



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR MATERIAL SAFETY AND  
SAFEGUARDS RELATED TO THE DIRECT TRANSFER OF POSSESSION ONLY  
LICENSE NO. DPR-73 FOR THREE MILE ISLAND NUCLEAR STATION, UNIT  
NO. 2 FROM THE FIRSTENERGY COMPANIES TO TMI-2 SOLUTIONS

1.0 INTRODUCTION

By application dated November 12, 2019, as supplemented by letters dated December 12, 2019, March 18, 2020, and June 12, 2020; and e-mail dated September 2, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML19325C600, ML20013E535, ML20079D788, ML20188A048, and ML20275A326, respectively), GPU Nuclear, Inc. (GPUN), Metropolitan Edison Company, Jersey Central Power and Light Company, and Pennsylvania Electric Company (collectively, the FirstEnergy Companies) and TMI-2 Solutions, LLC (TMI-2 Solutions) (together with the FirstEnergy Companies, the applicants) requested U.S. Nuclear Regulatory Commission (NRC, the Commission) consent to the direct transfer from the FirstEnergy Companies to TMI-2 Solutions of NRC Possession Only License (POL) No. DPR-73 for Three Mile Island Nuclear Station, Unit No. 2 (TMI-2).

The applicants requested that the NRC consent to the direct transfer in order to implement the accelerated decommissioning of TMI-2. This request was submitted to the NRC for approval pursuant to Section 184, "Inalienability of Licenses," of the Atomic Energy Act of 1954, as amended (AEA), and Title 10 of the *Code of Federal Regulations* (10 CFR) 50.80, "Transfer of licenses." The applicants also requested that the NRC approve a conforming amendment to the TMI-2 POL to reflect the proposed transfer pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit." Information provided for NRC analysis included a TMI-2 Nuclear Decommissioning Trust (NDT) balance as of June 1, 2020.

Notice of the application was published in the *Federal Register* (FR) on March 26, 2020 (85 FR 17102). The supplemental letters dated December 12, 2019, March 18, 2020, and June 12, 2020; and email dated September 2, 2020, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's no significant hazards consideration determination.

2.0 BACKGROUND

TMI-2 is a non-operational pressurized water reactor located on Three Mile Island in the Susquehanna River in Londonderry Township, Dauphin County, Pennsylvania, about 10 miles southeast of Harrisburg. TMI-2 shares Three Mile Island with an additional pressurized water reactor, the permanently shutdown Three Mile Island Nuclear Station, Unit 1 (TMI-1), which is owned by Exelon Generation Company, LLC (Exelon). TMI-2 was rated at a core thermal

power of 2,772 megawatts-thermal with a corresponding turbine generator output of 959 megawatts-electric.

An operating license was issued for TMI-2 on February 8, 1978, with commercial operation declared on December 30, 1978. On March 28, 1979, the unit experienced an accident which resulted in severe damage to the reactor core. Following the accident, approximately 99 percent of the fuel and damaged core material was removed from the TMI-2 reactor vessel and associated systems and shipped to the U.S. Department of Energy (DOE) Idaho National Laboratory. Title to and possession of this fuel and damaged core material is now under the responsibility of the DOE. TMI-2 is maintained in accordance with the NRC-approved SAFSTOR condition (method by 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), as described in the TMI-2 PDMS Safety Analysis Report (ADAMS Accession No. ML19235A001).

Pursuant to 10 CFR 50.82(a)(4), by letter dated June 28, 2013 (ADAMS Accession No. ML13190A366), GPUN submitted a post-shutdown decommissioning activities report (PSDAR) for TMI-2. By letter dated November 18, 2013 (ADAMS Accession No. ML13323A497), GPUN submitted its response to an October 21, 2013, NRC request for additional information on the PSDAR (ADAMS Accession No. ML13266A285). By letter dated December 4, 2015 (ADAMS Accession No. ML15338A222), GPUN further revised the PSDAR. The schedule presented for decommissioning TMI-2 in the 2015 PSDAR was based on the assumption that TMI-2 would be decommissioned with TMI-1 to achieve economies of scale by sharing costs between units and coordinating the sequence of work activities. Therefore, the 2015 PSDAR states that the decommissioning of TMI-2 would commence following the expiration of the TMI-1 operating license on April 9, 2034, with completion in 2053. TMI-1 has since permanently ceased power operations and had all fuel permanently removed from its reactor vessel as of September 26, 2019 (ADAMS Accession No. ML19269E480).

#### License Transfer Application

By application dated November 12, 2019, as supplemented by letters dated December 12, 2019, March 18, 2020, and June 12, 2020; and an e-mail dated September 2, 2020, the FirstEnergy Companies and TMI-2 Solutions requested NRC approval of the direct transfer of the TMI-2 POL from the FirstEnergy Companies to TMI-2 Solutions in order to implement the accelerated decommissioning of TMI-2. According to the applicants, the license transfer application demonstrates that: (1) the proposed transfer of the license to TMI-2 Solutions will accelerate the decommissioning of the TMI-2 site in a safe and compliant manner; (2) TMI-2 Solutions has the requisite managerial, technical, and financial qualifications to be the licensee of the TMI-2 facility; (3) TMI-2 Solutions will provide reasonable assurance of adequate funding to maintain and decommission the unit; (4) the material terms of the license will not be affected; and (5) the transfer of the license to TMI-2 Solutions will not result in any impermissible foreign ownership, control, or domination.

Following NRC approval of the proposed direct transfer and the consummation of the transfer transaction, TMI-2 Solutions would be the TMI-2 licensee. It would 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 waste within the TMI-2 facility (collectively, debris material) until title to the debris material is transferred to the DOE for disposal; excluding certain limited items such as substation or transmission-related real estate and assets. TMI-2 Solutions would

also assume responsibility for all activities at the TMI-2 site under the POL, including maintenance and security and the radiological decommissioning of the site and associated buildings and structures pursuant to NRC regulations.

After the proposed transfer, TMI-2 Solutions would initially maintain the site in a PDMS state and then, after the completion of additional licensing actions, transition to an accelerated decommissioning timeline, with completion scheduled for approximately 16.5 years after the license transfer. Specifically, TMI-2 Solutions intends to complete the decommissioning, restoration, and release of the TMI-2 site, except potentially for any onsite waste storage facilities, by 2037, which is significantly earlier than the schedule provided in the 2015 PSDAR.

#### Asset Purchase and Sale Agreement

According to the application, TMI-2 Solutions proposes to purchase TMI-2 pursuant to the terms of an October 15, 2019, Asset Purchase and Sale Agreement (PSA) between the FirstEnergy Companies and TMI-2 Solutions, which was enclosed with the application at Enclosure 1A (non-publicly available proprietary version) and Enclosure 1B (publicly available non-proprietary version). The PSA is subject to various conditions, including the condition that, generally, the aggregate amount of the funds held in the TMI-2 NDT at closing must equal or exceed \$800M.

#### Amended PSDAR

By letter dated December 12, 2019, GPUN notified the NRC of a significant schedule change in the 2015 PSDAR if the license transfer application were to be approved and consummated. To account for this possibility, GPUN provided the NRC an amended PSDAR. The amended PSDAR states that decommissioning under this scenario would occur in two phases. Phase 1 would focus on planning and engineering activities (including NRC licensing actions) and remediation of the areas subject to the 1979 accident, with the overall goal of Phase 1 being to reduce the radiological source term at 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. The first 4-5 years under Phase 1 would be preparation for decommissioning. During this time, TMI-2 would remain in a PDMS state. Phase 2 would focus on the 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. Phase 2 would be completed in 2037.

### 3.0 REGULATORY EVALUATION

The proposed transaction described in the license transfer application constitutes a direct transfer of the TMI-2 POL, which requires prior NRC approval. For such a transaction, the NRC must find that the proposed transferee is qualified to be the holder of the license and that the transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

The request for approval of the proposed transaction, as described above and as discussed in this safety evaluation, is made pursuant to 10 CFR 50.80(a), which states that:

No license for a production or utilization facility (including, but not limited to, permits under this part and part 52 of this chapter, and licenses under parts 50 and 52 of this chapter), or any right thereunder, shall be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission

gives its consent in writing.

In addition, the regulations in 10 CFR 50.80(b) and (c) apply. The regulation at 10 CFR 50.80(b) states, in part, that:

- (1) An application for transfer of a license shall include:
  - (i) For a construction permit or operating license under this part, as much of the information described in [10 CFR] 50.33 and 50.34 ... with respect to the identity and technical and financial qualifications of the proposed transferee as would be required by those sections if the application were for an initial license.

Section 50.80(c) of 10 CFR states, in part, that:

...the Commission will approve an application for the transfer of a license, if the Commission determines: (1) That the proposed transferee is qualified to be the holder of the license; and (2) That transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

In 10 CFR 50.33(a) through (d), the NRC requires applicants to provide information including the name of the applicant, address of the applicant, description of the corporate structure of the applicant, citizenship of the applicant, and foreign ownership, control, or domination of the applicant, as applicable.

In addition, 10 CFR 50.33(f) states, in part:

Except for an electric utility applicant for a license to operate a utilization facility of the type described in [10 CFR] 50.21(b) or [10 CFR] 50.22, [each application shall state] information sufficient to demonstrate to the Commission the financial qualification of the applicant to carry out, in accordance with regulations in this chapter, the activities for which the permit or license is sought.

Section 50.2, "Definitions," of 10 CFR states, in part, that an electric utility means:

[A]ny entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority.

The NRC staff applies guidance in NUREG-1577, Revision 1, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance" (ADAMS Accession No. ML013330264), to evaluate the financial qualifications of applicants to carry out the activities for which the permit or license is sought.

Section 50.33(k)(1) of 10 CFR requires that applicants provide information, in the form of a report, as described in 10 CFR 50.75, "Reporting and recordkeeping for decommissioning planning," indicating how reasonable assurance will be provided that funds will be available to decommission the facility.

The regulation under 10 CFR 50.75 specifies how a licensee will provide reasonable assurance

that funds will be available for the decommissioning process. Specifically, 10 CFR 50.75(b) requires that decommissioning financial assurance be provided in an amount not less than the minimum formula amount in 10 CFR 50.75(c). In 10 CFR 50.75(e), the NRC includes the methods acceptable to the agency for covering this decommissioning financial assurance amount, including using an NDT. Finally, 10 CFR 50.75(f) and (h) provide additional requirements on the reporting and management of NDTs.

Section 50.82(a)(8)(i) of 10 CFR states that licenses may use funds held in NDTs if:

(A) The withdrawals are for expenses for legitimate decommissioning activities consistent with the definition of decommissioning in [10 CFR] 50.2;

(B) The expenditure would not reduce the value of the decommissioning trust below an amount necessary to place and maintain the reactor in a safe storage condition if unforeseen conditions or expenses arise, and;

(C) The withdrawals would not inhibit the ability of the licensee to complete funding of any shortfalls in the decommissioning trust needed to ensure the availability of funds to ultimately release the site and terminate the license.

In accordance with 10 CFR 50.2, the term “decommission” means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits (1) release of the property for unrestricted use and termination of the license or (2) release of the property under restricted conditions and termination of the license.

Section 50.82(a)(8)(v) of 10 CFR requires power reactor licensees that have permanently ceased operations to provide to the NRC annually, by March 31, a decommissioning financial assurance status report. Among other things, the report must include the remaining balance of any decommissioning funds, an estimate of the costs to complete decommissioning, and additional financial assurance to cover any projected shortfalls.

In addressing foreign ownership, control, or domination (FOCD) issues, Section 103d of the AEA provides, in relevant part, that no license may be issued to:

[A]ny corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.

The NRC’s regulation in 10 CFR 50.38 is the regulatory provision that implements the FOCD provisions of the AEA. Section 50.38 of 10 CFR provides, in part, that:

[A]ny corporation, or other entity which the Commission knows or has reason to believe is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, shall be ineligible to apply for and obtain a license.

The NRC staff evaluates license transfer applications in a manner that is consistent with the guidance provided in the “Final Standard Review Plan on Foreign Ownership, Control, or Domination” (FOCD SRP), as published in the *Federal Register* on September 28, 1999 (64 FR 52357), to determine whether the proposed transferee is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. The NRC’s position on FOCD, outlined in the FOCD SRP, states that “the foreign control prohibition should be given an orientation toward safeguarding the national defense and security.” Further, the FOCD SRP outlines how the effects of foreign ownership may be mitigated through implementation of a “negation action plan” to ensure that any foreign interest is effectively denied control or domination over the licensee.

In 10 CFR 50.34(b)(6), the NRC requires that applicants provide certain information on facility operation. It requires, in part, that the information provided by the applicant includes:

- (i) The applicant’s organizational structure, allocations or responsibilities and authorities, and personnel qualification requirements.
- (ii) Managerial and administrative controls to be used to assure safe operation.

In 10 CFR 50.34(b)(7), the NRC also requires that applicants provide the following information in the final safety analysis report:

The technical qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter.

The NRC staff uses, in part, the following regulatory guidance to evaluate whether the qualifications of licensees would be affected by proposed transfers:

- (1) NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition,” Chapter 13, “Conduct of Operations,” Section 13.1.1, Revision 6, “Management and Technical Support Organization,” dated August 2016 (ADAMS Accession No. ML15005A449), which provides guidance for the review of changes to the technical organization or personnel qualifications proposed as a result of an operating license transfer. Specifically, Section I.4, “Reviews of Operating License Transfers,” states that the applicant for transfer of an operating license should provide a description of the organization to support plant operations, which should include (1) organizational charts of the corporate-level management and technical support organizations, emphasizing the changes to be made as a result of the transfer, (2) the relationship of the nuclear-oriented parts of the organization to the rest of the corporate organization, and (3) description of the specific provisions which have been made for uninterrupted technical support for operations.
- (2) NUREG-0800, Chapter 13, Sections 13.1.2–13.1.3, Revision 7, “Operating Organization,” dated August 2017 (ADAMS Accession No. ML15007A296), which provides guidance for the review of changes to the operating organization proposed as a result of an operating license transfer.

The purpose of this evaluation is to ensure that the proposed corporate management is involved with, informed of, and dedicated to the safe operation, maintenance, and decommissioning of the facility and that adequate technical and financial resources will be provided to support these activities.

The NRC staff also reviews information that relates to nuclear onsite property damage insurance requirements under 10 CFR 50.54(w) and the Price-Anderson insurance and indemnity requirements under Section 170 of the AEA and 10 CFR part 140, "Financial Protection Requirements and Indemnity Agreements."

Finally, with respect to the requested conforming license amendment, 10 CFR 50.90 states, in part:

Whenever a holder of a license ... desires to amend the license..., application for an amendment must be filed with the Commission ... fully describing the changes desired, and following as far as applicable, the form prescribed for original applications.

Pursuant to 10 CFR 2.1315, where administrative license amendments are necessary to reflect an approved license transfer, such amendments will be included in the order that approves the license transfer.

#### 4.0 FINANCIAL EVALUATION

##### 4.1 Financial Qualifications

According to the application, TMI-2 Solutions is a Delaware limited liability company established for the purpose of decommissioning TMI-2, managing debris material until acceptance by the DOE, and eventually terminating the TMI-2 license and releasing the TMI-2 site. The application provides that TMI-2 Solutions is an indirect wholly owned subsidiary of EnergySolutions, Inc. (EnergySolutions). According to the application, EnergySolutions provides global services for nuclear reactor decommissioning, specializing, with its affiliates, in providing high-level waste management, spent fuel handling and transportation, and complex decontamination and decommissioning services, including the decommissioning of commercial nuclear power generation facilities. For example, through its affiliates, EnergySolutions operates the largest low-level radioactive waste disposal facility in the Nation and is currently decommissioning the Zion Nuclear Power Station, Units 1 and 2 (Zion), and the La Crosse Boiling Water Reactor (LACBWR).

Since TMI-2 is a non-operational reactor with a possession only license, following the proposed transfer, TMI-2 Solutions, as the licensee, would only have the authority to possess TMI-2 and the obligations to maintain and decommission the TMI-2 site in accordance with NRC requirements. Therefore, TMI-2 Solutions would not conduct the operations contemplated by the financial qualifications provisions of 10 CFR 50.33(f); rather, all of its licensed activities would involve the possession of radioactive material in connection with maintaining the safe condition of the plant, radiological decommissioning of the TMI-2 site, license termination, and operational responsibilities associated with debris material management. As such, the financial qualifications provisions of 10 CFR 50.33(f) are satisfied in this instance by TMI-2 Solutions meeting the requirements regarding decommissioning financial assurance and debris material management financial assurance. The satisfaction of these requirements is discussed in the following two sections.

## 4.2 Decommissioning Financial Assurance

According to the application, the TMI-2 decommissioning cost estimate is \$1.06B (\$929.29M, \$81.67M, and \$45.91M for license termination (i.e., radiological decommissioning), debris material management, and site restoration, respectively) for the accelerated decommissioning approach with a 2037 completion date. The total project cost includes planning and transition, fuel debris removal, license termination, allocated support costs, contingency, and site restoration. By letter dated March 18, 2020, GPUN provided to the NRC the TMI-2 decommissioning funding status report. This status report stated that as of December 31, 2019, the TMI-2 NDT balance was \$899.48M. By letter dated June 12, 2020, in response to an NRC request for additional information, the applicants provided to the NRC updated information regarding the TMI-2 NDT. The applicant stated that, as of June 1, 2020, the TMI-2 NDT had a market value of \$901.44M. The highest value for the period of December 31, 2019, through June 1, 2020, was \$902.87M reported on February 29, 2020. The lowest value for this period was \$891.75M reported on March 31, 2020. The average value for this period was \$898.88M. Regardless, pursuant to the PSA, the amount in the NDT to be transferred to TMI-2 Solutions must generally be a minimum of \$800M to enable closing to occur.

According to the applicants, decommissioning financial assurance will be primarily provided by the TMI-2 NDT. Following the proposed license transfer transaction, all assets in the TMI-2 NDT will be segregated into two sub-accounts—a Phase 1 Subaccount and a Phase 2 Subaccount. The Phase 2 Subaccount will contain a minimum amount of NDT assets that generally cannot be accessed until Phase 1 activities are complete. If either sub-account is depleted during decommissioning phases, the licensee will use additional financial instruments to ensure that sufficient funding is in place throughout both phases to complete decommissioning. The right to draw on the source of funds described herein, and the *pro forma* projected costs set forth in Attachment 1, Enclosure 7 of the application, provide the requisite decommissioning financial assurance for the proposed license transfer consistent with 10 CFR 50.33(f). The availability of the funds in the TMI-2 NDT satisfies the “prepayment” method of providing financial assurance pursuant to 10 CFR 50.75(e)(1).

Pursuant to 10 CFR 50.2, “Decommission,” means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits: (1) release of the property for unrestricted use and termination of the license, or (2) release of the property under restricted conditions and termination of the license. The existing NDT for TMI-2 was created in compliance with 10 CFR 50.75. As described below, the NRC staff’s review of decommissioning financial assurance assesses whether the applicants have provided information sufficient to demonstrate that there is reasonable assurance that, after the proposed license transfer, funds will be available to cover the costs of the radiological decommissioning of TMI-2.

As described in the 2015 PSDAR, the decommissioning plan for TMI-2 is for the FirstEnergy Companies to complete decommissioning by 2053. The revised PSDAR provided in support of the proposed license transfer reflects the plan to, if the transfer is consummated, complete the decommissioning of the TMI-2 site as soon as 2037. In the license transfer application, the applicants provided financial projections for the duration of the TMI-2 decommissioning, including the amount of decommissioning trust funds in the NDT. They included a cash flow analysis that assumed an NDT balance of \$899M (as of December 31, 2019), as well as estimated costs for radiological decommissioning, debris material management, and site restoration (totaling approximately \$1.06B).



In addition to the TMI-2 NDT, the application provided that TMI-2 Solutions will have access to the resources of various financial instruments for the purposes of completing decommissioning. These instruments provide additional financial assurance for decommissioning of TMI-2, beyond the assets of the TMI-2 NDT. These instruments are:

- Back-Up and Provisional Nuclear Decommissioning Trust: This trust will contain a Provisional Trust Account and a Back-Up Trust Account that will be available for TMI-2 decommissioning expenses. The Back-Up Trust Account will be the depository of the benefits of the Irrevocable Letter of Credit and Irrevocable Disposal Capacity Easement.
- Irrevocable Letter of Credit: TMI-2 Solutions shall procure an irrevocable letter of credit from a reputable financial institution. The beneficiary of the Irrevocable Letter of Credit will be the Back-Up Trust Account.
- Irrevocable Disposal Capacity Easement: Upon closing, *EnergySolutions* will make available an Irrevocable Disposal Capacity Easement. This easement provides for disposal rights for low-level radioactive waste removed from TMI-2 that is acceptable at *EnergySolutions*' Clive, Utah low-level radioactive waste disposal facility and is anticipated to be sufficient to dispose of all of the Class A low level radioactive waste to be shipped from the TMI-2 site.
- Financial Support Agreement: Upon closing, *EnergySolutions* will implement a Financial Support Agreement to the benefit of TMI-2 Solutions for the purpose of assuring decommissioning completion.

Because of these financial instruments, TMI-2 Solutions will have in place, in addition to the TMI-2 NDT with its minimum of \$800M, decommissioning financial assurance valued up to \$100M. *EnergySolutions* will also provide a Parent Guarantee to the FirstEnergy Companies at closing guaranteeing the payment and performance of the obligations of TMI-2 Solutions as to the TMI-2 decommissioning. This guarantee makes the resources of *EnergySolutions* available to ensure the successful decommissioning of TMI-2.

The NRC has a comprehensive, regulation-based, framework that provides oversight of a licensee's decommissioning funding during operation and decommissioning. NRC regulations require a licensee to submit a site-specific decommissioning cost estimate, which encompasses all estimated costs required for decommissioning. Subsequent to permanent cessation of operations and until radiological decommissioning is complete, licensees are required to submit decommissioning funding status reports on an annual basis and certify to the decommissioning cost estimate. Ultimately, through its independent review of this information, the NRC seeks to find that licensees have provided reasonable assurance that they have or will have funding greater than or equal to the certified amount estimated to be needed for radiological decommissioning.

A power reactor licensee's decommissioning cost estimate also must include plans for adjusting the levels of funds assured for decommissioning to demonstrate that a reasonable level of assurance will be provided that funds will be available when needed to cover the cost of decommissioning. This provides the NRC staff with more detailed information as to the licensee's plans to address decommissioning funding assurance throughout the radiological decommissioning process. The staff will continue to monitor licensee decommissioning funding

assurance on an annual basis until radiological decommissioning is complete and the 10 CFR Part 50 license is terminated.

As part of its decommissioning funding assurance oversight, the NRC staff reviews prior-year and cumulative decommissioning expenditures, as well as the updated remaining estimated decommissioning cost, reflecting any differences between actual and estimated costs for the prior year. As appropriate, the staff has the ability to request additional information to clarify the data provided in the report. Ultimately, it is the licensee's responsibility to complete the decommissioning process in accordance with NRC regulations.

During the annual decommissioning funding status review, if the NRC staff finds that a licensee's NDT balance, including projected growth and collections, is less than the estimated minimum amount needed for radiological decommissioning, this shortage of funds is known as a shortfall. Licensees may use the methods specified in NRC decommissioning funding regulations to cover a shortfall. Remedy methods include, but are not limited to, the additional financial instruments discussed in the TMI-2 license transfer application.

The NRC staff's independent analysis of the application confirmed that, assuming a 2-percent real rate of return over the decommissioning period, the TMI-2 NDT is adequate to cover the costs associated with radiological decommissioning of the TMI-2 site, as identified in the site-specific cost estimate, and terminate the TMI-2 POL. The financial instruments valued up to \$100M and the Parent Guarantee that TMI-2 Solutions will have in place provide additional financial assurance.

The NRC staff reviewed the information provided in the application. Based on this review, the staff's independent cash flow analysis in Attachment 1 to this safety evaluation, and the imposition of the following license conditions, the staff finds that the applicants have provided information sufficient to demonstrate that there is reasonable assurance that, after the proposed license transfer, funds will be available to cover the costs of the decommissioning of TMI-2.

1. Upon the date of closing, and proceeding until determination of completion of Phase 2 of facility decommissioning, TMI-2 Solutions will maintain a Financial Support Agreement in the amount of \$100M, less the value of any cash-funded Provisional Trust Account, Disposal Capacity Easement, and Letter of Credit procured by TMI-2 Solutions for the benefit of the Back-Up Trust Account under the Back-Up & Provisional Trust Agreement.
2. At time of closing, EnergySolutions, Inc. will provide a Parent Guarantee in favor of the FirstEnergy Companies to guarantee the payment and performance of the obligations of TMI-2 Solutions as to the TMI-2 decommissioning. This guarantee makes the resources of EnergySolutions available to help ensure the successful decommissioning of TMI-2, assuring the ability of TMI-2 Solutions to (i) pay the costs of decommissioning the TMI-2 facility; (ii) protect the public health and safety; and (iii) meet NRC requirements.
3. These financial support conditions may not be voided, canceled, or modified without the prior written consent of the NRC. These financial support conditions are in place and will be maintained as described in the application. The Director of the Office of Nuclear Material Safety and Safeguards shall be informed, in writing, no later than 10 working days after any funds are provided under the terms of the conditions listed above.

#### 4.3 Debris Material Financial Assurance

After the closing of the proposed transaction, TMI-2 Solutions would assume responsibility for all licensed activities at the TMI-2 site, including the responsibility to complete radiological decommissioning pursuant to NRC regulations. This responsibility includes developing NRC-compliant storage plans for any remaining debris material until title to the debris material is transferred to the DOE. TMI-2 Solutions estimates that, if necessary, debris material management through Phase 2 of the decommissioning period would cost \$81.67M.<sup>1</sup>

Following the accident at TMI-2, the DOE collected approximately 99 percent of the spent nuclear fuel and damaged core material from the site and shipped it to the Idaho National Laboratory, pursuant to DOE Contract No. DE-SC07-84ID12355. Since the accident occurred within the first few months of reactor operation, no spent nuclear fuel was stored at TMI-2. Title to and possession of this material remains with the DOE. As stated in the 2015 PSDAR, it is presumed that the DOE retains ultimate authority for disposal of any remaining material pursuant to Standard Contract DE-CR01-83NE44477. This contract has an additional provision unique to TMI-2, which states:

All nuclear fuel used in future generation at TMI-2 as well as any damaged core material, if any, remaining after the completion of Contract No. 12355 will be covered by the provisions of this Standard Contract. The fee for disposal of any such remaining damaged core material under the Standard Contract will be negotiated by GPU Nuclear and DOE in accordance with the requirements of the Nuclear Waste Policy Act.

In their license transfer application, the applicants provided their funding plan for debris material management costs, which involves using NDT funds in excess of those required for all other radiological decommissioning activities, with additional assurance provided by DOE reimbursements and the additional financial instruments. The NRC staff's review of the applicants' funding plan for debris material management costs is discussed below.

In analyzing the applicants' proposed use of NDT funds to cover debris material management costs, the NRC staff considered its evaluation of its independent cash flow analysis. The staff determined that the applicants' use of the NDT for debris material management will not negatively impact the availability of funding for other radiological decommissioning activities. Additionally, the remaining NDT funds coupled with the additional financial instruments provided by TMI-2 Solutions will be sufficient to cover the costs associated with debris material management.

The NRC staff also determined that the assumption of DOE reimbursement is a reasonable source of additional funding. In recent years, the DOE reimbursements have become more consistent and predictable despite the longevity of the litigation process and complexity of the DOE standard settlement agreements. Moreover, as further assurance of their reliance on a future DOE settlement agreement, the applicants have provided additional funding mechanisms to ensure funds are available to cover debris material management costs if a settlement agreement is not reached in the timeframe anticipated. Therefore, the NRC staff concludes that

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<sup>1</sup> This amount does not include the TMI-2 Solutions estimate of approximately \$56M for the long-term storage of debris material after the completion of phase 2 until the DOE acceptance and the decommissioning of any storage facility. The NRC staff recognizes that it is expected that, pursuant to the contract discussed below, the DOE will be responsible for this additional cost.

DOE reimbursements, as proposed by the applicants, provide a reasonable source of funds, in addition to the other sources of funds discussed above, to cover debris material management costs.

Based on this review, in consideration of the above analysis and the license conditions, the NRC staff finds that the applicants have provided information sufficient to demonstrate that there is reasonable assurance that, after the proposed license transfer, funds will be available to cover the costs of debris material management.

#### 4.4 Financial Evaluation Conclusion

As described above, the NRC staff evaluated the financial qualifications of TMI-2 Solutions to be the holder of the TMI-2 POL, which consist of decommissioning financial assurance and debris material management financial assurance. Based on this evaluation and an independent cash flow analysis, the staff determined that there is reasonable assurance that the funds in the TMI-2 NDT will be sufficient to cover these costs. Additional assurance of adequate funding is provided by the license conditions requiring a Financial Support Agreement and a Parent Guarantee, as well as by the assumption of DOE reimbursements. Therefore, the staff concludes that TMI-2 Solutions is financially qualified to hold the TMI-2 POL.

#### 5.0 DOE STANDARD CONTRACT

Pursuant to DOE Contract No. DE-SC07-83ID12355, DOE collected approximately 99 percent of the spent nuclear fuel and damaged core material at the TMI-2 site following the accident and took title to and possession of this material. Pursuant to DOE Standard Contract DE-CR01-83NE44477, the DOE will take title to and possession of any remaining damaged core material at TMI-2. Upon closing, TMI-2 Solutions will hold title to any debris material at TMI-2 and will maintain the associated Standard Contract DE-CR01-83NE44477, including all rights and obligations under that contract.

#### 6.0 ANTITRUST CONSIDERATION

The AEA does not require or authorize antitrust reviews of post-operating license transfer applications (*Kansas Gas and Electric Co., et al.* (Wolf Creek Generating Station, Unit 1), CLI- 99-19, 49 NRC 441 (1999)). The application post-dates the issuance of the operating license for the unit under consideration in this safety evaluation and, therefore, no antitrust review is required or authorized. Additionally, the subject license does not contain any antitrust conditions; therefore, there are no antitrust issues to be considered in connection with the conforming license amendment.

#### 7.0 FOREIGN OWNERSHIP, CONTROL, OR DOMINATION

The application states that TMI-2 Solutions is an indirect wholly owned subsidiary of EnergySolutions, which, in turn, is a privately held company whose shares are directly owned by Rockwell Holdco, Inc. (Rockwell). Rockwell is 57 percent owned primarily by a number of affiliated passive investment funds (collectively, the ECP II Partnerships) controlled by Energy Capital Partners GP II, LP, a limited liability company organized under the laws of the State of Delaware. Rockwell is also 40 percent owned by passive investment funds controlled by TriArtisan ES Partners. All the TriArtisan entities are limited liability companies organized under the laws of the State of Delaware and are controlled by two U.S. Citizens. Approximately 37 percent of the equity in all of the ECP II Partnerships is held by foreign passive investors.

The NRC staff recognizes that some of TMI-2 Solutions' upstream parent organizations are held in part by foreign stockholders and, accordingly, considered the percentage of outstanding voting stock so held in its "totality of facts" review. However, recognizing that shares change hands rapidly in the international equity markets, the staff usually does not evaluate licensees to determine the degree to which foreign entities own relatively small percentages of shares of the licensees' voting stock. The Commission has not determined a specific threshold above which it would be conclusive that an applicant is controlled by foreign interests. Therefore, based on the nature of the foreign investment in the parent organizations, specifically the rights of the passive investors and the perceived inability of these investors to control or dominate the organizations or any of their subsidiaries (including TMI-2 Solutions) to the extent that it could directly affect safety and security decision making at TMI-2, based on the totality of facts, there are currently no FOCD issues with the subject transaction. Furthermore, EnergySolutions holds a facility security clearance with the DOE. This security clearance requires DOE findings regarding foreign ownership, control, or influence. Finally, other indirect wholly owned subsidiaries of EnergySolutions hold the NRC licenses for Zion and LACBWR.

Based on this information, the NRC staff finds that the transfer of ownership and decommissioning authority of the facility to TMI-2 Solutions as proposed in the application does not raise any issues related to FOCD within the meaning of the AEA and NRC regulations. In light of the above and pursuant to Section 103d of the AEA and 10 CFR 50.38, the staff concludes that it does not know, or have reason to believe, that TMI-2 Solutions or its owners will be owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, as a result of the direct license transfer.

#### 8.0 NUCLEAR INSURANCE AND INDEMNITY

Pursuant to the requirements of the Price-Anderson Act (Section 170 of the AEA) and the NRC's implementing regulations in 10 CFR Part 140, the current indemnity agreement must be modified to reflect that, after the proposed license transfer takes effect, TMI-2 Solutions will be the sole licensee for TMI-2 for the purposes of decommissioning the site. Consistent with NRC practice, the NRC staff will require TMI-2 Solutions to provide and maintain onsite property insurance as specified in 10 CFR 50.54(w), "Conditions of licenses." TMI-2 Solutions is also required to provide evidence that it has obtained the appropriate amount of insurance in accordance with 10 CFR 140.11(a)(4), which will be effective concurrent with the date of the license transfer and amended indemnity agreement. Therefore, the order approving the transfer will be conditioned as follows:

Prior to the closing of the license transfer, TMI-2 Solutions shall provide the Director of the NRC's Office of Nuclear Material Safety and Safeguards satisfactory documentary evidence that it has obtained the appropriate amount of insurance required of a licensee under 10 CFR 140.11(a)(4) and 10 CFR 50.54(w), consistent with the exemptions issued for TMI-2 on August 8, 1994, and July 27, 1999.

Based on the above, the NRC staff concludes that the proposed license transfer, as conditioned, satisfies the nuclear insurance and indemnity requirements of 10 CFR Part 140 and 10 CFR Part 50.

#### 9.0 TECHNICAL QUALIFICATIONS EVALUATION

With the completion of the proposed transfer actions, TMI-2 Solutions would assume responsibility for and control over the TMI-2 facility. According to the application, TMI-2 Solutions will draw on the experience of individuals from its parent company, *EnergySolutions*, and its affiliates, *ZionSolutions, LLC* and *LaCrosseSolutions, LLC*, which have nearly completed the decommissioning of Zion and LACBWR, respectively.

Work completed at Zion includes the creation of openings in the containment buildings at each Zion unit, dismantlement and segmentation of the reactor vessel internals at both units, the erection of heavy lift rail systems, the demolition of all remaining buildings and structures, and the packaging and disposal of lead, asbestos, reactor coolant pumps, and reactor coolant system piping. In addition, *EnergySolutions* constructed an independent spent fuel storage installation (ISFSI) on the Zion site and transferred all spent nuclear fuel from wet storage to the ISFSI. Once final status survey work is completed, *EnergySolutions* anticipates that personnel with experience from the Zion decommissioning effort will be transferred to work at TMI-2. The completion of decommissioning at the Zion facility would represent the first non-utility licensee to successfully decommission a commercial nuclear plant in the United States.

Similarly, *LaCrosseSolutions* has completed the removal of all plant structures and radioactive waste from the LACBWR site and conducted final radiological surveys. *EnergySolutions* remains on track to complete the scheduled decommissioning and release of the LACBWR site, with the exception of the ISFSI, in early 2021. *EnergySolutions* anticipates that personnel with experience from the LACBWR decommissioning effort will be transferred to work at TMI-2.

*EnergySolutions*, through its affiliates, also conducted the major component removal, waste disposal, and establishment of dry fuel cask systems for the Big Rock Point nuclear power plant. The company provides services at most commercial nuclear power stations, including waste management and liquid waste processing, are well qualified to ship large volumes of radioactive waste, with experience using specially built gondola rail cars and large capacity trucks, and owns and operate the Clive low-level radioactive waste disposal facility in Utah and is the operator for the State of South Carolina of the Barnwell disposal facility.

GPUN states it will transfer to TMI-2 Solutions TMI-2 related assets needed to maintain and complete decommissioning of the TMI-2 site in accordance with NRC requirements. These assets will include, in addition to the TMI-2 structures and equipment, the necessary books, records, safety and maintenance manuals, and engineering and construction documents.

GPUN does not have a significant employee presence at the TMI-2 site; therefore, a significant number of staff from GPUN are not expected to transfer over to TMI-2 Solutions. Instead, as described above, TMI-2 Solutions states it will initially ensure continuity of procedures and capabilities already in place and managed by Exelon on behalf of GPUN, and then promptly transition to a comprehensive onsite organization compliant with regulatory requirements and the TMI-2 POL. TMI-2 Solutions plans to conduct self-sufficient operations, although additional support for certain operational functions (e.g., training, emergency preparedness, and quality assurance) may be obtained from the *EnergySolutions* corporate organization and Exelon.

The application further states that GPUN will assign to TMI-2 Solutions its easement, monitoring, and service agreements with Exelon. Under these agreements, Exelon currently permits use of part of the TMI-1 site by TMI-2 personnel and contractors, and provides services necessary to maintain TMI-2 in a PDMS state on behalf of GPU Nuclear. The transfer of these agreements will enable TMI-2 Solutions access to portions of the TMI-1 site for decommissioning staging activities; provide for groundwater monitoring for the TMI-2 site; and

enable continued performance of technical services related to the maintenance of TMI-2 in a PDMS state until the start of decommissioning. The transfer of assets and agreements to TMI-2 Solutions will allow TMI-2 Solutions to maintain and decommission the TMI-2 site in compliance with NRC regulations.

The applicants stated that TMI-2 Solutions employees and contractors will be qualified for their positions, and that TMI-2 Solutions will directly manage Quality Assurance (QA), safety, and radiological programs with oversight by EnergySolutions. TMI-2 Solutions plans to subcontract technical support activities to qualified contractors, to include support for waste operations, transportation, demolition, project controls and reporting, operations and work control, and decommissioning and decontamination (D&D) engineering, with all contractors reporting to the TMI-2 Solutions Project Director.

TMI-2 Solutions would also adopt the existing QA, as specified for TMI-2 in the PDMS Quality Assurance Plan, Revision 17, with no anticipated changes. Any changes later identified would be made in accordance with 10 CFR 50.54(a).

The applicants provided an organization chart showing the planned project organization. Resumes for key management personnel were also provided. The applicants plan to establish an organization responsible for radiological safety, industrial health and safety, regulatory affairs, quality assurance, project administration and financial services, licensing, training, labor relations, environmental, D&D, engineering and operations, waste operations, and project controls. This organization would provide a nuclear management team with control over the decommissioning and decontamination. The individual filling the Radiation Protection Manager position would be required to have education, training, and experience consistent with NRC Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," Radiation Protection Managers.

Based on its review, the NRC staff determined that the applicants have described a project organization that will provide the requisite experience and expertise for the decommissioning of the TMI-2 facility, and compliance with the requirements of the TMI-2 POL and the Commission's regulations. Therefore, the NRC staff finds that, after the proposed transfer of licensed authority from the FirstEnergy Companies to TMI-2 Solutions, TMI-2 Solutions will (1) have an acceptable corporate organization, (2) retain an acceptable onsite organization, and (3) have adequate resources to support the safe maintenance and decommissioning of the TMI-2 facility. The applicants' submittal adequately addresses the relevant requirements of 10 CFR 50.34(b) and 10 CFR 50.80. Accordingly, the staff concludes that TMI-2 Solutions would be technically qualified to hold the TMI-2 POL.

#### 10.0 CONFORMING LICENSE AMENDMENT

The applicants requested a conforming amendment to the TMI-2 POL. The proposed conforming amendment reflects the proposed license transfer action. The proposed conforming amendment does not involve any change in the design or licensing basis, plant configuration, the status of TMI-2, or the requirements of the TMI-2 POL.

The NRC staff reviewed the proposed changes to the TMI-2 POL and determined that they involve no safety questions, are administrative in nature, and are necessary to reflect the approved license transfer. Accordingly, the staff concludes that the proposed conforming amendment is acceptable. The amendment shall be issued and made effective at the time the proposed transfer actions are completed.

As provided in 10 CFR 2.1315, unless otherwise determined by the Commission with regard to a specific application, the Commission has determined that any amendment to the license of a utilization facility, which does no more than conform the license to reflect the transfer action, involves no significant hazards consideration. No contrary determination has been made by the Commission with regard to this specific application.

#### 11.0 HEARING REQUESTS AND PUBLIC COMMENTS

On March 26, 2020, the NRC published in the *Federal Register* (FR) an opportunity to request a hearing and to comment on the license transfer application (85 FR 17102). In response, on April 15, 2020, the Pennsylvania Department of Environmental Protection (PADEP) and Eric Epstein and Three Mile Island Alert separately filed hearing requests. On August 10, 2020, PADEP withdrew its hearing request, stating that it had executed a settlement agreement with the applicants addressing its concerns for purposes of the license transfer application. The hearing request from Eric Epstein and Three Mile Island Alert remains pending before the Commission. The hearing, if granted, will not be completed prior to the approval of the license transfer application. Therefore, the order approving the application will be conditioned as follows:

The NRC staff's approval of this license transfer is subject to the Commission's authority to rescind, modify, or condition the approved transfer based on the outcome of any post-effectiveness hearing on the license transfer application.

The NRC also received four comment submissions on the license transfer application (available at [www.regulations.gov](http://www.regulations.gov) under docket NRC-2020-0082). Comments from PADEP sought to develop a record for the NRC's use in its evaluation of adequate financial resources to satisfactorily decommission TMI-2. The second commenter requested careful review of the application by the NRC with possible congressional oversight and consultation with the Pennsylvania Public Utility Commission. This commenter also expressed concerns about the adequacy of the funds to complete decommissioning and the efficiency of decommissioning TMI-2 while TMI-1 is planned to be decommissioned many years later. The third commenter expressed support for PADEP's concerns and for congressional hearings, while the fourth commenter did not discuss anything related to the application. The NRC staff considered the issues raised in the hearing requests pending before the Commission and these comments as part of its evaluation of the application.

#### 12.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Commonwealth of Pennsylvania's State Liaison Officer (SLO) was notified of the proposed license transfer and issuance of the conforming amendment on October 8, 2020. The SLO indicated that the Commonwealth completed a detailed analysis of the license transfer application and has no legal objections to granting the application for transfer, but is still concerned about the adequacy of financial resources to complete the radiological decommissioning of TMI-2.

#### 13.0 ENVIRONMENTAL CONSIDERATION

The subject application is for approval of a transfer of a license issued by the NRC and for approval of an associated amendment of the license required to reflect the approval of the transfer. Accordingly, the actions involved meet the eligibility criteria for categorical exclusion



set forth in 10 CFR 51.22(c)(21). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the approval of the transfer application and conforming license amendment.

#### 14.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) the proposed transferee is qualified to be the holder of the license and (2) transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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**Cash Flow Analysis**  
**Three Mile Island Nuclear Station, Unit No. 2**  
**Nuclear Decommissioning Trust (NDT) Beginning of Year (BOY) and End of Year (EOY)**  
**Balances**  
**(millions of 2019\$)**

Year	BOY NDT Balance	License Termination Cost	Debris Material Management Cost	Site Restoration Cost	Total Costs	NDT Earnings <sup>1</sup>	EOY NDT Balance
2019	\$899 <sup>2</sup>	\$3	\$1		\$4	\$17	\$913
2020	\$913	\$17	\$1		\$18	\$17	\$913
2021	\$913	\$27	\$1		\$28	\$17	\$903
2022	\$903	\$38	\$4		\$42	\$17	\$879
2023	\$879	\$60	\$16		\$76	\$16	\$819
2024	\$819	\$72	\$16		\$88	\$14	\$745
2025	\$745	\$82	\$16		\$98	\$1	\$660
2026	\$660	\$79	\$13		\$92	\$1	\$580
2027	\$580	\$67	\$9		\$76	\$10	\$514
2028	\$514	\$29	\$5		\$34	\$10	\$489
2029	\$489	\$13			\$13	\$9	\$486
2030	\$486	\$20			\$20	\$9	\$475
2031	\$475	\$53		\$4	\$57	\$8	\$427
2032	\$427	\$87		\$15	\$102	\$6	\$331
2033	\$331	\$103		\$12	\$115	\$4	\$221
2034	\$221	\$79		\$3	\$82	\$3	\$141
2035	\$141	\$73		\$1	\$74	\$2	\$69
2036	\$69	\$25			\$25	\$1	\$45
2037	\$45	\$1			\$1	\$1	\$44
	Totals	\$929.29	\$81.67	\$45.91	\$1,056.74		

<sup>1</sup> The NRC staff, consistent with 10 CFR 50.75(e)(1)(i), applied a 2 percent annual real rate of return to the NDT balances.

<sup>2</sup> As of June 1, 2020, the TMI-2 NDT had a market value of approximately \$901.45M; however, the above analysis reflects the TMI-2 NDT market value as of December 31, 2019 of approximately \$899M.