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United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-1437
Supplement 10
Second Renewal
Supplement 1

Generic Environmental Impact Statement for License Renewal of Nuclear Plants

Supplement 10, Second Renewal

Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 Supplement 1

Final Report

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ABSTRACT

This final supplement to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom), Final Report (the 2020 FSEIS) incorporates new information that the U.S. Nuclear Regulatory Commission (NRC) staff has obtained since publication of the 2020 FSEIS in January 2020. This information includes the new and revised environmental issues and impact determinations contained in the NRC's 2024 final rule revising its environmental protection regulation, Title 10 of the *Code of Federal Regulations* Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and Revision 2 of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." The NRC staff also considered any new and significant information with respect to generic (i.e., Category 1) environmental issues and determinations.

The NRC staff prepared these documents as part of its environmental review of the Exelon Generation Company, LLC (now Constellation *Energy* Generation, LLC) application to renew the operating licenses for Peach Bottom for an additional 20 years. Together, these documents complete the NRC staff's evaluation of the environmental impacts of license renewal and alternatives to license *renewal* and support the staff's recommendation that the adverse environmental impacts of license renewal for Peach Bottom are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. Further, the NRC staff concludes that restoring the expiration dates for Peach Bottom's subsequent renewed facility operating licenses for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation would not have impacts beyond those discussed in these documents and in Revision 2 of NUREG-1437.

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EXECUTIVE SUMMARY

Background

In July 2018, Exelon Generation Company, LLC (Exelon) (now Constellation Energy Generation, LLC [CEG]) (the applicant) submitted to the U.S. Nuclear Regulatory Commission (NRC or the Commission) an application requesting subsequent license renewal (SLR) for the Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom or Peach Bottom Units 2 and 3) renewed facility operating licenses (Exelon 2018-TN11706). The Peach Bottom Unit 2 renewed facility operating license (DPR-44) had an expiration date of midnight on August 8, 2033; the Peach Bottom Unit 3 renewed facility operating license (DPR-56) had an expiration date of midnight on July 2, 2034. In its application, Exelon requested SLR for a period of 20 years beyond the expiration dates of the renewed facility operating licenses (i.e., to August 8, 2053, for Peach Bottom Unit 2 and to July 2, 2054, for Peach Bottom Unit 3).

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 51.20(b)(2) (TN10253), the renewal of a power reactor operating license requires preparation of an environmental impact statement (EIS) or a supplement to an existing EIS. In addition, 10 CFR 51.95(c), "Operating license renewal stage," states that, in connection with the renewal of an operating license, the NRC shall prepare an EIS, which is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (LR GEIS).

Once the NRC officially accepted Exelon's SLR application for docketing, the NRC staff began the environmental review process as described in 10 CFR Part 51 (TN10253), "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." The environmental review began with the NRC publishing a notice of intent in the *Federal Register* to prepare a supplemental environmental impact statement (SEIS) and to conduct environmental scoping.

The NRC published a draft SEIS (DSEIS) for the Peach Bottom SLR application in July 2019 (NRC 2019-TN7301), which was a supplement to NUREG-1437, Revision 1 (the 2013 LR GEIS) (NRC 2013-TN2654). In January 2020, after considering public comments on the DSEIS, the NRC published a final SEIS (the 2020 FSEIS), "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (NRC 2020-TN7402). The 2020 FSEIS included the NRC staff's evaluation of the environmental impacts of SLR and alternatives to SLR and the staff's recommendation that the adverse environmental impacts of SLR for Peach Bottom are not so great that preserving the option of SLR for energy-planning decisionmakers would be unreasonable. Supported by the environmental review as documented in the 2020 FSEIS, on March 5, 2020, the NRC issued subsequent renewed facility operating licenses for Peach Bottom (NRC 2020-TN11562), which included the expiration dates of August 8, 2053, for Peach Bottom Unit 2 and July 2, 2054, for Peach Bottom Unit 3. In accordance with 10 CFR Part 51 (TN10253), the NRC also issued a record of decision in support of this action (NRC 2020-TN11564). The NRC provided notice of this action in the *Federal Register* on March 11, 2020 (85 FR 14247-TN11563).

On February 24, 2022, the Commission issued three memoranda and orders, Commission Legal Issuance (CLI)-22-02 (NRC 2022-TN8182), CLI-22-03 (NRC 2022-TN8272), and CLI-22-04 (NRC 2022-TN9553), that addressed the NRC staff's environmental reviews in SLR proceedings for five nuclear power plants, including Peach Bottom. The Commission concluded

that the 2013 LR GEIS (NRC 2013-TN2654), on which the NRC staff had relied, in part, to meet its obligations under 10 CFR Part 51 (TN10253) and the National Environmental Policy Act of 1969, as amended (NEPA) (42 *United States Code* [U.S.C.] 4321 et seq.-TN661) for its environmental reviews of nuclear power plant SLR applications, did not consider SLR. Therefore, the Commission determined that the NRC staff's SLR environmental reviews, including the environmental review for the Peach Bottom SLR application, were inadequate. The Commission directed the NRC staff to leave the Peach Bottom subsequent renewed facility operating licenses in place but to modify their expiration dates to reflect the end dates of the previous renewed facility operating licenses (i.e., August 8, 2033, for Peach Bottom Unit 2 and July 2, 2034, for Peach Bottom Unit 3), which the staff did on March 25, 2022 (NRC 2022-TN11565), as corrected on April 8, 2022 (NRC 2022-TN12236). The Commission affirmed this direction in CLI-22-07 (NRC 2022-TN11568).

In CLI-22-03 (NRC 2022-TN8272), the Commission separately directed the NRC staff to conduct rulemaking and update the LR GEIS to cover the environmental impacts of renewing the operating license of a nuclear power plant during the SLR term. The Commission also directed that thereafter the NRC staff should take appropriate action with respect to pending SLR applications to ensure that the environmental impacts for the SLR term are considered.

On August 6, 2024, the NRC published a final rule (89 FR 64166-TN10321) revising its environmental protection regulation, 10 CFR Part 51 (TN10253). The final rule was updated with a correction to Appendix B to Subpart A of 10 CFR Part 51 on August 21, 2024 (89 FR 67522-TN10823). The final rule updated the potential environmental impacts associated with the renewal of an operating license for a nuclear power plant for up to an additional 20 years, which could either be an initial license renewal or one term of SLR. The 2024 LR GEIS (NRC 2024-TN10161), which was revised as an update to the 2013 LR GEIS (NRC 2013-TN2654), provides the technical basis for the final rule. The 2024 LR GEIS further supports the updated list of environmental issues and associated environmental impact findings contained in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253) for both initial license renewal and one term of SLR.

The final rule became effective on September 5, 2024, and, therefore, the NRC staff must consider in this supplement to the 2020 FSEIS the new and modified issues, as applicable, as well as any new and significant information for Category 1 issues.

To address this new information and Commission direction, the NRC staff prepared a draft supplement (NRC 2025-TN12181) to the 2020 FSEIS in accordance with 10 CFR 51.92(a)(2) and 10 CFR 51.92(c) (TN10253), which address the preparation of a supplement to a final EIS for proposed actions that have not been taken under the following conditions, respectively:

- There are new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.
- The NRC staff determines, in its opinion, that preparation of a supplement will further the purposes of NEPA.

The draft supplement was issued for a 45-day public comment period that ended on July 14, 2025 (90 FR 23075-TN12177). The NRC staff's evaluation in the draft supplement and in this final supplement to the 2020 FSEIS is a "standalone" presentation that references information in the 2020 FSEIS and does not contain redline-strikeout text, figures, or tables to replace any information and statements presented in the 2020 FSEIS.

Changes made in response to comments in this final supplement, as well as any changes made to include updated information, corrections, and substantial editorial revisions, are marked with a change bar (vertical line) on the side margin of the page where the changes or additions were made. Minor editorial revisions, including those limited to reference citations and formatting, are not marked.

Proposed Federal Action

The proposed Federal action is essentially unchanged from that stated in Section 1.1 of the 2020 FSEIS (NRC 2020-TN7402). The NRC's Federal action in the 2020 FSEIS was to decide whether to issue subsequent renewed licenses for an additional 20 years for Peach Bottom. Exelon (now CEG) initiated the proposed Federal action by submitting an SLR application for Peach Bottom. On March 5, 2020, the NRC issued subsequent renewed facility operating licenses for Peach Bottom (NRC 2020-TN11562), which included the expiration dates of August 8, 2053, for Peach Bottom Unit 2 and July 2, 2054, for Peach Bottom Unit 3. However, on March 25, 2022 (NRC 2022-TN11565), in accordance with the Commission's direction in CLI-22-04 (NRC 2022-TN9553), the NRC staff modified the expiration dates of these subsequent renewed licenses to reflect the end dates of the previous renewed licenses. Thus, the existing subsequent renewed facility operating licenses for Peach Bottom expire at midnight on August 8, 2033, for Unit 2 (DPR-44) and at midnight on July 2, 2034, for Unit 3 (DPR-56). The decision to be supported by this supplement to the 2020 FSEIS is whether to restore the expiration dates for Peach Bottom's subsequent renewed facility operating licenses DPR-44 and DPR-56 for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation.

Purpose and Need for the Proposed Federal Action

The purpose and need for the proposed action are essentially unchanged from that stated in Section 1.2 of the 2020 FSEIS (NRC 2020-TN7402). It is to provide an option that allows for power generation capability beyond the term of the current nuclear power plant operating licenses to meet future system generating needs. Energy-planning decisionmakers such as States, utility operators, and, where authorized, Federal agencies (other than the NRC) may determine these future system generating needs. The Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.) (TN663), and NEPA (TN661) require the NRC to perform a safety review and an environmental review, respectively, of the proposed action. The purpose and need reflects the NRC's recognition that, unless there are findings in the safety review or in the environmental review that would lead the NRC to reject a license renewal application, the NRC does not have a role in the energy-planning decisions as to whether a particular nuclear power plant should continue to operate.

Environmental Impacts of License Renewal

This supplement to the 2020 FSEIS evaluates the potential environmental impacts of the proposed action. The NRC designates the environmental impacts from the proposed action as SMALL, MODERATE, or LARGE. Resource-specific effects or impact definitions from applicable environmental laws and policy, other than SMALL, MODERATE, and LARGE, are used where appropriate. Revision 2 of the LR GEIS (NRC 2024-TN10161) evaluates 80 environmental issues related to plant operation and classifies each issue as either a Category 1 issue (generic to all or a specific subset of nuclear power plants) or a Category 2 issue (specific to individual nuclear power plants). Category 1 issues are those that meet all of the following criteria:

- The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.
- A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for offsite radiological impacts of spent nuclear fuel and high-level waste disposal and offsite radiological impacts – collective impacts from other than the disposal of spent fuel and high-level waste).
- Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

For Category 1 issues, no additional nuclear power plant-specific (i.e., plant- or site-specific) analysis is required in a SEIS unless new and significant information is identified.

Category 2 issues are plant-specific issues that do not meet one or more of the criteria for Category 1 issues; therefore, a SEIS must include additional plant-specific review for these non-generic issues.

To support the preparation of this supplement to the 2020 FSEIS, the NRC staff conducted a supplemental environmental audit to evaluate new information available since the development and issuance of the 2020 FSEIS, including new and revised environmental issues and determinations contained in the 2024 final rule (89 FR 64166-TN10321) revising 10 CFR Part 51 and the 2024 LR GEIS supporting that final rule, and focusing on new and significant information with respect to generic (i.e., Category 1) environmental issues. Neither the applicant nor the NRC staff identified any information that is both new and significant related to Category 1 issues that has the potential to affect the conclusions in the LR GEIS. Therefore, the NRC staff relied upon the conclusions of the LR GEIS for all Category 1 issues applicable to Peach Bottom.

In this supplement to the 2020 FSEIS, the NRC staff reevaluated Category 2 issues applicable to Peach Bottom, as well as cumulative effects (impacts), and considered new information regarding severe accident mitigation alternatives (SAMAs). Table ES-1 summarizes the Category 2 issues relevant to Peach Bottom and the NRC staff's findings related to those issues. If the NRC staff determined that there were no Category 2 issues applicable for a particular resource area, the findings of the LR GEIS, as documented in 10 CFR Part 51, Subpart A, Appendix B (TN10253), "Environmental Effect of Renewing the Operating License of a Nuclear Power Plant," are incorporated for that resource area.

Table ES-1 Summary of U.S. Nuclear Regulatory Commission Conclusions Relating to Plant-Specific Impacts of Subsequent License Renewal at Peach Bottom Atomic Power Station Units 2 and 3

Resource Area	Relevant Category 2 Issues	Impacts
Surface Water Resources	Surface water use conflicts (plants with cooling ponds or cooling towers using makeup water from a river)	SMALL
Groundwater Resources	Groundwater use conflicts (plants with closed-cycle cooling systems that withdraw makeup water from a river)	SMALL
	Radionuclides released to groundwater	SMALL

Table ES-1 Summary of U.S. Nuclear Regulatory Commission Conclusions Relating to Plant-Specific Impacts of Subsequent License Renewal at Peach Bottom Atomic Power Station Units 2 and 3 (Continued)

Resource Area	Relevant Category 2 Issues	Impacts
Terrestrial Resources	Non-cooling system impacts on terrestrial resources[a]	SMALL
	Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river)	SMALL
Aquatic Resources	Impingement mortality and entrainment of aquatic organisms (plants with once-through cooling systems or cooling ponds)[a]	SMALL
	Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)[a]	SMALL to MODERATE
	Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river)	SMALL
Federally Protected Ecological Resources	Endangered Species Act: federally listed species and critical habitats under U.S. Fish and Wildlife Service jurisdiction[b]	May affect, but is not likely to adversely affect, the northern long-eared bat, Indiana bat, tricolored bat, and monarch butterfly
	Endangered Species Act: federally listed species and critical habitats under National Marine Fisheries Service jurisdiction[b]	No effect
	Magnuson-Stevens Act: essential fish habitat[b]	No adverse effects on essential fish habitat
	Federally Protected Ecological Resources—National Marine Sanctuaries Act: sanctuary resources[c]	No effect; Not applicable
Historic and Cultural Resources	Historic and cultural resources	Would not adversely affect known historic properties
Human Health	Microbiological hazards to the public[a]	SMALL
	Electric shock hazards	SMALL
	Electromagnetic fields (EMFs)[a]	Uncertain impact
Postulated Accidents	Severe accidents[d]	SMALL; see Section 3.11.4
Greenhouse Gas Emissions and Climate Change	Climate change impacts on environmental resources[c]	See Section 3.14
Cumulative Effects	Cumulative effects[a]	See Section 3.15

Table ES-1 Summary of U.S. Nuclear Regulatory Commission Conclusions Relating to Plant-Specific Impacts of Subsequent License Renewal at Peach Bottom Atomic Power Station Units 2 and 3 (Continued)

Resource Area	Relevant Category 2 Issues	Impacts

(a) Modified issue based on Revision 2 of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (the 2024 LR GEIS) (NRC 2024-TN10161), and the related final rule (89 FR 64166-TN10321).
(b) The 2024 LR GEIS and the related final rule divided a Category 2 issue, "Threatened, endangered, and protected species and essential fish habitat," into three separate Category 2 issues for clarity and consistency with the separate Federal statutes and interagency consultation requirements. When combined, the scope of the three issues is the same as the scope of the former issue.
(c) New issue based on the 2024 LR GEIS and the related final rule.
(d) The issue of severe accidents was recategorized as Category 1 in the 2024 LR GEIS and the related final rule.

Alternatives

As part of its environmental review, the NRC is required to consider alternatives to SLR and to evaluate the environmental impacts associated with each alternative. These alternatives can include other methods of power generation (replacement power alternatives), as well as not renewing the Peach Bottom renewed facility operating licenses (the no-action alternative).

In total, the NRC staff initially considered 17 replacement power alternatives; the NRC staff later dismissed 13 of these because of technical, resource availability, or commercial limitations that currently exist and that the NRC staff believes are likely to still exist when the current Peach Bottom licenses expire.

This left four feasible and commercially viable replacement power alternatives which, in addition to the no-action alternative, the NRC staff evaluated in-depth in the 2020 FSEIS (NRC 2020-TN7402) and include the following:

- new nuclear power (small modular reactors)
- supercritical pulverized coal
- natural gas combined-cycle
- combination alternative of natural gas combined-cycle, wind, solar, and purchased power

The NRC staff evaluated the environmental impacts of each replacement power alternative, using the same resource areas that it used in evaluating the impacts from the proposed action (SLR). There are no substantive changes to the range of reasonable alternatives to the proposed action or to the analysis of their comparative environmental impacts as presented in the 2020 FSEIS.

Recommendation

The NRC staff's recommendation is that the adverse environmental impacts of SLR for Peach Bottom are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. Therefore, the NRC staff's environmental review is supportive of restoring the expiration dates for Peach Bottom's subsequent renewed facility operating licenses DPR-44 and DPR-56 for Units 2 and 3 to August 8, 2053, and July 2, 2054, respectively, to authorize an additional 20 years of operation.

ABBREVIATIONS AND ACRONYMS

°C	degree(s) Celsius
°F	degree(s) Fahrenheit
ac	acre(s)
ACHP	Advisory Council on Historic Preservation
ADAMS	Agencywide Documents Access and Management System
AEA	Atomic Energy Act of 1954, as amended
CEG	Constellation Energy Generation, LLC
CFR	*Code of Federal Regulations*
cfs	cubic foot (feet) per second
CLI	Commission Legal Issuance
cm	centimeter(s)
CUMP	consumptive use mitigation plan
CWA	Clean Water Act (Federal Water Pollution Control Act) of 1972, as amended
DSEIS	draft supplemental environmental impact statement
EFH	essential fish habitat
EIS	environmental impact statement
ELF-EMF	extremely low frequency electromagnetic field
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ER	environmental report
ESA	Endangered Species Act of 1973, as amended
Exelon	Exelon Generating Company, LLC
FR	*Federal Register*
FSEIS	final supplemental environmental impact statement
FWS	U.S. Fish and Wildlife Service
GEIS	generic environmental impact statement
GHG	greenhouse gas
gpm	gallon(s) per minute

ha	hectare(s)
in.	inch(es)
IPCC	Intergovernmental Panel on Climate Change
ISFSI	independent spent fuel storage installation
km	kilometer(s)
Lpm	liter(s) per minute
LR	license renewal
LR GEIS	Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437)
mgd	million gallons per day
mi	mile(s)
mLd	million liters per day
MMT	million metric tons
MSA	Magnuson–Stevens Fishery Conservation and Management Act of 1976, as amended
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standards
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act of 1969, as amended
NHPA	National Historic Preservation Act of 1966, as amended
NIEHS	National Institute of Environmental Health Sciences
NLAA	may affect, but is not likely to adversely affect
NMFS	National Marine Fisheries Service (of the National Oceanic and Atmospheric Administration)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
PADEP	Pennsylvania Department of Environmental Protection
pCi/L	picocuries per liter
Peach Bottom	Peach Bottom Atomic Power Station Units 2 and 3

$PM_{2.5}$	particulate matter with a diameter of 2.5 micrometers or less
RCP	representative concentration pathway
ROW	right-of-way
SAMA	severe accident mitigation alternative
SEIS	supplemental environmental impact statement
SHPO	State Historic Preservation Officer
SLR	subsequent license renewal
SRBC	Susquehanna River Basin Commission
SSP	shared socioeconomic pathway
STP	sewage treatment plant
U.S.	United States
U.S.C.	*United States Code*
USGCRP	U.S. Global Change Research Program

1 INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC or the Commission) environmental protection regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions" (TN10253), implement the National Environmental Policy Act of 1969, as amended (NEPA) (42 *United States Code* [U.S.C.] 4321 et seq.) (TN661). The regulations in 10 CFR Part 51 (TN10253) require the NRC to prepare an environmental impact statement (EIS) or a supplement to an existing EIS before deciding whether to issue an operating license or a renewed operating license for a nuclear power plant. In addition, 10 CFR 51.95(c), "Operating license renewal stage," states that, in connection with the renewal of an operating license, the NRC shall prepare an EIS, which is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (LR GEIS).

The Atomic Energy Act of 1954, as amended (AEA) (42 U.S.C. 2011 et seq.) (TN663), specifies that licenses for commercial power reactors can be granted for up to 40 years. The initial 40-year licensing period was based on economic and antitrust considerations rather than on technical limitations of the nuclear power facility. NRC regulations permit these licenses to be renewed beyond the initial 40-year term for an additional period, limited to 20-year increments per renewal. The issuance of a renewed license is based on the results of an NRC staff aging management review of whether the facility can continue to operate safely during the proposed period of extended operation (10 CFR 54.29, "Standards for issuance of a renewed license" [TN4878]). There are no limitations in the AEA or the NRC's regulations restricting the number of times that a license may be renewed. The decision to seek a renewed license rests entirely with nuclear power facility owners and typically is based on the facility's economic viability and the investment necessary to continue to meet NRC safety and environmental requirements.

By letters dated July 10, 2018, and July 24, 2018, Exelon Generation Company, LLC (Exelon) (now Constellation Energy Generation, LLC [CEG]) (the applicant) submitted to the NRC an application requesting subsequent license renewal (SLR) for the Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom or Peach Bottom Units 2 and 3) renewed facility operating licenses (Exelon 2018-TN11706). Pursuant to 10 CFR Part 51 (TN10253), the NRC staff performed an environmental review of the Peach Bottom SLR application. In its SLR application, the applicant requested subsequent renewed facility operating licenses for Peach Bottom Units 2 and 3 for a period of 20 years beyond the dates when the initial renewed facility operating licenses would expire—i.e., August 8, 2033, for Unit 2 (DPR-44) and July 2, 2034, for Unit 3 (DPR-56). As part of its SLR application, the applicant submitted an environmental report (ER) (Exelon 2018-TN11707).

Once the NRC officially accepted the Peach Bottom SLR application for docketing, the NRC staff began the environmental review process as described in 10 CFR Part 51 (TN10253). Specifically, the environmental review began with the NRC publishing a notice of intent in the *Federal Register* (FR) to prepare a supplemental environmental impact statement (SEIS) and to conduct environmental scoping (83 FR 45692-TN11569).

The NRC staff held a public scoping meeting on September 25, 2018, near the Peach Bottom site in Delta, Pennsylvania. In July 2019, the NRC issued a "Supplemental Environmental Impact Statement Scoping Process Summary Report, for Peach Bottom Atomic Power Station, Units 2 and 3, York County, PA," which includes the comments received during the scoping process and the NRC staff's responses to those comments (NRC 2019-TN11570) (see Section A.1 of Appendix A to this supplement).

Thereafter, the NRC published a draft SEIS (DSEIS), "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Draft Report for Comment," for public comment in July 2019 (NRC 2019-TN7301). The DSEIS was prepared as a supplement to NUREG-1437, Revision 1 (the 2013 LR GEIS) (NRC 2013-TN2654). In January 2020, after considering public comments on the DSEIS, the NRC published a final SEIS (the 2020 FSEIS), "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (NRC 2020-TN7402). Section 1.3 of the 2020 FSEIS describes in greater detail the NRC staff's acceptance, public outreach, and environmental review processes for the Peach Bottom SLR application. The 2020 FSEIS included the NRC staff's evaluation of the environmental impacts of SLR and alternatives to SLR and the staff's recommendation that the adverse environmental impacts of SLR for Peach Bottom are not so great that preserving the option of SLR for energy-planning decisionmakers would be unreasonable. Supported by the environmental review as documented in the 2020 FSEIS, on March 5, 2020, the NRC issued subsequent renewed facility operating licenses for Peach Bottom (NRC 2020-TN11562), which included the expiration dates of August 8, 2053, for Peach Bottom Unit 2 and July 2, 2054, for Peach Bottom Unit 3. In accordance with 10 CFR Part 51 (TN10253), the NRC also issued a record of decision in support of this action (NRC 2020-TN11564). The NRC provided notice of this action in the *Federal Register* on March 11, 2020 (85 FR 14247-TN11563).

On February 24, 2022, the Commission issued three memoranda and orders, Commission Legal Issuance (CLI)-22-02 (NRC 2022-TN8182), CLI-22-03 (NRC 2022-TN8272), and CLI-22-04 (NRC 2022-TN9553), that addressed the NRC staff's environmental reviews in SLR proceedings for five nuclear power plants, including Peach Bottom. The Commission concluded that the 2013 LR GEIS (NRC 2013-TN2654), on which the NRC staff had relied, in part, to meet its obligations under 10 CFR Part 51 (TN10253) and NEPA for its environmental reviews of nuclear power plant SLR applications, did not consider SLR. Therefore, the Commission determined that the NRC staff's SLR environmental reviews, including the environmental review for the Peach Bottom SLR application, were inadequate. The Commission in CLI-22-04 (NRC 2022-TN9553) directed the NRC staff to leave the Peach Bottom subsequent renewed facility operating licenses in place but to modify their expiration dates to reflect the end dates of the previous renewed facility operating licenses (i.e., August 8, 2033, for Peach Bottom Unit 2 and July 2, 2034, for Peach Bottom Unit 3), which the staff did on March 25, 2022 (NRC 2022-TN11565), as corrected on April 8, 2022 (NRC 2022-TN12236). The Commission affirmed this direction in CLI-22-07 (NRC 2022-TN11568).

In CLI-22-03 (NRC 2022-TN8272), the Commission separately directed the NRC staff to conduct rulemaking and update the LR GEIS to cover the environmental impacts of renewing the operating license of a nuclear power plant during the SLR term. The Commission also directed that thereafter the NRC staff should take appropriate action with respect to pending SLR applications to ensure that the environmental impacts for the SLR term are considered.

On August 6, 2024, the NRC published a final rule (89 FR 64166-TN10321) revising its environmental protection regulation, 10 CFR Part 51 (TN10253). The final rule was updated with a correction to Appendix B to Subpart A of 10 CFR Part 51 on August 21, 2024 (89 FR 67522-TN10823). The final rule updated the potential environmental impacts associated with the renewal of an operating license for a nuclear power plant for up to an additional 20 years, which could either be an initial license renewal or one term of SLR. The 2024 LR GEIS (NRC 2024-TN10161), which was revised as an update to the 2013 LR GEIS, provides the technical basis

for the final rule. The 2024 LR GEIS further supports the updated list of environmental issues and associated environmental impact findings contained in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253) for both initial license renewal and one term of SLR. The final rule also included the issuance of Revision 2 of NUREG-1555, Supplement 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1: Operating License Renewal, Final Report" (NRC 2024-TN10251), and Revision 2 of Regulatory Guide 4.2, Supplement 1, "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications" (NRC 2024-TN10280).

The final rule became effective on September 5, 2024, and, therefore, the NRC staff must consider in this supplement to the 2020 FSEIS the new and modified issues, as applicable, as well as any new and significant information for Category 1 issues.

1.1 Proposed Federal Action

The applicant initiated the proposed Federal action by submitting an application for SLR for Peach Bottom Units 2 and 3. The proposed Federal action is essentially unchanged from that stated in Section 1.1 of the 2020 FSEIS (NRC 2020-TN7402). The NRC's Federal action in the 2020 FSEIS was to decide whether to issue subsequent renewed licenses for an additional 20 years for Peach Bottom. On March 5, 2020, the NRC issued subsequent renewed facility operating licenses for Peach Bottom (NRC 2020-TN11562), which included the expiration dates of August 8, 2053, for Peach Bottom Unit 2 and July 2, 2054, for Peach Bottom Unit 3. However, on March 25, 2022 (NRC 2022-TN11565), in accordance with the Commission's direction in CLI-22-04 (NRC 2022-TN9553), the NRC staff modified the expiration dates of these subsequent renewed licenses to reflect the end dates of the previous renewed licenses. Thus, the existing subsequent renewed facility operating licenses for Peach Bottom expire at midnight on August 8, 2033, for Unit 2 (DPR-44) and at midnight on July 2, 2034, for Unit 3 (DPR-56). The decision to be supported by this supplement to the 2020 FSEIS is whether to restore the expiration dates for Peach Bottom's subsequent renewed facility operating licenses DPR-44 and DPR-56 for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation.

1.2 Purpose and Need for the Proposed Federal Action

The purpose and need for the proposed action are essentially unchanged from that stated in Section 1.2 of the 2020 FSEIS (NRC 2020-TN7402). It is to provide an option that allows for power generation capability beyond the term of the current nuclear power plant operating licenses to meet future system generating needs. Such needs may be determined by energy-planning decisionmakers such as States, utility operators, and, where authorized, Federal agencies (other than the NRC). The purpose and need reflects the NRC's recognition that, unless there are findings in the NRC's safety review (required by the AEA [TN663]) or findings in the NRC's environmental review (required by NEPA [TN661]) that would lead the NRC to reject an SLR application, the NRC does not have a role in the energy-planning decisions as to whether a particular nuclear power plant should continue to operate.

1.3 Major Environmental Review Milestones

Section 1.3 of the 2020 FSEIS is supplemented as follows. By letter dated June 25, 2024, the applicant submitted a request to the NRC for the NRC's plan to complete the SLR environmental review for Peach Bottom and to restore the subsequent period of extended operation expiration dates for Peach Bottom Units 2 and 3 (CEG 2024-TN11571). On

September 6, 2024, the NRC staff responded to the applicant by letter outlining the steps necessary to update the SLR environmental review for Peach Bottom, to include consideration of new information, and to otherwise complete the required regulatory activities to support a decision to restore the subsequent period of extended operation expiration dates for Peach Bottom Units 2 and 3 (NRC 2024-TN11572). Accordingly, to support the preparation of this supplement to the 2020 FSEIS, the NRC staff conducted a virtual supplemental environmental audit during the weeks of November 18 and November 25, 2024, to evaluate new information available since the development and issuance of the 2020 FSEIS, including new and revised environmental issues and determinations contained in the 2024 final rule (89 FR 64166-TN10321) revising 10 CFR Part 51 and the 2024 LR GEIS supporting that final rule, and focusing on new and significant information with respect to generic (i.e., Category 1) environmental issues. By letter dated December 13, 2024, the NRC staff summarized the audit results and listed the attendees (NRC 2024-TN11575). During the audit, the NRC staff held meetings with Peach Bottom plant personnel, applicant corporate staff, and applicant contractor staff and reviewed site-specific documentation. Neither the applicant nor the NRC staff identified any information that is both new and significant related to Category 1 issues that has the potential to affect the conclusions in the LR GEIS.

On January 7, 2025, the NRC staff published in the *Federal Register* (90 FR 1201-TN11576) a notice of its intent to prepare a supplement to the 2020 FSEIS. To address new information and Commission direction, the NRC staff prepared a draft supplement, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Supplement 1, Draft Report for Comment" (NRC 2025-TN12181), to the 2020 FSEIS in accordance with 10 CFR 51.92(a)(2) and 10 CFR 51.92(c) (TN10253), which address the preparation of a supplement to a final EIS for proposed actions that have not been taken under the following conditions, respectively:

- There are new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.
- The NRC staff determines, in its opinion, that preparation of a supplement will further the purposes of NEPA.

On May 30, 2025, the draft supplement was issued for a 45-day public comment period that ended on July 14, 2025 (90 FR 23075-TN12177). The NRC staff's evaluation in the draft supplement and in this final supplement to the 2020 FSEIS is a "standalone" presentation that references information in the 2020 FSEIS and does not contain redline-strikeout text, figures, or tables to replace any information and statements presented in the 2020 FSEIS. Changes made in response to comments in this final supplement, as well as any changes made to include updated information, corrections, and substantial editorial revisions, are marked with a change bar (vertical line) on the side margin of the page where the changes or additions were made. Minor editorial revisions, including those limited to reference citations and formatting, are not marked.

1.4 Environmental Impacts of Subsequent License Renewal and the Generic Environmental Impact Statement

This final supplement to the 2020 FSEIS updates the NRC staff's consideration in the 2020 FSEIS of the potential environmental impacts of the proposed action and considers new and potentially significant information. The NRC designates the environmental impacts from the proposed action as SMALL, MODERATE, or LARGE. Resource-specific effects or impact

definitions from applicable environmental laws and policy, other than SMALL, MODERATE, and LARGE, are used where appropriate. Revision 2 of the LR GEIS (i.e., the 2024 LR GEIS) (NRC 2024-TN10161) evaluates 80 environmental issues related to plant operation and classifies each issue as either a Category 1 issue (generic to all or a specific subset of nuclear power plants) or a Category 2 issue (specific to individual nuclear power plants). Category 1 issues are those that meet all of the following criteria:

- The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.
- A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for offsite radiological impacts of spent nuclear fuel and high-level waste disposal and offsite radiological impacts – collective impacts from other than the disposal of spent fuel and high-level waste).
- Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

For Category 1 issues, no additional nuclear power plant-specific (i.e., plant- or site-specific) analysis is required in a SEIS unless new and significant information is identified. The NRC staff's process for considering new and significant information is presented in Section 4.14 of the 2020 FSEIS (NRC 2020-TN7402) and is not repeated in this supplement to the 2020 FSEIS.

New information can be identified from many sources, including the applicant, the NRC, other agencies, or public comments. If a new issue is revealed, it is first analyzed to determine whether it is within the scope of the environmental evaluation for license renewal. If the new issue is in scope and is not addressed in the LR GEIS, then the NRC staff would determine the significance of the issue and document its analysis. New and significant information identifies an in-scope significant environmental issue that was not covered in the LR GEIS or was not considered in the analysis in the LR GEIS and leads to an impact finding that is different from the finding presented in the LR GEIS.

Category 2 issues are plant- or site-specific issues that do not meet one or more of the criteria for Category 1 issues; therefore, a SEIS must include additional plant-specific review for these non-generic issues.

During the supplemental environmental audit as discussed above, the NRC staff evaluated new information available since the issuance of the 2020 FSEIS, including new and revised environmental issues and determinations contained in the 2024 LR GEIS and the related final rule, with a focus on new and significant information with respect to generic (i.e., Category 1) environmental issues. Neither the NRC staff nor the applicant identified any information that is both new and significant related to Category 1 issues that has the potential to affect the conclusions in the LR GEIS. This determination is further supported by the NRC staff's review of the applicant's documentation relevant to its activities, including additional information provided by the applicant (CEG 2024-TN11573), the applicant's responses to NRC staff requests for confirmation of information and requests for additional information (CEG 2025-TN11574), the prior public scoping process, and the findings from the NRC staff's site audits. Therefore, the NRC staff relied upon the conclusions of the LR GEIS for all Category 1 issues applicable to Peach Bottom.

In this supplement to the 2020 FSEIS, the NRC staff reevaluated Category 2 issues applicable to Peach Bottom, as well as cumulative effects (impacts), and considered new information regarding severe accident mitigation alternatives (SAMAs) to determine if any information was both new and significant. Figure 1-1 illustrates the NRC staff's license renewal environmental review process.

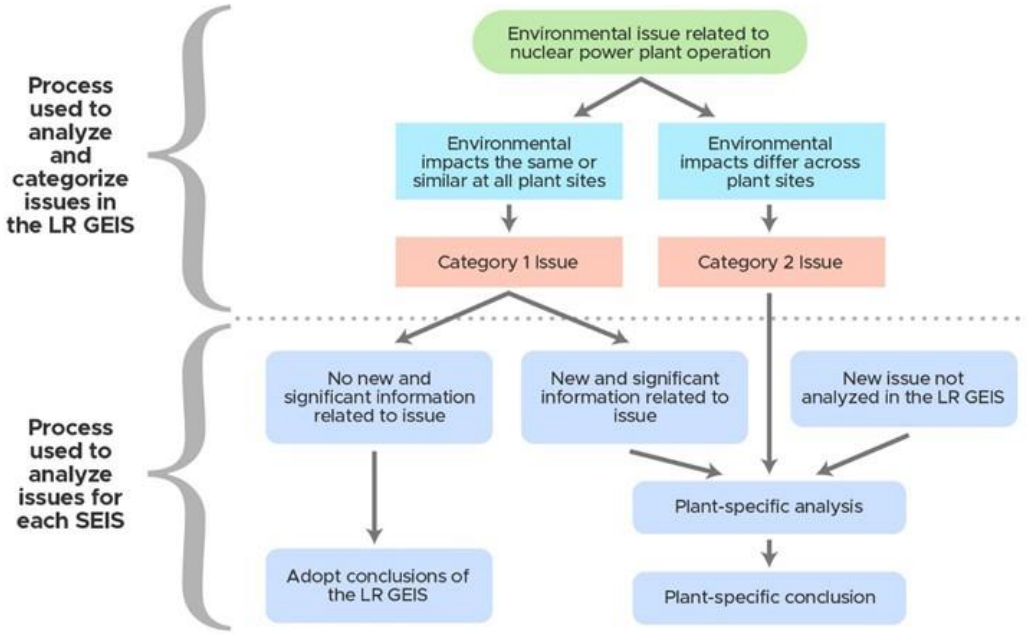

Figure 1-1 Environmental Issues Evaluated for License Renewal of Nuclear Power Plants

10 CFR Part 51 (TN10253), Subpart A, Appendix B, Table B-1, "Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants," requires an environmental impact statement for license renewal to include an analysis for the Category 2 issue of "Environmental Justice—Impacts on minority populations, low-income populations, and Indian Tribes." Executive Order 14173 (90 FR 8633-TN11607), "Ending Illegal Discrimination and Restoring Merit-Based Opportunity," issued January 21, 2025, revoked Executive Order 12898 (59 FR 7629-TN1450), "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," issued February 11, 1994, among other things. Staff Requirements Memorandum (SRM)-COMSECY-25-0007, "Withdrawing the Environmental Justice Policy Statement and Environmental Justice Strategy," issued April 10, 2025, approved publication of a notice in the *Federal Register* (90 FR 17887-TN11684), which explained that, in response to the policies in Executive Order 12898, the NRC had made voluntary commitments on environmental justice in its Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions (Environmental Justice Policy Statement) and its Environmental Justice Strategy (69 FR 52040-TN1009). Accordingly, with the revocation of Executive Order 12898, the NRC also withdrew its Environmental Justice Policy Statement and its Environmental Justice Strategy. Based on Executive Order 14173 and SRM-COMSECY-25-0007, and pursuant to 10 CFR 51.6 (TN10253), "Specific exemptions," the NRC staff has, upon its own initiative, determined that an exemption from the requirement to address environmental justice in this supplement to the 2020 FSEIS is authorized by law and otherwise in the public interest. Accordingly, this supplement to the 2020 FSEIS does not address that issue.

1.5 Decisions Supported by the 2020 FSEIS and this Supplement to the 2020 FSEIS

The decision to be supported by the 2020 FSEIS and this supplement to the 2020 FSEIS is whether to restore the expiration dates for Peach Bottom's subsequent renewed facility operating licenses DPR-44 and DPR-56 for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation. The regulation at 10 CFR 51.103(a)(5) (TN10253) specifies the NRC's relevant decision standard as follows:

> In making a final decision on a license renewal action pursuant to [10 CFR] part 54 …, the Commission shall determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

The analysis of environmental impacts in the 2020 FSEIS and this final supplement to the 2020 FSEIS will provide the NRC's decisionmaker (in this case, the Commission) with important environmental information for consideration in deciding on this action.

1.6 Cooperating Agencies

As discussed in Section 1.7 of the 2020 FSEIS (NRC 2020-TN7402), the NRC staff did not identify any Federal, State, or local agencies as cooperating agencies in the preparation of this environmental review.

1.7 Consultations

Certain Federal environmental statutes require Federal agencies to consult with other agencies, Tribes, and organizations before taking an action that may affect protected environmental resources, such as endangered species, habitat of managed fisheries, and historical and cultural resources. The Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq.-TN1010); the Magnuson–Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. 1801 et seq.-TN9966); and the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C. 300101 et seq.-TN4157), require Federal agencies to consult with applicable State and Federal agencies and groups before taking an action that may affect endangered species, fisheries, or historic and archaeological resources, respectively. Appendix C of the 2020 FSEIS discusses the consultations that the NRC staff conducted in support of this environmental review. The NRC staff has provided updates in Appendix C of this supplement to the 2020 FSEIS.

1.8 Correspondence

As stated in Section 1.7 of this supplement to the 2020 FSEIS, the NRC staff contacted Federal, State, Tribal, regional, and local agencies and this correspondence is documented in Appendix C of the 2020 FSEIS (NRC 2020-TN7402), with updates provided in Appendix C of this supplement to the 2020 FSEIS. Appendix D of the 2020 FSEIS chronologically lists all other correspondence, and the NRC staff has provided updates in Appendix D of this supplement to the 2020 FSEIS.

1.9 Status of Compliance

The applicant is responsible for complying with all NRC regulations and other applicable Federal, State, and local requirements. Appendix F of the 2024 LR GEIS describes some of the major applicable Federal statutes (NRC 2024-TN10161). Numerous permits and licenses are

issued by Federal, State, and local authorities for activities at Peach Bottom. Appendix B of the 2020 FSEIS (NRC 2020-TN7402) provides further information regarding the applicant's status of compliance. The NRC staff has provided updates in Appendix B of this supplement to the 2020 FSEIS.

1.10 Related State and Federal Activities

As discussed in Section 1.11 of the 2020 FSEIS (NRC 2020-TN7402), the NRC staff reviewed the possibility that activities (projects) of other agencies might affect the subsequent renewal of the renewed facility operating licenses for Peach Bottom. Updates to that discussion are as follows.

In accordance with Section 102(2)(C) of NEPA, which requires the NRC to consult with and obtain the comments of any Federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved in the subject matter of the NRC staff's environmental review, the staff has provided updated information as discussed in Section 1.7 of this supplement to the 2020 FSEIS. The NRC staff has also provided updates to the applicant's status of compliance for Peach Bottom as discussed in Section 1.9 of this supplement to the 2020 FSEIS. Further, the NRC staff has determined that there are no activities that would make it necessary for another agency to become a cooperating agency in the preparation of this supplement to the 2020 FSEIS (10 CFR 51.10(b)(2)) (TN10253).

The NRC staff separately provides an update to the cumulative effects (impacts) analysis that was presented in the 2020 FSEIS in Section 3.15 of this supplement to the 2020 FSEIS.

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Although the NRC's decisionmaking authority in SLR is limited to deciding whether to authorize an additional 20 years of operation, the agency's implementation of NEPA (42 U.S.C. 4321 et seq.) requires consideration of the environmental impacts of that action, as well as the environmental impacts of reasonable alternatives to that action. While the ultimate decision about which alternative (or proposed action) to implement falls on the plant operator, State, or other non-NRC Federal officials, comparing the environmental impacts of an additional 20 years of operation to the environmental impacts of alternatives allows the NRC to determine whether the environmental impacts of an SLR are so great that preserving the option of an SLR for energy-planning decisionmakers would be unreasonable (10 CFR 51.95(c)(4)) (TN10253).

Energy-planning decisionmakers and power plant owners ultimately decide whether the nuclear power plant will continue to operate, and economic and environmental considerations play roles in that decision. In general, the NRC's responsibility is to ensure the safe operation of nuclear power facilities, not to formulate energy policy or promote nuclear power, or encourage or discourage the development of alternative power generation. The NRC does not engage in energy-planning decisions, and it makes no judgment as to which replacement power alternatives would be the most likely alternative selected in any given case.

2.1 Proposed Action and Alternatives

In Chapter 2 of the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (NRC 2020-TN7402) (the 2020 FSEIS), the NRC staff provided (1) a description of the proposed action (i.e., subsequent renewal of the operating licenses for Peach Bottom Units 2 and 3 including any plans for plant refurbishment), (2) an in-depth evaluation of reasonable alternatives to the proposed action (including the no-action alternative), and (3) a brief description of the alternatives to the proposed action that the NRC staff considered but ultimately eliminated from in-depth evaluation.

In summary, in Section 2.2 the 2020 FSEIS, the NRC staff provided an in-depth analysis of the following alternatives to the proposed action, in addition to the no-action alternative:

- new nuclear
- supercritical pulverized coal
- natural gas combined-cycle
- combination (natural gas combined-cycle, wind, solar, and purchased power)

As described in Section 2.3 of the 2020 FSEIS, the NRC staff considered but ultimately eliminated the following 13 alternatives from detailed consideration to provide baseload replacement power: solar power, wind power, biomass power, demand-side management, hydroelectric power, geothermal power, wave and ocean energy, municipal solid waste, petroleum-fired power, coal integrated gasification combined cycle, fuel cells, purchased power, and delayed retirement of other generating facilities. The NRC staff eliminated these 13 alternatives because of technical reasons, resource availability limitations, or commercial or regulatory limitations. Many of these limitations will likely remain when the current Peach Bottom subsequent renewed licenses expire in 2033 (Unit 2) and 2034 (Unit 3), such that these 13 alternatives are not expected to be reasonably available when needed to replace the power generated by Peach Bottom Units 2 and 3.

In Chapter 4 of the 2020 FSEIS, the NRC staff evaluated the comparative impacts of the proposed action, the no-action alternative, and the four replacement power alternatives considered in-depth for each environmental resource area.

Appendix D of Revision 2 of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (the 2024 LR GEIS) (NRC 2024-TN10161), provides the NRC staff's most recent analysis of alternative (replacement) energy sources that may be potentially capable of meeting the purpose and need of the proposed action (license renewal). As in Revision 1 of the LR GEIS (the 2013 LR GEIS) (NRC 2013-TN2654), which was relied upon by the 2020 FSEIS, the 2024 LR GEIS incorporated the latest information on replacement power alternatives. Although the NRC staff continues to recognize that rapidly evolving technologies, including increasing power demand, are likely to outpace the information in the LR GEIS, the staff has identified no new information that would change the staff's consideration of replacement power alternatives and the comparative analysis of their environmental impacts as presented in the 2020 FSEIS. This determination is further supported by the NRC staff's review of the ER submitted as part of the Peach Bottom SLR application (Exelon 2018-TN11707), other documentation relevant to the applicant's activities including additional information provided by the applicant (CEG 2024-TN11573), the prior public scoping process, and the findings from the NRC staff's site audits.

2.1.1 Refurbishment and Other Activities Associated with Subsequent License Renewal

Refurbishment activities include replacement and repair of major structures, systems, and components (NRC 2013-TN2654, NRC 2024-TN10161). For example, replacement of boiling water reactor recirculation piping systems is a refurbishment activity. Refurbishment activities may have an impact on the environment beyond those that occur during normal operations and may require evaluation, depending on the type of action and the plant-specific design.

In its ER (Exelon 2018-TN11707), the applicant stated that Peach Bottom will continue to operate during the SLR term in the same manner as during the current license term except for additional aging management programs to address structure and component aging in accordance with 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants" (TN4878). The ER further states that refurbishment is not anticipated for Peach Bottom and that no other plant modifications to support extended operations and that could directly affect the environment or plant effluents are planned (Exelon 2018-TN11707). The applicant stated in its 2024 additional information report that it continues to have no plans for refurbishment activities at Peach Bottom. Further, no changes or upgrades to plant systems have been implemented since the 2018 submission of the SLR application or are currently planned that would affect effluent (air or liquid) emissions or waste quantities (CEG 2024-TN11573).

2.1.2 Comparison of Alternatives

As discussed in Chapter 1 of this supplement to the 2020 FSEIS, on August 6, 2024, the NRC published a final rule (89 FR 64166-TN10321) revising its environmental protection regulation, 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions" (TN10253). The final rule updated the potential environmental impacts associated with the renewal of an operating license for a nuclear power plant for up to an additional 20 years, which could either be an initial license renewal or one term of SLR. The

2024 LR GEIS (NRC 2024-TN10161), which was revised as an update to the 2013 LR GEIS (NRC 2013-TN2654), provides the technical basis for the final rule.

In the 2020 FSEIS (NRC 2020-TN7402), the NRC staff considered in depth one alternative to the proposed action of Peach Bottom SLR that does not replace the plant's energy generation (the no-action alternative) and four alternatives to the proposed action that may reasonably replace Peach Bottom's energy generation, as listed in Section 2.1 of this supplement to the 2020 FSEIS. The NRC staff has identified no new information that would change its consideration of alternatives and the comparative analysis of their environmental impacts as presented in the 2020 FSEIS. In Chapter 3 of this supplement to the 2020 FSEIS, the NRC staff updates the environmental impacts for the proposed action based on revised findings for SLR presented in the 2024 LR GEIS and including the new and modified environmental issues contained in Table B-1 in Appendix B to Subpart A of the revised 10 CFR Part 51 (TN10253). Table 2-1 below presents the updated environmental impacts of Peach Bottom SLR as compared to the reasonable alternatives considered in detail.

The environmental impacts of the proposed action (Peach Bottom SLR) would continue to be SMALL for all impact categories except for aquatic resources. Due to thermal impacts on the aquatic organisms in the Conowingo Pond (see Section 3.7), the impact of Peach Bottom SLR to aquatic resources would be SMALL to MODERATE.

In comparison, each of the four reasonable replacement power alternatives would have environmental impacts in at least six resource areas that are greater than the environmental impacts of the proposed action of subsequent license renewal (and one resource area, aquatic resources, that has less impacts). If the NRC adopts the no-action alternative and does not issue subsequent renewed facility operating licenses for Peach Bottom, energy planning decisionmakers would likely implement one of the four replacement power alternatives. Based on the NRC staff's review of these four replacement power alternatives, the no-action alternative, and the proposed action, the staff concludes that the environmentally preferred alternative is the proposed action (Peach Bottom SLR).

Table 2-1 Summary of Environmental Impacts of the Proposed Action and Reasonable Alternatives to the Proposed Action

Impact Area (Resource)	Peach Bottom Subsequent License Renewal (Proposed Action)	No-Action Alternative	New Nuclear (Small Modular Reactors) Alternative	Supercritical Pulverized Coal Alternative	Natural Gas Combined-Cycle Alternative	Combination Alternative (Natural Gas Combined-Cycle, Wind, Solar, and Purchased Power)
Land Use	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to LARGE
Visual Resources	SMALL	SMALL	MODERATE to LARGE	MODERATE to LARGE	SMALL to MODERATE	SMALL to LARGE
Air Quality	SMALL	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Noise	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Geologic Environment	SMALL	SMALL	SMALL	SMALL to MODERATE	SMALL	SMALL to MODERATE
Surface Water Resources	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Groundwater Resources	SMALL	SMALL	SMALL	SMALL to MODERATE	SMALL	SMALL
Terrestrial Resources	SMALL	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Aquatic Resources	SMALL to MODERATE[a]	SMALL	SMALL	SMALL	SMALL	SMALL to MODERATE
Federally Protected Ecological Resources	See Note[b]	See Note[c]	See Note[c]	See Note[c]	See Note[c]	See Note[c]
Historic and Cultural Resources	See Note[d]	See Note[e]	See Note[f]	See Note[f]	See Note[f]	See Note[f]
Socioeconomics	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to LARGE
Transportation	SMALL	SMALL	SMALL to LARGE	MODERATE to LARGE	SMALL to MODERATE	SMALL to LARGE
Human Health	SMALL[g]	SMALL[g]	SMALL[g]	SMALL[g]	SMALL[g]	SMALL[g]

Table 2-1 Summary of Environmental Impacts of the Proposed Action and Reasonable Alternatives to the Proposed Action (Continued)

Impact Area (Resource)	Peach Bottom Subsequent License Renewal (Proposed Action)	No-Action Alternative	New Nuclear (Small Modular Reactors) Alternative	Supercritical Pulverized Coal Alternative	Natural Gas Combined-Cycle Alternative	Combination Alternative (Natural Gas Combined-Cycle, Wind, Solar, and Purchased Power)
Waste Management	SMALL[(h)]	SMALL[(h)]	SMALL[(h)]	MODERATE	SMALL	SMALL to MODERATE
Greenhouse Gas Emissions	SMALL	SMALL	SMALL	MODERATE to LARGE	MODERATE	MODERATE

CFR = *Code of Federal Regulations*; NRC = U.S. Nuclear Regulatory Commission; SLR = subsequent license renewal; U.S.C. = *United States Code*.

(a) Due to thermal impacts on the aquatic organisms in the Conowingo Pond, the impact of Peach Bottom SLR to aquatic resources would be SMALL to MODERATE.

(b) The NRC staff concludes that the Peach Bottom SLR may affect, but is not likely to adversely affect, the northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*M. sodalis*), tricolored bat (*Perimyotis subflavus*), and monarch butterfly (*Danaus plexippus*). The U.S. Fish and Wildlife Service concurred with these determinations in correspondence dated September 4, 2019 (FWS 2019-TN9742), November 22, 2024 (FWS 2024-TN11578), and August 15, 2025 (FWS 2025-TN12282). The SLR would have no effect on any other Federally listed or proposed species or on designated or proposed critical habitat. The proposed SLR would have no adverse effects on designated essential fish habitat.

(c) The types and magnitudes of adverse impacts to species listed under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.-TN1010), designated critical habitat, and essential fish habitat would depend on Peach Bottom shutdown activities, the proposed alternative site, and plant design and operation, as well as listed species and habitats present when the alternative is implemented. Therefore, the NRC staff cannot forecast a level of impact for this alternative.

(d) Based on (1) that no new ground disturbance, construction, or modifications are anticipated during the SLR period, (2) State historic preservation office input, and (3) Peach Bottom procedures, SLR would not adversely affect any known historic properties (Title 36, “Parks, Forest, and Public Property,” of the CFR 800.4(d)(1) [TN513], “No historic properties affected”), or historic and cultural resources.

(e) As a result of facility shutdown, land-disturbance activities or dismantlement are not anticipated as these would be conducted during decommissioning and, therefore, facility shutdown would have no immediate effect on historic properties.

(f) The potential for impacts to historic and cultural resources from construction and operation of a replacement power alternative would vary greatly depending on the location of the site. The impacts on historic and cultural resources could range from will not adversely affect known historic and cultural resources to may adversely affect known historic and cultural resources.

(g) The effects of electromagnetic fields on human health associated with operating nuclear power and other electricity generating plants are uncertain.

(h) NUREG-2157, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel” (NRC 2014-TN4117), discusses the environmental impact of spent fuel storage for the timeframe beyond the licensed life for reactor operations.

3 CONSIDERATION OF NEW INFORMATION ON THE ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

3.1 Introduction

In accordance with the requirements in 10 CFR Part 51 (TN10253), in January 2020, the NRC published the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom or Peach Bottom Units 2 and 3), Final Report (the 2020 FSEIS) (NRC 2020-TN7402). The 2020 FSEIS was prepared as a supplement to Revision 1 of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (2013 LR GEIS) (NRC 2013-TN2654). This chapter updates the environmental impacts analyses for the proposed action (Peach Bottom SLR) presented in Chapter 4 of the 2020 FSEIS.

As detailed in Chapter 1 of this supplement to the 2020 FSEIS, the Commission directed the NRC staff to conduct rulemaking and update the LR GEIS to cover the environmental impacts of renewing the operating license of a nuclear power plant during the SLR term. Accordingly, on August 6, 2024, the NRC published a final rule (89 FR 64166-TN10321) revising its environmental protection regulation, in 10 CFR Part 51 (TN10253). The final rule updated the potential environmental impacts associated with the renewal of an operating license for a nuclear power plant for up to an additional 20 years, which could either be an initial license renewal or one term of SLR. Revision 2 of NUREG-1437 (NRC 2024-TN10161) (2024 LR GEIS), which was revised as an update to the 2013 LR GEIS (NRC 2013-TN2654), provides the technical basis for the final rule. The 2024 LR GEIS further supports the updated list of environmental issues and associated environmental impact findings contained in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253) for both initial license renewals and one period of SLR. The final rule also included the issuance of Revision 2 of NUREG-1555, Supplement 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1: Operating License Renewal, Final Report" (NRC 2024-TN10251), and Revision 2 of Regulatory Guide 4.2, Supplement 1, "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications" (NRC 2024-TN10280). The final rule became effective on September 5, 2024, and, therefore, the NRC staff must consider in this supplement to the 2020 FSEIS the new and modified issues, as applicable, as well as any new and significant information for Category 1 issues.

The 2024 LR GEIS identifies 80 environmental issues (divided into Category 1 and Category 2 issues) to be evaluated for license renewal. Section 1.4 of this supplement to the 2020 FSEIS explains the criteria for Category 1 issues (generic to all, or a distinct subset of, nuclear power plants) and Category 2 issues (specific to individual nuclear power plants), as well as the definitions of SMALL, MODERATE, and LARGE impact significance.

For Category 1 issues, the NRC staff relies on the analysis in the LR GEIS unless otherwise noted. Table 3-1 lists the Category 1 (generic) issues that apply to Peach Bottom during the proposed SLR term.

Following the NRC's issuance of the final rule revising 10 CFR Part 51 (TN10253) and the 2024 LR GEIS, the staff conducted a supplemental environmental audit regarding Peach Bottom SLR. The NRC staff considered additional information provided by Constellation Energy

Generation, LLC (CEG or the applicant) (CEG 2024-TN11573, CEG 2025-TN11574) and the applicant's responses to the staff's requests for confirmation of information and requests for additional information (CEG 2025-TN11574). As a result of this review, the NRC staff determined that there are no impacts related to environmental issues beyond those discussed in the 2024 LR GEIS and in the 2020 FSEIS (Table 3-1 and Table 3-2 below), as cited in Sections 3.2 through 3.15 below. For Category 1 (generic) issues, the NRC staff did not identify any new and significant information that would change the conclusions of the 2024 LR GEIS.

The NRC staff's evaluation in this supplement to the 2020 FSEIS and in this chapter is a "standalone" presentation that references information in the 2020 FSEIS and does not contain redline-strikeout text, figures, or tables to replace any information and statements presented in the 2020 FSEIS. Where appropriate, the NRC staff references the affected environment discussions contained in Chapter 3 of the 2020 FSEIS and provides updated information relevant to the updated environmental impacts analyses for Category 1 and Category 2 issues as summarized in Table 3-1 and Table 3-2.

Table 3-1 Applicable Category 1 (Generic) Issues for Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal

Environmental Issue[a]	2024 LR GEIS Section	Impact[a]
Land Use—Onsite land use	4.2.1.1	SMALL
Land Use—Offsite land use	4.2.1.1	SMALL
Land Use—Offsite land use in transmission line right-of-ways (ROWs)	4.2.1.1	SMALL
Visual Resources—Aesthetic impacts	4.2.1.2	SMALL
Air Quality—Air quality impacts[b]	4.3.1.1	SMALL
Air Quality—Air quality effects of transmission lines	4.3.1.1	SMALL
Noise—Noise impacts	4.3.1.2	SMALL
Geologic Environment—Geology and soils	4.4.1	SMALL
Surface Water Resources—Surface water use and quality (non-cooling system impacts)	4.5.1.1	SMALL
Surface Water Resources—Altered current patterns at intake and discharge structures	4.5.1.1	SMALL
Surface Water Resources—Altered thermal stratification of lakes	4.5.1.1	SMALL
Surface Water Resources—Scouring caused by discharged cooling water	4.5.1.1	SMALL
Surface Water Resources—Discharge of metals in cooling system effluent	4.5.1.1	SMALL
Surface Water Resources—Discharge of biocides, sanitary wastes, and minor chemical spills	4.5.1.1	SMALL
Surface Water Resources—Effects of dredging on surface water quality	4.5.1.1	SMALL
Surface Water Resources—Temperature effects on sediment transport capacity	4.5.1.1	SMALL
Groundwater Resources—Groundwater contamination and use (non-cooling system impacts)	4.5.1.2.1	SMALL
Groundwater Resources—Groundwater use conflicts (plants that withdraw less than 100 gallons per minute [gpm])	4.5.1.2.2	SMALL

Table 3-1 Applicable Category 1 (Generic) Issues for Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal (Continued)

Environmental Issue[a]	2024 LR GEIS Section	Impact[a]
Groundwater Resources—Groundwater quality degradation resulting from water withdrawals	4.5.1.2.5	SMALL
Terrestrial Resources—Exposure of terrestrial organisms to radionuclides	4.6.1.1	SMALL
Terrestrial Resources—Cooling system impacts on terrestrial resources (plants with once-through cooling systems or cooling ponds)	4.6.1.1	SMALL
Terrestrial Resources—Cooling tower impacts on terrestrial plants[b]	4.6.1.1	SMALL
Terrestrial Resources—Bird collisions with plant structures and transmission lines	4.6.1.1	SMALL
Terrestrial Resources—Transmission line right-of-way (ROW) management impacts on terrestrial resources	4.6.1.1	SMALL
Terrestrial Resources—Electromagnetic field effects on terrestrial plants and animals[b]	4.6.1.1	SMALL
Aquatic Resources—Entrainment of phytoplankton and zooplankton[b]	4.6.1.2	SMALL
Aquatic Resources—Infrequently reported effects of thermal effluents[b]	4.6.1.2	SMALL
Aquatic Resources—Effects of nonradiological contaminants on aquatic organisms	4.6.1.2	SMALL
Aquatic Resources—Exposure of aquatic organisms to radionuclides	4.6.1.2	SMALL
Aquatic Resources—Effects of dredging on aquatic resources	4.6.1.2	SMALL
Aquatic Resources—Non-cooling system impacts on aquatic resources[b]	4.6.1.2	SMALL
Aquatic Resources—Impacts of transmission line right-of-way (ROW) management on aquatic resources	4.6.1.2	SMALL
Socioeconomics—Employment and income, recreation and tourism	4.8.1.1	SMALL
Socioeconomics—Tax revenue	4.8.1.2	SMALL
Socioeconomics—Community services and education	4.8.1.3	SMALL
Socioeconomics—Population and housing	4.8.1.4	SMALL
Socioeconomics—Transportation	4.8.1.5	SMALL
Human Health—Radiation exposures to the public	4.9.1.1.1	SMALL
Human Health—Radiation exposures to plant workers	4.9.1.1.1	SMALL
Human Health—Chemical hazards[b]	4.9.1.1.2	SMALL
Human Health—Microbiological hazards to plant workers	4.9.1.1.3	SMALL
Human Health—Physical occupational hazards	4.9.1.1.5	SMALL
Postulated Accidents—Design-basis accidents	4.9.1.2	SMALL
Postulated Accidents—Severe accidents[c]	4.9.1.2	SMALL
Waste Management—Low-level waste storage and disposal	4.11.1.1	SMALL
Waste Management—Onsite storage of spent nuclear fuel	4.11.1.2	SMALL
Waste Management—Offsite radiological impacts of spent nuclear fuel and high-level waste disposal	4.11.1.3	[d]
Waste Management—Mixed-waste storage and disposal	4.11.1.4	SMALL

Table 3-1 Applicable Category 1 (Generic) Issues for Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal (Continued)

Environmental Issue[(a)]	2024 LR GEIS Section	Impact[(a)]
Waste Management—Nonradioactive waste storage and disposal	4.11.1.5	SMALL
Greenhouse Gas Emissions and Climate Change—Greenhouse gas impacts on climate change[(e)]	4.12.1	SMALL
Uranium Fuel Cycle—Offsite radiological impacts—individual impacts from other than the disposal of spent fuel and high-level waste	4.14.1.5	SMALL
Uranium Fuel Cycle—Offsite radiological impacts—collective impacts from other than the disposal of spent fuel and high-level waste	4.14.1.5	[(f)]
Uranium Fuel Cycle—Nonradiological impacts of the uranium fuel cycle	4.14.1.5	SMALL
Uranium Fuel Cycle—Transportation	4.14.1.5	SMALL
Termination of Nuclear Power Plant Operations and Decommissioning—Termination of plant operations and decommissioning	4.14.2.1	SMALL

CFR = *Code of Federal Regulations*; LR GEIS = Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437); NRC = U.S. Nuclear Regulatory Commission; SLR = subsequent license renewal.

(a) All issues were revised and reviewed by the NRC staff to account for the environmental impacts of SLR and any refurbishment during the proposed SLR term. Impact determinations are based on findings described in Sections 3.2 through 3.15 below, as applicable, for the proposed action.

(b) Modified and/or retitled issue based on the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

(c) The issue “Severe accidents” was revised from Category 2 to Category 1 based on the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

(d) The environmental impact of this issue for the time frame beyond the licensed life for reactor operations is contained in NUREG-2157, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel” (NRC 2014-TN4117).

(e) New issue based on the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

(f) There are no regulatory limits applicable to collective doses to the general public from fuel-cycle facilities. The practice of estimating health effects on the basis of collective doses may not be meaningful. All fuel-cycle facilities are designed and operated to meet the applicable regulatory limits and standards. The Commission concludes that the collective impacts are acceptable. The Commission concludes that the impacts would not be sufficiently large to require the National Environmental Policy Act of 1969 (TN661) conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 (TN4878) should be eliminated. Accordingly, while the Commission has not assigned a single level of significance for the collective impacts of the uranium fuel cycle, this issue is considered Category 1.

Source: Table B-1 in Appendix B, Subpart A, to 10 CFR Part 51 (TN10253); 89 FR 64166-TN10321; NRC 2024-TN10161.

As presented in Sections 3.2 through 3.15 below, the NRC staff evaluated new information and analyzed the Category 2 (plant- or site-specific) issues, as well as one uncategorized issue, applicable to Peach Bottom during the proposed SLR period and assigned impacts to these issues as shown below in Table 3-2.

Table 3-2 Applicable Category 2 (Plant-Specific) Issues for Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal

Environmental Issue[a]	2024 LR GEIS Section	Impact[a]
Surface Water Resources—Surface water use conflicts (plants with cooling ponds or cooling towers using makeup water from a river)[b]	4.5.1.1.9	SMALL
Groundwater Resources—Groundwater use conflicts (plants with closed-cycle cooling systems that withdraw makeup water from a river)[b]	4.5.1.2.4	SMALL
Groundwater Resources—Radionuclides released to groundwater	4.5.1.2.7	SMALL
Terrestrial Resources—Non-cooling system impacts on terrestrial resources[c]	4.6.1.1.1	SMALL
Terrestrial Resources—Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river)[b]	4.6.1.1.6	SMALL
Aquatic Resources—Impingement mortality and entrainment of aquatic organisms (plants with once-through cooling systems or cooling ponds)[c]	4.6.1.2.1	SMALL
Aquatic Resources—Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)[c]	4.6.1.2.4	SMALL to MODERATE
Aquatic Resources—Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river)[b]	4.6.1.2.10	SMALL
Federally Protected Ecological Resources—Endangered Species Act: federally listed species and critical habitats under U.S. Fish and Wildlife Service jurisdiction[d]	4.6.1.3.1	May affect, but is not likely to adversely affect, the northern long-eared bat, Indiana bat, tricolored bat, and monarch butterfly
Federally Protected Ecological Resources—Endangered Species Act: federally listed species and critical habitats under National Marine Fisheries Service jurisdiction[d]	4.6.1.3.2	No effect
Federally Protected Ecological Resources—Magnuson-Stevens Act: essential fish habitat[d]	4.6.1.3.3	No adverse effects on essential fish habitat
Federally Protected Ecological Resources—National Marine Sanctuaries Act: sanctuary resources[e]	4.6.1.3.4	No effect; Not applicable
Historic and Cultural Resources—Historic and cultural resources	4.7.1	Would not adversely affect known historic properties
Human Health—Microbiological hazards to the public[c]	4.9.1.1.3	SMALL
Human Health—Electromagnetic fields (EMFs)[c,f]	4.9.1.1.4	Uncertain impact
Human Health—Electric shock hazards	4.9.1.1.5	SMALL
Greenhouse Gas Emissions and Climate Change—Climate change impacts on environmental resources[e]	4.12.2	See Section 3.14.1.2
Cumulative Effects—Cumulative effects[c]	4.13	See Section 3.15

Table 3-2 Applicable Category 2 (Plant-Specific) Issues for Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal (Continued)

Environmental Issue[a]	2024 LR GEIS Section	Impact[a]

CFR = *Code of Federal Regulations*; LR GEIS = Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437); NRC = U.S. Nuclear Regulatory Commission; SLR = subsequent license renewal.

(a) All issues were revised and reviewed by the NRC staff to account for the environmental impacts of SLR and any refurbishment during the proposed SLR term. Impact determinations are based on findings described in Sections 3.2 through 3.15 below, as applicable, for the proposed action.

(b) The NRC staff has determined that these issues are applicable because Peach Bottom uses helper cooling towers under certain conditions in combination with its once-through cooling system to cool a portion of the cooling water return flow to the plant's discharge canal, resulting in consumptive water loss.

(c) Modified and/or retitled issue based on the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

(d) The 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321) divided a Category 2 issue, "Threatened, endangered, and protected species and essential fish habitat," into three separate Category 2 issues for clarity and consistency with the separate Federal statutes and interagency consultation requirements. When combined, the scope of the three issues is the same as the scope of the former issue.

(e) New issue based on the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

(f) This issue was not designated as Category 1 or 2 and is discussed in Section 3.11.1 below.

Source: Table B-1 in Appendix B, Subpart A, to 10 CFR Part 51 (TN10253); 89 FR 64166-TN10321; NRC 2024-TN10161.

3.2 Land Use and Visual Resources

This section describes the potential land use and visual resources impacts of the proposed action (Peach Bottom SLR).

Section 3.1 of the 2020 FSEIS (NRC 2020-TN7402) provides a detailed description of the appearance, configuration, and setting of Peach Bottom. In summary, Peach Bottom is located near Delta, Pennsylvania, in York County, approximately 38 miles (mi) (61 kilometers [km]) north of Baltimore, Maryland (Figure 3-1). Peach Bottom is located on the west side of Conowingo Pond, an impoundment that was formed when Conowingo Dam was constructed across the Susquehanna River in 1928.

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic land use and visual resources issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573**,** CEG 2025-TN11574).

Sections 3.2.1 and 3.2.2 of the 2020 FSEIS (NRC 2020-TN7402) describe the land use and visual resources of the Peach Bottom site, respectively, and Section 4.2.1 evaluated the impacts of Peach Bottom SLR on land use and visual resources. Since the publication of the 2020 FSEIS, there have been no changes in onsite land use or leases (CEG 2024-TN11573). The applicant has since completed two operation and maintenance projects associated with the installation of a new sewage treatment plant, including an associated pumping station and outfall, and the replacement of underground power transmission cables associated with Peach Bottom Unit 3 (CEG 2025-TN11574). These activities are consistent with the designated land use zoning and visual appearance of the industrial site. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on land use and visual resources would be SMALL. There are no Category 2 land use or visual resource issues (see Table 3-2).

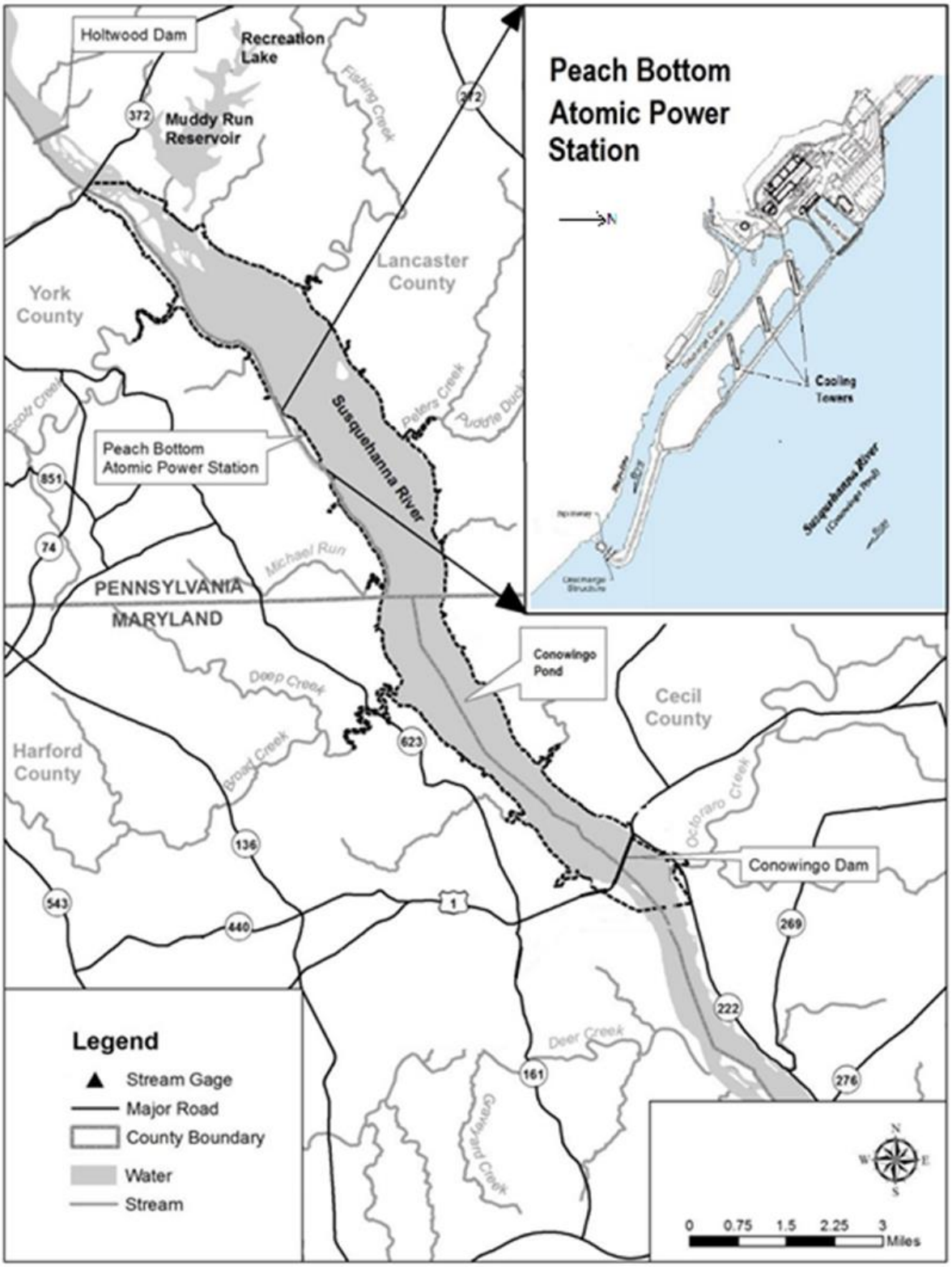

Figure 3-1 Peach Bottom Atomic Power Station Site and Vicinity. Source: NRC 2020-TN7402.

3.3 Air Quality and Noise

This section describes the potential air quality and noise impacts of the proposed action (Peach Bottom SLR).

3.3.1 Air Quality

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic issues related to air quality, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11571, CEG 2025-TN11574).

Section 3.3.2 of the 2020 FSEIS (NRC 2020-TN7402) describes the ambient air quality in the region where Peach Bottom is located, and Section 4.3.1.1 evaluated the air quality impacts of Peach Bottom SLR. The following discussion updates that information with respect to ambient air quality.

Since the publication of the 2020 FSEIS, the air quality designations for Lancaster and York Counties have changed. With respect to air quality designations, the U.S. Environmental Protection Agency (EPA) designates York County as a maintenance area for particulate matter with a diameter of 2.5 micrometers or less ($PM_{2.5}$) (2006 standard) and in attainment for all other National Ambient Air Quality Standards (NAAQS) (EPA 2024-TN10322). The EPA designates Lancaster County in nonattainment for ozone (2008 8-hour standard), as a maintenance area for $PM_{2.5}$ (2006 standard), and in attainment for all other NAAQS (EPA 2025-TN11577).

The Pennsylvania Department of Environmental Protection (PADEP) issued Peach Bottom a synthetic minor operating permit in March 2025 (Permit No. 67-05020) (PADEP 2025-TN11734). In addition to the permitted emissions sources listed in Table 3-2 of the 2020 FSEIS (which reflects sources from Peach Bottom's November 2014 synthetic minor operating permit), the following sources were included in Peach Bottom's March 2025 synthetic minor operating permit—three emergency generators, two auxiliary water pumps, and a sewage plant emergency pump. Table 3-3 presents annual emissions from permitted sources at Peach Bottom Units 2 and 3 for 2018–2023. Permitted air emissions from Peach Bottom represent less than 0.2 percent of Lancaster County or York County emissions.

Table 3-3 of the 2020 FSEIS provided air pollutant emissions from Peach Bottom for 2013–2017. In comparing the 2018–2023 emissions to those presented in Table 3-3 of the 2020 FSEIS, the NRC staff notes that the emissions are similar and have remained minor. The applicant reports that it has received no notices of violation or noncompliance associated with Peach Bottom's air permit (Permit No. 67-05020) from 2018 through November 2024 (CEG 2025-TN11574). The NRC staff reviewed EPA's Enforcement and Compliance History Online 3-year compliance history (from April 2022 to December 2024) for Peach Bottom Units 2 and 3 and no violations were identified related to its air permit (EPA 2025-TN11747).

Based on its review of the information available since the publication of the 2020 FSEIS, the NRC staff determined that this information does not change the conclusion in its 2020 FSEIS with respect to air quality. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on air quality would be SMALL. There are no Category 2 air quality issues (see Table 3-2).

Table 3-3 Estimated Air Pollutant Emissions from Peach Bottom Atomic Power Station Units 2 and 3 (tons/year)

Year	SOx	NOx	CO	PM_{10}	$PM_{2.5}$	VOCs	HAPs
2018	0.11	14.95	3.43	8.32	0.26	0.32	0.0003
2019	0.13	13.18	3.04	9.96	0.23	0.35	0.0183
2020	0.08	13.62	3.6	11.43	0.23	0.4	0.0087
2021	0.04	10.94	2.58	6.5	0.17	0.28	0.0072
2022	0.05	11.42	2.5	10.14	0.18	0.27	0.0112
2023	0.85	13.34	2.87	1.3	0.31	0.69	0.0063
Lancaster County[(a)]	339	9,626	56,269	13,769	5,003	26,630	3,863
York County[(a)]	2,474	11,300	43,566	9,117	3,905	22,414	2,981

CO = carbon monoxide, HAPs = hazardous air pollutants, NO_x = nitrogen oxides, $PM_{2.5}$ = particulate matter with a diameter of less than 2.5 micrometers, PM_{10} = particulate matter with a diameter of less than 10 micrometers, SO_x = sulfur oxides, VOC = volatile organic compound. To convert tons per year to metric tons per year, multiply by 0.90718.
Source: CEG 2025-TN11574.
(a) Emissions for the year 2020 and obtained from EPA 2023-TN11774.

3.3.2 Noise

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic issue related to noise, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusion in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574). Section 3.3.3 of the 2020 FSEIS discusses noise conditions in the vicinity of the Peach Bottom site, and Section 4.3.1.2 evaluated the impacts of Peach Bottom SLR on the noise environment. Since the publication of the 2020 FSEIS, no ambient noise studies in the vicinity of the Peach Bottom site were conducted (CEG 2025-TN11574). From 2018 through November 2024, the applicant did not receive any noise complaints associated with the operation of Peach Bottom (CEG 2025-TN11574). The NRC staff did not identify any new information that would change the discussion of the noise conditions at Peach Bottom or in the vicinity of the site in the 2020 FSEIS. Thus, as concluded in the 2024 LR GEIS for this Category 1 (generic) issue, the impacts of Peach Bottom SLR on noise would be SMALL. There are no Category 2 noise issues (see Table 3-2).

3.4 Geologic Environment

This section describes the potential geology and soils impacts of the proposed action (Peach Bottom SLR).

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic issue related to the geologic environment, the impacts of nuclear power plant license renewal and continued operations and refurbishment on geology and soils would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusion in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574).

Section 3.4 of the 2020 FSEIS (NRC 2020-TN7402) describes the geologic environment of the Peach Bottom site and vicinity, and Section 4.4.1 evaluated the impacts of Peach Bottom SLR on geology and soils. Since the publication of the 2020 FSEIS, the applicant has completed two operation and maintenance projects at Peach Bottom associated with the installation of a new sewage treatment plant, including an associated pumping station and outfall, and the replacement of underground power transmission cables associated with Peach Bottom Unit 3. The installation of the new sewage treatment plant and associated pumping station and outfall was completed in November 2024, with operation in February 2025. The cable replacement project was completed in September 2023. Excavation work associated with both projects was largely confined to previously disturbed areas on the site. The applicant obtained required permits from the PADEP and the local township including for stormwater management and erosion control (CEG 2025-TN11574). The NRC staff finds that the impacts on geology and soils were localized and temporary in nature and that no new operational impacts on geology and soils beyond those considered in the 2024 LR GEIS are anticipated during the SLR term. Thus, as concluded in the 2024 LR GEIS for this Category 1 (generic) issue, the impacts of Peach Bottom SLR on geology and soils would be SMALL. There are no Category 2 geologic environment-related issues (see Table 3-2).

3.5 Water Resources

This section describes the potential surface water resources and groundwater resources impacts of the proposed action (Peach Bottom SLR).

3.5.1 Surface Water Resources

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for generic surface water resources issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusion in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573**,** CEG 2025-TN11574).

Section 3.5.1 of the 2020 FSEIS (NRC 2020-TN7402) describes the surface water resources of the Peach Bottom site and vicinity, encompassing surface water use and quality, and Section 4.5.1.1 evaluated the surface water resources impacts of Peach Bottom SLR. The following discussion updates that information with respect to operational impacts on surface water resources.

Industrial wastewater effluent discharges from Peach Bottom to Conowingo Pond remain subject to a National Pollutant Discharge Elimination System (NPDES) permit administered by the PADEP. As stated in Section 3.5.1.3 of the 2020 FSEIS, the applicant submitted a renewal application for that permit to the PADEP in March 2019. The permit renewal application remains under review by the PADEP, and the applicant stated that it routinely interacts with the PADEP (CEG 2025-TN11574). The existing NPDES permit remains valid and in effect.

The NRC staff identified no substantial changes in Peach Bottom's regulated wastewater discharges since 2019, and the applicant plans no changes or upgrades to the nuclear plant systems that would increase or decrease liquid emissions (CEG 2024-TN11573). The NRC staff's review of EPA's Enforcement and Compliance History Online system identified only one NPDES discharge monitoring noncompliance since 2019. That was for exceeding the daily

maximum limit for total suspended solids from Outfall 003 in November 2019 (EPA 2025-TN11584). The applicant confirmed that a sample collected from just prior to a scheduled cleanout of the water treatment settling basin exceeded the daily total suspended solids limit on November 5, 2019. In addition to proceeding with the scheduled cleanout, corrective actions taken included updating internal procedures to ensure that cleanout occurs prior to the start of a plant outage and to provide guidance to plant personnel on sample collection at various NPDES outfalls (CEG 2025-TN11574). Nevertheless, the applicant has received no notices of violation related to Peach Bottom's NPDES-regulated effluent discharges over the last 5 years (CEG 2025-TN11574). In summary, the NRC staff's review did not identify any new and significant information with respect to effluent discharge or water quality that would change the conclusions in the 2024 LR GEIS. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on surface water resources would be SMALL.

In Table 3-2, the NRC staff identifies one plant-specific (Category 2) issue related to surface water resources applicable to Peach Bottom during the SLR term. That Category 2 issue is discussed next.

Category 2 Issue: Surface Water Use Conflicts (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River)

Potential surface water use conflicts from nuclear power plants using cooling towers or cooling ponds supplied with makeup water from a river is a Category 2 issue and requires a plant-specific assessment. This issue encompasses potential water use conflicts and water availability for competing agricultural, municipal, and industrial user demands as well as related instream water availability and water quality for aquatic resources and ecological habitat.

Section 3.1.3 of the 2020 FSEIS describes Peach Bottom's combination (hybrid) heat dissipation system. As described there and as related to this issue, the system includes the use of helper cooling towers where some of the discharged cooling water may be diverted through helper cooling towers to lower the temperature of the return flow. The helper cooling towers lower the temperature of water by evaporating a fraction of the water that is diverted through one or more of the five helper cooling towers and then conveyed through the nuclear power plant's discharge canal to Conowingo Pond. In Section 4.5.1.1 of the 2020 FSEIS, the NRC staff evaluated potential surface water use conflicts due to this consumptive water use associated with the operation of the Peach Bottom combination cooling system. This issue applies to Peach Bottom because the plant uses helper cooling towers in combination with its normal once-through cooling system, resulting in some consumptive water use due to evaporation and drift. Makeup water for the plant's heat dissipation system is withdrawn from Conowingo Pond, an impounded portion of the lower Susquehanna River, as described in Section 3.1.3 of the 2020 FSEIS. The NRC staff performs a plant-specific review under this Category 2 issue for nuclear power plant sites that use once-through cooling systems and also have helper cooling towers (NRC 2013-TN2654, NRC 2024-TN10161). This section updates the NRC staff's previous assessment.

In previous license renewal environmental reviews, the NRC staff has found that surface water use conflicts are SMALL for plants with once-through cooling systems, because they return most of their withdrawn water to the same surface water body. In the 2024 LR GEIS (NRC 2024-TN10161), the NRC staff cites that thermoelectric power plants using once-through cooling systems return most of their withdrawn water to the same surface waterbody, with evaporative losses of approximately 1 percent, compared to 57 percent for closed-cycle (recirculating) cooling systems.

At Peach Bottom, helper cooling tower operation only occurs during the warmer months, with Peach Bottom operating solely as a once-through cooling system plant at all other times of the year. Peach Bottom's existing NPDES permit continues to require the operation of one or more helper cooling towers each year between June 15 and August 31 based on intake water temperatures. In addition, helper cooling tower operation is required in accordance with an agreement with the PADEP between September 1 and September 30 based on 48-hour river water averages. In total, 60 percent of the plant's cooling water discharge may be diverted through the helper cooling towers prior to discharge (CEG 2024-TN11573).

Further, the Susquehanna River Basin Commission (SRBC) manages water resources over the entire Susquehanna River basin. Peach Bottom's surface water withdrawals and associated consumptive water use remain subject to SRBC regulation under SRBC Docket No. 20061209-1. That docket was issued on December 5, 2006, modified on June 23, 2011, and reissued from Exelon to CEG on May 10, 2022 (SRBC 2022-TN11585; CEG 2024-TN11573). The docket authorizes Peach Bottom to withdraw up to 2,363.62 million gallons per day (mgd) (8,947 million liters per day [mLd]) of water, which is equivalent to approximately 3,657 cubic feet per second (cfs). It also limits the plant's peak (daily) consumptive water use to 49 mgd (185 mLd) (75.8 cfs) (SRBC 2022-TN11585). The SRBC docket also imposes consumptive water use mitigation requirements for Peach Bottom (SRBC 2022-TN11585). Mitigation is required during August, September, and October when natural flows fall below specified trigger values. CEG implements flow mitigation in accordance with Peach Bottom's consumptive use mitigation plan (CUMP) (CEG 2024-TN11573). The annual mean discharge of the Susquehanna River measured at Marietta, Pennsylvania, 27 mi (43 km) upstream of Peach Bottom, is 38,230 cfs (USGS 2025-TN11586). This measure is an analog for the natural inflow of water into Conowingo Pond.

For the period from 2019 through 2024 (inclusive of the first 9 months of 2024), Peach Bottom's peak daily surface water withdrawal rate averaged 2,250 mgd (8,500 mLd). Peak consumptive water use averaged 26.7 mgd (101 mLd), or approximately 41 cfs. During this timeframe, low flow conditions met the CUMP threshold in two instances in 2022 (i.e., August 15–22, 2022, and September 2–3, 2022) and was reported by CEG in its 2022 annual report to the SRBC. While there were periods of low flow at these times, there were no instances where operational flow through Conowingo Dam fell below natural inflow to Conowingo Pond. Therefore, Conowingo Dam did not need to use any of the 800 cfs of leakage, including the 220 cfs allotment for Peach Bottom, to meet minimum flow requirements per the CUMP (CEG 2024-TN11573**,** CEG 2025-TN11574).

Peach Bottom's current averaged surface water consumptive use rate represents approximately 0.11 percent of the 38,230 cfs mean annual flow of the Susquehanna River into Conowingo Pond. Peach Bottom's consumptive water use continues to reflect a very low percentage of the available flow volume in Conowingo Pond. Therefore, the NRC staff concludes that surface water use conflicts associated with Peach Bottom SLR would be SMALL.

3.5.2 Groundwater Resources

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic groundwater resources issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS.

Section 3.5.2 of the 2020 FSEIS (NRC 2020-TN7402) describes the groundwater resources of the Peach Bottom site and vicinity, encompassing groundwater use and groundwater quality, and Section 4.5.1.2 evaluated the groundwater resources impacts of Peach Bottom SLR. The following discussion updates that information with respect to operational impacts on groundwater resources.

While the applicant is not required to report Peach Bottom groundwater usage to the SRBC as it is required to do for surface water withdrawals and consumptive use under the applicant's docket for Peach Bottom, the applicant remains subject to the rules and regulations of the SRBC and the PADEP to maintain registration of all surface water and groundwater withdrawals.

Three groundwater production wells (well numbers 16, 17, and 20) have been in use at Peach Bottom to supply water for miscellaneous, non-potable uses across the nuclear power plant site. The NRC staff found, as stated in Section 3.5.2.2 of the 2020 FSEIS, that site-wide groundwater production volume was estimated to be substantially below 15 gpm (57 liters per minute [Lpm]), which is about 21,600 gallons per day (81,800 liters per day). Peach Bottom also has a subsurface drain and sump system for managing infiltrating groundwater. Most notably, two yard drain sumps contribute a combined outflow of approximately 50 gpm (190 Lpm), or 72,000 gallons per day (272,500 liters per day). These and another sump, whose flow is intermittent, discharge to NPDES-permitted outfalls. The applicant continues to operate the three identified groundwater production wells at Peach Bottom with a maximum total capacity of 15 gpm (57 Lpm). The yard drain sump and dewatering system remains in operation with a discharge capacity of 50 gpm (190 Lpm) (CEG 2025-TN11574). Total groundwater withdrawals at Peach Bottom average less than 65 gpm (246 Lpm). Based on the evaluation in Section 4.5.1.2.2 of the 2024 LR GEIS, no groundwater use conflicts would be expected for nuclear power plants that withdraw less than 100 gpm (378 Lpm) and, therefore, there would be SMALL impacts during any license renewal term (NRC 2024-TN10161).

The NRC staff also considered new information regarding generic groundwater quality issues. For the 5-year period of 2014–2018 as evaluated and discussed in Section 3.5.2.3 of the 2020 FSEIS, no accidental spills or similar releases of nonradioactive substances, including petroleum products, had been documented at Peach Bottom. The NRC staff did not identify any new and significant information in this regard during its 2024 supplemental environmental audit. Specifically, the applicant confirmed that there have been no spills of petroleum products at Peach Bottom since 2018 that would trigger Federal Water Pollution Control Act (i.e., Clean Water Act of 1972, as amended [CWA]) (33 U.S.C. 1251–1387), Section 311(b)(4) [TN662] reporting requirements specified in 40 CFR Part 110 (TN8485; CEG 2025-TN11574).

Based on the above, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on groundwater resources would be SMALL.

In Table 3-2, the NRC staff identifies two plant-specific (Category 2) issues related to groundwater resources applicable to Peach Bottom during the SLR term. Those Category 2 issues are discussed next.

Category 2 Issue: Groundwater Use Conflicts (Plants with Closed-Cycle Cooling Systems that Withdraw Makeup Water from a River)

For nuclear power plants with cooling towers or cooling ponds that rely on a river for makeup of consumed (evaporated) cooling water, it is possible that water withdrawals from the river could

lead to groundwater use conflicts with other users. This situation could occur because of the interaction between groundwater and surface water, especially in the setting of an alluvial aquifer in a river valley (NRC 2013-TN2654, NRC 2024-TN10161). Consumptive use of river water, if significant enough to lower the river's water level, would also influence water levels in an alluvial aquifer. Shallow wells of nearby groundwater users could therefore be adversely affected.

In Section 4.5.1.2 of the 2020 FSEIS, the NRC staff presented its analysis of potential groundwater use conflicts due to consumptive water use associated with continued operations of the Peach Bottom hybrid or combination cooling system. The NRC staff has identified no new and significant circumstances or information arising from its 2024 supplemental environmental audit that would change the conclusions in the 2020 FSEIS. The staff's updated analysis follows.

In summary, geologic mapping of the Peach Bottom site and vicinity shows that alluvial deposits that could support local aquifers along the Conowingo Pond portion of the Susquehanna River are extremely limited. The local groundwater flow system is one where the river valley acts as a drain for groundwater rather than as a source of recharge to groundwater. As a result, groundwater flow in both the regolith and bedrock is roughly toward the Susquehanna River. The water supply wells used at Peach Bottom and the wells used by other private entities in the local groundwater basin are generally completed in the Peters Creek schist. The bedrock fracture systems that yield water to wells are recharged by the infiltration of precipitation and runoff and offer no hydrologic connection with water levels in Conowingo Pond. As a result, the NRC staff would not expect any hydrologic interaction or associated groundwater use conflicts due to Peach Bottom's continued surface water withdrawals and consumptive use from Conowingo Pond.

Peach Bottom's operational consumptive water use is limited to the warmer months when one or more helper cooling towers are in operation in accordance with NPDES permit requirements. For the period from 2019 through 2024 (inclusive of the first 9 months of 2024), Peach Bottom's highest peak daily consumptive water use was 37.4 mgd (142 mLd), or 58 cfs (CEG 2025-TN11574). This peak consumption rate is approximately 0.15 percent of the mean annual flow of the Susquehanna River. Consumptive water use at this level, even if sustained over an extended period of time, is unlikely to have any effect on the water levels in Conowingo Pond and, thus, would have no effect on water levels in any aquifers intersecting Conowingo Pond.

The NRC staff's supplemental environmental review confirms its prior review in the 2020 FSEIS that found that Peach Bottom's continued surface water withdrawals and relatively low rate of consumptive use from the Conowingo Pond portion of the Susquehanna River would not measurably affect local groundwater resources. Therefore, the NRC staff concludes that the potential for groundwater use conflicts associated with Peach Bottom SLR would be SMALL.

Category 2 Issue: Radionuclides Released to Groundwater

All commercial nuclear power plants routinely release radioactive gaseous and liquid materials into the environment in accordance with established procedures. These radioactive releases are designed to be planned, monitored, documented, and released into the environment at designated discharge points. In contrast, this issue considers the potential impact to groundwater quality from the unplanned, inadvertent discharge of liquids containing radionuclides into groundwater. Such unknown, uncontrolled, and unmonitored releases of radioactive liquids have occurred at nuclear power plant sites from various power plant systems.

The majority of the inadvertent liquid release events involve tritium, which is a radioactive isotope of hydrogen. However, other radioactive isotopes, such as cesium and strontium, have also been inadvertently released into the groundwater at some sites. The inadvertent release of radionuclides to groundwater is a Category 2 issue and therefore requires a plant-specific assessment that includes the consideration of new and significant information (NRC 2013-TN2654, NRC 2024-TN10161).

Section 3.5.2.3 of the 2020 FSEIS describes the groundwater quality of the Peach Bottom site including the history of documented inadvertent releases of radionuclides to groundwater. In Section 4.5.1.2 of the 2020 FSEIS, the NRC staff discussed the impact on groundwater quality from the inadvertent release of radionuclides from the continued operations of Peach Bottom. The NRC staff concluded that the impacts on groundwater quality and use were SMALL and were projected to remain SMALL during the SLR term. This section updates the NRC staff's previous assessment.

The applicant continues to maintain a radiological groundwater protection program at Peach Bottom, which is consistent with the industry groundwater protection initiative, Nuclear Energy Institute (NEI) 07-07. In 2020, the applicant updated the Peach Bottom program and modified sample locations to align with the 2019 revision to NEI 07-07 (NEI 2019-TN6775) (CEG 2024-TN11573).

As described in Section 3.5.2.3 of the 2020 FSEIS and as documented in the applicant's additional information report (CEG 2024-TN11573), a plume of tritium-contaminated groundwater persists in the vicinity of the Peach Bottom Unit 3 turbine building. Residual tritium activity in the Peach Bottom Unit 3 turbine building monitoring wells (wells MW-PB-24 through MW-PB-27) has been attributed by the applicant to natural groundwater flow. The plume, which extends northeast of the turbine building and toward MW-PB-4, does not extend beyond the boundaries of the plant site and does not reach Conowingo Pond. Monitoring results show that the plume does not extend to the north beyond wells MW-PB-12 and MW-PB-22 and to the south beyond wells MW-PB-20 and MW-PB-21 (CEG 2024-TN11573, NRC 2024-TN11590). The locations of these wells are shown in Figure 3-2.

The highest tritium concentrations were observed in monitoring well MW-PB-25. The applicant identified the source of this plume as a steam leak from the Peach Bottom Unit 3 moisture separation room that occurred in April 2015. After repairs were completed (described in Section 3.5.2.3 of the 2020 FSEIS), tritium concentrations steadily decreased through 2018 but have exhibited spikes in activity since. In May 2019, tritium concentrations increased to 23,000 picocuries per liter (pCi/L) in MW-PB-25 (CEG 2024-TN11573). This level exceeded the EPA and Commonwealth of Pennsylvania primary maximum contaminant level (drinking water standard) of 20,000 pCi/L (40 CFR 141.66 [TN4456]; 25 Pa. Code 109.202 [TN3952]).

From 2020 to 2023, tritium concentrations in MW-PB-25 varied, ranging from non-detectable levels to 17,100 pCi/L (2022) (CEG 2024-TN11573; NRC 2024-TN11590). In adjacent wells MW-PB-24, -26, and -27, the highest observed tritium level was 1,680 pCi/L in MW-PB-27 in July 2023. In calendar year 2024, the highest recorded concentration in MW-PB-25 was from the March quarterly sampling event at 606 pCi/L (CEG 2025-TN11574).

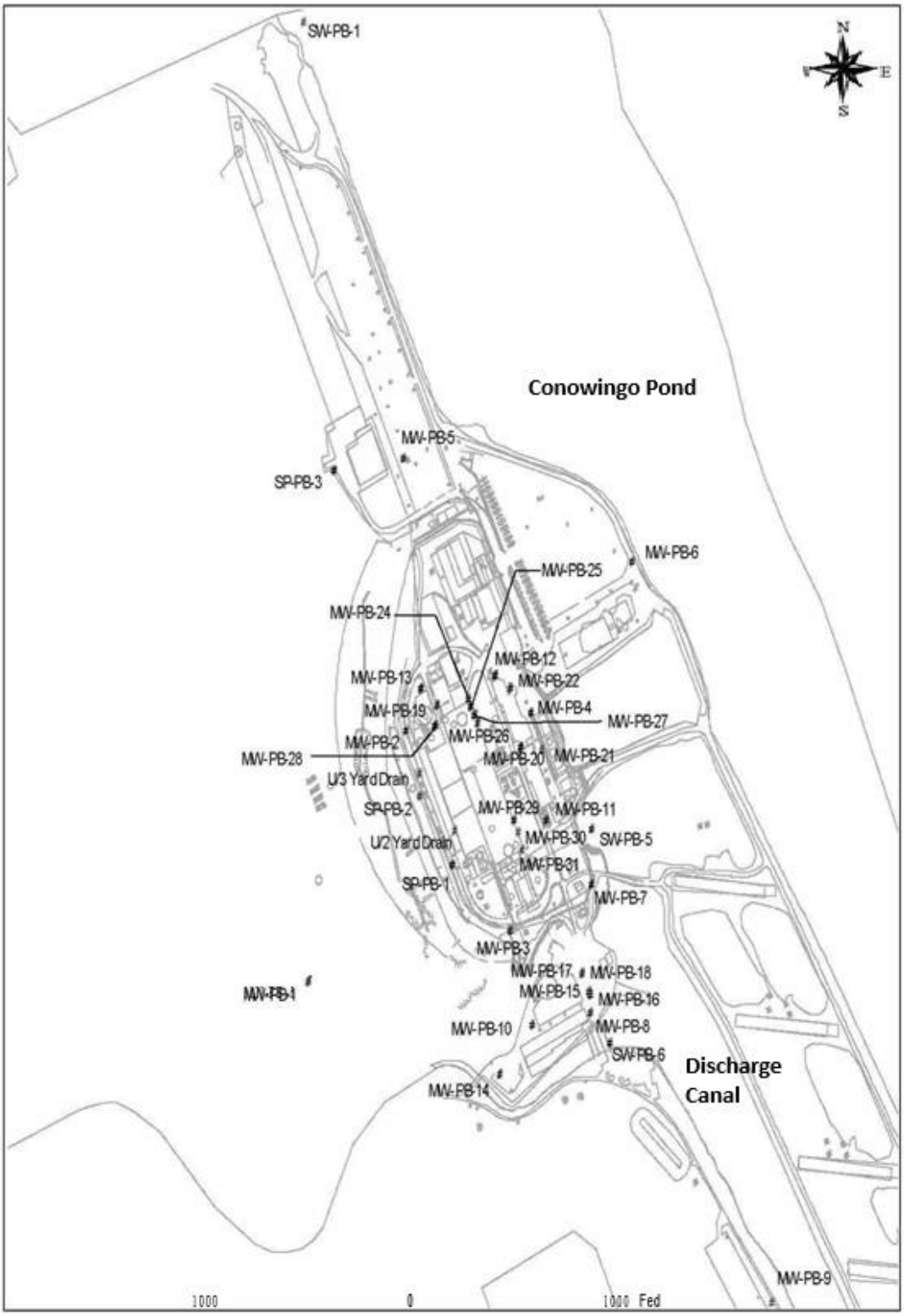

Figure 3-2 Groundwater Protection Program Monitoring Locations, Peach Bottom Atomic Power Station Site. Source: NRC 2024-TN11590.

In the December 2020 sampling, elevated tritium levels were detected in well MW-PB-28 and in the Peach Bottom Unit 3 yard drain sump. Concentrations were found to increase steadily through 2021 to a maximum concentration of 12,200 pCi/L in MW-BP-28 and 3,680 pCi/L in the Peach Bottom Unit 3 yard drain sump (CEG 2024-TN11573). An investigation determined the tritium source to be a packing leak in the torus dewater tank moat, where cracks in the moat floor could allow for any leaking water to penetrate the concrete and reach the subsurface. The applicant took corrective action by removing the tritiated water, sealing surface floor leaks, and repairing the valve packing. Thereafter, tritium concentrations steadily declined throughout 2023 (CEG 2024-TN11573; NRC 2024-TN11590). Quarterly samples taken during 2024 continue to show tritium levels at or below 300 pCi/L (CEG 2025-TN11574).

From late 2022 through late 2023, tritium results showed that tritium in monitoring well MW-PB-30 increased from 683 pCi/L to a maximum of over 37,000 pCi/L. The applicant identified the source of the tritium as a steam leak from the Peach Bottom Unit 2 moisture separator room. The applicant characterized the root cause of the leak as steam condensing in association with a roof drain that passes through the room. The condensate pooled in the room and flowed to a sump. The applicant installed containment around the sump to prevent condensate from entering. Following corrective action, the concentration of tritium in MW-PB-30 decreased, reaching 7,690 pCi/L in November of 2023 (CEG 2024-TN11573, NRC 2024-TN11590).

However, instances of elevated tritium concentrations were again observed through 2024 in monitoring well MW-PB-30. This well is located just east of the Peach Bottom Unit 2 moisture separator room and within feet of a ventilation supply pit. In August 2024, tritium concentrations in MW-PB-30 reached 131,100 pCi/L. The applicant identified the source as standing tritiated water that had collected in the moisture separator area floor drains and ventilation pit due to backed-up turbine building floor drains. The applicant took corrective action by clearing the drain system and installing a temporary berm to divert water from the ventilation supply pit. Tritium sampling results from MW-PB 30 showed 38,100 pCi/L in September 2024, with levels decreasing to 1,130 pCi/L in October 2024 (CEG 2025-TN11574).

During the Peach Bottom Unit 2 maintenance outage in fall 2024, the applicant undertook several tritium mitigative actions, including cleaning out and coating the ventilation supply pit and installing a permanent berm around the pit to minimize the entry of standing water. Sample results from November 5, 2024, at MW-PB-30 revealed elevated tritium levels reaching 41,890 pCi/L. The applicant determined that this increase was the result of pressure washing conducted during the maintenance of the moisture separation ventilation pit, which flushed accumulated tritium out of porous concrete surfaces and into MW-PB-30. This finding was isolated to MW-PB-30, as excess tritium levels were not observed at adjacent wells. Additional sampling indicated that tritium was again decreasing in the well (CEG 2025-TN11574).

For the period from 2018 through 2022, no gamma-emitting target radionuclides and strontium-89/90 have been detected during sampling events above laboratory lower limits of detection. Some naturally occurring radionuclides have been observed above, but at concentrations considered to be background. The applicant is scheduled to report sample results for gamma radionuclides from the 2024 sampling when the 2024 annual radiological environmental operating report is submitted to the NRC (CEG 2024-TN11573).

Based on the latest available information, as discussed above, the NRC staff finds that its supplemental environmental review confirms its prior review in the 2020 FSEIS that found that there are no discernible trends in radiological groundwater protection monitoring data that would

indicate an ongoing, uncontrolled inadvertent release of radionuclides to groundwater at Peach Bottom. The overburden material and bedrock beneath the Peach Bottom site are not a current or potential future source of drinking water. Onsite inadvertent releases of radionuclides have had no measurable effect on surface waters adjoining the Peach Bottom site and do not affect or threaten offsite groundwater sources or users. This is because groundwater flows generally from west to east across the Peach Bottom site and discharges to the plant intake and discharge basins and to Conowingo Pond, where any tritium-containing groundwater is quickly diluted. Thus, there is no drinking water pathway for tritium to reach other groundwater users. All wells where elevated radionuclide concentrations (tritium) have been detected are located in or near the Peach Bottom nuclear island. Therefore, the NRC staff concludes that the impacts on groundwater quality and use from inadvertent releases of radionuclides from Peach Bottom operations are SMALL and are projected to remain SMALL during the SLR term.

3.6 Terrestrial Resources

This section describes the potential impacts of the proposed action (Peach Bottom SLR) on terrestrial resources.

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for generic terrestrial resources issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS related to these issues. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573**,** CEG 2025-TN11574).

Section 3.6 of the 2020 FSEIS (NRC 2020-TN7402) describes the terrestrial resources of the Peach Bottom site and vicinity, and Section 4.6.1 evaluated the impacts of Peach Bottom SLR on terrestrial resources. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on terrestrial resources would be SMALL.

In Table 3-2, the NRC staff identifies two plant-specific (Category 2) issues related to terrestrial resources applicable to Peach Bottom during the SLR term. These Category 2 issues are:

- Non-cooling system impacts on terrestrial resources.
- Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river).

The NRC staff performed a plant-specific review of these issues in the 2020 FSEIS and concluded that the impacts of Peach Bottom SLR for each would be SMALL.

In the 2024 LR GEIS (NRC 2024-TN10161), the NRC staff changed the title of the issue "Effects on terrestrial resources (non-cooling system impacts)" to "Non-cooling system impacts on terrestrial resources" for clarity and consistency with other ecological resources issue titles. Otherwise, the scope of this issue was unchanged. Separately, as presented in Section 3.5.1 above, the NRC staff has evaluated new information for the Category 2 issue, "Surface water use conflicts (plants with cooling ponds or cooling towers using makeup water from a river)," which includes consideration of impacts on instream water availability for aquatic species and ecological habitats.

During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these issues. The applicant has not undertaken any new ecological studies and has not changed its landscape and stormwater management practices, and the previous NPDES permit remains in place until the PADEP completes its review of the plant's 2019 NPDES permit renewal application and issues a renewed permit. Additionally, the applicant has no plans to conduct any refurbishment (see Section 2.1.1). The only new information identified, and reported by the applicant, is that on December 14, 2023, the applicant submitted an application for Wildlife Habitat Council Conservation Certification for the Peach Bottom site. This certification would allow the site to demonstrate a voluntary long-term commitment to managing quality habitat for wildlife, conservation education, and community outreach initiatives (CEG 2024-TN11573). Therefore, as concluded in the 2020 FSEIS and consistent with the finding above for generic terrestrial resources issues, the impacts of Peach Bottom SLR on terrestrial resources would be SMALL.

3.7 Aquatic Resources

This section describes the potential impacts of the proposed action (Peach Bottom SLR) on aquatic resources.

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for generic aquatic resources issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS related to these issues. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573**,** CEG 2025-TN11574).

Section 3.7 of the 2020 FSEIS (NRC 2020-TN7402) describes the aquatic resources of the Peach Bottom site and vicinity, and Section 4.7.1 evaluated the impacts of Peach Bottom SLR on terrestrial resources. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on aquatic resources would be SMALL.

In Table 3-2, the NRC staff identifies three plant-specific (Category 2) issues related to aquatic resources applicable to Peach Bottom during the SLR term. These Category 2 issues are:

- Impingement mortality and entrainment of aquatic organisms (plants with once-through cooling systems or cooling ponds)
- Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)
- Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river)

The NRC staff performed a plant-specific review of these issues in the 2020 FSEIS and concluded that the impacts of Peach Bottom SLR for each would be SMALL, SMALL to MODERATE, and SMALL, respectively.

In the 2024 LR GEIS, the NRC staff changed the titles of two of these issues. The NRC staff changed the title of the issue "Impingement and entrainment of aquatic organisms (plants with once-through cooling systems or cooling ponds)" to include impingement mortality, rather than just impingement. This change is consistent with the EPA's 2014 CWA Section 316(b)

regulations (79 FR 48300-TN4488) and the EPA's assessment that impingement reduction technology is available, feasible, and has been demonstrated to be effective. The 2024 LR GEIS also consolidated the impingement component of the issue of "Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses" for plants with once-through cooling systems or cooling ponds into this issue. In the 2024 LR GEIS, the NRC staff also changed the title of the issue "Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)" to "Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)" for clarity and consistency with other ecological resources issue titles. These changes do not change the NRC staff's analysis of Peach Bottom SLR for these issues, which appears in Sections 4.7.1.1 and 4.7.1.2 of the 2020 FSEIS.

During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these issues. The applicant has not undertaken any new aquatic resources studies, and the PADEP is still reviewing the plant's 2019 NPDES permit renewal application. In that application, the applicant proposed to install fish-friendly modified traveling screens and a fish return system to meet the best technology standard for impingement mortality. As indicated in Section 4.7.1.1 of the 2020 FSEIS, although the PADEP has yet to render a best technology available determination for impingement mortality and entrainment at Peach Bottom, the NRC staff assumes that if the PADEP issues the applicant a renewed NPDES permit, then that permit will specify the conditions necessary to minimize adverse effects in accordance with the EPA's 2014 CWA Section 316(b) final rule (79 FR 48300-TN4488). Any such conditions would further reduce the impacts of impingement and entrainment over the course of the SLR term. These assumptions remain valid as does the NRC staff's conclusion in the 2020 FSEIS that the impacts of impingement and entrainment of aquatic organisms resulting from Peach Bottom SLR would be SMALL.

With respect to the effects of thermal effluents on aquatic organisms, the NRC staff found in Section 4.7.1.2 of the 2020 FSEIS that during summer months, a narrow 12-acre (ac) (4.9-hectare [ha]) band of shallow water habitat downstream of the discharge canal would exhibit short-term, observable changes, including reduced macroinvertebrate community health (i.e., lower Index of Biological Integrity scores) and lower fish diversity. Seasonal impacts in this region would be MODERATE because water temperatures would result in thermal stress and avoidance behaviors. The applicant's operation of the Peach Bottom cooling towers in accordance with applicable NPDES permit conditions imposed to assure the protection of a balanced, indigenous aquatic community and voluntary agreements with the PADEP would help minimize the duration and frequency of seasonal impacts. However, absent information indicating that Peach Bottom's operation could be effectively conditioned to reduce or mitigate existing impacts, the NRC staff conservatively concluded that the thermal impacts on aquatic resources in Conowingo Pond during the Peach Bottom SLR term would be SMALL to MODERATE. These assumptions remain valid as does the NRC staff's conclusion in the 2020 FSEIS of SMALL to MODERATE.

With respect to water use conflicts with aquatic resources, in Section 4.7.1.3 of the 2020 FSEIS, the NRC staff concluded that the impacts of this issue would be SMALL based on the facts that the amount of water that Peach Bottom consumes is minor in comparison to the flow of water past the plant and that the withdrawal of water by Peach Bottom and other water users is regulated by the SRBC. The basis for this conclusion has not changed, and the NRC staff's conclusion for this issue remains SMALL. This finding is supported by the NRC staff's revised analysis as presented in Section 3.5.1 above for the Category 2 issue "Surface water use

conflicts (plants with cooling ponds or cooling towers using makeup water from a river)," which also considered impacts on instream water availability for aquatic species and ecological habitats.

3.8 Federally Protected Ecological Resources

This section describes the potential impacts of the proposed action (Peach Bottom SLR) on federally protected ecological resources. The NRC must consider the effects of its actions on ecological resources protected under several Federal statutes and must consult with the appropriate agency (i.e., the U.S. Fish and Wildlife Service [FWS], the National Marine Fisheries Service [NMFS], or the National Oceanic and Atmospheric Administration [NOAA]) prior to taking action in cases where the action may affect those resources. These statutes include the following:

- The Endangered Species Act of 1973, as amended (ESA) (TN1010)
- The Magnuson–Stevens Fishery Conservation and Management Act of 1976, as amended (MSA) (TN9966)
- The National Marine Sanctuaries Act (TN4482)

This section updates the 2020 FSEIS's description of the species and habitats that are federally protected under these statutes and analyzes how Peach Bottom SLR may affect those resources.

In Table 3-2, the NRC staff identifies four plant-specific (Category 2) issues related to federally protected ecological resources applicable to Peach Bottom during the SLR term. Those Category 2 issues are:

- Endangered Species Act: federally listed species and critical habitats under U.S. Fish and Wildlife Service jurisdiction
- Endangered Species Act: federally listed species and critical habitats under National Marine Fisheries Service jurisdiction
- Magnuson-Stevens Act: essential fish habitat
- National Marine Sanctuaries Act: sanctuary resources

In the 2020 FSEIS (NRC 2020-TN7402), the NRC staff evaluated the first three of these issues as one issue titled, "Threatened, endangered, and protected Species and essential fish habitat." In the 2024 LR GEIS (NRC 2024-TN10161) and as codified in the related final rule (89 FR 64166-TN10321), the NRC staff split this issue into three unique issues to recognize that a given license renewal review may require ESA consultation with the FWS, ESA consultation with the NMFS, and/or essential fish habitat (EFH) consultation under the MSA with the NMFS. Additionally, the NRC staff added a new environmental issue to address sanctuary resources protected under the National Marine Sanctuaries Act.

With respect to federally listed species and critical habitats under FWS jurisdiction, the NRC staff previously evaluated potential impacts on five species in Sections 3.8.1.2 and 4.8.1.1 of the 2020 FSEIS. The NRC staff then concluded that Peach Bottom SLR may affect, but is not likely to adversely affect, the northern long-eared bat (*Myotis septentrionalis*) and the Indiana bat (*M. sodalis*). The FWS provided its concurrence with these findings by letter dated September 4, 2019 (FWS 2019-TN9742). The NRC staff also concluded that Peach Bottom SLR would have

no effect on the bog turtle (*Clemmys muhlenbergii*) and the rufa red knot (*Calidris canutus rufa*). The ESA does not require FWS concurrence with "no effect" findings. Additionally, the NRC staff concluded that Peach Bottom SLR may affect the Chesapeake logperch (*Percina bimaculata*). However, because the Chesapeake logperch was a candidate under FWS review for listing, the ESA did not require the NRC to consult with the FWS on this species. This species remains a candidate for listing at this time. During its supplemental environmental review, the NRC staff did not identify any new and significant information that would change the conclusions in the 2020 FSEIS for these species or that would require further coordination or consultation with the FWS. In conjunction with its supplemental environmental review, the NRC staff identified three additional species proposed for Federal listing that may occur in the Peach Bottom action area, as defined and described in Section 3.8.1.1 of the 2020 FSEIS. These are the tricolored bat (*Perimyotis subflavus*), the green floater (*Lasmigona subviridis*), and the monarch butterfly (*Danaus plexippus*). New information for these species is presented below (Section 3.8.1).

With respect to federally listed species and critical habitats under NMFS jurisdiction, the NRC staff previously evaluated potential impacts on the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus)* and the shortnose sturgeon (*Acipenser brevirostrum)* in Sections 3.8.1.3 and 4.8.1.2 of the 2020 FSEIS and determined that these species are not present in the action area and that, therefore, Peach Bottom SLR would have no effect on these species. During its supplemental environmental review, the NRC staff did not identify any new information that would change the conclusions in the 2020 FSEIS for these species or that would require further coordination or consultation with the NMFS. Notably, for federally listed species and critical habitats under both FWS's and NMFS's jurisdiction, Section 3.8.1.1 of the 2020 FSEIS describes the ESA action area. The action area remains unchanged for this supplement to the 2020 FSEIS.

With respect to EFH, the NRC staff previously evaluated the potential impacts of Peach Bottom SLR on the EFH of six federally managed species in Sections 3.8.2 and 4.8.1.4 of the 2020 FSEIS. The NRC staff concluded that Peach Bottom SLR would have no direct effects on the EFH of any species because no designated EFH is present in Conowingo Pond. All potential adverse impacts on EFH would be limited to loss of prey for those EFH species that consume anadromous prey species that migrate through Conowingo Pond. For those EFH species that do not consume anadromous prey, the NRC staff concluded that the proposed SLR would have no effects. For the remaining EFH species, the NRC staff concluded that none of the available studies or other information indicates that impingement, entrainment, thermal effects, or indirect impacts to the habitat of anadromous species would be noticeably affected as a result of Peach Bottom SLR. Accordingly, no adverse effects to EFH would result from loss of prey and, therefore, the NRC staff concluded that the proposed action would have no adverse effects on the designated EFH for these species. During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for EFH species or that would require further coordination or consultation with the NMFS.

With respect to sanctuary resources, no National Marine Sanctuaries have been proposed or designated near Peach Bottom. Therefore, there would be no effect to any sanctuary resources from Peach Bottom SLR, and consultation with NOAA is not required.

3.8.1 Endangered Species Act: Federally Listed Species and Critical Habitats Under U.S. Fish and Wildlife Service Jurisdiction

As a supplement to the 2020 FSEIS, the NRC staff considers here three species that have been proposed for Federal listing since the 2020 FSEIS was prepared and that may occur in the Peach Bottom SLR action area. These are the tricolored bat, the green floater, and the monarch butterfly. The NRC staff identified no additional federally listed species that were not already addressed in the 2020 FSEIS and in previous consultations with the FWS concerning the Peach Bottom SLR. The NRC staff determined that no designated or proposed critical habitat occurs in the action area.

Table 3-4 and Table 3-5 summarize the results of the NRC staff's supplemental evaluation of Federally listed species. Table 3-4 identifies habitat requirements and information on the occurrence of each species within the action area. Table 3-5 identifies the NRC's effect determination and date of FWS concurrence (as applicable) for each species.

Table 3-4 Occurrences of Federally Listed Species Under U.S. Fish and Wildlife Service Jurisdiction in the Peach Bottom Atomic Power Station Subsequent License Renewal Action Area

Species or Critical Habitat	Federal Status[(a)]	Habitat	Type and Likelihood of Occurrence in Action Area
tricolored bat (*Perimyotis subflavus*)	FPE	In non-hibernating seasons, tricolored bats primarily roost among leaf clusters of live or recently dead deciduous hardwood trees. Additionally, species may roost during summer among pine needles and within artificial roosts like barns and beneath porch roofs, bridges, and concrete bunkers.	**Seasonal and occasional.** The action area falls within the general range of the species but does not contain caves, mines, or other features suitable for hibernating. Therefore, bats would not be present in the winter inactive season. No bat surveys have been conducted within the action area nor have any assessments been undertaken to specifically determine habitat suitability or quality for bats. Because of this, the NRC staff conservatively assumes that the oak-hickory and oak-tulip forests in the action area, which total approximately 356 ac, could support foraging, mating, roosting, and pup rearing in the spring, summer, and fall. If present during these seasons, individuals would occur in the action area occasionally and in relatively low numbers.

Table 3-4 Occurrences of Federally Listed Species Under U.S. Fish and Wildlife Service Jurisdiction in the Peach Bottom Atomic Power Station Subsequent License Renewal Action Area (Continued)

Species or Critical Habitat	Federal Status[(a)]	Habitat	Type and Likelihood of Occurrence in Action Area
green floater (*Lasmigona subviridis*)	FPT	Streams with slow to medium flows and good water quality. Individuals are found in sand or small gravel substrates where they establish a foothold and bury themselves as deep as 15 in. Species has limited mobility, and fast-flowing currents or high-water events can cause individuals to be washed downstream. When they occur in larger streams and rivers, they are found in quieter pools and eddies, away from strong currents.	**Absent.** The reach of the Conowingo Pond near Peach Bottom has greater depths and slower water velocities compared to the upstream reach. Lentic conditions result in finer grained, silty substrates and lack sandy or cobble sediments. The area is characterized by steep banks and few in-river features. Poor mussel habitat occurs in Conowingo Pond for most native mussels, and even those species found below Conowingo Dam do not occur within the Pond (Exelon 2018-TN11707). Because quality habitat is not present, the green floater is also unlikely to occur in the action area (CEG 2024-TN11573).
monarch butterfly (*Danaus plexippus*)	FPT	Prairies, meadows, grasslands, and along roadsides across most of North America, especially in areas containing milkweed.	**Seasonal and occasional.** Monarchs occur in Pennsylvania from April through October. The species is known to breed within Pennsylvania. Migrating monarchs may use the action area as breeding or stopover habitat. No surveys have been conducted to determine either the species' presence or the presence of milkweed on the site. However, the applicant reports that suitable habitat for the monarch butterfly is likely present in undeveloped portions of the Peach Bottom site that are not maintained by mowing (CEG 2024-TN11573). Therefore, the NRC staff conservatively assumes that the monarch butterfly could occur within the action area from April through October.

FPE = proposed for listing as federally endangered; FPT = proposed for listing as federally threatened.
(a) Indicates protection status under the Endangered Species Act.
Source: FWS 2024-TN11579.

Table 3-5 Effect Determinations for Federally Listed Species under U.S. Fish and Wildlife Service Jurisdiction in the Peach Bottom Atomic Power Station Subsequent License Renewal Action Area

Species	Federal Status[a]	Potentially Present in the Action Area?	Effect Determination[b]	FWS Concurrence Date[c]
tricolored bat	FPE	Yes	NLAA	11/22/2024
green floater	FPT	No	NE	n/a
monarch butterfly	FPT	Yes	NLAA	n/a

ESA = Endangered Species Act; FPE = proposed for listing as federally endangered; FPT = proposed for listing as federally threatened; FWS = U.S. Fish and Wildlife Service; n/a = not applicable; NE = no effect; NLAA = may affect, but is not likely to adversely affect.

(a) Indicates protection status under the ESA.

(b) The U.S. Nuclear Regulatory Commission staff makes its effect determinations for federally listed species in accordance with the language and definitions specified in the U.S. Fish and Wildlife Service and National Marine Fisheries Service Endangered Species Consultation Handbook (FWS and NMFS 1998-TN1031).

(c) The ESA does not require Federal agencies to seek FWS concurrence for NLAA determinations for proposed species or for NE determinations.

Tricolored Bat

Tricolored bats may occur in the action area's oak-hickory and oak-tulip forests in spring, summer, and fall (see Table 3-4). If present, these bats would occur rarely and in low numbers. In Section 4.8.1.1 of the 2020 FSEIS, the NRC staff evaluated potential impacts to the northern long-eared bat and the Indiana bat. Potential impacts include mortality or injury from collisions with nuclear power plant structures and vehicles; habitat loss, degradation, disturbance, or fragmentation, and associated effects; and behavioral changes resulting from refurbishment or other site activities all of which the NRC staff determined to be insignificant or discountable. These impacts, as well as the discussions of these impacts in the 2020 FSEIS, apply equally to the tricolored bat because this species has a similar life history, habitat requirements, and likelihood of occurrence in the action area. Therefore, for the same reasons that it made this conclusion regarding the northern long-eared bat and the Indiana bat in the 2020 FSEIS, the NRC staff concludes that Peach Bottom SLR may affect, but is not likely to adversely affect (NLAA), the tricolored bat.

The ESA does not require Federal agencies to seek concurrence on NLAA findings for proposed species. However, the FWS has made the Northern Long-eared Bat and Tricolored Bat Range-Wide Determination Key available to agencies in advance of the final rule concerning the tricolored bat listing. Accordingly, the NRC staff sought the FWS's concurrence under this Determination Key for Peach Bottom SLR. The FWS's concurrence is documented by letter dated November 22, 2024 (FWS 2024-TN11578).

Green Floater

The green floater does not occur in the action area (see Table 3-4). Therefore, Peach Bottom SLR would have no effect on the green floater.

Monarch Butterfly

The monarch butterfly may occur in the action area from late April to mid-October when individuals are moving between areas of more suitable habitat (see Table 3-4). If present, monarchs would occur occasionally and for short periods of time.

The FWS (FWS 2020-TN8593) identified three primary factors affecting the health of the two North American migratory populations of monarch butterfly: (1) habitat loss and degradation, (2) insecticide exposure, and (3) climate change effects.

Monarch habitat loss and degradation have resulted from conversion of grasslands to agriculture, widespread use of herbicides, urban development, drought, logging/thinning at overwintering sites in Mexico, senescence, and incompatible management of overwintering sites in California, (FWS 2020-TN8593). The applicant has not proposed any SLR-related refurbishment activities or SLR-related construction activities (CEG 2025-TN11574). Therefore, Peach Bottom SLR would not involve any new habitat loss, new land-disturbing activities, or any activities that would degrade existing natural areas or potential habitat for monarch butterflies. The continued preservation of existing natural areas on the Peach Bottom site would result in positive impacts on monarch butterflies.

Most insecticides are nonspecific and broad-spectrum in nature. Furthermore, the larvae of many Lepidopterans are considered major pest species, and insecticides are specifically tested on this taxon to ensure that they will effectively kill individuals at the labeled application rates (FWS 2020-TN8593). Although insecticide use is most often associated with agricultural production, any habitat where monarchs are found may be subject to insecticide use. Studies looking specifically at dose-response of monarchs to neonicotinoids, organophosphates, and pyrethroids have demonstrated toxicity in monarchs (e.g., Krischik et al. 2015-TN8596; James 2019-TN8595; Krishnan et al. 2020-TN8597; Bagar et al. 2020-TN8594). Larvae and pupae experience reduced survival rates, while adult monarchs are less affected. Moreover, the magnitude of risk posed by insecticides may be underestimated, as research usually examines the effects of the active ingredient alone, while many of the formulated products contain more than one active insecticide.

During the proposed SLR term, the NRC staff assumes that the applicant would continue to apply herbicides, as needed, according to labeled uses, but has no plans to apply herbicides in natural areas. Application would primarily be confined to industrial use and other developed portions of the site, such as perimeters of parking lots, roads, and walkways. Continued herbicide application could directly affect monarchs in the action area by injuring or killing individuals exposed to these chemicals. Certain herbicides, such as glyphosate (e.g., Round Up™), can kill milkweed, which can affect the ability of female monarchs to lay eggs because milkweed acts as host plants for monarch butterfly larvae. Monarchs are only likely to occur in the action area seasonally during spring and fall migration when individuals are moving between areas of more suitable habitat. Because of the low likelihood of monarchs to be exposed to hazardous levels of chemicals, this potential impact is insignificant because it is unlikely to reach the scale where a take might occur.

Because the current and projected monarch population numbers are low, both the eastern and western populations are more vulnerable to catastrophic events, such as extreme storms at the overwintering habitat, and other climate change-related phenomena. The FWS (FWS 2020-TN8593) anticipates that the eastern population will gain habitat in the northcentral region of North America as the species expands northward in response to increasing ambient

temperatures. The degree and rate at which this expansion occurs will depend on the simultaneous northward expansion of milkweed. In the southern region of the continent, the population will either experience no gain or some loss of habitat.

Contributions to climate change from normal operations at nuclear power plants can result from the release of greenhouse gases (GHGs) from stationary combustion sources, refrigeration systems, electrical transmission and distribution systems, and mobile sources. However, such emissions are typically very minor because nuclear power plants do not normally combust fossil fuels to generate electricity. During the SLR term, the contribution of Peach Bottom operations to climate change-related effects on monarch butterflies would be too small to be meaningfully measured, detected, or evaluated.

All potential effects on the monarch butterfly resulting from the proposed action of Peach Bottom SLR would be insignificant. Therefore, the NRC staff concludes that the proposed action may affect, but is not likely to adversely affect (NLAA), the monarch butterfly. The ESA does not require Federal agencies to seek concurrence on NLAA findings for proposed species. However, upon issuance of the draft supplement to the 2020 FSEIS, the NRC staff provided notice to the FWS of its determination regarding this species (NRC 2025-TN12180). On August 15, 2025, the FWS concurred with the NRC staff's findings for the monarch butterfly (FWS 2025-TN12282).

3.9 Historic and Cultural Resources

This section describes the potential historic and cultural resources impacts of the proposed action (Peach Bottom SLR).

Section 3.9 of the 2020 FSEIS (NRC 2020-TN7402) describes the historic and cultural resources of the Peach Bottom site and vicinity, and Section 4.9.1 evaluated the impacts of Peach Bottom SLR on historic and cultural resources. In the 2024 LR GEIS (NRC 2024-TN10161), the scope of this issue was updated to include consideration of the impacts on cultural resources that are not eligible for or listed in the National Register of Historic Places (NRHP) during license renewal environmental reviews. Table 3-2 identifies one plant-specific (Category 2) issue related to historic and cultural resources applicable to Peach Bottom SLR. The NRC staff's prior analysis in the 2020 FSEIS for this issue is updated as follows.

In summary, and as described in Section 4.9.1.1 of the 2020 FSEIS, the NHPA (TN4157) requires Federal agencies to consider the effects of their undertakings on historic properties. Issuing a subsequent renewed facility operating license to a nuclear power plant is an undertaking that could potentially affect historic properties. Historic properties are defined as resources included on, or eligible for inclusion on, the NRHP. The criteria for eligibility are listed in Title 36, "Parks, Forests, and Public Property," of the *Code of Federal Regulations* (36 CFR) 60.4, "Criteria for evaluation" (TN1682).

The historic preservation review process (NHPA Section 106) is outlined in regulations issued by the Advisory Council on Historic Preservation (ACHP) in 36 CFR Part 800, "Protection of Historic Properties" (TN513). In accordance with NHPA provisions, the NRC establishes the undertaking (Peach Bottom SLR), identifies the appropriate State or Tribal historic preservation officer, and initiates consultation with the appropriate officer. The NRC is required to make a reasonable effort to identify historic properties in the area of potential effect that are included in, or eligible for inclusion in, the NRHP. The area of potential effect for SLR includes the power plant site, the transmission lines up to the first substation, and immediate environs that may be

affected by the SLR decision and land disturbing activities associated with continued reactor operations during the SLR term. In addition, the NRC is required to notify the State historic preservation officer if historic properties would not be affected by license renewal or if no historic properties are present. In Pennsylvania, the Pennsylvania State Historic Preservation Office, a bureau within the Pennsylvania Historical and Museum Commission, administers the State's historic preservation program.

3.9.1 Consultation

In accordance with 36 CFR 800.8, "Coordination with the National Environmental Policy Act," on September 10, 2018, the NRC initiated NHPA Section 106 consultation by sending letters to the ACHP and the Pennsylvania State Historic Preservation Officer (SHPO) (36 CFR Part 800-TN513; NRC 2018-TN11587), as well as to 15 Federally recognized Indian Tribes (see Appendix C). In these letters, the NRC provided information about the proposed action, defined the area of potential effect, and indicated that the NRC would integrate its NHPA Section 106 review with its NEPA process, in accordance with 36 CFR 800.8(c) (TN513). The NRC invited participation in the identification of, and possible decisions concerning, historic properties and also invited participation in the scoping process. On October 3, 2018, the NRC staff and staff from the Pennsylvania State Historic Preservation Office participated in a historic and cultural resources tour of Peach Bottom with Exelon staff (NRC 2018-TN11588). The Pennsylvania SHPO subsequently stated in correspondence to the NRC that "[t]here may be historic buildings, structures, and/or archaeological resources located in or near the project. In our opinion, the activities described in your proposal should have no effects on these resources" (PSHPO 2018-TN11589).

In conjunction with the NRC's issuance of the draft supplement (NRC 2025-TN12181), the NRC reinitiated written consultation under NHPA Section 106 with the ACHP and the Pennsylvania SHPO by letter dated May 23, 2025. On May 28, 2025, the NRC also reinitiated consultation with 15 federally recognized Tribes.

On June 2, 2025, the Stockbridge-Munsee Community responded that the project area is outside of the Stockbridge-Munsee Community Traditional Homeland/Area of Interest, and thus, they had no comment on the project (Mohican Indians 2025-TN12183).

In its June 18, 2025, correspondence to the NRC, the Pennsylvania SHPO stated that there would be No Effect to above-ground historic properties and No Effect on archaeological resources (PSHPO 2025-TN12184). On July 7, 2025, the ACHP responded to the NRC that it had no comments on the project (ACHP 2025-TN12185).

3.9.2 Findings

As discussed in Section 3.9 of the 2020 FSEIS, cultural resource surveys have not been conducted within the Peach Bottom site. However, in 1972, a field archaeologist noted that archaeological resources that may have been present along the floodplain and terraces were flooded by backwaters of the Conowingo Pond, and construction of Peach Bottom Units 1, 2, and 3 likely disturbed any historic and archaeological resources that may have been located within the site footprint. The applicant stated in its ER that no known archaeological resources were disturbed during the construction of Peach Bottom (Exelon 2018-TN11707). In April 2024, the applicant commissioned a review of Pennsylvania's Historic & Archaeological Resource Exchange Geographic Information Systems database. No new cultural resources

studies or archaeological or historic sites were recorded within the 769 ac (311 ha) Peach Bottom site (CEG 2025-TN11574).

Peach Bottom Unit 1 has not been evaluated for eligibility for listing in the NRHP. Given the age of Peach Bottom Unit 1 (older than 50 years) and its design, development, and operation, as well as the consortium of utilities involved, it is potentially eligible for listing in the NRHP under Criterion a (association with significant events in history) or Criterion c (embodiment of distinctive characteristics of type, period, or construction). Similarly, Peach Bottom Units 2 and 3 have not been evaluated for eligibility for listing in the NRHP. Peach Bottom Unit 1 remains in a SAFSTOR (safe storage) condition awaiting final decommissioning. After the permanent shutdown of Peach Bottom Units 2 and 3 (following the proposed SLR term), the applicant would be required to review the potential impacts of decommissioning on historic resources as part of the preparation and submission to the NRC of a post-shutdown decommissioning activities report in accordance with 10 CFR 50.82 (TN249). In addition, 10 CFR 50.82(a)(6) (TN249) states that power reactor licensees in decommissioning shall not perform any decommissioning activities that, among other things, result in significant environmental impact not previously reviewed. Adverse impacts, such as some alterations to or demolition of structures eligible for listing on the NRHP could be considered an unreviewed significant environmental impact pursuant to 10 CFR 50.82(a)(6) (TN249).

If a licensee plans to conduct an activity at a decommissioning power reactor that would cause significant environmental impacts not previously reviewed, as described under 10 CFR 50.82(a)(6) (TN249), then prior to undertaking that activity (e.g., alterations to or demolition of NRHP-eligible or historically significant structures), the licensee must either submit a licensing action, such as a request for an amendment, that would request review of major decommissioning activities that would diminish the historic integrity (e.g., physical demolition) of buildings previously deemed eligible for the NRHP; decide not to perform the proposed activity; or modify the proposed activity so that the unreviewed significant environmental impact does not occur. As such, before commencing decommissioning activities that would dismantle potentially significant historic resources at the site, such as Peach Bottom Unit 1, the applicant would take steps in accordance with company procedures and applicable regulations to ensure that it conducts appropriate consultations with the Pennsylvania State Historic Preservation Office.

The applicant stated that Peach Bottom operations and maintenance activities during the SLR term are expected to be similar to current operations. The applicant has not proposed any SLR-related refurbishment activities or SLR-related construction activities at Peach Bottom (CEG 2024-TN11573). Excavation work associated with site construction projects completed since 2019, including the installation of a new sewage treatment plant and the replacement of underground power transmission cables associated with Peach Bottom Unit 3, was largely confined to previously disturbed areas on the site. The applicant obtained required permits from the PADEP and local township (CEG 2025-TN11574). The applicant had identified the possible need for a third independent spent fuel storage installation (ISFSI) pad beyond 2034. The applicant stated that the site selection process would follow plant environmental procedures, including those that outline the requirements for cultural, historic, and paleontological resource evaluation. In addition, the applicant continues to maintain plant procedures to protect previously unidentified historic and cultural resources at Peach Bottom (CEG 2024-TN11573).

Based on the above, and consistent with its conclusion in the 2020 FSEIS, the NRC staff concludes that Peach Bottom SLR would not adversely affect any known historic properties or historic and cultural resources.

3.10 Socioeconomics

This section describes the potential socioeconomic impacts of the proposed action (Peach Bottom SLR).

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic socioeconomic issues, the impacts of nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusion in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574).

Section 3.10 of the 2020 FSEIS (NRC 2020-TN7402) describes the socioeconomic conditions near the Peach Bottom site, and Section 4.10.1 evaluated the socioeconomic impacts of Peach Bottom SLR. As stated in the 2020 FSEIS, the socioeconomic effects of ongoing reactor operations at Peach Bottom have become well established as regional socioeconomic conditions have adjusted to the presence of the nuclear power plant. The applicant has no plans to conduct any refurbishment at Peach Bottom or make any substantial changes or upgrades to plant systems, which would require additional workers (CEG 2024-TN11573). Therefore, no appreciable workforce changes at Peach Bottom are expected, and the NRC staff does not anticipate changes in housing demand or traffic volumes as a result of Peach Bottom SLR.

The applicant continues to provide tax revenue to local jurisdictions and school districts in association with the continued operation of Peach Bottom. In 2020, the applicant made payments to the following entities: York County ($201,209); South Eastern School District ($729,339); Peach Bottom Township ($15,406); Red Lion Area School District ($29,506); and Lower Chanceford Township ($1,457). In 2024, these payments were as follows: York County ($546,277); South Eastern School District ($2,456,835); Peach Bottom Township ($93,489); Red Lion Area School District ($30,805); and Lower Chanceford Township ($1,589). Changes between 2020 and 2024 primarily reflect a new payment after taxes agreement that the applicant executed, which covers 2024–2032 and involves retroactive payments to the taxing jurisdictions for years 2022–2023 and 2023–2024 (CEG 2025-TN11574). These payments would be expected to have an overall stabilizing effect on socioeconomic conditions, including community services and public education, in the communities around the nuclear power plant. Other impacts associated with Peach Bottom continued operations during the SLR term could include changes in housing demand and associated traffic volume. However, the NRC staff would not expect these effects to be noticeable during the SLR term above and beyond what is already being experienced.

Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on socioeconomics would be SMALL. There are no Category 2 socioeconomics issues (see Table 3-2).

3.11 Human Health

This section describes the potential human health impacts of the proposed action (Peach Bottom SLR).

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for generic human health issues, the impacts of

nuclear power plant license renewal and continued operations and refurbishment would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS related to these issues. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573**,** CEG 2025-TN11574).

Section 3.11 of the 2020 FSEIS (NRC 2020-TN7402) describes the human health issues associated with Peach Bottom operations, and Section 4.11.1 evaluated the human health impacts of Peach Bottom SLR. These issues include radiation exposures to plant workers and the public, chemical hazards, and physical occupational hazards.

During its supplemental environmental review, the NRC staff did not identify any new and significant information that would change the conclusions in the 2020 FSEIS for these issues. For example, the staff reviewed effluent and annual environmental monitoring reports for Peach Bottom to identify any trends since the 2020 FSEIS was published (NRC 2024-TN11590). The NRC staff compared the data against NRC dose limits and looked for indications of adverse trends (i.e., increasing dose levels or increasing radioactivity levels). The NRC staff observed no such adverse trends.

The applicant confirmed that it continues to maintain procedures at Peach Bottom for protecting personnel from microbiological hazards and updates its occupational and safety programs on an as-needed basis (CEG 2025-TN11574). Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on human health would be SMALL. The Category 1 issues of design-basis accidents and severe accidents are discussed in Section 3.11.4 below.

In Table 3-2, the NRC staff identifies one uncategorized issue and two Category 2 issues related to human health applicable to Peach Bottom during the SLR term. These issues are analyzed below.

3.11.1 Uncategorized Issue: Electromagnetic Fields (EMFs)

As presented in Section 4.9.1.1.4 of the 2024 LR GEIS (NRC 2024-TN10161), the renamed issue "Electromagnetic fields (EMFs)" is a clarification of the issue "Chronic effects of electromagnetic fields (EMFs)" in the 2013 LR GEIS because this issue concerns effects beyond just those that might be chronic in nature. Nuclear power plants use power transmission systems that consist of switching stations (or substations) located on the plant site and transmission lines located primarily offsite that connect the power plant to the regional electric grid. Electric fields and magnetic fields, collectively referred to as EMFs, are produced by any electrical equipment, including operating transmission lines. During the SLR term, plant workers and members of the public who live, work, or pass near an associated operating transmission line may be exposed to EMFs in the same way that they are exposed during the current license term.

Section 4.11.1.1 of the 2020 FSEIS evaluated the impacts of Peach Bottom SLR regarding EMF effects. The NRC staff's prior analysis is updated here.

During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for this issue. Specifically, the potential for health effects from EMFs continues to be studied and is not known at this time. The National Institute of Environmental Health Sciences (NIEHS)

directs related research through the U.S. Department of Energy. The report by the NIEHS, "NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields" (NIEHS 1999-TN78), states:

> The NIEHS concludes that ELF-EMF [extremely low frequency electromagnetic field] exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern.

This statement was not sufficient to cause the NRC to change its position with respect to the health effects of EMFs. The NRC staff finds that the 2024 LR GEIS finding of "UNCERTAIN" remains appropriate for Peach Bottom SLR. The NRC staff will continue to follow developments on this issue.

3.11.2 Category 2 Issue: Electric Shock Hazards

In-scope transmission lines are those lines that connect the nuclear power plant to the first substation of the regional electric grid. This substation is frequently, but not always, located on the plant property. The greatest hazard from a transmission line is direct contact with the conductors. Tower designs preclude direct access to the conductors. However, electrical contact can be made without physical contact between a grounded object and the conductor. A person who contacts such an object could receive a shock and experience a painful sensation at the point of contact. The intensity of the shock would depend on the EMF strength, size of the object, and how well the object and person were insulated from ground. The Commission found that electric shock resulting from direct access to energized conductors or from induced charges in metallic structures has not been identified to be a problem at most operating nuclear power plants and generally is not expected to be a problem during the SLR term. However, a plant-specific review is required to determine the significance of the electric shock potential along the portions of the transmission lines that are within the scope of the Peach Bottom SLR review.

Section 4.11.1.2 of the 2020 FSEIS evaluated the impacts of Peach Bottom SLR regarding electric shock hazards. The NRC staff's prior analysis is updated here.

As part of its supplemental environmental review, the NRC staff considered additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574). The applicant provided that there have been no additions or removals of in-scope electrical lines or voltage changes since the applicant's submittal of the ER in 2018 (CEG 2024-TN11573). During its supplemental environmental review, the NRC staff found that a portion of a publicly accessible historical trail (Mason-Dixon Trail) crosses underneath the Peach Bottom Unit 3 500 kilovolt and Nottingham-Cooper 220 kilovolt in-scope transmission lines (CEG 2025-TN11574). These in-scope transmission lines are described in Section 3.11.4 of the 2020 FSEIS. Nonetheless, the applicant ensures that Peach Bottom's in-scope transmission lines satisfy National Electrical Safety Code standards through adherence to station electrical safety procedures. Further, the applicant updates Peach Bottom's occupational and electrical safety programs, as needed, based on applicable regulatory changes and industry and applicant fleet

operational changes (CEG 2025-TN11574). Therefore, the NRC staff concludes that the potential impacts from acute electric shock associated with Peach Bottom SLR would be SMALL.

3.11.3 Category 2 Issue: Microbiological Hazards to the Public

As presented in Section 4.9.1.1.3 of the 2024 LR GEIS (NRC 2024-TN10161), the renamed issue "Microbiological hazards to the public" is an expansion of the issue "Microbiological hazards to the public (plants with cooling ponds or canals or cooling towers that discharge to a river)" in the 2013 LR GEIS because this issue is a concern wherever receiving waters are accessible to the public. Specifically, members of the public could be exposed to microorganisms in thermal effluents at nuclear power plants that use cooling ponds, lakes, canals, or that discharge to publicly accessible surface waters. As described in Section 3.9.2.2 of the 2024 LR GEIS, the microorganisms of concern under this issue include enteric pathogens (bacteria that typically exist in the intestines of animals and humans), thermophilic fungi and bacteria, free-living amoebae, and organisms that produce toxins that affect human health (e.g., certain dinoflagellates and cyanobacteria [also called blue-green algae]).

Section 4.11.1.3 of the 2020 FSEIS evaluated the impacts of Peach Bottom SLR regarding microbiological hazards to the public. The NRC staff's prior analysis is updated here.

As part of its supplemental environmental review, the NRC staff considered additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574). According to the National Outbreak Reporting System, which is current through 2021, there have been no reported incidences of waterborne disease associated with untreated recreational water in Pennsylvania (CDC 2021-TN11591). The Pennsylvania Department of Health maintains a program for monitoring harmful algal blooms and reports blooms through an online Harmful Algal Bloom Dashboard. There have been no algal blooms reported for the Susquehanna River or Conowingo Pond or in the vicinity of Peach Bottom since 2018 (PADH 2025-TN11592).

Peach Bottom continuously discharges thermal effluent to the Susquehanna River, creating a thermal plume with temperatures elevated above 90°F (32.2°C) that is generally limited to a small swath of shoreline along the west shore that extends approximately 2,100 feet (640 meters) from the discharge canal outlet. This area is accessible to the public and may be accessed by boat. Peach Bottom implemented a Measurement Uncertainty Recapture uprate in mid-January 2018. Water temperature monitoring from 2018–2020 indicates that this uprate resulted in an increase in water temperature within the thermal plume of up to 0.4°F (0.2°C), consistent with predictions (CEG 2024-TN11573). However, as indicated in Section 4.11.1.3 of the 2020 FSEIS, while thermal discharge during the summer could be within the range of optimal growth of some thermophilic organisms, the size of the thermal plume is relatively small compared to the width and depth of the Susquehanna River. In addition, the thermal effluent quickly dissipates given the operational design of the discharge diffuser.

Legionellosis outbreaks are often associated with complex water system housing inside buildings or structures, such as cooling towers. Peach Bottom uses cooling towers (see Section 3.5.1 of this supplement to the 2020 FSEIS) as part of its cooling water system during the warmer months. The applicant provided that the extended use of the cooling towers and the initiation of that use based on temperature and flow conditions would not be expected to alter the public exposure to aerosolized *Legionella* (CEG 2024-TN11573). As indicated in the 2020 FSEIS, the NRC staff continues to find that public exposure to aerosolized *Legionella* is unlikely because such exposure would be confined to a small area of the site where public access is restricted.

In addition, with respect to hazards to plant personnel from microorganisms within the scope of this issue, the applicant has procedures in place at Peach Bottom for personnel protection, including corporate procedures for *Legionella* monitoring, a Respiratory Protection Program, and the Selection of Respiratory Protection for Non-Radiological Use (CEG 2025-TN11574).

Based on the above and as evaluated as part of its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for this issue. Therefore, the NRC staff concludes that the effects of microbiological hazards on the public associated with Peach Bottom SLR would be SMALL.

3.11.4 Environmental Consequences of Postulated Accidents

Both the 2013 LR GEIS and the 2024 LR GEIS (NRC 2013-TN2654, NRC 2024-TN10161) evaluate the following two classes of postulated accidents as they relate to license renewal:

- Design-basis accidents: Postulated accidents that a nuclear facility must be designed and built to withstand without loss to the systems, structures, and components necessary to ensure public health and safety
- Severe accidents: Postulated accidents that are more severe than design-basis accidents because they could result in substantial damage to the reactor core

As shown in Table 3-1, the 2024 LR GEIS (NRC 2024-TN10161) addresses design-basis accidents as a Category 1 issue and concludes that the environmental impacts of design-basis accidents are of SMALL significance for all nuclear power plants. Neither the applicant nor the NRC staff identified any new and significant information for Peach Bottom related to design-basis accidents. This included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574).

The 2024 LR GEIS, which supports the updated list of environmental issues and associated environmental impact findings in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253) for both initial license renewals and one term of SLR, reclassified the issue of "Severe accidents" from Category 2 in the 2013 LR GEIS to Category 1 (89 FR 64166-TN10321). Based on new information, the NRC determined in 10 CFR Part 51 (TN10253) that for all nuclear power plants, the environmental impacts of severe accidents associated with initial license renewal and one term of SLR are SMALL. Specifically, 10 CFR Part 51 states:

> The probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are SMALL for all plants. Severe accident mitigation alternatives do not warrant further plant-specific analysis because the demonstrated reductions in population dose risk and continued severe accident regulatory improvements substantially reduce the likelihood of finding cost-effective significant plant improvements.

As described in Section 4.11.1.4 of the 2020 FSEIS (NRC 2020-TN7402), the ER submitted in 2001 as part of the Peach Bottom initial license renewal application included an analysis of severe accident mitigation alternatives (SAMAs) for Peach Bottom Units 2 and 3 (Exelon 2001-TN11596). During its review of the Peach Bottom initial license renewal application, the NRC staff performed a site-specific analysis of SAMAs for Peach Bottom and documented its review in a 2003 supplement to the LR GEIS (NRC 2003-TN3685). Because the NRC staff had previously considered SAMAs for Peach Bottom Units 2 and 3, any subsequent Peach Bottom license renewal application was not required to consider SAMAs (10 CFR 51.53(c)(3)(ii)(L) [TN10253]).

Further, in support of its SLR application, the applicant evaluated areas of new information that could change the probability-weighted consequences of postulated severe accidents or that could indicate that a given potentially cost-beneficial SAMA would substantially reduce either the consequences of or the probability of occurrence (risk) of a severe accident. The NRC staff evaluated this new information pertaining to SAMAs in Appendix E of the 2020 FSEIS.

After the NRC's issuance of the 2024 LR GEIS (NRC 2024-TN10161) and the revised findings in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253), the applicant performed an evaluation for potential new and significant information for Category 1 issues, including for the now-Category 1 severe accidents issue. The applicant did not identify any new and significant information regarding Category 1 issues and determined that the generic conclusions in the 2024 LR GEIS are appropriate for Peach Bottom SLR (CEG 2024-TN11573).

The 2024 LR GEIS (NRC 2024-TN10161) addresses design-basis accidents and severe accidents as Category 1 issues and concludes that the environmental impacts of design-basis accidents and severe accidents related to nuclear power plant license renewal are of SMALL significance for all nuclear power plants. To date, the NRC staff has not identified any new and significant information related to design-basis accidents during its independent review of the 2001 Peach Bottom license renewal ER, through the scoping process, during the NRC staff's environmental audits, or in its evaluation of other available information (generic and plant-specific). This included consideration of additional, updated information provided by the applicant (CEG 2025-TN11574). Therefore, the NRC staff concludes there is no information on the environmental impacts of design-basis accidents related to Peach Bottom SLR that is new and significant as compared to that already discussed in the SEIS for initial license renewal (NRC 2003-TN3685) or generically evaluated for all nuclear power plants in the 2024 LR GEIS. Therefore, the NRC staff concludes that the environmental impacts of design-basis accidents related to Peach Bottom SLR would be SMALL.

With respect to severe accidents, Peach Bottom was specifically included in the plants evaluated in the 2024 LR GEIS. Peach Bottom values (i.e., population dose risk and core damage frequency) were presented in 2024 LR GEIS Tables E.3-1, E.3-10, and E.3-11. As provided in Table E.3-1 of the 2024 LR GEIS, the 15 person-rem/reactor year calculated in the 2003 Peach Bottom SAMA analysis is three orders of magnitude lower than the 1996 LR GEIS (NRC 1996-TN288) estimate of the Peach Bottom population dose risk value of 2,950 person-rem/reactor year. Additional information regarding the Peach Bottom source term and state-of-the-art reactor consequence analysis is provided in 2024 LR GEIS Tables E.3-13, E.3-24, and E.3-25.

To date, the NRC staff has not identified any new and significant information related to severe accidents during its independent review of the 2001 Peach Bottom ER, through the scoping process, during the NRC staff's environmental audits, or in its evaluation of other available information that would significantly increase the environmental impact associated with severe accidents above those values previously projected in the 1996 LR GEIS (NRC 1996-TN288). Therefore, the aggregate effect of new Peach Bottom SLR information is consistent with the expectations of the 2013 LR GEIS (NRC 2013-TN2654) and the 2024 LR GEIS (NRC 2024-TN10161) that the probability-weighted consequences of severe accidents for Peach Bottom are bounded by the 1996 LR GEIS estimates. This reflects a substantial decrease in risk associated with a better understanding of new information and the Peach Bottom probabilistic risk assessments. The NRC staff conclusion is that the overall impact of new and significant information since initial license renewal on the environmental impacts of severe accidents at Peach Bottom continues to be well below the impact previously evaluated in the 1996 LR GEIS.

Thus, the conclusion in the 1996, 2013, and 2024 LR GEISs that "the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are SMALL" continues for Peach Bottom during the SLR term.

As part of its initial license renewal application submitted in 2001, the applicant included a SAMA analysis for Peach Bottom (Exelon 2001-TN11596), and the NRC staff documented its analysis of SAMAs in its SEIS for Peach Bottom initial license (NRC 2003-TN3685). Because the NRC staff had previously considered SAMAs for Peach Bottom, the applicant was not required to perform another SAMA analysis for its SLR application (10 CFR 51.53(c)(3)(ii)(L)) (TN10253). In response to an NRC staff request for confirmation of information, the applicant confirmed that SAMAs were evaluated using the NEI 17-04, Revision 1, "Model SLR New and Significant Assessment Approach for SAMA" (NEI 2019-TN6815), methodology and that no new and significant SAMAs were found. The NRC staff notes that the decrease in the core damage frequency values since the SLR submittal leads to the same conclusion. NEI 17-04 is endorsed in NRC Regulatory Guide 4.2, Supplement 1, Revision 2 (NRC 2024-TN10280). In its additional information submittal (CEG 2024-TN11573) and responses to NRC staff requests for confirmation of information (CEG 2025-TN11574), the applicant confirmed, and the NRC staff verified, that there was no new and significant information that would change any of the SAMA conclusions. Specifically, the NRC staff reviewed the applicant's information process for Peach Bottom as part of its supplemental environmental audit and did not find any new and significant SAMAs.

Based on the above and as evaluated as part of its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these issues. Thus, as concluded in the 2024 LR GEIS for these Category 1 (generic) issues, the impacts of postulated accidents related to Peach Bottom SLR would be SMALL.

3.12 Waste Management

This section describes the potential waste management impacts of the proposed action (Peach Bottom SLR).

As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS for the generic issues related to waste management, the impacts of nuclear power plant license renewal and continued operations and refurbishment related to waste management would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusions in the 2024 LR GEIS related to waste management. This review included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574).

Sections 3.1.4, 3.1.5, and 3.13 of the 2020 FSEIS (NRC 2020-TN7402) describe the waste management issues and infrastructure associated with Peach Bottom operations, and Section 4.13.1 evaluated the waste management impacts of Peach Bottom SLR. During its supplemental environmental review, the NRC staff reviewed effluent and annual environmental monitoring reports for Peach Bottom to identify any trends since the 2020 FSEIS was published (NRC 2024-TN11590). The NRC staff compared the data against NRC dose limits and looked for indications of adverse trends (i.e., increasing dose levels or increasing radioactivity levels). The NRC staff observed no adverse trends in the dose levels.

Unplanned abnormal releases containing radioactive material have occurred in recent years, but they are monitored, reported, and fall within Federal release limits and guidelines. There was one gaseous abnormal release of tritium from the auxiliary boiler in 2023 and one in 2024. The applicant has since replaced the valves that were suspected to be the cause, and the applicant expects that the source of the leak has now been repaired. The applicant will continue with increased monitoring until sufficient evidence is obtained to conclude that the leak that caused the abnormal gaseous releases has been corrected. The impact from these releases was captured in a gaseous release permit and was below regulatory limits (CEG 2025-TN11574). Abnormal (inadvertent) radioactive liquid releases are discussed in Section 3.5.2, "Radionuclides Released to Groundwater," of this supplement to the 2020 FSEIS.

In Section 3.1.4.4 of the 2020 FSEIS, the NRC staff stated that the applicant was expanding its ISFSI with the addition of a second pad, which was completed in 2019. The NRC staff also stated that an additional ISFSI pad might be needed beyond 2034 if the U.S. Department of Energy had not begun taking possession of commercial spent fuel by that time. Based on the latest information provided by the applicant, the current ISFSI pads do not have adequate storage to accommodate spent fuel beyond 2034, when a third ISFSI pad would be needed. When expansion is required, construction would likely occur to the north of the existing pads, which is previously disturbed land near the existing ISFSI, and this would not be expected to have any significant environmental impacts. Should the applicant need to go forward with the third ISFSI pad, it would conduct a siting study to identify candidate sites within the Peach Bottom site licensed by the NRC (the host area required by 10 CFR 72.106 [TN4884] for an ISFSI general license under 10 CFR 72.210). The site selection process would consider regulations for, and commitments to, the protection of endangered species, wetlands, and archaeological findings (CEG 2024-TN11573).

Finally, the applicant does not have any planned changes or upgrades to the low-level waste program or to the nonradiological waste program at Peach Bottom during the proposed SLR term (CEG 2025-TN11574). Thus, as concluded in the LR GEIS for these Category 1 (generic) issues, the impacts of Peach Bottom SLR on waste management would be SMALL. There are no Category 2 waste management issues (see Table 3-2).

3.13 Impacts Common to All Alternatives

In Section 4.15 of the 2020 FSEIS (NRC 2020-TN7402), the NRC staff described the impacts that the NRC staff considers common to all alternatives, including the proposed action (Peach Bottom SLR) and replacement power alternatives. The continued operation of a nuclear power plant and replacement fossil fuel power plants both involve mining, processing, and the consumption of fuel that result in comparable impacts. In addition, the following sections discuss termination of operations and the decommissioning of both a nuclear power plant and replacement fossil fuel power plants. The NRC staff's prior analysis is summarized, incorporated, and updated in the following sections.

3.13.1 Fuel Cycle

This section describes the environmental impacts associated with the fuel cycles of both the proposed action (Peach Bottom SLR) and all replacement power alternatives.

3.13.1.1 Uranium Fuel Cycle

The uranium fuel cycle includes uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials, and management of low-level wastes and high-level wastes related to uranium fuel cycle activities. The 2024 LR GEIS (NRC 2024-TN10161) presents the current conditions of the uranium fuel cycle and describes in detail the generic potential impacts of the radiological and nonradiological environmental impacts of the uranium fuel cycle and transportation of nuclear fuel and wastes. The NRC staff relies upon and incorporates by reference herein the analysis presented in Section 4.14.1 of the 2024 LR GEIS (NRC 2024-TN10161: 4-150–4-164).

As stated in the LR GEISs (NRC 1996-TN288, NRC 2013-TN2654, NRC 2024-TN10161), the generic issues related to the uranium fuel cycle, as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS, would not be affected by continued operations and refurbishment associated with Peach Bottom SLR. The NRC staff's review did not identify any new and significant information that would change the conclusions in the LR GEIS related to uranium fuel cycle. This included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574). Thus, as concluded in the LR GEIS for these Category 1 (generic) issues, the environmental impacts of Peach Bottom SLR associated with the uranium fuel cycle would be SMALL. There are no Category 2 uranium fuel cycle issues (see Table 3-2).

3.13.1.2 Replacement Power Plant Fuel Cycles

Most replacement energy alternatives employ, to varying degrees, a set of steps in the utilization of their fuel sources. These steps may include extraction, transformation, transportation, combustion, storage, and disposal and result in associated environmental impacts. The 2024 LR GEIS (NRC 2024-TN10161) provides an updated discussion of the fuel cycle impacts for replacement energy alternatives, including new nuclear, fossil fuel, and renewable energy technologies. The NRC staff relies upon and incorporates by reference herein the analysis presented in Appendix D, Section D.4.12 of the 2024 LR GEIS (NRC 2024-TN10161: D-41–D-44).

3.13.2 Terminating Power Plant Operations and Decommissioning

All operating power plants will terminate operations and be decommissioned at some point after the end of their operating life or after a decision is made to cease operations. The proposed action (Peach Bottom SLR) would delay this eventuality for Peach Bottom for an additional 20 years.

3.13.2.1 Existing Nuclear Power Plant

Decommissioning would occur whether Peach Bottom is shut down at the end of its current renewed license term or at the end of the SLR term. NUREG-0586, Supplement 1, "*Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Regarding the Decommissioning of Nuclear Power Reactors*" (Decommissioning GEIS), evaluates the environmental impacts from the activities associated with the decommissioning of any power reactor before or at the end of an initial or renewed license (NRC 2002-TN665). Section 4.14.2.1 of the 2024 LR GEIS (NRC 2024-TN10161) summarizes the incremental environmental impacts associated with nuclear power plant decommissioning activities after initial license renewal or one term of SLR.

As cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS, there is one generic issue, "Termination of plant operations and decommissioning," applicable to Peach Bottom SLR. License renewal is expected to have a negligible effect on the impacts of terminating operations and decommissioning on all resources. Thus, the impacts are projected to be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change this conclusion in the 2024 LR GEIS. This included consideration of additional information provided by the applicant (CEG 2024-TN11573, CEG 2025-TN11574**)**. Thus, as concluded in the 2024 LR GEIS, the environmental impacts of Peach Bottom SLR related to the termination of plant operations and decommissioning would be SMALL.

3.13.2.2 Replacement Power Plants

Fossil Fuel Energy Alternatives

All electrical power-generating facilities will be shut down and decommissioned after the end of their operating life or after a decision is made to terminate their operations. The termination of operations and decommissioning of power-generating plants using alternative energy sources would result in associated environmental impacts. Some of these impacts would be specific to the alternative energy source employed, while others are anticipated to be common across all technologies. The 2024 LR GEIS provides an updated discussion of the environmental impacts from the termination of power plant operations and decommissioning of replacement energy alternatives, including new nuclear, fossil fuel, and renewable energy technologies. The NRC staff relies upon and incorporates by reference herein the information in Appendix D, Section D.4.13 of the 2024 LR GEIS (NRC 2024-TN10161: D-44–D-46).

3.14 Greenhouse Gas Emissions and Climate Change

This section discusses GHG emissions from the proposed action (Peach Bottom SLR) and alternatives to the proposed action and the potential climate change impacts on environmental resources. In Sections 4.15.3 and 4.16 of the 2020 FSEIS (NRC 2020-TN7402), the NRC staff evaluated GHG emissions and climate change impacts associated with Peach Bottom SLR and replacement power alternatives, as well as observed changes in climate change indicators. The NRC staff's prior analysis is summarized, incorporated, and updated in the sections below.

3.14.1 Proposed Action

The effects of the proposed action (Peach Bottom SLR) on climate change can be evaluated by quantifying the proposed action's GHG emissions. Therefore, the contribution to GHG emissions over the SLR term serves as a proxy in assessing the impact from SLR on climate change. Changes in climate have broader implications for environmental resources (e.g., water resources, air quality, and ecosystems). For instance, changes in precipitation patterns and increases in air temperature can affect water availability and quality. As a consequence, climate change can have overlapping impacts on environmental resources by inducing changes in resource conditions that can also be affected by the proposed action (Peach Bottom SLR).

Based on these considerations, the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule amending the findings in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253) added two issues (see Table 3-1 and Table 3-2 in this supplement to the 2020 FSEIS):

- Greenhouse gas impacts on climate change (Category 1) (see Section 3.14.1.1 below)
- Climate change impacts on environmental resources (Category 2) (see Section 3.14.1.2 below)

At the time of the publication of the 2020 FSEIS, the NRC staff had not categorized the issues of GHG emissions impacts on climate change and climate change impacts on environmental resources as individual Category 1 or Category 2 issues, and the staff's prior analysis presented in Section 4.15.3 of the 2020 FSEIS (NRC 2020-TN7402) did not explicitly encompass the scope of each issue as it is now presented in the 2024 LR GEIS and codified in Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 (TN10253). Although the NRC staff's consideration of climate change impacts on certain environmental resource conditions was included under the cumulative effects analysis presented in Section 4.16 of the 2020 FSEIS (see Section 3.15 of this supplement to the 2020 FSEIS), it is now considered here (see Section 3.14.1.2). Additionally, while the NRC staff did consider GHG emissions from the proposed action and replacement power alternatives, the staff did not assign an impact significance level (i.e., SMALL, MODERATE, or LARGE) to this aspect of the proposed action and replacement power alternatives. Therefore, the NRC staff has now assigned a significance level for alternatives as presented in Sections 3.14.2 through 3.14.6 in this supplement to the 2020 FSEIS.

3.14.1.1 Greenhouse Gas Impacts on Climate Change

As indicated in Section 3.14.1 above, the new Category 1 issue "Greenhouse gas impacts on climate change" considers the contribution of GHG emissions from nuclear power plant operations during the proposed initial license renewal or one term of SLR on climate change. As described in the 2024 LR GEIS (NRC 2024-TN10161) and as cited in Section 3.1 and Table 3-1 of this supplement to the 2020 FSEIS, GHG impacts on climate change from nuclear power plant license renewal would be SMALL. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant information that would change the conclusion in the 2024 LR GEIS. This review included consideration of additional information provided by the applicant (CEG 2025-TN11574, CEG 2024-TN11573). The following updates the NRC staff's prior analysis of GHG emissions presented in Section 4.15.3.1 of the 2020 FSEIS.

The Pennsylvania Climate Change Act of 2008 (PA P.L. 935-TN11634) requires the PADEP to compile an annual GHG inventory for Pennsylvania and to develop a climate action plan. In 2021, gross GHG emissions in Pennsylvania were approximately 284 million tons (258 million metric tons [MMT]) of carbon dioxide equivalents (PADEP 2024-TN11635). The industrial, electricity production, and transportation sectors were the largest contributors to Pennsylvania's gross emissions; electricity production accounted for approximately 30 percent of gross GHG emissions (PADEP 2024-TN11635). Pennsylvania's Climate Action Plan (PADEP 2021-TN11636) identifies strategies to achieve Pennsylvania's goal to reduce GHG emissions by 80 percent (relative to 2005) as set forth in Pennsylvania's Executive Order 2019-01 (COP 2019-TN11735).

Table 4-14 of the 2020 FSEIS presents direct and indirect quantified annual GHG emission sources at Peach Bottom. Direct GHG emissions presented in Table 4-14 of the 2020 FSEIS accounted for onsite combustion sources operating at their maximum allowable fuel usage and hours. Indirect GHG emissions presented in Table 4-14 of the 2020 FSEIS accounted for workforce commuting. Table 3-6 presents updated GHG emissions from direct and indirect sources associated with the operations of Peach Bottom for 2018–2023. Direct GHG emissions

account for combustion sources listed in Peach Bottom's air permit, fire suppression equipment that uses carbon dioxide, carbon dioxide released during purging the main generator, sulfur hexafluoride fugitive emissions from a breaker, and fluorinated gas emissions from refrigerant sources. Indirect GHG emissions include electricity used by Peach Bottom and commuting activities of Peach Bottom's workforce.

Table 3-6 Estimated Greenhouse Gas Emissions from Operations of Peach Bottom Atomic Power Station

Source	2018	2019	2020	2021	2022	2023
Direct Emissions (tons)[(a)]	7,394	6,955	4,205	3,807	5,817	3,064
Indirect Emissions-Purchased Electricity[(b)] (tons)	629	667	640	586	614	659
Indirect Emissions-Workforce Commuting[(c)] (tons)	4,343	4,343	4,343	4,343	4,343	4,343
Total (tons)	12,367	11,964	9,188	8,737	10,774	8,066

(a) Direct emissions account for combustion sources listed in Peach Bottom's air permit, fire suppression equipment that uses carbon dioxide, carbon dioxide released during purging the main generator, sulfur hexafluoride fugitive emissions from a breaker, and fluorinated gas emissions from refrigerant sources. Combustion source greenhouse gas emissions are based on fuel usage and EPA's 2023 Emission Factor for GHG inventories (EPA 2023-TN11637).
(b) Emissions estimated based on electricity purchased and sourced from the electrical grid mix of electrical generation found in Peach Bottom's subregion.
(c) Based on a full-time workforce of 919 employees and U.S. Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator (EPA 2024-TN10062).

Source: CEG 2025-TN11574. All reported values are rounded up. Direct and indirect emissions from purchased electricity in CEG 2025-TN11574 were provided in metric tons and converted and are presented here as tons. To convert to metric tons, multiply by 0.907.

In comparing total emissions in Table 3-6 to those in Table 4-14 of the 2020 FSEIS, emissions are similar in magnitude. The NRC staff has not identified any other new or differing information that would warrant revision of the description of GHG emissions from the proposed action in Section 4.15.3.1 of the 2020 FSEIS. Based on its review of GHG emissions in the 2020 FSEIS and on its review of the above additional information, the NRC staff concludes that there would be no impacts on climate change beyond the impacts discussed in the 2024 LR GEIS. Thus, as concluded in the 2024 LR GEIS for this Category 1 (generic) issue, the GHG impacts on climate change from Peach Bottom SLR would be SMALL.

3.14.1.2 Climate Change Impacts on Environmental Resources

The new Category 2 issue of "Climate change impacts on environmental resources" considers the effects of climate change on environmental resources that may also be directly affected by continued operations and refurbishment during the LR term. In the 2020 FSEIS (NRC 2020-TN7402), the NRC staff considered observed trends in climate change (Section 4.15.3.2), climate change projections (Section 4.15.3.2), and climate change impacts on resource areas that could be incrementally affected by the proposed action as part of its cumulative effects analysis (Sections 4.16.1 through 4.16.6). In the 2020 FSEIS, the NRC staff considered regional projected climate change effects from numerous climate assessment reports, including from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Global Change Research Program (USGCRP), NOAA, and EPA. Since the publication of the 2020 FSEIS, a number of climate assessment reports have been published, including the IPCC's sixth assessment synthesis report (IPCC 2023-TN8557), USGCRP's Fifth National Climate Assessment

(USGCRP 2023-TN9762), and Pennsylvania's Climate Impacts Assessment report (PADEP 2021-TN11773). This section updates the NRC staff's previous assessment with respect to climate change projections.

The USGCRP's Fifth National Climate Assessment (USGCRP 2023-TN9762) uses shared socioeconomic pathway (SSP) and representative concentration pathway (RCP) emission scenarios when presenting climate change projections. As discussed in Section 4.15.3.2 of the 2020 FSEIS, the four RCP scenarios are numbered in accordance with the change in radiative forcing measured in watts per square meter (i.e., +2.6 [very low], +4.5 [lower], +6.0 [mid-high], and +8.5 [higher]) (USGCRP 2018-TN5847). For example, RCP 2.6 is representative of a mitigation scenario aimed at limiting the increase of global mean temperature to 3.6°F (2°C) (IPCC 2014-TN7651). RCP 8.5 reflects a continued increase in global emissions resulting in increased warming by 2100. The five SSPs (SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5) cover a range of GHG pathways and climate change mitigation strategies.

The IPCC's sixth assessment synthesis report concludes that "[i]t is unequivocal that human influence has warmed the atmosphere, ocean, and land" (IPCC 2023-TN8557). With respect to the Northeast region, USGCRP in the Fifth National Climate Assessment states "[m]uch of the information about the impacts of climate change on the [Northeast] region presented in the Fourth National Climate Assessment remains true today" (USGCRP 2023-TN9762). Projected changes in annual mean precipitation by midcentury (2036–2065) relative to 1991–2020 under an intermediate scenario (RCP 4.5) indicate an increase of 1–2 inches (in.) (2.5–5 centimeters [cm]) for Pennsylvania (USGCRP 2023-TN9762: Figure 4.3). USGCRP also projects that annual runoff by midcentury (2036–2065), relative to 1991–2020 under an intermediate scenario (RCP 4.5) in Pennsylvania, will increase 0.0–0.5 in. (0.0–1.27 cm) (USGCRP 2023-TN9762: Figure 4.7).

In its latest Climate Impacts Assessment report, the PADEP reports that Pennsylvania will continue to experience an increase in average annual temperature, an increase in average annual precipitation, extreme precipitation events, and drought due to more extreme but less frequent precipitation patterns (PADEP 2021-TN11773). Projections show that under an RCP 8.5 scenario, by midcentury (2041–2070) relative to 1971–2000, annual average temperatures will increase by 5.9°F (3.3°C) and days with temperature over 90°F (32.2°C) and 95°F (35°C) will increase by 31.9 and 11.5 days, respectively. Projections also show that average annual precipitation by midcentury relative to 1971–2000 will increase by 8.4 percent (or 3.6 in.). Very heavy precipitation events (occurring less than 5 percent of the time) and extremely heavy precipitation events (occurring less than 1 percent of the time) are projected to increase by 12.1 percent (or 0.08 in.) and 13.1 percent (or 0.1 in.), respectively.

In Section 4.15.3.2 of the 2020 FSEIS, the NRC staff presented precipitation projections from the Fourth National Climate Assessment (USGCRP 2017-TN5848) and the Third National Climate Assessment Report (USGCRP 2014-TN3472) for Pennsylvania. These precipitation projections are in agreement and similar in magnitude with the updated information presented above from the Fifth National Climate Assessment and Pennsylvania's Climate Impacts Assessment report in that Pennsylvania is projected to see an increase in annual mean precipitation, an increase in annual runoff, and an increase in extreme precipitation events by midcentury.

In Sections 4.16.1 through 4.16.6 of the 2020 FSEIS, the NRC staff considered climate change impacts for those resource areas that could be incrementally impacted by the proposed action (Peach Bottom SLR). The following discussions update that information, where appropriate, with

respect to the overlapping climate change impacts on environmental resources when added to the impact contribution on the resource from the proposed action (Peach Bottom SLR).

Air Quality

In Section 4.16.1 of the 2020 FSEIS, the NRC staff evaluated climate change impacts on ozone. In addition, particulate matter concentration has also been found to be particularly sensitive to climate change influences. Warmer temperatures, air stagnation, droughts, and wildfires are favorable conditions for higher levels of both ozone and $PM_{2.5}$ (USGCRP 2023-TN9762). USGCRP reports that there is medium confidence that climate change is projected to worsen air quality in many U.S. regions (USGCRP 2023-TN9762). This is due to the uncertainty in how meteorology will respond to climate change and how these meteorological conditions will in turn change air pollutant concentrations. For instance, while warmer average temperatures are projected to increase seasonal mean daily maximum 8-hour average ozone and $PM_{2.5}$ concentrations, increases in annual average precipitation will decrease $PM_{2.5}$ concentrations (USGCRP 2023-TN9762). As discussed in Section 3.3.1 of this supplement to the 2020 FSEIS, York County is designated as a maintenance area for $PM_{2.5}$ (2006 standard) and in attainment for all other NAAQS. Lancaster County is designated as nonattainment for ozone (2008 8-hour standard), as a maintenance area for $PM_{2.5}$ (2006 standard), and in attainment for all other NAAQS. Climate change can worsen air quality by compromising the attainment status of counties. However, as presented in Section 3.3.1, emissions from the operations of Peach Bottom are minor and represent less than 0.2 percent of Lancaster County or York County total emissions. Therefore, the NRC staff concludes that any climate change-related deterioration in air quality in Lancaster County or York County would not exacerbate the minor air quality impacts associated with Peach Bottom SLR.

Water Resources

In Section 4.16.2 of the 2020 FSEIS, the NRC staff evaluated climate change impacts on surface water and groundwater resources and water quality. The latest available climate models predict a continuation of increasing temperatures across the Northeast region of the United States, with annual average temperatures increasing by 5.9°F (3.3°C) by midcentury across Pennsylvania along with more frequent and more intense heat events. Pennsylvania has also been getting wetter with annual average precipitation increasing by 4.6 in. (11.7 cm) since 2000 (relative to 1971–2000). Projections indicate that annual average precipitation will further increase by another 8 percent under an RCP 8.5 scenario by midcentury (2041–2070). The frequency of extremely heavy precipitation events (occurring less than 1 percent of the time) is also projected to rise 13 percent by midcentury (PADEP 2021-TN11773).

In the 2020 FSEIS, the NRC staff observed that increased air temperatures would be likely to also result in an increase in surface water temperatures. Temperature increases along with increased evapotranspiration from vegetation could reduce the amount of water available for surface runoff, streamflow, and groundwater recharge. As a consequence, this could require Peach Bottom to rely more on its helper cooling towers to meet NPDES permit requirements, along with proportional increases in consumptive water use during the warmer months when the use of the helper cooling towers is required (see Section 3.5 of this supplement to the 2020 FSEIS). Nonetheless, Peach Bottom's thermal discharge is subject to limits and monitoring imposed by the PADEP-issued NPDES permit, and surface water withdrawals and consumptive water use are subject to limits in the SRBC docket. As for groundwater, precipitation and evapotranspiration are key drivers in groundwater recharge. A reduction in groundwater recharge, especially if runoff rates increase with heavier rainfall events, reduces groundwater

availability to wells, reduces baseflow to streams, and can negatively affect groundwater quality. Overall, the NRC staff finds that, as in the 2020 FSEIS, a positive trend in annual average precipitation could partially offset reductions in surface water availability and groundwater recharge due to projected temperature increases. As a result, the NRC staff concludes that any water reduction in water availability due to climate change should not have any substantial additive effect on water use conflicts associated with Peach Bottom SLR.

Aquatic Resources

In Section 4.16.3.3 of the 2020 FSEIS, the NRC staff evaluated climate change impacts on aquatic resources. Consistent with the NRC staff's discussion presented under "Water Resources" above for surface water and groundwater resources and water quality, the effects of climate change, including increased temperatures and heavy downpours, could result in degradation to aquatic resources in Conowingo Pond. More rainfall and heavy downpours under future climate scenarios can increase the rate of runoff and pollutants reaching the Susquehanna River because pollutants washed away in the high volume of runoff have less time to absorb into the soil before reaching the river. These changes could exacerbate existing environmental stressors for aquatic life, such as high nutrient levels and low dissolved oxygen, both of which are associated with eutrophication. As a result, the NRC staff concludes that any deterioration in the ambient aquatic environment associated with climate change could have an additive effect on industrial wastewater and thermal effluents discharged during the Peach Bottom SLR term. However, the NRC staff notes that the responsible regulatory agencies would account for such changes via water quality-based effluent limits imposed through future NPDES permits and other measures.

3.14.2 No-Action Alternative

In Section 4.15.3.1 of the 2020 FSEIS, the NRC staff evaluated GHG emissions under the no-action alternative, which includes the immediate impacts resulting from activities at Peach Bottom that would occur between plant shutdown and the beginning of decommissioning (i.e., activities and actions necessary to cease operations of Peach Bottom Units 2 and 3). As discussed in Section 4.15.3.1 of the 2020 FSEIS, when the facility stops operating, a reduction in GHG emissions from activities related to plant operations, such as the use of diesel generators and employee vehicles, would occur. The NRC staff anticipates that GHG emissions for the no-action alternative would be less than or equal to GHG emissions from the operations of Peach Bottom. Therefore, GHG emissions from the no-action alternative would be less than or equal to the emissions presented in Table 3-6. Given that GHG emissions from the no-action alternative would be similar to those from the proposed action, the NRC staff concludes that the GHG impacts of the no-action alternative on climate change would be SMALL.

3.14.3 New Nuclear Alternative

In Section 4.15.3.1 of the 2020 FSEIS, the NRC staff evaluated GHG emissions under the new nuclear alternative. As discussed in Section 4.15.3.1 of the 2020 FSEIS, GHG emissions from a new nuclear alternative would be similar to GHG emissions from the current operations of Peach Bottom (see Table 3-6). Therefore, the NRC staff concludes that the GHG impacts of the new nuclear alternative on climate change would be SMALL.

3.14.4 Supercritical Pulverized Coal Alternative

In Section 4.15.3.1 of the 2020 FSEIS, the NRC staff evaluated GHG emissions under the supercritical pulverized coal alternative. As discussed in Section 4.15.3.1 of the 2020 FSEIS, the NRC staff estimates that GHG emissions from the supercritical pulverized coal alternative would be 19.4 million tons (17.6 MMT) of carbon dioxide equivalents per year. If Peach Bottom's generating capacity were to be replaced by the supercritical pulverized coal alternative, there would be a significant increase in GHG emissions (more than three orders of magnitude greater). Therefore, the NRC staff concludes that the GHG impacts of the supercritical pulverized coal alternative would be MODERATE to LARGE.

3.14.5 Natural Gas Combined-Cycle Alternative

In Section 4.15.3.1 of the 2020 FSEIS, the NRC staff evaluated GHG emissions under the natural gas combined-cycle alternative. As discussed in Section 4.15.3.1 of the 2020 FSEIS, the NRC staff estimates that GHG emissions from the natural gas combined-cycle alternative would be 9.5 million tons (8.6 MMT) of carbon dioxide equivalents per year. If Peach Bottom's generating capacity were to be replaced by the natural gas combined-cycle alternative, GHG emissions would increase by three orders of magnitude. GHG emissions from the natural gas combined-cycle alternative are half of those from the supercritical pulverized coal alternative. Therefore, the NRC staff concludes that the GHG impacts of the natural gas combined-cycle alternative would be MODERATE.

3.14.6 Combination Alternative

In Section 4.15.3.1 of the 2020 FSEIS, the NRC staff evaluated GHG emissions under the combination alternative. As discussed in Section 4.15.3.1 of the 2020 FSEIS, the NRC staff estimates that GHG emissions from the combination alternative would be 4.5 million tons (4.1 MMT) of carbon dioxide equivalents per year. If Peach Bottom's generating capacity were to be replaced by the combination alternative, GHG emissions would increase by two orders of magnitude. GHG emissions from the combination alternative are a quarter of those from the supercritical pulverized coal alternative and half of those from the natural gas combined-cycle alternative. Therefore, the NRC staff concludes that the GHG impacts of the combination alternative would be MODERATE.

3.15 Cumulative Effects

Actions considered in the cumulative effects (impacts) analysis include the proposed license renewal action (initial LR or SLR) when added to past, present, and reasonably foreseeable actions, including projects and programs that are conducted, regulated, or approved by a Federal agency. Cumulative impacts can result from actions with individually minor but collectively significant effects taking place over a period of time. As described in Section 4.13 of the 2024 LR GEIS (NRC 2024-TN10161), the cumulative effects or impacts analysis only considers resources and environmental conditions that could be affected (directly impacted) by the proposed license renewal or SLR action, including the effects of continued reactor operations during the license renewal or SLR term and any refurbishment activities or associated new construction at a nuclear power plant. In order for there to be a cumulative effect, the proposed action (Peach Bottom SLR) must have an incremental new, additive, or increased physical impact on the resource or environmental condition beyond what is already occurring. Consequently, no cumulative effects analysis was performed for the following resource areas: land use, visual resources, noise, geologic environment, terrestrial resources,

and historic and cultural resources. The cumulative effects analysis considers potential effects through the end of the current license term and extending through the 20-year SLR term. Section 4.16 of the 2020 FSEIS (NRC 2020-TN7402) describes the NRC staff's consideration of potential cumulative effects associated with Peach Bottom SLR. The NRC staff's prior analysis in the 2020 FSEIS is summarized and updated in the sections below.

In Section 4.16 of the 2020 FSEIS, the NRC staff's cumulative effects analysis included a climate change impact discussion for certain resource areas. However, the associated analyses, where applicable, have been combined with the NRC staff's consideration of GHGs and climate change presented in Section 3.14 of this supplement to the 2020 FSEIS for consistency with the 2024 LR GEIS (NRC 2024-TN10161) and the related final rule (89 FR 64166-TN10321).

To evaluate cumulative effects resulting from the proposed action (Peach Bottom SLR), the incremental impacts of the proposed action, as described in Sections 4.2 through 4.13 of the 2020 FSEIS as supplemented in Sections 3.3 through 3.12 of this supplement to the 2020 FSEIS, are combined with the impacts of other past, present, and reasonably foreseeable actions regardless of which agency (Federal or non-Federal) or person undertakes such actions.

Section 4.16 of the 2020 FSEIS provides a discussion of operating facilities, ongoing or proposed projects, and other actions and activities within the region of influence of Peach Bottom that could contribute to cumulative effects. Section 4.16 included a summary of electrical generating facilities located in York and Lancaster Counties. This information is not repeated here but is incorporated herein by reference (NRC 2020-TN7402: 4-123–4-125).

Since the development of the 2020 FSEIS, there have been several changes in the status of actions (i.e., projects, facilities) that were discussed in the 2020 FSEIS, such as facilities that were in development or under construction. These changes are discussed as follows.

Two operating nuclear power plants are located within the 50 mi (80 km) radius of Peach Bottom: Salem/Hope Creek (approximately 43 mi [70 km] southeast) and Limerick (approximately 47 mi [76 km] northeast) (Exelon 2018-TN11707). Three Mile Island Unit 1 is also within this radius, located approximately 33 mi (53 km) northwest of Peach Bottom, but it was permanently shut down in September 2019. However, in September 2024, CEG announced plans to restart that facility, renaming it the Crane Clean Energy Center. CEG states that operations would commence in 2028 (CEG 2025-TN11748). Commencement of operations would be subject to NRC review and approval (NRC 2025-TN11750).

The Old Dominion Electric Cooperative completed construction of the Wildcat Point natural gas-fired power plant in the spring of 2018 (CEG 2024-TN11573). The plant is located in Cecil County, Maryland, approximately 6.5 mi (10.5 km) southeast of Peach Bottom. The facility has a generation capacity of 980 megawatts (MW) of electricity (ODEC 2021-TN8551). In addition, Calpine Mid Merit, LLC completed construction of the York 2 Energy Center in Peach Bottom Township. The power plant, generating approximately 830 MW, is a dual-fueled, combined-cycle technology using natural gas and diesel that became operational in March 2019 (CEG 2024-TN11573; Calpine Undated-TN11751).

In October 2018, the new Atlantic Sunrise pipeline was placed into service (NS Energy 2018-TN11752; CEG 2024-TN11573). The pipeline traverses York and Lancaster Counties to the north of the Peach Bottom site. This pipeline is an expansion of the existing Transco pipeline for the transfer of natural gas from the producing regions of northeastern Pennsylvania to markets in the Mid-Atlantic (Exelon 2018-TN11707; NS Energy 2018-TN11752).

Eurofins BioPharma completed the expansion of its product testing laboratory facility in Lancaster County with building occupancy in April 2022 (Eurofins 2024-TN11753). The project was projected to add 350 jobs (Exelon 2018-TN11707; CEG 2024-TN11573).

In December 2023, construction began on a Commerce Center in York County, Manchester Township. The project will create 1,600 operational and construction jobs. This center is located approximately 40 mi (60 km) from Peach Bottom. The project will include two buildings with over 670,000 square feet (62,200 square meters) of space, rated Class A core industrial (CEG 2024-TN11573).

As evaluated elsewhere in this supplement to the 2020 FSEIS (e.g., Section 3.2), the applicant has completed two operations and maintenance projects at Peach Bottom since the 2020 FSEIS was published. These include installation of a new sewage treatment plant (STP) and a cable replacement project associated with Peach Bottom Unit 3. The new STP replaces the existing facility at Peach Bottom. This project included installation of a new pumping station in the previously disturbed parking lot in front of the training center, which will collect and convey sewage from the site and pump it across Rock Run Creek to the new STP located in the ISFSI parking lot. The new STP has a new outfall to discharge treated effluent to the Susquehanna River. The project required various permits and approvals including: Pennsylvania Natural Diversity Inventory environmental review for animal and plant impact, GP-04 permit for installation of utilities across Rock Run Creek (PADEP General Permit File No. GP046703222-005 and GW056703222-011), GP-05 permit for outfall installation (PADEP General Permit File No. GP056703223-008), evidence to the contrary for engineering study to define 100-year floodplain for Rock Run Creek, and Water Quality Management permit for treatment of wastewater sewage. Township permits required included Land Development and Stormwater permit for local development and Uniform Construction Code Building Permit for building related construction activities. Following the completion of testing, operation of the new STP was scheduled to commence in February 2025 (CEG 2024-TN11573, CEG 2025-TN11574).

The cable replacement project associated with Peach Bottom Unit 3 was conducted to abandon the existing cable and replace the feeder cable with new cable. The existing cable feed was completely underground, whereas the new feed has portions underground and portions overhead. The work involved the installation of four poles to run the cable overhead to avoid disturbing the ground and original buried cables. Some tree and vegetation clearing was required for the overhead portion to allow the underground duct banks, riser structures, steel poles, and cables to be installed and to ensure that adequate clearances are provided and maintained. Areas along the route were graded to allow pole and duct bank installation. The applicant commissioned an environmental impact review in accordance with plant procedure to ensure that potential environmental impacts were mitigated or avoided. The cable replacement work was completed in September 2023, and the cable is in service. Various permits and approvals were required for the project. The areas that were disturbed are covered by an erosion control permit that will remain open until permanent stabilization is established. The applicant obtained the PA PAG-02 permit (#PAC670576, Authorization to Discharge Under the NPDES General Permit for Discharges of Stormwater Associated with Construction Activities), which has been renewed until the fall of 2025 (CEG 2024-TN11573, CEG 2025-TN11574).

Additional ISFSI storage capacity at Peach Bottom will likely be needed to accommodate spent nuclear fuel generated at Peach Bottom during the SLR term. Siting and construction would likely occur to the north of the existing pads, in an area previously disturbed. However, the applicant states that it would conduct a siting study to identify candidate sites. The site selection

process would consider regulations for, and commitments to, the protection of endangered species, wetlands, and archaeological findings (CEG 2024-TN11573).

The NRC staff does not expect that any of the aforementioned projects or actions would be likely to substantially contribute to cumulative effects or be additive to the impacts associated with Peach Bottom continued operations during the SLR term. Further, as described in Section 2.1.1 of this supplement to the 2020 FSEIS, the applicant continues to have no plans for refurbishment activities at Peach Bottom, and there are currently no plans for any physical changes or upgrades to plant systems that would increase or decrease plant effluent (air or liquid) emissions or waste quantities. Therefore, the NRC staff has not identified any new and significant circumstances or information regarding cumulative effects associated with Peach Bottom SLR.

Separately, the NRC is considering a request from the applicant for an exemption from the NRC requirement that the decommissioning of Peach Bottom Unit 1 be completed within 60 years of its permanent cessation of operations (CEG 2023-TN11770, CEG 2024-TN11771, CEG 2024-TN11772).

The following sections present the NRC staff's revised cumulative effects analyses for specific resource areas.

3.15.1 Air Quality

The NRC staff continues to expect that air emissions at Peach Bottom during the SLR would be similar to those presented in Section 3.3.1 of this supplement to the 2020 FSEIS and have negligible to minor contributions to cumulative air pollutant emissions. Consequently, cumulative changes to air quality in Lancaster and York Counties would be the result of future projects and actions that change present-day emissions within the counties. Regional development and construction activities such as those identified in Section 3.15 above can increase air emissions during their respective construction periods, but those air emissions would be temporary and localized. However, future operation of new commercial and industrial facilities and increases in vehicular traffic can result in overall long-term air emissions that contribute to cumulative air quality impacts. Any entity establishing new stationary sources of emissions in the region of influence would be required to apply for an air pollution control permit from the PADEP or the Maryland Department of the Environment, as applicable, and would also be required to operate in accordance with applicable Federal, State, and local regulatory requirements.

3.15.2 Water Resources

3.15.2.1 Surface Water Resources

The SRBC, a Federal interstate commission created by the Susquehanna River Basin Compact between the Federal Government and the Commonwealth of Pennsylvania and the States of New York and Maryland, continues to be responsible for managing water resources over the entire Susquehanna River basin. As stated, and further described in Section 4.16 of the 2020 FSEIS, the SRBC works to reduce damages caused by floods; provide for the reasonable and sustained development and use of surface and groundwater for municipal, agricultural, recreational, commercial, and industrial purposes; protect and restore fisheries, wetlands, and aquatic habitat; protect water quality and instream uses; and ensure future availability of flows to the Chesapeake Bay. Any new development projects within the basin would directly or

indirectly, through State or municipal permitting and approvals, be subject to regulation to ensure that water use and water quality objectives are maintained.

Surface water impacts from Peach Bottom SLR would continue to be restricted to Conowingo Pond and areas downstream from the plant site along the Susquehanna River. The SRBC manages water withdrawals from Conowingo Pond. The Conowingo Dam provides the minimum flow releases required under its current license to users downstream of the Conowingo Dam, including to meet industrial and public water supply needs.

As discussed in Section 3.5.1, subsection "Surface Water Use Conflicts (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River)," of this supplement to the 2020 FSEIS, Peach Bottom consumes only a very small volume of the water available in Conowingo Pond. Continued plant operations during the SLR term should not have any significant impact on the amount of water available to be released to downstream users from Conowingo Pond with minimal contributions to cumulative impacts on surface water availability.

With respect to water quality effects, Peach Bottom continues to be subject to effluent limits, including for thermal discharge, and associated discharge monitoring requirements in accordance with the applicant's PADEP-issued NPDES permit (see Section 3.5.1). The only material change identified by the NRC staff is that the new STP will discharge treated effluent directly to the Susquehanna River; the STP replaces an antiquated facility and is covered by the Peach Bottom NPDES permit. Thermal discharges from Peach Bottom affect a very small area of Conowingo Pond, as further described in Section 3.15.3 below.

3.15.2.2 Groundwater Resources

Section 4.16.2.2 of the 2020 FSEIS describes the hydrogeologic environment of the Peach Bottom site and vicinity and associated groundwater usage. The NRC staff has identified no substantial changes to the information or analysis presented in the 2020 FSEIS. As presented in Section 3.5.2 of this supplement to the 2020 FSEIS, groundwater withdrawals at Peach Bottom are less than 100 gpm (378 Lpm), averaging less than 65 gpm (246 Lpm). In addition, the applicant and Peach Bottom operations are subject to the rules and regulations of the SRBC and the PADEP to maintain registration of all surface water and groundwater withdrawals. The NRC staff reaffirms that the volume of such withdrawals and locations of other groundwater users would be unlikely to present a groundwater use conflict (i.e., for offsite domestic and public water supplies) or would substantially contribute to cumulative impacts on groundwater availability.

Peach Bottom operations have resulted in inadvertent release of radionuclides (principally tritium) to groundwater beneath the Peach Bottom plant site. The NRC staff describes and assesses additional releases that have occurred at Peach Bottom since the 2020 FSEIS was developed in Section 3.5.2, subsection "Radionuclides Released to Groundwater," of this supplement to the 2020 FSEIS. Nevertheless, onsite inadvertent releases of radionuclides have had no measurable effect on surface waters adjoining the Peach Bottom site and do not currently affect or threaten offsite groundwater sources or users. In addition, the Susquehanna River is a hydrologic barrier to groundwater flow from one side of the river to the other. The applicant maintains a radiological groundwater protection program at Peach Bottom to prevent, detect, and respond to inadvertent releases of radionuclides. Thus, Peach Bottom SLR would be unlikely to contribute to cumulative impacts on groundwater quality in the local groundwater basin.

3.15.3 Aquatic Resources

In Section 4.16.3 of the 2020 FSEIS, the NRC staff described various environmental stressors and trends that it considered in the cumulative effects analysis for Peach Bottom. These included runoff from industrial, agricultural, and urban areas and water users and discharges. These factors and trends in environmental conditions remain relatively unchanged since the development of the 2020 FSEIS. The NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these issues.

As presented in Section 3.7 of this supplement to the 2020 FSEIS, the NRC staff reaffirmed that direct and indirect impacts on aquatic resources from Peach Bottom SLR would be SMALL to MODERATE for thermal impacts and SMALL for all other aquatic resources issues. With respect to thermal impacts, such adverse effects are confined to a narrow 12 ac (4.9 ha) band of shallow water habitat downstream of the Peach Bottom discharge canal, where short-term, observable changes, including reduced macroinvertebrate community health and lower fish diversity, can occur. Seasonal impacts in this region would be MODERATE because water temperatures would result in thermal stress and avoidance behaviors. However, continued operation of Peach Bottom's helper cooling towers in accordance with applicable NPDES permit conditions imposed to assure the protection of a balanced, indigenous aquatic community and voluntary agreements with the PADEP would help minimize the duration and frequency of seasonal impacts. However, given the relatively small area affected by Peach Bottom's thermal discharges, the relatively limited duration, and the regulatory regime governing Peach Bottom operations, the NRC staff finds that Peach Bottom SLR would be unlikely to substantially contribute to cumulative impacts on aquatic resources.

3.15.4 Socioeconomics

Based on the updated assessment presented in Section 3.10 of this supplement to the 2020 FSEIS, continued operations of Peach Bottom during the SLR term would have no additional impact on socioeconomic conditions beyond the Lancaster and York Counties region outside of what is already being experienced. The applicant has no planned activities at Peach Bottom, such as any refurbishment, beyond continued operations and maintenance.

Because the applicant has no plans to hire additional workers during the SLR term, overall expenditures and employment levels at Peach Bottom would remain unchanged and there would be no new or increased demand for housing and public services. Therefore, the only contributory cumulative effects would come from completed and new projects (discussed in Section 3.15) in the region that are unrelated to the proposed action and could include increased employment, traffic, and associated demand for goods, services, and housing. Nonetheless, Peach Bottom SLR, when combined with past, present, and reasonably foreseeable actions, would have no new or increased effect beyond what is currently being experienced.

3.15.5 Human Health

The NRC and EPA have established radiological dose limits to protect the public and workers from both acute and long-term exposure to radiation and radioactive materials. These dose limits are in 10 CFR Part 20 (TN283), "Standards for Protection Against Radiation," and 40 CFR Part 190 (TN739), "Environmental Radiation Protection Standards for Nuclear Power Operations." As discussed in Section 3.11 of this supplement to the 2020 FSEIS, the impacts to

human health from continued plant operations would be SMALL. The NRC staff observed no adverse trends in radiological dose to plant workers or the public.

The proposed restart of Three Mile Island Unit 1 as the Crane Clean Energy Center would not be expected to substantially contribute to cumulative radiological impacts because the facility would be subject to radiological dose limits and NRC regulatory oversight. Similarly, the applicant's plans to expand the onsite ISFSI to a third pad would not be expected to contribute to cumulative radiological effects. The expansion would be subject to applicable NRC siting requirements and would be subject to the provisions of Peach Bottom's general license under 10 CFR 72.210 (TN4884) (see Appendix B, Table B-1).

The NRC staff reaffirms that there would be no substantial cumulative effect from Peach Bottom SLR on human health. This finding is based, in part, on the expectation that Peach Bottom would continue to comply with Federal radiation protection standards and the continued regulation of any future development or actions in the vicinity of Peach Bottom by the NRC, the Commonwealth of Pennsylvania, and State of Maryland, as appropriate.

3.15.6 Waste Management and Pollution Prevention

As discussed in Section 3.12 of this supplement to the 2020 FSEIS, the waste management impacts associated with Peach Bottom SLR would be SMALL. The applicant continues to maintain waste management programs for radioactive and nonradioactive waste generated at Peach Bottom and is required to comply with Federal and State permits and other regulatory waste management requirements. The NRC staff expects that the applicant will continue to comply with Federal and State requirements for radioactive and nonradioactive waste.

The nuclear power plants and other facilities within a 50 mi (80 km) radius of Peach Bottom remain subject to compliance with appropriate NRC, EPA, and State requirements for the management of radioactive and nonradioactive waste. Operation of the Crane Clean Energy Center, if approved by the NRC, would be subject to the same regulatory framework and NRC oversight with respect to waste generation, including radiological waste generation and spent fuel storage. The NRC staff reaffirms that there would be no substantial cumulative effect from the generation of radioactive and nonradioactive waste during the Peach Bottom SLR term. This conclusion is based on the continued compliance of the applicant with Federal and Commonwealth of Pennsylvania requirements for radioactive and nonradioactive waste management and on the expected regulatory compliance of other waste producers in the area.

3.16 Resource Commitments Associated with the Proposed Action

Section 4.17 of the 2020 FSEIS (NRC 2020-TN7402) describes the NRC staff's consideration of potentially unavoidable adverse environmental impacts that could result from implementation of the proposed action (Peach Bottom SLR) and alternatives to the proposed action, the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and the irreversible and irretrievable commitments of resources. The NRC staff's review in support of this supplement to the 2020 FSEIS did not identify any new and significant circumstances or information that would change the conclusions presented in the 2020 FSEIS. There are no changes to the proposed action, and the applicant has not proposed any changes in Peach Bottom operations during the proposed SLR term that would lead to any different unavoidable adverse environmental impacts, short-term uses of the environment, or resource commitments. This review included consideration of new information used in the NRC staff's revised resource-specific determinations presented in Sections 3.2 through 3.15 of this supplement to the 2020 FSEIS.

4 CONCLUSION

This supplement to the January 2020 Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom), Final Report (the 2020 FSEIS) (NRC 2020-TN7402) documents the NRC staff's supplemental environmental review of the Exelon Generation Company, LLC (Exelon) (now Constellation Energy Generation, LLC [CEG]) application requesting subsequent license renewal (SLR) for Peach Bottom Units 2 and 3 renewed facility operating licenses, as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions" (TN10253). The regulations at 10 CFR Part 51 implement the National Environmental Policy Act of 1969, as amended (NEPA) (42 *United States Code* [U.S.C.] 4321 et seq.) (TN661). This chapter briefly summarizes the environmental impacts of Peach Bottom SLR, lists and compares the environmental impacts of alternatives to Peach Bottom SLR, and presents the NRC staff's conclusions and recommendation.

4.1 Environmental Impacts of Subsequent License Renewal

After reviewing new and potentially significant information with respect to generic (Category 1) environmental issues in this supplement to the 2020 FSEIS, the NRC staff concluded that restoring the expiration dates for Peach Bottom's subsequent renewed facility operating licenses for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation would not have impacts beyond those discussed in Revision 2 of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (NRC 2024-TN10161) (2024 LR GEIS).

After reevaluating the nuclear power plant-specific (Category 2) environmental issues in this supplement to the 2020 FSEIS, the NRC staff concluded that restoring the expiration dates for Peach Bottom's subsequent renewed facility operating licenses for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation would have SMALL impacts for all the Category 2 issues applicable to Peach Bottom SLR with the exception that for aquatic resources, the impact would be SMALL to MODERATE for the issue of "Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)," which was formerly titled "Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)." The NRC staff considered mitigation measures for each Category 2 issue, as applicable. The NRC staff concluded that no additional mitigation measures are warranted.

4.2 Comparison of Alternatives

In Chapter 4, "Environmental Impacts and Mitigating Actions," of the 2020 FSEIS, as reevaluated in Chapter 2 of this supplement to the 2020 FSEIS, the NRC staff considered the following alternatives to Peach Bottom SLR:

- no-action alternative
- new nuclear alternative
- supercritical pulverized coal alternative
- natural gas combined-cycle alternative
- combination alternative (natural gas, wind, solar, and purchased power)

Based on the evaluation presented in the 2020 FSEIS, as reevaluated in this supplement to the 2020 FSEIS, the NRC staff concludes that the environmentally preferred alternative is the proposed action of Peach Bottom SLR. As shown in Table 2-1, "Summary of Environmental Impacts of the Proposed Action and Reasonable Alternatives to the Proposed Action," all other reasonable power-generation alternatives have impacts in more than one resource area that are greater than the impacts of Peach Bottom SLR and only one resource area has lesser impacts. The no-action alternative does not expressly meet the purpose and need of the proposed action because the no-action alternative does not provide a means of delivering baseload power to meet future electric system needs. Assuming that a need currently exists for the power generated by Peach Bottom, the no-action alternative would likely create a need for a replacement power alternative.

4.3 Recommendation

The NRC staff's recommendation is that the adverse environmental impacts of Peach Bottom SLR are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. The NRC staff bases its recommendation on the following:

- the analysis and findings in the LR GEIS (NRC 2013-TN2654, NRC 2024-TN10161)
- the ER submitted by Exelon (Exelon 2018-TN11707), as supplemented by additional information provided by CEG (CEG 2024-TN11573, CEG 2025-TN11574)
- the NRC staff's consultation with Federal, State, Tribal, and local agencies
- the NRC staff's independent environmental reviews, as summarized in the 2020 FSEIS and as reevaluated in this supplement to the 2020 FSEIS
- the NRC staff's consideration of public comments received during the scoping process and received on the draft of the 2020 FSEIS and presented in Appendix A.2 of the 2020 FSEIS (NRC 2020-TN7402)
- the NRC staff's consideration of public comments received on the 2025 draft supplement (NRC 2025-TN12181) and presented in Appendix A.2 of this final supplement

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6 LIST OF PREPARERS

Members of the U.S. Nuclear Regulatory Commission's (NRC's) Office of Nuclear Material Safety and Safeguards prepared this document with assistance from other NRC organizations and Pacific Northwest National Laboratory. Table 6-1 below identifies each contributor's name and education and experience.

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Name	Education and Experience
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Samuel Cohen, NRC	MS Physical Geography; BA Environmental Studies; 2 years of research experience in areas of geochemistry, geology, hydrology, water resources, and emerging contaminants
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Kevin Folk, NRC	MS Environmental Biology; BA Geoenvironmental Studies; 35 years of experience in NEPA compliance; geologic, hydrologic, and water quality impacts analysis; utility infrastructure analysis, environmental regulatory compliance; and water supply and wastewater discharge permitting
Brian Glowacki, NRC	BS Environmental Engineering; 4 years of relevant experience
Stephen Koenick, NRC	MS Environmental Engineering; BS Mechanical Engineering; 30+ years of government experience
Karen Loomis, NRC	MS Environmental Science and Technology; BS Environmental Resource Management; BS Agriculture and Extension Education; 15 years of government experience in environmental compliance, program management, and project management
Nancy Martinez, NRC	BS Earth and Environmental Science; AM Earth and Planetary Science; 13 years of experience in environmental impact analysis
Jeffrey Rikhoff, NRC	MRP Regional Planning; MS Economic Development and Appropriate Technology; BA English Composition; 44 years of combined industry and Government experience in NEPA compliance for DOE Defense Programs/NNSA and Nuclear Energy, DoD, and DOI; project management; land use and socioeconomic impact analysis, historic and cultural resource impact assessments, consultation with American Indian Tribes, and comprehensive land use and industrial development planning studies

Table 6-1 List of Preparers (Continued)

Name	Education and Experience
Dave Anderson, PNNL	MS Forest Economics; BS Forest Resources; 33 years of experiences in NEPA planning, national and regional economic impact modeling, and socioeconomics impact analysis
Dan Nally, PNNL	MA Urban and Environmental Policy and Planning; BS Biology; 11 years of experience in preparation and review of NEPA documents, related regulatory compliance, and conducting public outreach and engagement

AA = associate degree; AM = Master of Arts; BA = Bachelor of Arts; BE = Bachelor of Engineering; BS = Bachelor of Science; DoD = U.S. Department of Defense; DOE = U.S. Department of Energy; DOI = U.S. Department of Interior; EFH = essential fish habitat; MBA = Master of Business Administration; MHP = Master of Public Health; MPM = Master of Project Management; MRP = Master of Regional Planning; MS = Master of Science; MTech = Master of Technology; NEPA = National Environmental Policy Act of 1969, as amended; NNSA = National Nuclear Security Administration; NRC = U.S. Nuclear Regulatory Commission; Pacific Northwest National Laboratory = PNNL; PhD = Doctor of Philosophy; PMP = Project Management Professional.

7 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS DOCUMENT ARE SENT

Table 7-1 List of Agencies, Organizations, and Persons to Whom Copies of this Document Are Sent

Name and Title	Affiliation
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Matthew Willson NEPA Specialist	U.S. Environmental Protection Agency, Region 3 NEPA & Technical Assistance Branch
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Evan Wosochlo Program Manager	PA Department of Environmental Protection Southcentral Regional Office, Radiation Protection Program
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Andrea Lowery Pennsylvania State Historic Preservation Officer	Pennsylvania Historical and Museum Commission State Historic Preservation Office
Andrea MacDonald Bureau Director / Deputy State Historic Preservation Officer	Pennsylvania Historical and Museum Commission State Historic Preservation Office
John Raymond Johnson Governor	Absentee-Shawnee Tribe of Oklahoma
Clayton Martinez Tribal Historic Preservation Officer	Absentee-Shawnee Tribe of Oklahoma

Table 7-1 List of Agencies, Organizations, and Persons to Whom Copies of this Document Are Sent (Continued)

Name and Title	Affiliation
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Deborah Dotson President	Delaware Nation
Katelyn Lucas Tribal Historic Preservation Officer	Delaware Nation Historic Preservation Office
Brad KillsCrow Chief	Delaware Tribe of Indians
Susan Bachor Historic Preservation Officer	Delaware Tribe of Indians Historic Preservation Office
Glenna J. Wallace Chief	Eastern Shawnee Tribe of Oklahoma
Lora Nuckolls Cultural Preservation Director Tribal Historic Preservation Officer	Eastern Shawnee Tribe of Oklahoma
Ray Halbritter Nation Representative	Oneida Indian Nation
Tehassi Hill Chairman	Oneida Nation
Kanani Nunies Tribal Historic Preservation Officer	Oneida Nation
Sidney Hill Chief	Onondaga Nation
J. Conrad Seneca President	Seneca Nation of Indians
David L. George-Shongo Jr. Tribal Historic Preservation Officer	Seneca Nation of Indians
Charles Diebold Chief	Seneca—Cayuga Nation
William Tarrant Tribal Historic Preservation Officer	Seneca—Cayuga Nation
Michael L. Conners, Tribal Chief Beverly Kiohawiton Cook, Tribal Chief Donald Thompson Jr., Tribal Chief	Saint Regis Mohawk Tribal Council
Darren Bonaparte Tribal Historic Preservation Officer	Saint Regis Mohawk Tribe
Ben Barnes Chief	Shawnee Tribe
Tonya Tipton Tribal Historic Preservation Officer	Shawnee Tribe
Shannon Holsey President	Stockbridge-Munsee Community
Jeff Bendremer Tribal Historic Preservation Officer	Stockbridge-Munsee Community
Roger Hill Chief	Tonawanda Band of Seneca

Table 7-1 List of Agencies, Organizations, and Persons to Whom Copies of this Document Are Sent (Continued)

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Tom Jonathan Chief	Tuscarora Nation
David E. Gemmill Chairman	Peach Bottom Township Board of Supervisors
Patricia Borchmann	Citizen
Ernest Eric Guyll	Citizen
Susan and Jyuji D. Hewitt	Citizens
Eric Epstein	Three Mile Island Alert, Inc.
Diane Curran	Harmon, Curran, Spielberg, & Eisenberg, L.L.P.
Paul Gunter	Beyond Nuclear
David Lewis	-

"-" denotes no entry in table cell.

Note: This table includes recipients specified by 10 CFR 51.74 (TN10253). The NRC staff has also included individuals and organizations who provided comments on the January 2020 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (NRC 2020-TN7402) as well as those who provided comments during the 2018 environmental scoping period, as listed in the scoping summary report (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19037A348) (NRC 2019-TN11570). Distribution also was made to individuals and organizations who provided comments on the 2025 draft supplement (NRC 2025-TN12181) (see Appendix A.2, Table A-1 of this final supplement). In all cases, distribution was made to those commenters who provided contact information. The NRC staff made every reasonable effort to update recipient information.

APPENDIX A

COMMENTS RECEIVED ON ENVIRONMENTAL REVIEW

A.1 Comments Received During the Scoping Period

In preparing this supplement to the January 2020 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom), Final Report" (the 2020 FSEIS) (NRC 2020-TN7402), the U.S. Nuclear Regulatory Commission (NRC) staff determined that a new scoping process need not be conducted (Title 10 of the *Code of Federal Regulations* [10 CFR] 51.92(d) [TN10253]). Appendix A.1 of the 2020 FSEIS describes the environmental scoping process that was conducted for the environmental review of the Peach Bottom subsequent license renewal (SLR) application in July 2018. In summary, the NRC issued a notice of intent to conduct an environmental scoping process for Peach Bottom SLR that was published in the *Federal Register* on September 10, 2018, and conducted a public meeting in Delta, Pennsylvania, on September 25, 2018. A summary and transcript of the scoping meeting is available in the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at http://www.nrc.gov/reading-rm/adams.html. The scoping meeting summary is available at ADAMS Accession No. ML18289A509 (NRC 2018-TN11754). The transcript of the meeting is available at ADAMS Accession No. ML18288A438 (NRC 2018-TN11755).

The NRC staff also developed and issued a scoping summary report that provides information on how to access the comments received and the staff's responses to comments received as part of the environmental scoping process. The scoping summary report is available at ADAMS Accession No. ML19037A348 (NRC 2019-TN11570).

A.2 Comments Received on the Draft Supplement

On May 21, 2025, the NRC issued the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Supplement 1, Draft Report for Comment" (NRC 2025-TN12181), referred to as the draft supplement, to Federal, State, Tribal, and local government agencies and interested members of the public. The U.S. Environmental Protection Agency (EPA) issued its Notice of Availability on May 30, 2025 (90 FR 23050-TN12178). The public comment period ended on July 14, 2025. As part of the process to solicit public comments on the draft supplement, the NRC did the following:

- placed copies of the draft supplement at the Harford County Public Library – Whiteford Branch, 2407 Whiteford Road, Whiteford, MD 21160
- made a copy of the draft supplement available in the NRC's Public Document Room in Rockville, Maryland
- provided access to the draft supplement at several locations on the NRC website including at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/s10-slr/s1/index.html
- sent copies of the draft supplement to certain Federal, Tribal, State, and local government agencies

- published a notice of availability of the draft supplement in the *Federal Register* on May 30, 2025 (90 FR 23075-TN12177)
- filed the draft supplement with the EPA

The NRC received four pieces of correspondence in the form of letters, emails, and submissions through Regulations.gov (see Docket ID NRC-2024-0214), resulting in 17 unique comments. To identify each individual comment, the NRC staff reviewed each letter, email, and Regulations.gov submittal related to the draft supplement, all of which are accessible in ADAMS. The NRC staff identified substantive statements related to the proposed action and recorded the statements as comments.

Comments submitted during the comment period and their associated correspondence received a unique comment identification number consisting of the correspondence identification number and a number associated with the sequential order of the comment within the specific document. Table A-1 lists individuals that provided comments during the comment period, including their affiliation, the correspondence identification number, the comment source, and the ADAMS Accession No. for the comment. Where reproduced, the comments are recited verbatim from the comment source. In addition, while new or substantially revised text is marked with a change bar (vertical line) elsewhere in this final supplement, this convention is not used in this appendix section to improve readability and because the content of this appendix section is entirely new. The comments and the NRC staff's responses are provided in Sections A.2.1 through A.2.6, following Table A-1.

Table A-1 List of Commenters on the Draft Supplement

Commenter	Affiliation (if stated)	Correspondence ID	Comment Source	ADAMS Accession Number
Anonymous	-	1	Regulations.gov	ML25155A023
Darby, Valincia[(a)]	U.S. Department of the Interior, Office of Environmental Policy and Compliance	3	Email	ML25191A106
Wilson, Christoper	Constellation Energy Generation, LLC	2	Letter	ML25183A139
Witman, Timothy	U.S. Environmental Protection Agency	4	Email	ML25196A001

(a) Correspondence from commenter did not include any comments on the draft supplement.

A.2.1 Ecology – Aquatic Resources

Comment: No.: 4
Section: 3.7
Page: 3-20
Line(s): 24-26
Comment: Suggest removing the statement, "Additionally, the PADEP could impose additional requirements related to Peach Bottom's thermal effluent to assure the protection of a balanced, indigenous aquatic community." As this appears to be speculative and not directly tied to the NRC's decision, its removal may help maintain focus on substantiated information.
(**2-4** [Wilson, Christopher D])

Comment: No.: 10
Section: 3.15.3
Page: 3-49
Line(s): 31-33
Comment: Similar to Comment No. 4, consider removing the statement, "As part of the NPDES permit renewal process, the PADEP could also impose additional requirements on Peach Bottom's thermal discharge to promote the protection of a balanced, indigenous aquatic community," as it introduces speculative content. (**2-10** [Wilson, Christopher D])

Response: *These comments recommend removing statements in the supplement that the Pennsylvania Department of Environmental Protection (PADEP) may impose additional requirements on Peach Bottom as part of the National Pollutant Discharge Elimination System (NPDES) permit renewal process. The NRC staff included these statements in accordance with NRC guidance. Section 4.6.3 of NUREG-1555, Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1, Operating License Renewal, Revision 2 (NRC 2024-TN10251) contains review procedures for ecological resource issues. Specifically, if adverse impacts are identified, this guidance directs the NRC staff to "describe mitigation measures that have been implemented at the nuclear power plant to reduce such impacts and note whether such measures would continue during the license renewal term. Describe any additional mitigation proposed by the applicant or measures that would be required in the future (e.g., conditions anticipated in a future renewed NPDES permit concerning best technology available to minimize impingement mortality and entrainment)." However, the NRC staff revised the text in Sections 3.7 and 3.15.3 of this supplement to improve clarity regarding the imposition of mitigation measures under a renewed NPDES permit.*

Comment: No.: 5
Section: 3.7
Page: 3-20
Line(s): 16-31
Comment: The 2024 SLRA Additional Information ER (Reference 1) Section 5.7.1.4 describes the determination that the thermal discharges in the small area of Conowingo Pond (along the west shore near the discharge) do not impede upstream or downstream fish movement. It also outlines mitigation measures in the current NPDES permit, used from June 15th through the end of August each year if temperature-critical levels are exceeded, or if drought or hot weather begins to impact pond temperatures. Also, Section 5.7.1.4 presents water temperature monitoring data from 2016 through 2020. These results support the conclusion that the PBAPS cooling towers under the PA DEP-issued NPDES permit requirements adequately reduce discharge temperatures during warm weather months and that the thermal plume disseminates locally. Based on the results under this monitoring plan, it was concluded that there is adequate protection of the fish and benthic community in relation to thermal effluents. Therefore, the 2024 SLRA Additional Information ER concluded that thermal effects on aquatic organisms are SMALL.

The 2025 PBAPS DSEIS conservatively characterizes thermal impacts on aquatic organisms as SMALL to MODERATE, citing "absent information indicating that Peach Bottom's operation could be effectively conditioned to reduce or mitigate existing impacts." However, the 2016 through 2020 monitoring data (described above) and existing NPDES permit conditions described in the 2024 SLRA Additional Information ER provide relevant context. Including this information in the 2025 DSEIS could support a more refined conclusion that thermal impacts are SMALL. (**2-5** [Wilson, Christopher D])

Comment: No.: 9
Section: 3.15.3
Page: 3-49
Line(s): 22-23
Comment: As stated in Comment No. 5, the 2024 SLRA Additional Information ER (Reference 1) supports the conclusion that direct and indirect impacts on aquatic resources from Peach Bottom SLR would be SMALL. Including the water temperature monitoring data conducted from 2016 through 2020 and the existing NPDES permit information in the 2025 DSEIS would further substantiate this conclusion. (**2-9** [Wilson, Christopher D])

Response: *These comments recommend that the NRC staff change its conclusion for the license renewal environmental issue "Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)" from "SMALL to MODERATE" to "SMALL." As defined in Table B-1 of Appendix B to Subpart A of 10 CFR Part 51 (TN10253), MODERATE impacts are those where "environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource." SMALL impacts are those where "environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource."*

Section 3.7 of this supplement explains that during summer months, a narrow band of shallow water habitat downstream of the discharge canal would exhibit short-term, observable changes, including reduced macroinvertebrate community health and lower fish diversity. Because of this, the NRC staff concluded that seasonal impacts in this region would be MODERATE because water temperatures would result in detectable impacts in the form of thermal stress and avoidance behaviors. Section 3.7 also explains that the applicant's operation of the Peach Bottom cooling towers in accordance with its NPDES permit conditions and voluntary agreements with the PADEP would help minimize the duration and frequency of seasonal impacts. However, in the absence of information indicating that Peach Bottom's operation could be effectively conditioned to reduce or mitigate existing impacts, the NRC staff conservatively concluded that the thermal impacts on aquatic resources in Conowingo Pond during the Peach Bottom SLR term would be SMALL to MODERATE. This conclusion is appropriate because localized, observable impacts exist. However, after reviewing the available information, the staff concluded that these impacts would not destabilize important attributes of the Conowingo Pond aquatic community. The NRC staff made no changes to the supplement as a result of this comment.

A.2.2 Editorial Comments

Comment: No.: 1
Section: 3.5.1
Page: 3-12
Line(s): 23-27
Comment: Consider revising the statement to reflect the information provided by CEG NRC RCI Number: SW-4 in Reference 3 (PBAPS DSEIS reference CEG 2025-TN11574) that discussed that the thresholds were met in two periods in 2022 although Conowingo Dam did not need to use any of the allotment to meet the minimum flow requirements per the Consumptive Use Mitigation Plan (CUMP). (**2-1** [Wilson, Christopher D])

Response: *The NRC staff revised the cited text in Section 3.5 of this supplement for clarity and completeness and for consistency with the information provided in the cited sources.*

Comment: No.: 2
Section: 3.5.2
Page: 3-15
Line(s): 21
Comment: Please specify the report title and year of reference. While PBAPS DSEIS reference NRC 2024-TN11590 points to the NRC website location for Peach Bottom ARERR and AREOR reports, it would be beneficial to identify the specific report(s) and year(s) used to support this section. (**2-2** [Wilson, Christopher D])

Response: *The NRC staff disagrees with the suggested revision. The NRC staff's discussion of the tritium plume in Section 3.5.2 of this supplement is supported by several source documents as cited therein. In particular, the statement regarding the NRC staff's assessment of the extent of the tritium plume is supported by the totality of the best available information reviewed by the staff and not by a single effluent report or radiological environmental operating report. Therefore, the citation to the NRC's "Radioactive Effluent and Environmental Reports" website for these reports is sufficient.*

Comment: No.: 3
Section: 3.5.2
Page: 3-15
Line(s): 38
Comment: Recommend updating the concentration value from "12,000 pCi/L" to "12,200 pCi/L". The 2024 SLRA Additional Information ER (Reference 1) Section 5.3.1.4 stated, "Tritium concentrations at these locations steadily increased through 2021 to a maximum concentration of 12,200 pCi/L in MW-PB-28". (**2-3** [Wilson, Christopher D])

Comment: No.: 6
Section: 3.9.1
Page: 3-27
Line(s): 34
Comment: Please correct the statement that consultation letters were sent to, "14 Federally recognized Indian Tribes (see Appendix C)." There are 15 listed Indian Tribes in Appendix C. (**2-6** [Wilson, Christopher D])

Comment: No.: 7
Section: 3.12
Page: 3-36
Line(s): 36
Comment: Please correct the spelling of "archeological" to "archaeological".
(**2-7** [Wilson, Christopher D])

Comment: No.: 8
Section: 3.14.1.1
Page: 3-40
Line(s): 16-17
Comment: Clarify the unit of measurement for the data presented in Table 3-6 - Estimated Greenhouse Gas Emissions from Operations of Peach Bottom Atomic Power Station. Since CEG GHG emissions are reported in metric tons Reference 3 (PBAPS DSEIS reference CEG 2025-TN11574), please confirm whether the table uses metric tons or short tons. If the numbers presented within Table 3-6 are in short tons, a review of the unit conversion may be warranted

to ensure correct calculations (e.g., the 2023 direct emissions value of 3,008 metric tons converts to 2,728 not 2,780). (**2-8** [Wilson, Christopher D])

Comment: No.: 11
Section: B.2
Page: B-2
Line(s):
Comment: Consider updating Table B-1 to reflect that the air emissions permit was renewed and issued by PADEP on March 25, 2025, with an effective date of April 1, 2025, and expiration date of March 31, 2030. (**2-11** [Wilson, Christopher D])

Comment: No.: 12
Section: B.2
Page: B-3
Line(s):
Comment: Consider updating Table B-1 to reflect that Tennessee radioactive shipping license was reissued on December 4, 2024, with a new expiration date of December 31, 2025. (**2-12** [Wilson, Christopher D])

Response: *The NRC staff agrees with the editorial comments and suggested corrections and made appropriate changes to the supplement as a result of these comments.*

A.2.3 Human Health

Comment: Microbiological Hazards
Section 3.11.3 (page 3-32) indicates that thermal impacts could create conditions conducive to microbiological hazards including thermophilic fungi and bacteria, cyanobacteria, and other organisms that produce toxins that affect human health in areas accessible to the public using the Susquehanna River. This section indicates that no Harmful Algal Blooms (HABs) have been reported in the vicinity of Peach Bottom since 2018. As acknowledged by the 2014 reauthorization of the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2014 (HABHRCA), HABs are a serious threat to drinking and recreational uses in surface waters. HABs, particularly those caused by blue-green algae and their cyanotoxins, can pose risks to humans, pets, and wildlife as well as public drinking water supplies.

> ***Recommendations for the Final SEIS:***
> • Include monitoring for HABs when conditions are in the optimal range for their growth to protect public health and inform future management and preventative actions. (**4-2** [Witman, Timothy])

Response: *The NRC staff acknowledges the U.S. Environmental Protection Agency's (EPA's) recommendation. As discussed in Section 3.11.3 of this supplement, the Pennsylvania Department of Health maintains a program for monitoring harmful algal blooms and reports blooms through an online Harmful Algal Bloom Dashboard. No changes were made to the supplement as a result of this comment.*

Comment: Radionuclides Released to Groundwater
The Supplement to the SFEIS discusses several incidents of inadvertent release of radionuclides to groundwater (pages 3-14 to 3-18) that were detected by the radiological groundwater protection monitoring program since 2020 that exceeded the EPA's primary maximum contaminant level (drinking water standard) of 20,000 pCi/L. While these were

corrected, the FSEIS does not discuss whether additional steps, including modification or maintenance, should be considered to prevent future leaks, particularly as equipment ages over the proposed longer time period. For example, tritium concentrations in MW-PB-30 spiked several times from 2022 to late 2024 due to multiple issues, including condensed steam pooling and flowing to a sump, backed-up turbine building floor drains, and pressure washing conducted during maintenance. Elevated tritium levels were detected at monitoring well MW-PB-28 and in the Unit 3 yard drain sump from a packing leak.

Recommendations for the Final SEIS:
• Include measures to prevent additional releases of radionuclides through 2054. (**4-3** [Witman, Timothy])

Response: *The NRC staff acknowledges the EPA's recommendation. As described in Section 3.5.2 of this supplement, the NRC staff reviewed the Peach Bottom groundwater protection program and the results from tritium monitoring that were obtained as part of that program. Constellation Energy Generation, LLC (CEG) has implemented its groundwater protection program under the NEI 07-07 Groundwater Protection Initiative (*NEI 2019-TN6775*). This program includes the maintenance of a site conceptual model to identify groundwater pathways, a site risk assessment to identify structures and work practices with a credible mechanism for releases to groundwater, a monitoring program to detect inadvertent releases, and a remediation protocol to prevent the migration of radionuclides off-site. As part of the risk assessment component, the licensee is responsible for identifying work practices to prevent spills or leaks of source material. No changes were made to the supplement as a result of this comment.*

A.2.4 Waste Management

Comment: Waste
The Supplement indicates the possible need for construction of a third independent spent fuel storage installation (ISFSI) pad beyond 2034. Should this be needed, the applicant would conduct a study to identify candidate sites within the Peach Bottom site.

Recommendations for the Final SEIS:
• Include a discussion clarifying how decision-making regarding construction of an ISFSI pad will proceed, including whether an additional supplemental EIS would be needed. (**4_4** [Witman, Timothy])

Response: *The NRC staff acknowledges the EPA's recommendation. Spent fuel from Peach Bottom Units 2 and 3 is stored in a spent fuel pool and in an onsite independent spent fuel storage installation (ISFSI). The current Peach Bottom ISFSI has a general license under 10 CFR 72.210 (TN4884). The expansion of the existing ISFSI or the construction of a new ISFSI at Peach Bottom adjacent to the existing pad would need to meet the requirements of 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste" (NRC 2020-TN7402). The regulation at 10 CFR Part 72, Subpart E, "Siting Evaluation Factors," requires a licensee to investigate and assess site characteristics that may affect the safety or environmental impact of the ISFSI. As discussed in Section 3.12 of this supplement, should CEG need to go forward with construction of an additional ISFSI, it would conduct a siting study to identify candidate sites within the Peach Bottom site licensed by the NRC (the host area required by 10 CFR 72.106 [TN4884] for an ISFSI general license under 10 CFR 72.210). No changes were made to the supplement as a result of this comment.*

A.2.5 Water Resources – Surface Water

Comment: Water Quality and Surface Water Use
Section 316 of the Clean Water Act (CWA) applies to point sources with thermal discharges. Section 3.11.3 of the Draft Supplement indicates that Peach Bottom continuously discharges thermal effluent to the Susquehanna River, creating a thermal plume. Currently, Peach Bottom is operating under a 2014 National Pollutant Discharge Elimination System (NPDES) permit issued by the Pennsylvania Department of Environmental Protection (PADEP) and the applicant submitted a renewal application for the NPDES permit to PADEP in March 2019. The permit renewal application remains under review.

Additionally, the use of helper cooling towers in combination with the once-through cooling system results in consumptive surface water use. Makeup water is withdrawn from Conowingo Pond, an impounded portion of the lower Susquehanna River. Susquehanna River Basin Commission (SRBC) Docket No. 20061209-14 1 currently authorizes Peach Bottom to withdraw up to 2,363.62 million gallons per day of water and limits the plant's peak daily consumptive water use. This authorization will expire in 2034.

> ***Recommendations for the Final SEIS:***
> • Continue to coordinate with PADEP for the renewal of the NPDES permit and with SRBC on the extension of the withdrawal authorization for the duration of the NRC license renewal period. (**4-1** [Witman, Timothy])

Response: *The NRC staff acknowledges the EPA's recommendation. The NRC staff expects that CEG will adhere to all requirements and regulatory limits imposed by the PADEP and the Susquehanna River Basin Commission (SRBC), including those associated with the renewal of its environmental permits and authorizations. No changes were made to the supplement as a result of this comment.*

A.2.6 Opposition-Licensing Action

Comment Summary: The commenter expressed opposition to the license renewal referencing safety concerns and alternative power options.

Comment: (**1-1** [Anonymous])

Response: *The comment opposes Peach Bottom SLR and is general in nature. The comment provides no new and significant information; therefore, no changes were made to the supplement as a result of this comment.*

A.3 References

10 CFR Part 51. *Code of Federal Regulations*, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." TN10253.

10 CFR Part 72. *Code of Federal Regulations*, Title 10, *Energy*, Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste." TN4884.

90 FR 23050. May 30, 2025. "Environmental Impact Statements; Notice of Availability." *Federal Register*, Environmental Protection Agency. TN12178.

90 FR 23075. May 30, 2025. “Constellation Energy Generation, LLC; Peach Bottom Atomic Power Station Units 2 and 3; Draft Supplement to Environmental Impact Statement.” *Federal Register*, Nuclear Regulatory Commission. TN12177.

CEG (Constellation Energy Generation, LLC). 2025. Letter from C.D. Wilson, Director, License Renewal, to NRC Document Control Desk, dated January 21, 2025, regarding “Peach Bottom Atomic Power Station, Units 2 and 3 Subsequent Renewed Facility Operating License Nos. DPR-44 & DPR-56 NRC Docket Nos. 50-277 & 50-278, Peach Bottom Atomic Power Station Units 2 and 3, Subsequent License Renewal Environmental Review, Response to NRC Requests for Confirmation of Information (RCIs) and Request for Additional Information (RAI).” Kennett Square, Pennsylvania. ADAMS Accession No. ML25021A237. TN11574.

NEI (Nuclear Energy Institute). 2019. *Industry Groundwater Protection Initiative – Final Guidance Document, Rev. 1.* NEI-07-07, Revision 1, Washington, D.C. ADAMS Accession No. ML19142A071. TN6775.

NRC (U.S. Nuclear Regulatory Commission). 2018. *Official Transcript of Proceedings: Peach Bottom Units 2 and 3 Subsequent License Renewal Scoping Meeting.* Washington, D.C. ADAMS Accession No. ML18288A438. TN11755.

NRC (U.S. Nuclear Regulatory Commission). 2018. *Public Scoping Meeting for Environmental Review of Peach Bottom Atomic Power Station, Units 2 and 3 Subsequent License Renewal Application (EPID NO. L-2018-RWL-0013)*. Washington, D.C. ADAMS Accession No. ML18289A509. TN11754.

NRC (U.S. Nuclear Regulatory Commission). 2019. Letter from E.R. Oesterle, Chief, License Renewal Project Branch, Division of Materials and License Renewal, Office of Nuclear Reactor Regulation, to M. Gallagher, Vice President, License Renewal and Decommissioning, Exelon Nuclear, dated July 25, 2019, regarding “Issuance of Environmental Scoping Summary Report Associated with the Staff’s Review of the Peach Bottom Atomic Power Station Units 2 and 3 Subsequent License Renewal Application (EPID No. L-2018-RNW-0013).” Washington, D.C. ADAMS Accession No. ML19037A348. TN11570.

NRC (U.S. Nuclear Regulatory Commission). 2020. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station, Units 2 and 3, Final Report*. NUREG-1437, Supplement 10, Second Renewal, Washington, D.C. ADAMS Accession No. ML20023A937. TN7402.

NRC (U.S. Nuclear Regulatory Commission). 2024. “Radioactive Effluent and Environmental Reports for Peach Bottom 2 & 3.” Washington, D.C. Accessed March 3, 2025, at https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/pb2-3.html. TN11590.

NRC (U.S. Nuclear Regulatory Commission). 2024. *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal, Final Report*. NUREG-1555, Revision 2, Washington, D.C. ADAMS Accession No. ML23201A227. TN10251.

NRC (U.S. Nuclear Regulatory Commission). 2025. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station, Units 2 and 3 Supplement 1, Draft Report for Comment*. NUREG-1437, Washington, D.C. ADAMS Accession No. ML25111A147. TN12181.

APPENDIX B

APPLICABLE LAWS, REGULATIONS, AND OTHER REQUIREMENTS

There are a number of Federal laws and regulations that affect environmental protection, health, safety, compliance, and consultation at every U.S. Nuclear Regulatory Commission (NRC)-licensed nuclear power plant. Some of these laws and regulations require permits by or consultation with other Federal agencies or State, Tribal, or local governments. Certain Federal environmental requirements have been delegated to State authorities for enforcement and implementation. Furthermore, States have also enacted their own laws to protect public health and safety and the environment. It is the NRC's policy to make sure nuclear power plants are operated in a manner that provides adequate protection of public health and safety and protection of the environment through compliance with applicable Federal and State laws, regulations, and other requirements.

The Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.) (AEA) (TN663), authorizes the NRC to enter into an agreement with any State that allows the State to assume regulatory authority for certain activities (see 42 U.S.C. 2021). Pennsylvania is an NRC Agreement State. The Bureau of Radiation Protection within the Pennsylvania Department of Environmental Protection (PADEP) has regulatory responsibility over the radioactive materials program under the AEA Section 274b Agreement between the NRC and the Commonwealth of Pennsylvania.

In addition to carrying out certain Federal programs, State legislatures develop their own laws. State statutes can supplement, as well as implement, Federal laws for protection of air, surface water, and groundwater. State legislation may address solid waste management programs, locally rare or endangered species, and historic and cultural resources.

The U.S. Environmental Protection Agency (EPA) has the primary responsibility to administer the Clean Water Act (33 U.S.C. 1251 et seq.) (Federal Water Pollution Control Act of 1972-TN662). The National Pollutant Discharge Elimination System (NPDES) program addresses water pollution by regulating the discharge of potential pollutants to waters of the United States. EPA allows for primary enforcement and administration of the NPDES program through State agencies, as long as the State program is at least as stringent as the Federal program.

The EPA has delegated the authority to issue NPDES permits to Pennsylvania. Among other things, the PADEP provides oversight for public water supplies, issues permits to regulate the discharge of industrial and municipal wastewaters—including discharges to groundwater—and monitors State water resources for water quality. The PADEP issues NPDES permits to regulate and control water pollutants.

B.1 Federal and State Requirements

Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom) is subject to various Federal and State requirements. Appendix B, Table B-1 of the January 2020 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (the 2020 FSEIS) (NRC 2020-TN7402), lists and summarizes the applicable Federal and State laws and regulations potentially applicable to Peach Bottom subsequent license renewal (SLR). The NRC staff did not identify any new or differing information that would warrant any substantive changes to that table. Therefore, the NRC staff incorporates the information in Table B-1 of the 2020 FSEIS herein by reference (NRC 2020-TN7402: B-2–B-7).

B.2 Operating Permits and Other Requirements

Table B-1 lists the permits and licenses issued by Federal, State, and local authorities for activities at Peach Bottom. The NRC staff incorporates the related information in the 2020 FSEIS (NRC 2020-TN7402) in this table and provides relevant updates.

Table B-1 Federal, State, and Local Permits and Other Requirements

Permit	Responsible Agency	Number	Expiration Date	Authorized Activity
Federal Authorizations				
Licensing of nuclear power plant	NRC	DPR-44	Issue date: 05/07/2003 Expiration date: 08/08/2033	Operation of Unit 2
Licensing of nuclear power plant	NRC	DPR-56	Issue date: 05/07/2003 Expiration date: 07/02/2034	Operation of Unit 3
General license for storage of spent fuel at power reactor sites	NRC	General license	Included under Units 2 and 3 operation licenses	Storage of power reactor spent fuel and other associated radioactive materials in an ISFSI
Non-Project consumptive use of Conowingo Reservoir water	FERC	152 FERC 62, 142	Issued on 09/2/2015 Indefinite until system is modified	Non-Project consumptive use of Conowingo Reservoir water
Compliance with state water quality standards	EPA PADEP	PADEP File No. EA 67-024	Issued on 07/23/2014 (effective for duration of operation as an electric generation facility; may be suspended, revoked, or modified)	Certification of compliance with state water quality standards
Operation of air emission sources	EPA PADEP	67-05020	Renewal issued on 03/25/2025 Expiration date: 03/31/2030	Operation of air emission sources
US DOT Hazardous Material Shipments	DOT	051022550113EG	06/30/2025	Hazardous material shipments
Commonwealth of Pennsylvania Authorizations				
Individual Discharge Permit	PADEP	PA 0009733	09/30/2014; administratively extended; NPDES permit renewal application was submitted in 2019	Effluent limits for Peach Bottom discharges to the Susquehanna River

Table B-1 Federal, State, and Local Permits and Other Requirements (Continued)

Permit	Responsible Agency	Number	Expiration Date	Authorized Activity
Water and Wastewater Systems Operators Certification Act	PADEP	S24890	09/20/2026	Authorized to operate class B wastewater system
Storage Tanks	PADEP	67-60412	Issued annually	Gasoline, used oil, hazardous substances, unlisted materials
Safe Drinking Water Act	PADEP	W23604	09/30/2027	Authorization to operate Class A, E water system
Public Water Supply	PADEP	6709503	Issued: 9/22/2011 Indefinite (valid until system is modified)	Public Water Supply
Submerged Lands License Agreement	PADEP	E67-503	Indefinite (valid until system is modified)	Occupation of Submerged Lands of the Commonwealth
Resource Conservation and Recovery Act	PADEP	PAD000798132	Not applicable	Hazardous waste generation
Other States' Authorizations				
Radioactive waste shipments	Utah Department of Environmental Quality	0112001213	Renewed annually	Radioactive waste shipments to land disposal facility in Utah
Tennessee License to Ship Radioactive Materials	Tennessee Department of Environment and Conservation	T-PA005-L24	Reissued on 12/04/2024 Expiration date: 12/31/2025	Shipment of radioactive material to a licensed disposal/processing facility in Tennessee
Local Authorizations				
Consumptive use of Conowingo Pond water	SRBC	Docket 20061209-1	07/3/2034	Consumptive use of Conowingo Pond water

DOT= U.S. Department of Transportation; EPA = U.S. Environmental Protection Agency; FERC = Federal Energy Regulatory Commission; ISFSI = independent spent fuel storage installation; NRC = U.S. Nuclear Regulatory Commission; PADEP = Pennsylvania Department of Environmental Protection; SRBC = Susquehanna River Basin Commission.

Source: Exelon 2018-TN11707; CEG 2024-TN11573; NRC 2023-TN11756.

B.3 References

Cited references are included in Chapter 5.

APPENDIX C

CONSULTATION CORRESPONDENCE

C.1 Endangered Species Act Section 7 Consultation

As a Federal agency, the U.S. Nuclear Regulatory Commission (NRC) must comply with the Endangered Species Act of 1973, as amended (ESA) (16 *United States Code* [U.S.C.] 1531 et seq. [TN1010]), as part of any action authorized, funded, or carried out by the agency. In this case, the proposed agency action is whether to restore the expiration dates for the Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom) subsequent renewed facility operating licenses to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation. Under Section 7 of the ESA, the NRC must consult with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) ("the Services" [collectively] or "Service" [individually]), as appropriate, to ensure that the proposed action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. The NRC staff incorporates the related information in the January 2020 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (the 2020 FSEIS) (NRC 2020-TN7402) and provides relevant updates.

C.1.1 Federal Agency Obligations under Section 7 of the Endangered Species Act

The ESA and the regulations that implement ESA Section 7 at Title 50 of the *Code of Federal Regulations* (50 CFR) Part 402 (TN4312) describe the consultation process that Federal agencies must follow in support of agency actions. As part of this process, the Federal agency shall either request that the Services (1) provide a list of any listed or proposed species or designated or proposed critical habitats that may be present in the action area or (2) request that the Services concur with a list of species and critical habitats that the Federal agency has created (50 CFR 402.12(c) [TN4312]). If any such species or critical habitats may be present, the Federal agency prepares a biological assessment to evaluate the potential effects of the action and determine whether the species or critical habitats are likely to be adversely affected by the action (50 CFR 402.12(a) [TN4312]; 16 U.S.C. 1536(c) [TN4459]).

Biological assessments are required for any agency action that is a "major construction activity" (50 CFR 402.12(b) [TN4312]). A major construction activity is a construction project or other undertaking having construction-type impacts that is a major Federal action significantly affecting the quality of the human environment under the National Environmental Policy Act of 1969, as amended (NEPA; 42 U.S.C. 4321 et seq.) (51 FR 19926-TN7600). Federal agencies may fulfill their obligations to consult with the Services under ESA Section 7 and to prepare a biological assessment, if required, in conjunction with the interagency cooperation procedures required by other statutes, including NEPA (50 CFR 402.06(a) [TN4312]). In such cases, the Federal agency should include the results of ESA Section 7 consultation(s) in the NEPA document (50 CFR 402.06(b) [TN4312]).

C.1.2 Biological Evaluation

Subsequent license renewal (SLR) does not require the preparation of a biological assessment because it is not a major construction activity. Nonetheless, the NRC staff must consider the

impacts of its actions on federally listed species and designated critical habitats. In cases where the NRC staff finds that SLR "may affect" ESA-protected species or habitats, ESA Section 7 requires the NRC to consult with the relevant Service(s).

To support such consultations, the NRC staff has documented its analysis of the potential impacts of Peach Bottom SLR in Sections 3.8 and 4.8 of the 2020 FSEIS (NRC 2020-TN7402) and Section 3.8 of this supplement to the 2020 FSEIS. The NRC staff refers to its ESA analysis as a "biological evaluation."

The NRC staff structured its evaluation in accordance with the Services' suggested biological assessment contents described at 50 CFR 402.12(f) (TN4312). Section 3.8.1 of the 2020 FSEIS describes the action area as well as the ESA-protected species and critical habitats potentially present in the action area. Section 4.8.1 of the 2020 FSEIS assesses the potential effects of Peach Bottom SLR on the ESA-protected species and critical habitats present in the action area and contains the NRC's effect determinations for each of those species and habitats. Finally, Sections 4.8.2 through 4.8.7 of the 2020 FSEIS address the potential effects of the no-action alternative and reasonable replacement power alternatives. In Section 3.8 of this supplement to the 2020 FSEIS, the NRC staff evaluated additional species that the FWS has proposed for Federal listing since the NRC issued the 2020 FSEIS. The results of the NRC staff's analysis are summarized below in Table C-1 and Table C-2.

Table C-1 Effect Determinations for Federally Listed Species under U.S. Fish and Wildlife Service Jurisdiction

Species	Federal Status[(a)]	Potentially Present in the Action Area?	Effect Determination[(b)]	FWS Concurrence Date[(c)]
bog turtle	FT	No	NE	n/a
northern long-eared bat	FT	Yes	NLAA	9/4/2019
Indiana bat	FE	Yes	NLAA	9/4/2019
rufa red knot	FT	No	NE	n/a
Chesapeake logperch	CL	Yes	MA	n/a
tricolored bat	FPE	Yes	NLAA	11/22/2024
green floater	FPT	No	NE	n/a
monarch butterfly	FPT	Yes	NLAA	n/a

CL = candidate for Federal listing; ESA = Endangered Species Act; FE = federally listed as endangered; FPE = proposed for Federal listing as endangered; FPT = proposed for Federal listing as threatened; FT = federally listed as threatened; MA = may affect; n/a = not applicable; NE = no effect; NLAA = may affect, but is not likely to adversely affect; FWS = U.S. Fish and Wildlife Service.

(a) Indicates protection status under the ESA.

(b) The U.S. Nuclear Regulatory Commission staff makes its effect determinations for federally listed species in accordance with the language and definitions specified in the FWS and National Marine Fisheries Service Endangered Species Consultation Handbook (FWS and NMFS 1998-TN1031).

(c) The ESA does not require Federal agencies to seek FWS concurrence for NLAA determinations for proposed species, for NE determinations, or for candidate or proposed species.

Table C-2 Effect Determinations for Federally Listed Species under National Marine Fisheries Service Jurisdiction

Species	Federal Status[(a)]	Potentially Present in the Action Area?	Effect Determination[(b)]	NMFS Concurrence Date[(c)]
Atlantic sturgeon	FE	No	NE	n/a
shortnose sturgeon	FE	No	NE	n/a

ESA = Endangered Species Act; FE = federally listed as endangered; n/a = not applicable; NE = no effect; FWS = U.S. Fish and Wildlife Service.

(a) Indicates protection status under the ESA.

(b) The U.S. Nuclear Regulatory Commission staff makes its effect determinations for federally listed species in accordance with the language and definitions specified in the FWS and National Marine Fisheries Service Endangered Species Consultation Handbook (FWS and NMFS 1998-TN1031).

(c) The ESA does not require Federal agencies to seek FWS concurrence for NE determinations.

C.1.3 Chronology of Endangered Species Act Section 7 Consultation

Endangered Species Act Section 7 Consultation with the U.S. Fish and Wildlife Service

Appendix C, Section C.1.3 of the 2020 FSEIS (NRC 2020-TN7402) summarizes the NRC staff's consultation with the FWS concerning the bog turtle, northern long-eared bat, Indiana bat, rufa red knot, and Chesapeake logperch. During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these species or that would require further coordination or consultation with the FWS.

During its supplemental environmental review, the NRC staff identified three additional species proposed for Federal listing that may occur in the Peach Bottom action area: the tricolored bat, the green floater, and the monarch butterfly. The ESA does not require Federal agencies to seek concurrence on NLAA findings for proposed species. However, the FWS has made the Northern Long-eared Bat and Tricolored Bat Range-Wide Determination Key available to agencies in advance of the final rule concerning the tricolored bat listing. Accordingly, the NRC staff sought the FWS's concurrence under this Determination Key for Peach Bottom SLR. The FWS's concurrence is documented by letter dated November 22, 2024 (FWS 2024-TN11578). Although FWS concurrence is not required for either the green floater or the monarch butterfly, following the issuance of the draft of this supplement to the 2020 FSEIS, the NRC staff provided a copy of the draft supplement to the FWS for review and comment (NRC 2025-TN12180). On August 15, 2025, the FWS concurred with the NRC staff's findings for the monarch butterfly (FWS 2025-TN12282).

Endangered Species Act Section 7 Consultation with the National Marine Fisheries Service

Appendix C, Section C.1.3 of the 2020 FSEIS summarizes the NRC staff's consultation with the NMFS concerning the Atlantic sturgeon and the shortnose sturgeon. During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for these species or that would require further coordination or consultation with the NMFS. Accordingly, the NRC staff considers its obligations under ESA Section 7 to be fulfilled with respect to species and habitats under the NMFS's jurisdiction potentially affected by Peach Bottom SLR.

C.2 Essential Fish Habitat Consultation

The NRC must comply with the Magnuson–Stevens Fishery Conservation and Management Act of 1976, as amended (MSA) (16 U.S.C. 1801 et seq. [TN9966]), for any actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect any essential fish habitat (EFH) identified under the MSA.

Appendix C, Section C.2 of the 2020 FSEIS (NRC 2020-TN7402) summarizes the NRC staff's consultation with the NMFS concerning EFH. During its supplemental environmental review, the NRC staff did not identify any new and significant circumstances or information that would change the conclusions in the 2020 FSEIS for EFH or that would require further coordination or consultation with the NMFS. Accordingly, the NRC staff considers its obligations under the MSA to be fulfilled with respect to EFH potentially affected by Peach Bottom SLR.

C.3 National Marine Sanctuaries Act Consultation

The National Marine Sanctuaries Act of 1966, as amended (16 U.S.C. § 1431 et seq. [TN4482]), authorizes the Secretary of Commerce to designate and protect areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as National Marine Sanctuaries. Under Section 304(d) of the act, Federal agencies must consult with the National Oceanic and Atmospheric Administration's Office of National Marine Sanctuaries if a Federal action is likely to destroy, cause the loss of, or injure any sanctuary resources.

In Section 3.8 of this supplement to the 2020 FSEIS, the NRC staff concludes that no National Marine Sanctuaries are proposed or designated near Peach Bottom and that Peach Bottom SLR would have no effect on sanctuary resources. Thus, the National Marine Sanctuaries Act of 1966, as amended, does not require the NRC to consult with the National Oceanic and Atmospheric Administration for this proposed action.

C.4 National Historic Preservation Act Section 106 Consultation

The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq. [TN4157]) (NHPA), requires Federal agencies to consider the effects of their undertakings on historic properties and consult with applicable State and Federal agencies, Tribal groups, individuals, and organizations with a demonstrated interest in the undertaking before taking action. Historic properties are defined as resources that are eligible for listing on the National Register of Historic Places. The historic preservation review process (Section 106 of the NHPA) is outlined in regulations issued by the Advisory Council on Historic Preservation in 36 CFR Part 800 (TN513), "Protection of Historic Properties." In accordance with 36 CFR 800.8(c), "Use of the NEPA Process for Section 106 Purposes," the NRC has elected to use the NEPA process to comply with its obligations under NHPA Section 106 (TN513).

In Section 3.9.1 of this supplement to the 2020 FSEIS, the NRC staff concludes that Peach Bottom SLR would not adversely affect any known historic properties or historic and cultural resources.

Table C-3 lists the chronology of consultation and consultation documents related to the NRC staff's NHPA Section 106 review of Peach Bottom SLR. The NRC staff is required to consult with the State and Federal agencies and Tribal governments as identified in Section 1.7 of this supplement to the 2020 FSEIS in accordance with the statutes listed above.

Table C-3 National Historic Preservation Act Correspondence

Date	Sender and Recipient	Description	ADAMS Accession No.[a]
September 10, 2018	B. Beasley (NRC) to E. Butler-Wolfe, Absentee-Shawnee Tribe of Oklahoma	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to C. Halftown, Cayuga Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to D. Dotson, Delaware Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to C.L. Brooks, Delaware Tribe of Indians	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to G.J. Walla, Eastern Shawnee Tribe of Oklahoma	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to R. Halbritter, Oneida Indian Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to T. Hill, Oneida Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to Council of Chiefs, Onondaga Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B Beasley (NRC) to T. Gates, Seneca Nation of Indians	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to W.L. Fisher, Seneca-Cayuga Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to Tribal Chiefs, St. Regis Mohawk Tribe	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to R. Sparkman, Shawnee Tribe	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to S. Holsey, Stockbridge-Munsee Community	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to R. Hill, Tonawanda Band of Seneca	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to L. Henry, Tuscarora Nation	Request for scoping comments/notification of Section 106 review	ML18243A456
September 10, 2018	B. Beasley (NRC) to A. MacDonald, Pennsylvania State Historic Preservation Office	Request for scoping comments/notification of Section 106 review	ML18243A454

Table C-3 National Historic Preservation Act Correspondence (Continued)

Date	Sender and Recipient	Description	ADAMS Accession No.[(a)]
September 10, 2018	B. Beasley (NRC) to R. Nelson, Advisory Council on Historic Preservation	Request for scoping comments/notification of Section 106 review	ML18243A453
October 1, 2018	D. McLearen, Pennsylvania State Historic Preservation Office, to B. Beasley (NRC)	Re: Request for scoping comments/notification of Section 106 review	ML18299A124
August 7, 2019	B. Beasley (NRC) to A. Lowery, Pennsylvania State Historic Preservation Office	Availability of Draft Environmental Impact Statement	ML19205A210
August 7, 2019	B. Beasley (NRC) to R. Nelson, Advisory Council on Historic Preservation	Availability of Draft Environmental Impact Statement	ML19205A212
August 7, 2019	B. Beasley (NRC) to E. ButlerWolfe, Absentee-Shawnee Tribe of Oklahoma	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to C. Halftown, Cayuga Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to D. Dotson, Delaware Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to C. Brooks, Delaware Tribe of Indians	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to G. Wallace, Eastern Shawnee Tribe of Oklahoma	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to R. Halbritter, Oneida Indian Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to T. Hill, Oneida Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to Council of Chiefs, Onondaga Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to R. Armstrong, Seneca Nation of Indians	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to W. Fisher, Seneca-Cayuga Nation	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to Tribal Chiefs, St. Regis Mohawk Tribe	Availability of Draft Environmental Impact Statement	ML19205A211

Table C-3 National Historic Preservation Act Correspondence (Continued)

Date	Sender and Recipient	Description	ADAMS Accession No.[(a)]
August 7, 2019	B. Beasley (NRC) to R. Sparkman, Shawnee Tribe	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to S. Holsey, Stockbridge-Munsee Community	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to R. Hill, Tonawanda Band of Seneca	Availability of Draft Environmental Impact Statement	ML19205A211
August 7, 2019	B. Beasley (NRC) to L. Henry, Tuscarora Nation	Availability of Draft Environmental Impact Statement	ML19205A211
May 23, 2025	M. Rome (NRC) to Reid Nelson, Advisory Council on Historic Preservation	Availability of Draft Environmental Impact Statement, Supplement	ML25113A135
May 23, 2025	M. Rome (NRC) to Andrea Lowery, Pennsylvania State Historic Preservation Officer	Availability of Draft Environmental Impact Statement, Supplement	ML25113A136
May 23, 2025	M. Rome (NRC) to T. Jonathan, Tuscarora Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A256
May 28, 2025	M. Rome (NRC) to B. KillsCrow, Delaware Tribe of Indians	Availability of Draft Environmental Impact Statement, Supplement	ML25147A257
May 28, 2025	M. Rome (NRC) to J. Seneca, Seneca Nation of Indians	Availability of Draft Environmental Impact Statement, Supplement	ML25147A258
May 28, 2025	M. Rome (NRC) to S. Holsey, Stockbridge-Munsee Community	Availability of Draft Environmental Impact Statement, Supplement	ML25147A255
May 28, 2025	M. Rome (NRC) to J. Johnson, Absentee-Shawnee Tribe of Oklahoma	Availability of Draft Environmental Impact Statement, Supplement	ML25113A150
May 28, 2025	M. Rome (NRC) to B. Barnes, Shawnee Tribe	Availability of Draft Environmental Impact Statement, Supplement	ML25147A244
May 28, 2025	M. Rome (NRC) to M. Conners, B. Cook, and D. Thompson, Jr., Saint Regis Mohawk Tribe	Availability of Draft Environmental Impact Statement, Supplement	ML25147A245
May 28, 2025	M. Rome (NRC) to C. Diebold, Seneca-Cayuga Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A246
May 28, 2025	M. Rome (NRC) to R. Halbritter, Oneida Indian Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A248
May 28, 2025	M. Rome (NRC) to C. Halftown, Cayuga Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A249

Table C-3 National Historic Preservation Act Correspondence (Continued)

Date	Sender and Recipient	Description	ADAMS Accession No.[(a)]
May 28, 2025	M. Rome (NRC) to R. Hill, Tonawanda Band of Seneca	Availability of Draft Environmental Impact Statement, Supplement	ML25147A250
May 28, 2025	M. Rome (NRC) to T. Hill, Oneida Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A254
May 28, 2025	M. Rome (NRC) to S. Hill, Onondaga Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A252
May 28, 2025	M. Rome (NRC) to G. Wallace, Eastern Shawnee Tribe of Oklahoma	Availability of Draft Environmental Impact Statement, Supplement	ML25147A259
May 28, 2025	M. Rome (NRC) to D. Dotson, Delaware Nation	Availability of Draft Environmental Impact Statement, Supplement	ML25147A247
June 2, 2025	J. Bendremer, Stockbridge-Munsee Community, to B. Goldstein (NRC)	Consultation Response – No Comment	ML25189A212
June 18, 2025	B. Frederick, Pennsylvania State Historic Preservation Office, to B. Goldstein (NRC)	Consultation Response – No Effect	ML25189A206
July 7, 2025	B. Marzella, Advisory Council on Historic Preservation, to B. Goldstein (NRC)	Consultation Response – No Comment	ML25189A174

ADAMS = Agencywide Documents Access and Management System; NRC = U.S. Nuclear Regulatory Commission.
(a) Access these documents through the NRC's ADAMS at https://adams.nrc.gov/wba/.

C.5 References

Cited references are included in Chapter 5.

APPENDIX D

CHRONOLOGY OF CORRESPONDENCE

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and external parties as part of the agency's environmental review of the Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom) subsequent license renewal (SLR) application. This appendix does not include consultation correspondence or comments received during the scoping process. For a list and discussion of consultation correspondence, see Appendix C, "Consultation Correspondence," of this supplement to the January 2020 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Final Report" (the 2020 FSEIS) (NRC 2020-TN7402). All documents are available electronically from the NRC's Public Electronic Reading Room at http://www.nrc.gov/reading-rm.html. From this site, the public can access the Agencywide Documents Access and Management System (ADAMS), which provides text and image files of the NRC's public documents. The ADAMS accession number for each document is included in the following table. The NRC staff incorporates the related information in the 2020 FSEIS in this table and provides relevant updates.

D.1 Environmental Review Correspondence

Table D-1 lists the environmental review correspondence, by date, beginning with the request by Exelon Generation Company, LLC (Exelon) (now Constellation Energy Generation, LLC [CEG]) for Peach Bottom SLR.

Table D-1 Environmental Review Correspondence

Date	Correspondence Description	ADAMS Accession No.
July 10, 2018	Peach Bottom Units 2 and 3—Submittal of Subsequent License Renewal Application	ML18193A689
July 10, 2018	Peach Bottom Units 2 and 3—Submittal of CDs and Paper Copies of Subsequent License Renewal Application	ML18193A699
July 24, 2018	Peach Bottom Units 2 and 3, Subsequent License Renewal Application—Letter from Exelon redacting one figure	ML18205A311
August 1, 2018	Receipt and Availability of the Subsequent License Renewal Application for the Peach Bottom Units 2 and 3	ML18191B175
August 27, 2018	Determination of Acceptability and Sufficiency for Docketing, Proposed Review Schedule, and Opportunity for a Hearing Regarding the Application from Exelon for Subsequent Renewal of the Peach Bottom Units 2 and 3	ML18191B085
September 5, 2018	Peach Bottom Units 2 and 3, Subsequent License Renewal Application Online Reference Portal	ML18214A383
September 10, 2018	Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process for Peach Bottom Subsequent License Renewal Application	ML18232A438

Table D-1 Environmental Review Correspondence (Continued)

Date	Correspondence Description	ADAMS Accession No.
September 14, 2018	Peach Bottom Units 2 and 3, Subsequent License Renewal Application—Supplement 1	ML18257A143
October 25, 2018	Site Environmental Audit Plan for the Peach Bottom Subsequent License Renewal Application Review	ML18289A379
November 6, 2018	In-Office Severe Accident Mitigation Alternatives Audit Plan for the Peach Bottom Subsequent License Renewal Application Review	ML18304A200
November 23, 2018	Requests for Additional Information for the Environmental Review of the Peach Bottom Subsequent License Renewal Application	ML18330A157
December 13, 2018	Requests for Additional Information for the Severe Accident Mitigation Alternatives Assessment of the Peach Bottom Subsequent License Renewal Application	ML18348B029
December 20, 2018	Responses to Requests for Additional Information for the Environmental Review	ML18354B061 ML18354B066
January 28, 2019	Responses to Requests for Additional Information for the Severe Accident Mitigation Alternatives Assessment	ML19028A280
January 31, 2019	Peach Bottom Units 2 and 3—Summary of the Site Environmental Audit	ML18346A675
February 5, 2019	Peach Bottom Units 2 and 3—Summary of the In-Office Severe Accident Mitigation Alternatives Audit	ML19023A227
July 25, 2019	Environmental Scoping Summary Report Associated with the Staff's Review of the Peach Bottom Units 2 and 3 Subsequent License Renewal Application	ML19037A348
July 31, 2019	Schedule Revision for the Review of the Peach Bottom Atomic Power Station Units 2 & 3 Subsequent License Renewal Application (EPID NOS. L-2018-RNW-0012/L-2018-RNW-0013)	ML19210C571
August 1, 2019	Notice of Availability of Draft Supplement 10, Second Renewal to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3	ML19199A113
October 2, 2019	Nuclear Regulatory Commission's Public Meeting on the Draft Supplemental Environmental Impact Statement for Subsequent License Renewal of Peach Bottom Atomic Power Station, Units 2 and 3	ML19260F965
October 31, 2019	Requests for Additional Information for the Environmental Review of the Peach Bottom Subsequent License Renewal Application - Set 2 (EPID No. L-2018-RNW-0013)	ML19303D091
November 1, 2019	Response to Request dated October 31, 2019, for Docketing of Additional Documents to Support	ML19305A965

Table D-1 Environmental Review Correspondence (Continued)

Date	Correspondence Description	ADAMS Accession No.
	NRC's Environmental Review of the Peach Bottom Atomic Power Station, Units 2 and 3, Subsequent License Renewal Application	
June 5, 2024	Letter from CEG to NRC Document Control Desk, Regarding the Subsequent License Renewal Environmental Review for Peach Bottom Atomic Power Station, Units 2 and 3	ML24157A069
September 6, 2024	Letter From NRC to CEG, Response to Request for Re-Engagement Regarding the Subsequent License Renewal Environmental Review for Peach Bottom Atomic Power Station, Units 2 And 3	ML24221A258
November 13, 2024	Peach Bottom Nuclear Plant, Units 2 and 3 – License Renewal Regulatory Audit Regarding the Environmental Review of the Subsequent License Renewal Application; Audit Plan	ML24313A101
December 13, 2024	Peach Bottom Atomic Power Station, Units 2 And 3 – Summary of the 2024 Supplemental Environmental Audit Related to the Review of the Subsequent License Renewal Application	ML24344A110
January 7, 2025	*Federal Register*, Notice of Intent to Prepare a Supplement to the Supplemental Environmental Impact Statement; Constellation Energy Generation, LLC; Peach Bottom Atomic Power Station, Units 2 and 3	ML24339A013; 90 FR 1201
January 21, 2025	Peach Bottom Atomic Power Station Units 2 and 3, Subsequent License Renewal Environmental Review, Response to NRC Requests for Confirmation of Information (RCIs) and Request for Additional Information (RAI)	ML25021A237
May 22, 2025	Letter from NRC to C. Wilson, CEG, Peach Bottom Atomic Power Station, Units 2 and 3 – Notice of Availability of Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station, Units 2 and 3, Supplement 1, Draft Report for Comment	ML25114A047
May 30, 2025	*Federal Register*, Constellation Energy Generation, LLC; Peach Bottom Atomic Power Station Units 2 and 3; Draft Supplement to Environmental Impact Statement; Request for comment; opportunity to request a hearing and to petition for leave to intervene	ML25112A119; 90 FR 23075

ADAMS = Agencywide Documents Access and Management System; NRC = U.S. Nuclear Regulatory Commission.
(a) Access these documents through the NRC's ADAMS at https://adams.nrc.gov/wba/.

D.2 References

Cited references are included in Chapter 5.

NRC FORM 335 (12-2010) NRCMD 3.7

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

(See instructions on the reverse)

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(Assigned by NRC, Add Vol., Supp., Rev., and Addendum Numbers, if any.)

NUREG-1437
Supplement 10
Second Renewal
Supplement 1

2. TITLE AND SUBTITLE

Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station, Units 2 and 3, Supplement 1
Final Report

3. DATE REPORT PUBLISHED

MONTH	YEAR
August	2025

4. FIN OR GRANT NUMBER

5. AUTHOR(S)

See Chapter 6, “List of Preparers,” of the report.

6. TYPE OF REPORT

7. PERIOD COVERED (Inclusive Dates)

8. PERFORMING ORGANIZATION - NAME AND ADDRESS (If NRC, provide Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address; if contractor, provide name and mailing address.)

Division of Rulemaking, Environmental, and Financial Support
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

9. SPONSORING ORGANIZATION - NAME AND ADDRESS (If NRC, type "Same as above", if contractor, provide NRC Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address.)

Same as 8 above.

10. SUPPLEMENTARY NOTES

Docket Nos. 50-277 and 50-278; SEIS-429-00-000-1734688863

11. ABSTRACT (200 words or less)

This final supplement to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3 (Peach Bottom), Final Report (the 2020 FSEIS) incorporates new information that the NRC staff has obtained since the publication of the 2020 FSEIS in January 2020. The staff prepared these documents as part of its environmental review of the Exelon Generation Company, LLC (now Constellation Energy Generation, LLC) application to renew the operating licenses for Peach Bottom for an additional 20 years. Together, they complete the staff’s evaluation of the environmental impacts of license renewal and alternatives to license renewal and support the staff’s recommendation that the adverse environmental impacts of license renewal for Peach Bottom are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. Further, the staff concludes that restoring the expiration dates for Peach Bottom’s subsequent renewed facility operating licenses for Units 2 and 3 to August 8, 2053, and to July 2, 2054, respectively, to authorize an additional 20 years of operation would not have impacts beyond those discussed in these documents and in Revision 2 of NUREG-1437.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

Constellation Energy Generation, LLC
CEG
Peach Bottom Atomic Power Station
Peach Bottom
Subsequent License Renewal
Supplemental Environmental Impact Statement
Supplement
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13. AVAILABILITY STATEMENT
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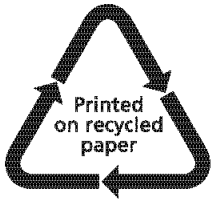

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NUREG-1437
Supplement 10
Second Renewal
Supplement 1, Final

Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 10, Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Supplement 1

August 2025