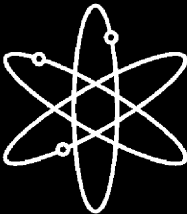


Generic Environmental Impact Statement for License Renewal of Nuclear Plants



Supplement 24



**Regarding
Nine Mile Point Nuclear Station, Units 1 and 2**



Final Report



**U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001**



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**Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001**



Abstract

The U.S. Nuclear Regulatory Commission (NRC) considered the environmental impacts of renewing nuclear power plant operating licenses (OLs) for a 20-year period in its *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, and codified the results in Title 10 of the Code of Federal Regulations (CFR) Part 51. In the GEIS (and its Addendum 1), the staff identifies 92 environmental issues and reaches generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. Additional plant-specific review is required for the remaining 23 issues. These plant-specific reviews are to be included in a supplement to the GEIS.

This supplemental environmental impact statement (SEIS) has been prepared in response to applications submitted to the NRC by the Nine Mile Point Nuclear Station, LLC (NMPNS), to renew the OLs for Nine Mile Point Nuclear Station (Nine Mile Point) Units 1 and 2 for an additional 20 years under 10 CFR Part 54. Nine Mile Point Units 1 and 2 (NMP) are operated exclusively by NMPNS, a subsidiary of Constellation Generation Group, LLC, which in turn is a member of Constellation Energy Group. This SEIS includes the NRC staff's analysis that considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the staff's recommendation regarding the proposed action.

Regarding the 69 issues for which the GEIS reached generic conclusions, neither NMPNS nor the staff has identified information that is both new and significant for any issue that applies to NMP. In addition, the staff determined that information provided during the scoping process did not call into question the conclusions in the GEIS. Therefore, the staff concludes that the impacts of renewing the Nine Mile Point OLs will not be greater than impacts identified for these issues in the GEIS. For each of these issues, the staff's conclusion in the GEIS is that the impact is of SMALL significance^(a) (except for collective offsite radiological impacts from the fuel cycle and high-level waste and spent fuel, which were not assigned a single significance level).

Regarding the remaining 23 issues, those that apply to NMP are addressed in this SEIS. For each applicable issue, the staff concludes that the significance of the potential environmental impacts of renewal of the OLs is SMALL. The staff also concludes that additional mitigation measures are not likely to be sufficiently beneficial as to be warranted. The staff determined that information provided during the scoping process did not identify any new issue that has a significant environmental impact.

The NRC staff's recommendation is that the Commission determine that the adverse environmental impacts of license renewal for NMP are not so great that preserving the option of

(a) Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

license renewal for energy-planning decisionmakers would be unreasonable. This recommendation is based on the following: (1) the analysis and findings in the GEIS; (2) the Environmental Report submitted by NMPNS; (3) consultation with Federal, State, and local agencies; (4) the staff's own independent review; and (5) the staff's consideration of public comments.

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Executive Summary

By letter dated May 26, 2004, the Nine Mile Point Nuclear Station, LLC (NMPNS) submitted applications to the U.S. Nuclear Regulatory Commission (NRC) to renew the operating licenses (OLs) for Nine Mile Point Nuclear Station Units 1 and 2 for an additional 20-year period. Nine Mile Point Units 1 and 2 (NMP) are operated exclusively by NMPNS, a subsidiary of Constellation Generation Group, LLC, which in turn is a member of Constellation Energy Group. If the OLs are renewed, State regulatory agencies and NMPNS will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. If the OLs are not renewed, then the plant must be shut down at or before the expiration dates of the current OLs, which are August 22, 2009, for Unit 1, and October 31, 2026, for Unit 2.

The NRC has implemented Section 102 of the National Environmental Policy Act (NEPA) (42 USC 4321) in Title 10 of the Code of Federal Regulations (CFR) Part 51. In 10 CFR 51.20(b)(2), the Commission requires preparation of an Environmental Impact Statement (EIS) or a supplement to an EIS for renewal of a reactor OL. In addition, 10 CFR 51.95(c) states that the EIS prepared at the OL renewal stage will be a supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2.^(a)

Upon acceptance of the NMPNS applications, the NRC began the environmental review process described in 10 CFR Part 51 by publishing a notice of intent to prepare an EIS and conduct scoping. The staff visited the Nine Mile Point site in September 2004 and held public scoping meetings on September 21, 2004, in Oswego, New York. In the preparation of this supplemental environmental impact statement (SEIS) for NMP, the staff reviewed the NMPNS Environmental Report (ER) and compared it to the GEIS; consulted with other agencies; conducted an independent review of the issues following the guidance set forth in NUREG-1555, Supplement 1, the *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*; and considered the public comments received during the scoping process. The public comments received during the scoping process that were considered to be within the scope of the environmental review are provided in Appendix A, Part 1, of this SEIS.

A draft SEIS was published in September 2005. The staff held two public meetings in Oswego, New York, in November 2005, to describe the preliminary results of the NRC environmental review, to answer questions, and to provide members of the public with information to assist them in formulating comments on this SEIS. When the comment period ended, the staff considered and addressed all of the comments received. These comments are addressed in Appendix A, Part 2 of this SEIS.

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the GEIS include the GEIS and its Addendum 1.

This SEIS includes the NRC staff's analysis that considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures for reducing or avoiding adverse effects. It also includes the staff's recommendation regarding the proposed action.

The Commission has adopted the following statement of purpose and need for license renewal from the GEIS:

The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and, where authorized, Federal (other than NRC) decisionmakers.

The goal of the staff's environmental review, as defined in 10 CFR 51.95(c)(4) and the GEIS, is to 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.

Both the statement of purpose and need and the evaluation criterion implicitly acknowledge that there are factors, in addition to license renewal, that will ultimately determine whether an existing nuclear power plant continues to operate beyond the period of the current OL.

NRC regulations [10 CFR 51.95(c)(2)] contain the following statement regarding the content of SEISs prepared at the license renewal stage:

The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) ["Temporary storage of spent fuel after cessation of reactor operation-generic determination of no significant environmental impact"] and in accordance with § 51.23(b).

The GEIS contains the results of a systematic evaluation of the consequences of renewing an OL and operating a nuclear power plant for an additional 20 years. It evaluates 92 environmental issues using the NRC's three-level standard of significance—SMALL, MODERATE, or LARGE—developed using the Council on Environmental Quality guidelines. The following definitions of the three significance levels are set forth in footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B:

SMALL—Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE—Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE—Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For 69 of the 92 issues considered in the GEIS, the analysis in the GEIS reached the following conclusions:

- (1) 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.
- (2) A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal).
- (3) 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.

These 69 issues were identified in the GEIS as Category 1 issues. In the absence of new and significant information, the staff relied on conclusions as amplified by supporting information in the GEIS for issues designated as Category 1 in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B.

Of the 23 issues that do not meet the criteria set forth above, 21 are classified as Category 2 issues requiring analysis in a plant-specific supplement to the GEIS. The remaining two issues, environmental justice and chronic effects of electromagnetic fields, were not categorized. Environmental justice was not evaluated on a generic basis and must be addressed in a plant-specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

This SEIS documents the staff's consideration of all 92 environmental issues identified in the GEIS. The staff considered the environmental impacts associated with alternatives to license renewal and compared the environmental impacts of license renewal and the alternatives. The alternatives to license renewal that were considered include the no-action alternative (not renewing the OLS for NMP) and alternative methods of power generation. Based on projections made by the U.S. Department of Energy's Energy Information Administration (DOE/EIA), gas- and coal-fired generation appear to be the most likely power-generation alternatives if the power from NMP is replaced. These alternatives are evaluated assuming that the replacement power generation plant is located at either the Nine Mile Point site or some other unspecified alternate location.

NMPNS and the staff have established independent processes for identifying and evaluating the significance of any new information on the environmental impacts of license renewal. Neither NMPNS nor the staff has identified information that is both new and significant related to Category 1 issues that would call into question the conclusions in the GEIS. Similarly, neither the scoping process nor the staff has identified any new issue applicable to NMP that has a significant environmental impact. Therefore, the staff relies upon the conclusions of the GEIS for all of the Category 1 issues that are applicable to NMP.

NMPNS's license renewal applications presented an analysis of the Category 2 issues plus environmental justice and chronic effects from electromagnetic fields. The staff has reviewed the NMPNS analysis for each issue and has conducted an independent review of each issue. Five Category 2 issues are not applicable, because they are related to plant design features or site characteristics not found at Nine Mile Point. Four Category 2 issues are not discussed in this SEIS, because they are specifically related to refurbishment. NMPNS has stated that its evaluation of structures and components, as required by 10 CFR 54.21, did not identify any major plant refurbishment activities or modifications as necessary to support the continued operation of NMP, for the license renewal period. In addition, any replacement of components or additional inspection activities are within the bounds of normal plant operation, and are not expected to affect the environment outside of the bounds of the plant operations evaluated in the U.S. Atomic Energy Commission's 1972 *Final Environmental Statement Related to Operation of Nine Mile Point Nuclear Station*.

Twelve Category 2 issues related to operational impacts and postulated accidents during the renewal term, as well as environmental justice and chronic effects of electromagnetic fields, are discussed in detail in this SEIS. Five of the Category 2 issues and environmental justice apply to both refurbishment and to operation during the renewal term and are only discussed in this SEIS in relation to operation during the renewal term. For all 12 Category 2 issues and environmental justice, the staff concludes that the potential environmental effects are of SMALL significance in the context of the standards set forth in the GEIS. In addition, the staff determined that appropriate Federal health agencies have not reached a consensus on the existence of chronic adverse effects from electromagnetic fields. Therefore, no further evaluation of this issue is required. For severe accident mitigation alternatives (SAMAs), the staff concludes that a reasonable, comprehensive effort was made to identify and evaluate SAMAs. The staff agrees with NMPNS's identification of areas in which risk can be further reduced in a cost-beneficial manner through the implementation of all or a subset of the identified, potentially cost-beneficial SAMAs. Given the potential for cost-beneficial risk reduction, the staff agrees that further evaluation of these SAMAs by NMPNS is warranted. However, none of the potentially cost-beneficial SAMAs relate to adequately managing the effects of aging during the period of extended operation. Therefore, they need not be implemented as part of the license renewal pursuant to 10 CFR Part 54.

Mitigation measures were considered for each Category 2 issue. Current measures to mitigate the environmental impacts of plant operation were found to be adequate, and no additional mitigation measures were deemed sufficiently beneficial to be warranted.

If the Nine Mile Point operating licenses are not renewed and the units cease operation on or before the expiration of their current operating licenses, then the adverse impacts of likely alternatives will not be smaller than those associated with continued operation of NMP. The impacts may, in fact, be greater in some areas.

The recommendation of the NRC staff is that the Commission determine that the adverse environmental impacts of license renewal for NMP, are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS; (2) the ER submitted by NMPNS; (3) consultation with other Federal, State, Tribal and local agencies; (4) the staff's own independent review; and (5) the staff's consideration of public comments received.

Abbreviations/Acronyms

°	degree
ac	acre(s)
ac	alternating current
ACC	averted cleanup and decontamination costs
AChP	Advisory Council on Historic Preservation
ADAMS	Agencywide Document Access and Management System
ADS	automatic depressurization system
AEC	U.S. Atomic Energy Commission
ALARA	as low as reasonably achievable
AOC	present value of averted offsite property damage costs
AOE	present value of averted occupational exposure
AOSC	present value of averted onsite costs
APE	present value of averted public exposure OR area of potential effect
AQCR	air quality control region
Bq	becquerel(s)
Btu	British thermal unit(s)
BWR	boiling water reactor
BWROG	Boiling Water Reactor Owners Group
C	Celsius
CDF	core damage frequency
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Ci	curie(s)
cm	centimeter(s)
cm/s	centimeter(s) per second
COE	cost of enhancement
CRD	control rod drive
CWA	Clean Water Act
CWS	circulating water system
DAW	dry active waste
DBA	design-basis accident
dc	direct current
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSM	demand-side management

EDG	emergency diesel generator
EFPD	effective full power day
EIA	Energy Information Administration (of DOE)
EIS	environmental impact statement
ELF-EMF	extremely low frequency electromagnetic field
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ER	Environmental Report
ESA	Endangered Species Act
ESRP	Environmental Standard Review Plan, NUREG-1555, Supplement 1, Operating License Renewal
F	Fahrenheit
FES	Final Environmental Statement
FIVE	Fire Induced Vulnerability Evaluation
FR	Federal Register
FSAR	Final Safety Analysis Report
ft	foot/feet
ft/s	feet per second
ft ²	square foot/feet
ft ³	cubic foot/feet
ft ³ /s	cubic foot/feet per second
ft ³ /yr	cubic foot/feet per year
FV	Fussell-Vesely
FWS	U.S. Fish and Wildlife Service
g	gram(s)
gal	gallon
GEIS	Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437
GLWQA	Great Lakes Water Quality Agreement
gpd	gallons per day
gpm	gallons per minute
gps	gallons per second
GWPS	gaseous waste processing system
ha	hectare(s)
HCLPF	high confidence low probability of failure
HEPA	high-efficiency particulate air
HLW	high-level waste
hp	horsepower
HPCS	high pressure core spray

hr	hour(s)
HVAC	heating ventilation air conditioning
Hz	Hertz
IGLD	International Great Lakes Datum
in.	inch(es)
in/sec	inch(es) per second
IPE	individual plant examination
IPEEE	individual plant examination of external events
ISLOCA	interfacing systems loss-of-coolant accident
ISLRBC	International St. Lawrence River Board of Control
JTU	Jackson Turbidity Unit
kg	kilogram(s)
km	kilometer(s)
km ²	square kilometer(s)
km ³	cubic kilometer(s)
kV	kilovolt(s)
kW(e)	kilowatt hour(s) electric
kWh	kilowatt hour(s)
L	liter(s)
L/day	liter(s) per day
L/min	liter(s) per minute
L/s	liter(s) per second
LERF	large early release frequency
lb	pound
LLC	limited liability corporation
LOCA	loss-of-coolant accident
LOS	level of service
m	meter(s)
m/s	meter(s) per second
m ²	square meter(s)
m ³	cubic meter(s)
m ³ /d	cubic meter(s) per day
m ³ /m	cubic meter(s) per minute
m ³ /s	cubic meter(s) per second
m ³ /yr	cubic meter(s) per year
mA	milliampere(s)
MAAP	Modular Accident Analysis Program

MAB	maximum attainable benefit
MACCS2	MELCOR Accident Consequence Code System 2
MBq	megabequerel
mi	mile(s)
mg/L	milligram(s) per liter
mL	milliliter(s)
mm	millimeter(s)
MOV	motor operated valve
mph	miles per hour
mrem	millirem(s)
mrem/yr	millirem(s) per year
MSA	metropolitan statistical area
msl	mean sea level
mSv	millisievert(s)
mSv/yr	millisievert(s) per year
MT	metric ton(s) (or tonne[s])
MTHM	metric tons of heavy metal (a conventional unit for high-level nuclear waste)
MTU	metric ton(s) uranium
MT/yr	metric tons of heavy metal per year
MW	megawatt(s)
MWB	metropolitan water board
MWd	megawatt day(s)
MW(e)	megawatt(s) electric
MW(t)	megawatt(s) thermal
MWh	megawatt hour(s)
N/A	not applicable
NAS	National Academy of Sciences
NEPA	National Environmental Policy Act of 1969
NESC	National Electric Safety Code
NGVD	National Geodetic vertical datum
ng/J	nanogram per joule
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NMP	Nine Mile Point Units 1 and 2
NMPC	Niagra Mohawk Power Company
NMPNS	Nine Mile Point Nuclear Station, LLC
NO _x	nitrogen oxide(s)
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NWI	National Wetland Inventory
NYCRR	New York Code of Rules and Regulations

NYISO	New York Independent System Operator
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric and Gas
NYSERDA	New York State Energy Research Development Authority
OCWA	Onondaga County Water Authority
ODCM	Offsite Dose Calculation Manual
OL	operating license
OMNR	Ontario Ministry of Natural Resources
OWS	Oswego Water System
PBT	persistent, bioaccumulative, toxic chemicals
PCB	polychlorinated byphenals
PM ₁₀	particulate matter, 10 microns or less in diameter
PRA	probabilistic risk assessment
PSD	prevention of significant deterioration
PV	photovoltaic
RAI	request for additional information
RCIC	reactor core insolation cooling
RCP	reactor coolant pump
RCRA	Resource Conservation and Recovery Act
rem	special unit of dose equivalent, equal to 0.01 sievert
REMP	radiological environmental monitoring program
RERR	Radioactive Effluent Release Report
RHR	residual heat removal
RIS	Representative Important Species
RPC	replacement power cost
RPV	reactor pressure vessel
RWCU	reactor water cleanup
s	second(s)
SAMA	severe accident mitigation alternative
SAR	Safety Analysis Report
SBO	station blackout
SCR	selective catalytic reduction
SEIS	supplemental environmental impact statement
SER	Safety Evaluation Report
SHPO	State Historic Preservation Officer
SMA	seismic margins assessment
SO ₂	sulfur dioxide
SO _x	sulfur oxide(s)

SPDES	State Pollutant Discharge Elimination System
Sv	Seivert(s) (special unit of dose equivalent)
SWMA	State Wildlife Management Area
UFSAR	Updated Final Safety Analysis Report
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Service
USI	Unresolved Safety Issue
VOC	volatile organic compound
yr	year

1.0 Introduction

Under the Nuclear Regulatory Commission's (NRC's) environmental protection regulations in Title 10 of the Code of Federal Regulations (CFR) Part 51, which implement the National Environmental Policy Act of 1969 (NEPA), renewal of a nuclear power plant operating license (OL) requires the preparation of an environmental impact statement (EIS). In preparing the EIS, the NRC staff is required first to issue the statement in draft form for public comment, and then issue a final statement after considering public comments on the draft. To support the preparation of the EIS, the staff has prepared a *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2 (NRC 1996, 1999).^(a) The GEIS is intended to (1) provide an understanding of the types and severity of environmental impacts that may occur as a result of license renewal of nuclear power plants under 10 CFR Part 54, (2) identify and assess the impacts that are expected to be generic to license renewal, and (3) support 10 CFR Part 51 to define the number and scope of issues that need to be addressed by the applicants in plant-by-plant renewal proceedings. Use of the GEIS guides the preparation of complete plant-specific information in support of the OL renewal process.

The Nine Mile Point Nuclear Station, LLC (NMPNS) operates Nine Mile Point nuclear reactor Units 1 and 2 in northern New York under OLs DPR-63 and NPF-69, which were issued by the NRC. These OLs will expire in August 22, 2009 for Unit 1 and October 31, 2026 for Unit 2. On May 26, 2004, NMPNS submitted applications to the NRC to renew the Nine Mile Point Units 1 and 2 (NMP) OLs for an additional 20 years in accordance with 10 CFR Part 54; the application was supplemented by letters dated March 3, 2005, and July 14, 2005. NMPNS is the licensee for the purpose of its current OLs and the applicant for the renewal of the OLs. Pursuant to 10 CFR 54.23 and 51.53(c), NMPNS submitted an Environmental Report (ER) (NMPNS 2004) in which NMPNS analyzed the environmental impacts associated with the proposed license renewal action, considered alternatives to the proposed action, and evaluated mitigation measures for reducing adverse environmental effects.

This report is the plant-specific supplement to the GEIS (the supplemental environmental impact statement [SEIS]) for the NMPNS license renewal applications. This SEIS is a supplement to the GEIS because it relies, in part, on the findings of the GEIS. The staff will also prepare a separate safety evaluation report in accordance with 10 CFR Part 54.

1.1 Report Contents

The following sections of this introduction (1) describe the background for the preparation of this SEIS, including the development of the GEIS and the process used by the staff to assess the environmental impacts associated with license renewal, (2) describe the proposed Federal

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the GEIS include the GEIS and its Addendum 1.

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action to renew the NMP OLS, (3) discuss the purpose and need for the proposed action, and (4) present the status of NMPNS's compliance with environmental quality standards and requirements that have been imposed by Federal, State, regional, and local agencies that are responsible for environmental protection.

The ensuing chapters of this SEIS closely parallel the contents and organization of the GEIS. Chapter 2 describes the site, power plant, and interactions of the plant with the environment. Chapters 3 and 4, respectively, discuss the potential environmental impacts of plant refurbishment and plant operation during the renewal term. Chapter 5 evaluates potential environmental impacts of plant accidents and considers severe accident mitigation alternatives. Chapter 6 discusses the uranium fuel cycle and solid waste management. Chapter 7 discusses decommissioning, and Chapter 8 discusses alternatives to license renewal. Finally, Chapter 9 summarizes the findings of the preceding chapters and draws conclusions about the adverse impacts that cannot be avoided; the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and the irreversible or irretrievable commitment of resources. Chapter 9 also presents the staff's recommendation with respect to the proposed license renewal action.

Additional information is included in appendixes. Appendix A contains public comments related to the environmental review for license renewal and staff responses to those comments. Appendixes B through G, respectively, list the following:

- The preparers of the supplement
- The organizations contacted during the development of this SEIS
- The chronology of NRC staff's environmental review correspondence related to this SEIS
- NMPNS's compliance status in Table E-1 (this appendix also contains copies of consultation correspondence sent and received during the evaluation process)
- GEIS environmental issues that are not applicable to NMP
- Severe accident mitigation alternatives (SAMAs).

1.2 Background

Use of the GEIS, which examines the possible environmental impacts that could occur as a result of renewing individual nuclear power plant OLS under 10 CFR Part 54, and the established license renewal evaluation process supports the thorough evaluation of the impacts of renewal of OLS.

1.2.1 Generic Environmental Impact Statement

The NRC initiated a generic assessment of the environmental impacts associated with the license renewal term to improve the efficiency of the license renewal process by documenting the assessment results and codifying the results in the Commission's regulations. This assessment is provided in the GEIS, which serves as the principal reference for all nuclear power plant license renewal EISs.

The GEIS documents the results of the systematic approach that was taken to evaluate the environmental consequences of renewing the licenses of individual nuclear power plants and operating them for an additional 20 years. For each potential environmental issue, the GEIS (1) describes the activity that affects the environment, (2) identifies the population or resource that is affected, (3) assesses the nature and magnitude of the impact on the affected population or resource, (4) characterizes the significance of the effect for both beneficial and adverse effects, (5) determines whether the results of the analysis apply to all plants, and (6) considers whether additional mitigation measures would be warranted for impacts that would have the same significance level for all plants.

NRC's standard of significance for impacts was established using the Council on Environmental Quality (CEQ) terminology for "significantly" (40 CFR 1508.27, which requires consideration of both "context" and "intensity"). Using the CEQ terminology, the NRC established three significance levels—SMALL, MODERATE, or LARGE. The definitions of the three significance levels are set forth in the footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, as follows:

SMALL—Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE—Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE—Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The GEIS assigns a significance level to each environmental issue, assuming that ongoing mitigation measures would continue.

The GEIS includes a determination of whether the analysis of the environmental issue could be applied to all plants and whether additional mitigation measures would be warranted. Issues are assigned a Category 1 or a Category 2 designation. As set forth in the GEIS, **Category 1** issues are those that meet all of the following criteria:

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- (1) 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.
- (2) A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal).
- (3) 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 likely not to be sufficiently beneficial to warrant implementation.

For issues that meet the three Category 1 criteria, no additional plant-specific analysis is required in this SEIS unless new and significant information is identified.

Category 2 issues are those that do not meet one or more of the criteria of Category 1, and therefore, additional plant-specific review for these issues is required.

In the GEIS, the staff assessed 92 environmental issues and determined that 69 qualified as Category 1 issues, 21 qualified as Category 2 issues, and 2 issues (environmental justice and chronic effects of electromagnetic fields) were not categorized. Environmental justice was not evaluated on a generic basis and must be addressed in a plant-specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

Of the 92 issues, 11 are related only to refurbishment, 6 are related only to decommissioning, 67 apply only to operation during the renewal term, and 8 apply to both refurbishment and operation during the renewal term. A summary of the findings for all 92 issues in the GEIS is codified in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B.

1.2.2 License Renewal Evaluation Process

An applicant seeking to renew its OLS is required to submit an ER as part of its application. The license renewal evaluation process involves careful review of the applicant's ER and assurance that all new and potentially significant information not already addressed in or available during the GEIS evaluation is identified, reviewed, and assessed to verify the environmental impacts of the proposed license renewal.

In accordance with 10 CFR 51.53(c)(2) and (3), the ER submitted by the applicant must

- Provide an analysis of the Category 2 issues in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B in accordance with 10 CFR 51.53(c)(3)(ii).

- Discuss actions to mitigate any adverse impacts associated with the proposed action and environmental impacts of alternatives to the proposed action.

In accordance with 10 CFR 51.53(c)(2) and (3)(iii) and (iv), the ER does not need to

- Consider the economic benefits and costs of the proposed action and alternatives to the proposed action except insofar as such benefits and costs are either (1) essential for making a determination regarding the inclusion of an alternative in the range of alternatives considered, or (2) relevant to mitigation.
- Consider the need for power and other issues not related to the environmental effects of the proposed action and the alternatives.
- Discuss any aspect of the storage of spent fuel within the scope of the generic determination in 10 CFR 51.23(a) in accordance with 10 CFR 51.23(b).
- Contain an analysis of any Category 1 issue unless there is new and significant information on a specific issue.

New and significant information is (1) information that identifies a significant environmental issue not covered in the GEIS and codified in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, or (2) information that was not considered in the analyses summarized in the GEIS and that leads to an impact finding that is different from the finding presented in the GEIS and codified in 10 CFR Part 51.

In preparing to submit its application to renew the NMP OLS, NMPNS developed a process to ensure that information not addressed in or available during the GEIS evaluation regarding the environmental impacts of license renewal for NMP would be properly reviewed before submitting the ER, and to ensure that such new and potentially significant information related to renewal of the licenses for Units 1 and 2 would be identified, reviewed, and assessed during the period of NRC review. NMPNS reviewed the Category 1 issues that appear in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, to verify that the conclusions of the GEIS remained valid with respect to NMP. This review was performed by personnel from NMPNS and its support organization who were familiar with NEPA issues and the scientific disciplines involved in the preparation of a license renewal ER.

The NRC staff also has a process for identifying new and significant information. That process is described in detail in NUREG-1555, *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal (ESRP)* (NRC 2000). The search for new information includes (1) review of an applicant's ER and the process for discovering and evaluating the significance of new information; (2) review of records of public comments; (3) review of environmental quality standards and regulations; (4) coordination with Federal, State, and local environmental protection and resource agencies; and (5) review of the technical literature. New information discovered by the staff is evaluated for significance using

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the criteria set forth in the GEIS. For Category 1 issues where new and significant information is identified, reconsideration of the conclusions for those issues is limited in scope to the assessment of the relevant new and significant information; the scope of the assessment does not include other facets of the issue that are not affected by the new information.

Chapters 3 through 7 discuss the environmental issues considered in the GEIS that are applicable to NMP. At the beginning of the discussion of each set of issues, a table identifies the issues to be addressed and lists the sections in the GEIS where the issue is discussed. Category 1 and Category 2 issues are listed in separate tables. For Category 1 issues for which there is no new and significant information, the table is followed by a set of short paragraphs that state the GEIS conclusion codified in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, followed by the staff's analysis and conclusion. For Category 2 issues, in addition to the list of GEIS sections where the issue is discussed, the tables list the subparagraph of 10 CFR 51.53(c)(3)(ii) that describes the analysis required and the final SEIS sections where the analysis is presented. The SEIS sections that discuss the Category 2 issues are presented immediately following the table.

The NRC prepares an independent analysis of the environmental impacts of license renewal and compares these impacts with the environmental impacts of alternatives. The evaluation of the NMPNS license renewal application began with publication of a notice of acceptance for docketing in the *Federal Register* (NRC 2004b) on July 21, 2004. The staff published a notice of intent to prepare an EIS and conduct scoping (NRC 2004c) on August 11, 2004. Two public scoping meetings were held on September 21, 2004, in Oswego, New York. Comments received during the scoping period were summarized in the *Environmental Impact Statement Scoping Process: Summary Report—Nine Mile Point Units 1 and 2, New York* (NRC 2004a) dated November 4, 2004. Comments that are applicable to this environmental review are presented in Part 1 of Appendix A.

The staff and contractors, retained to assist the staff, visited the Nine Mile Point Nuclear Station site on September 22, 2004, to gather information and become familiar with the site and its environs. The staff followed the review guidance contained in NUREG-1555, *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal (ESRP)* (NRC 2000). The staff also reviewed the comments received during scoping, and consulted with Federal, State, regional, and local agencies. A list of the organizations consulted is provided in Appendix D. Other documents related to NMP were reviewed and are referenced in this report.

On October 6, 2005, the NRC published the Notice of Availability of the draft in 70 FR 58489 (NRC 2005). A 75-day comment period began on the date of publication of the U.S. Environmental Protection Agency Notice of Filing of the draft SEIS to allow members of the public to comment on the results of the NRC staff's review. During this comment period, two public meetings were held in Oswego, New York, in November 2005. During these meetings, the staff described the preliminary results of the NRC environmental review and answered questions to provide members of the public with information to assist them in formulating their

comments. The comment period for the Nine Mile Point draft SEIS ended on December 22, 2005. Comments made during the 75-day comment period, including those made at the two public meetings, are presented in Part 2 of Appendix A of this SEIS. The NRC responses to those comments are also provided.

This SEIS presents the staff's analysis that considers and weighs the environmental effects of the proposed renewal of the OLs for NMP, the environmental impacts of alternatives to license renewal, and mitigation measures available for avoiding adverse environmental effects. Chapter 9, "Summary and Conclusions," provides the NRC staff's recommendation to the Commission on 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.

1.3 The Proposed Federal Action

The proposed Federal action is renewal of the OLs for NMP. The Nine Mile Point Nuclear Station is located in northern New York on the shore of Lake Ontario, approximately 8 kilometers (km) (5 miles [mi]) northeast of Oswego, New York, 60 km (36 mi) north-northwest of Syracuse, New York, and 105 km (65 mi) east of Rochester, New York. The plant has two General Electric-designed light-water reactors; Unit 1 with a design power level of 1850 megawatts thermal (MW[t]) and a net power output of 615 megawatts electric (MW[e]); and Unit 2 with an original design power level of 3323 MW(t) and a net power output of 1100 MW(e). In 1995, Unit 2 underwent a power uprate authorized by Amendment No. 66 to Operating License No. NPF-69. Unit 2 currently has a power rating of 3467 MW(t) and a net power output of 1144 MW(e). Unit 1 uses once-through cooling with dissipation of heat to the air and to Lake Ontario. Plant cooling for Unit 2 is provided by a natural-draft cooling tower that dissipates heat primarily to the air. Units 1 and 2 produce electricity to supply the needs of more than 2 million homes. The current OL for Unit 1 expires on August 22, 2009, and for Unit 2 on October 31, 2026. By letter dated May 26, 2004, NMPNS submitted an application to NRC (NMPNS 2004) to renew these OLs for an additional 20 years of operation (until August 22, 2029, for Unit 1 and October 31, 2046, for Unit 2). Nine Mile Point Units 1 and 2 are operated exclusively by Nine Mile Point Nuclear Station, LLC, a subsidiary of Constellation Generation Group, LLC, which in turn is a member of Constellation Energy Group.

1.4 The Purpose and Need for the Proposed Action

Although a licensee must have a renewed license to operate a reactor beyond the term of the existing OLs, the possession of that license is just one of a number of conditions that must be met for the licensee to continue plant operation during the term of the renewed license. Once an OL is renewed, State regulatory agencies and the owners of the plant will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners.

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Thus, for license renewal reviews, the NRC has adopted the following definition of purpose and need (GEIS Section 1.3):

The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and where authorized, Federal (other than NRC) decisionmakers.

This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the Atomic Energy Act of 1954 or findings in the NEPA environmental analysis that would lead the NRC to reject a license renewal application, the NRC does not have a role in the energy planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate. From the perspective of the licensee and the State regulatory authority, the purpose of renewing an OL is to maintain the availability of the nuclear plant to meet system energy requirements beyond the current term of the plant's license.

1.5 Compliance and Consultations

NMPNS is required to hold certain Federal, State, and local environmental permits, as well as meet relevant Federal and State statutory requirements. In its ER, NMPNS provided a list of the authorizations from Federal, State, and local authorities for current operations as well as environmental approvals and consultations associated with NMP license renewal. Authorizations and consultations relevant to the proposed renewal action are included in Appendix E.

The staff has reviewed the list and consulted with the appropriate Federal, State, and local agencies to identify any compliance or permit issues or significant environmental issues of concern to the reviewing agencies. These agencies did not identify any new and significant environmental issues. The ER states that NMPNS is in compliance with applicable environmental standards and requirements for NMP. The staff has not identified any environmental issues that are both new and significant.

1.6 References

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

10 CFR Part 54. Code of Federal Regulations, Title 10, *Energy*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

40 CFR Part 1508. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 1508, "Terminology and Index."

Atomic Energy Act of 1954 (AEA). 42 USC 2011, et seq.

National Environmental Policy Act of 1969 (NEPA), as amended. 42 USC 4321, et seq.

Nine Mile Point Nuclear Station, LLC (NMPNS). 2004. *Nine Mile Point Nuclear Station Application for License Renewal, Appendix E—Applicant's Environmental Report*. Lycoming, New York.

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Volumes 1 and 2, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Main Report, Section 6.3—Transportation, Table 9.1, Summary of findings on NEPA issues for license renewal of nuclear power plants, Final Report*. NUREG-1437, Volume 1, Addendum 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2000. *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal (ESRP)*. NUREG-1555, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2004a. *Environmental Impact Statement Scoping Process: Summary Report—Nine Mile Point Units 1 and 2, Oswego, New York*. Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2004b. "Notice of Acceptance for Docketing of the Application Regarding Renewal of License Nos. DPR-63 and DPR-69 for an Additional Twenty-Year Period." *Federal Register*, Vol. 69, No. 139, pp. 43631–43633. Washington, D.C. July 21, 2004.

U.S. Nuclear Regulatory Commission (NRC). 2004c. "Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process." *Federal Register*, Vol. 69, No. 154, pp. 48900–48901. Washington, D.C. August 11, 2004.

U.S. Nuclear Regulatory Commission (NRC). 2005. "Nine Mile Point Nuclear Station, Units 1 and 2; Notice of Availability of the Draft Supplement 24 to the Generic Environmental Impact Statement and Public Meeting for the License Renewal of Nine Mile Point Nuclear Station, Units 1 and 2." *Federal Register*, Vol. 70, No. 195, pp. 58489–58490. Washington, D.C. October 6, 2005.