

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 (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 Florida Power & Light Company (FPL) operates Turkey Point Plant Units 3 and 4 in southern Florida under OLs DPR-31 and DPR-41, which were issued by the NRC. These OLs will expire in July 2012 for Unit 3 and April 2013 for Unit 4. On September 8, 2000, FPL submitted an application to the NRC to renew the Turkey Point Units 3 and 4 OLs for an additional 20 years under 10 CFR Part 54. FPL is a *licensee* for the purposes of its current OLs and an *applicant* for the renewal of the OLs. Pursuant to 10 CFR 54.23 and 51.53(c), FPL submitted an Environmental Report (ER; FPL 2000a) in which FPL 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 EIS [SEIS]) for the FPL license renewal application. 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.

(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.

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 action to renew Turkey Point Units 3 and 4 OLS; (3) discuss the purpose and need for the proposed action; and (4) present the status of FPL'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 contains an evaluation of potential environmental impacts of plant accidents and includes consideration of 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). The final chapter also presents the staff's preliminary recommendation with respect to the proposed license renewal action.

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

- c the preparers of the supplement
- c the chronology of correspondence related to the NRC staff's review for this SEIS
- c the organizations contacted during the development of this SEIS
- c FPL's compliance status in Table E-1 (this appendix also contains copies of consultation correspondence prepared and sent during the evaluation process)
- c GEIS environmental issues that are not applicable to Turkey Point Units 3 and 4.

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 successful 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) described the activity that affects the environment, (2) identified the population or resource that is affected, (3) assessed the nature and magnitude of the impact on the affected population or resource, (4) characterized the significance of the effect for both beneficial and adverse effects, (5) determined whether the results of the analysis applied to all plants, and (6) considered whether additional mitigation measures would be warranted for impacts that would have the same significance level for all plants.

The NRC's standard of significance 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.

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

The GEIS included 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 were then 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:

- c 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 characteristic.
- c 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).
- c 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 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 did 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 were not categorized. The latter two issues, environmental justice and chronic effects of electromagnetic fields, are to be addressed in a plant-specific analysis. Of the 92 issues, 11 are related only to refurbishment, 6 are related only to decommissioning, and 75 apply to 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 OL 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

- c 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)
- c 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), the ER does not need to

- c 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
- c consider the need for power and other issues not related to the environmental effects of the proposed action and the alternatives
- c 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)
- c contain an analysis of any Category 1 issue unless there is new and significant information on a specific issue—this is pursuant to 10 CFR 51.23(c)(3)(iii) and (iv).

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 Turkey Point Units 3 and 4 OLS, FPL developed a process to ensure that information not addressed in or available during the GEIS evaluation regarding the environmental impacts of license renewal for Turkey Point Units 3 and 4 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 3 and 4 would be identified, reviewed, and assessed during the period of NRC review. FPL reviewed the Category 1 issues that appear in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, to verify

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that the conclusions of the GEIS remained valid with respect to Turkey Point Units 3 and 4. This review was performed by personnel from FPL and its support organization that 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 *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal* (ESRP), NUREG-1555, Supplement 1 (NRC 2000a). 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 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 Turkey Point Units 3 and 4. At the beginning of the discussion of each set of issues, there is a table that 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 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 FPL license renewal application began with publication of a notice of acceptance for docketing and opportunity for a hearing in the Federal Register (FR; 65 FR 60693 [NRC 2000b]). The staff published a notice of intent to prepare an EIS and conduct scoping (65 FR 63636 [NRC 2000c]). Two public scoping meetings were held on December 6, 2000, in Homestead, Florida. Comments received during the scoping meetings were summarized in the *Environmental Impact Statement Scoping Process: Summary Report – Turkey Point Units 3*

and 4, Florida (NRC 2001). Comments that are applicable to this environmental review are presented in Part 1 of Appendix A.

The staff and its contractors retained to assist the staff visited the Turkey Point site on December 6 and 7, 2000, to gather additional information and to become familiar with the site and its environs. 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 Turkey Point Units 3 and 4 were also reviewed and are referenced.

The staff followed the review guidance contained in NUREG-1555, Supplement 1, in the *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal* (NRC 2000a). The results of the staff evaluation are contained in this SEIS.

On June 22, 2001, the U.S. Environmental Protection Agency published the Notice of Availability of the draft SEIS (66 FR 33533). A 75-day comment period began on that date during which members of the public could comment on the preliminary results of the NRC staff's review. During this comment period, two public meetings were held in Homestead, Florida, on July 17, 2001. During these meetings, the staff described the preliminary results of the NRC environmental review and answered questions related to it to provide members of the public with information to assist them in formulating their comments. The comment period for the Turkey Point Units 3 and 4 draft SEIS ended September 6, 2001. Comments made during the 75 day comment period, including those made at the two public meetings, are presented in Part 2 of Appendix A. The NRC responses to these comments are also provided.

This SEIS presents the staff's analysis that considers and weighs the environmental effects of the proposed renewal of the OL for Turkey Point Units 3 and 4, 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 decision-makers would be unreasonable.

1.3 The Proposed Federal Action

The proposed Federal action is renewal of the OLs for Turkey Point Units 3 and 4 (as fossil-powered generating plants, Turkey Point Units 1 and 2 are outside the scope of this SEIS). The Turkey Point Plant is located in southern Florida on the shore of Biscayne Bay, approximately 40 km (25 mi) south of Miami, 13 km (8 mi) east of Florida City, 15 km (9 mi) southeast

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of Homestead, and 16 km (10 mi) north of Key Largo. The plant has two Westinghouse-designed light-water reactors, each with a design rating for a net electrical power output of 693 megawatts electric (MW[e]). Plant cooling is provided by a closed network of canals that dissipate heat primarily to the air. Units 3 and 4 produce electricity to supply the needs of more than 250,000 homes. The current OL for Unit 3 expires on July 19, 2012, and for Unit 4 on April 10, 2013. By letter dated September 8, 2000, FPL submitted an application to the NRC (FPL 2000b) to renew these OLs for an additional 20 years of operation (i.e., until July 19, 2032, for Unit 3 and April 10, 2033, for Unit 4).

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 OL, 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.

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) decision makers.”

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 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

FPL is required to hold certain Federal, State, and local environmental permits, as well as meet relevant Federal and State statutory requirements. In its ER, FPL provided a list of the authorizations from Federal, State, and local authorities for current operations as well as environmental approvals and consultations associated with Turkey Point Units 3 and 4 license renewal. Authorizations and consultations most relevant to the proposed OL renewal action are summarized in Table 1-1. The full list of authorizations and consultations provided by FPL is 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 FPL is in compliance with applicable environmental standards and requirements for Turkey Point Units 3 and 4. The staff has also not identified any environmental issues that are both new and significant.

Table 1-1. Federal, State, and Local Authorizations and Consultations

Agency	Authority	Requirement	Number	Permit Expiration or Consultation Date	Activity Covered
NRC	Atomic Energy Act, 10 CFR Part 50	Operating license	DPR-31 (Unit 3) DRP-41 (Unit 4)	July 19, 2012 (Unit 3) April 10, 2013 (Unit 4)	Operation of Turkey Point Units 3 and 4
FWS and NMFS	Endangered Species Act, Section 7	Consultation	NA	Consultation initiated September 7, 1999	Operation during the renewal term
FDEP	Florida Statutes, Section 403.088	NPDES permit and FWPCA Section 401 certification	FL0001562	January 6, 2005	Permit for discharge of wastewater and once-through cooling water to the closed cycle recirculating cooling canal system. Section 1.E.15 of the permit states that the permit constitutes certification of compliance with §401 of the FWPCA.

Table 1-1. (contd)

Agency	Authority	Requirement	Number	Permit Expiration or Consultation Date	Activity Covered
FDEP	Florida Statutes, Chapter 403	Air emissions permit	0250003-002-AV	December 31, 2003	Emissions from diesel emergency generators, miscellaneous diesel engines, and other miscellaneous units
FDCA	Coastal Zone Management Act, Section 307	Consistency determination	FL200008-250606C	Letter from FDCA's FCMP to FPL dated October 4, 2000	Consistency of license renewal with the Florida Coastal Management Program
FDHR	National Historic Preservation Act, Section 106	Consultation	NA	Letter from FDHR to FPL, October 22, 1999	Impact on sites listed or eligible for listing in the National Register of Historic Places

FCMP - Florida Coastal Management Program.

FDCA - Florida Department of Community Affairs.

FDEP - Florida Department of Environmental Protection.

FDHR - Florida Division of Historic Resources.

FWPCA - Federal Water Pollution Control Act (also known as the Clean Water Act).

FWS - U.S. Fish and Wildlife Service.

NMFS - National Marine Fisheries Service.

NPDES - National Pollutant Discharge Elimination System.

NA - Not applicable.

1.6 References

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

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

40 CFR 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.

Clean Air Act (CAA). 42 USC 7401, et seq.

Coastal Zone Management Act (CZMA). 16 USC 1451, et seq.

Endangered Species Act (ESA). 16 USC 1531, et seq.

Federal Water Pollution Control Act. 33 USC 1251, et seq. (Also known as the Clean Water Act [CWA]).

Florida Power & Light Company (FPL). 2000a. *Applicant's Environmental Report – Operating License Renewal Stage Turkey Point Units 3 and 4*. Miami, Florida.

Florida Power & Light Company (FPL). 2000b. *Application for Renewed Operating Licenses, Turkey Point Units 3 and 4*. Miami, Florida.

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

National Historic Preservation Act of 1966 (NHPA). 16 USC 470, et seq.

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). 2000a. *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*. NUREG-1555, Supplement 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2000b. "Notice of Acceptance for Docketing of the Application and Notice of Opportunity for a Hearing Regarding Renewal of License Nos. DPR-31 and DPR-41 for an Additional Twenty-Year Period." *Federal Register*. Vol. 64, No. 198, pp. 60693-60694 (October 12, 2000).

U.S. Nuclear Regulatory Commission (NRC). 2000c. "Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process." *Federal Register*. Vol. 65, No. 206, pp. 63636-63637 (October 24, 2000).

U.S. Nuclear Regulatory Commission (NRC). 2001. *Environmental Impact Statement Scoping Process: Summary Report – Turkey Point Units 3 & 4, Homestead, Florida*. Washington, D.C.