

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Commission

In the Matter of)	
)	Docket Nos. 52-040-COL
Florida Power & Light Company)	52-041-COL
)	
Turkey Point Units 6 and 7)	

**APPLICANT’S PRE-FILED TESTIMONY IN SUPPORT OF
THE MANDATORY HEARING FOR THE
TURKEY POINT, UNITS 6 AND 7 COMBINED LICENSE**

I. WITNESS FOR THE UNCONTESTED HEARING

Q1. Please State your full name.

A1. My name is William Maher. I am the Director - Licensing, New Nuclear Projects for Florida Power & Light Company (“FPL”). I have overall responsibility for the development of the Turkey Point Units 6 & 7 (“PTN 6 & 7”), Combined License Application (“COLA”) and other State and Federal permits and approvals. My business address is 700 Universe Blvd., Juno Beach, FL 33408.

Q2. Please describe your educational and professional background.

A2. I have spent 7 years in the Navy’s submarine program, both enlisted and officer. I earned a Bachelor of Science degree in Nuclear Engineering from Pennsylvania State University. I have 38 years of experience in nuclear power plant operations and engineering in the areas of licensing, new nuclear projects, and reactor operations including obtaining a Senior Reactor Operators license. I have experience with the various aspects of licensing nuclear power plants, particularly new nuclear power plants, including the applicable regulatory requirements, policies,

and practices. I am a member of several industry organizations including the Nuclear Energy Institute's New Plant Working and Oversight Groups and Subsequent License Renewal Executive Working Group, and the Electrical Power Research Institute's Advanced Nuclear Technology Committee. I am the Chairman of APOG (a group consisting of utilities that have selected the AP1000 design) and a past member of the NuStart Energy Management Committee and the Institute of Nuclear Power Operations New Plant Development Executive Group. My *curriculum vitae* is provided as Exhibit FPL-002.

Q3. What is the purpose of your testimony?

A3. The purpose of my testimony is to support the findings that the Commission must make as part of the mandatory hearing on uncontested issues for the PTN 6 & 7 COLA proceeding.

II. BACKGROUND

Q4. Please briefly describe FPL's Combined License Application for PTN 6 & 7.

A4. FPL filed its COLA for the PTN 6 & 7 on June 30, 2009. The PTN 6 & 7 COLA has been updated and revised since the initial filing, most recently on August 26, 2016. The PTN 6 & 7 COLA seeks combined licenses ("COL") under 10 C.F.R. Part 52 to construct and operate two Westinghouse Electric Company ("Westinghouse") AP1000 advanced passive pressurized water reactors. These new reactors are formally designated as Turkey Point Units 6 & 7. The PTN 6 & 7 COLA includes a request for associated material licenses under 10 C.F.R. Parts 30, 40, and 70.

The PTN 6 & 7 COLA incorporates by reference the Design Certification Rule for the AP1000 Design, Appendix D to 10 C.F.R. Part 52, as amended on December 22, 2011, which certifies Westinghouse's AP1000 Design Control Document ("DCD"), Revision 19.

Q5. Please describe the ownership of PTN 6 & 7.

A5. FPL will be the sole owner of PTN 6 & 7 and will retain full responsibility for operation of the new units after the requirements of 10 C.F.R. § 52.103(g) are satisfied. FPL is a wholly-owned subsidiary of NextEra Energy, Inc., a leading clean energy company with consolidated revenues of approximately \$16.2 billion and approximately 45,900 megawatts of generating capacity. FPL is not owned, controlled, or dominated by an alien, foreign corporation, or foreign government.

Q6. Can you briefly describe how the COLA is organized?

A6. The PTN 6 & 7 COLA is composed of ten parts. Each of these is identified below, along with the current revision of each part:

- Part 1 – General and Administrative Information (Revision 8)
- Part 2 – Final Safety Analysis Report (“FSAR”) (Revision 8)
- Part 3 – Environmental Report (“ER”) (Revision 6)
- Part 4 – Technical Specifications (Revision 8)
- Part 5 – Emergency Plan (Revision 8)
- Part 6 – Limited Work Authorization (Revision 8)
- Part 7 – Departures and Exemptions (Revision 8)
- Part 8 – Safeguards/Security Plans (withheld from public availability) (Revision 8)
- Part 9 – Other Withheld Information (Revision 8)
- Part 10 – Proposed License Conditions and Inspections, Tests, Analyses, and Acceptance Criteria (“ITAAC”) (Revision 8)
- Part 11 – COLA Enclosures (Revision 8).

Q7. What is the significance of the fact that the PTN 6 & 7 COLA is not the first COLA to reference the AP1000 DCD?

A7. In 2006, the NRC Staff (“Staff”) described its “design-centered review approach” (“DCRA”) in Regulatory Issue Summary 2006-06. The Staff discussed the potential efficiencies to be realized from increased standardization and coordination of approaches, stating that:

In order for the DCRA to be fully effective, it is essential that applicants referencing a particular design standardize their applications to the maximum extent practicable (standardize design features, analyses, assumptions, and methods) such that the technical review and decisions are made against a standard application, known as the reference COL (R-COL) application. If this is done, those decisions will be applicable to subsequent COL (S-COL) applications that reference the standard. The NRC’s DCRA uses the DC review or the review of the R-COL as the basis for acceptance. The DC or R-COL application review will identify those technical areas to be considered standard for a given design . . . S-COL applicants who use the standard application and actively work with the R-COL applicant to standardize will significantly benefit from the DCRA and the goal of having “one issue, one review, one position” for multiple COL applications.

NRC Regulatory Issue Summary 2006-06, “New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach,” at 2 (May 31, 2006). The Commission embraced the process recommended by the Staff in its Final Policy Statement, “Conduct of New Reactor Licensing Proceedings,” 73 Fed. Reg. 20,963 (Apr. 17, 2008).

Here, the PTN 6 & 7 COLA is a “Subsequent COLA” (or “S-COLA”) since it incorporates the standard plant material of the COLA submitted by Southern Nuclear Operating Company for Vogtle Units 3 and 4, the “R-COLA,” which also referenced the AP1000 DCD. Following the DCRA approach, FPL has adopted the R-COLA’s resolution of standard plant licensing issues except to the extent required to satisfy site-specific requirements or to address certain changes to the certified design identified during detailed design activities supporting lead plant construction. Since FPL has implemented the DCRA approach, “no further staff review of the adequacy of the approach [of such common issues] is necessary” and the Staff’s review of the PTN 6 & 7 COLA

with respect to such matters is “limited to verification that [FPL] has indeed adopted the previously approved approach and will properly implement it, and, for technical issues that depend on site-specific factors, that the previously-approved approach applies to the applicant’s proposed facility.” *Id.* at 20,973.

Q8. What effect does incorporating the AP1000 DCD, Revision 19, have on the Staff’s review of the PTN 6 & 7 COLAs?

A8. Incorporating the AP1000 DCD, Revision 19, by reference narrows considerably the scope of issues that the Commission needs to consider before issuing the COLs. Under the NRC rules at § 52.63(a)(5), except as provided in 10 C.F.R. § 2.335, in making the findings required for issuance of a combined license, the Commission treats as resolved those matters resolved in connection with the issuance of a design certification rule. Accordingly, safety issues within the scope of the AP1000 DCD, Revision 19, are addressed in FPL’s testimony in this mandatory hearing only to the extent that FPL submitted departures for certified information.

Q9. Do the PTN 6 & 7 COLAs contain any exemptions from NRC regulations?

A9. Yes. The PTN 6 & 7 COLAs contain eight exemptions from NRC regulations. These exemptions are addressed in Part 7 of the COLA, in Sections B.1 through B.9.

The first exemption request (B.1) is a non-substantive exemption from certain COLA organization and numbering requirements in 10 C.F.R. Part 52, Appendix D, Section IVA.2.a, and an associated exemption from 10 C.F.R. 52.93(a)(1). The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and that special circumstances are present as

described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule.

The second exemption request (B.2) is an exemption from COLA requirements in 10 C.F.R. Part 52, Appendix D, Section IVA.2.d, to include “information demonstrating compliance with the site parameters and interface requirements.” The DCD site parameter value for the air temperature maximum wet bulb (noncoincident), which is Tier 1 information, is inconsistent with the site characteristic value. Analysis shows that the use of the site characteristic value instead of the DCD site parameter value will not adversely affect any safety-related structures, systems or components. A similar exemption has been granted for the V.C. Summer Nuclear Station Units 2 and 3 COL. *See* VCSNS FSER at 2-6 to 2-7. The NRC Staff determined that the exemption will not result in a significant decrease in the level of safety otherwise provided by the design, will not present an undue risk to the public health and safety, and will not adversely affect the common defense and security. The NRC Staff determined that the application of this regulation in these circumstances was not necessary to achieve the underlying purpose of the rule. The NRC Staff also agreed that the special circumstances outweigh any decrease in safety that may result from the reduction in standardization (due to the increase in the maximum normal wet-bulb (noncoincident) air temperature) caused by the exemption, because the exemption does not change the AP1000 standard plant design and does not affect the configuration of the plant or the manner in which the plant is operated.

The third exemption request (B.4) is an exemption from certain Material Control and Accounting (“MC&A”) requirements in 10 C.F.R. Part 70 and Part 74 so that the same requirements apply to Part 52 licensees as apply to Part 50 licensees. Similar exemptions have been granted for previously issued AP1000 COLs. The NRC Staff determined that the exemption is authorized

by law, will not present an undue risk to public health and safety and is otherwise in the public interest. The NRC Staff also determined that the exemption will not adversely affect the common defense and security, and special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because the application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule. The NRC Staff agreed that nuclear reactors licensed under 10 C.F.R. Part 52 should be treated the same as the reactors licensed under 10 C.F.R. Part 50 regarding the MC&A for special nuclear material (“SNM”).

The fourth exemption request (B.5) is from requirements in 10 C.F.R. Part 52, Appendix D, Section III.B, which requires a COL applicant to incorporate and comply with the elements of the certified design including Tier 1 information. Acceptance criteria for hydrogen venting inside containment are revised for consistency with the current detailed design of the plant. Similar exemptions have been granted for previously issued AP1000 COLs. The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, and is consistent with the common defense and security, and that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the Tier 1 information is not necessary to achieve the underlying purpose of the rule. Furthermore, as required by 10 C.F.R. § 52.63(b)(1), the NRC Staff found that the special circumstances supporting the exemption outweigh any decrease in safety that may result from reduced standardization in the AP1000 design because modifying the ITAAC acceptance criteria for combustible gas control will allow for application of acceptance criteria that are appropriate to evaluate a plant built according to the current detailed design, does not reduce the design margins of the Containment Hydrogen Control System, and will result in no reduction in the level of safety.

The fifth exemption request (B.6) is from requirements in 10 C.F.R. Part 52, Appendix D, Section III.B, which requires a COL applicant to incorporate and comply with the elements of the certified design including generic Technical Specifications (“TS”). A permissive is added to the source range flux doubling function to prevent bypassing the chemical and volume control system makeup isolation actuation upon a source range flux doubling to more effectively perform its design function and provide reactor protection as analyzed, and to comply with IEEE Std. 603–1991. Similar exemptions have been granted for previously issued AP1000 COLs. This change includes adding the permissive to the instrument Table in the TS. The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the requirements in the generic TS Table is not necessary to achieve the underlying purpose of the rule.

The sixth exemption request (B.7) is from requirements in 10 C.F.R. Part 52 Appendix D, Section III.B, which requires a COL applicant to incorporate and comply with the elements of the certified design including Tier 1 information and generic TS. Changes are made to ensure the Emergency Habitability System (“VES”) design functions to: 1) maintain heat loads within the main control room envelope (“MCRE”) within design basis assumptions to limit the heat-up of the room, 2) ensure a 72-hour supply of breathable quality air for the occupants of the MCRE, 3) maintain the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the main control room vestibule, and 4) provide a passive recirculation flow of MCRE air to maintain main control room (“MCR”) dose rates below an acceptable level during VES operation. Similar exemptions have been granted for previously

issued AP1000 COLs. The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the Tier 1 information is not necessary to achieve the underlying purpose of the rule. Furthermore, as required by 10 C.F.R. § 52.63(b)(1), the NRC Staff found that the special circumstances outweigh any decrease in safety that may result from reduced standardization in the AP1000 design because the exemption modifying the VES will result in no reduction in the level of safety.

The seventh exemption request (B.8) is from requirements in 10 C.F.R. Part 52 Appendix D, Section III.B, which requires a COL applicant to incorporate and comply with the elements of the certified design including Tier 1 information and generic TS. This exemption request is necessary to add additional components to the condensate return design to enable the Passive Core Cooling System to more effectively perform its design function and revise a TS requirement to add downspout screens. Similar exemptions have been granted for previously issued AP1000 COLs. The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, and is consistent with the common defense and security, and that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the Tier 1 and TS information at issue is not necessary to achieve the underlying purpose of the rule. Furthermore, as required by 10 C.F.R. § 52.63(b)(1), the NRC Staff found that the special circumstances supporting this exemption outweigh the potential decrease in safety due to reduced standardization of the AP1000 design because the proposed exemption will improve the reliability and effectiveness of the condensate return

system, to better allow the system to perform its intended function. The NRC Staff also found that there would be no significant decrease in the level of safety provided by the design.

The eighth exemption request (B.9) is from requirements in 10 C.F.R. Part 52 Appendix D, Section III.B, which require a COL applicant to incorporate and comply with the elements of the certified design including Tier 1 information and generic TS. Site-specific revisions to the AP1000 design and associated dose consequence analyses presented in DCD Revision 19 are required to ensure that operator dose following a design basis accident is maintained below the limit in the general design criteria for the duration of the event. Similar exemptions have been granted for previously issued AP1000 COLs. These include revising Tier 1 information to add information on ITAAC related to the radiation shielding below the MCR VES filter and reflect a change to the name of the actuation signal for isolating the MCR penetrations and initiating the VES, and changing generic TS to lower the allowable value for secondary coolant iodine activity concentration. The NRC Staff determined that the exemption is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and that special circumstances are present as described in 10 C.F.R. § 50.12(a)(2)(ii) because application of the Tier 1 and generic TS information is not necessary to achieve the underlying purpose of the rule. Furthermore, as required by 10 C.F.R. § 52.63(b)(1), the NRC Staff found that special circumstances outweigh any potential decrease in safety that may result from reduced standardization in the AP1000 design because adding shielding to the VES filter will improve the reliability and effectiveness of the MCR and associated heating, ventilation, and air conditioning (“HVAC”) systems, to better allow the MCR and the VES to perform their intended functions with respect to radiological habitability.

Q10. Does the PTN 6 & 7 COLA contain any departures from the AP1000 DCD?

A10. Yes. As described in Part 7 of the COLA, FPL seeks approval of seventeen departures from the AP1000 certified design. The first (STD DEP 1.1-1) is a non-substantive administrative departure for organization and numbering of the FSAR sections, and is a standard departure for plants referencing the AP1000 design.

The second departure (PTN DEP 1.8-1) corrects a citation in an interface description in the DCD. The third departure (PTN DEP 2.0-2) uses the site characteristic value for the maximum normal air temperature wet bulb (noncoincident). The fourth departure (PTN DEP 2.0-4) is to reconcile a minor difference between the DCD and the Units 6 & 7 site values for the distance to the exclusion area boundary in two compass sectors. The fifth departure (PTN DEP 3.11-1) is a correction to the “Envir. Zone” numbers for Spent Fuel Pool Level instruments to be consistent with the actual designed locations identified on Westinghouse design documents. The sixth departure (PTN DEP 6.3.-1) more accurately describes the long-term cooling capability of the passive residual heat removal heat exchanger in a closed-loop mode of operation. The seventh departure (STD DEP 8.3-1) is a departure regarding the Class 1E voltage regulating transformer current limiting features. The eighth departure (PTN DEP 18.8-1) is related to the Emergency Response Facility locations. This departure relocates the Operations Support Center (“OSC”) from the location described in the DCD, reflecting a shared OSC for the two units. The ninth departure (PTN DEP 18.8-2) is related to the Emergency Response Facility locations. This departure relocates the Technical Support Center (“TSC”) from the location described in the DCD, reflecting a shared TSC for the new and existing units. The tenth departure (PTN DEP 19.58-1) is related to a revised analysis of high winds and tornadoes to determine core damage frequency.

The eleventh departure (PTN DEP 2.0-1) increases the operating basis wind speed to be consistent with site values. This includes a change to Tier 2* information. The twelfth departure (PTN DEP 2.0-3) increases the maximum safety wet bulb (noncoincident) air temperature to be consistent with site values. This includes a change to Tier 1 information, so a request for an exemption from DCD Tier 1 information is included in exemption request B.2. The thirteenth departure (PTN DEP 3.2-1) is related to the previously-described exemption request (B.8) for the changes to the condensate return portion of the Passive Core Cooling System. This includes modifications to the polar crane girder, internal stiffener and passive core cooling system gutter designs, adding downspouts to the condensate return to increase the condensate available in the In-containment refueling water storage tank after the initiation of a design basis event. The fourteenth departure (PTN DEP 6.2-1) is a correction to the ITAAC acceptance criteria for the in-containment compartment vents to reflect the as-designed plant configuration, as described in exemption request (B.5). The fifteenth departure (PTN DEP 6.4-1) corrects the AP1000 design and associated dose consequence analyses presented in DCD Revision 19 to ensure that operator dose following a design basis accident is maintained below the general design criteria limit for the duration of the event, as described in exemption request (B.7). The sixteenth departure (PTN DEP 6.4-2) makes changes to ensure that the VES can perform its design functions and ensure that MCR habitability and environmental qualification requirements are met in the most limiting event scenario, as described in exemption request (B.9). The seventeenth departure (PTN DEP 7.3-1) implements changes to ensure compliance with IEEE 603 by incorporating an operating bypass permissive to prevent blocking the Source Range nuclear instrumentation flux doubling function, or actuating the function when the conditions are not met, as described in exemption request (B.6). Additional details regarding these departures are provided in Part 7 of the COLA.

Q11. Please describe FPL’s request in the COLA for Part 30, 40, and 70 licenses.

A11. The PTN 6 & 7 COLA includes a request for a license to receive, store, or use byproduct, source, or special nuclear material (under 10 C.F.R. Parts 30, 40, and 70 respectively). These licenses will allow FPL to possess and use nuclear fuel, radiological waste materials, and various radiological sources used for operational purposes.

Q12. Was there a review of the PTN 6 & 7 COLA by the Advisory Committee on Reactor Safeguards (“ACRS”)?

A12. Yes. The ACRS provided an independent review and report to the Commission regarding the PTN 6 & 7 COLA. On September 16, 2016, the ACRS issued a letter on its review of the PTN 6 & 7 COLA, concluding that “[t]here is reasonable assurance that Turkey Point Units 6 and 7 can be built and operated without undue risk to the health and safety of the public” and “[t]he FPL COLA for these units should be approved.” Report on the Safety Aspects of the Florida Power & Light Company’s Combined License Application for Turkey Point Units 6 and 7 at 1-2 (September 16, 2016).

Q13. Did the NRC Staff document its safety and environmental reviews?

A13. Yes. The NRC Staff documented its safety review in the Final Safety Evaluation Report for the PTN 6 & 7 Nuclear Plant Combined License Application, dated November 10, 2016, concluding that there is “reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the Commission’s regulations.” NRC, “Final Safety Evaluation Report for the Turkey Point Units 6 and 7 Combined License Application” at 22-1 (Nov. 2016) (“FSER”). The NRC Staff also issued the Final Environmental Impact Statement (“FEIS”) for the Combined License (COL) for Turkey Point Units 6 and 7, concluding that “[t]he NRC staff’s recommendation to the

Commission related to the environmental aspects of the proposed action is that the COL should be issued.” NUREG-2176, “Environmental Impact Statement for Combined Licenses (COLs) for Turkey Point Units 6 and 7: Final Report” at 10-28 (Oct. 2016) and NUREG-2176, Supplement 1 (Dec. 2016) (collectively “FEIS”).

Q14. What safety findings must the Commission make under Part 52 in order to issue COLs to FPL?

A14. Under 10 C.F.R. § 52.97(a), the Commission may issue the COL if it finds that:

- The applicable standards and requirements of the Atomic Energy Act (“Act”) and the Commission’s regulations have been met;
- Any required notifications to other agencies or bodies have been duly made;
- There is reasonable assurance that the facility will be constructed and will operate in conformity with the licenses, the provisions of the Act, and the Commission’s regulations;
- The applicant is technically and financially qualified to engage in the activities authorized;
- Issuance of the licenses will not be inimical to the common defense and security or to the health and safety of the public; and
- The findings required by 10 C.F.R. Part 51, Subpart A, have been made.

Q15. What are the environmental findings required by Part 51?

A15. Under 10 C.F.R. § 51.107, the Commission must do the following:

- Determine whether the requirements of Sections 102(2) (A), (C), and (E) of the National Environmental Policy Act (“NEPA”) and the regulations in 10 C.F.R. Part 51, Subpart A, have been met;
- Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken;
- Determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the COL should be issued, denied, or appropriately conditioned to protect environmental values; and
- Determine whether the NEPA review conducted by the Staff has been adequate.

Q16. Does the PTN 6 & 7 COLA, and the NRC Staff’s review of the COLA, meet the standards identified above?

A16. Yes. The basis for the Commission to make each of the relevant safety and environmental findings required under 10 C.F.R. §§ 52.97 and 51.107 is described below.

III. DISCUSSION

10 C.F.R. § 52.97(a)(1)(i)

Q17. Have the applicable standards and requirements of the Act and the Commission’s regulations been met?

A17. Yes. The PTN 6 & 7 COLA was based on NRC regulations and applicable portions of relevant Standard Review Plans (“SRP”), Interim Staff Guidance (“ISG”), Regulatory Guides (“Reg. Guides”), bulletins, generic letters, and other NUREGs. The primary SRPs for the PTN 6 & 7 COLA review were NUREG-0800, “Standard Review Plan for the Review of Safety

Analysis Reports for Nuclear Power Plants (LWR [Light Water Reactor] Edition)” (safety review) and NUREG-1555, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan” (environmental review). The NRC Staff reviewed the COLA and evaluated it against the applicable regulations in 10 C.F.R. Parts 20, 26, 30, 31, 32, 40, 50, 51, 52, 55, 70, 73, 74, 100, and 140. The NRC Staff considered applicable portions of the SRP, ISGs, Reg. Guides, bulletins, generic letters, and other NUREGs. Based on the COLA and the NRC Staff’s review, documented in the FSER and the FEIS, the Staff concluded that, for the purpose of issuing PTN 6 & 7 COL, the applicable standards and requirements of the Atomic Energy Act (“AEA”) and the Commission’s regulations have been met.

10 C.F.R. § 52.97(a)(1)(ii)

Q18. Have the required notifications to other agencies or bodies been duly made?

A18. As required by Section 182c of the AEA, as amended, and 10 C.F.R. § 50.43(a), the NRC notified the Public Service Commission of Florida of the Turkey Point COL application (ADAMS Accession No. ML16182A212). In addition, in July 2008, the NRC published notices of the application in *Total Leader and South Dade News Leader*. In accordance with Section 182c of the AEA, the staff also published a notice of the application in the Federal Register on November 18, November 25, December 2, and December 9, 2011 (76 Fed. Reg. 71608, 72725, 75566, and 77021). Required notifications to other agencies or bodies have been made.

10 C.F.R. § 52.97(a)(1)(iii)

Q19. Is there reasonable assurance that the facility will be constructed and will operate in conformity with the licenses, the provisions of the Act, and the Commission's regulations?

A19. Yes. The PTN 6 & 7 COLA, which incorporates the AP1000 DCD, provides critical aspects of construction and operation of Turkey Point Units 6 and 7. This information includes the FSAR and other portions of the application, the general and financial information section of the application, technical specifications, the emergency plan, requests for departures and exemptions, the quality assurance ("QA") plan, and the physical security plan. These materials demonstrate that there is reasonable assurance that Turkey Point Units 6 and 7 can be built and operated in compliance with the COLs, the AEA, and the NRC's regulations.

Q20. What actions did the NRC Staff take to satisfy itself that the plant could be constructed and operated safely?

A20. In addition to reviewing the COLA material provided by FPL, the NRC Staff issued Requests for Additional Information ("RAIs"). The RAIs sought additional information or clarifications in order to develop sufficient information for the NRC Staff to make a reasonable assurance finding. The NRC Staff also conducted audits and inspections of FPL's records and calculations, and performed confirmatory calculations, in order to confirm information or conclusions made by FPL.

Q21. How does the NRC Staff ensure that the bases for its reasonable assurance finding will be maintained in the future?

A21. The NRC Staff developed draft license conditions and ITAAC for Turkey Point Units 6 and 7. The draft COL identifies proposed license conditions, including conditions related to the squib valves, Fukushima Near-Term Task Force Recommendations, and ITAAC. The basis for

each license condition or ITAAC appears in the technical evaluations in the Turkey Point Units 6 and 7 COL FSER and the AP1000 DCD FSER referenced by the Turkey Point Units 6 and 7 COLA.

Q22. Did the NRC Staff reach a “reasonable assurance” conclusion with respect to the PTN 6 & 7 COLA?

A22. Yes. The NRC Staff concluded based on its safety and environmental reviews, documented in the FSER and FEIS, respectively, that there is reasonable assurance that the facilities will be constructed and will operate in conformance with the licenses, the provisions of the Atomic Energy Act and the Commission’s regulations.

Q23. Do you agree with the NRC Staff’s conclusions?

A23. Yes.

10 C.F.R. § 52.97(a)(1)(iv)

Q24. Is FPL technically qualified to engage in the activities authorized by the COL?

A24. Yes. FPL has the longstanding engineering and management experience (including operations, engineering, and other functions) to be technically-qualified to engage in construction and operation of PTN 6 & 7. FPL is a large investor-owned electric utility engaged in the generation, transmission, and distribution of electricity across nearly half of Florida with more than 4.8 million customer accounts. FPL already owns and operates 4 nuclear units at 2 stations, and its affiliates own and operate four more nuclear units at 3 stations. FPL holds four 10 CFR Part 50 licenses for St. Lucie Units 1 and 2 and Turkey Point Units 3 and 4 and has demonstrated its ability to build and operate a nuclear power reactor and the ability to choose and

manage the oversight of nuclear steam supply system vendors, architect-engineers, and constructors of nuclear-related work.

Q25. Did the NRC Staff conclude that FPL was technically qualified to engage in the activities authorized by the COL?

A25. Yes. As documented in the NRC Staff’s SER, the NRC Staff evaluated FPL’s experience, organizational structure, and QA program. The NRC Staff found that “[b]ased on FPL’s experience with building and operating a nuclear power plant and the staff’s evaluation of FPL’s QA program, the staff finds that FPL is technically qualified to hold a 10 C.F.R. Part 52 license in accordance with 10 C.F.R. 52.97(a)(1)(iv).” FSER at 1-23.

Q26. Is FPL financially qualified to engage in the activities authorized by the COL?

A26. Yes. FPL is an electric utility as defined in the NRC rules; FPL generates and distributes electricity and recovers the cost of this electricity through cost-of-service based rates established by the Florida Public Service Commission and the Federal Energy Regulatory Commission (FERC). FPL provided information in the COLA to demonstrate its financial qualifications, including information regarding cost of construction and operation of PTN 6 & 7, the sources of construction funding, and decommissioning funding assurance.

Q27. Did the NRC Staff conclude that FPL was financially qualified to engage in the activities authorized by the COL?

A27. Yes. The NRC Staff reviewed the information provided by FPL. The NRC Staff evaluated the information pertaining to the total cost of PTN 6 & 7, consisting of engineering, procurement, construction costs, owners’ costs, financing costs, inflation, and information pertaining to funding sources for the owner. The NRC Staff also considered regulations and guidance related to financial protection requirements and indemnity agreements, financial

qualifications for construction permits and combined licenses, and power reactor licensee financial qualifications and decommissioning funding assurance. The NRC Staff's evaluation is in FSER Chapter 1. Based on its review, the NRC Staff found that FPL has sufficient financing capacity to fund the PTN 6 & 7 project. The NRC Staff concluded that "FPL is financially qualified to engage in the proposed activities for Turkey Point Units 6 and 7, and that there are no decommissioning funding assurance or foreign ownership, control, or domination issues." FSER at 1-44. Regarding operating costs, as an electric utility recovering its costs of generating electricity through regulated rates, FPL is not required to provide financial qualifications information related to operating cost recovery under 10 C.F.R. § 50.33(f).

10 C.F.R. § 52.97(a)(1)(v)

Q28. Will issuance of the licenses be inimical to the common defense and security or to the health and safety of the public?

A28. No. FPL provided information, analysis, and conclusions regarding site-specific conditions, including geography and demography of the site; nearby industrial, transportation, and military facilities; site meteorology; site hydrology; and site geology, seismology, and geotechnical engineering to ensure that issuance of the licenses will not be inimical to public health and safety. In addition to a review of that information, the NRC Staff also evaluated the design of structures, components, equipment, and systems to ensure safe operation, performance, and shutdown when subjected to extreme weather, floods, seismic events, missiles (including aircraft impacts), chemical and radiological releases, and loss of offsite power to the extent not already resolved by the incorporation of the AP1000 design.

Q29. What did the NRC Staff conclude based on that review?

A29. The review confirmed that radiological releases and human doses during both normal operation and accident scenarios will remain within regulatory limits, which supports the NRC Staff's conclusion that issuance of the licenses will not be inimical to public health and safety. The review also determined that the security measures to be implemented at the site are adequate to protect the facility, which supports the NRC Staff's conclusion that issuance of the licenses will not be inimical to the common defense and security.

Q30. What about operational programs?

A30. The NRC Staff evaluation included the operational programs identified in the Staff Requirements Memorandum for SECY-05-0197, dated February 22, 2006, as well as additional operational programs, including a cybersecurity program, a program for special nuclear material materials control and accountability ("SNM MC&A"), and a SNM physical security program. These programs are listed in the PTN 6 & 7 FSAR at Table 13.4-201, Operational Programs Required by NRC Regulations. The NRC Staff's review determined that the operational programs identified by FPL are sufficiently described to assure compliance with regulations. This also supports the NRC Staff's conclusion that issuance of the COL will not be inimical to the common defense and security or to public health and safety.

Q31. Did the NRC Staff review FPL's emergency plan?

A31. Yes. The NRC Staff concluded that FPL's emergency plan is acceptable and supports the NRC Staff's conclusion that issuance of the COL will not be inimical to public health and safety.

Q32. Did the NRC Staff make an overall inimicality finding?

A32. Yes. Based on its review of the COLA, the NRC Staff concluded that issuance of the PTN 6 & 7 COL will not be inimical to the common defense and security or to public health and safety.

10 C.F.R. § 51.107(a)

Q33. Has the NRC Staff's review been adequate to support the findings set forth in 10 C.F.R. § 51.107(a)?

A33. Yes, as discussed in the sections below, the NRC Staff's environmental review has been adequate to support the findings set forth in 10 C.F.R. § 51.107(a) for the purpose of issuing the COL for construction and operation of PTN 6 & 7.

Q34. Have the requirements of Sections 102(2) (A), (C), and (E) of NEPA and the regulations in this subpart been met?

A34. Yes, these requirements of NEPA have been met by the Staff's preparation of the FEIS, which evaluated the environmental impacts of constructing and operating PTN 6 & 7. The FEIS was prepared by the NRC in accordance with the Commission's rules in 10 C.F.R. Part 51, which are derived from the Council on Environmental Quality guidance, and using the comprehensive guidance in the environmental SRP.

Q35. How did the NRC Staff meet Section 102(2)(A) of NEPA?

A35. The NRC Staff prepared the FEIS based on its independent assessment of the information provided by FPL and information developed independently by the NRC Staff, including thorough consultation with other State and Federal agencies. As required by Section 102(2)(A) of NEPA, the Staff used a systematic, interdisciplinary approach to integrate information from

many fields, including the natural and social sciences. The NRC Staff's findings in the FEIS reflect the "hard look" required by NEPA and have support in logic and fact.

Q36. How did the Staff meet Section 102(2)(C) of NEPA?

A36. As required by Section 102(2)(C) of NEPA, the PTN 6 & 7 FEIS addresses (1) the environmental impact of the proposed action, (2) any unavoidable adverse environmental effects, (3) alternatives to the proposed action, (4) the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented. In addition, as required by Section 102(2)(C) of NEPA, in preparing the FEIS, the NRC consulted with and received comments from other State and Federal agencies with jurisdiction by law or special expertise. The U.S. Army Corps of Engineers ("USACE") participated as a cooperating agency in preparing the PTN 6 & 7 FEIS and as a member of the review team, along with the NRC Staff and its contractor staff. Additionally, the National Park Service participated in the environmental review by providing special expertise for the areas in and around the adjacent national parks (Biscayne and Everglades National Parks). The NRC also consulted with and received comments from other State and Federal agencies with jurisdiction by law or special expertise, such as the Advisory Council on Historic Preservation, the Florida Department of Environmental Protection, the U.S. Fish and Wildlife Service ("FWS") and the U.S. Environmental Protection Agency. This correspondence is described in Appendix F of the FEIS.

After issuing the FEIS, the NRC continued to consult with the FWS. On September 28, 2016, the NRC Staff initiated formal consultation with FWS under Section 7 of the Endangered

Species Act. In this consultation, the Staff included a Biological Assessment dated February 2015 that outlined the Staff's evaluation of potential effects of the proposed project on threatened or endangered species (listed species) known to potentially occur in the area of the proposed project. Additionally, the Staff and FPL had communicated frequently with FWS about the proposed project before and after the formal consultation request. On June 23, 2017, the FWS sent the NRC Staff a Biological Opinion and Incidental Take Statement regarding the COLA, and provided a minor amendment by email to the NRC Staff on September 29, 2017.

The Biological Opinion affirmed the same conclusions that NRC Staff drew in the Biological Assessment, except that, based on subsequent information, the FWS elevated the NRC Staff's conclusions that the project would not adversely affect the eastern indigo snake and red knot to conclusions that the project could adversely affect these two species. The Incidental Take Statement establishes incidental take limits for each of the six species that the Biological Opinion concluded the project may affect and could likely adversely affect. The NRC Staff is incorporating the non-discretionary terms and conditions of the Incidental Take Statement into license conditions in its non-radiological environmental protection plan (EPP) that will be an appendix to any combined license for Turkey Point Units 6 and 7.

Q37. How did the Staff meet Section 102(2)(E) of NEPA?

A37. The Staff considered appropriate alternatives in the FEIS, including the no-action alternative, energy alternatives, alternative sites, system design alternatives, and mitigation alternatives for severe accidents. The FEIS demonstrates that the NRC Staff adequately considered alternatives to the proposed action, consistent with the requirements in Section 102(2)(E) of NEPA.

10 C.F.R. § 51.107(a)(2)

Q38. Has the NRC Staff independently considered the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken?

A38. Yes. FEIS Section 10.6 contains the NRC Staff's summary of the cost-benefit balancing for the PTN 6 & 7 COLA. The NRC Staff concluded that construction and operation of PTN 6 & 7, with the mitigation measures identified by the NRC Staff, would have accrued benefits that most likely would outweigh the economic, environmental, and social costs associated with constructing and operating the new units at Turkey Point. The primary benefit from building and operating PTN 6 & 7 is that they would generate baseload power and provide thousands of residential, commercial, and industrial consumers with baseload electricity, without the emissions of coal and natural-gas fired alternatives. Other benefits include tax revenue, regional productivity, and community development. The benefits of building and operating PTN 6 & 7 are presented in FEIS Table 10-3. Internal costs to FPL, as well as external costs to the surrounding region and environment, would be incurred during the preconstruction, construction, and operation of PTN 6 & 7. Internal costs include the costs to build the power plant (capital costs), as well as operating and maintenance costs, the costs of fuel, waste disposal, and decommissioning. External costs include all costs imposed on the environment and region surrounding the plant. Internal and external costs of building and operating PTN 6 & 7 are presented in FEIS Table 10-4.

10 C.F.R. § 51.107(a)(3)

Q39. After weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, should the COL be issued?

A39. Yes. In the PTN 6 & 7 FEIS, the NRC Staff considered the cost-benefit balancing and reasonable alternatives. Based on that assessment, the NRC Staff recommends that the COL be issued. The overall conclusion was based on (1) the PTN 6 & 7 COLA ER; (2) consultation with Federal, State, Tribal and local agencies; (3) the NRC Staff review team's own independent review; (4) the NRC Staff's consideration of public comments received on the environmental review; and (5) the assessments summarized in the FEIS, including mitigation measures. The NRC Staff also found that none of the alternative sites assessed in the FEIS is obviously superior to the Turkey Point site and that none of the reasonable energy alternatives and none of the reasonable system design alternatives were environmentally preferable to those proposed. I concur with the NRC Staff's conclusions.

Q40. How does the NRC Staff's conclusion relate to the findings that the USACE must make for activities within its jurisdiction?

A40. The NRC's conclusion is independent of the USACE's determination of a Least Environmentally Damaging Practicable Alternative ("LEDPA") under Section 404(b) of the Clean Water Act and the USACE's public interest review. The USACE's independent regulatory permit decision documentation will address other information and evaluations that are outside the NRC's scope of analysis (and therefore not addressed in the PTN 6 & 7 FEIS), but are required by the USACE to support its permit decision.

10 C.F.R. § 51.107(a)(3)

Q41. Has the NRC Staff's review been adequate?

A41. Yes. The NRC Staff conducted an independent environmental evaluation of the application that consumed more than seven years of focused effort. The NRC obtained additional information as needed by FPL responses to RAIs and site visits where appropriate. The NRC Staff developed independent, reliable information and conducted a systematic, interdisciplinary review of the potential impacts of the proposed action on the environment and reasonable alternatives to the proposed action. The NRC Staff considered the purpose of and need for the proposed action, the environment that could be affected by the action, and the consequences of the proposed action, including mitigation that could reduce impacts. The FEIS considered the no-action alternative, energy alternatives, alternative sites, system design alternatives, and the potential impact of conservation measures in determining the demand for power and consequential need for additional generating capacity. The FEIS compared the alternatives to the proposed action. The NRC Staff considered any adverse environmental effects that could not be avoided should the proposed action be implemented, the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, and the irreversible or irretrievable commitments of resources that would be involved in the proposed project.

Q42. Was the public permitted to participate in the environmental review process?

A42. Yes. At the start of the environmental review, the NRC Staff issued a notice of intent to prepare an FEIS and invited the public to provide any information relevant to the environmental review (the NEPA scoping process). The NRC Staff also provided opportunities for governmental and general public participation during the public meeting on the draft

Environmental Impact Statement (“DEIS”) and sought, received, and responded to comments on the DEIS from the public. Those responses are documented in the FEIS and its supplement.

Q43. What are your overall conclusions regarding the NRC Staff’s Environmental Review?

A43. I agree with the NRC Staff that, for the purpose of issuing the PTN 6 & 7 COL, the NRC Staff conducted a thorough and complete environmental review that was sufficient to meet the requirements of NEPA and adequate to inform the Commission’s action on the COL requested.

IV. CONCLUSION

Q44. What are your overall safety conclusions regarding issuance of the COL?

A44. With respect to safety issues, the application and the record of the licensing review contain sufficient information, and the review of the application by the NRC Staff has been adequate, to support the findings to be made by the Commission, with respect to the standards set forth in the Hearing Notice and the applicable standards in NRC regulations. Based on the record, FPL is technically and financially qualified to construct and operate PTN 6 & 7. Issuance of licenses for the construction and operation of PTN 6 & 7 will not be inimical to the common defense and security or to the health and safety of the public, and the requested licenses should be issued.

Q45. What are your overall environmental conclusions regarding the issuance of the COL?

A45. Based upon the entire record of this proceeding, the environmental review conducted by the NRC Staff pursuant to 10 C.F.R. Part 51 has been adequate; the requirements of Sections 102(2)(A), (C), and (E) of NEPA have been satisfied; an independent weighing and balancing of

the environmental, technical, and other costs and benefits of PTN 6 & 7 supports the issuance of the licenses; and the requested licenses should be issued.

Certification

I, William Maher, certify that the testimony above was prepared by me or under my direction, and I adopt this testimony as my sworn testimony in this proceeding. I hereby certify under penalty of perjury that the testimony above is true and correct to the best of my knowledge, information, and belief.

Executed in Accord with 10 C.F.R. § 2.304(d)

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Dated at Juno Beach, FL
this 7th day of November, 2017