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**Docket:** NRC-2022-0172

Notice of Intent to Conduct Scoping Process and Prepare Environmental Impact Statement Florida Power & Light Company Turkey Point Nuclear Generating Unit Nos. 3 and 4

**Comment On:** NRC-2022-0172-0001

Notice of Intent To Conduct Scoping Process and Prepare Environmental Impact Statement Florida Power & Light Company Turkey Point Nuclear Generating Unit Nos. 3 and 4

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## Submitter Information

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**Organization:** NRDC

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## General Comment

Please find attached comments from Miami Waterkeeper, Friends of the Earth, Center for Biological Diversity, and NRDC.

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## Attachments

2022-11-7\_Waterkeeper FOE Center NRDC Scoping Comments

November 7, 2022

*Submitted electronically via  
Federal rulemaking website  
Regulations.gov  
Docket ID NRC-2022-0172*

**Re: Notice of Intent To Conduct Scoping Process and Prepare Environmental Impact Statement Florida Power & Light Company Turkey Point Nuclear Generating Unit Nos. 3 and 4, Docket Nos. 50–250 and 50–251; NRC–2022–0172**

Dear Nuclear Regulatory Commission:

Miami Waterkeeper, Friends of the Earth (“FoE”), Center for Biological Diversity (“the Center”), and the Natural Resources Defense Council (“NRDC”) (together, “Organizations”) submit the following comments regarding the scope of the U.S. Nuclear Regulatory Commission’s (“NRC’s”) supplemental environmental impact statement (“SEIS”) for the subsequent license renewal for Florida Power and Light Co.’s (“FPL’s”) Turkey Point Nuclear Generating Units Nos. 3 and 4 (“Turkey Point”).

Organizations have participated in the Turkey Point subsequent license renewal process since 2018. Organizations’ June 2018 scoping comments remain relevant to this notice, and we incorporate our 2018 comments by reference here.<sup>1</sup>

## **I. Statements of Interest**

Miami Waterkeeper is a Florida non-profit organization with a mission to defend, protect, and preserve the aquatic integrity of South Florida’s watershed and wildlife through citizen involvement and community action. Miami Waterkeeper seeks to eliminate or mitigate threats to South Florida’s coastal waters. The organization works to ensure a clean and vibrant South Florida watershed and coastal culture for future generations. Miami Waterkeeper uses education, community outreach, and legal advocacy to protect South Florida’s marine ecosystems, marine life, and coral reefs. Miami Waterkeeper is a member of the Waterkeeper Alliance, an international organization uniting more than 190 Waterkeeper affiliates across the world.

FoE strives for a healthier and more just world and has been a powerful and fearless voice for protecting public health and the environment. For 40 years, FoE has been a leading voice in the U.S. with respect to the safety of nuclear power reactors. FoE’s nuclear campaign

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<sup>1</sup> Scoping Comments of FoE and NRDC (June 21, 2018) (ML18177A192).

Scoping Comments of Miami Waterkeeper and National Parks Conservation Association (June 21, 2018) (ML18177A187).

Scoping Comments of the Center et al. (June 21, 2018) (ML18219A165).

works to assure that any nuclear power reactors licensed for extended operation are safe for humans and the environment.

The Center is a nonprofit, public interest environmental organization dedicated to the protection of imperiled species and the habitat and climate they need to survive through science, policy, law, and creative media. The Center is supported by more than 1.7 million members and activists throughout the country, including several thousand in Florida. The Center works to secure a future for all species, great or small, hovering on the brink of extinction.

NRDC is a national non-profit membership environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Santa Monica, and Beijing. NRDC has a nationwide membership of over one million combined members and activists. NRDC’s activities include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the civil nuclear facilities licensed by the NRC.

## **II. The Scope of the Environmental Impact Statement**

The Commission’s Order with respect to the environmental impact analysis of Turkey Point is extremely clear about the scope of the new SEIS analysis that must be done before the NRC can issue a subsequent license renewal for the two units. Issues previously designated as Category 1 (generic) issues must, the Commission ruled, be addressed on a site-specific basis, not in the generic fashion authorized by the Generic Environmental Impact Statement<sup>2</sup> for initial license renewals. In addition, the NRC’s analysis of issues previously characterized as Category 2 (site-specific) must be revisited, in light of new research findings and information since the NRC published the final supplemental environmental impact statement for Turkey Point subsequent license renewal (“2019 FSEIS”).<sup>3</sup>

The Commission explained that because “[n]either the original 1996 GEIS nor the revised 2013 GEIS analyzed the environmental impacts of subsequent license renewal periods,” CLI-22-02, 12, “the Staff did not conduct an adequate NEPA analysis before issuing FPL licenses for the subsequent license renewal period.” CLI-22-02, 14.

**... [W]e cannot interpret our regulations in a manner that conflicts with our NEPA responsibility.** NEPA requires the NRC to discuss the environmental

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<sup>2</sup> *Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants* (Final Report), NUREG 1437, vols. 1-2 (May 1996) (ML040690705, ML040690738) (“1996 GEIS”); *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (Final Report), NUREG-1437, vols. 1, Rev. 1 (June 2013) (ML13106A241) (“2013 GEIS”).

<sup>3</sup> *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4* (Final Report), NUREG-1437 (Oct. 2019).

impacts of the proposed action, which is the operation of Turkey Point for an additional twenty years beyond the expiration of its renewed licenses. NRC rules codified the findings of the GEIS and designated certain topics as Category 1 issues that the Staff had considered and evaluated when drafting the GEIS. **We cannot retroactively decide that the GEIS covered impacts of subsequent license renewal.** As discussed below, the 1996 GEIS indicated that its scope was limited to one period of license renewal. Although there are some ambiguous statements in the text of the 2013 GEIS, these isolated cases of ambiguous text are clearly outweighed by the numerous definitive other statements in the GEIS that the document only examined the environmental impacts of a single, twenty-year license renewal and the lack of statements indicating that the scope of the 2013 GEIS was expanded from the original version.

CLI-22-02, 9-10.

The Commission explicitly held “that the 2013 GEIS does not cover the subsequent license renewal period and that section 51.53(c)(3) does not apply to subsequent license renewal applicants. Therefore, the Staff may not exclusively rely on the 2013 GEIS and Table B-1 for the evaluation of environmental impacts of Category 1 issues.” CLI-22-02, 6. The Commission further explained, “applicants for subsequent license renewal must evaluate Category 1 impacts in their environmental reports. Accordingly, these impacts must be addressed on a site-specific basis in the Staff’s site-specific environmental impact statements.” CLI-22-03, 3. The environmental analysis the NRC completes here therefore *is not a supplement to the 2013 GEIS*, nor can it simply tier off the 2013 GEIS. Rather, the NRC must analyze the impacts of Turkey Point *operating between 2032 and 2053* seriously and in a full-blown environmental impact statement.

Thus, for issues previously labeled Category 1 (generic) and for which the NRC relied exclusively on the 1996 GEIS and 2013 GEIS in the 2019 FSEIS, the NRC must conduct a new site-specific review. And because the Commission has held that “the 2013 GEIS does not cover the subsequent license renewal period,” the NRC cannot simply point to the 2013 GEIS analysis for this review. Rather, the NRC must conduct a *new* analysis of the issues previously labeled Category 1 (generic) for the Turkey Point during the relevant time period, 2032-2053, and for a reasonable period beyond 2053 during which Turkey Point will be decommissioned.

Additionally, three years have passed since the NRC issued the 2019 FSEIS and significant new developments have occurred. The NRC must reanalyze based on new and significant information all issues previously labeled Category 2 (site-specific) and already analyzed at a site-specific level in the 2019 FSEIS.

We next provide some of the major issues the NRC must readdress in the new environmental impact statement for subsequent license renewal of Turkey Point.

### Baseline Environment

To satisfy NEPA’s “hard look” requirement and complete an adequate environmental analysis, the NRC must establish the proper environmental baseline. That is, the NRC must address the state of the environment that is *likely to exist during the proposed subsequent license renewal period and decommissioning*. The Commission has stated that the NRC has already conducted an adequate environmental analysis of the impacts of operation of Turkey Point until 2032 and 2033. CLI-22-02, 14. The scope of what the NRC must analyze now is the impact of operations of the units from 2032 to 2052 and 2033 to 2053, plus at least 10 additional years to address the *minimum* time it will take to decommission the units.

When defining the baseline environment of southeastern Florida in the 2030s through 2050s, the NRC must at least take into account projections of both climate science and the groundwater contamination caused by FPL’s unique cooling canal system. The 2019 FSEIS assumed that the mitigation program for the hypersaline plume being undertaken by FPL as a result of a litigation settlement would assure restoration of the polluted groundwater. New evidence, as discussed below and which the new EIS must now take into account, suggests the NRC was far too optimistic in the 2019 FSEIS.

### Climate Change

The NRC must include the most up to date research on the rapidly changing climate. In the three years since the previous NRC analysis, local, state, federal, and international authorities have published significant information on projected climate changes such as sea level rise, subsidence, rising temperatures, storm intensity and duration, and drought. The NRC must use this updated climate research, information, and projections to define the baseline environment for the subsequent license renewal period, which starts in 2032. Further, the NRC must use this updated climate information for conducting both a new review for previously labeled Category 1 (generic) issues and for updating the stale analysis of previously labeled Category 2 (site-specific) issues. The NRC must include climate impacts not simply in a siloed section but rather must consider how climate change will play a role in every aspect of how Turkey Point will interact with the environment during the subsequent license renewal period of 2032 to 2053, as well as a reasonable time beyond 2053 during which Turkey Point will be decommissioned.

### Aging Reactor

The NRC must discuss the cumulative effects of extended operation using aging safety equipment. The problems experienced by sixty-to-eighty-year-old equipment are distinct from, more severe, and less understood than the problems experienced by forty-to-sixty-year-old equipment. Aging problems include reactor pressure vessel embrittlement, irradiation-assisted stress corrosion cracking of reactor internals, concrete structures and containment degradation, and electrical cable qualification and condition assessment, as identified in SECY-14-0016, Memorandum from Mark A. Satorius, NRC Executive Director of Operations, to NRC Commissioners, re: Ongoing Staff Activities to Assess Regulatory Considerations for Power

Reactor Subsequent License Renewal at 1 (Jan. 31, 2014) (ML14050A306) and the NRC’s five-volume Expanded Materials Degradation Assessment (EMDA), NUREG/CR-7153 (Oct. 2014) (“EMDA Report”).<sup>4</sup>

The scope of the environmental analysis should also include mitigation measures designed to close the technical knowledge gaps and resolve the significant uncertainties that exist regarding the performance and reliability of equipment that has aged past sixty years, including the harvesting of components from decommissioned nuclear reactors. As NRC has recognized, harvested reactor components “[m]ay be the only practical source of representative aged materials;” and could be used to “validate larger aging data set[s].”<sup>5</sup> Furthermore, “[e]x-plant materials offer unique environmental exposure that cannot be entirely replicated by laboratory testing with fresh materials.”<sup>6</sup>

### Groundwater

The NRC must consider the new information regarding FPL’s cooling canal system (“CCS”) and related hypersaline plume that has come to light since the 2019 FSEIS.

As background, in 1973, FPL constructed Turkey Point’s radiator-like CCS to serve as heat exchange for the power plant’s reactors. The CCS consists of a network of 5,900 acres of canals carved into South Florida’s porous limestone geology. The system is intended to be “closed-loop” in that the canal surface waters are not meant to interact with surface water bodies, including the adjacent Biscayne Bay to the east and Card Sound to the south. To the west of the CCS, an 18-foot-deep interceptor ditch was dug to serve as a hydraulic barrier; this is intended to prevent water from the CCS migrating towards adjacent lands. However, due to long-term evaporation of hot water in the CCS, a hypersaline plume formed and spread through the Biscayne Aquifer’s porous limestone geology. The Biscayne Aquifer supplies the main source of drinking water for Miami-Dade and Monroe Counties; pollution of it represents a cause for alarm.

On October 6, 2015, a Consent Agreement (“CA”) regarding the hypersaline plume was executed between FPL and Miami-Dade County. The CA documents the following:

- In a letter dated April 16, 2013, the South Florida Water Management District notified FPL that saline water from the CCS had moved westward of a canal it operates, the L-31E Canal.

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<sup>4</sup> The five volumes of the EMDA Report are as follows: Volume 1, Core Internals and Piping (ML14279A321); Volume 2, Core Internals and Piping (ML14279A331); Volume 3, Reactor Vessel Aging (ML14279A349); Volume 4, Concrete Aging (ML14279A430); and Volume 5, Cable Aging (ML14279A461).

<sup>5</sup> M. Hiser, P. Purtscher, A. B. Hull and R. Tregoning, *Harvesting of Aged Materials from Operating and Decommissioning Nuclear Power Plants*, at 5 (Oct. 12, 2017) (ML17285A484).

<sup>6</sup> M. Hiser and A. Hull, *Strategic Approach for Obtaining Material and Component Aging Information*, at 3 (June 2-4, 2015) (ML20332A097).

- On October 2, 2015, Miami-Dade County Department of Environmental Resources Management (“DERM”) issued a Notice of Violation to FPL alleging that Miami-Dade County water quality standards and criteria for groundwater were being violated, attributable to FPL’s actions, and specifically for groundwaters outside the boundaries of FPL’s CCS and beyond the boundaries of the Turkey Point property.

The CA requires FPL “to demonstrate a statistically valid reduction in the salt mass and volumetric extent of hypersaline water (as represented by chloride concentrations above 19,000 mg/l) in groundwater west and north of Turkey Point without creating adverse environmental impacts. A further objective of the CA is to reduce the rate of, and as an ultimate goal, arrest migration of hypersaline groundwater.” According to the CA (17.b): FPL shall develop and implement actions to “intercept, capture, contain and retract hypersaline groundwater (groundwater with a chloride concentration of greater than 19,000 mg/l) to Property boundary to achieve the objectives of this Consent Agreement.” FPL was required to construct an aquifer recovery well system (“RWS”) and demonstrate that it will not create adverse impacts to groundwater, wetland, or other environmental resources. At year ten of RWS implementation, FPL is required to review the results of the activities and progress to achieve the objectives of the CA. Annual status reports are also required. The CA also compelled FPL to acknowledge the benefit of hydrologic restoration projects contemplated by the comprehensive Everglades Restoration Projects in controlling the movement of hypersaline and saline water in Biscayne Bay.

In November of 2019, FPL submitted its first remedial action annual status report (“RAASR”). The 2019 RAASR stated that FPL believed that “results indicate that operations of the RWS are on track to meet the hypersaline groundwater plume remediation objectives of the MDC CA and FDEP CO. Based on CSEM data, there was a  $22 \pm 2\%$  reduction in aquifer volume occupied by the hypersaline plume. Year 1 results indicate that the system is functioning as designed; therefore, no refinements to the remediation system design or monitoring are recommended at this time.”<sup>7</sup>

However, new information published since the 2019 FSEIS suggests that FPL is incorrect; the hypersaline groundwater plume remediation in fact is not working and is unlikely to work. Peer reviewers have expressed serious concerns about the operation of the recovery well system failing to meet the objectives of the consent agreement.

An external peer reviewer, Groundwater Tek Inc. (“GTI”), reviewed FPL’s Groundwater Flow and Salt Transport Models and Assessment of the first year operation of the recovery well system.<sup>8</sup> GTI rebutted a number of FPL’s major assertions, most drastically finding that both groundwater modeling and survey data indicate the RWS “has little remedial effect to the hypersaline plume currently in the deep portion of the Biscayne aquifer west and north of the

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<sup>7</sup> FPL, *Remedial Action Annual Status Report* (Nov. 15, 2019).

<sup>8</sup> Groundwater Tek, Inc., *Review of FPL’s Groundwater Flow and Salt Transport Models and Assessment of the First Year Operation of the RWS* (July 2020).

CCS.”<sup>9</sup> GTI also concluded that, “[b]ased on the information reviewed and analyzed, *the current recovery well system does not appear to be capable of meeting the remediation objectives of retracting the hypersaline plume to the FPL’s property from either west or north of the CCS...*”<sup>10</sup> Once the recovery well system ceases to operate, GTI believes that the hypersaline plume in the lower layers will likely remain a source of pollution and the salt will likely diffuse back to the layers above due to the concentration gradient.<sup>11</sup>

DERM also contracted the services of another peer reviewer, Arcadis, to perform an independent review of geophysics and statistics contained in FPL’s airborne electromagnetics survey (“AEM”) mapping reports. In a September 2020 report, Arcadis recommended a more robust and technically defensible assessment of the mathematical relationships between variables and the magnitude of uncertainty (particularly in absolute plume volume).<sup>12</sup> They also found that, “[b]ased on the hypersaline plume distribution evaluation presented in this Review, it appears that *there may be a risk that the hypersaline plume is not being fully captured by remediation system at the depth interval of Layers 9 and 10, as the area greater than 19,000 mg/L appears to have increased between 2018 and 2019.*”<sup>13</sup>

In a comment letter dated October 22, 2021, Arcadis notes that evidence suggests that the westward migration of the plume has not entirely been halted.<sup>14</sup> They recommend generation of layer-by-layer figures for each year that clearly show areas of expansion and areas of contraction relative to the 2018 baseline.<sup>15</sup> Arcadis also declared that the areas of plume expansion or potentially no net change have been underemphasized by FPL.<sup>16</sup>

FPL’s 2021 Year 3 RAASR represents the latest CA-required monitoring report we could find in the County’s public portal. This report states that recalibrated “model forecast simulations for Years 5 and 10 show continuous improvement in hypersaline retraction, with complete retraction achieved in the upper two-thirds of the aquifer by Year 10. However, *complete retraction in the southern portion of layer 9 and all of layers 10 and 11 are not achieved by Year 10 of the simulation.*”<sup>17</sup> In this report, FPL does include a layer-by-layer summary as Arcadis had recommended. Indeed, Figures 4.3-2 and 4.3-3, depicting the 19,000 mg/L chloride

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<sup>9</sup> *Id.*, at 3 (emphasis added).

<sup>10</sup> *Id.* (emphasis added).

<sup>11</sup> *Id.*, at 34.

<sup>12</sup> Arcadis, *Review of Aerial Electromagnetic Surveys at Turkey Point Power Plant, Southern Florida*, at 2 (Sept. 30, 2020).

<sup>13</sup> *Id.*, at 52 (emphasis added).

<sup>14</sup> Letter from Arcadis to Ms. Lorna Bucknor, DERM, RE: Part 1 Review Comment Letter on Statistics for the Annual Florida Power and Light Turkey Point Remedial Action Annual Status Reports, at 2-3 (Oct. 22, 2021).

<sup>15</sup> *Id.*, at 3.

<sup>16</sup> *Id.*, at 3.

<sup>17</sup> FPL, *Remedial Action Annual Status Report, Turkey Point Clean Energy Center, Year 3*, at ES-2 (Nov. 15, 2021) (emphasis added).

concentration contour for layers 9 and 10 of the aquifer between years 2018 and 2021, show that the hypersaline plume is not fully retracting, and in some places, *is actually expanding* since the RWS was installed. Figure 5.3-1C is a depiction of Model Layer 11, which shows that in this layer, the plume is predicted to expand by year 10.

The NRC must take this updated information into account. In setting the environmental baseline and in analyzing groundwater impacts, the NRC must consider the impacts of operating Turkey Point and the CCS through 2053 if the hypersaline plume is not fully retracted. Further, if FPL is unable to remediate the hypersaline plume, the subsequent license renewal period is likely to have major impacts, specifically impacts on efforts to restore the Everglades, coastal wetlands, and the nearshore estuary system.

The Biscayne Bay and Southeastern Everglades Ecosystem Restoration (“BBSEER”) project is a component of the Comprehensive Everglades Restoration Project meant to achieve restoration of the Everglades and South Florida Ecosystems. The goals<sup>18</sup> of BBSEER are to:

- Improve quantity, timing, and distribution of freshwater to estuarine and nearshore subtidal areas, including mangrove and seagrass areas, of Biscayne National Park, Card Sound, and Barnes Sound to improve salinity regimes and reduce damaging pulse releases;
- Improve freshwater wetland water depth, ponding duration, and flow timing within the Model Lands, Southern Glades, and eastern panhandle of Everglades National Park to maintain and improve habitat value;
- Improve ecological and hydrological connectivity between Biscayne Bay coastal wetlands, the Model Lands, and Southern Glades; and
- Increase resiliency of coastal habitats in southeastern Miami-Dade County to sea level change (“SLC”).

It is crucial for the NRC to analyze whether a persistent hypersaline plume and the continued existence of the CCS would blunt the goals of Everglades restoration.

### Species

The NRC must also consider new information regarding environmental impacts to endangered and threatened species within the action area, including the Turkey Point site, the CCS, adjacent wetlands, and areas in Biscayne Bay where barges may travel. While the NRC already considered these impacts in the 2019 FSEIS, as a Category 2 (site-specific) issue, the NRC must consider updated information available since 2019. For example, in considering how the relicensing will affect listed species, the NRC must consider the new information regarding FPL’s groundwater remediation, discussed above, and how a failure to remediate the hypersaline plume could affect species. The NRC also must take into account the updated projected effects of

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<sup>18</sup> See, U.S. Army Corps of Engineers, Biscayne Bay and South Eastern Everglades Restoration Project BBSEER, Fact & Information (Jan. 2021) <https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll1/id/4899>.

climate change during the subsequent license renewal period, including rising air and water temperatures, sea level rise, intensifying storms, and increased storm surge.<sup>19</sup>

The NRC should reconsider all effects of the license renewal on state and federally protected species, including but not limited to the Florida panther (*Puma concolor coryi*), eastern indigo snake (*Drymarchon couperi*), red knot (*Caladris rufa*), West Indian manatee (*Trichechus manatus*), and wood stork (*Mycteria americana*). Many of these species rely on coastal and freshwater systems that, as explained above and more next, will be significantly affected by the cumulative subsequent license renewal, failed attempt at groundwater remediation, and changing climatic conditions over the coming decades.

Vitality, the NRC must reconsider direct, indirect, and cumulative effects on the American crocodile (*Crocodylus acutus*). While Florida crocodile populations have grown and were downlisted to threatened status in 2007,<sup>20</sup> the most recent information shows the species is still vulnerable to extinction.<sup>21</sup> In 2019, in an updated recovery plan for the crocodile published after the 2019 FSEIS, the Service described specific threats to the species, including stochastic natural disasters such as hurricanes and cold weather, human-crocodile conflict, invasive species of plants and animals, continued habitat degradation, and sea level rise.<sup>22</sup> In this report, the Service also described “reduction in nesting due to poor water quality at FPL’s Turkey Point Power Plant” alongside “new potential threats” to the species.<sup>23</sup> Additionally, operations at Turkey

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<sup>19</sup> See, e.g., IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844 (“IPCC 2022”).

Sweet, W.V., B.D. Hamlington, R.E. Kopp, C.P. Weaver, P.L. Barnard, D. Bekaert, W. Brooks, M. Craghan, G. Dusek, T. Frederikse, G. Garner, A.S. Genz, J.P. Krasting, E. Larour, D. Marcy, J.J. Marra, J. Obeysekera, M. Osler, M. Pendleton, D. Roman, L. Schmied, W. Veatch, K.D. White, and C. Zuzak, 2022: Global and Regional Sea Level Rise Scenarios for the United States: Up-dated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines. NOAA Technical Report NOS 01. National Oceanic and Atmospheric Administration, National Ocean Service, Silver Spring, MD, 111 pp. <https://oceanservice.noaa.gov/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf> (“Sweet et al. 2022”).

<sup>20</sup> Endangered and Threatened Wildlife and Plants; Reclassification of the American Crocodile Distinct Population Segment in Florida From Endangered to Threatened, 53 Fed. Reg. 13,027 (March 20, 2007).

<sup>21</sup> ICUN Redlist, *Crocodylus Acutus*, at <http://www.iucnredlist.org/details/full/5659/0> (last updated 2020).

<sup>22</sup> *Id.* at 4-509, 4-520–4-521; U.S. Fish & Wildlife Serv., Recovery Plan for the Distinct Population Segment of the American crocodile (*Crocodylus acutus*) in Florida, Amendment 1, 3 (Nov. 7, 2019), available at [https://ecos.fws.gov/docs/recovery\\_plan/American%20crocodile%20Recovery%20Plan%20Amendment.pdf](https://ecos.fws.gov/docs/recovery_plan/American%20crocodile%20Recovery%20Plan%20Amendment.pdf) (“Recovery Plan Amendment”) (noting that the threats outlined in the Multi-Species Recovery Plan remain the same, but *also listing new threats*).

<sup>23</sup> Recovery Plan Amendment at 3–4. Notably, one of the delisting criteria for the crocodile is the existence of stable or increasing trends in nesting and natural recruitment at three of five nesting areas, one of which is FPL’s Turkey Point Power Plant Site.

Point have also directly taken crocodiles via car crashes, requiring several reinitiated ESA consultations, including new consultations since the 2019 FSEIS.<sup>24</sup>

The health of Turkey Point’s CCS greatly affects the health and the numbers of crocodiles that use the CCS for nesting and foraging. Poor conditions in the CCS previously caused crocodiles to starve and experience stress, dehydration, and malnutrition, which in turn caused a reduction in numbers of crocodiles, as well as nesting and hatchling abundance.<sup>25</sup> Although FPL is currently required to conduct activities aimed at improving water quality within the CCS pursuant to the 2015 CA with the Miami-Dade County DERM and a 2016 consent order with the Florida Department of Environmental Protection,<sup>26</sup> the Service recently determined that current conditions within the system are having an adverse impact on crocodiles and their critical habitat.<sup>27</sup>

The NRC must also consider updated information on how the subsequent license renewal will affect crocodiles and their critical habitat as climate change causes atmospheric and oceanic temperatures to rise, presenting added stressors on the species. The most recent reports project that global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered, and global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades.<sup>28</sup> According to the IPCC’s Climate Change 2021 report, even under a very low greenhouse-gas emissions scenario, it is likely that global sea level rise by 2100 will be about one to two feet (0.28-0.55 m) compared to 1995–2014. Under an intermediate scenario, sea level rise is likely to be as high as 2.5 feet (0.44–0.76 m), and under a very high greenhouse gas emissions scenario it is likely to be close to three feet (0.37–0.86 m). Sea level rise above the likely range, approaching seven feet (2 m) by 2100 under a very high GHG emissions scenario

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<sup>24</sup> See Letter from Paul Souza, U.S. Fish & Wildlife Serv., to Frank Gillespie, U.S. Nuclear Regulatory Comm’n, transmitting biological opinion on renewal of licenses for Turkey Point Units 3 and 4, 2 (May 5, 2006); Letter from Paul Souza, U.S. Fish and Wildlife Serv., to Frank Gillespie, U.S. Nuclear Regulatory Comm’n, regarding reinitiated formal consultation on renewed licenses for Units 3 and 4, 1–2 (Aug. 1, 2006); Letter from John Moses, U.S. Nuclear Regulatory Commission, to Elise Pautler Bennett, Center for Biological Diversity responding to the Center for Biological Diversity’s June 16, 2022 Letter Concerning Endangered Species Act Compliance for Operations of Turkey Point Nuclear Generating Units 3 and 4, 2 (July 18, 2022) (reporting “two vehicular collision-related American crocodile mortalities in calendar year 2021 that were associated with Turkey Point operations”).

<sup>25</sup> Letter from Roxanna Hinzman, U.S. Fish and Wildlife Serv., to Briana Grange, U.S. Nuclear Regulatory Comm’n, regarding formal consultation on subsequent renewed licenses for Units 3 and 4, 31, 32-33 (July 25, 2019) (“2019 Biological Opinion”)

<sup>26</sup> *Id.* at 5–6, 34.

<sup>27</sup> *Id.* at 31, 33, 34, 40.

<sup>28</sup> IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-33, doi:10.1017/9781009325844.001.

cannot be ruled out due to uncertainty around the melting of ice sheets. Regardless, the impacts of sea level rise will be long-lived: under all emissions scenarios, sea levels will continue to rise for many centuries.<sup>29</sup>

When considered along with an environmental baseline that will be significantly affected by climate change, the effects of Turkey Point’s subsequent renewed license will likely have increasingly significant impacts to the American crocodile over the coming decades. Although sea-level rise occurs gradually, it intensifies the effects of other weather events such as spring tides and storm surges, causing habitat damage, migration, elimination, and conversion into other habitat types. Increasingly intense storms and higher storm surge will pose additional threats to the crocodile’s coastal habitat. For example, eutrophication and sea grass loss in the CCS is likely to become more frequent or intense as temperatures rise and more intense storms increase turbidity. Sea level rise may further compromise Turkey Point’s open CCS or necessitate resiliency responses such as coastal hardening that adversely modify the crocodile’s critical habitat or subject it to coastal squeeze. In general, climate change will make the crocodile more vulnerable to existing negative effects, including those originating from Turkey Point’s operations under the subsequent renewed license. The NRC must consider these environmental impacts.

### **III. Conclusion**

It is important for the NRC to address the above issues within the environmental impact statement for the potential subsequent license renewal of FPL’s Turkey Point. Without addressing these issues, the NRC cannot comply with the Commission’s Orders and NEPA’s mandate to take a hard look at the environmental impacts of its decision.

Sincerely,

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<sup>29</sup> Intergovernmental Panel on Climate Change, Summary for Policymakers In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/> at SPM-28; *See also* Seet et al. 2022 (providing Atlantic-specific sea level rise projections).