

March 28, 2016

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of)	
)	Docket No. 50-250-LA
Florida Power & Light Company)	50-251-LA
)	
(Turkey Point Units 3 and 4))	ASLBP No. 15-935-02-LA-BD01

**FLORIDA POWER & LIGHT COMPANY'S
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW**

Steven C. Hamrick
Florida Power & Light Company
801 Pennsylvania Avenue, N.W. Suite 220
Washington, DC 20004

William S. Blair
Florida Power & Light Company
700 Universe Blvd.
Juno Beach, Florida 33408

COUNSEL FOR
FLORIDA POWER & LIGHT COMPANY

Table of Contents

I.	INTRODUCTION	1
II.	PROCEDURAL HISTORY OF CASE CONTENTION 1	2
	A. License Amendment Application and NRC Staff’s Environmental Review	2
	B. CASE’s Initial Statement of Position, FPL’s Motion to Strike, and CASE’s Initial Motion to Subpoena Expert Witnesses	4
	C. FPL’s and the NRC Staff’s Prefiled Testimony	6
	D. CASE’s Rebuttal Testimony, the NRC Staff’s Motion in Limine, and CASE’s Second Motion to Subpoena Witnesses	6
	E. FPL’s Motion to Dismiss or For Summary Disposition	7
	F. The Board’s December 22, 2015 Order	7
	G. The January 2016 Evidentiary Hearing	9
III.	APPLICABLE LEGAL STANDARDS	9
	A. NEPA’s Rule of Reason	9
	B. Supplementation of NEPA Documents is Required When New Information Presents a Seriously Different Picture of Environmental Impacts	12
	C. Burden of Going Forward and Burden of Proof	13
	D. CASE Must Demonstrate Standing	15
	E. The Board’s Decision Amends the Environmental Assessment	16
IV.	FINDINGS OF FACT	17
	A. Findings of Fact Regarding the Witnesses and Evidence Presented	17
	1. FPL	17
	2. NRC Staff	19
	3. CASE	22
	B. Uncontroverted Material Facts Deemed Admitted	23
	C. Findings of Fact Regarding the Cooling Canal System and Groundwater	25
	1. Cooling Canal System Background	25
	2. The Local Aquifer Systems	27
	3. The Cooling Canal System Interacts with Groundwater	29
	4. Regulatory Oversight of CCS Salinity	31

5. CCS Conditions in 2014.....	36
D. Findings of Fact Regarding Groundwater Impacts of the Ultimate Heat Sink License Amendment.....	38
1. Temperature Increases Attributable to the UHS Amendment Would be of Short Duration.....	38
2. Conservative Projections of Impacts of the UHS License Amendment	40
E. Findings of Fact Regarding FPL’s Water Withdrawals.....	43
1. FPL’s Water Withdrawals.....	43
2. Impacts of FPL’s Water Withdrawals.....	45
3. The Aquifer and Canal Withdrawals Are Not a Result of the Proposed Action.....	49
F. Findings of Fact Regarding The NRC’s Environmental Analyses.....	51
1. The 1972 Final Environmental Statement.....	52
2. The 2002 Turkey Point Site-Specific Supplement to the 1996 GEIS.....	53
3. The 2012 Extended Power Uprate Environmental Assessment.....	54
4. The 2014 Environmental Assessment for the Ultimate Heat Sink License Amendment	57
G. Findings of Fact Regarding Issues Beyond the Scope of CASE Contention 1	64
V. CONCLUSIONS OF LAW	67
A. The Record Reflects that CASE Does Not Have Standing to Challenge the UHS License Amendment.....	67
B. CASE Has Not Met its Burden of Going Forward Regarding Impacts of the UHS Amendment or of FPL’s Water Withdrawals	71
C. The NRC’s Environmental Assessment Satisfies the Requirements of NEPA	72
VI. ADDITIONAL ISSUES RAISED BY THE BOARD.....	79
A. The NRC’s Environmental Assessments Were Not Improperly Segmented.....	80
B. The NRC Appropriately Considered State Regulatory Determinations in its Environmental Assessment	84
C. The Recent Recommended Order Critiquing FDEP’s Administrative Order Has No Bearing on the Adequacy of the NRC Staff’s Environmental Review	88
VII. CONCLUSION.....	92

LIST OF ACRONYMS

AO	Administrative Order
CCS	Cooling Canal System
EA	Environmental Assessment
FDEP	Florida Department of Environmental Protection
FPL	Florida Power & Light Company
MGD	Million Gallons per Day
NOV	Notice of Violation
pCi/L	picoCuries per Liter
ppt	Parts per Thousand
psu	Practical Salinity Units
SCA	Site Certification Application
SFWMD	South Florida Water Management District
TS	Technical Specification
UFA	Upper Floridan Aquifer
UHS	Ultimate Heat Sink
UHS EA	Environmental Assessment for Turkey Point Ultimate Heat Sink License Amendment
Uprate EA	Environmental Assessment for Turkey Point Extended Power Uprate License Amendment

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Pursuant to 10 C.F.R. § 2.1209, and the schedule established by the Atomic Safety and Licensing Board (“Board”) at the conclusion of the contested hearing in this proceeding on January 12, 2016, Florida Power & Light Company (“FPL”) submits its findings of fact and conclusions of law concerning Contention 1.

I. INTRODUCTION

1. In Contention 1, Citizens Allied for Safe Energy (“CASE”) challenges the Environmental Assessment (“EA” or “UHS EA”) that the Nuclear Regulatory Commission (“NRC”) Staff prepared for a license amendment issued to FPL for the Turkey Point Nuclear Generating Units Nos. 3 and 4 (“Turkey Point”). Specifically Contention 1 challenges the EA’s analysis of impacts to groundwater resources.
2. The amendment changed certain Technical Specifications (“TS”) for Turkey Point Nuclear Generating Units Nos. 3 and 4 (“Turkey Point”) to increase the ultimate heat sink (“UHS”) water temperature limit specified in TS 3.7.4 from 100°F to 104°F, among

other changes.¹ CASE Contention 1 presents the issue of whether the EA that accompanied this license amendment adequately assessed the “reasonably foreseeable” impacts to local groundwater as required under the NRC’s regulations at 10 C.F.R. Part 51 and the National Environmental Policy Act (“NEPA”) in reaching its finding that the license amendment would have no significant environmental impact.

3. After consideration of all relevant evidence in the record, Contention 1 should be resolved in favor of the NRC Staff and FPL, and the Board should affirm that the Staff has met its burden of demonstrating that the EA complies with NEPA and the Commission’s regulations at 10 C.F.R. Part 51. In fact, the uncontroverted testimony of the NRC Staff and FPL witnesses demonstrate that the amendment is not likely to have a significant impact on groundwater resources. Accordingly, CASE Contention 1 is without merit.

II. PROCEDURAL HISTORY OF CASE CONTENTION 1

A. License Amendment Application and NRC Staff’s Environmental Review

4. In the summer of 2014, environmental conditions, including extraordinary algae growth in the Turkey Point Cooling Canal System (“CCS”) and unseasonably dry weather, among other factors, resulted in UHS temperatures approaching the 100°F TS limit. Consequently, on July 10, 2014, FPL requested the NRC to increase the UHS temperature limit in TS 3.7.4. FPL did not submit an Environmental Report along with its amendment request, and instead invoked a categorical exclusion from NEPA for

¹ Letter from M. Kiley, FPL to NRC Document Control Desk “License Amendment Request No. 231, Application to Revise Technical Specifications to Revise Ultimate Heat Sink Temperature Limit,” dated July 10, 2014 (ADAMS Accession No. ML14196A006) (“FPL License Amendment Request”) (Exh. FPL-008).

amendments that change requirements for facility components that do not involve: (1) significant hazards consideration; (2) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite; and (3) a significant increase in individual or cumulative occupational radiation exposure.²

5. The NRC opted not to rely upon the categorical exclusion and instead published an EA for the license amendment in the *Federal Register* on July 31, 2014.³ The EA concluded that the UHS license amendment would not have a significant environmental impact and so the NRC also included a formal finding of no significant impact (“FONSI”) for the NRC’s action. Having also determined that the amendment involved no significant hazards considerations and that the criteria for exigent consideration were met, the NRC issued the amendment on August 8, 2014.⁴
6. On August 14, the NRC published a notice of issuance of the license amendment and a supplemental notice of opportunity for hearing in the *Federal Register*.⁵ In response to the NRC’s Hearing Notice, CASE requested a hearing, submitting four contentions.⁶ FPL and the NRC Staff opposed CASE’s hearing request.⁷ CASE filed a reply on

² See 10 C.F.R. § 51.22(c)(9); FPL License Amendment Request at 16.

³ Florida Power & Light Company, Turkey Point Units 3 and 4: Environmental Analysis and Finding of No Significant Impact, 79 Fed. Reg. 44,464 (July 31, 2014) (Exh. NRC-009) (“UHS EA”).

⁴ Letter from A. Klett, NRC to M. Nazar, FPL, Turkey Point Nuclear Generating Units Nos. 3 and 4 – Issuance of Amendments under Exigent Circumstances Regarding Ultimate Heat Sink and Component Cooling Water Technical Specifications (TAC Nos. MF4392 and MF4393) dated August 8, 2014 (ADAMS Accession No. ML14199A107). (Exh. NRC-006).

⁵ Florida Power & Light Company; Turkey Point, Units 3 and 4; License Amendment, Issuance, Opportunity to Request a Hearing, and Petition for Leave to Intervene, 79 Fed. Reg. 17,689 (Aug. 14, 2014) (“Hearing Notice”).

⁶ Citizens Allied for Safe Energy, Inc. Petition to Intervene and Request for a Hearing (Oct. 14, 2014).

⁷ FPL’s Answer to Citizens Allied for Safe Energy, Inc.’s Petition to Intervene and Request for a Hearing (Nov. 10, 2014) (“FPL Answer”); NRC Staff’s Answer to Citizens Allied for Safe Energy, Inc.’s Petition for Leave to Intervene and Request for Hearing (Nov. 10, 2014) (“NRC Staff Answer”).

November 17, 2014.⁸ On March 23, 2015, the Licensing Board issued LBP-15-13, ruling that CASE had demonstrated standing and admitting CASE Contention 1 for hearing.⁹ Specifically, Contention 1, as admitted alleges:

The NRC's environmental assessment, in support of its finding of no significant impact related to the 2014 Turkey Point Units 3 and 4 license amendments, does not adequately address the impact of increased temperature and salinity in the CCS on saltwater intrusion arising from (1) migration out of the CCS; and (2) the withdrawal of fresh water from surrounding aquifers to mitigate conditions within the CCS.

7. FPL and the NRC Staff each appealed the Board's decision to the Commission.¹⁰

Finding the decision a "close call," the Commission deferred to the Board's decision to admit the contention.¹¹

B. CASE's Initial Statement of Position, FPL's Motion to Strike, and CASE's Initial Motion to Subpoena Expert Witnesses

8. On September 19 and 20, 2015, approximately three weeks before its initial testimony was due to be filed, CASE's representative sent *ex parte* e-mails to members of this Licensing Board in which he sought legal advice on the proper method to request the issuance of a subpoena for testimony at the upcoming proceeding.¹² The Board's law clerk informed CASE's representative that all requests to the Licensing Board must be made in the form of a motion.¹³ CASE made no further effort to obtain written expert

⁸ CASE Reply to FPL and to NRC Staff Answers to Its Petition to Intervene and Request for a Hearing (Nov. 17, 2014).

⁹ *Florida Power & Light Company* (Turkey Point Units 3 and 4), LBP-15-13, 81 NRC 456 (2015).

¹⁰ NRC Staff's Notice of Appeal of LBP-15-13 (Apr. 17, 2015); Florida Power & Light Company's Notice of Appeal of LBP-15-13 (Apr. 17, 2015).

¹¹ *Florida Power & Light Company* (Turkey Point Units 3 and 4), CLI-15-25 82 NRC ___, slip op. at 11 (Dec. 17, 2015).

¹² Email Exchange between Barry White and ASLB regarding Subpoena Request, dated September 21, 2015 (ADAMS Accession No. ML15265A500).

¹³ *Id.*

testimony prior to the deadline for its submittal. On October 9, 2015 CASE submitted its “Initial Statement Of Position, Testimony, Affidavits and Exhibits (For January, 2015 Evidentiary Hearing).” Though captioned as including testimony, it contained no testimony.¹⁴

9. Because CASE’s submittal addressed issues beyond the scope of the contention, included technical exhibits without expert sponsorship, and included excerpts of documents that were not provided as exhibits, FPL moved to strike much of CASE’s submittal.¹⁵ The NRC Staff supported the motion.¹⁶
10. On November 3, nearly one month after its initial written testimony was due and two months after the Board’s clerk informed CASE’s representative that a motion would be necessary in order to obtain a subpoena, it filed a motion asking the Board to subpoena four expert witnesses.¹⁷ The Board rejected this motion on the ground that CASE had not explained what efforts it had taken to obtain voluntary testimony from those witnesses.¹⁸

¹⁴ This was initially filed via email. CASE later e-filed versions of its statement and various exhibits on October 22 and October 26.

¹⁵ Florida Power & Light Company’s Motion to Strike Portions of CASE’s “Initial Statement Of Position, Testimony, Affidavits And Exhibits” or, in the Alternative, Motion In Limine to Exclude it and its Cited Documents From Evidence, (Oct. 19, 2015).

¹⁶ NRC Staff’s Answer to [FPL’s Motion to Strike] (Oct. 26, 2015).

¹⁷ “Motion Requesting Subpoenas for Expert Testimony for January, 2016 Evidentiary Hearing ,” dated November 3, 2015.

¹⁸ Order (Denying CASE’s Application for Subpoenas) (Nov. 12, 2015).

C. FPL's and the NRC Staff's Prefiled Testimony

11. On November 10, 2015, FPL submitted its Statement of Position,¹⁹ the sworn prefiled testimony of Mr. Steve Scroggs, Mr. Jim Bolleter, and Mr. Pete Andersen,²⁰ and supporting exhibits.²¹
12. On November 10, 2015, the NRC Staff submitted its Statement of Position,²² the sworn prefiled testimony of Ms. Audrey Klett, Ms. Briana Grange, Mr. William Ford, and Mr. Nicholas Hobbs,²³ and supporting exhibits.²⁴

D. CASE's Rebuttal Testimony, the NRC Staff's Motion in Limine, and CASE's Second Motion to Subpoena Witnesses

13. CASE filed its rebuttal statement of position on December 1, 2015.²⁵ Embedded within this statement was CASE's first testimony offered in this proceeding, that of Dr. Phillip Stoddard. Following the submittal of CASE's Rebuttal Statement, the NRC Staff filed a Motion to Strike portions of this submittal that raised issues beyond the scope of the contention (including the alleged failure to properly consult with other agencies, issues related to the NRC's considerations of alternatives and the speed of its review), and relied on testimony of an unqualified witness.²⁶ FPL supported the NRC Staff Motion.²⁷

¹⁹ Florida Power & Light Company's Initial Statement of Position (Nov. 10, 2015) ("FPL Position Statement").

²⁰ Initial Written Testimony of Florida Power & Light Company Witnesses Steve Scroggs, Jim Bolleter, and Pete Andersen on Contention 1" (Nov. 10, 2015) ("FPL Testimony") (Exh. FPL-001).

²¹ See Exhibits FPL-002 through FPL-037, including modified FPL-032R.

²² NRC Staff's Initial and Rebuttal Statement of Position Regarding Contention 1 (Nov. 10, 2015) ("NRC Staff Position Statement").

²³ "NRC Staff Testimony of Audrey L. Klett, Briana A. Grange, William Ford, and Nicholas P. Hobbs Concerning Contention 1" (Nov. 10, 2015) ("NRC Staff Testimony") (Exh. NRC-001).

²⁴ See Exh. NRC-002 through NRC-050, excluding NRC-023.

²⁵ "Citizens Allied for Safe Energy's Joint Rebuttal to NRC Staff's and FPL's Initial Statements of Position, Exhibit List and Exhibits," (Dec. 1, 2015) ("CASE Rebuttal") (Exh. CASE-076).

²⁶ NRC Staff's Motion in Limine to Exclude Portions of the Prefiled Rebuttal Testimony or in the Alternative Strike Portions of the Prefiled Rebuttal Testimony and Rebuttal Statement of Position (Dec. 14, 2015).

14. On December 9, nearly a month after the Board rejected its first motion to subpoena expert witnesses, and eight days after its rebuttal testimony was due, CASE filed yet another motion seeking to subpoena expert witnesses.²⁸ This time, CASE sought subpoenas for a total of five witnesses.²⁹

E. FPL's Motion to Dismiss or For Summary Disposition

15. On December 3, 2015, FPL moved for dismissal of Contention 1, or in the alternative, summary disposition.³⁰ Based on CASE's lack of relevant testimony, FPL argued that CASE has not demonstrated standing and had not provided enough evidence to satisfy CASE's "burden of going forward."³¹ Together with its motion, FPL included a Statement of Material Facts Not in Dispute. The NRC Staff supported FPL's Motion.³² CASE filed a response in opposition, but did not provide an affidavit or testimony of an expert to rebut any of FPL's Material Facts.³³

F. The Board's December 22, 2015 Order

16. On December 22, the Board issued an Order, in which it disposed of several pending matters.³⁴ First, it denied CASE's motion to subpoena expert witnesses because the circumstances did not merit the "extraordinary remedy" of forcing expert witnesses to

²⁷ Florida Power & Light Company's Answer Supporting the NRC Staff's Motion in Limine (Dec. 15, 2015).

²⁸ CASE's "Second Motion Requesting Subpoenas for Expert Testimony for January, 2016," (Dec. 9, 2015).

²⁹ *Id.*

³⁰ Florida Power & Light Company's Motion to Dismiss CASE Contention 1 or, in the Alternative, for Summary Disposition (Dec. 3, 2015).

³¹ *Id.* at 6, 8.

³² NRC Staff Answer to Motion to Dismiss or in the Alternative Summary Disposition (Dec. 21, 2015).

³³ Citizens Allied For Safe Energy, Inc.'s Answer to FPL's Motion to Dismiss Case Contention 1 or, in the Alternative, for Summary Disposition, and FPL's Statement of Material Facts on Which No Genuine Dispute Exists (Dec. 13, 2015).

³⁴ Order (Denying Application for Subpoenas, Denying Motion for Summary Disposition, and Granting in Part and Denying in Part Motions to Strike) (Dec. 22, 2015) ("December 22 Order").

appear against their will and without compensation.³⁵ Second, it denied FPL's Motion to Dismiss or for Summary Disposition, finding that CASE had met its burden of going forward and that its resources would be best served by reviewing the evidence more thoroughly at a hearing.³⁶ The Board rested this decision, in part, on the conclusion that "CASE's members rely on the water supply of the Floridan Aquifer," and that, according to the South Florida Water Management District ("SFWMD"), the freshwater in the L-31 E canal (and system) is used to prevent saltwater intrusion.³⁷

17. The Order also ruled on the two pending motions to strike. The Board deferred judgment on FPL's motion to exclude technical exhibits offered by CASE with no expert sponsorship.³⁸ It excluded CASE arguments regarding the presence of certain chemicals in the CCS water and impacts to double-crested cormorants.³⁹ The Board also struck a paper by Dr. Sydney Bacchus, which "concerns a wide range of issues that are wholly outside the narrow scope of Contention 1."⁴⁰ Finally, it struck arguments related to the NRC's consultation with the U.S. Fish and Wildlife Service, the NRC's considerations of alternatives to the license amendment, and arguments related to Contention 2, which had already been dismissed.⁴¹

³⁵ *Id.* at 3.

³⁶ *Id.* at 5.

³⁷ *Id.* at 6-7 (*quoting* Declaration in Support of Citizens Allied for Safe Energy, Inc./CASE Petition to Intervene In the Issuance of Amendments to Renewed Facility Operating License Nos. DPR-31 and DPR-41 Issued to Florida Power & Light for the Operation of the Turkey Point Nuclear Generating Units 3 and 4 Located in Miami-Dade County, Florida (Oct. 14, 2014); *and* Ex. FPL-033, South Florida Water Management District, Final Order, SFWMD No. 2015-020-DAO-WU (Apr. 10, 2015)).

³⁸ *Id.* at 11-12.

³⁹ *Id.* at 13.

⁴⁰ *Id.* at 14.

⁴¹ *Id.* at 15.

18. Finally, the Board considered the NRC Staff's Motion to Strike portions of the CASE rebuttal statement. It struck discussion related to the timing of the EA, the NRC Staff's consultation with other agencies, and the NRC Staff's review of alternatives.⁴² The Board concluded however, that it could not "conclusively determine" that Dr. Stoddard's testimony would not be of assistance to the Board, and so denied the NRC Staff's request to exclude his testimony.⁴³

G. The January 2016 Evidentiary Hearing

19. On January 4, 2016, the Board held a prehearing conference in which it admitted exhibits into evidence.⁴⁴ This action was memorialized in an order issued later that day.⁴⁵ An evidentiary hearing was held in Homestead, Florida on January 11 and 12, 2016. As further discussed below, CASE, FPL, and the NRC Staff each put forward witnesses for questioning by the Board.

III. APPLICABLE LEGAL STANDARDS

A. NEPA's Rule of Reason

20. The National Environmental Policy Act ("NEPA") requires agencies to take a "hard look" at and disclose the environmental impacts of a proposed action.⁴⁶ An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or instead issue a

⁴² *Id.* at 16.

⁴³ *Id.*

⁴⁴ Order (Admitting Exhibits) (Jan 4, 2016).

⁴⁵ *Id.*

⁴⁶ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

finding of no significant impact.⁴⁷ Unlike an environmental impact statement, which is subject to a number of specified regulatory requirements, there is no “universal formula for what an EA must contain and consider.”⁴⁸ The level of detail required “depends upon the nature and scope of the proposed action.”⁴⁹ An EA requires less depth of consideration and less detail than an environmental impact statement.⁵⁰

21. Even in the context of a full environmental impact statement, the NEPA “hard look” requirement is subject to a “rule of reason.”⁵¹ For this reason, both NRC and CEQ regulations for environmental impact statements explain that impacts should be discussed in proportion to their significance.⁵² Under this standard, an “agency’s environmental review, rather than addressing every impact that could possibly result, need only account for those that have some likelihood of occurring or are reasonably foreseeable.”⁵³ Further, NEPA review documents should be “analytic rather than encyclopedic,” and “kept concise” and “no longer than absolutely necessary to comply with NEPA and these regulations.”⁵⁴ In fact, in a finding of no significant impact, the discussion should be brief, and only include so much as is necessary to show why more study is not warranted.⁵⁵ Because of these principles, the NRC’s licensing boards do not

⁴⁷ 40 C.F.R. § 1508.9.

⁴⁸ *Friends of Congaree Swamp v. Fed. Highway Admin.*, 786 F.Supp.2d 1054, 1062 (D.S.C. 2011).

⁴⁹ *California v. Block*, 690 F.2d 753, 761 (9th Cir.1982).

⁵⁰ *See Pa’ina Hawaii, L.L.C.*, CLI-10-18, 72 NRC 56, 75 (2010).

⁵¹ *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 767-69 (2004); *see also Louisiana Energy Servs.* (National Enrichment Facility), LBP-06-8, 63 NRC 241, 258-59 (2006) (*citing Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836 (1973)).

⁵² 10 C.F.R. § 51.45(b)(1); 40 C.F.R. § 1502.2(b).

⁵³ *LES*, LBP-06-8, 63 NRC at 258-59 (*citing Shoreham*, ALAB-156, 6 AEC at 836).

⁵⁴ 40 C.F.R. § 1502.2(a), (b); *see also Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348 n. 25 (2002).

⁵⁵ 40 C.F.R. § 1502.2(b).

sit to “flyspeck” an EA or to add minor details or nuances to the analysis.⁵⁶ NRC adjudicatory hearings are not editing sessions.⁵⁷ It is enough that the EA discusses the significant aspects of the probable environmental impacts of the proposed action.⁵⁸

22. Similarly, a NEPA review need not be exactly precise. As the Commission has explained, NEPA “does not call for certainty or precision, but an estimate of anticipated (not unduly speculative) impacts.”⁵⁹ When faced with uncertainty, NEPA only requires “reasonable forecasting.”⁶⁰ There is no requirement to use the best scientific methodology, and NEPA should be construed in the light of reason if it is not to demand virtually infinite study and resources.⁶¹
23. For this reason, NEPA’s “hard look” uses the best information available at the time the assessment is performed.⁶² It represents a “snapshot” in time and the NRC need not “wait until inchoate information matures into something that later might affect” the review.⁶³ The Commission has stated that “while there ‘will always be more data that could be gathered [agencies] must have some discretion to draw the line and move forward with decisionmaking.’”⁶⁴

⁵⁶ *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-04, 53 NRC 31, 71 (2001).

⁵⁷ *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-03-17, 58 NRC 419, 431 (2003).

⁵⁸ *Shoreham*, ALAB-156, 6 AEC at 836.

⁵⁹ *Louisiana Energy Servs.* (Nat’l Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005).

⁶⁰ *Scientists’ Inst. for Pub. Info., Inc. v. AEC*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

⁶¹ *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (quoting *Natural Resources Defense Council, Inc. v. Hodel*, 865 F.2d 288, 294 (D.C. Cir. 1988)).

⁶² *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-5, 75 NRC 301, 341 (2012).

⁶³ *Luminant Generation Company, LLC* (Comanche Peak Nuclear Power Plant, Units 3 and 4) CLI-12-7, 75 NRC 379, 391-92 (2012) (citing *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989)).

⁶⁴ *Pilgrim*, CLI-10-11, 71 NRC at 315 (2010).

24. And while other environmental statutes, such as the Endangered Species Act, impose substantive obligations on the NRC and authorize substantive action, “it is now well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process.”⁶⁵ Nor does NEPA expand the agency’s authority beyond that provided in the Atomic Energy Act, or other substantive environmental statutes.⁶⁶

B. Supplementation of NEPA Documents is Required When New Information Presents a Seriously Different Picture of Environmental Impacts

25. Agencies need not supplement a NEPA document every time new information comes to light after it is finalized. A contrary rule “would render agency decisionmaking intractable, always awaiting updated information only to find the new information outdated by the time a decision is made.”⁶⁷ Supplementation is not required unless there is a major federal action yet to occur and “new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered.”⁶⁸ As the Commission has put it, in order to warrant supplementation, new information must paint a “‘seriously different picture of the environmental landscape.’”⁶⁹

⁶⁵ *Robertson*, 490 U.S. at 350-51 (citing *Strycker’s Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223, 227-228, (1980); *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 558, (1978)).

⁶⁶ See e.g., Licenses, Certifications, and Approvals for Materials Licensees, 76 Fed. Reg. 56958 (Sept. 15, 2011) (“the courts have consistently determined that NEPA is a procedural statute, and as such it cannot and does not expand the NRC’s jurisdiction beyond the scope of the AEA; i.e., to give the NRC authority to decide non-radiological public health and safety issues.”) (citing *Public Citizen*, 541 U.S. at 771; and *Natural Resources Defense Council v. Environmental Protection Agency*, 822 F.2d 104, 129 (D.C. Cir. 1987)).

⁶⁷ *Marsh*, 490 U.S. at 373-74.

⁶⁸ *Id.* (internal quotations omitted).

⁶⁹ *Comanche Peak*, CLI-12-7, 75 NRC at 388-89.

26. Under the so-called “Sholly Amendment” to the Atomic Energy Act, the NRC Staff may issue an amendment to a reactor operating license notwithstanding the pendency of a hearing if it determines that the amendment “involves no significant hazards consideration.”⁷⁰ NRC regulations implementing this provision state that in such a case, “the amendment *will be effective on issuance*, even if adverse public comments have been received and even if an interested person . . . has filed a request for a hearing.”⁷¹ Because the license amendment at issue in this proceeding was “effective” on the date it was issued, that date controls as the point in time at which there was no longer a federal action to occur for purposes of a *Marsh* supplementation analysis. For this reason, any development that occurred after the license amendment was issued need not be considered for the purpose of a supplementation review. Nevertheless, the Licensing Board maintains authority to review the NRC’s EA, based on information available at the time the NRC took its action.

C. Burden of Going Forward and Burden of Proof

27. An applicant generally has the burden of proof in a licensing proceeding.⁷² However, in cases involving NEPA contentions, the burden of proof belongs to the NRC Staff because it, not the applicant, has the responsibility for complying with NEPA.⁷³ Where

⁷⁰ Atomic Energy Act (“AEA”) § 189a.(1)(A); 42 U.S.C. § 2239(a)(1)(A).

⁷¹ 10 C.F.R. § 50.91(a)(4) (emphasis added).

⁷² 10 C.F.R. § 2.325.

⁷³ See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

the Applicant becomes a proponent of a particular challenged position set forth in a NEPA document, the Applicant shares the burden on that matter.⁷⁴

28. But while the Staff and applicant have the ultimate burden of proof, “hearings are held on only those issues that an intervenor brings to the fore.”⁷⁵ The burden of going forward on any issues that make it to the hearing process is on the intervenor that is pursuing that issue.⁷⁶ Thus, the Intervenor maintains a “burden of preserving the scope of its contention.”⁷⁷ To satisfy this burden, an intervenor must provide “probative evidence or expert testimony” to support the contentions.⁷⁸ In *Oyster Creek*, the Commission approved the Licensing Board’s determination that an intervenor had not met its burden through: (1) testimony of a witness who was not an expert in the relevant field; (2) mere assertions and speculation; and (3) invocation of the applicant’s ultimate burden.⁷⁹

29. The NRC applies the “preponderance of the evidence” standard to resolve a contention.⁸⁰ Thus, if the intervenor carries its burden of going forward, the Board must consider the evidence and testimony and determine whether the NRC Staff and the

⁷⁴ *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 339 (1996) (citing *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 489 n.8 (1978)), *rev’d on other grounds*, CLI-97-15, 46 NRC 294 (1997).

⁷⁵ *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-05-12, 61 NRC 319, 326 (2005), *aff’d Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-05-19, 62 NRC 403 (2005).

⁷⁶ *Id.*; *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 268-69 (2009) (citing *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1093 (1983); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 345 (1973)).

⁷⁷ *PFS*, LBP-05-12, 61 NRC at 329.

⁷⁸ *Oyster Creek*, CLI-09-7, 69 NRC at 269.

⁷⁹ *Id.* at 269-70.

⁸⁰ *Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-94-6, 39 NRC 285, 301 n.22 (1994), *aff’d*, *Advanced Medical Systems, Inc. v. NRC*, 61 F.3d 903 (6th Cir.1995); *see also Commonwealth Edison Co.* (Zion Station, Units 1 & 2), ALAB-616, 12 NRC 419, 421 (1980).

applicant have shown by the preponderance of the evidence that the NRC Staff's review was adequate to comply with NEPA.

D. CASE Must Demonstrate Standing

30. In order to obtain a hearing before the NRC, a petitioner must demonstrate standing and file at least one admissible contention.⁸¹ To establish standing, a petitioner must plead “the nature of the requestor’s/petitioner’s right under the Act to be made a party to the proceeding[,] . . . the nature and extent of [the petitioner’s] property, financial or other interest in the proceeding; and [t]he possible effect of any decision or order that may be issued in the proceeding on the [petitioner’s] interest.”⁸²
31. CASE, as the petitioner, bears the burden of providing facts sufficient to establish standing.⁸³ In determining whether a petitioner has established the requisite interest, the Commission has traditionally applied contemporaneous judicial concepts of standing.⁸⁴ The petitioner must establish; (a) that he personally has suffered or will suffer a “distinct and palpable” harm that constitutes injury in fact; (b) that the injury can fairly be traced to the challenged action; and (c) that the injury is likely to be redressed by a favorable decision in the proceeding.⁸⁵
32. Since these are not mere pleading requirements but rather an indispensable part of the petitioner’s case, each element must be supported in the same way as any other matter

⁸¹ See AEA § 189a, 42 U.S.C. § 2239(a).

⁸² 10 C.F.R. § 2.309(d)(1).

⁸³ *U.S. Enrichment Corp.* (Paducah, Kentucky Gaseous Diffusion Plant), CLI-01-23, 54 NRC 267, 272 (2001).

⁸⁴ See, e.g., *Gulf States Utilities Co.* (River Bend Station, Unit 1), CLI-94-10, 40 NRC 43, 47 (1994).

⁸⁵ *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195 (1998) (citing *Steel Co. v. Citizens for a Better Environment*, 523 U.S. 83, 101 (1998)); *Dellums v. NRC*, 863 F.2d 968, 971 (D.C. Cir. 1988)).

on which the petitioner bears the burden of proof, i.e., with the manner and degree of evidence required at the successive stages of the litigation.⁸⁶ While at the pleading stage, general factual allegations of injury may suffice, in response to a summary judgment motion, the petitioner can no longer rest on such “mere allegations,” but must set forth specific facts by affidavit or other evidence, and ultimately those facts must be “supported adequately by the evidence adduced at trial.”⁸⁷

E. The Board’s Decision Amends the Environmental Assessment

33. In reviewing the EA and the NRC Staff’s compliance with NEPA, the Board considers the adjudicatory record as a whole, including the evidentiary record developed by the parties, such that the Board’s decision becomes part of the NEPA record of decision.⁸⁸ In NRC licensing proceedings, “the ultimate NEPA judgments regarding a facility can be made on the basis of the entire record before a presiding officer, such that the [NEPA document] can be deemed amended *pro tanto*.”⁸⁹ Therefore, the Board may consider the full record before it, including the testimony and exhibits at the hearing, to conclude that “the aggregate is sufficient to satisfy the agency’s obligation under NEPA” to take a “hard look” at the environmental consequences of issuing the license amendment.⁹⁰ The Commission encourages this process as it allows for “additional and a more rigorous

⁸⁶ *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 (1992).

⁸⁷ *Id.* See also *Fla. Audubon Soc. v. Bentsen*, 94 F.3d 658, 672 (D.C. Cir. 1996).

⁸⁸ *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3) CLI-15-6, 81 NRC ___, (slip op. at 62-63) (March 9, 2015).

⁸⁹ *Louisiana Energy Servs.* (National Enrichment Facility), LBP-05-13, 61 NRC 385, 404 (2005).

⁹⁰ *LES*, LBP-06-8, 63 NRC at 286.

public scrutiny” than does the typical NEPA process.⁹¹ The Commission utilizes this method in its review of an EA as well as of an EIS.⁹²

IV. FINDINGS OF FACT

A. Findings of Fact Regarding the Witnesses and Evidence Presented

1. FPL

34. FPL presented a three-person expert witness panel in this proceeding. Each of these witnesses provided initial written testimony and testified on behalf of FPL during the hearing held on January 11 and 12, 2016. FPL offered exhibits numbered FPL-001 through FPL-037, which were admitted into evidence by the Board by Order dated January 4, 2016.⁹³
35. Mr. Steve Scroggs is employed as a Senior Director, Project Development at FPL. He currently leads the project development for the Turkey Point Units 6 & 7 new nuclear project and is directing efforts to reduce salinity in the Turkey Point CCS and to add operating margin through upgrades to specific plant systems. Mr. Scroggs is an expert in power plant engineering, design, and siting.⁹⁴ His initial written testimony is set forth in Exhibit FPL-001. His testimony addressed the UHS license amendment, the history of the CCS, and the efforts of FPL and state and local regulators to reduce salinity in the CCS, among other topics. A statement of his professional qualifications is provided in Exhibit FPL-002.

⁹¹ *Indian Point*, CLI-15-6, slip op. at 63.

⁹² See e.g., *Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-26, 68 NRC 509, 526 & n.87 (2008).

⁹³ Exhibit FPL-032 was replaced with Exhibit FPL-032R.

⁹⁴ FPL Testimony at 1-3 (A1-A5).

36. Mr. Jim Bolleter is employed by Ecology and Environment, Inc. as Operations Manager. He has over 30 years of experience in a wide variety of environmental, coastal, and water resource projects, including: environmental impact assessment; water quality and wetland restoration; environmental monitoring, permitting, and compliance; and contamination site assessment and remediation. He currently oversees FPL's Uprate Monitoring Program, which tracks groundwater and surface water quality in the vicinity of the cooling canals. Mr. Bolleter is an expert in ground and surface water monitoring, saltwater intrusion, and environmental assessment.⁹⁵ His initial written testimony is set forth in Exhibit FPL-001. His testimony addressed the scope of saltwater intrusion in the vicinity of Turkey Point, the findings of the Uprate Monitoring Program, and the potential effect of the UHS license amendment on CCS salinity, among other topics. A statement of his professional qualifications is provided in Exhibit FPL-003.
37. Mr. Pete Andersen is employed at Tetra Tech, Inc., as Principal Engineer and Operations Manager at the Alpharetta, GA office. Mr. Andersen performs groundwater modeling and performs assessments of migration of constituents in groundwater. His technical duties include analysis of subsurface systems using numerical models, evaluation of water supply potential, and prediction of impacts of water supply development. He has been extensively involved in modeling the effects of the CCS and migration of water in the surrounding aquifers for several years. Mr. Andersen is an expert in groundwater hydrology, water resource engineering, groundwater modeling,

⁹⁵ FPL Testimony at 3-5 (A6-A10)..

and groundwater/surface water relationships.⁹⁶ His initial written testimony is set forth in Exhibit FPL-001. His testimony addressed the local groundwater in the vicinity of Turkey Point, the potential effect of the UHS license amendment on CCS salinity, and the potential effect of FPL's groundwater withdrawals on saltwater intrusion, among other topics. A statement of his professional qualifications is provided in Exhibit FPL-004.

* * * * *

38. Based on the foregoing, and the respective backgrounds and experience of Mr. Scroggs, Mr. Bolleter, and Mr. Andersen, the Board should find that all three FPL witnesses are qualified to testify as experts relative to the issues raised in CASE Contention 1.

2. NRC Staff

39. The NRC Staff presented a four-person expert witness panel in this proceeding. Each of these witnesses provided initial written testimony and testified on behalf of FPL during the hearing held on January 11 and 12, 2016. The NRC Staff offered exhibits NRC-001 through NRC-049 (excepting NRC-023, a designation that was not used), which were admitted into evidence by the Board by Order dated January 4, 2016.
40. Ms. Audrey Klett is a Project Manager employed by the NRC in the Division of Operating Reactor Licensing in the Office of Nuclear Reactor Regulation. She has been employed by the NRC for over 12 years. She is the NRC's licensing project manager for Turkey Point Units 3 and 4. Ms. Klett processes licensing actions related to Turkey Point 3 and 4, including license amendment requests ("LARs"). When the licensee

⁹⁶ FPL Testimony at 5-9 (A11-A16).

requests an amendment to its operating license, she identifies and assigns the NRC organizations that need to review the request and develop safety evaluations and environmental reviews. In the instant case, Ms. Klett coordinated the development of the EA and the Finding of No Significant Impact (“FONSI”).⁹⁷ Her initial written testimony is provided in Exhibit NRC-001. Ms. Klett’s testimony addressed the Staff’s process for evaluating the amendment request and preparing the environmental analysis. A statement of her professional qualifications is provided in Exhibit NRC-002.

41. Ms. Briana A. Grange is a biologist employed by the NRC. She has been employed by the NRC for over 9 years. Ms. Grange performs NEPA reviews of reactor licensing actions in the areas of terrestrial ecology, aquatic ecology, land use, visual resources, and microbiological hazards for a variety of licensing actions including license amendments and license renewal applications. She also performs NEPA reviews for reactor license amendments and exemption requests, and develops substantial inputs for EISs. In the instant case, Ms. Grange was responsible for performing the NEPA review and preparing the EA and FONSI associated with FPL’s license amendment request.⁹⁸ Her initial written testimony is provided in Exhibit NRC-001. Ms. Grange’s testimony addressed the challenged EA, the Staff’s conclusions, and the information supporting those conclusions. A statement of her professional qualifications is provided in Exhibit NRC-003.

42. Mr. William Ford is a Senior Physical Scientist with the NRC and a professional geologist with the State of Florida. He has been employed by the NRC for over 30 years.

⁹⁷ NRC Staff Testimony at 1-5 (A1a., A2a., A3a.).

⁹⁸ NRC Staff Testimony at 1-6 (A1b., A2b., A3b.).

Mr. Ford conducts groundwater, surface water, and geology investigations of NRC licensed power reactors. He conducts independent environmental reviews of license renewal applications and license amendments. He has conducted geologic and hydrologic studies of conventional uranium mills and mill tailings piles and facilities that use large numbers of wells to extract uranium from aquifers.⁹⁹ His initial written testimony is provided in Exhibit NRC-001. Mr. Ford's testimony addressed assertions regarding the impact on saltwater intrusion from the proposed 4°F change to the UHS inlet temperature. A statement of his professional qualifications is provided in Exhibit NRC-004.

43. Mr. Nicholas P. Hobbs is a Reactor Systems Engineer employed by the NRC in the Balance-of-Plant Branch. He began work with the NRC in 2015. He supports various projects to analyze NRC license amendments and their potential impacts on reactor operational safety. He has performed thermal-hydraulic analyses in support of reactor modeling for advanced reactors and light water reactors for over five years.¹⁰⁰ His initial written testimony is provided in Exhibit NRC-001. Mr. Hobbs' testimony addressed the expected performance and characteristics of the CCS and various actual and hypothetical operating conditions. A statement of his professional qualifications is provided in Exhibit NRC-005.

* * * * *

44. Based on the foregoing, and the respective backgrounds and experience of Ms. Klett, Ms. Grange, Mr. Ford, and Mr. Hobbs, the Board should find that all four NRC Staff

⁹⁹ NRC Staff Testimony at 1-3 (A1c., A2c.).

¹⁰⁰ NRC Staff Testimony at 1-3 (A1d., A2d.).

witnesses are qualified to testify as experts relative to the issues raised in CASE Contention 1.

3. CASE

45. CASE presented several exhibits, including a number that were not properly identified or numbered. Over the objections of FPL and the NRC Staff, the Board admitted CASE Exhibits INT-000 through INT-006, INT-012, INT-013, INT-029, INT-030, INT-042, INT-043, and INT-076. By Order dated January 4, 2016. Over the objection of FPL, the Board also admitted INT-017 and INT-028 at the hearing on January 11, 2016.
46. CASE presented no initial written testimony.
47. CASE presented rebuttal testimony of Dr. Phillip Stoddard, a biologist. Dr. Stoddard testified on behalf of CASE during the hearing held on January 11, 2016. Dr. Stoddard is a Professor in the Department of Biological Sciences, Florida International University (“FIU”) and the Mayor of the City of South Miami.¹⁰¹ He has worked at FIU since 1992, where he supervises graduate students and reviews research proposals in wetlands ecology projects, directed wetland restoration projects, conducted research on freshwater vertebrates, and managed lakes and ponds. Dr. Stoddard’s testimony addressed impacts of the CCS on Biscayne Bay and various aquatic species.

* * * * *

48. Based on the foregoing, and the background and experience of Dr. Stoddard, he does not have the necessary qualifications and personal knowledge to testify concerning groundwater movement or the impacts of increased temperatures on the CCS or on the

¹⁰¹ CASE Rebuttal at 4.

surrounding aquifers or surface water bodies. Dr. Stoddard has no relevant expertise in the matters within the scope of Contention 1. Instead, his testimony addressed impacts to biota and to Biscayne Bay, each of which is not relevant to underground saltwater intrusion. Testimony that is outside of Dr. Stoddard's identified expertise or beyond the scope of this contention should be afforded no weight whatsoever.

B. Uncontroverted Material Facts Deemed Admitted

49. Because CASE did not controvert any of the material facts presented in FPL's motion for summary disposition with documentary evidence or expert testimony, those facts are deemed admitted.¹⁰² These uncontroverted facts include, *inter alia*:

- *The Ultimate Heat Sink License Amendment*
 - The NRC performed an Environmental Assessment for the ultimate heat sink license amendment, which noted that temperature increases associated with the amendment would increase water evaporation rates and result in higher salinity levels in the cooling canal system, but that this effect would be temporary and short in duration because salinity would again decrease upon natural freshwater recharge of the system, and concluded that the ultimate heat sink license amendment would not have a significant impact on groundwater resources and aquatic resources.¹⁰³
 - The EA concluded that the amendment would have no significant environmental impact.¹⁰⁴
- *Environmental Impacts of the Ultimate Heat Sink License Amendment*
 - The ultimate heat sink license amendment has not resulted in a significant increase in temperature in the CCS.¹⁰⁵
 - The ultimate heat sink license amendment has not resulted in a significant increase in salinity in the CCS.¹⁰⁶

¹⁰² *Advanced Medical Sys., Inc.* (One Factory Row, Geneva, Ohio), CLI-93-22, 38 NRC 98, 102-03 (1993); 10 C.F.R. § 2.710(a).

¹⁰³ FPL Statement of Material Facts on Which No Genuine Dispute Exists (December 3, 2015) ("FPL Statement") at ¶ 2-4.

¹⁰⁴ *Id.* at ¶ 3.

¹⁰⁵ *Id.* at ¶ 6.

¹⁰⁶ *Id.* at ¶ 7.

- The ultimate heat sink license amendment has not resulted in a noticeable effect in the surrounding aquifers.¹⁰⁷
- The ultimate heat sink license amendment will not cause FPL to withdraw additional water from local sources.¹⁰⁸
- *Environmental Impacts of Upper Floridan Aquifer Withdrawals*
 - FPL has withdrawn water from the Upper Floridan Aquifer to mitigate conditions in the CCS.¹⁰⁹
 - The Florida Department of Environmental Protection has issued an Administrative Order requiring FPL to develop a salinity management plan to reduce salinity in the CCS to 34 psu (approximately that of seawater) within 4 years.¹¹⁰
 - FPL plans to comply with the Administrative Order by constructing and operating new wells in the Upper Floridan Aquifer to add up to 14 million gallons per day of water into the CCS.¹¹¹
 - The Upper Floridan Aquifer contains brackish water in the vicinity of Turkey Point.¹¹²
 - The Floridan Aquifer is separated from the Biscayne Aquifer and there is little if any interaction between the two.¹¹³
 - FPL's withdrawal of water from the Floridan Aquifer will not result in an increase in saltwater intrusion.¹¹⁴
- *Environmental Impacts of Biscayne Aquifer Withdrawals*
 - FPL has withdrawn water from the Biscayne Aquifer for CCS mitigation, using wells drilled on the Turkey Point peninsula.¹¹⁵
 - The Biscayne Aquifer contains saltwater in the vicinity of Turkey Point.¹¹⁶
 - Saltwater has been documented in the Biscayne Aquifer well inland of Turkey Point since before the construction of the CCS.¹¹⁷

¹⁰⁷ *Id.* at ¶ 8.

¹⁰⁸ *Id.* at ¶ 9.

¹⁰⁹ *Id.* at ¶ 10.

¹¹⁰ *Id.* at ¶ 11.

¹¹¹ *Id.* at ¶ 12.

¹¹² *Id.* at ¶ 13.

¹¹³ *Id.* at ¶ 14.

¹¹⁴ *Id.* at ¶ 15.

¹¹⁵ *Id.* at ¶ 16.

¹¹⁶ *Id.* at ¶ 17.

¹¹⁷ *Id.* at ¶ 18.

- FPL’s withdrawal of water from the Biscayne Aquifer will not result in an increase in saltwater intrusion.¹¹⁸
 - *Environmental Impacts of L-31 E Canal Withdrawals*
 - FPL has directed excess storm water from the L-31 E canal to the CCS for CCS mitigation.¹¹⁹
 - The water FPL has utilized from the L-31 E canal would be discharged to tide if it were not diverted to the CCS.¹²⁰
 - FPL’s withdrawal of water from the L-31 E canal will not result in an increase in saltwater intrusion.¹²¹
50. Because CASE also did not provide relevant testimony for consideration at the evidentiary hearing, the additional findings of fact discussed below are necessarily consistent with these findings based on CASE’s failure to controvert the motion for summary disposition.

C. Findings of Fact Regarding the Cooling Canal System and Groundwater

1. Cooling Canal System Background

51. The CCS was constructed in compliance with a 1971 consent order from the Department of Justice, which instructed FPL to construct a cooling canal system that would be closed to interaction with other surface waters and would provide cooling water to Turkey Point Units 1-4.¹²² This design eliminated the discharge of warm water to Biscayne Bay or Card Sound and any potential impacts to sea grasses.¹²³ The CCS

¹¹⁸ *Id.* at ¶ 19.

¹¹⁹ *Id.* at ¶ 20.

¹²⁰ *Id.* at ¶ 21. While the FPL Statement used the phrase “released to the ocean,” CASE and the NRC Staff clarified that the water would be released directly to Biscayne Bay, which is, of course, connected to the ocean. Here, we have used the phrase “released to tide” to match the language in the South Florida Water Management District’s L-31 E canal consumptive use permits. *See, e.g.*, FPL-031 (SFWMD Emergency Final Order) at 6, ¶18. This distinction is not relevant for the purpose of CASE Contention 1, which focuses on saltwater intrusion, and not impacts to Biscayne Bay.

¹²¹ *Id.* at ¶ 22.

¹²² FPL Testimony at 11-12 (A21); NRC Staff Testimony at 19 (A11).

¹²³ FPL Testimony at 12 (A21).

provides the basic steam cycle heat removal capacity for Units 1, 3, and 4 (since the retirement of Unit 2) and also serves as the UHS for Units 3 & 4 in the NRC's Design Basis Accident analysis.¹²⁴

52. The plant's Circulating Water pumps provide for the steady counter-clockwise flow of the CCS water beginning at the northern end discharge canal.¹²⁵ From this point the water flows five miles to the south through a series of shallow canals, collects at the southern end, and is directed eastward.¹²⁶ The water then flows north through seven intake canals, around an island, and back to the plant intakes.¹²⁷ The full circuit takes approximately 48 hours.¹²⁸ The temperature of the CCS water outlet from the plant is approximately 10 to 14°F above the intake temperature.¹²⁹ The CCS water cools through convective heat transfer as it moves through the canals.¹³⁰
53. Heat from the power plants that is released to the CCS is dissipated to the atmosphere primarily through evaporation.¹³¹ The process of evaporation removes only water and not the solids that are dissolved in the water.¹³² Therefore the water that is evaporated leaves behind the constituents, primarily sodium and chloride, which account for its salinity.¹³³ The water that leaves the CCS through evaporation is replaced primarily by rainfall, with a smaller portion provided by groundwater inflow from under Biscayne

¹²⁴ *Id.*

¹²⁵ *Id.* at 12 (A22).

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.* at 14 (A25).

¹³² *Id.*

¹³³ *Id.*; NRC Staff Testimony at 27 (A29).

Bay, which has a salinity that is approximately equal to that of sea water.¹³⁴ The process of evaporating salt water gives the cooling canals a salinity that is higher than the Bay.¹³⁵ For this reason, the CCS has been hypersaline for decades, meaning that it is more saline than seawater.¹³⁶

2. The Local Aquifer Systems

54. The regional hydrostratigraphic framework of Florida contains three major components: (1) the surficial aquifer system (Biscayne Aquifer), (2) an intermediate confining bed, and (3) the Floridan aquifer system.¹³⁷ Because of the confining bed (sometimes called a confining unit or layer) there is little or no interaction between the water of the Biscayne and Floridan Aquifers.¹³⁸
55. The Biscayne Aquifer extends from land surface to approximately 150 feet below land surface at the Turkey Point site.¹³⁹ Due to the presence of Biscayne Bay and the Atlantic Ocean, the aquifer is saline offshore and near the coast.¹⁴⁰ The saltwater extends inland for several miles up and down the coast, with the greatest intrusion proportional to depth (because saltwater is dense and tends to sink).¹⁴¹ The saltwater interface at the base of the aquifer is approximately 6 to 8 miles inland of the Turkey Point area and

¹³⁴ FPL Testimony at 14 (A25). *See also* Hearing Transcript (“Tr.”) at 367-68 (Andersen).

¹³⁵ FPL Testimony at 14 (A25); NRC Staff Testimony at 27 (A29).

¹³⁶ FPL Testimony at 13 (A24); Tr. at 460-461 (Andersen, Scroggs).

¹³⁷ FPL Testimony at 19 (A32); NRC Staff Testimony at 21 (A13), 24 (A19).

¹³⁸ NRC Staff Testimony at 24 (A19), 26 (A23); FPL Testimony at 19-21 (A32); Tr. at 431-33 (Ford); Tr. at 434 (Andersen).

¹³⁹ FPL Testimony at 19 (A32).

¹⁴⁰ *Id.* at 19-20; *see also* NRC Staff Testimony at 23-24 (A17).

¹⁴¹ FPL Testimony at 20 (A32).

preceded the construction of Turkey Point.¹⁴² Drinking water for much of southeast Florida is obtained from wells sunk into the Biscayne aquifer, but these are some distance onshore.¹⁴³ Because of its location near the shore, the water in the Biscayne Aquifer in the vicinity of Turkey Point is approximately the salinity of seawater.¹⁴⁴ Near the surface, however, there is a freshwater lens, created when fresh rainfall collects on top of the dense saline groundwater.¹⁴⁵

56. The location of the freshwater/saltwater interface in the Biscayne Aquifer is established by the potentiometric surface or head of the inland freshwater that prevents the saltwater near the coast (usually at a head equal to sea level) from moving landward.¹⁴⁶ Because the saltwater is more dense than the freshwater, it has a higher effective head at sea level, and will intrude to such a point where the fresh inland water head is high enough to balance the more dense saltwater.¹⁴⁷ The Biscayne Aquifer in Miami-Dade County is prone to saltwater intrusion because the area has a low land-surface elevation with a low topographic gradient and is bordered to the east and south by large saltwater bodies (i.e. the Atlantic Ocean, Biscayne Bay, and Florida Bay).¹⁴⁸
57. Below the Biscayne Aquifer and the underlying confining unit, is the Floridan Aquifer.¹⁴⁹ Near Turkey Point, the top of this aquifer is approximately 1000 feet

¹⁴² *Id.*; see also *id.* at 21 (A34); NRC Staff Testimony at 24 (A18).

¹⁴³ FPL Testimony at 20 (A32); NRC Staff Testimony at 23 (A16).

¹⁴⁴ FPL Testimony at 22 (A35) (*citing* exhibits FPL-017; FPL-018; FPL-019); *id.* at 23 (A36) (*citing* exhibits FPL-013 and FPL-020); NRC Staff Testimony at 24 (A17) (*citing* NRC-026).

¹⁴⁵ See FPL Testimony at 21 (A34).

¹⁴⁶ *Id.* at 21 (A33).

¹⁴⁷ *Id.*

¹⁴⁸ NRC Staff Testimony at 23 (A17).

¹⁴⁹ FPL Testimony at 19-20 (A32).

beneath land surface.¹⁵⁰ But in central Florida, the aquifer is close to land surface and so receives most of its recharge in this area.¹⁵¹ For this reason, it is used as a major source of potable groundwater in that part of Florida.¹⁵² By contrast, in southeastern Florida, including around Turkey Point, because the aquifer is so far from its recharge area, so far beneath the ground, and is trapped by the confining layer above, it is brackish.¹⁵³ As a result, in this area, it can only be used for drinking water following desalinization treatment.¹⁵⁴ In fact, the lower portion of the Floridan Aquifer is used for the injection on sewage and industrial waste.¹⁵⁵ FPL has sought permission to use Floridan Aquifer water for CCS mitigation precisely because it is a “degraded” source, which it must use, if available, as FPL is an industrial user.¹⁵⁶

3. The Cooling Canal System Interacts with Groundwater

58. The CCS is considered to be a closed cycle cooling system because it does not discharge directly into fresh or marine surface waters.¹⁵⁷ However, an exchange of water exists between the canal system and groundwater because the canals are unlined.¹⁵⁸ Groundwater inflow serves to help replace losses from evaporation, in addition to gains from rainfall, stormwater runoff, and other sources at the plant.¹⁵⁹ Because surface

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.* at 20 (A32), at 23 (A38) (citing FPL-021 and FPL-022); NRC Staff Testimony at 25 (A21, A22).

¹⁵⁴ FPL Testimony at 48 (A80).

¹⁵⁵ NRC Staff Testimony at 25 (A21).

¹⁵⁶ FPL Testimony at 16 (A27).

¹⁵⁷ UHS EA at 44,466 col. 3, 44,467 col. 1; Tr. at 472 (Grange); NRC Staff Testimony at 17 (A10); FPL Testimony at 11-12 (A21), 35 (A57).

¹⁵⁸ NRC Staff Testimony at 17 (A10); FPL Testimony at 35 (A57).

¹⁵⁹ FPL Testimony at 35 (A57); NRC Staff Testimony at 40 (A45).

water levels in the canals are lowest in the return canals along the east side of the CCS, groundwater inflow into the cooling canals occurs primarily from the saline aquifer under Biscayne Bay.¹⁶⁰ Dense saline water in the CCS sinks down into the underlying portion of the aquifer.¹⁶¹ Once the dense CCS water reaches the confining layer it can no longer continue down and so begins to spread out laterally.¹⁶²

59. By this mechanism, some water that originated in the CCS has migrated to the west.¹⁶³ Higher salinity in the CCS can increase the amount of CCS water that enters the groundwater both due simply to the higher proportion of solids in the water and also due to the higher density, and thus, higher hydraulic head, of the salt water, which pushes water down into the aquifer.¹⁶⁴ However, there are other forces that also contribute to saltwater intrusion in this area, including rainfall amount, water level, and operation of control structures on canals.¹⁶⁵ The extent to which each of the factors, including the CCS, has contributed to the saltwater intrusion is not fully established.¹⁶⁶ Marine water existed in much of the area groundwater prior to construction of the CCS, and CCS water has since intermixed with historic saltwater.¹⁶⁷ The extent of saltwater intrusion in the area today is less than it was in the 1950s and there have been limited changes in

¹⁶⁰ FPL Testimony at 35 (A57); NRC Staff Testimony at 26 (A25).

¹⁶¹ FPL Testimony at 35 (A58); NRC Staff Testimony at 28 (A30).

¹⁶² NRC Staff Testimony at 28 (A30), 24 (A19).

¹⁶³ FPL Testimony at 36 (A58); *see also* NRC Staff Testimony at 50 (A74).

¹⁶⁴ FPL Testimony 45 (A76); *see also id.* at 30 (A48), 35 (A58). NRC Staff Testimony at 28 (A30); *see also id.* at 26 (A25).

¹⁶⁵ FPL Testimony at 36 (A58); *see also* NRC Staff Testimony at 23 (A16).

¹⁶⁶ FPL Testimony at 34 (A55).

¹⁶⁷ FPL Testimony at 34 (A55).

movement observed during five years of Uprate Monitoring, discussed in more detail below.¹⁶⁸

4. Regulatory Oversight of CCS Salinity

60. Because of the potential for CCS water to spread westward, FPL has worked with the SFWMD and its predecessor agency to limit the environmental impacts of the CCS.¹⁶⁹ To that end, in the 1970s FPL agreed to operate an eighteen-foot deep interceptor ditch along the west side of the CCS to restrict the westward movement of saline water from the CCS in the upper part of the Biscayne Aquifer.¹⁷⁰

a. The Extended Power Uprate of Turkey Point Units 3 and 4

61. In 2010, FPL sought permission from the NRC for an extended power uprate (“EPU”).¹⁷¹ FPL and the NRC expected the EPU to increase the overall thermal load to the CCS, which they estimated would increase the temperature in the CCS by 2.5°F.¹⁷² This increase in temperature was expected to result in an increase in salinity in the CCS of approximately 2 to 3 ppt.¹⁷³ The NRC performed an Environmental Assessment of the EPU and concluded that, though this minor increase in temperature and salinity attributable to the uprate would likely occur, the amendment still would not have a

¹⁶⁸ FPL Testimony at 34 (A55).

¹⁶⁹ FPL Testimony at 25 (A40); NRC Staff Testimony at 19 (A11).

¹⁷⁰ FPL Testimony at 24-25 (A39-A40); NRC Staff Testimony at 23 (A16); 1972 FES at V-3.

¹⁷¹ FPL Testimony at 25 (A41); NRC Staff Testimony at 38 (A42).

¹⁷² License Amendment to Increase the Maximum Reactor Power Level, Florida Power & Light Company Turkey Point, Units 3 and 4: Final environmental assessment and finding of no significant impact, 77 Fed. Reg. 20,059 (April 3, 2012) at 20,062 col. 2 (Exh. NRC-022) (“Uprate EA”); FPL Testimony at 57 (A97); FPL-035 (Excerpt from 2008 Site Certification Application for EPU).

¹⁷³ Uprate EA at 20,062 col. 2; FPL Testimony at 57 (A97); FPL-035.

significant environmental impact.¹⁷⁴ Nevertheless, it should be noted that the increase in thermal load to the CCS that the NRC anticipated would follow the uprate has not occurred due to the retirement of Turkey Point Unit 2.¹⁷⁵ For this reason, there is no factual basis to conclude that the increases in temperature and salinity that did occur following the uprate were a result of the uprate.¹⁷⁶

62. State agencies also reviewed the uprate under Florida's Power Plant Siting Act and required the establishment of an "Uprate Monitoring Program" that would provide information to determine the vertical and horizontal effects, and extent, of saline CCS water on existing and projected surface and groundwater resources, and ecological conditions surrounding the Turkey Point Facility.¹⁷⁷ The Uprate Monitoring Plan collects groundwater, surface water, meteorological, and ecological data in and around the plant to assess pre-uprate and post-uprate conditions and to identify changes associated with the uprate project.¹⁷⁸ To date, data collected through the Uprate Monitoring Program has not shown a significant change in groundwater salinity.¹⁷⁹

b. Salinity Management Plan

63. In 2013, based on the results of the 2012 Comprehensive Pre-Uprate Monitoring Report, the SFWMD indicated in a letter to FPL that water from the CCS had migrated outside

¹⁷⁴ Uprate EA at 20,070 col. 1; FPL Testimony at 25-26 (A41).

¹⁷⁵ FPL Testimony at 15-16 (A26), 32 (A51); Exh. FPL-009 ("Comparison of Pre-Uprate CCS Heat Discharge with Post-Uprate CCS Heat Discharge"); NRC Staff Testimony at 39 (A43).

¹⁷⁶ FPL Testimony at 32 (A51).

¹⁷⁷ FPL Testimony at 26 (A42).

¹⁷⁸ *Id.*

¹⁷⁹ FPL Testimony at 30-31 (A49) (citing Exhibit FPL-024 "Turkey Point Plant; Annual Post-Uprate Monitoring Report, Units 3&4 Uprate Project (August 2014)").

the geographic boundaries of the CCS.¹⁸⁰ The SFWMD's determination led to a nearly two-year consultation period, which concluded with the issuance of an Administrative Order ("AO") by the Florida Department of Environmental Protection in December 2014.¹⁸¹ The AO explains that while the interceptor ditch has been effective at restricting the westward movement of saline CCS water in the upper portion of the Biscayne aquifer, it has not been effective at restricting the westward movement of the hypersaline water from the CCS into the deeper portions of the aquifer.¹⁸² As a result, it concluded that saline water from the CCS has moved inland in excess of those amounts that would have occurred without the existence of the CCS.¹⁸³ The AO therefore sought to abate the westward movement of hypersaline water from the CCS.¹⁸⁴ Modeling performed by FPL and the SFWMD indicated that reducing CCS salinities can moderate westward movement of CCS water.¹⁸⁵ Therefore, the AO required FPL to submit a salinity management plan that would enable it to reduce salinity in the CCS to at least 34 PSU within 4 years.¹⁸⁶

64. FPL did not challenge the AO and plans to comply with it by introducing up to 14 MGD of brackish water from the Upper Floridan Aquifer into the CCS.¹⁸⁷ However, a third

¹⁸⁰ FPL Testimony at 36 (A59); (citing Exh. FPL-026, Letter from SFWMD to FPL dated April 16, 2013 "Consultation Pursuant to the October 14, 2009 Fifth Supplemental Agreement between the SFWMD and FPL"). The movement of hypersaline CCS water west of the CCS into the already saline Biscayne Aquifer is related to but conceptually distinct from the movement of the interface between saline water and fresh water 6-8 miles inland. Tr. at 547 (Scroggs).

¹⁸¹ FPL Testimony at 36 (A59).

¹⁸² FPL Testimony at 25 (A40); Administrative Order at 4 ¶24.

¹⁸³ FPL Testimony at 36 (A59); Administrative Order at 4 ¶24.

¹⁸⁴ FPL Testimony at 37 (A60); Administrative Order at 4 ¶25-27, 6 ¶37.

¹⁸⁵ FPL Testimony at 41-43 (A69-A71); Administrative Order at 5, ¶28-32.

¹⁸⁶ FPL Testimony at 37 (A60); Administrative Order at 6, ¶37b.

¹⁸⁷ FPL Testimony at 37-38 (A61, A63).

party has challenged the AO, so it is not currently effective, pending resolution of that challenge.¹⁸⁸ After holding an evidentiary hearing on that challenge, an Administrative Law Judge of the Florida Division of Administrative Hearings issued a Recommended Order to the Florida Department of Environmental Protection on February 15, 2016.¹⁸⁹ The Recommended Order found procedural infirmities in the Administrative Order and recommended that FDEP either rescind or amend the AO. The ALJ found that the AO was an enforcement action, but concluded that it was not a reasonable exercise of enforcement discretion because FPL had not been charged with a violation and was not required to come into compliance with standards.¹⁹⁰

65. The Recommended Order concluded that the AO improperly required FPL to hold CCS salinity at 34 PSU and did not allow FPL to bring the salinity lower than that standard.¹⁹¹ However, the plain language of the AO clearly allows FPL to bring salinity lower than 34 PSU.¹⁹² Specifically, Paragraphs 42 and 43 of the AO provide:

42. Within four years of the Effective Date of the Management Plan, the average annual CCS salinity as calculated per the approved Management Plan shall be reduced *to or below a practical salinity of 34*.

43. Thereafter, FPL shall continue to maintain the average annual salinity of the CCS *at or below a practical salinity of 34* so long as the CCS is in operation and serving units under operation at Turkey Point or unless otherwise directed by amendment to this Order or as specified in the State License.¹⁹³

¹⁸⁸ FPL Testimony at 37 (A61).

¹⁸⁹ Order (Taking Official Notice and Ordering Briefing), Feb. 26, 2016. This Order attached the RECOMMENDED ORDER *Atlantic Civil, Inc. v. Fla. Power & Light Co. & Dep't of Env'tl. Prot.*, Fla. Admin. Orders Nos. 15-1746 & 15-1747 (Fla. Div. of Admin. Hearings Feb. 15, 2016) ("AO Recommended Order").

¹⁹⁰ AO Recommended Order at 28, ¶¶ 90-93.

¹⁹¹ AO Recommended Order at 29.

¹⁹² See Administrative Order at 8 ¶¶ 42-43.

¹⁹³ *Id.* (emphases added).

66. The state hearing process allows parties to file exceptions to the ALJ's Recommended Order, before a final decision is issued by FDEP.¹⁹⁴ FDEP must issue a final order that includes an explicit ruling on each exception.¹⁹⁵ FDEP has not yet issued a Final Order.
67. In an action similar to the AO, Miami-Dade County issued a Notice of Violation ("NOV") to FPL in October 2015, for groundwater chloride concentration levels that exceeded County groundwater standards.¹⁹⁶ Upon receiving the NOV, FPL entered into a Consent Agreement with the County.¹⁹⁷ The Consent Agreement acknowledges FPL's plan to freshen the CCS through additions of Upper Floridan Aquifer water and also requires abatement through the installation of a recovery well system and monitoring to ensure progress is made without adverse impacts.¹⁹⁸ The AO and NOV are complementary and envision the utilization of some of the same resources to meet similar goals.¹⁹⁹
68. The local portion of the Upper Floridan Aquifer has a salinity of approximately 2.5 psu, which means that it is too salty to drink without treatment, but is relatively fresh compared to the hypersaline water in the CCS.²⁰⁰ This makes it ideal for use in freshening the CCS.²⁰¹ The Upper Floridan Aquifer is separated from the surficial Biscayne Aquifer by a confining layer, so there is no communication between the two

¹⁹⁴ § 120.57(1)(b), Fla. Stat.; Rule 28-106.217, Fla. Admin. Code.

¹⁹⁵ § 120.57(1)(k), Fla. Stat.

¹⁹⁶ FPL Testimony at 39 (A65) (*citing* Exhibit INT-005, Miami-Dade County Notice of Violation and Orders for Corrective Action, dated October 2, 2015 ("County NOV")).

¹⁹⁷ *Id.* (*citing* Exh. INT-006, Consent Agreement Between FPL and Miami-Dade County, dated October 6, 2015 ("Consent Agreement")).

¹⁹⁸ FPL Testimony at 39 (A65); Consent Agreement at 4-6.

¹⁹⁹ FPL Testimony at 40 (A67) (*citing* Consent Agreement).

²⁰⁰ *Id.* at 48 (A80).

²⁰¹ *Id.* at 24 (A38).

aquifers.²⁰² For this reason, impacts from these Floridan Aquifer withdrawals on the Biscayne Aquifer are not reasonably expected.²⁰³

69. FPL has sought a modification of its Site Certification from the FDEP to allow it to drill into the UFA for this purpose.²⁰⁴ FDEP has approved the modification, but the SCA Modification is subject to third-party challenge.²⁰⁵ Recently, the Administrative Law Judge assigned to the case issued a Recommended Order, which recommended that FDEP issue the modification to the Site Certification, concluding that “the modification would improve current groundwater conditions.”²⁰⁶ In that case, no party argued that the proposed withdrawal of 14 mgd of water from the UFA would interfere with existing legal uses or cause saltwater intrusion.²⁰⁷ This Recommended Order is not a final order at this point, as it is also subject to party exceptions prior to the final determination of that matter by the Florida Power Plant Siting Board.

5. CCS Conditions in 2014

70. In 2013 and the first half of 2014 the South Miami-Dade region experienced below average rainfall, and consequently, above average evaporation.²⁰⁸ This ambient weather phenomenon contributed to above normal salinity in the CCS.²⁰⁹ The above normal salinity aided the growth and persistence of a blue-green algae bloom; a type of algae

²⁰² *Id.* at 51 (A82).

²⁰³ *Id.*

²⁰⁴ *Id.* at 37-38 (A63).

²⁰⁵ *Id.* at 38 (A63).

²⁰⁶ Florida Power & Light Company’s Notice to the Board Regarding State Administrative Proceeding (Jan. 26, 2016) at 19.

²⁰⁷ *Id.* at 19.

²⁰⁸ FPL Testimony at 15 (A26), 55 (A93).

²⁰⁹ *Id.*

that thrives in warm, hypersaline environments.²¹⁰ The combined effect of low precipitation, high evaporation, and degraded water quality due to the algal bloom (e.g., high turbidity, high total suspended solids) resulted in an imbalance in historic salinity levels.²¹¹ When salinity increases as a result of a lack of sufficient water to replace evaporation, water quality degradation can occur, further exacerbating the heat transfer capability and elevating temperatures.²¹² This elevation of temperatures increased evaporation, which therefore increased salinity, creating a negatively reinforcing cycle.²¹³

71. In the summer of 2014, the temperature increases approached the Technical Specification limitation of 100°F in place at the time.²¹⁴ This required FPL to take action to reduce power multiple times during July and August of 2014.²¹⁵ As a result, FPL analyzed the CCS intake temperature limitation and through a safety analysis, determined that the 100°F limitation could be raised to 104°F, without causing any safety issues.²¹⁶ As a result, on July 10, 2014, FPL sought approval from the NRC to increase the UHS temperature limit in Technical Specification 3.7.4 to 104°F, which requires a license amendment.²¹⁷

²¹⁰ FPL Testimony at 15 (A26), 55 (A93); Tr. at 501 (Scroggs).

²¹¹ *Id.* at 15 (A26).

²¹² *Id.*

²¹³ *Id.*

²¹⁴ *Id.* at 56 (A94).

²¹⁵ *Id.*

²¹⁶ *Id.*

²¹⁷ *Id.*; NRC Staff Testimony at 29-30 (A32).

D. Findings of Fact Regarding Groundwater Impacts of the Ultimate Heat Sink License Amendment

72. The License Amendment is not likely to significantly affect groundwater at Turkey Point.²¹⁸ CASE appears to assume that the amendment will allow FPL to operate at a temperature constantly increased by 4 degrees Fahrenheit, which, it alleges, could increase CCS salinity through increased evaporation. This increase in CCS salinity, CASE argues, could in turn exacerbate the westward movement of hypersaline water in the Biscayne Aquifer. However, CASE offered no evidence of any kind to support this theory. Based on the unrebutted and convincing testimony of the NRC Staff and FPL expert witnesses, it is clear that this is not a reasonably foreseeable outcome.

1. Temperature Increases Attributable to the UHS Amendment Would be of Short Duration

73. The license amendment does not allow FPL to operate at higher thermal power levels than those already approved by the NRC.²¹⁹ Nor does it change the amount of heat energy that is added to the closed-cycle cooling canal system.²²⁰ Instead, the amendment provides operational flexibility for FPL during periods when the CCS is less efficient at removing heat energy (*i.e.* during times of high outside temperature, low rainfall, high blue-green algae concentrations, or poor water circulation).²²¹

74. While the maximum allowed temperature at the intake was increased by 4 degrees through the UHS amendment, this would not result in an increase in the average temperature by nearly that amount because in the cooler, non-summer months the

²¹⁸ *Id.* at 57 (A97); 58 (A98).

²¹⁹ NRC Staff Testimony at 52 (A80).

²²⁰ *Id.*

²²¹ *Id.*

temperature would not be affected, and even in the summer, the temperature would only potentially be affected.²²² The CCS temperature varies daily and seasonally in response to a number of conditions, such as the thermal output of the plants, air temperature and humidity, sun exposure, rainfall, drought conditions, and algae concentrations.²²³ In order to impact aquifer salinity, the temperature increase would need to be sustained for years.²²⁴ Such a long, sustained period of increased CCS temperature would be unlikely to sustain itself due to the seasonal and daily changes in the CCS.²²⁵ In 2014, the intake water temperature exceeded 100°F for only a few days, most of which were nonconsecutive (the temperature typically dropped below 100°F at night).²²⁶

75. As a result, any temperature increases in the CCS above the previously authorized limit of 100°F would be temporary and short in duration.²²⁷ But for short periods of time, temperature increases could result in higher salinity within the CCS.²²⁸ However, because this effect would be temporary and of short duration, if it even happens at all, average salinity levels are not expected to increase in the CCS or in water that moves from the CCS into the Biscayne Aquifer.²²⁹ Any potential salinity changes attributable to the UHS amendment would be small relative to the routine changes that occur in the

²²² FPL Testimony at 58 (A99).

²²³ NRC Staff Testimony at 51 (A78); Tr. at 392 (Ford).

²²⁴ NRC Staff Testimony at 46 (A59).

²²⁵ Tr. at 398 (Ford); *see also id.* at 338 (“So you have a four-degree change proposed, but you can’t just hold it at four degrees); NRC Staff Testimony at 46-47 (A60).

²²⁶ NRC Staff Testimony at 51 (A78).

²²⁷ *Id.* at 52 (A80); Tr. at 391-92, 397-98 (Ford), 408 (Bolleter).

²²⁸ NRC Staff Testimony at 52 (A80).

²²⁹ *Id.*

canal system.²³⁰ Further, the groundwater system is slow to change and responds mostly to long-term changes in the CCS, not changes of a few days or hours or a week or so.²³¹

76. FPL's witnesses explained that its ongoing actions to manage the cooling canals have made it less likely that the temperatures will rise into the level authorized by the license amendment. Both the addition of Upper Floridan water pursuant to the salinity management plan required by the AO and the addition of the L-31 E water as permitted the SFWMD, together with the flow balancing and sediment activities "make the radiator work better" and will allow FPL to stabilize the thermal situation in the canals.²³² These ongoing salinity management activities make it even less likely that any marginal increase in salinity due to the license amendment would result in a significant environmental impact.²³³ In fact, in 2015, CCS temperatures were approximately 2.5 to 3°F lower than during the same time period in 2014 and the maximum intake temperature during the summer of 2015 was 98.5°F, compared to a maximum intake temperature of 102.5°F in 2014.²³⁴

2. Conservative Projections of Impacts of the UHS License Amendment

77. Both the NRC Staff and FPL witness testified that even if the increases in temperature were not of short duration, which would be unexpected and unusual, the impacts would

²³⁰ Tr. at 392-93 (Ford).

²³¹ *Id.* at 392 (Ford).

²³² Tr. at 480 (Scroggs); FPL Testimony at 40 (A68). *See also* FPL Testimony at 59-60 (A101).

²³³ FPL Testimony at 40 (A68). Because FPL expects to maintain average annual CCS salinity at least at 34 PSU, any hypothetical increased salinity allowed by the license amendment (1) would be remedied and (2) would involve marginal increases of salinity around 34 PSU, far below the salinity above 90 PSU experienced in 2014.

²³⁴ FPL Testimony at 19 (A31) (*citing* Exh. FPL-011, "60-Day Canal Peak Temperature Trend").

still not be significant.²³⁵ FPL performed two theoretical calculations to quantify these small impacts, one that is “very much” conservative and one that is more realistic, though still considerably more conservative than the past year of real data. The very conservative FPL analysis shows that due to increased evaporation, a 4 degree average increase in temperature would result in a 5.8 psu increase in salinity at the plant intake.²³⁶ The incremental effect of increasing salinity by 5.8 psu would be to increase density by 0.0021 g/cm³.²³⁷ This increase in density would increase the hydraulic head at the bottom of a 20 foot canal by 0.04 foot, well within random natural fluctuations caused by climate, wind, pumping, and CCS operations.²³⁸ This value is very conservative because there is no reason to believe that the amendment could result in an average 4 degree F increase in CCS temperature.²³⁹ And because the impact of temperature on density mitigates the impact of salinity on density, the impact of this “worst-case” temperature increase would actually be even less (0.025 feet).²⁴⁰ This would have little impact on the surrounding aquifer.²⁴¹

78. The above analysis assumes an average 4 degree temperature increase, which is akin to an absolute worst-case scenario, which NEPA does not require.²⁴² Realistically, an average 4 degree temperature increase across the CCS is not anticipated and so the

²³⁵ Tr. at 397-99 (Ford).

²³⁶ FPL Testimony at 58 (A98).

²³⁷ *Id.*

²³⁸ *Id.*

²³⁹ *Id.* at 58 (A99).

²⁴⁰ *Id.* at 59 (A100).

²⁴¹ *Id.* at 58 (A98).

²⁴² *Id.* at 58 (A99); Tr. at 411 (Andersen).

impact would be much smaller than the already-small impact described above.²⁴³ In fact, CCS inlet temperatures greater than 100°F have not occurred after the few days in the summer of 2014.²⁴⁴

79. The second, more realistic, analysis by FPL demonstrates the extremely limited impact on average CCS temperatures that would be experienced as a result of the short durations under which CCS maximum temperatures exceed the previous threshold of 100°F.²⁴⁵ This analysis, based on data taken from the CCS after the issuance of the amendment in 2014 and 2015, shows that the effects of exceeding the previous temperature threshold for a few short periods of time would be vanishingly small and, were they to occur, would be too small for FPL's monitoring equipment to even measure in the field.²⁴⁶ The percentage of time when inlet temperatures are greater than 100°F would be so limited (if they even occur) that the effects on CCS temperature, and therefore on CCS salinity, would be negligible.²⁴⁷ As a result, the reasonably foreseeable impact of the license amendment on CCS salinity is somewhere between nothing (as in the 2015 experience with no temperatures above 100°F) and negligible (based on temperatures exceeding 100°F for a few short periods of time).

²⁴³ FPL Testimony at 58 (A99).

²⁴⁴ NRC Staff Testimony at 47 (A61); FPL Testimony at 19 (A31); (citing Exh. FPL-012, "ICW Temperature Trend").

²⁴⁵ FPL Testimony at 60-62 (A102-104).

²⁴⁶ *Id.* at 62 (A104). Including the temperatures records from July 2014 would not have a significant impact on this analysis and would amount to a "spit in the ocean." Tr. at 426 (Bolleter).

²⁴⁷ *Id.* at 61 (A103).

E. Findings of Fact Regarding FPL's Water Withdrawals

80. In the summer of 2014, with temperatures approaching the 100°F TS limit and CCS salinity at an all-time high, FPL took action to provide additional water sources to mitigate the salinity increase during the dry season and begin the process of reducing salinity.²⁴⁸ FPL has continued adding water from various sources to the CCS to address salinity, an issue that is related to, but separable from, temperature.²⁴⁹

1. FPL's Water Withdrawals

a. Initial Floridan Aquifer Withdrawals

81. First, FPL obtained approval to redirect up to 5 mgd of brackish water from an existing Floridan Aquifer source permitted to provide make up water for the Turkey Point Unit 5 cooling tower.²⁵⁰ Use of this small volume source was discontinued in the summer of 2015 when larger volume sources were brought into service.²⁵¹

b. Biscayne Aquifer Withdrawals

82. Second, in 2014, FPL utilized an existing well in the shallow saline Biscayne Aquifer on the Turkey Point peninsula.²⁵² This water is approximately 35 psu, about the salinity of seawater.²⁵³ In 2015, subsequent to the NRC's EA, the peninsular marine well field was expanded to provide two new wells producing a total volume of approximately 45 MGD

²⁴⁸ *Id.* at 16 (A27).

²⁴⁹ Tr. at 475 (Scroggs).

²⁵⁰ FPL Testimony at 16 (A27).

²⁵¹ *Id.*

²⁵² *Id.*

²⁵³ *Id.*

for all three wells.²⁵⁴ In September 2015, as CCS salinity began to fall in response to seasonal rainfall and L-31 E storm water, FPL stopped adding this water source to the CCS to limit the addition of salt that is associated with this source.²⁵⁵

c. L-31 E Canal Withdrawals

83. Third, in 2014, after the NRC issued the UHS license amendment, FPL received authorization to obtain excess storm water from the nearby L-31E canal, which would otherwise be discharged to tide.²⁵⁶ In the fall of 2014, FPL was able to draw an average of approximately 44 MGD for a 21 day drawdown period.²⁵⁷ Withdrawals from this source were controlled by permit conditions that ensured that an environmental reservation of water for Biscayne Bay was always achieved in concert with any flow to FPL's CCS.²⁵⁸ FPL also received similar authority in 2015 and 2016, but due to an extreme drought in Southeast Florida in the summer of 2015, water from this source was not available until August 28, 2015.²⁵⁹ Withdrawals from the L-31E canal averaged approximately 43 MGD in September and October of 2015.²⁶⁰ This source is available only in the rainy season.²⁶¹ Therefore, it is not available after November 30.²⁶² This authorization will expire in 2016.²⁶³

²⁵⁴ *Id.* at 17 (A27).

²⁵⁵ *Id.*

²⁵⁶ *Id.*

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ *Id.*

²⁶¹ *Id.*

²⁶² *Id.*

²⁶³ *Id.*

2. Impacts of FPL's Water Withdrawals

84. FPL's water withdrawals will not have a significant negative impact on groundwater salinity.²⁶⁴

a. Impact of Biscayne Aquifer Withdrawals

85. The persuasive and un rebutted testimony of the NRC Staff and FPL experts demonstrates that FPL's use of marine water from the Biscayne Aquifer water has not caused saltwater intrusion, and will, in fact, help to alleviate it.²⁶⁵ The water FPL withdrew from the Biscayne Aquifer is classified as seawater.²⁶⁶ Because these wells are on the seaward side of the freshwater/saltwater interface, the withdrawals did not pull that interface further inland, which is the classic mechanism of saltwater intrusion.²⁶⁷

b. Impact of L-31 E Canal Withdrawals

86. The persuasive and un rebutted testimony of the NRC Staff and FPL experts demonstrates that FPL's use of water from the L-31 E canal has not and will not cause saltwater intrusion, and will, in fact, help to alleviate it.²⁶⁸ In issuing the consumptive use permit for the L-31 E canal water, the SFWMD concluded that the withdrawal of water from the canal would not exacerbate saltwater intrusion.²⁶⁹ FPL's consumptive use permit for the L-31 E water was challenged administratively in Florida, but the

²⁶⁴ Tr. at 336 (Ford).

²⁶⁵ FPL Testimony at 42 (A70), at 47 (A78, A79); NRC Staff Testimony at 48 (A68).

²⁶⁶ FPL Testimony at 47 (A79). *See also* Exh.FPL-018 (South Florida Water Management District Biscayne Aquifer Saline Water Letter dated July 1, 2014); Exh. FPL-019 ("Biscayne Well Withdrawal Salinity Data, June – September 2015"); NRC Staff Testimony at 25 (A22).

²⁶⁷ FPL Testimony at 47 (A79); NRC Staff Testimony at 48 (A68).

²⁶⁸ FPL Testimony at 55 (A92); NRC 001 at 49-50 (A72).

²⁶⁹ *See* Exh. FPL-037 (Recommended Order of ALJ on FPL's L-31 E Consumptive Use Permit, Dec. 31, 2015) at 13-17.

SFWMD determination that taking water from the L-31 E would not cause saltwater intrusion, was not challenged.²⁷⁰ The SFWMD also determined that adding the L-31 water to the CCS would not significantly exacerbate saltwater intrusion by increasing the hydraulic head within the CCS and pushing more CCS water into the aquifer.²⁷¹ This determination was challenged, and, upon administrative review of that determination, the ALJ in a Recommended Order determined that FPL provided reasonable assurance that the proposed water use would not increase the rate of saltwater intrusion.²⁷² In any event, CASE never raised this argument here or offered any evidence to rebut FPL's expert testimony.

87. In its Order denying FPL's motion for summary disposition, the Board cited one of the consumptive use permits issued to FPL by the SFWMD, which explained that one of the purposes of the canal network is to prevent saltwater intrusion.²⁷³ This is stated in paragraph 10 on page 4 of Exhibit FPL-033, the SFWMD's Final Order approving FPL's application for consumptive use of L-31 E canal water in 2015.²⁷⁴ However, in the next paragraph, the Order goes on to explain that "[o]peration of the C&SF Project coastal structure gates in this canal network discharge excess water when rainfall causes stages to rise above the control levels and close in order to maintain sufficient water to

²⁷⁰ *Id.* at 15 ¶49.

²⁷¹ *Id.* at 16 ¶54.

²⁷² *Id.* at 17 ¶59. The SFWMD had not yet taken final action on this permit at the time the record closed in this proceeding.

²⁷³ Order (Denying Application for Subpoenas, Denying Motion for Summary Disposition, and Granting in Part and Denying in Part Motions to Strike) (Dec. 22, 2015) at 7, n.30 (*citing* Exh. FPL-033, South Florida Water Management District, Final Order, SFWMD No. 2015-020-DAO-WU (Apr. 10, 2015)).

²⁷⁴ Exh. FPL-033 at 4¶10.

prevent salt water intrusion among other Project purposes.”²⁷⁵ In other words, the SFWMD manages the canal system in order to keep the canals filled high enough to prevent saltwater intrusion. The only water available to FPL is water above that level, which would not be kept on the inland side of the control structures to prevent saltwater intrusion, but would instead be released to tide.²⁷⁶ For this reason, the simple act of redirecting excess water from the L-31 E canal to the CCS has no impact on the amount of water left behind the control structures and so has no impact on the canal network’s role in preventing saltwater intrusion.²⁷⁷

c. Impact of Upper Floridan Aquifer Withdrawals

88. The persuasive and un rebutted testimony of the NRC Staff and FPL experts demonstrates that FPL’s use of water from the Upper Floridan Aquifer will not cause saltwater intrusion and will in fact, help to alleviate it.²⁷⁸ FPL’s use of water from the Upper Floridan Aquifer is a part of a regulatory structure overseen by the FDEP. FPL will utilize this water source because its and the FDEP’s modelers concluded that using it in the CCS will help to reduce saltwater intrusion.²⁷⁹ FDEP identified the Upper Floridan Aquifer as a potential source of water for CCS mitigation in the Administrative Order.²⁸⁰ And, subject to administrative challenge, FDEP approved the use of the UFA

²⁷⁵ *Id.* at ¶11.

²⁷⁶ *Id.* at 11 ¶37; 12 ¶42a. *See also* FPL Testimony at 54 (A92).

²⁷⁷ FPL Testimony at 55 (A92).

²⁷⁸ *Id.* at 48-51 (A81, A82); NRC Staff Testimony at 49 (A70).

²⁷⁹ *Id.* at 48-50 (A82); *see also* Administrative Order at 5 ¶28-32.

²⁸⁰ Administrative Order at 6 ¶37d.

wells in a site certification modification proceeding.²⁸¹ In this proceeding, CASE offered no evidence upon which to overturn these carefully considered determinations of the local regulators.

89. FPL's withdrawals from the Upper Floridan Aquifer will not cause saltwater intrusion in the Biscayne Aquifer because the two aquifers are separated by a confining layer and there is very limited interaction between the two.²⁸² Nor will the withdrawals cause significant impacts in the Upper Floridan Aquifer, which is already brackish.²⁸³ The South Florida Water Management District's Basis of Review for water use permitting requires that proposed pumping not impact the saltwater interface and its regulations use the 250 mg/L isochlor to define the saltwater interface.²⁸⁴ As the quality of Upper Floridan Aquifer water in this area already exceeds that concentration, no saltwater interface exists, and FPL's Upper Floridan withdrawals cannot impact the saltwater interface in the Upper Floridan Aquifer.²⁸⁵ The freshwater/saltwater interface in the Floridan Aquifer is too far away to be impacted by FPL's use of the water.²⁸⁶
90. Modeling performed by FPL's expert in support of its Site Certification Modification application demonstrated that only minor drawdown effects might be experienced offsite and would not have a significant impact on other users.²⁸⁷ Further, there will be only a

²⁸¹ Tr. at 478 (Scroggs).

²⁸² *Id.* at 51 (A82). Tr. at 431-434 (Ford, Andersen).

²⁸³ *Id.* at 48 (A82).

²⁸⁴ FPL-027 at 41; FPL Testimony at 48 (A82).

²⁸⁵ FPL-027 at 41; FPL Testimony at 48 (A82).

²⁸⁶ Tr. at 486-87 (Andersen).

²⁸⁷ FPL Testimony at 48-50 (A81-82); *see also* Exh. FPL-027 (FPL Request for Site Certification Modification) at Appendix A "Evaluation of Required Floridan Water for Salinity Reduction in the Cooling Canal System"; Exh. FPL-030 (Revised Memo- "Evaluation of Drawdown in the Upper Floridan Aquifer Due to Proposed SSalinity Reduction-based Withdrawals").

minor increase in salinity in the Upper Floridan Aquifer, which will be minimal, localized to the FPL production well field, and not affect the aquifer regionally.²⁸⁸

3. The Aquifer and Canal Withdrawals Are Not a Result of the Proposed Action

91. CASE Contention 1 claims that FPL's withdrawals of groundwater or canal water for use in CCS mitigation are a result of the NRC's license amendment. This is wrong.²⁸⁹ The withdrawals would have happened regardless of the proposed action.²⁹⁰ FPL began adding water to the CCS prior to the issuance of the amendment in 2014 in order to mitigate degraded conditions from the sources that were then available to it: an unused allocation for Unit 5 from the Upper Floridan Aquifer and marine water from wells drilled into the Biscayne Aquifer as part of Units 6&7 exploratory work.²⁹¹ FPL continued to add water to the CCS in 2015 even though the higher temperatures authorized by the amendment did not materialize that year. Thus, the additions of water in neither 2014 nor 2015 can be causally linked to the UHS license amendment.
92. The use of each of these sources has since been discontinued upon the availability of fresher water from the L-31E Canal later.²⁹² Starting in the fall of 2014 and continuing through 2016, FPL has used and plans to use the water from the L-31 E canal for CCS mitigation during the rainy season.²⁹³ This source is a bridging strategy that FPL has utilized until it can bring its longer-term source, the Upper Floridan Aquifer, into use

²⁸⁸ FPL Testimony at 50 (A82).

²⁸⁹ FPL Testimony at 56 (A95, A96).

²⁹⁰ Tr. at 333-34 (Grange).

²⁹¹ FPL Testimony at 16-17 (A27); Tr. at 478 (Scroggs).

²⁹² FPL Testimony at 16-17 (A27).

²⁹³ *Id.* at 17 (A27).

following the modification of its Site Certification.²⁹⁴ These planned withdrawals are not intended to address CCS temperature, and are not caused by the NRC license amendment. Instead, they are specifically intended to address the FDEP's Administrative Order to FPL to reduce salinity in the CCS, which itself was the result of a state regulatory finding that preceded FPL's license amendment request.²⁹⁵ The temperature issue and its mitigation are separable from the salinity issue and its mitigation.²⁹⁶ However, the additions intended for salinity reduction do have the benefit of helping to stabilize the thermal situation in the CCS.²⁹⁷

93. Moreover, as the NRC Staff's expert testified, allowing FPL to operate at higher CCS temperatures would actually reduce the potential need for external water injection for temperature management, because it would give FPL the operational flexibility to not add water as the temperature approached the prior limit.²⁹⁸ And, as discussed earlier, FPL's actions, including the addition of water from the L-31 E canal and Upper Floridan Aquifer have made it less likely that the temperatures will rise into the level authorized by the license amendment. These activities "make the radiator work better" and will allow FPL to stabilize the thermal situation in the canals.²⁹⁹ Rather than being caused by the proposed action, FPL's water withdrawals help to alleviate the need to utilize the greater operating authority afforded by the amendment.

²⁹⁴ *Id.* at 17 (A27); at 47 (A78).

²⁹⁵ FPL Testimony at 37-38 (A63) ("The Floridan wells are intended to be a long term water resource component to help manage and maintain a constant low salinity in the CCS.")

²⁹⁶ Tr. at 475 (Scroggs).

²⁹⁷ Tr. at 480 (Scroggs).

²⁹⁸ NRC Staff Testimony at 53 (A82, A83).

²⁹⁹ Tr. at 480 (Scroggs). *See also* FPL Testimony at 59-60 (A101).

94. But in a colloquy at the evidentiary hearing, it was posited that FPL might need to withdraw more water to help reduce temperature than it would already need to withdraw in order to meet its salinity management obligations. There is no evidence in the record that such a scenario is a reasonably foreseeable result of the UHS license amendment. In fact, as discussed in the previous paragraph, this is unlikely. In a situation where the CCS temperature approached the new 104°F limit, causing FPL to seek additional water to cool the CCS, the CCS would have already passed the previous 100°F limit. Absent the amendment, additional water would have already been needed to cool the CCS. In other words, the amendment does not create the potential need to add water to mitigate CCS temperature as it nears the limit, it simply postpones the need to do so. For this reason, it is not possible to conclude that the proposed action would ever be the cause of any future water addition. Therefore, these withdrawals cannot be an environmental impact of the proposed action.³⁰⁰

F. Findings of Fact Regarding The NRC's Environmental Analyses

95. The NRC Staff prepared an EA for the UHS license amendment request. Its witnesses explained that the EA did not include a comprehensive review of the history, regulations, and environmental impacts of the CCS because the EA incorporated by reference several of the NRC's previous NEPA analyses, which describe the CCS and its impact on local groundwater.³⁰¹ Instead, the NRC focused its evaluation of the UHS license amendment on the current condition of the CCS and the impacts of that proposed

³⁰⁰ Even if they were caused by the NRC's action, FPL's use of the available water sources would have no impact on saltwater intrusion, as discussed above.

³⁰¹ UHS EA at 44,465 col. 1, 2; Tr. at 428 (Grange).

action and incorporated several historical documents by reference.³⁰² The three documents incorporated by reference in the 2014 UHS EA were the 1972 final environmental statement for Turkey Point,³⁰³ the 2002 supplemental environmental impact statement for license renewal of Turkey Point,³⁰⁴ which incorporates and relies upon the NRC's 1996 Generic Environmental Impact Statement ("GEIS") for nuclear reactor license renewal),³⁰⁵ and the 2012 environmental assessment for the extended power uprate license amendment ("Uprate EA").

1. The 1972 Final Environmental Statement

96. The 1972 FES describes the construction of the cooling canal system.³⁰⁶ The FES explained that the addition of water from Biscayne Bay to the new cooling canal area would increase the salinity of that area and would be "considerably higher than that of the ground water."³⁰⁷ The FES acknowledged that the CCS could have an impact on the

³⁰² See Tr. at 517, 522-23 (Grange).

³⁰³ Final Environmental Statement Related to Operation of Turkey Point Plant, Florida Power & Light Company (1972) ("FES"). The NRC Staff provided an excerpt of this FES as Exhibit NRC-047. Its testimony and exhibit list provided the ADAMS citation for the complete document (ADAMS Accession No. ML092030310). NRC Staff Testimony at 11. This document was also discussed in some detail during the evidentiary hearing (Tr. at 518) and referenced in the UHS EA.

³⁰⁴ Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Supplement 5 Regarding Turkey Point Plant, Units 3 and 4 - Final Report (NUREG-1437, Supplement 5) (Jan. 2002) ("SEIS"). The NRC Staff provided an excerpt of this document as Exhibit NRC-024. Its testimony and exhibit list provided the ADAMS citation for the complete document (ADAMS Accession No. ML020280119). NRC Staff Testimony at 10. This document was also discussed during the evidentiary hearing (Tr. at 518-19) and referenced in the UHS EA.

³⁰⁵ NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, Vols. 1 & 2 (May 1996) ("GEIS") available at ADAMS Accession Nos. ML040690705, ML040690738. The GEIS was not provided as an exhibit. However, it was discussed at the evidentiary hearing. See e.g. Tr. at 519, 523-25. The 1996 GEIS was also incorporated by reference into the site-specific 2002 Turkey Point Supplemental Environmental Impact Statement (Exh. NRC-024) and in FPL's Environmental Report that accompanied its license renewal application in 2000 (excerpted in Exh. NRC-032 at 3.1-4 to 3.1-7). The NRC's testimony and exhibit list provided the ADAMS citation for the complete 2000 Environmental Report (ADAMS Accession No. ML003749667). NRC Staff Testimony at 10-11.

³⁰⁶ Tr. at 518 (citing 1972 FES at V-3).

³⁰⁷ 1972 FES at V-3. See Tr. at 543.

westward movement of higher-salinity groundwater, noting that because soil permeability in the area is high, westward flow of groundwater flows out of the canals on the order of 600 to 800 cubic feet per second were expected.³⁰⁸ The FES explained that FPL planned to pump water out of an interceptor ditch on the western boundary of the canals in order to control intrusion of saline water west of Levee 31.³⁰⁹

2. The 2002 Turkey Point Site-Specific Supplement to the 1996 GEIS

97. When FPL sought renewal of its operating licenses for Turkey Point Units 3 and 4, the NRC published an environmental impact statement.³¹⁰ This license renewal EIS incorporated the NRC's 1996 license renewal GEIS.³¹¹
98. Impacts of cooling ponds (and canals) on groundwater quality, including impacts on saltwater intrusion are discussed in Section 4.8.3 of the license renewal GEIS.³¹² In that section, the NRC acknowledged that alteration of groundwater quality in shallow unconfined aquifers may occur at the sites (including Turkey Point) that use cooling ponds.³¹³ It noted that all of the cooling ponds are unlined and that cooling pond water has higher total dissolved solids concentrations than the surrounding groundwater, due to evaporation.³¹⁴ It explained that water seeping from these ponds commingles with the

³⁰⁸ Tr. at 543-44; 1972 FES at V-3.

³⁰⁹ Tr. at 518, 546; 1972 FES at V-3.

³¹⁰ SEIS, Exh.NRC-024.

³¹¹ Tr. at 519 (Grange).

³¹² See Tr. at 519, 523 (Grange) (citing 1996 GEIS at 4-121). The reference on page 519 to the "SEIS on page 4-121" is either a previously unidentified transcript error or a misstatement. It should have stated "GEIS on page 4-121." This citation is stated correctly on page 523 of the transcript.

³¹³ 1996 GEIS at 4-121, discussed at pages 519 and 523 of the transcript.

³¹⁴ *Id.*

underlying groundwater, and spreads out laterally.³¹⁵ The GEIS predicted that this commingled groundwater would eventually reach offsite areas, where its quality would be between that of the cooling pond and the naturally occurring groundwater.³¹⁶ Because this water will migrate offsite, the GEIS states that groundwater quality at some points offsite may be reduced and approach that quality found in the cooling pond.³¹⁷

99. The Turkey Point site-specific supplemental EIS explained that the NRC was not aware of any new and significant information that would alter the conclusion in the GEIS regarding the impact of the Turkey Point cooling canals on saltwater intrusion.³¹⁸ Therefore, it concluded that there would be no groundwater quality degradation impacts associated with saltwater intrusion during the renewal term beyond those that had already been discussed in the GEIS.³¹⁹

3. The 2012 Extended Power Uprate Environmental Assessment

100. In 2010, FPL applied to the NRC for a license amendment that would allow an extended power uprate (the “EPU” or “uprate”) for Units 3 and 4.³²⁰ The NRC prepared an EA for that proposed action which concluded that it would not have any significant environmental impacts.³²¹
101. In the Uprate EA, the NRC was able to provide an update to much of its earlier analysis regarding the CCS. For example, the Uprate EA explained that the CCS had become

³¹⁵ *Id.*

³¹⁶ *Id.*

³¹⁷ *Id.* at 4-122.

³¹⁸ Tr. at 523-25 (Grange) (citing SEIS at 4-31 to 4-32).

³¹⁹ Tr. at 524 (Grange) (citing SEIS at 4-31 – 4-32).

³²⁰ FPL Testimony at 25 (A41).

³²¹ Uprate EA at 20,070 col. 1&2.

hypersaline, meaning that it was twice the salinity of Biscayne Bay with seasonal variations from 40 to 60 parts per thousand (ppt).³²² However, the Uprate EA explained that, as a closed cycle cooling system, it does not discharge directly to fresh or marine surface waters.³²³ It explained that water in the CCS is lost due to evaporation and is made up from a variety of sources, including rainfall, storm water runoff, as well as from infiltration and exchange of saline water with local groundwater and Biscayne Bay.³²⁴ It clarified that, while the Biscayne Aquifer has been declared a sole-source aquifer by the EPA, it contains saline to saltwater in the area of Turkey Point and is not usable as a potable water supply in that area.³²⁵ It went on to explain that, below about 40 feet into the Biscayne aquifer, relatively high salinity water (greater than 28 ppt) exists year round (the more buoyant water above this high-salinity water is a freshwater lens).³²⁶ The EA acknowledged that, because the canals are unlined, there is an exchange of water between the CCS and local groundwater.³²⁷ It also noted that FPL continued to operate an interceptor ditch in an attempt to “minimize” the flow of hypersaline CCS water towards the west in groundwater.³²⁸

102. The Uprate EA predicted that under uprated conditions the quantity of waste heat discharged by each nuclear unit would increase, which would increase temperature and,

³²² *Id.* at 20,062 col. 1.

³²³ *Id.*

³²⁴ *Id.* at 20,062 col. 1. It also stated that there is indirect surface water communication between the CCS and Biscayne Bay. *Id.* at 20,062 col. 3.

³²⁵ *Id.* at 20,062 col. 3. The Uprate EA explained that Florida classifies the groundwater in this area as G-III based on its salinity, which means that it has no reasonable potential as a future source of drinking water due to high total dissolved solids. *Id.* at 20,063 col. 1.

³²⁶ *Id.* at 20,063 col. 1.

³²⁷ *Id.* at 20,062 col. 1.

³²⁸ *Id.*

by extension, salinity in the CCS.³²⁹ Specifically, the Uprate EA explained that FPL's analysis predicted a 2.5°F increase in discharge water temperature.³³⁰ This increased discharge temperature, the Uprate EA noted, would cause additional evaporative losses to the CCS, which the Florida Department of Environmental Protection ("FDEP") predicted would lead to the loss of an additional 2 to 3 million gallons per day.³³¹ This increased evaporation would, in turn, increase the cooling canal's salinity, which was then 40 to 60 ppt, by 2 to 3 ppt.³³²

103. The Uprate EA also explained that the FDEP imposed Conditions of Certification on its approval of the uprate to address impacts associated with the salinity of the CCS.³³³ As explained in the Uprate EA, the Conditions of Certification required FPL to monitor and assess the potential direct and indirect impacts to ground and surface water from the proposed uprate, which includes measuring water temperature and salinity in the CCS and monitoring the American crocodile populations.³³⁴ The Uprate EA explained that the monitoring plan expanded FPL's ongoing monitoring of the CCS's impact on ground and surface water to include the land and water bodies surrounding the Turkey Point site such as Biscayne Bay.³³⁵ It stated that the monitoring would include groundwater monitoring well clusters at selected sites that would provide field data prior to implementation of the proposed uprate to characterize existing environmental

³²⁹ *Id.* at 20,063 col. 2.

³³⁰ *Id.* at 20,062 col. 2., at 20,063 col. 3.

³³¹ *Id.* at 20,062 col. 2., at 20,063 col. 3.

³³² *Id.* at 20,062 col. 2., at 20,063 col. 3.

³³³ *Id.* at 20,062 col. 2.

³³⁴ *Id.*

³³⁵ *Id.*

conditions.³³⁶ The Uprate EA explained that FDEP would require additional measures if the data indicate an adverse impact, including enhanced monitoring and that modeling or mitigation would likely be required to evaluate or to abate such impacts if they were to occur.³³⁷ The Uprate EA stated that mitigation measures necessary to comply with State and local water quality standards may include methods to reduce and mitigate salinity levels in groundwater and operational changes to the CCS system to reduce environmental impacts.³³⁸

4. The 2014 Environmental Assessment for the Ultimate Heat Sink License Amendment

104. The NRC once again revisited the environmental impacts of the CCS in the EA its for the ultimate heat sink license amendment request.

a. The Proposed Action

105. The 2014 UHS EA built on and updated this earlier discussion of the Turkey Point CCS in the NRC's previous NEPA documents.³³⁹ The UHS EA explained that the proposed action would amend Appendix A of Turkey Point's Renewed Facility Operating Licenses in order to revise the UHS temperature limit set forth in TS Limiting Operating Condition 3/4.7.4 from 100°F to 104°F.³⁴⁰ This was necessary because UHS temperatures had recently approached and exceeded the 100°F TS limit on several

³³⁶ *Id.* at 20,063 col. 1.

³³⁷ *Id.* at 20,062 col. 2, 3.

³³⁸ *Id.* at 20,062 col. 3.

³³⁹ UHS EA at 44,465 col. 2, 3; Tr. at 428, 517 (Grange).

³⁴⁰ *Id.* at 44,465 col. 3.

occasions.³⁴¹ As is explained in the UHS EA, the amendment was intended to provide FPL with additional operational flexibility during periods when high air temperatures, low rainfall, and other factors contribute to conditions resulting in a UHS temperature in excess of 100°F that would otherwise necessitate FPL to place Turkey Point in cold shutdown.³⁴²

106. FPL's water withdrawals were not considered part of the proposed action because the NRC does not authorize water withdrawals.³⁴³ These actions and their resulting environmental impacts were factored into the environmental baseline for the EA, were described in the cumulative impacts section of the EA, or both.³⁴⁴

b. Impacts of the Proposed Action

107. In the EA, the Staff initially concluded that the proposed action would result in no significant impact on land use, visual resources, air quality, noise, the geologic environment, terrestrial resources, historic and cultural resources, socioeconomic conditions including minority and low income populations (environmental justice), waste generation and management activities, or, pertinent for this proceeding, groundwater resources.³⁴⁵ The Staff excluded these resources from further discussion.³⁴⁶ Other resources, including surface water resources and aquatic resources were discussed

³⁴¹ *Id.* at 44,466 col. 1.

³⁴² *Id.* at 44,465 col. 3.

³⁴³ FPL Testimony at 56 (A95, A96).

³⁴⁴ NRC Staff Testimony at 42 (A50).

³⁴⁵ UHS EA at 44,466 col. 2; Tr. at 371-73 (Grange).

³⁴⁶ Tr. at 373 (Grange).

in more detail.³⁴⁷ Because the Staff had previously excluded groundwater and other resources from potential impacts, it did not evaluate cumulative impacts on those resources.³⁴⁸

108. The UHS EA explained that, under the proposed action, the CCS could experience temperatures between 100°F and 104°F at the TS monitoring location near the north end of the system for short durations during periods of peak summer air temperatures and low rainfall.³⁴⁹ The UHS EA explained that such conditions may not be experienced at all depending on site and weather conditions.³⁵⁰ But it acknowledged that these temporary temperature increases would also increase CCS water evaporation rates and result in higher salinity levels.³⁵¹ The EA concluded, however, that this effect would also be temporary and short in duration because salinity would again decrease upon natural freshwater recharge of the system (i.e., through rainfall, stormwater runoff, and groundwater exchange).³⁵² As a result, no other onsite or offsite waters would be affected by the proposed UHS temperature limit increase.³⁵³

109. In its analysis of aquatic impacts in the EA, the Staff was focused on whether there was any reasonably foreseeable environmental impact of increasing the maximum water temperature from 100°F to 104°F.³⁵⁴ The Staff did not evaluate a worst-case scenario or assume a four degree increase over the remaining operating life of the plant, but instead

³⁴⁷ UHS EA at 44,467 col. 1-2.

³⁴⁸ Tr. at 371 (Grange).

³⁴⁹ UHS EA at 44,466 col. 3.

³⁵⁰ *Id.*

³⁵¹ *Id.* at 44,466 col 3 – 44,467 col. 1.

³⁵² *Id.* at 44, 467 col. 1.

³⁵³ *Id.*

³⁵⁴ Tr. at 332 (Klett).

assessed what was reasonable to expect to occur.³⁵⁵ Notably, the Staff was *not* analyzing an increase in the *average* temperature in the CCS, but instead, was simply analyzing the effects of increasing the maximum temperature at one measuring point by four degrees.³⁵⁶ For a number of reasons, the Staff's assessment of the reasonably foreseeable impacts concluded that the increases in temperature attributable to the license amendment would be of short duration.³⁵⁷ These reasons included natural conditions in the CCS, the fact that there was no additional thermal load going in to the CCS as a result of the amendment, and FPL's ongoing mitigation activities and those that would be required by the State of Florida.³⁵⁸ The CCS temperature varies daily and seasonally in response to a number of conditions, such as thermal output of the Units 1 through 4, air temperature and humidity, sun exposure, rainfall, drought conditions, and algae concentrations. In 2014, the intake water temperature exceeded 100°F for a few days, most of which were nonconsecutive (the temperature typically dropped below 100°F at night).³⁵⁹ The NRC Staff's expectation that these temperature increases would be of short duration was a reasonable projection of the low likelihood that the conditions that the CCS experienced in 2013 and 2014 were unlikely to happen again, based on the natural temperature ranges in the CCS.³⁶⁰ In fact, the NRC's expert witness opined that

³⁵⁵ Tr. at 405 (Grange).

³⁵⁶ Tr. at 402-03 (Grange).

³⁵⁷ Tr. at 405 (Grange).

³⁵⁸ Tr. at 397 (Ford), 402 (Klett), 405-06 (Grange); NRC Staff Testimony at 51 (A78).

³⁵⁹ NRC Staff Testimony at 51 (A78).

³⁶⁰ Tr. at 558 (Klett).

the impacts to local groundwater would be small even if the temperatures excursions above 100°F were not limited to a short duration.³⁶¹

110. The UHS EA also updated the NRC’s consideration of the state and local regulation of the CCS. It noted that FPL anticipated the FDEP to issue an Administrative Order requiring FPL to install up to six new wells that will pump approximately 14 MGD of water from the Floridan Aquifer into the CCS.³⁶² This is a continuation of the discussion of the state oversight process in the 2012 Uprate EA. The UHS EA explained that FPL’s modeling shows that its compliance with this state regulatory action would reduce salinity in the CCS to approximately that of Biscayne Bay (34 ppt) within about two years.³⁶³

111. Based on the EA’s determinations, the Staff prepared a finding of no significant impact and concluded that the proposed action would not have significant effects on the quality of the human environment.³⁶⁴ Based on the FONSI, the Staff decided not to prepare an Environmental Impact Statement for the proposed action.³⁶⁵

c. The Environmental Baseline

112. The Staff considered the current condition of the CCS when making its determination regarding environmental impacts of the UHS TS LAR.³⁶⁶ The current condition of a resource (here, the CCS) is known as the environmental baseline—the condition absent

³⁶¹ Tr. at 398-99 (Ford).

³⁶² UHS EA at 44, 468 col.2.

³⁶³ *Id.*

³⁶⁴ NRC Staff Testimony at 38 (A41); UHS EA at 44,469 col. 3.

³⁶⁵ NRC Staff Testimony at 38 (A41).

³⁶⁶ *Id.* at 41 (A47).

the proposed action.³⁶⁷ The baseline represents the actual condition of the environmental resource regardless of what actions have influenced that baseline in the past and regardless of whether past assessments accurately predicted the future condition of the resource.³⁶⁸ Previously authorized license amendments are material to the Staff's FONSI to the extent that those actions influence the environmental baseline.³⁶⁹ For instance, the changes that potentially resulted from the EPU license amendment have contributed to the current condition of the CCS and were, therefore, factored into the environmental baseline upon which the Staff assessed the potential impacts of the UHS amendment.³⁷⁰ This is true even if those changes were not anticipated in 2012 when the NRC prepared the EA for the EPU.³⁷¹

d. The NRC Staff's Cumulative Impacts Analysis

113. In addition, the Staff considered both actions that had already been approved by other regulatory agencies as well as actions that might occur in the future as a result of approvals that were being sought by FPL from other regulatory agencies at that time.³⁷² Though beyond the scope of CASE Contention 1 as admitted, the UHS EA discussed the FDEP-approved algacide treatments to eradicate the algae bloom in the CCS.³⁷³

³⁶⁷ *Id.* In the EA, the environmental baseline is described in the "Plant Site and Environs" section as well as in the introduction to the Staff's discussion of impacts on each of the various environmental resources in the "Nonradiological Impacts" and "Radiological Impacts" sections. *Id.* at 44 (A52), at 41 (A47); UHS EA at 44,465-67.

³⁶⁸ *Id.* at 41 (A47).

³⁶⁹ *Id.* at 42 (A48). However the current FONSI only applies to the proposed action at hand, the UHS license amendment. *Id.*

³⁷⁰ *Id.* at 41 (A47).

³⁷¹ *Id.*

³⁷² *Id.* at 42 (A49).

³⁷³ *Id.* at 43 (A52); UHS EA at 44,468, col. 1.

114. Authorized and contemplated water withdrawals from the Biscayne and Floridan Aquifers are also described in the cumulative impacts section of the EA.³⁷⁴ The Staff understood these withdrawals to be a part of a larger action to mitigate cooling canal system conditions, which included salinity as well as temperature and would have occurred regardless of the UHS temperature amendment.³⁷⁵ In this section, the EA briefly described the aquifers, described the SFWMD's approvals regarding withdrawals from the two aquifers, described the FDEP Administrative Order that the NRC anticipated would require additional aquifer withdrawals to mitigate salinity in the CCS, and addressed the cumulative impacts of these actions.³⁷⁶
115. The Staff concluded that FPL's mitigating actions would not have a significant impact. The Biscayne withdrawals would not impact freshwater in the aquifer because the Biscayne Aquifer water is salty.³⁷⁷ Similarly, the Floridan Aquifer water that had been and would be used is brackish, so the NRC concluded that FPL again would not be pumping from freshwater supplies.³⁷⁸ The EA concluded that the withdrawals would not have a significant environmental impact and would have a positive impact on aquatic resources and American crocodiles.³⁷⁹
116. In addition, at the time the Staff prepared the EA, it was aware that FPL was considering requesting consumptive use of water from the L-31 E canal.³⁸⁰ The Staff did not include

³⁷⁴ *Id.* at 43 (A52); UHS EA at 44,468, col. 2.

³⁷⁵ Tr. at 333-34 (Grange).

³⁷⁶ NRC Staff Testimony at 43-44 (A52); UHS EA at 44,468, col. 2.

³⁷⁷ Tr. at 393 (Ford).

³⁷⁸ Tr. at 394 (Ford).

³⁷⁹ NRC Staff Testimony at 44 (A52); UHS EA at 44,468, col. 2.

³⁸⁰ NRC Staff Testimony at 49 (A71).

this in the EA because FPL had not yet requested permission to use that resource and FPL still had access to the Biscayne Aquifer wells that it had not yet utilized. For this reason, the Staff concluded that FPL's use of this water was not reasonably likely.³⁸¹

G. Findings of Fact Regarding Issues Beyond the Scope of CASE Contention 1

117. FPL's Motion to Strike challenged aspects of CASE Contention 1 that addressed impacts to Biscayne Bay because CASE's petition never asserted potential impacts to the Bay itself.³⁸² The Board did not rule on that aspect of the motion.³⁸³ However, the Board did recently clarify that the "contention, as admitted by the Board, concerns possible saltwater intrusion into groundwater and movement of the freshwater/saltwater interface" and not impacts regarding tritium or the Bay.³⁸⁴ FPL addresses this beyond-scope issue here because the Board did not specifically rule on this aspect of its motion. Because there will be no measureable impacts to the CCS as a result of the UHS license amendment, there necessarily cannot be impacts to Biscayne Bay either.
118. Water from the CCS has moved into the Biscayne aquifer and moved to the east under Biscayne Bay, mostly at depth because it is hypersaline.³⁸⁵ This is indicated by higher salinity groundwater with tritium at notable concentrations.³⁸⁶ One deep groundwater well on the northern end of the CCS (TPGW-10) initially did not indicate any presence of CCS water but began to show a notable increase in tritium and saltwater parameters,

³⁸¹ Tr. at 391 (Grange).

³⁸² FPL Motion to Strike at 9.

³⁸³ See generally December 22 Board Order.

³⁸⁴ Order (Clarifying Scope of Proposed Findings of Fact and Conclusions of Law and Amending Initial Scheduling Order) (March 11, 2016) at 2 n.3.

³⁸⁵ FPL Testimony at 28-29 (A47).

³⁸⁶ *Id.*

indicating the presence of CCS water, prior to the beginning of the post-uprate period, (which began May 27, 2013).³⁸⁷ But there is no indication the CCS water in groundwater is upwelling into Biscayne Bay or that any CCS water of significant consequence has reached the Bay because it is not detected in Biscayne Bay Monitoring Stations BBSW-1, BBSW-2, BBSW-3, BBSW-4, or BBSW-5.³⁸⁸ Upwelling of hypersaline CCS water into the Bay is not expected because the CCS water is more dense than the Biscayne Bay water and tends to sink.³⁸⁹

119. In his rebuttal testimony, Dr. Stoddard opined that migration of hypersaline water from the CCS into the Biscayne Bay will have a negative impact on a variety of aquatic life.³⁹⁰ At the evidentiary hearing, he testified that certain data measured by Miami-Dade County in November of 2015 “shows elevations in phosphorous and ammonia recorded above the surface of [the] bay floor” and that this data formed the support for his claim regarding impacts to the Bay.³⁹¹ This, he claimed, is the evidence he relies upon to show that there has been salt water migration from the CCS into Biscayne Bay.³⁹² According to Dr. Stoddard, these measurements were taken “30 feet deep” in “some channels that have been dug” —“that’s the only way you get it down that deep.”³⁹³ Dr. Stoddard was not aware of any contemporary data in the CCS reflecting

³⁸⁷ *Id.* at 29-30 (A47).

³⁸⁸ *Id.*; Tr. at 313 (Bolleter).

³⁸⁹ FPL Testimony at 30 (A48).

³⁹⁰ CASE Rebuttal at 9.

³⁹¹ Tr. at 280 (Stoddard) (discussing non-evidentiary transcript attachment).

³⁹² *Id.*

³⁹³ Tr. at 284 (Stoddard).

higher phosphorus or ammonia.³⁹⁴ Dr. Stoddard made no attempt to link any of these alleged impacts to the higher operating temperatures authorized by the NRC's UHS license amendment.

120. FPL's expert, who runs its Uprate Monitoring Program, testified that there is no evidence in the shallow groundwater wells beneath Biscayne Bay to indicate any upwelling of CCS water into the Bay.³⁹⁵ For this reason, indications that water from the CCS may be present in the Bay would indicate that there may be some seepage, but there is still no data that indicates *significant* communication between the CCS and the bay proper.³⁹⁶ He explained that the samples to which Dr. Stoddard referred were taken in deeply dredged canals that are an unusual Bay location, whereas typically this area adjacent to the CCS is shallow and can only be accessed at high tide. He also explained that there may be natural explanations for high nutrient levels in those unusually deep canal cuts in the Bay.³⁹⁷
121. The NRC Staff did not address migration of hypersaline CCS water in to Biscayne Bay because the data from the Uprate Monitoring Program had not found any indication of migration into the Bay.³⁹⁸
122. Though impacts to Biscayne Bay are beyond the scope of this contention, based on the record in the proceeding, there is no basis to conclude that there is a significant impact

³⁹⁴ Tr. at 322 (Sager, Stoddard)

³⁹⁵ Tr. at 316 (Bolleter).

³⁹⁶ Tr. at 314-317 (Bolleter).

³⁹⁷ Tr. at 315-16 (Note that the transcript was corrected by Order of the Licensing Board dated February 17, 2016 to indicate that this statement was made by Mr. Bolleter, not Dr. Stoddard).

³⁹⁸ Tr. at 311 (Grange).

to Biscayne Bay that is attributable to the CCS and certainly no evidence to link such harm to the UHS license amendment.

V. CONCLUSIONS OF LAW

123. Based upon its review of the entire record in this proceeding, and based upon the findings of fact set forth above, which are supported by reliable, probative, and substantial evidence in the record, the Board should decide all matters in controversy for CASE Contention 1 in favor of the NRC Staff and FPL.

A. The Record Reflects that CASE Does Not Have Standing to Challenge the UHS License Amendment

124. As noted earlier, while petitioners may establish standing at the pleading stage based on mere allegations, as the proceeding continues, the evidentiary basis necessary for demonstrating standing rises accordingly.³⁹⁹ The Board's Order in LBP-15-13 specifically deferred resolution of factual disputes regarding standing to later portions of the proceeding.⁴⁰⁰ Because CASE offered no testimony or exhibits regarding either the impacts of the UHS amendment, or its members' use of local water sources, CASE has failed to meet the required standing showing at this stage.

125. Based on the well-developed record in this proceeding, now with the benefit of a full evidentiary hearing, it is apparent that CASE does not, in fact, have standing. CASE has alleged an injury related to the operation of the CCS, but that injury is not sufficient to demonstrate standing in this particular proceeding. CASE has offered no evidence or testimony identifying an injury traceable to the UHS license amendment. In fact,

³⁹⁹ *Lujan*, 504 U.S. at 561.

⁴⁰⁰ LBP-15-13, slip op. at 10.

CASE's members have suffered and will suffer no injury due to the challenged NRC action.

126. The Board's decision regarding standing in its December 22, 2015 Order denying FPL's motion to dismiss relied in large part on the Administrative Order, which it concluded provided probative evidence of an injury to CASE.⁴⁰¹ The Board cited the AO's finding that saline water from the CCS has migrated inland and contributed to the westward movement of saline water.⁴⁰² But this was not caused by the NRC's license amendment. The SFWMD's finding of westward movement of saline water from the CCS, which initiated the process leading to the AO, was made in April 2013, over a year before FPL even sought the UHS license amendment.⁴⁰³ That alleged injury, therefore, is not traceable to the challenged NRC action. There must instead be some incremental change in that harm attributable to the license amendment in order for CASE to have standing to challenge this amendment. But the unrebutted testimony in this proceeding is that there would likely be no impact on the CCS itself as a result of the amendment because if temperatures did reach the range allowed by the amendment, they would not remain there for a significant period of time.⁴⁰⁴ And even if they did, any reasonably foreseeable impact on the CCS would be insignificant and too small to measure.⁴⁰⁵ Without an impact on the CCS, there cannot be an impact outside of the CCS that could injure CASE's members.

⁴⁰¹ December 22 Order at 5-6.

⁴⁰² *Id.*

⁴⁰³ FPL-026.

⁴⁰⁴ NRC Staff Testimony at 51 (A77-78); Tr. at 392 (Ford).

⁴⁰⁵ NRC Staff Testimony at 51 (A77), 52 (A79); FPL Testimony at 62 (A104).

127. The Board's Order also noted that the Administrative Order identified the "greater addition of fresh water" as one possible method of achieving its performance requirement.⁴⁰⁶ But the Administrative Order does not *require* FPL to use fresh water. Regardless, the un rebutted testimony in this case, is that none of FPL's water withdrawals will cause or exacerbate saltwater intrusion. FPL's withdrawals of saltwater from the Biscayne aquifer will not cause saltwater intrusion.⁴⁰⁷ And, contrary to the Board's statement its December 22 Order, FPL's withdrawal of freshwater from the L-31 E canal will not impact the ability of the canal system to help prevent saltwater intrusion.⁴⁰⁸ FPL only takes water that had already been released from the portion of the canal system that helps to prevent saltwater intrusion and would have been released regardless of FPL's use.⁴⁰⁹
128. Moreover, the Board's statement in its December 22 Order that CASE's member declarations asserted that they rely upon water from the Upper Floridan Aquifer is incorrect.⁴¹⁰ CASE's member declarations do not indicate that they utilize the Upper Floridan Aquifer, but instead state generically that they use "the south Florida aquifer."⁴¹¹ While such general allegations may be sufficient to demonstrate standing at the contention admissibility stage, by this stage in the proceeding, CASE is obligated to

⁴⁰⁶ December 22 Order at 6.

⁴⁰⁷ FPL Testimony at 47 (A79); NRC Staff Testimony at 48 (A68).

⁴⁰⁸ FPL Testimony at 54-55 (A92); NRC 001 at 49-50 (A72). *See supra* at § IV. E. 2.

⁴⁰⁹ FPL-033 at 4, 11 ¶¶37; 12 ¶42a; *see also* FPL Testimony at 55 (A92).

⁴¹⁰ December 22 Order at 6, n. 28.

⁴¹¹ *See e.g.*, CASE Petition Exhibit 7 (Phillip Stoddard) Declaration in Support of Citizens Allied for Safe Energy, Inc./CASE Petition to Intervene In the Issuance of Amendments to Renewed Facility Operating License Nos. DPR-31 and DPR-41 Issued to Florida Power & Light for the Operation of the Turkey Point Nuclear Generating Units 3 and 4 Located in Miami-Dade County, Florida (Oct. 13, 2014).

have put on evidence supporting an injury, traceable to the proposed action.⁴¹² It has not done so. The fact that CASE's sole witness in this proceeding is the mayor of the city in which he lives, with access to information regarding the sources of his city's water supply, means that CASE could have attempted to address this factor with evidence. It did not.

129. CASE has never alleged that its members are harmed by the brackish water in the Upper Floridan Aquifer becoming slightly more brackish, thus marginally increasing the desalinization efforts necessary by the municipalities in which its members live. And even if they had, the evidence in this case is that FPL's withdrawals of brackish water from the confined Upper Floridan aquifer will not cause saltwater intrusion in the Biscayne Aquifer and will have only localized effects near FPL's wellfield in the already-brackish Upper Floridan Aquifer.⁴¹³ There is no evidence of a realistic potential harm to CASE's members from these withdrawals.

130. In any case, even if FPL's withdrawals did negatively impact saltwater intrusion, which they do not, the NRC license amendment cannot be said to be causing these withdrawals because as discussed above, the NRC license amendment will not have a noticeable effect on CCS salinity. Even further, the un rebutted testimony in this case is that, to the extent the license amendment affects water withdrawals one way or another, it will reduce the need for them.⁴¹⁴ With a higher temperature limit, FPL would have a delayed, and reduced, need to add water to the CCS to keep its temperature below the

⁴¹² *Lujan*, 504 U.S. at 561.

⁴¹³ FPL Testimony at 49-51 (A81, A82); NRC Staff Testimony at 49 (A70).

⁴¹⁴ NRC Staff Testimony at 53 (A82-A83).

limit.⁴¹⁵ CASE does not have standing to challenge the UHS license amendment, because neither it, nor FPL's aquifer withdrawals (which are not even caused by the amendment) will materially exacerbate saltwater intrusion.

B. CASE Has Not Met its Burden of Going Forward Regarding Impacts of the UHS Amendment or of FPL's Water Withdrawals

131. For the same reason that CASE cannot demonstrate standing based on either the impacts of the UHS amendment itself or the impacts of FPL's water withdrawals, it also has not met its burden of going forward to show that there is any environmental impact from those activities beyond what is described in the EA. CASE has offered no testimony and no evidence whatsoever regarding the incremental increase in any environmental harm as a result of the NRC's action. Similarly, CASE has offered no testimony or evidence to show that any of FPL's withdrawals from any source will exacerbate saltwater intrusion. CASE simply asks the Board to infer these harms. But mere assertions and speculation are insufficient to meet its burden.⁴¹⁶

132. In denying FPL's Motion for Summary Disposition, the Board found that, despite submitting no relevant testimony on the issues raised in its Contention 1, CASE had met its burden of going forward by submitting as exhibits FDEP's Administrative Order (INT-004) and Miami-Dade County's Notice of Violation (INT-005).⁴¹⁷ These documents, the Board concluded, "provide probative evidence of saltwater intrusion and water migrating out of the CCS."⁴¹⁸ CASE may have met its burden on this limited

⁴¹⁵ *Id.* See also FPL Testimony at 60 (A101). *Supra* at § IV. E. 2.

⁴¹⁶ *Oyster Creek*, CLI-09-7, 69 NRC at 269-70.

⁴¹⁷ December 22 Order at 7.

⁴¹⁸ *Id.*

aspect of the case—the fact that the hypersalinity in the CCS has been one factor that has contributed to the westward movement of saline water in the Biscayne Aquifer in the vicinity of Turkey Point. This limited issue is relevant to the NRC Staff’s discussion of the environmental baseline in its EA. But CASE has offered no testimony or evidence of any kind that challenged the reasonableness of the EA’s discussion of these issues, much less the NRC’s incorporation by reference of the discussions in its previous environmental analyses. And CASE has also not even attempted to meet its burden on the broader issues regarding impacts attributable to the license amendment. Therefore, CASE has failed to meet its “burden of preserving the scope of its contention” by offering evidence to show any significant impact attributable to the amendment.⁴¹⁹

C. The NRC’s Environmental Assessment Satisfies the Requirements of NEPA

133. As noted earlier, the NEPA “hard look” requirement is subject to a “rule of reason”⁴²⁰ and impacts should be discussed in proportion to their significance.⁴²¹ Based on the proposed findings of fact set forth above, the EA as a matter of law satisfies these standards with respect to the matters at issue in CASE Contention 1. The EA takes the required hard look at the reasonably foreseeable environmental impacts at issue. CASE has not provided any credible evidence to support a finding to the contrary.
134. When an agency prepares a finding of no significant impact, its discussion should be brief, and only include so much as is necessary to show why more study is not

⁴¹⁹ *PFS*, LBP-05-12, 61 NRC at 329.

⁴²⁰ *Pub. Citizen*, 541 U.S. at 767-69; see also *LES*, LBP-06-8, 63 NRC at 258-59 (citing *Shoreham*, ALAB-156, 6 AEC at 836).

⁴²¹ 10 C.F.R. § 51.45(b)(1); 40 C.F.R. § 1502.2(b).

warranted.⁴²² Because the NRC's action to increase the ultimate heat sink temperature limit by 4°F is not expected to have a significant impact on groundwater, its EA must only provide a brief explanation for that conclusion. The NRC Staff's EA met that obligation.

135. The Staff performed an analysis of the reasonably foreseeable impacts of the proposed action. Its analysis appropriately did not include a worst-case analysis or evaluate the absolute maximum that CCS temperatures might increase following the amendment, but instead examined what the Staff thought was reasonable to predict.⁴²³ The Staff's EA acknowledged that, under the proposed action, the CCS could experience temperatures between 100°F and 104°F at the TS monitoring location near the north end of the system for short durations during periods of peak summer air temperatures and low rainfall but noted that these conditions may not be experienced at all depending on site and weather conditions.⁴²⁴ The EA acknowledged that these minor potential temperature increases would also increase CCS water evaporation rates, which would result in higher CCS salinity levels.⁴²⁵ But the EA explained that this effect would be temporary and short in duration because salinity would again decrease upon natural freshwater recharge of the system.⁴²⁶

136. For a number of reasons, the Staff's assessment of the reasonably foreseeable impacts of the amendment concluded that the increases in temperature attributable to the license

⁴²² 40 C.F.R. § 1502.2(b).

⁴²³ Tr. at 332 (Klett), at 402-03, 405 (Grange).

⁴²⁴ UHS EA at 44,466 col. 3.

⁴²⁵ *Id.* at 44,466 col 3 – 44,467 col. 1.

⁴²⁶ *Id.* at 44,467 col. 1.

amendment would be of short duration. These reasons included natural conditions in the CCS, the fact that there was no additional thermal load going in to the CCS as a result of the amendment, and FPL's ongoing mitigation activities as well as those that would be required by the State of Florida. CASE did not challenge this analysis. It was reasonable.

137. To be true, CASE's allegation of a potentially significant impact to aquifers resulting from the license amendment would require a number of necessary preconditions. Significant impacts to the aquifers would require significant, sustained increases in CCS temperatures, which, in turn, could lead to significant, sustained increases in CCS salinity, which, in turn, could lead to an increase in higher salinity water migrating out of the CCS and into the groundwater. But because the Staff concluded that there would not be significant, sustained increases in either CCS temperature or salinity as a result of the amendment, it had no reason to discuss the potential impact on local aquifers from a significant, sustained increase in CCS temperature or salinity. This evaluation was reasonable.

138. CASE has also argued that the CCS itself, especially in its degraded state in 2014, affected the westward migration of hypersaline water. However, NEPA does not require federal agencies to prepare analyses of ongoing environmental concerns, it requires agencies to review the environmental impact of their proposed actions.⁴²⁷ As the Licensing Board and the Commission have both made clear in this case, the focus of this case is on the UHS license amendment, not on the EPU or previous operation of the

⁴²⁷ 42 U.S.C. § 4332(C)(i); 10 C.F.R. §§ 51.30(a), 51.32(a).

facility.⁴²⁸ CASE argues that the EPU caused the increase in temperature and salinity experienced in 2014.⁴²⁹ But the unrebutted expert testimony of FPL and the NRC Staff show that CASE's theory is incorrect. On its face, the recent rise in CCS salinity appears to be a direct result of the uprate, but the evidence shows that it is not. Due to the retirement of Unit 2, the uprate of Units 3 and 4 did not add heat to the CCS above that experienced during the previous period of equilibrium.⁴³⁰

139. To the extent that the rise in CCS salinity is relevant to the EA, it is as part of the description of the baseline environmental condition. And the NRC appropriately considered changes from the EPU itself and other factors affecting the current state of the CCS in the environmental baseline for the Staff's analysis.⁴³¹ Thus, the increase in salinity in the CCS was included in the Staff's analysis as part of the environmental baseline.⁴³² The NRC's incorporation by reference of its previous NEPA reviews that addressed the CCS was a reasonable method for providing background and historical context for the impact of the salinity of the CCS on the migration of saline groundwater.⁴³³ Incorporation by reference is encouraged as a method of reducing unnecessary bulk in NEPA documents.⁴³⁴

⁴²⁸ LBP-15-13, 81 NRC 456 (2015) (slip op. at 16); CLI-15-25, 82 NRC__ (slip op. at 13-14) ("We are not revisiting the issuance of previous environmental analyses for Turkey Point (including the environmental assessment for the extended power uprate)").

⁴²⁹ See LBP-15-13, 81 NRC 456 (2015) (slip op. at 17); CLI-15-25 (slip op. at 14).

⁴³⁰ FPL Testimony at 15-16 (A26); FPL-009; Tr. at 382-83 (Scroggs).

⁴³¹ NRC Staff Testimony at 41 (A47); Tr. at 338-39 (Ford), at 389 (Grange).

⁴³² NRC Staff Testimony at 41 (A47); see also Tr. at 440-41 (Grange).

⁴³³ Tr. at 439 (Grange) ("We didn't feel that going into a very long description about all those things we had already described in previous assessments would really be helpful to the reader or the decision-maker because we had determined that there really wouldn't be measureable impacts to groundwater as a result of the license amendment itself").

⁴³⁴ 40 C.F.R. § 1502.21.

140. The context of the UHS EA's discussion of the FDEP's anticipated AO to reduce salinity in the CCS is provided by other documents referenced in the UHS EA.⁴³⁵ For instance, the NRC's contemporaneous Biological Assessment for the UHS license amendment discussed the significant extent to which CCS salinities had risen by 2014, and this was referenced in the EA.⁴³⁶ Further context was provided in the 2012 Uprate EA, which the NRC incorporated by reference. The Uprate EA explained that state regulators were concerned about CCS salinity because of its potential to contribute to the inland migration of saline water. The Uprate EA also explained that the FDEP imposed Conditions of Certification that required monitoring of groundwater quality.⁴³⁷ The Uprate EA explained that FDEP would require additional measures if the data indicate an adverse impact, including enhanced monitoring and that modeling or mitigation would likely be required to evaluate or to abate such impacts if they were to occur.⁴³⁸ Potential mitigation measures were said to include methods to reduce and mitigate salinity levels in groundwater and operational changes to the CCS system in order to reduce environmental impacts.⁴³⁹ While the 2014 EA did not include this detail, it did explain that the CCS was hypersaline and that time, high air temperatures, low rainfall, and other factors were contributing to conditions resulting in a UHS temperature in excess of 100°F.⁴⁴⁰ Nevertheless, the NRC Staff witnesses clearly

⁴³⁵ See UHS EA at 44,468 col. 2.

⁴³⁶ NRC-010 at C-4 (pdf page 282) (discussing recent "greater than normal temperature and salinity fluctuations in the system"); and C-5 (pdf page 283) (explaining that the water in the CCS is hypersaline with a range from 45 to 95 ppt). The Biological Assessment was referenced in the UHS EA on page 44,467. UHS EA at 44,467 (col. 2).

⁴³⁷ Uprate EA at 20,063 col. 1.

⁴³⁸ *Id.* at 20,062 col. 2, 3.

⁴³⁹ *Id.* at 20,062 col. 3.

⁴⁴⁰ UHS EA at 44,466 col. 1.

testified that they considered the contemporary condition of the CCS in their analysis.⁴⁴¹

Therefore: (1) the NRC's analysis properly accounted for the contemporary salinity in the CCS as well as its potential to impact on groundwater resources; and (2) the NRC's review properly disclosed the high salinity in the CCS and the reasons why the FDEP was interested in reducing CCS salinity.

141. To the extent the Board finds fault with the organization of these points incorporated from the various EAs and EISs, it has the opportunity to remedy that concern in its Initial Decision, based on the clear and extensive record developed in this proceeding.⁴⁴² The following discussion, which is based on the record developed by the parties in this proceeding, is consistent with the conclusion of the existing EA that the UHS license amendment would not have a significant environmental impact, and is drafted based on information available in July 2014, should resolve that potential concern:

Salinity in the CCS has risen significantly over the past year and the water in the CCS is considered hypersaline. While the timing of this rise appears to reflect a causal relationship with the extended power uprate of Turkey Point Units 3&4, the thermal output to the CCS actually went down following the uprate, due to the retirement of Unit 2. Other factors, including low rainfall, algae, and turbidity are the likely cause of the rise in salinity.

In 2013, the South Florida Water Management District issued a letter to FPL concluding that saline water from the CCS had moved outside the plant's boundaries and begun affecting non-FPL property. Specifically, the state agency determined that the hypersalinity of the CCS was a factor leading to the westward movement of saline water in the Biscayne Aquifer. That letter initiated a consultation period under two state regulatory processes, under which FPL and the relevant agencies would identify measures to mitigate, abate, or remediate the movement of the saline water. FPL expects the Florida Department of Environmental Protection to take

⁴⁴¹ NRC Staff Testimony at 41 (A47); Tr. at 338-39 (Ford), at 389 (Grange).

⁴⁴² See *Indian Point*, CLI-15-6, slip op. at 63.

action to mitigate, remediate, or abate the contribution of the CCS to the westward migration of saline groundwater by issuing an Administrative Order requiring FPL to reduce the salinity of the CCS to at least 34 ppt (approximately that of Biscayne Bay). To reach that level, FPL expects to add up to 14 million gallons per day of water from the brackish Upper Floridan Aquifer to the CCS.

Even in light of this ongoing salinity and saltwater migration issue, the ultimate heat sink license amendment will not have a significant impact on either CCS salinity or the movement of hypersaline water from the CCS into the local aquifers. Under the proposed action, the CCS could experience temperatures between 100°F and 104°F at the TS monitoring location near the north end of the system for short durations during periods of peak summer air temperatures and low rainfall. Such conditions may not be experienced at all depending on site and weather conditions. Temperature increases would also increase CCS water evaporation rates and result in higher salinity levels. This effect would also be temporary and short in duration because salinity would again decrease upon natural freshwater recharge of the system (i.e., through rainfall, stormwater runoff, and groundwater exchange). The CCS is not likely to maintain temperatures in this narrow, newly authorized, band for significant periods of time due to the natural variability of the system. This conclusion does not rely on the expectation of state regulatory action, but that expectation does give added assurance that raising the ultimate heat sink license amendment by four degrees will not affect CCS salinity in a way that could significantly impact the migration of saltwater into the aquifer.

142. The NRC's EA also reasonably considered the cumulative impacts of then existing and reasonably foreseeable Biscayne and Upper Floridan aquifer withdrawals for CCS mitigation purposes. Because these withdrawals are not a result of the license amendment, they were properly considered as potential cumulative impacts. These withdrawals will not exacerbate saltwater intrusion, and will in fact alleviate saltwater intrusion to the extent saltwater intrusion is furthered by hypersalinity in the CCS. For this reason, the NRC's EA appropriately concluded that these withdrawals would have a positive impact, if any.

143. The NRC's EA did not discuss the L-31 E canal withdrawals even though the Staff was aware that FPL may rely on that source for CCS mitigation. The Staff witnesses testified, however, that they did not reasonably expect the L-31 E canal to be utilized because of the other options available. In light of this unrebutted testimony, this decision was reasonable based on the information available at the time the EA was published. Even looking back at the EA now in retrospect, adding a discussion of the L-31 E canals is not necessary. Supplementation is not required unless "new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered."⁴⁴³ Because the L-31 E canal withdrawals will not cause significant negative impacts on the groundwater quality and are not caused by the license amendment, it is not necessary to reopen the EA to add a discussion of those withdrawals.

VI. ADDITIONAL ISSUES RAISED BY THE BOARD

144. At the evidentiary hearing and in its Order dated February 26, 2016, the Board directed the parties to address three additional issues in its Proposed Findings of Fact and Conclusions of Law. Those issues are: (1) whether the NRC Staff's review improperly segmented environmental impacts; (2) whether the NRC Staff improperly relied upon state regulatory determinations in its review; and (3) the impact of a Recommended Order of a State Administrative Law Judge on the NRC Staff's review. Those topics are addressed below.

⁴⁴³ *Marsh*, 490 U.S. at 374 (internal quotations omitted).

A. The NRC's Environmental Assessments Were Not Improperly Segmented

145. Improper segmentation of a Federal action can occur where a Federal agency divides what would otherwise be regarded as a single, integrated Federal action into separate, smaller Federal actions, for the purpose of avoiding compliance with NEPA or otherwise minimizing the apparent impact of the single, integrated Federal action.⁴⁴⁴ Generally, the segmentation problem arises when the environmental impacts of projects are evaluated in a piecemeal fashion and, as a result, the comprehensive environmental impacts of the entire Federal action are never considered or are only considered after the agency has committed itself to continuation of the project.⁴⁴⁵
146. To avoid this segmentation problem, the Council on Environmental Quality ("CEQ") has set forth regulations defining when additional matters should be considered in a NEPA review.⁴⁴⁶ To determine whether actions are "connected" such that they should be discussed in the same EIS, 40 C.F.R. § 1508.25(a)(1) indicates that an agency is to consider whether the actions (1) "automatically trigger" other actions that may require an EIS; (2) "[c]annot or will not proceed unless other actions are taken previously or simultaneously"; or (3) "[a]re interdependent parts of a larger action and depend on the larger action for their justification."⁴⁴⁷
147. In determining whether the requisite "interdependence" exists among the various actions at issue, courts generally have looked to see whether the first action has "independent

⁴⁴⁴ See Final Rule, Limited Work Authorizations for Nuclear Power Plants 72 Fed. Reg. 57,416, 57,418 (Oct. 9, 2007).

⁴⁴⁵ *Id.* at 57,427-28.

⁴⁴⁶ 40 C.F.R. § 1508.25(a). The NRC's Part 51 regulations recognize that CEQ regulations provides guidance for the scope or range of actions that should be considered in implementing NEPA. 10 C.F.R. § 51.14(b).

⁴⁴⁷ 40 C.F.R. § 1508.25(a)(1)(i)-(iii).

utility.”⁴⁴⁸ The NRC considers the following factors when determining whether it should confine its environmental analysis under NEPA to the portion of the plan for which approval is being sought:

- (1) whether the proposed portion has substantial independent utility;
- (2) whether approval of the proposed portion either forecloses the agency from later withholding approval of subsequent portions of the overall plan or forecloses alternatives to subsequent portions of the plan; and (3) if the proposed portion is part of a larger plan, whether that plan has become sufficiently definite such that there is high probability that the entire plan will be carried out in the near future.⁴⁴⁹

148. Moreover, NEPA requires only a discussion of reasonably foreseeable impacts as it is subject to the “rule of reason.”⁴⁵⁰ The Commission has explained that “to bring NEPA into play, a possible future action must at least constitute a ‘proposal’ pending before the agency (i.e., ripeness), and must be in some way interrelated with the action that the agency is actively considering (i.e., nexus).”⁴⁵¹

149. The NRC’s environmental assessments involving the Turkey Point cooling canals were not improperly segmented. The NRC performed a comprehensive review of the environmental impacts of the both the EPU license amendment and the UHS license amendment. The EPU is not under review in this proceeding, but even if it was, it could not be criticized for failure to address the UHS amendment as a connected action. The

⁴⁴⁸ See *McGuire/Catawba*, CLI-02-14, 55 NRC at 297 (“[W]hen developing an EIS, an agency must consider the impact of other proposed projects ‘only if the projects are so interdependent that it would be unwise or irrational to complete one without the other.’” (quoting *Webb v. Gorsuch*, 699 F.2d 157, 161 (4th Cir. 1983))).

⁴⁴⁹ *Commonwealth Edison Co.* (Braidwood Nuclear Power Station, Units 1 & 2), LBP-85-43, 22 NRC 805, 810 (1985) (citing *Swain v. Brinegar*, 542 F.2d 364, 369 (7th Cir. 1976)); *Duke Power Co.* (Amendment to SNM-1773—Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-651, 14 NRC 307, 313 (1981) (“Where it is found that the project before the court is an essentially independent one, an EIS for that project alone has been found sufficient compliance with the act”).

⁴⁵⁰ *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 352 (2002) (citing *Robertson*, 490 U.S. at 97).

⁴⁵¹ *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-14, 55 NRC 278, 295-96 (2002) (citing *Kleppe v. Sierra Club*, 427 U.S. 390 (1976)).

unrebutted and persuasive testimony in this proceeding is that the NRC did not foresee the need for the UHS amendment at the time of the EPU, and the EPU did not cause the need for the UHS amendment.⁴⁵² As such, they are not connected actions and the NRC properly evaluated the two amendments separately.

150. Typically, segmentation claims are made prospectively—an agency evaluates the first segment of a highway project independently and leaves later segments for future NEPA analyses. Such claims are not typically made retroactively—at the time of the later highway segment—because NEPA documents include discussions of the environmental baseline. The current condition of a resource is known as the environmental baseline—the condition absent the proposed action.⁴⁵³ The baseline represents the actual condition of the environmental resource regardless of what actions have influenced that baseline in the past and regardless of whether past assessments accurately predicted the future condition of the resource.⁴⁵⁴ Here, the NRC Staff testified that previously authorized license amendments, including the EPU, are included in the environmental baseline, to the extent that those actions contributed to the current condition of the CCS.⁴⁵⁵ Because the UHS EA incorporates the impacts of the EPU into the environmental baseline, the effects of the EPU were properly considered.

151. In its earlier decision in this case, CLI-15-25, the Commission explained that issues related to the extended power uprate of Turkey Point are beyond the scope of this

⁴⁵² Tr. at 554 (Grange).

⁴⁵³ NRC Staff Testimony at 41 (A47).

⁴⁵⁴ *Id.*

⁴⁵⁵ *Id.* at 41-42 (A47, A48).

particular proceeding.⁴⁵⁶ The Commission was clear: “We are not revisiting the issuance of previous environmental analyses for Turkey Point (including the environmental assessment for the extended power uprate); the final agency action was taken three years ago.”⁴⁵⁷ For this reason, a segmentation claim challenging the Uprate EA cannot be made in this proceeding.

152. Regardless, NEPA requires only a discussion of reasonably foreseeable impacts and its application is subject to the “rule of reason.” The Commission has explained that “to bring NEPA into play, a possible future action must at least constitute a ‘proposal’ pending before the agency (i.e., ripeness), and must be in some way interrelated with the action that the agency is actively considering (i.e., nexus).” There is no evidence in the record that FPL or the NRC anticipated, or reasonably could have anticipated the need for an UHS amendment at the time of the Uprate LAR.⁴⁵⁸ In fact, the evidence clearly shows that: (1) both FPL and the NRC expected only a small (2.5°F) increase in CCS temperature associated with the uprate;⁴⁵⁹ and (2) the uprate did not, in fact, lead to higher thermal output to the CCS due to the retirement of Unit 2.⁴⁶⁰ There was no reason for the NRC to address the potential for a UHS amendment in its Uprate EA.

⁴⁵⁶ CLI-15-25, 82 NRC ___, slip op. at 13 n.66. The Commission also noted that CASE specifically disclaimed any argument relating to the uprate. *Id.* at 13.

⁴⁵⁷ *Id.* at 14.

⁴⁵⁸ See Tr. at 554 (Grange) (The potential likelihood of having to increase the ultimate heat sink water temperature limit “was not an action that was foreseeable at that time”); at 556 (Grange) (“The increase [in salinity] that we have seen in the past couple of years, and that was part of the reason that FPL submitted the license amendment at hand, we did not foresee that happening.”).

⁴⁵⁹ Uprate EA at 20,062 col. 2; FPL Testimony at 57 (A97); FPL-035.

⁴⁶⁰ Tr. at 554-556 (Grange).

153. The EPU did not “automatically trigger” the UHS amendment.⁴⁶¹ And, as the UHS license amendment happened after the EPU, it obviously was not required to be taken previously or simultaneously.⁴⁶² Nor were the EPU and the UHS license amendments parts of a larger action.⁴⁶³ The EPU obviously had independent utility (allowing greater electric generation from the plants) and its issuance in no way committed the NRC to approval of the UHS amendment request two years later.⁴⁶⁴ Had the NRC’s safety analysis not concluded that the UHS license amendment maintained reasonable assurance of the protection of the public health and safety, the NRC would have denied the subsequent amendment request.
154. Ultimately, the EPU and the UHS amendment are not connected actions. Whether the challenge is made to the EPU EA or to the UHS EA, a segmentation claim must fail because there is no evidence in the record that the increase in thermal output authorized by the uprate led to the requested increase in the UHS temperature limit or that the environmental impact of the EPU was not factored in to the environmental baseline in the UHS EA.

B. The NRC Appropriately Considered State Regulatory Determinations in its Environmental Assessment

155. NEPA requires that the NRC exercise its independent judgment in identifying and assessing the significant and reasonably foreseeable impacts of a proposed licensing action. In *Idaho v. ICC*, the D.C. Circuit, held that the Interstate Commerce

⁴⁶¹ 40 C.F.R. § 1508.25(a)(1)(i).

⁴⁶² 40 C.F.R. § 1508.25(a)(1)(ii).

⁴⁶³ 40 C.F.R. § 1508.25(a)(1)(iii).

⁴⁶⁴ See *Braidwood*, LBP-85-43, 22 NRC at 810.

Commission improperly delegated its NEPA responsibility to other federal and state agencies by deferring to the scrutiny of others when it authorized an action subject to conditions that required the applicant to consult with other federal and state agencies on environmental impacts.⁴⁶⁵ The court in *Idaho* relied on its earlier decision in *Calvert Cliffs*.⁴⁶⁶ There, the Court had held that the NRC had abdicated its NEPA responsibilities by relying entirely on the certifications of appropriate state or federal agencies that the licensee would comply with substantive environmental protection regulations to reach conclusions regarding environmental impact.⁴⁶⁷ The Court found this deferral to be in conflict with the basic purpose of NEPA—requiring the performance of a case-by-case judgment, balancing the benefits of the proposed action against the identified environmental impacts.⁴⁶⁸

156. This duty to perform an independent review does not, however, mean that NRC must “perform a wholly independent analysis from scratch,” that it must “reinvent every wheel or duplicate competent and professional environmental data and studies that have already been done.”⁴⁶⁹ When conducting a NEPA review, the Staff may rely heavily upon a State’s analysis where the State is charged with regulatory authority over the subject matter.⁴⁷⁰ The Staff must independently verify the State’s analyses and

⁴⁶⁵ *Idaho v. Interstate Commerce Comm’n*, 35 F.3d 585, 595 (D.C. Cir. 1994).

⁴⁶⁶ *Calvert Cliffs’ Coordinating Committee v. AEC*, 449 F.2d 1109, 1122-23 (D.C. Cir. 1971).

⁴⁶⁷ *Id.*

⁴⁶⁸ *Id.* at 1123.

⁴⁶⁹ *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-13-4, 77 NRC 107, 213 (2013) (citing *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-785, 20 NRC 848, 868 n.65 (1984)).

⁴⁷⁰ *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), ALAB-490, 8 NRC 234, 241 (1978); see *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 527 (1977).

conclusions, but need not redo the State's work.⁴⁷¹ Moreover, the NRC may properly assume that a licensee will comply with concrete and enforceable conditions and requirements imposed by competent federal, state, or local governmental entities.⁴⁷² The "critical factor" then is whether the staff exercised "independent judgment with regard to its ultimate conclusions about the environmental impacts of the project."⁴⁷³

157. In this case, the Staff witnesses explained that their analysis relied on state regulation in two areas: (1) its expectation that FDEP would order FPL to take actions that would reduce CCS salinity; and (2) the analyses of FPL's requests to withdraw water from local sources that had been or would be performed by the SFWMD and the FDEP. In neither of those instances did the Staff abdicate its responsibility to exercise its own critical judgment as to the impacts of the project as a whole.

158. As to the effects of the license amendment itself, the Staff concluded that it was not likely to significantly affect groundwater at Turkey Point because: (1) the change in the temperature limit and FPL's mitigating actions do not impact saltwater intrusion; (2) the time that the CCS was expected to exceed the previous temperature limit was of short duration; (3) the increase in the temperature limit reduces the plants' need to consume additional water; and lastly (4) the State was already directing the licensee to address the salinity within the CCS.⁴⁷⁴ Anticipated state action was only one factor of the NRC's

⁴⁷¹ *Airport Impact Relief, Inc. v. Wykle*, 192 F.3d 197, 208 (1st Cir. 1999) (noting that 40 C.F.R. § 1506.5(a) allows agencies to rely on information provided by others so long as they independently evaluate it and are responsible for its accuracy and that it is not the intent of NEPA that work be redone, but that it be verified by the agency).

⁴⁷² *Levy County*, LBP-13-14, 77 NRC at 217-18 (citing *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-03-2, 57 NRC 19, 29 (2003)).

⁴⁷³ *Limerick*, ALAB-785, 20 NRC at 868 n.65. See also *Shearon Harris*, ALAB-490, 8 NRC at 241.

⁴⁷⁴ NRC Staff Testimony at 45 (A54); Tr. at 397-98 (Ford), 402 (Klett), 405-06, 550-51 (Grange).

analysis.⁴⁷⁵ This fact alone takes the NRC's analysis outside the realm of the *Calvert Cliffs* decision. Here the NRC did not improperly import a state environmental analysis into its EA, the NRC simply acknowledged the state's reasonably foreseeable plan to enforce its duly promulgated permitting conditions against FPL by ordering it to take remedial action and the NRC included this factor in its own "independent judgment with regard to its ultimate conclusions about the environmental impacts of the project."⁴⁷⁶ To have ignored the pending Administrative Order would have been an inappropriate omission of relevant information and frustrated the purpose of NEPA.⁴⁷⁷

159. The Staff also relied in part upon determinations of the State in making its findings regarding the cumulative impacts of aquifer withdrawals on surface water and groundwater resources.⁴⁷⁸ This reliance on state agencies is also entirely appropriate. Again, the water withdrawals are not the proposed action and were not approved by the NRC. Nor, as discussed earlier, is FPL's withdrawal of water a reasonably foreseeable consequence of the NRC's action. As such, the water withdrawals were properly considered as potential cumulative impacts. As the NRC had already concluded that its action (the license amendment) would not impact groundwater resources, the NRC could reasonably rely on the determinations of state agencies that had approved or would necessarily approve FPL's separate water withdrawals with specific consideration of

⁴⁷⁵ Tr. at 551 (Grange).

⁴⁷⁶ *Limerick*, ALAB-785, 20 NRC at 868 n.65.

⁴⁷⁷ Because the UHS EA anticipated the Administrative Order, there is no need for a supplement to acknowledge its issuance. The issuance of the predicted AO did not present a seriously different picture of the impacts of the UHS license amendment. *Comanche Peak*, CLI-12-7, 75 NRC at 388-89. Nor does the issuance of Miami-Dade County's NOV, which represents the same fundamental finding of CCS migration as does the Administrative Order.

⁴⁷⁸ Tr. at 473-74 (Grange).

groundwater impacts. These are the agencies with direct jurisdiction over and expertise regarding such impacts.

160. Further, in the EA, the only withdrawals the NRC considered were the Biscayne marine withdrawals and the Upper Floridan Aquifer withdrawals. The Staff considered the factual characteristics of the withdrawals and concluded that there was no reason to second-guess the state agencies as to impacts on groundwater resources. As an NRC Staff witness explained, the Biscayne water near the site is saltwater, so FPL would not be impacting a freshwater resource.⁴⁷⁹ And because the water quality in the Floridan Aquifer is brackish over a large area, FPL would not be pumping from freshwater supplies and would not be increasing saltwater intrusion.⁴⁸⁰ Where a state agency's determination is consistent with the NRC's own understanding of the potential impacts, the NRC can certainly incorporate that determination into its overall evaluation.
161. As a matter of law, the Staff's reliance on the water use determinations of the state agencies was reasonable and appropriate under NEPA.

C. The Recent Recommended Order Critiquing FDEP's Administrative Order Has No Bearing on the Adequacy of the NRC Staff's Environmental Review

162. The recent Recommended Order issued by the Florida Division of Administrative Hearings regarding the AO does not change the reasonableness of the NRC Staff's review in any material way. Supplementation of NEPA document is not required unless there is a major federal action yet to occur and any "new information is sufficient to show that the remaining action will affect the quality of the human environment in a

⁴⁷⁹ *Id.* at 393 (Ford).

⁴⁸⁰ *Id.* at 394 (Ford).

significant manner or to a significant extent not already considered.”⁴⁸¹ As the Commission has put it, in order to warrant supplementation, new information must paint a “‘seriously different picture of the environmental landscape.’”⁴⁸² As noted above, because the NRC issued the license amendment, the NRC need not address new information at all, but to the extent it does, the Recommended Order does not paint a different picture (seriously or otherwise) of the environmental landscape.

163. First, the Recommended Order, on its face, is not a final decision. It is a recommendation to FDEP. As it states:

All parties have the right to submit written exceptions within 15 days from the date of this Recommended Order. Any exceptions to this Recommended Order should be filed with the agency that will issue the Final Order in this case.⁴⁸³

Under Florida law, FDEP will consider both the Judge’s Recommended Order and any exceptions filed by the Parties before entering a final order.⁴⁸⁴

164. Second, the Administrative Order had not been issued when the NRC issued the EA. It was not in effect during the evidentiary hearing in this proceeding because of the third-party administrative challenge in Florida.⁴⁸⁵ And it remains not in effect today. In that respect, nothing has changed. The NRC Staff’s review did not rest entirely on the anticipated Administrative Order. It was simply “one thing [they] considered.”⁴⁸⁶ But even this portion of its evaluation did not rest solely on the pending Administrative

⁴⁸¹ *Marsh*, 490 U.S. at 374. (internal quotations omitted).

⁴⁸² *Comanche Peak*, CLI-12-7, 75 NRC at 388-89.

⁴⁸³ Recommended Order at 34.

⁴⁸⁴ §§ 120.57(1)(b), (k) Fla. Stat.; Rule 28-106.217, Fla. Admin. Code.

⁴⁸⁵ FPL Testimony at 37 (A61).

⁴⁸⁶ Tr. at 405-06 (Grange) (the anticipated state action “was one thing we considered.”)

Order, but on the regulatory process created by the Fifth Supplemental Agreement and the Conditions of Certification that was leading to the AO.⁴⁸⁷ The Fifth Supplemental Agreement and the Conditions of Certification remain in place and legally binding and continue to require FDEP or the SFWMD to take action to abate any harm caused by the CCS. The Administrative Order was one outcome of that regulatory process. If the Administrative Order is rescinded, the Fifth Supplemental Agreement and the Conditions of Certification would continue to require some other regulatory action to address the harm alleged to have been caused by the CCS.

165. Today we are faced with a similar situation to the NRC Staff in 2014, attempting to make a reasonable forecast about expected state regulatory action. In 2014, the NRC was aware that the FDEP was considering action to require FPL to reduce salinity in the CCS and expected that it would require the use of up to 14 MGD of water from the Upper Floridan Aquifer. Today, it is still reasonable to assume that FDEP will require FPL to take this action to reduce salinity in the CCS because: (1) it has, in fact, already done so, demonstrating its willingness and commitment; (2) the Fifth Supplemental Agreement and the Conditions of Certification remain in place and legally binding and continue to require FDEP or the SFWMD to take action to abate any harm caused by the CCS; (3) FPL did not object to the original Administrative Order; (4) FPL has already sought permission to build and operate the necessary Upper Floridan Aquifer wells to comply with the AO; (5) the FDEP has approved those wells subject to administrative challenge; (6) the same ALJ has issued a Recommended Order approving the Site

⁴⁸⁷ NRC Staff Testimony at 55 (A90).

Certification modification to allow the Upper Floridan Aquifer wells; and (7) FPL has entered into a Consent Agreement with Miami-Dade County that is based in part on the CCS mitigation required by the AO and which already includes factors the ALJ found missing from the AO—a notice of violation and physical abatement measures.

166. Third, even without the AO, the other reasons for the NRC’s conclusions stand and fully support the EA’s conclusion. The consistent and undisputed expert testimony in this proceeding is that the NRC’s UHS license amendment will not have a significant impact on salinity in the CCS and so logically cannot have any resulting significant impact on local groundwater.⁴⁸⁸ As both the FPL and NRC Staff experts testified, even if CCS temperatures exceeded 100°F for a significant amount of time, the environmental impact on surrounding groundwater would be insignificant.⁴⁸⁹ So, while compliance with the Administrative Order would have a meaningful environmental benefit and should help to alleviate impacts associated with increased salinity in the CCS, the consistent and unrebutted testimony in this proceeding is that this NRC license amendment will not have a significant impact on groundwater quality with or without the Administrative Order.

167. Fourth, this case is fundamentally about the reasonableness of the NRC’s Environmental Assessment, which was performed in 2014. Even if the FDEP amends or rescinds the Administrative Order, that decision is not material to the Board’s evaluation of the reasonableness of the NRC’s Environmental Assessment in 2014. A NEPA review

⁴⁸⁸ See e.g., FPL Testimony at 57-62 (A97-A104).

⁴⁸⁹ Tr. at 398-99 (there would not be significant environmental impacts even if the duration was not short); see also FPL Testimony at 57-62 (A97-A104).

represents a “snapshot” in time and the NRC need not “wait until inchoate information matures into something that later might affect” the review.⁴⁹⁰ The NRC in its EA reasonably foresaw that FDEP would address CCS salinity in accordance with the Fifth Supplemental Agreement and the Conditions of Certification, and FDEP in fact did so several months later. No party has argued that it was unreasonable for the NRC Staff to have anticipated in 2014 that FDEP would issue an Administrative Order directing FPL to reduce CCS salinity. It was not.

168. Moreover, in the intervening time period, FPL has been taking significant steps to reduce salinity in the CCS even prior to the AO becoming legally effective, and by the time of the evidentiary hearing in January had brought CCS salinity down to about 36 parts per thousand.⁴⁹¹ Thus, even if the FDEP walked away from CCS mitigation entirely at this point, an outcome that is entirely at odds with the record in this case, its mere issuance of an AO that never ultimately became effective has already begun to have the effect desired by the FDEP and anticipated by NRC’s EA. And even in that unexpected scenario, the Consent Agreement with Miami-Dade County, the Conditions of Certification, and the Fifth Supplemental Agreement would all serve to prevent backsliding.

VII. CONCLUSION

169. For the foregoing reasons, the Board should decide CASE Contention 1 in favor of the NRC Staff and FPL. The NRC’s EA is adequate to meet its obligations under NEPA.

⁴⁹⁰ *Comanche Peak*, CLI-12-7, 75 NRC at 391-92 (citing *Marsh*, 490 U.S. at 374).

⁴⁹¹ Tr. at 479 (Scroggs).

To the extent the Board finds fault in the EA, the adjudicatory record in this proceeding is more than sufficient to address any shortcoming.

Respectfully Submitted,

Signed (electronically) by Steven Hamrick

Steven C. Hamrick
Florida Power & Light Company
801 Pennsylvania Avenue, N.W. Suite 220
Washington, DC 20004
steven.hamrick@fpl.com
202-349-3496

William S. Blair
Florida Power & Light Company
700 Universe Blvd.
Juno Beach, Florida 33408
william.blair@fpl.com
561-304-5238

March 28, 2016

COUNSEL FOR
FLORIDA POWER & LIGHT COMPANY

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of)	
)	Docket No. 50-250-LA
Florida Power & Light Company)	50-251-LA
)	
(Turkey Point Units 3 and 4))	ASLBP No. 15-935-02-LA-BD01

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing “Florida Power & Light Company’s Proposed Findings of Fact and Conclusions of Law” were provided to the E-Filing system for service to those individuals on the service list in this proceeding.

Signed (electronically) by,

Steven C. Hamrick
Florida Power & Light Company
801 Pennsylvania Avenue, N.W. Suite 220
Washington, DC 20004
steven.hamrick@fpl.com
202-349-3496

Dated at Washington, DC
this 28th day of March, 2016