

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:)	
)	
FLORIDA POWER & LIGHT COMPANY)	Docket No. 50-250-SLR-2
)	Docket No. 50-251-SLR-2
(Turkey Point Nuclear Generating Units 3 and 4))	
)	June 12, 2024
(Subsequent License Renewal Application))	

**MIAMI WATERKEEPER’S REPLY IN SUPPORT OF MOTION TO ADMIT
AMENDED AND NEW CONTENTIONS**

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309(i)(2), Petitioner Miami Waterkeeper files this reply to the Answers in opposition to its Petition that have been filed by the U.S. Nuclear Regulatory Commission Staff (“NRC Staff”)¹ and the Florida Power and Light Company (“FPL”)².

¹ NRC Staff Answer to Amended and New Contentions and Petition for Waiver, ADAMS Accession No. ML24155A110 (June 3, 2024) (hereinafter “NRC Staff Answer”).

² Applicant’s Answer to Petitioner’s Motion to Admit New and Amended Contentions on the Final Site-Specific Environmental Impact Statement, ADAMS Accession No. ML24155A267 (June 3, 2024) (hereinafter “FPL Answer”).

II. PROCEDURAL HISTORY AND STANDARD OF REVIEW

A. Procedural History

Petitioner incorporates by reference the procedural history of the Turkey Point proceeding provided in Petitioner’s May 2024 Motion to Admit Amended and New Contentions in Response to NRC Staff’s Final Site-Specific Environmental Impact Statement.³

B. Standard of Review

Petitioner “does not have to prove its contentions at the admissibility stage.”⁴ Nor does the Board adjudicate disputed facts at this juncture.⁵ As the Commission explained in proposing what became § 2.309(f), the presiding officer’s job is to “determine whether the information presented is sufficient to prompt a reasonable mind to inquire further with regard to the validity of the contention,” not to rule on the validity of the contention.⁶

10 C.F.R. § 2.309(f)’s purpose is to relieve Boards of the duty to hold hearings on vague and unsubstantiated claims.⁷ The rule is not intended to alter NRC’s core principle of “open,

³ Miami Waterkeeper’s Motion to Admit Amended and New Contentions in Response to NRC Staff’s Final Site-Specific Environmental Impact Statement, ADAMS Accession No. ML24129A220 (May 9, 2024) (hereinafter “Miami Waterkeeper Motion”) at 2-4.

⁴ *Clinch River*, 86 NRC at 150 (quoting *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004)).

⁵ *Id.* at 151 (citing *AmerGen Energy Co.* (Oyster Creek Nuclear Generating Station), LBP-06-22, 64 NRC 229, 244 (2006)).

⁶ Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 1986 WL 328108 (June 30, 1986), at *3.

⁷ *Duke Energy Co.* (Oconee Nuclear Station, Units 1, 2 & 3), CLI-99-11, 49 NRC 328, 338 (1999) (Licensing boards need not hear “contentions that appeared to be based on little more than speculation.”); *Dominion Nuclear Connecticut Inc.* (Millstone Nuclear Power Station Units 2 and 3), CLI-01-24, 55 NRC 1 (2001) (Admissibility rules are “strict by design” in that they shield Boards from “sift[ing] through poorly defined or supported contentions.”); *Fla. Power & Light Co.* (Turkey Point Units 6 & 7), ASLBP No. 10-903-02-COL-BD01, 2017 WL 4310384, at *9 (Jan. 13, 2017) (Board may reject “conclusory assertion[s]” “unsupported by fact or expert opinion.”).

understandable, and accessible” processes.⁸ Thus, the Commission stated forcefully that “our contention rule should not be turned into a ‘fortress to deny intervention,’”⁹ but rather used to require “at least some minimal factual and legal foundation” for contentions.¹⁰ A Board ought not reject the contentions “of petitioners who, after reviewing all relevant licensing documents, have isolated specific issues they dispute and wish to litigate.”¹¹

Here, each of Petitioner’s contentions meets the good cause standard and presents a genuine dispute regarding discrete material issues. Petitioner has provided robust factual support for its claims, including a 44-page expert report by hydrologist Dr. William Nuttle¹² and a Government Accountability Office containing new site-specific information. Petitioner demonstrates in turn why each contention should be admitted.

III. EFFECT OF THE PENDING PART 51 RULEMAKING

All parties agree that the pending Part 51 rulemaking does not affect this proceeding.¹³ The Commission’s order CLI-22-03 established an alternative procedural pathway, allowing FPL to submit a site-specific environmental report to supplement a site-specific review, rather than wait for NRC Staff to complete its LR GEIS rulemaking.¹⁴ FPL elected to take this pathway.¹⁵

⁸ Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2182 (Jan. 14, 2004).

⁹ *Oconee*, 49 NRC at 335 (quoting *Peach Bottom*, ALAB-216, 8 AEC 13, 21 (1974)).

¹⁰ *Tennessee Valley Authority* (Clinch River Nuclear Site Early Site Permit Application), ASLBP No. 17-954-01-ESP-BD01, 2017 WL 9478622 (Oct. 10, 2017), at 150 (quoting *Oconee*, CLI-99-11, 49 NRC at 334).

¹¹ *Oconee*, 49 NRC at 337.

¹² See Miami Waterkeeper Motion Attachment A - Expert Report of William Nuttle, Ph.D., PEng (May 8, 2024), (hereinafter “May 2024 Nuttle Report”).

¹³ FPL Answer at 6-9; NRC Staff Answer at 82-86.

¹⁴ See *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Units 3 and 4), CLI-22-3, 95 NRC 40 (2022)

¹⁵ FPL Answer at 6-7.

NRC Staff agrees that it is now bound to conduct a site-specific review in its FSEIS.¹⁶ Petitioner agrees with NRC Staff that the new rule would not enable NRC Staff to “replace their site-specific evaluations with the new generic impact determinations,” as this would “deprive the members of the public of the meaningful opportunity for hearing envisioned in CLI-22-3.”¹⁷

IV. AMENDED AND NEW CONTENTIONS

CONTENTION 1:

1-A: THE 2024 FSEIS FAILS TO ADEQUATELY ANALYZE GROUNDWATER CONDITIONS FOR THE "NO ACTION" ALTERNATIVE, WHICH SHOULD BE THE CONDITIONS PRESENT WHEN THE PLANT IS NOT OPERATIONAL.

1-B: THE 2024 FSEIS EMPLOYS THE WRONG STANDARD TO DETERMINE THE IMPACT OF THE CCS ON POTABLE WATER.

1-C: THE 2024 FSEIS'S ASSESSMENT OF THE IMPACT OF THE PROPOSED ACTION TO GROUNDWATER QUALITY IS INADEQUATE BECAUSE IT UNDERESTIMATES THE IMPACTS ON DRINKING WATER RESOURCES.

A. Contentions 1-A, 1-B, and 1-C satisfy the good cause standard for new and amended contentions.

The good cause standard for new and amended contentions is stated in 10 C.F.R. § 2.309(c) and requires Petitioner to demonstrate that:

- (i) The information upon which the filing is based was not previously available;
- (ii) The information upon which the filing is based is materially different from information previously available; and
- (iii) The filing has been submitted in a timely fashion based on the availability of the subsequent information.

¹⁶ NRC Staff Answer at 6-7.

¹⁷ *Id.* at 84-85.

Here, there is no dispute that Petitioner filed in accordance with a schedule set forth by the Board and that the filing was timely. Instead, NRC Staff and FPL allege that Contentions 1-A, 1-B, and 1-C fail to satisfy the good cause factor of being based on new information that is materially different from information previously available.¹⁸ The Staff and FPL cannot have it both ways. If the new groundwater analysis is sufficient to moot out Petitioner's prior contention, it must be materially different to the prior analysis. It cannot be a mere rephrasing as the Staff alleges.¹⁹

The 2024 FSEIS contains new information that significantly changes the analysis and explanation offered previously—specifically the analysis of groundwater issues that Petitioner had previously contended was omitted. That analysis and explanation is therefore open to challenge. As noted above, the new analysis in the 2024 FSEIS was the reason why Petitioner joined the motion to dismiss the previously admitted contention of omission and why the Board dismissed that contention as moot.²⁰

Boards have consistently found good cause under the procedural circumstances present here: where an earlier contention of omission is mooted by an amended environmental document that includes the previously omitted analysis, and the Petitioner subsequently challenges the adequacy of that new analysis in an amended contention. This precise circumstance was presented earlier in this proceeding, where a Board admitted two of Joint Petitioners' contentions of omission challenging FPL's Environmental Report.²¹ NRC Staff later published a DSEIS

¹⁸ Both parties, however, concede that Petitioner satisfies section 2.309(c)(1)(iii) by filing the Motion within the time set by the scheduling order. NRC Staff Answer at 20; FPL Answer at 2.

¹⁹ NRC Staff Answer at 21, 24.

²⁰ See March 2024 Board Order at 34.

²¹ *In the Matter of Florida Power & Light Co. (Turkey Point Nuclear Generating Units 3 and 4)*, 90 NRC 139, 146 (2019).

rendering the two admitted contentions as moot,²² and Joint Petitioners moved to admit new contentions challenging the adequacy of the DSEIS.²³ The Board found that good cause was satisfied: the new cooling tower analysis that NRC Staff added to cure Petitioners' prior contention constituted "new information that (1) was not previously available; and (2) is materially different from previously available information in the [Environmental Report]."²⁴

Likewise, in *In the Matter of Tennessee Valley Authority (Clinch River Nuclear Site)*, 88 NRC 55 (2018), the Board admitted a contention of omission regarding the risks of spent fuel pool fires,²⁵ and NRC Staff later published a DEIS that added a new section discussing the risks of spent fuel pool fires.²⁶ After dismissing the originally admitted contention of omission as moot, the Board held that the intervenors satisfied the "good cause" standard to file a new contention that challenged the adequacy of that discussion, noting that "this was the first opportunity to challenge the adequacy of any discussion of spent fuel pool fires, which appeared for the first time in the DEIS."²⁷

These decisions illustrate that the good cause standard does not require that every piece of information used in a revised analysis to be new. If an **analysis** is new and different to what was previously presented, it constitutes "new" information for the purposes of good cause, even if it is based on existing information. Moreover, a key part of Petitioner's dispute is that the

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *In the Matter of Tennessee Valley Authority (Clinch River Nuclear Site)*, 88 NRC 55, 58 (2018).

²⁶ *Id.* at 59.

²⁷ *Id.* at 60.

groundwater analysis that NRC Staff added is inadequate precisely because it relies on outdated information, rather than recent data.

Contention 1-A therefore demonstrates “good cause.” Petitioner challenges the use of an outdated and incomplete assessment of groundwater conditions under the no action alternative in the updated comparison of alternatives section provided in the latest 2024 FSEIS. Petitioner could not have challenged this before for two reasons. First, the updated analysis of alternatives it seeks to challenge was not available; and second, the 2019 analysis has become more and more outdated over the last few years and needs to be updated.²⁸ As a Board ruled earlier in this proceeding, because the alternatives analysis is new, it can be challenged at this stage.²⁹

Contention 1-B demonstrates “good cause” for similar reasons. In its March 7, 2024, order, the Board admitted the following contention of omission:

The 2023 Draft SEIS fails to take a hard look at impacts to groundwater quality because it does not include an explanation for the Staff’s conclusion that the uncertainty in retracting the hypersaline groundwater plume could result in moderate impacts.³⁰

In response to that order, on March 29, 2024, NRC Staff showed its work by adding significant new analysis to the FSEIS that explained how it arrived at its determination that the impacts to

²⁸ Although NRC and FPL claim that the 2019 FSEIS fully evaluated the no action alternative, this review occurred *two years* before freshening allocations were doubled in 2021. *Id.* at 22 & 28 n.4; FPL Answer at 13; 2024 FSEIS at 2-26. It also makes no reference to the movement of the salt/fresh groundwater interface. By using the 2019 assessment of the no action alternative, the 2024 FSEIS has not accounted for the environmental impacts of increasing volumes of freshening water on the surrounding environment and the impact of reducing or eliminating that flow rendering the updated comparison of alternatives inadequate. Nor did it analyze how ceasing use if the CCS would affect the movement of the salt/fresh groundwater interface, which lies close to existing public drinking water wells.

²⁹ *Id.*

³⁰ Memorandum and Order (Granting Request for Hearing) (LBP-24-03), ADAMS Accession No. ML24067A280 (Mar. 7, 2024), at 22.

water quality will be moderate.³¹ Among other things, this new analysis revealed that NRC Staff was employing a “hypersalinity” standard to gauge the impact of the proposed action to the potability of a sole-source drinking water aquifer.³² Because this explanation—which is the subject of Amended Contention 1-B—was revealed for the first time in the 2024 FSEIS in response to the Board’s order, sections 2.309(c)(1)(i) and (ii) are satisfied.³³

Finally, Contention 1-C meets the good cause standard in two ways. First, it challenges the adequacy of NRC Staff’s newly added explanation in the 2024 FSEIS about why it chose SMALL or MODERATE as the impact that the continuing operation of the cooling canal system would cause to groundwater quality. This analysis and explanation were included in the 2024 FSEIS in response to the Board’s previous admission of a contention of omission. Thus, there was no opportunity to challenge its adequacy earlier in the proceeding. Second, it is based on an expert interpretation of critical tritium data—including previously unavailable data that was not included in the 2024 FSEIS.³⁴ This data illustrates that the analysis of groundwater impacts is inadequate because it underestimates the potential for the operation of the CCS to contaminate potable water supplies.

Thus, Contentions 1-A, 1-B, and 1-C satisfy the good cause requirement.

³¹ 2024 FSEIS at 2-24–2-40.

³² *Id.* at 2-39–2-40.

³³ 10 C.F.R. §2.309(c)(1); *In the Matter of Florida Power & Light Co.* (Turkey Point Nuclear Generating Units 3 and 4), 90 NRC 139, 152 n.16 (2019); *In the Matter of Tennessee Valley Authority* (Clinch River Nuclear Site), 88 NRC 55, 60 (2018).

³⁴ Tritium data shown in Figure 7 of Dr. William K. Nuttle’s expert report is not available in any public database and was received by Miami Waterkeeper on April 29, 2024, by request.

B. Contentions 1-A, 1-B, and 1-C satisfy the admissibility criteria.

CONTENTION 1-A: THE 2024 FSEIS FAILS TO ADEQUATELY ANALYZE GROUNDWATER CONDITIONS FOR THE "NO ACTION" ALTERNATIVE, WHICH SHOULD BE THE CONDITIONS PRESENT WHEN THE PLANT IS NOT OPERATIONAL.

In addition to meeting the good cause standard, Contention 1-A satisfies the admissibility criteria.

1. Contention 1-A provides substantial factual support

NRC staff alleges that factual support is inadequate but ignores the basis set forth in the initial pleading and in particular references to Section 2.8.3 and Section 3.2 of the FSEIS in its discussion of the factual support. The basis of the contention is broadly that conditions have changed since 2019 and therefore the revised analysis of alternatives must include an updated version of the no-action alternative before the comparison of alternatives in the 2024 FSEIS can satisfy NEPA. That things have changed since 2019 is not in dispute. Indeed, NRC Staff's acknowledgement and FPL's protestations that much new information has been generated over the last five years serve to buttress the factual support for Contention 1-A. In particular, the Staff notes that two extraction wells have been added since 2019.³⁵ FPL states that the 2024 FSEIS discusses "extensive new information" including five years of updated well data.³⁶ FPL goes on to discuss much new data presented in the 2024 SEIS on seepage rates and rate of sale withdrawal.³⁷ Obviously, a thorough analysis would incorporate this new information in the discussion of the no-action alternative and analysis of alternatives. NRC Staff's analysis, which

³⁵ NRC Staff Answer at 36.

³⁶ FPL Answer at 27.

³⁷ *Id.* at 29-30.

does not adequately consider material information, falls short of the “hard look” standard mandated by NEPA.

2. Contention 1-A raises a genuine dispute regarding a material issue

Finally, Contention 1-A presents a genuine dispute regarding a material issue. At bottom, Petitioner asserts that failing to update that old analysis before incorporating it into the new analyses provided in the 2024 FSEIS rendered the new analyses inadequate. This does raise a genuine dispute. NRC Staff believe that the analysis of alternatives in the 2024 FSEIS that incorporates the outdated 2019 analysis of the no-action alternative remains adequate, while Petitioner does not. It is this issue that Petitioner seeks to adjudicate in this proceeding.

CONTENTION 1-B: THE 2024 FSEIS EMPLOYS THE WRONG STANDARD TO DETERMINE THE IMPACT OF THE CCS ON POTABLE WATER.

In addition to demonstrating good cause, Contention 1-B satisfies the admissibility requirements.

1. Contention 1-B raises a genuine dispute regarding a material issue

NRC Staff and FPL do not dispute that the 2024 FSEIS employs a relaxed “hypersalinity” standard—and not a potable water standard—to determine whether the proposed action is sufficient to destabilize a potable water aquifer. On this concession alone, the Board should admit Amended Contention 1-B: The “hypersalinity” standard is **19,000 mg/L chlorinity**, yet the most permissive metric of potability—Florida’s Class G-II groundwater standard—is 10,000 mg/L of total dissolved solids (TDS) which equates to **5,500 mg/L chlorinity**.³⁸ In other

³⁸ The conversion standard for TDS to chlorinity in seawater is provided in Frank J. Millero, et al. *The Composition of Standard Seawater and the Definition of the Reference-Composition Salinity Scale*, 55 Deep Sea Research Part I: Oceanographic Research Paper 50, 56 (2009), ISSN 0967-0637, available at <https://doi.org/10.1016/j.dsr.2007.10.001>. TDS is roughly 1.8 times greater than chlorinity in seawater.

words, the “hypersaline” standard used in the 2024 FSEIS to analyze impacts to a drinking water aquifer is almost **four-times greater** than the most lenient drinking water standard.³⁹

This methodological flaw led the 2024 FSEIS to severely underestimate the impact of the proposed action to groundwater quality. By looking only to whether “hypersaline” water would destabilize the sole-source drinking water aquifer, the 2024 FSEIS failed to account for the impact to drinking water during the subsequent license renewal (SLR) term caused by the discharge of non-potable CCS water between 5,500 and 19,000 mg/L chlorinity.⁴⁰

Critically, this is the expected chlorinity range of all the CCS water that will discharge into the Biscayne Aquifer over the SLR term. Recall that the FDEP Consent Order requires FPL to add enough fresh water to reduce CCS salinity levels to 34 practical salinity units (PSU).⁴¹ Thirty-four PSU is the equivalent of 19,000 mg/L chlorinity—the standard for “hypersaline” water.⁴² If, as FPL claims, these “freshening activities” succeed in reducing salinity levels to below 19,000 mg/L chlorinity, then the CCS water discharged into the Biscayne Aquifer during

³⁹ In its Motion, MWK argued that the hypersalinity standard was twice as large as the G-II potable water standard. *See* Miami Waterkeeper Motion at 16, 19. Regrettably, this was a significant understatement. The G-II potable water standard is expressed in TDS, whereas the hypersalinity standard is expressed in chlorinity. *Compare* 2016 FDEP Consent Order at 7, *with* Fla. Admin. Code Ann. R. (“F.A.C.”) 62-520.410(1). The G-II potable water standard is 10,000 mg/L of TDS, which includes both chloride concentrations and other dissolved solids. F.A.C. 620-520.410(1). Converting that TDS standard to chlorinity results in a maximum measure of chlorinity for G-II groundwater of 5,500 mg/L—almost four times less than the hypersalinity standard of 19,000 mg/L chlorinity. *See* n.38, *supra*. For the Board’s convenience, MWK attaches as **Attachment A** a demonstrative table that lists the applicable standards.

⁴⁰ 2024 FSEIS at 2-22–2-24.

⁴¹ 2016 FDEP Consent Order at 7.

⁴² May 2024 Nuttle Report at 7 (“Chlorinity is closely related to salinity; where salinity measures the concentration of total dissolved solids, chlorinity measures the concentration of dissolved chloride ions. Typical values for seawater are ~35 parts per thousand total dissolved solids, corresponding to ~35 PSU (practical salinity units, the conventional measure for seawater salinity), and 19,000 mg/L chlorinity. Hypersaline water, as discussed below, is defined as water with chlorinity greater than 19,000 mg/L. Seawater and hypersaline water are considered to be non potable.”).

the SLR term will necessarily be **lower** than the “hypersaline” standard of 19,000 mg/L chlorinity.

By its very design, the methodology employed in the 2024 FSEIS does not account for **any** of that non-potable saltwater. The reason is that the 2024 FSEIS looks only at the impact to groundwater quality of “hypersaline” water, i.e., water with chlorinity **greater** than 19,000 mg/L.⁴³ As a result, none of the post-freshening CCS water between 5,500 and 19,000 mg/L chlorinity—water, again, that is not potable—has been accounted for in the Staff’s impact determination. This is an enormous volume of water: although there is some dispute about the exact number, all parties agree that the “freshening activities” currently result in the CCS discharging an average of between **four to nine million** gallons of saltwater into the Biscayne Aquifer, every day, over the twenty year SLR term.⁴⁴ This equates to between **29.2 billion** and **65.7 billion** gallons of non-potable saltwater that will discharge into a sole-source drinking water aquifer between 2032 and 2052. But, due to the “hypersalinity” standard employed in the 2024 FSEIS, **none** of that saltwater has been accounted for in the NRC Staff’s impact determination to groundwater quality.⁴⁵

In short, the methodology applied in the 2024 FSEIS fails to account for the impacts to groundwater quality of most—if not all—of the saltwater that will discharge from the CCS to the Biscayne Aquifer during the SLR term. The “hard look” standard requires NRC Staff to actually look at the environmental effects of the proposed action. Designing a study to avoid learning the

⁴³ See, e.g., 2024 FSEIS at 2-38–2-39 (“However, the hypersaline groundwater has not destabilized the aquifer as demonstrated by the facts that the use of the aquifer by existing users has not been affected and that remediation efforts have demonstrated that the hypersaline groundwater plume is subject to retraction.”).

⁴⁴ See May 2024 Nuttle Report at 17; FPL Answer at 29.

⁴⁵ NRC Staff Answer at 30-40.

impact of groundwater pollution to a potable drinking water aquifer is the exact opposite of what NEPA demands.

None of NRC Staff and FPL's responsive arguments change the outcome.

FPL claims that Amended Contention 1-B is "based on either a misreading of the 2024 FSEIS or a carefully selected representation of the NRC's analysis."⁴⁶ Petitioner did neither, and FPL's argument proves the point. As FPL aptly explains in its answer, NRC Staff considered only the impacts to groundwater quality of the "hypersaline plume" and not the tens of billions of gallons of non-potable saltwater that will discharge from the CCS into the Biscayne Aquifer over the SLR term.⁴⁷

Likewise, NRC Staff's lengthy discussion of the 2019 FSEIS confirms that NRC Staff only considered the impact of the "hypersaline" plume to groundwater:

The 2019 FSEIS discusses in detail how the operation of the CCS and the hypersaline groundwater plume in the Biscayne Aquifer, defined as water with a chloride concentration exceeding 19,000 mg/L, directly beneath the CCS have influenced the movement of the saltwater interface and, therefore, the availability of potable water to the region.⁴⁸

This supports Petitioner's position that the "hypersalinity" standard employed by NRC Staff failed to account for the impact to groundwater quality of the substantial volume of non-potable saltwater, between 5,500 mg/L and 19,000 mg/L chlorinity, that will discharge from the CCS to the Biscayne Aquifer over the SLR term.⁴⁹

⁴⁶ FPL Answer at 18.

⁴⁷ *See, e.g., id.* at 18-19 (NRC Staff considers scenarios of "the hypersaline plume not expanding" and "the hypersaline plume being retracted"; the "staff's analysis is based, in part, on the location of the plume.").

⁴⁸ NRC Staff Answer at 35.

⁴⁹ Miami Waterkeeper Motion at 18-20.

FPL then attempts to bootstrap the NRC Staff’s use of a “hypersaline” standard to the FDEP’s use of that standard in its consent order.⁵⁰ This argument is irrelevant to the question of whether the 2024 FSEIS complies with NEPA. If the proposed action contemplates FPL discharging tens of billions of gallons of non-potable saltwater into a sole-source drinking water aquifer (which it does), then NRC Staff has a statutory duty to consider the environmental impact of that action—regardless of whether those discharges exceed the FDEP’s “hypersalinity” standard.

Next, FPL asserts that the “hypersaline” plume is an “appropriate *proxy* to determine the CCS impact on the aquifer and its potable water users.”⁵¹ Whether or not that had some utility when the CCS primarily discharged hypersaline water, “hypersalinity” is not a proxy here. The 2024 FSEIS must consider groundwater impacts over the SLR term—not the past. And, as noted earlier, FPL’s “freshening activities” have, and will continue to, pump millions of gallons of water into the CCS every day over the SLR term to bring salinity levels **below** the “hypersaline” target. Because the water discharging from the CCS to the Biscayne Aquifer over the SLR term will likely not be hypersaline, it can hardly be said that the hypersaline plume is an appropriate “proxy to evaluate whether CCS operation would ‘destabilize’ the aquifer” over the SLR term.⁵²

FPL then claims that Petitioner presents a “dubious theory” by “speculat[ing] that ‘non-potable saltwater’ from the CCS somehow could reach and impact the **currently** potable portion of the Biscayne Aquifer.”⁵³ Far from dubious, this, in fact, is exactly what has happened. As Dr. Nuttle explains, “[d]etection of tritium in excess of the 20 pico Curie per liter threshold in

⁵⁰ FPL Answer at 19.

⁵¹ *Id.* at 20 (emphasis in original).

⁵² *Id.*

⁵³ *Id.* at 21.

monitoring well G-3699, first in 2014 and continuing to the present day (Figure 7) places water originating from the CCS at the vanguard of the advancing salt water interface that is encroaching on the Newton wellfield.”⁵⁴ Thus, contrary to FPL’s suggestion, the impacts of “non-potable saltwater” to groundwater quality are real and occurring. They must be considered under NEPA.

Finally, NRC Staff (but not FPL) claims that Petitioner “doesn’t provide any factual support for” Amended Contention 1-B.⁵⁵ This is wrong. Amended Contention 1-B challenges the methodology and standard employed in the 2024 FSEIS to determine if the proposed action is “sufficient to destabilize” an “important attribute” (i.e. potability) of a sole-source drinking water aquifer.⁵⁶ Petitioner identifies the hypersalinity standard employed by NRC Staff (19,000 mg/L chlorinity) and argues that that standard is improperly relaxed because it far exceeds the most permissive metric of potability, i.e., Florida’s Class G-II groundwater standard of 10,000 mg/L TDS and 5,500 mg/L chlorinity. This is the factual basis of amended Contention 1-B. The materiality of using a standard that is nearly four-times greater than the most lenient potability metric is self-evident: by employing a hypersalinity standard, the 2024 FSEIS fails to consider the impact to groundwater quality of any of the non-potable saltwater between 5,500 mg/L to 19,000 mg/L chlorinity that will discharge into the Biscayne Aquifer of the SLR term.⁵⁷ As noted above, this may well comprise all of the water that discharges from the CCS to the Biscayne Aquifer over the SLR term.

⁵⁴ 2024 Nuttle Report at 101, 102, 116 (map of wells), 121 (tracing CCS groundwater in wells), 122 (tritium table and map); *see also* MWK Motion at 17 n.60 (citing 2024 FSEIS at 2-39).

⁵⁵ *Id.* at 38.

⁵⁶ Miami Waterkeeper Motion at 16-18.

⁵⁷ *Id.* at 20.

The Board should admit Amended Contention 1-B because it demonstrates good cause and satisfies all admissibility criteria.

CONTENTION 1-C: THE 2024 FSEIS'S ASSESSMENT OF THE IMPACT OF THE PROPOSED ACTION TO GROUNDWATER QUALITY IS INADEQUATE BECAUSE IT UNDERESTIMATES THE IMPACTS ON DRINKING WATER RESOURCES.

In addition to demonstrating good cause, Contention 1-B satisfies the admissibility requirements.

1. Contention 1-C raises a genuine dispute

In their answers, NRC Staff and FPL inappropriately focus on the recovery well system withdrawals and the hypersaline plume.⁵⁸ However, they still do not address Petitioner's concerns of the wider spread of saline water (less salty than "hypersaline," which is defined as chloride concentrations greater than 19,000 mg/L⁵⁹) moving far beyond the consent agreement compliance area boundary.⁶⁰ Nowhere is it more evident that NRC Staff missed the mark than in its summary of its answer to Petitioner's Contention 1-C:

In sum, the Staff's environmental review determined the amount of withdrawals from the Biscayne Aquifer by the recovery well system and the amount of freshening of the CCS, discussed modeling predicting that the withdrawals would indirectly pull the saltwater interface seaward, discussed modeling predicting that the withdrawals would not drawdown the aquifer to an extent that would impact existing users, discussed peer-reviewed data indicating that the hypersaline groundwater plume has been reduced since the start of recovery well system operations in 2018, discussed data indicating that the salinity of the CCS has decreased, and discussed the continuing requirements of the 2015 DERM Consent

⁵⁸ NRC Staff Answer at 40-41; FPL Answer at 22-33.

⁵⁹ 2024 FSEIS at 2-30 (noting that the 2015 Miami-Dade County Consent Agreement and the 2016 FDEP Consent Order define hypersaline groundwater as groundwater with a chloride concentration greater than 19,000 mg/L).

⁶⁰ The compliance area boundary, which is not officially stated in either the 2015 Consent Agreement or 2016 Consent Order, consists of the aerial electromagnetic flight lines and monitoring well locations within a designated boundary shown in Figure 3 of Petitioner's expert report prepared by Dr. William Nuttle. It is also shown as Figure 2-1 in the 2019 FSEIS, the 2023 DSEIS, and the 2024 FSEIS.

Agreement, the 2016 FDEP Consent Order, and the NPDES permit that are enforced by local and State regulators.⁶¹

NRC Staff believes that this represents a “fulsome analysis.” But this very statement indicates that the agency still has not grappled with the claim and evidence that Petitioner clearly articulated in its motion. Furthermore, it implies that Staff are focused on the wrong standards. The task of the EIS is not to assess compliance with standards in permits and consent orders, it is to evaluate the impact on the environment.⁶² If the state regulator has failed to impose standards to directly safeguard drinking water, that does not mean that the potential impacts on drinking water can be ignored.

At the contention admissibility stage, the Board does not adjudicate the merits of the contention, rather it verifies that a contention meets the admissibility requirements. However, for Contention 1-C, NRC Staff and FPL attempt to dispute the basis of the contention in a misguided effort to show there is no genuine dispute. As shown below, this approach actually illustrates that the Staff and FPL’s myopic focus on the hypersaline area have led them to fail to evaluate a related, but distinct issue: how continued operation during the extended licensing period will affect drinking water.

2. Contention 1-C disputes a material issue, and provides substantial support

Petitioner’s expert showed that **the operation of the CCS as a heat sink**, and the massive amounts of freshening water required to cool this heat sink, can cause hydraulic gradient changes to occur such that CCS water migrates along an east to west gradient and towards public water supply wells—so far that CCS-origin water is found at the leading edge of the salt water

⁶¹ NRC Staff Answer at 47.

⁶² Miami Waterkeeper Motion at 8-9.

interface advancing toward the Newton Wellfield.⁶³ Instead of addressing this finding, NRC Staff and FPL fixate on hypersaline groundwater withdrawals and aquifer drawdown. But these are not the central concern raised by the Petitioner in Contention 1-C. Case in point: NRC remarks at “that the hypersaline groundwater plume, which is defined as groundwater with greater than 19,000 mg/L chloride, influences the position of the saltwater interface,” “that FPL is taking remedial actions required by the 2016 Consent Order to retract the hypersaline groundwater plume to within the Turkey Point site boundary,” and “that, therefore, the impact to the potable water use of the Biscayne Aquifer is based on the relative locations of potable water users and the saltwater interface, as well as the drawdown effect from FPL’s remediation actions.”⁶⁴ NRC Staff goes on to state that “Staff’s environmental review then discusses the monitoring data that demonstrate that the withdrawals of the hypersaline groundwater from the Biscayne Aquifer are removing its influence on the saltwater interface and that the drawdown caused by these withdrawals will also not impact those other water users.”⁶⁵

NRC Staff therefore signals it believes that the hypersaline water is the sole influence on the saltwater interface. NRC Staff and FPL fail to understand that the inland extent of saltwater in the aquifer, the saltwater interface, and the hypersaline interface are three distinctly different aspects of the plume of saltwater intruding into the aquifer. Therefore, NRC Staff and FPL must not conflate the monitoring associated with one of these three aspects (the hypersaline plume) as indicative of the other aspects. Petitioner’s expert discusses this on pages 9 and 10 of his report,⁶⁶

⁶³ Miami Waterkeeper Motion at 34 (citing May 2024 Nuttle Report at 17).

⁶⁴ NRC Staff Answer at 37.

⁶⁵ *Id.*

⁶⁶ May 2024 Nuttle Report at 10 (warning that “information generated by the annual monitoring program and the groundwater remediation is limited in scope by the particular requirements of the 2016 consent order. Care must be exercised in relying on this information for other purposes, such as assessing the

but NRC Staff and FPL have failed to grasp this essential aspect of the surrounding hydrology. Regardless, the hypersaline groundwater withdrawals and aquifer drawdown are not the issues that Petitioner raised in Contention 1-C. Petitioner’s expert demonstrated that the **addition** (not withdrawal) of massive amounts of water into the CCS heat sink influences the salt water interface. NRC Staff and FPL refuse to acknowledge the substance of Contention 1-C, and as such, are digging themselves deeper into the well.

NRC Staff and FPL cite five years of monitoring data that they claim Petitioner has ignored.⁶⁷ In reading annual RAASRs, Petitioner is aware that FPL monitors groundwater within the orange polygon depicted in Figure 3 of Dr. Nuttle’s report,⁶⁸ and which is also shown in Figure 2-6 of the 2024 FSEIS. This area is the “compliance zone” associated with the County Consent Agreement and State Consent Order and encompasses the region of the hypersaline plume. It is, by far, further east of the approximate extent of saltwater shown in Figure 6 of Dr. Nuttle’s expert’s report. Figure 6 shows the spread of tritium—in excess of the county’s 20 PiC/L compliance standard—far outside this compliance zone.⁶⁹ NRC Staff and FPL do not acknowledge Figure 7 of Dr. Nuttle’s report showing the buildup of tritium in well G-3966S—again, far outside the compliance zone. In other words, the five years of monitoring data associated with the hypersaline plume remediation discussed in section 2.8.3.2. are **at a different**

impact of the operation of the CCS on adjacent users of groundwater and on groundwater resources generally”).

⁶⁷ NRC Answer at 49 (“[T]he 2024 FSEIS includes monitoring data gathered since both the operation of the recovery well system and the freshening of the CCS that shows an overall decrease in the annual average salinity in the CCS and the overall volume and extent of the hypersaline groundwater plume.”). NRC Staff cite to the 2024 FSEIS at 2-30 through 2-38. This section, 2.8.3.2, discusses the recovery of the hypersaline groundwater from the Biscayne Aquifer and monitoring. It acknowledges the 2017 baseline survey, subsequent aerial electromagnetic monitoring flights, and monitoring wells’ locations shown in Figure 2-6.

⁶⁸ May 2024 Nuttle Report at 34; 2024 FSEIS at Figure 2-6.

⁶⁹ May 2024 Nuttle Report at 37.

location than the salt water interface. The geographic limitations of FPL’s monitoring are articulated in Dr. Nuttle’s expert opinion:

The boundaries of the compliance area defined for compliance with the 2016 consent order illustrate graphically the limitations on the information that is produced by FPL’s annual monitoring program and groundwater remediation program, Figure 3. The compliance area corresponds to the area covered by the aerial survey used to map the extent of the hypersaline plume. The position of the salt water interface, as indicated by the landward extent of salt water intrusion, is located far outside the western boundary of the compliance area, Figures 1 and 4.⁷⁰

Additionally:

Consideration for the position of the salt water interface is absent from the information produced by the annual monitoring program and the groundwater remediation program. FPL uses three tools to assess the progress of the groundwater remediation: groundwater monitoring, aerial electromagnetic surveys of the hypersaline plume, and groundwater modeling. None of these address changes in the position of the saltwater interface.⁷¹

NRC and FPL continue to dig themselves deeper into the well. Petitioner proffered data showing that the CCS’s influence continues to be at the leading edge of the salt front, and that salt front is making its way towards public water supply wells. Yet NRC Staff and FPL do not acknowledge this new information and do not dispute that this information provides sufficient basis for contention 1-C.

NRC Staff claims that its environmental review in the 2019 FSEIS actually discusses the impact of the CCS on the salt water interface.⁷² In its 2019 FSEIS, NRC Staff remarks that “[t]he interaction of water in the CCS . . . with underlying groundwater in the Biscayne aquifer is complex.”⁷³ Staff goes on to enumerate variables and factors that affect groundwater interactions

⁷⁰ May 2024 Nuttle Report at 10.

⁷¹ *Id.*

⁷² NRC Staff Answer at 46 (citing 2019 FSEIS at 3-69–3-70, 3-72–3-88).

⁷³ 2019 FSEIS at 3-27.

between the CCS waters and the Biscayne Aquifer waters.⁷⁴ However, NRC Staff omits the driving factor that Petitioner has raised in Contention 1-C: the elevated water levels in the CCS, which have changed since 2019.

Water and salt budgets compiled and reported as part of FDEP’s annual monitoring program illustrate that the vertical discharge through the bottom of the CCS in the north and west area consistently accounts for the largest discharge of water and salt into the aquifer. And while NRC Staff notes that variations in hydraulic head (water table elevation) are a factor, it elaborates no further, and certainly there is no discussion in this 17-page section regarding variations in hydraulic head caused by millions of gallons of Upper Floridan Aquifer water additions per day. Moreover, this “fulsome analysis” occurred **two years** before freshening allocations were doubled, from 15 to 30 million gallons per day, in 2021.⁷⁵ Accordingly, the 2024 FSEIS has **not** accounted for the environmental impacts of increasing volumes of freshening water on the surrounding environment. FPL goes so far as to frame the leakage of 4 million gallons per day of saltwater from the CCS as a pittance.⁷⁶ To put the cumulative impacts of 4 million gallons per day of saltwater leakage into perspective over a 20-year license extension, this would equate to 29.2 billion gallons, or nearly 90,000 acre-feet, of polluted water.

FPL claims that Petitioner disregards the goal of the recovery well system. FPL explains that the goal of the recovery well system is not merely intended to intercept hypersaline water; but also to prevent additional CCS-sourced water, regardless of salinity, from moving inland.⁷⁷ FPL also claims that Petitioner has ignored that the recovery well system is “highly effective” in

⁷⁴ *Id.*

⁷⁵ 2024 FSEIS at 2-26.

⁷⁶ FPL Answer at 29.

⁷⁷ *Id.* at 31.

this regard and has halted the westward advance of the saltwater interface in the Biscayne Aquifer.⁷⁸ In response, Petitioner notes that the **goal** of the recovery well system to capture CCS water is, at this point, still an unrealized goal. Bewilderingly, FPL cites to the 2024 FSEIS at Section 2.8.3.2 in support of its claim that the recovery well system is successfully capturing the hypersaline plume and CCS-origin water. This section of the 2024 FSEIS acknowledges the inability of the recovery well system to retract the plume back to the CCS boundary within ten years of its commencing operation, or to about 2028.⁷⁹

Section 2.8.3.2 also discusses a number of issues new and material to the 2024 FSEIS: (1) Arcadis' peer reviews that find there is evidence to indicate that the westward migration of the hypersaline plume has not been entirely halted and that areas of plume expansion or potentially no net change have been underemphasized;⁸⁰ (2) that FPL has modeled multiple remedial alternatives to the current recovery well system approach over a 15 year period through 2033 (which exceeds the start of the SLR term in 2032);⁸¹ (3) that none of those alternatives were shown to fully retract the hypersaline plume to the L-31E canal by 2033;⁸²(4) that FPL's recommended Alternative 1 both proposes to increase recovery well system pumping capacity and to take a portion of extracted, saline water and return it to the CCS due to capacity limits of the existing deep well injection system;⁸³ (5) that there is uncertainty regarding the groundwater modeling to the start of the SLR term and that there is no groundwater modeling to the end of the

⁷⁸ *Id.*

⁷⁹ 2024 FSEIS at 2-30.

⁸⁰ *Id.* at 2-28.

⁸¹ *Id.* at 2-34.

⁸² *Id.*

⁸³ *Id.*

SLR term, which precludes the staff from reaching a definitive conclusion about the likely extent of the hypersaline plume during the SLR term.⁸⁴

Moreover, FPL revealed in its Year 5 RAASR (unlike the previous four RAASRs) that the recovery well system was **expected to be inadequate prior to its installation.**⁸⁵ It is therefore completely inconsistent for FPL to frame the recovery well system as so successful that it captures all hypersaline and saline water leaving the CCS, yet, also concede that recovery well system withdrawal capacity must be increased—because the wells are not capturing enough water (as expected)—and some of the captured water under the proposed Alternative 1 remedial action scenario may have to be returned to the CCS due to lack of deep well injection system capacity. Both cannot be true at the same time.

3. *The issues raised in Contention 1-C are material to the findings that the NRC must make*

NRC Staff and FPL have not addressed Petitioner’s claims in Contention 1-C. Petitioner has shown that the **continued operation of the CCS as a heat sink**, and the ongoing mitigation of environmental impacts of this activity via significant quantities of freshening water and by action of large circulating pumps, propel CCS water far beyond the monitoring zone associated with the hypersaline plume remediation. Petitioner notes that, contrary to NRC Staff’s assertion that Petitioner provides no data to support its claim in 1-C,⁸⁶ tritium data was included in Dr.

⁸⁴ *Id.* at 2-38.

⁸⁵ Year 5 RAASR at 1-2 (“Fifteen groundwater remediation alternatives were identified in 2016 as part of remedial measure formulation Descriptions of the 15 alternatives considered in the model, the screening criteria, and the resulting scores for all alternatives were presented to the agencies on May 16, 2016, and formally submitted to [Miami-Dade County] on May 28, 2016, and [Florida Department of Environmental Protection] on July 20, 2016. Modeling showed none of the alternatives, including the preferred alternative (Alt-3D), were successful in retracting hypersaline groundwater at the base of the Biscayne aquifer to the L-31E canal by Year 10.”).

⁸⁶ NRC Staff Answer at 43.

Nuttle's expert opinion⁸⁷ and discussed in Petitioner's Motion for Amended and New Contentions.⁸⁸ This data was obtained from Miami-Dade County for the monitoring wells near the Newton Wellfield for the period of 2016 through 2023 and therefore could not have been fully incorporated in the 2019 FSEIS or even the 2023 FSEIS.

Data show the persistence of CCS water and the saltwater interface at these locations. At one well in particular located adjacent to the Newton wellfield, tritium levels are increasing even as the recovery well system has operated and reduced the extent of the hypersaline plume. This indicates that the CCS continues to pollute the Biscayne Aquifer for miles despite recovery well system extraction. Moreover, Petitioner notes that these data are not included in the tritium data previously reported in FPL's annual monitoring reports.⁸⁹ Petitioner therefore proffers data from Miami-Dade County that FPL has chosen to exclude from its monitoring reports and that NRC Staff has not evaluated in any of its environmental impact statements.

Petitioner also notes new information in the EIS that is material to the finding NRC must make: Section 2.8.3.2 discusses FPL's proposal to increase recovery well system extraction rates and return some extracted water back to the CCS, though this proposal and nine other alternatives were modeled to fail to retract the plume back to FPL's property by the start of the license extension period. When considering that nine alternatives to the current recovery well system are all projected to fail, apparently due to lack of capacity; when considering the doubling of freshening water allocations that can cause additional leakage along an east-west hydraulic gradient; and when considering that there is already CCS-origin water tritiated at the leading

⁸⁷ May 2024 Nuttle Report at 17, 38 (Figure 7).

⁸⁸ Miami Waterkeeper Motion at 33-34.

⁸⁹ *Id.* at 33-35.

edge of the salt water interface advancing on the Newton Wellfield, the NRC’s conclusion of SMALL to MODERATE impacts caused by CCS operations due to its use as a heat sink, is inadequate. Because Petitioner believes that the 2024 FSEIS fails to provide an adequate analysis of this issue, but the Staff and FPL believe that no more analysis is needed for NEPA compliance, there is a material dispute.

The preventable pollution of public water supply wells represents a significant, clearly noticeable, and destabilizing impact on Miami-Dade County’s sole source drinking water supply. As such, NRC Staff must address the mechanisms outlined in Dr. Nuttle’s report explaining how this water is arriving so far away from the cooling canal system, because it indicates that the continued operation of the CCS as a heat sink—and its 30 million gallon per day freshening allocation—is propelling polluted water towards critical resources in the public trust. NRC Staff should also consider that active, continuous and on-going operation of the recovery well system that is required to prevent the CCS from harming the Biscayne Aquifer is itself evidence that the CCS has destabilized the groundwater resource.

Contention 1-C raises an important issue and is based on new information in the 2024 FSEIS and an expert report. NRC Staff and FPL have yet to fully grasp this new information, let alone assess adequately in the FSEIS. Thus, Contention 1-C satisfies the admissibility criteria.

CONTENTION 2: THE 2024 FSEIS’S ANALYSIS OF THE POTENTIAL IMPACTS OF TURKEY POINT’S CONTINUED OPERATION DURING THE RENEWAL PERIOD ON MIAMI CAVE CRAYFISH IS INADEQUATE AND ITS DETERMINATION THAT CONTINUED OPERATION IS UNLIKELY TO ADVERSELY AFFECT OR JEOPARDIZE THE MIAMI CAVE CRAYFISH IS UNSUPPORTED.

Contention 2 meets both the good cause standards under 10 C.F.R. § 2.309(c) and the admissibility requirements of 10 C.F.R. § 2.309(f).

A. Contention 2 satisfies the “good cause” standard for new and amended contentions.

Good cause may be shown where a contention is based on new or materially different information.⁹⁰ Contention 2 challenges NRC Staff’s analysis in its 2024 FSEIS, which includes new information not raised in its earlier Draft SEIS.⁹¹ NRC Staff acknowledges Contention 2 demonstrates good cause under Section 2.309(c), stating, “[n]ew Contention 2 does challenge information in the 2024 FSEIS that is new and materially different from information previously available.”⁹² FPL acknowledges that after the publication of the 2023 DSEIS the Fish and Wildlife Service proposed to list the Crayfish and does not dispute that this is new information that was newly addressed in the 2024 FSEIS.⁹³ However, like NRC Staff, FPL complains that there is no material dispute.⁹⁴ As demonstrated in detail below, this is incorrect. Serious deficiencies in the 2024 FSEIS analysis of the effects on the Crayfish include excess focus on hypersalinity and lack of attention to lower salinity levels that adversely affect the Crayfish. Furthermore, the 2024 FSEIS fails to meaningfully consider the cumulative impacts of continued CCS operations together with climate change, and it relies on invalid assumptions and outdated data.

B. Contention 2 meets the admissibility requirements.

1. *Contention 2 raises a genuine dispute with NRC Staff’s environmental review and determination that Turkey Point’s continued operation is unlikely to adversely affect or jeopardize the Miami cave crayfish, with substantial support, which is material to the findings the NRC must make*

⁹⁰ 10 C.F.R. § 2.309(c).

⁹¹ *See generally* 2024 FSEIS; *see also* FPL Answer at 38-39 (describing new analysis in the 2024 FSEIS).

⁹² NRC Staff Answer at 20.

⁹³ FPL Answer at 34.

⁹⁴ *Id*

Contention 2 meets the admissibility requirements of 10 C.F.R. § 2.309(f). In short, Contention 2 challenges NRC Staff’s analysis of the potential impacts of Turkey Point’s continued operation during the renewal period on Miami cave crayfish and its determination that continued operation is unlikely to adversely affect or jeopardize the species. FPL and NRC Staff argue Contention 2 fails to “show that a genuine dispute exists with the 2024 FSEIS on a material issue of law or fact, lacks adequate factual support for Petitioner’s position, and does not demonstrate that the issue raised is material to the findings that the NRC must make.”⁹⁵ As discussed in detail below, Contention 2 raises and supports several material disputes relating to the adequacy of NRC Staff’s environmental review under NEPA and the ESA, all material to the findings the NRC must make in this proceeding. Petitioner raises a material dispute by challenging the sufficiency of Staff’s evaluation of impacts on the Miami cave crayfish in the 2024 FSEIS. NRC Staff and FPL each assert that the FSEIS’s consideration of those impacts is sufficient. Petitioner disagrees. Staff’s evaluation focuses narrowly on hypersaline plume remediation, ignoring both other factors impacting the spread of saline water from the CCS more broadly and the Miami cave crayfish’s sensitivity to salinity levels that are much lower than those represented by either the hypersaline plume or the salt water/freshwater interface as defined in the 2024 FSEIS. Furthermore, the 2024 FSEIS fails to meaningfully consider the cumulative impacts of continued CCS operations together with climate change, and it relies on invalid assumptions and outdated data. These inadequacies amount to a failure to take the required “hard look” at environmental impacts—including impacts to the crayfish—as required by NEPA. They also undermine the 2024 FSEIS’s conclusion that continued operation of Turkey Point will not adversely affect or jeopardize the Miami cave crayfish. These disputes are

⁹⁵ NRC Staff Answer at 20; *see also* FPL Answer at 2, 34-43.

substantially supported—by evidence offered by Petitioner’s expert, as well as evidence found in the 2024 FSEIS and its supporting documents—and are material to the findings NRC must make in this proceeding.

i. The 2024 FSEIS repurposes modeling of the hypersaline plume that cannot be used to predict effects on the crayfish

Petitioner shows that, fundamentally, NRC Staff failed to adequately analyze the effect of the proposed Turkey Point license extension on the Miami cave crayfish. NRC Staff instead repurposed analyses that were designed to assess different questions—primarily the impact of the CCS operation and mitigation measures on the hypersaline plume, and to a lesser degree the derivative impact on the freshwater/salt water interface—on the impact of the continued operation of the CCS and mitigation measures on the Miami cave crayfish, a species that can only tolerate very low salinity levels. The essential argument in the 2024 FSEIS is that the Miami cave crayfish is “unlikely to experience measurable effects from saltwater intrusion associated with the proposed continued operation of Turkey Point during the SLR term” because (1) the recovery well system would **contract the hypersaline plume** and prevent water originating from the CCS from **influencing the “Biscayne Aquifer’s saltwater/freshwater interface** within the species’ range” and (2) “the hypersaline plume does not currently overlap with the endemic range of the Miami cave crayfish.”⁹⁶ Based on those ideas, the 2024 FSEIS concludes that:

All potential impacts on Miami cave crayfish from the proposed continued operation of Turkey Point during the SLR term would not be able to be meaningfully measured, detected, or evaluated, and would, therefore, be insignificant. Accordingly, the NRC staff concludes that Turkey Point SLR may affect, but is not likely to adversely affect, this species.⁹⁷

⁹⁶ 2024 FSEIS at 2-67 (emphasis added).

⁹⁷ *Id.* (emphasis added).

Petitioner has articulated a material dispute with the 2024 FSEIS’s claims that the Miami cave crayfish is “unlikely to experience measurable effects from saltwater intrusion associated with the proposed continued operation of Turkey Point during the SLR term” and that “continued CCS freshening would ensure that water originating from the CCS does not influence the Biscayne Aquifer’s saltwater/freshwater interface within the species’ range.”⁹⁸ Petitioner has also demonstrated a material dispute with the NRC Staff’s legal claim that its analysis—a simple repackaging of environmental reviews created to answer different questions—is sufficient to support its conclusion that the Turkey Point SLR is not likely to affect the Miami cave crayfish especially given that species’ intolerance to even very low levels of salinity.

NRC Staff failed to take the required “hard look” at groundwater salinity impacts on the crayfish in its 2024 FSEIS by focusing almost entirely on the retraction of the hypersaline plume. In the 2024 FSEIS, NRC Staff presents FPL’s partial compliance with the consent agreements governing the hypersaline plume’s remediation efforts and tout this compliance—alongside the promise of future regulatory action if efforts are not completely successful—as being a sufficient basis upon which to conclude the impacts to the crayfish will be negligible.⁹⁹ As discussed in greater detail in Contention 1-C, NRC Staff’s analysis does not address the wider spread of saline water moving beyond the Consent Agreement compliance zone. Petitioner’s concern lies with the influence of CCS operations related to its use as a heat sink at the leading edge of the salt water interface and not within a compliance zone focused on demonstrating the retraction of the hypersaline plume (in shallow portions of the Biscayne Aquifer). There are more factors than

⁹⁸ *Id.*

⁹⁹ *Id.* (contending that compliance with “the 2015 Miami-Dade County Consent Agreement, the 2016 FDEP Consent Order, and the NPDES permit and enforced by local and State regulators” and the “required freshening” would, “ensure that water originating from the CCS does not influence the Biscayne Aquifer’s saltwater/freshwater interface within the species’ range”).

the hypersaline plume and changes in salinity caused by the CCS that must be considered. A complete assessment of CCS impacts must also consider other mechanisms by which the operation of the CCS impacts groundwater resources.¹⁰⁰

FPL and NRC Staff each repeatedly assert that Petitioner has failed to consider its most recent monitoring well data, yet themselves fail to acknowledge that these data do not speak to the continuing influence of CCS operation on the broader area of saltwater influence beyond the compliance zone associated with the hypersaline plume retraction and water leaking at reduced salinities, though still saline, from the CCS.¹⁰¹ Movement of the hypersaline plume is not the only mechanism through which the CCS can affect the salt water interface.¹⁰² NRC Staff does not adequately address impacts to cave crayfish habitat outside the compliance zone in its 2024 FSEIS. The 2024 FSEIS states the recovery well system will “halt and retract the westward migration of the hypersaline plume,”¹⁰³ and FPL argues the FSEIS’s underlying data show that mitigation measures have “largely” halted the westward advance of the salt water interface.¹⁰⁴ This, FPL claims, is enough to rely on hypersaline plume retraction as the deciding factor in impacts to the saltwater/freshwater interface, as well as the leakage of water at reduced salinities from the CCS of concern to the Miami cave crayfish.¹⁰⁵ However, remediation of the hypersaline plume continues to be fraught.¹⁰⁶ It is therefore highly suspect that FPL, in its reply, promotes

¹⁰⁰ May 2024 Nuttle report at 8-11.

¹⁰¹ NRC Staff Answer at 38-39, 41-42, and 48-49; FPL Answer at 27-32.

¹⁰² May 2024 Nuttle Report at 10-11; *see also* discussion, *supra* Contention 1-C.

¹⁰³ 2024 FSEIS at 2-67.

¹⁰⁴ FPL Answer at 31 (citing 2024 FSEIS at 2-300).

¹⁰⁵ *Id.* at 31-32.

¹⁰⁶ See discussion, *supra* Contention 1-C, regarding Section 2.8.3.2 of the 2024 FSEIS.

the recovery well system as a solid barrier to water flow,¹⁰⁷ an idea that is disputed by Petitioners and is at odds with the fact that the system has not retracted the hypersaline plume as originally planned—as discussed in more detail below—and the fact that FPL is recommending increased extraction rates for all recovery well system wells.¹⁰⁸ At best, all that the 2024 FSEIS and supporting documents offer as support for the claim that retraction of the hypersaline plume is an adequate surrogate for **all** salinity impacts of the CCS is a theory that is belied by available data. This is the crux of one of the material disputes with the analysis in the 2024 FSEIS. Petitioners believe that the prediction of the movement of the hypersaline plume does not predict how much less saline water will move and therefore cannot predict how the crayfish will be affected by that less saline water.

Despite Staff’s reliance on plume remediation as a sufficient marker of all salt water influence from the CCS, the 2024 FSEIS admits that plume retraction has not been as effective as hoped.¹⁰⁹ Monitoring data between 2018 and 2023 does show retraction of the plume in some locations, but it also shows portions of the plume that are advancing west, away from the Turkey Point site.¹¹⁰ The overall degree of reduction, as presented in Table 2-5 of the FSEIS, “illustrates that FPL’s remediation efforts have resulted in less plume reduction than previously

¹⁰⁷ See FPL Answer at 33 (citing Final Order, Ex. A at 69) (“The RWS . . . create[es] a hydraulic barrier such that none of the CCS water that seeps into ground water is able to move westward past the RWS. The extraction of the hypersaline ground water beneath the CCS reduces the driving force that contributed to lateral movement away from the CCS thereby halting the westward migration of hypersaline water from the CCS. Thus, since May 2018, the RWS has functioned—and continues to function—as a **hydrologic barrier** that has halted the westward movement of hypersaline water from the CCS.”). (emphasis added)).

¹⁰⁸ 2024 FSEIS at 2-34.

¹⁰⁹ *Id.* at 2-28–2-40.

¹¹⁰ *Id.*

estimated.”¹¹¹ This advancing portion is at the northern end of the plume, closest to known crayfish habitat.¹¹² Acknowledging these shortcomings does not, as Staff claims, “implicitly challenge[] the presumption . . . that State and local regulators will enforce their regulations,” but rather reflects the reality that an adequate environmental impact assessment cannot simply assume that compliance with existing regulatory requirements will result in a predicted outcome when faced with data to the contrary.¹¹³

ii. The 2024 FSEIS fails to take account of the habitat of the crayfish and its intolerance for salt

Lastly, the 2024 FSEIS fails to analyze critical impacts on the Miami cave crayfish. As Petitioner pointed out in its Motion, the full extent of the crayfish’s range remains uncertain, as sampling for the species has been sparse and much of the data is decades old.¹¹⁴ The 2024 FSEIS does not mention the potential for further plume encroachment on crayfish habitat, and does not contemplate the possibility of crayfish outside the known range. Nor does it address the fact that the best available science indicates that the Miami cave crayfish likely tolerates salinity levels significantly lower than those represented by either the hypersaline plume or the saltwater/freshwater interface (as defined in the 2019 and 2024 FSEISs)¹¹⁵ and fails to look at the

¹¹¹ *Id.* at 2-28–2-29. Staff’s analysis notes: “Figure 2-8 illustrates that for the middle horizon, the plume in the area northwest of the CCS may have expanded slightly since 2018. Figure 2-9 illustrates that in the deep horizon, the southwestern portion of the plume shows minimal retraction in addition to an isolated area around well TPGW-22 with chloride concentrations above 19,000 mg/L.” *Id.* at 2-30 (emphasis added); *see also* discussion, *supra* Contention 1-C (noting FPL’s need to increase RWS withdrawal rates).

¹¹² *Id.* at 2-32 (“Figure 2-8 Comparison of the 2018 and 2023 Inland Extent of Hypersaline Groundwater (19,000 mg/L Chloride Isochlor) in the Middle Monitoring Well Horizon.”), 2-64 (“Figure 2-13 Endemic Range of Miami Cave Crayfish Divided into the Seven Units Used in the FWS Review”).

¹¹³ NRC Staff Answer at 51-52.

¹¹⁴ Miami Waterkeeper Motion at 47 (citing 2024 FSEIS at 2-63; U.S. Fish & Wildlife Serv., Miami Cave Crayfish Species Status Assessment Version 1.2 (Sept. 20, 2023) at 19-22 (hereinafter “Status Assessment”).

¹¹⁵ 2019 FSEIS (“In 1983, the FDEP designated as Class G-III (i.e., non-potable use with TDS levels of 10,000 mg/L or greater) the . . . Biscayne aquifer [] within the Turkey Point plant property, with the west

impact of license extension on the lower levels of salinity that would preclude Miami cave crayfish from utilizing otherwise suitable habitat.¹¹⁶

In short, Petitioner has set forth and supported a material dispute with the 2024 FSEIS’s environmental review, based on its failure to take the required “hard look” at the environmental consequences of the proposed action, a failure that leaves unsupported its conclusion that Turkey Point’s license extension is unlikely to adversely affect or jeopardize the Miami cave crayfish.

iii. The 2024 FSEIS fails to take account of the cumulative effect of climate change and the extended period of operation

Petitioner also shows that NRC Staff failed to adequately evaluate the cumulative impacts of climate change and sea level rise on the Miami cave crayfish. Staff and FPL rely on the false assumption that CCS operations, including freshening water additions and pumps circulating water, do not influence salt water intrusion—an assumption Petitioner disputes.¹¹⁷ An examination of cumulative effects should consider the incremental effects of agency action when added to the impacts of other reasonably foreseeable actions in the past, present, and future.¹¹⁸ A cumulative climate change impacts assessment therefore should consider rising sea levels (resulting in increasing saltwater intrusion), worsening storm events, hotter temperatures, and drought.¹¹⁹ A satisfactory environmental impact statement must therefore examine the *combined*

side of the CCS marking the western boundary The FDEP has classified surficial groundwater west of the Turkey Point site (i.e., to the west of the site boundary and CCS) as Class G-II, which means potable water use, with TDS levels of less than 10,000 mg/LThe intersection of Class G-II and underlying Class G-III groundwater marks the saltwater interface[.]” (citations omitted).

¹¹⁶ Status Assessment at 69 (concluding that it is “highly unlikely” the crayfish “could sustain reproductively successful populations at salinity measures above those evidenced in the natural freshwater aquifer environments from which they have been collected (i.e., ≤0.45 ppt).”) (noting potential upper limit of tolerance of 18 ppt based on potential analogous species).

¹¹⁷ See discussion, *supra* Contentions 1-C and 2.

¹¹⁸ 40 C.F.R. § 1508.1(g)(3).

¹¹⁹ NUREG 1437, Volume 1 Revision 2, Generic Environmental Impact Statement for License Renewal

pressure of these forces on an ecologically significant resource, like the crayfish. The 2024 FSEIS fails to do so.

iv. Contention 2 provides substantial factual support

In addition to the facts presented in the discussion above, Petitioner’s arguments are supported by the comprehensive analysis offered by the May 2024 report of Petitioner’s expert, Dr. William Nuttle. Contention 2 also relies on the data and analysis presented in the 2024 FSEIS and the FWS Species Status Assessment for the Miami cave crayfish.

v. The issues raised in Contention 2 are material to the findings that the NRC must make

A contention is “material” to the NRC’s duty to make environmental findings if the issue of law or fact it raises “is of possible significance to the result of the proceeding.”¹²⁰ Material contentions have “some significant link between the claimed deficiency and either the health and safety of the public or the environment.”¹²¹ The disputes raised in Contention 2 are material to the findings NRC must make in this proceeding. NRC Staff have failed to meet the requirements of both NEPA and the ESA by offering an inadequate evaluation of Turkey Point’s continued CCS operations on the Miami cave crayfish.

NEPA’s hard look requirement is satisfied where analysis “contains sufficient discussion of the relevant issues and opposing viewpoints” and is “fully informed” and well-considered.”¹²² Looking almost exclusively at only one aspect of the salinity impacts of CCS operations ignores

of Nuclear Plants, Main Report, Final Report, ADAMS Accession No. ML23201A224 (Feb. 2024), at 4-146.

¹²⁰ *Entergy Nuclear Vt. Yankee L.L.C. & Entergy Nuclear Operations* (Vermont Yankee Nuclear Power Station), LBP-04-28, 60 NRC 548, 556–57 (Nov. 22, 2004).

¹²¹ *Id.*

¹²² *Fla. Power & Light Co.* (Turkey Point Units 6 and 7), LBP-17-5, 86 NRC 1, 26 (2017).

relevant issues and cannot qualify as fully informed or well-considered. Staff and FPL remind Petitioner that NEPA does not require agencies to analyze every “conceivable” aspect or alternative.¹²³ While this is true, an analysis must be reasonable,¹²⁴ and it must encompass both direct and indirect impacts.¹²⁵

Here, NRC Staff sought simply to repackage and repurpose an analysis of the impacts of the CCS operations on the extent of the hypersaline plume, and to a lesser, derivative extent, on the regional freshwater/saltwater interface. The Staff failed to acknowledge, let alone analyze, the effects of CCS operations on regional salinity levels with a view to the much lower salinity levels that render aquifer habitat unavailable to the Miami cave crayfish. The Staff also failed to focus on the specific regions of the aquifer most likely to provide habitat for the species. Attempting to repurpose analyses designed to address different questions, Staff’s analysis failed to consider key issues central to understanding the potential effects of the license extension on the Miami cave crayfish and its habitat, violating NEPA and rendering its conclusion that the extension will not adversely affect or jeopardize the species unsupported.¹²⁶

Furthermore, NRC and ESA regulations expressly require the impact of license renewal on imperiled species and their habitats including specifically on species listed or proposed for listing as endangered or threatened under the ESA to determine whether a license renewal is likely to adversely affect or jeopardize the continued existence of the species.¹²⁷ Failure to

¹²³ NRC Staff Answer at 18; FPL Answer at 42.

¹²⁴ *Powertech USA, Inc.* (Dewey-Burdoch in Situ Uranium Recovery Facility), LBP-17-9, 86 NRC 167, 191 (2017).

¹²⁵ 40 C.F.R. § 1508.1(g) (defining the scope of effects to be analyzed under the statute).

¹²⁶ 2024 FSEIS at 2-67.

¹²⁷ 10 C.F.R. § 51.53(c)(3)(ii)(E) (“All license renewal applicants shall assess the impact of . . . continued operations . . . on important plant and animal habitats. Additionally, the applicant shall assess the impact of the proposed action on threatened or endangered species[.]”).

adequately assess impacts amounts to a violation of NEPA, the ESA, and their implementing regulations.

As discussed above, Staff failed to adequately assess impacts to the Miami cave crayfish. The FSEIS's myopic, misguided focus on the hypersaline plume, its failure to analyze the impacts of continued operation of the CCS on lower levels of salinity in the aquifer that likely render potential habitat unsuitable for the Miami cave crayfish, as well as its failure to analyze these impacts together with the cumulative impacts of sea level rise and climate change, are material to findings the NRC must make regarding the potential impact of the license renewal on the Miami cave crayfish.

CONTENTION 3:

3-A: THE 2024 FSEIS FAILS TO ADEQUATELY ANALYZE CLIMATE CHANGE-RELATED ENVIRONMENTAL IMPACTS THAT ARE REASONABLY FORESEEABLE TO OCCUR DURING THE SUBSEQUENT LICENSE RENEWAL PERIOD.

3-B: THE 2024 FSEIS FAILS TO ADEQUATELY UPDATE ITS EVALUATION OF FPL'S SAMA ANALYSIS TO REFLECT THE EFFECTS OF CLIMATE CHANGE ON ACCIDENT RISK.

A. Contentions 3-A and 3-B satisfy the good cause standard for new and amended contentions.

New Contentions 3-A and 3-B satisfy the section 2.309(c) standard. Because FPL and NRC Staff challenge these contentions' compliance with the "good cause" standard, Petitioner addresses each prong of that analysis in turn.¹²⁸

¹²⁸ To satisfy "good cause" under section 2.309(c) are recited earlier in this brief. *See supra* section IV.1 Amended Contention. Because all parties agree that Petitioner's contention is timely, Petitioner does not address that prong here. NRC Staff Answer at 59-67; FPL Answer at 43-58.

1. The GAO Report provides new information that was not previously available

The GAO Report (the “Report”) contains new information that was not previously available, and NRC Staff and FPL’s assertions otherwise should be rejected. The Report makes new and site-specific findings about the risks climate change poses to the Turkey Point nuclear facility. These findings are the result of an extensive review process whereby the Report’s authors (1) “interviewed officials from federal agencies, including NRC, the Department of Energy, and the National Oceanic and Atmospheric Administration, and knowledgeable stakeholders from industry, academia, and nongovernmental organizations”; (2) “conducted site visits to two plants,” including Turkey Point; and (3) “analyzed available federal data and reviewed regulations, agency documents, and relevant literature.”¹²⁹ The report incorporates the new information obtained from these interviews and site visits.

Yet FPL and NRC Staff insist that the information in the GAO Report is not new, since it cites past studies. By FPL and NRC Staff’s logic, any report that relies on pre-existing information would not be “new.” That is not and cannot be the good cause standard. Indeed, earlier in this proceeding, the 2023 DSEIS relied on information and data that was already publicly available to reach new conclusions about impacts—and Petitioner still had the right to challenge this analysis.¹³⁰ Every new analysis of an ongoing issue necessarily incorporates known information. That the GAO Report’s analysis relies in part on pre-existing data and government reports does not render its findings stale, nor does it mean that there is nothing new in the Report. Even reports conducting a new analysis of existing data can provide new conclusions. For example, literature reviews or meta-studies by design look only at pre-existing

¹²⁹ Miami Waterkeeper Motion, Appendix B, U.S. Government Accountability Office Report (hereinafter “GAO Report”), at Highlights Page.

¹³⁰ See generally 2023 DSEIS.

studies and data. Far from stale, such reports provide further insight that can lead to new revelations. Such review and analysis of existing data should be and is open to challenge where—as here—the study results in new findings.

Here, the GAO Report provides novel analysis. In determining each plant’s flood hazard level, hurricane storm surge level, projected change in maximum temperature, and other factors, the Report analyzes various datasets that had never before been cross-analyzed. For example, to determine a plant’s exposure to hurricane storm surge, GAO staff identified overlap between (1) the 0.5-mile radius around nuclear power plant coordinates provided by the Nuclear Regulatory Commission and (2) the National Oceanic and Atmospheric Administration’s Sea, Lake, and Overland Surges from Hurricanes Model, which estimates storm surge heights resulting from the various categories of hurricanes.¹³¹ Commenters had specifically urged NRC Staff to analyze this NOAA storm surge dataset, but NRC Staff refused to do so.¹³² Similarly, GAO staff used MapInfo mapping software to layer specific plant locations with various hazards and determine exposure levels.¹³³ The GAO Report therefore conducted a new data analysis that relied in part on existing information to draw new conclusions—something that almost all studies, including groundbreaking ones, do. No other report has comprehensively analyzed and compared the site-specific climate risks at each of the United States’ 75 nuclear plants.

¹³¹ GAO Report at 22. The report used similar methodology for flood hazards. *Id.* at 20.

¹³² 2024 FSEIS at A-36. NRC Staff mistakenly claimed that the NOAA storm surge data was outside of the scope of relicensing. *Id.*

¹³³ GAO Report at 46 ("To analyze whether nuclear plants are located in areas that may be affected by heat, cold, wildfire, flooding, and hurricane storm surge, we used MapInfo mapping software to determine whether the nuclear power plant locations were located in areas with exposure to the selected hazards. Exposure indicates that a facility is located in an area that may be affected by a selected hazard. If the plant overlapped with multiple hazard layers, the layer representing the highest level of exposure was reported. For example, in our report, we coded a plant whose locations showed exposure to both layers for Category 1 and Category 5 storm surge data as having exposure to Category 5 storm surge.").

Moreover, the GAO report does not only rely on previously published information. GAO Staff toured the Turkey Point plant, interviewed plant staff and NRC resident inspectors, and “observed an NRC safety evaluation review to understand the extent to which NRC incorporates considerations of climate change risks when determining whether and under what conditions to license a nuclear power plant.”¹³⁴ GAO Staff also interviewed officials from NRC headquarters and all four NRC regional offices.¹³⁵ The GAO Report is therefore not “merely a compendium of historical information,” as FPL insists, but rather independent new research that draws novel conclusions from a holistic approach that includes new site-specific data.

2. *The new information provided by the GAO Report is materially different from previously available information*

Contentions 3-A and 3-B meet the second prong of section 2.309(c) because the new information provided in the GAO Report is materially different from previously available information.¹³⁶ Despite having discussed (albeit inadequately) the impacts of climate change in the 2024 FSEIS, NRC Staff now claims that “the GAO Report”—titled: *Nuclear Power Plants, NRC Should Take Actions to Fully Consider the Potential Effects of Climate Change*—“is unrelated to license renewal at Turkey Point.”¹³⁷ Surely a site-specific analysis from a sister agency warning Congress and the public that Miami-Dade County could experience an increased risk of a nuclear release if the license renewal is granted without review of potential safety updates is relevant.

¹³⁴ *Id.* at 42, 47.

¹³⁵ *Id.* at 47.

¹³⁶ *See* 10 C.F.R. 2.309(c)(ii).

¹³⁷ NRC Staff Answer at 59.

This is precisely the type of information that NRC Staff needs to consider in deciding whether to update the severe action mitigation alternatives (SAMA) evaluation during consideration of the application to renew FPL’s operating license for another 20 years. Members of Congress, presumably concerned about nuclear plants’ vulnerability to climate change in coming decades, requested that GAO staff prepare this report.¹³⁸ As described at length in Contentions 3-A and 3-B, the Report identifies and demonstrates the reasonable foreseeability of several climate change-related impacts that NRC Staff has failed to adequately analyze.¹³⁹

The Board interprets “materially different” new information “from the standpoint of a reasonable petitioner.”¹⁴⁰ The NRC has found information to be materially different where more recent information regarding a previously considered issue comes to light. For example, in *In Situ Leach Facility*, the Board found that recent seismic information was materially different from previously available seismic information, where the environmental report had previously discussed earthquakes but “neglected to analyze significant *recent* seismic information” and failed to include “discussion of seismic activity in . . . nearby areas.”¹⁴¹

The GAO Report is easily distinguished from other cases where a Board or Commission has rejected contentions as not materially different, because the reports in question in those cases contained not a single piece of new information, or because the conclusions in question had been previously published.¹⁴²

¹³⁸ See GAO Report at Highlights Page; U.S. Government Accountability Office, *What GAO Does*, available at <https://www.gao.gov/about/what-gao-does> (last visited June 12, 2024).

¹³⁹ Miami Waterkeeper Motion at 56-67, 72-76.

¹⁴⁰ *In the Matter of Holtec Int’l* (HI-STORE Consolidated Interim Storage Facility), LBP-19-4, 89 NRC 353 (2019) (*affirmed in part, reversed in part on other grounds* by CLI-20-4, 91 NRC 167 (2020)).

¹⁴¹ *In the Matter of Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), LBP-15-11, 81 NRC 401 (2015) (*reversed in part on other grounds* by CLI-19-5, 89 NRC 329, 448 (2019)).

¹⁴² See *In the Matter of Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), CLI-10-27, 72 NRC 481 (2010) (rejecting a contention based on a report that compiled historical

NRC Staff implies that the Board ought to reject Contentions 3-A and 3-B because Petitioner filed related contentions in the past. But whether a petitioner previously raised similar issues has no bearing on whether the petitioner satisfies the good cause standard. Petitioner does not have the access that GAO Staff had—for example, Petitioner cannot interview Turkey Point employees or conduct site inspections to assess the plant’s risk to climate change. That the GAO Staff undertook that investigation and arrived at the Report’s conclusions should be enough for NRC Staff to take a hard look at these issues. Petitioner should not be penalized for correctly identifying an issue that was subsequently substantiated by an independent government investigation. When new information became available that corroborated its argument, Petitioner needed only to demonstrate that the new information provides a basis for the contention and that it raises a material dispute with the FSEIS. Petitioner has done that. The GAO Report provides new information demonstrating that a number of climate risks are reasonably foreseeable, and therefore rightfully serve as the basis for Contentions 3-A and 3-B. Had the GAO Report been available when Petitioner filed its 2023 Petition, Petitioner would have cited the Report to substantiate its claims regarding climate-related impacts.

NRC Staff mistakenly claims that the GAO Report “does not identify any way in which the Staff’s license renewal reviews are deficient under the current statutory or regulatory requirements.”¹⁴³ To the contrary: the Report identifies a number of inadequacies of NRC’s

information but did not contain “any single [new] event or any single [new] piece of information”); *In the Matter of Holtec Int’l* (HI-STORE Consolidated Interim Storage Facility), LBP-20-6, 91 NRC 239 (2020) (decisive factor cited by Board in rejecting the contention for lack of good cause was *not* that the report largely cited pre-existing sources, but rather that the conclusions had already been published seven years earlier); *see also In the Matter of Interim Storage Partners LLC* (WCS Consolidated Interim Storage Facility), LBP-19-11, 90 NRC 358 (2019) (same); *In the Matter of Entergy Nuclear Generation Co. & Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-12-11, 75 NRC 731 (2012) (finding information was not materially different where the relevant conclusions were previously available).

¹⁴³ NRC Staff Answer at 60.

relicensing process, enumerated in Contention 3-B.¹⁴⁴ At bottom, the Report found that “[w]ithout incorporating the best available information into its licensing and oversight processes, it is unclear whether the safety margins for nuclear power plants established during the licensing period—in most cases over 40 years ago—are adequate to address the risks that climate change poses to plants.”¹⁴⁵ These inadequacies concern NRC Staff’s violation of NEPA by neglecting to adequately consider reasonably foreseeable climate-related environmental impacts, including the environmental impacts of a severe accident.

NRC Staff cannot know if it has taken sufficient measures to mitigate risks of severe accidents if it doesn’t consider the climate data in its evaluation of reasonably foreseeable climate change-related impacts and its SAMA evaluation. Therefore, the fact that the GAO analysis does not incorporate the plant’s protective measures into its analysis has no effect on the significance of its findings. In *Diablo Canyon*, the Board specifically rejected NRC Staff’s argument that despite new conclusions published in a report, overall risk levels remain lower and the plant had been “demonstrated to have reasonable assurance of safety.”¹⁴⁶ The Board found that it could not “accept at face value PG&E’s own “interim” conclusion” about the bounding of the risk level—and that, in fact, “this is the very issue on which [Petitioner] seeks a hearing, and on which [Petitioner] has set forth evidence that is at least plausible.”¹⁴⁷

Contentions 3-A and 3-B therefore satisfy the good cause standard.

¹⁴⁴ GAO Report at 39-40; Miami Waterkeeper Motion at 75-76.

¹⁴⁵ GAO Report at 39; Miami Waterkeeper Motion at 76.

¹⁴⁶ *In the Matter of Pacific Gas & Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-15-6, 81 NRC 314, 320 (2015).

¹⁴⁷ *Id.*

B. Contentions 3-A and 3-B satisfy the admissibility criteria.

CONTENTION 3-A: THE 2024 FSEIS FAILS TO ADEQUATELY ANALYZE CLIMATE CHANGE-RELATED ENVIRONMENTAL IMPACTS THAT ARE REASONABLY FORESEEABLE TO OCCUR DURING THE SUBSEQUENT LICENSE RENEWAL PERIOD.

In addition to satisfying the good cause requirement, Contention 3-A meets the admissibility requirements.

1. Contention 3-A raises a genuine dispute regarding a material issue and provides substantial factual support

Contention 3-A raises a genuine dispute. FPL mistakenly suggests that because the GAO Report does not directly cite the 2024 FSEIS, Petitioner has not identified a material dispute.¹⁴⁸ FPL misunderstands the contention. The information in the GAO Report provides the *basis* for the contention and demonstrates that a number of climate change-related impacts are reasonably foreseeable. Contention 3-A relies on the information in the Report to explain why, in light of the reasonable foreseeability of these impacts, the analysis in the 2024 FSEIS is inadequate.

Contention 3-A concerns a material issue. Contrary to NRC Staff’s claims, Petitioner adequately explained why the issues it identifies are material to NRC Staff’s review.¹⁴⁹ Materiality requires Petitioner to show a “significant link between the claimed deficiency and either the health and safety of the public or the environment.”¹⁵⁰ As discussed at length in the petition, the GAO Report demonstrates that the environmental impacts of continued plant

¹⁴⁸ FPL Answer at 51-53 (“The GAO Report, Itself, Fails to Demonstrate a Genuine Dispute Because It Does Not Evaluate the 2024 FSEIS”).

¹⁴⁹ See Miami Waterkeeper Motion at 68, 77-78.

¹⁵⁰ *Vermont Yankee*, 60 NRC at 556–57. Contrary to NRC Staff’s assertion, the report analyzes not only climate change effects on plant operations, but also effects on the environment, including sea level rise and heat. GAO Report at 13-26; Miami Waterkeeper Motion at 56-67; NRC Staff Answer at 64.

operation in light of climate change are reasonably foreseeable to be significant.¹⁵¹ Were NRC Staff to take a hard look at these impacts, it might decide to deny the license renewal or impose conditions on the renewal.¹⁵²

NRC Staff asserts that the GAO report makes only general claims applicable to all U.S. power plants without specifically addressing climate change impacts at Turkey Point.¹⁵³ Yet, as described at length in the Petition, the report analyzes the specific risk of each of the 75 U.S. nuclear plants.¹⁵⁴ Out of the 75 plants it analyzed, GAO staff selected Turkey Point and one other plant for a site visit, presumably because of the Turkey Point plant’s high risk level for a number of climate-related risks.¹⁵⁵ Indeed, of the nine “current and future hazards at operating nuclear power plants” assessed in the Report, Turkey Point was almost uniformly ranked in the highest

¹⁵¹ NRC Staff claims that part of Petitioner’s Contention 3-A related to overtopping is not material because Petitioner has not adequately demonstrated the significance of the impact of overtopping. NRC Staff Answer at 64. In its Motion, Petitioner explains that CCS water flowing out into the Bay carries with it a number of pollutants, all of which could have detrimental impacts on the surrounding Bay. Miami Waterkeeper Motion at 59. The fact that NRC Staff speculated in response to a comment in its 2019 FSEIS—not its 2024 FSEIS—that the impact of more frequent overtopping would be minimal does not constitute the “hard look” that NEPA requires to determine whether the impacts would in fact be SMALL. NRC Staff Answer at 64-65 (citing 2019 FSEIS at A-39). We do not yet know whether the impacts of more frequent overtopping would be significant because NRC Staff has failed to adequately analyze this issue. Miami Waterkeeper Motion at 60. At this stage it is sufficient for Petitioner to identify the possibility of a significant impact that has been overlooked. Petitioner does not have to carry out the impact analysis.

NRC Staff also takes issue with the fact that the GAO Report relies on an outdated version of the National Climate Assessment, and suggests that if the GAO report can rely on this outdated version, so too can the 2024 FSEIS. NRC Staff Answer at 61. Yet Petitioner is not alleging that the GAO report is the end point for the analysis of climate impacts. Rather, it serves to illustrate why the NRC Staff’s analysis needs to be updated to incorporate the latest available information on climate impacts—by demonstrating that the plant faces reasonably foreseeable risks of sea level rise and heat if it continues to operate into the 2050s.

¹⁵² Contrary to NRC Staff’s claim, Petitioner demonstrates at length “how . . . the relevant information in the GAO Report has not been accounted for in the Staff’s environmental review.” NRC Answer at 65-66; *see* Miami Waterkeeper Motion at 54-69.

¹⁵³ NRC Staff Answer at 63.

¹⁵⁴ GAO Report at 14-29, 55-60; Miami Waterkeeper Motion at 56-67.

¹⁵⁵ GAO Report at 2, 42, 55; Miami Waterkeeper Motion at 56-67.

risk category.¹⁵⁶ The Report also specifically identifies a number of shortfalls in the licensing process that NRC Staff must remedy to adequately analyze climate risks.¹⁵⁷

The cases cited by FPL regarding the materiality of GAO reports therefore have no bearing here. In *Va. Elec. & Power Co.* (North Anna Power Station, Unit 3), the Board did indeed find that a GAO report cited by the petitioner provided useful background information, and discussed the report’s findings at length in a footnote—and ultimately admitted the contention that was founded in part upon the GAO Report.¹⁵⁸ Nowhere did the Board state that the report was too general to serve as a basis, or partial basis, for admission.¹⁵⁹ In *Entergy Nuclear Operations, Inc.* (Palisades Nuclear Power Plant and Big Rock Point Site), the Board rejected a contention based on “generalized conclusions,” where petitioners failed to explain how they extrapolated a specific cost estimate based on general data.¹⁶⁰ In that case, the GAO report table that petitioners relied on was titled “*Typical Costs Associated with Transferring Spent Nuclear Fuel in Canisters from Wet to Dry Storage*” and contained no site-specific information regarding the nuclear plant in question.¹⁶¹ Where Boards have rejected contentions based on GAO reports, it has been where the report lacks any site-specific information about the nuclear plant in question.¹⁶²

¹⁵⁶ GAO Report at 56, Table 1.

¹⁵⁷ *Id.* at 34-40; Miami Waterkeeper Motion at 72, 75-76.

¹⁵⁸ LBP-08-15, 68 NRC 294, 312 n.82 (2008).

¹⁵⁹ *Id.*

¹⁶⁰ CLI-22-8, 96 NRC 1, 39-40 (2022).

¹⁶¹ See U.S. Government Accountability Office, GAO-15-141, “Spent Fuel Management: Outreach Needed to Help Gain Public Acceptance for Federal Activities that Address Liability” (Oct. 2014), 17 tbl.2 (emphasis added).

¹⁶² See *In the Matter of Pacific Gas & Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-93-1, 37 NRC 5 (1993); *In the Matter of Vermont Yankee Nuclear Power Corp. & Amergen Vermont, LLC* (Vermont Yankee Nuclear Power Station), CLI-00-20, 52 NRC 151 (2000); *In the Matter of U.S. Department of Energy* (High-Level Waste Repository), Docket No. 63-001-HLW, 69 NRC 367

In contrast, the GAO Report that Petitioner cites includes a table with a set of climate risk information specific to Turkey Point, and the Report’s authors specifically singled the Turkey Point plant out for a site visit.¹⁶³ The GAO Report emphasizes that “[f]indings from selected site visits are *not* generalizable to all sites.”¹⁶⁴

Indeed, Boards have found GAO reports that contain site-specific information to serve as adequate bases for contention. For example, in *In the Matter of Detroit Edison Co. (Fermi Nuclear Power Plant, Unit 3)*, the Board admitted a contention based in part on a GAO study containing specific information about the facility in question.¹⁶⁵ Boards and the Commission have also granted enforcement action,¹⁶⁶ decided license amendments,¹⁶⁷ and conducted special inspections,¹⁶⁸ based in part on information provided by GAO reports. GAO reports have historically sounded the alarm on a variety of safety issues and served as the impetus for NRC

(2009) (*affirmed in part, reversed in part* by CLI-09-14, 2009 WL 1883741 (June 30, 2009)); *In the Matter of Calvert Cliffs 3 Nuclear Project, LLC & Unistar Nuclear Operating Services, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), LBP-09-4, 69 NRC 170 (2009); *In the Matter of Pennsylvania Power & Light Co. & Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-79-6, 9 NRC 291, 325 (1979).

¹⁶³ GAO Report at 55, Table 1.

¹⁶⁴ *Id.* at 42 (emphasis added).

¹⁶⁵ *In the Matter of Detroit Edison Co. (Fermi Nuclear Power Plant, Unit 3)*, ASLBP No. 09-880-05-COL-BD01, 70 NRC 227 (2009).

¹⁶⁶ *In the Matter of Entergy Nuclear Operations, Inc. et al.* (Indian Point Units 1, 2, and 3), DD-12-3, 76 NRC 416 (2012).

¹⁶⁷ *In the Matter of Nuclear Fuel Services, Inc. & New York State Energy Research & Development Authority* (Western New York Nuclear Service Center), CLI-81-29, 14 NRC 940 (1981).

¹⁶⁸ *In the Matter of Duke Power Co., et al.* (Catawba Nuclear Station, Units 1 and 2), DD-84-16, 20 NRC 161 (1984).

rulemaking.¹⁶⁹ Boards have consistently cited GAO reports as relevant and reliable sources of information.¹⁷⁰

As discussed above in Petitioner’s “good cause” analysis, Petitioner provides ample factual support for its contention.¹⁷¹ Notably, FPL does not contest that Petitioner provides sufficient factual support in accordance with 10 C.F.R. § 2.09(f)(v).¹⁷² NRC Staff implies that the Board ought to reject Contentions 3-A and 3-B because Petitioner filed related contentions in the past.¹⁷³ But, as with good cause, whether a petitioner previously raised similar issues has no bearing on whether the petitioner satisfies the admissibility standard.¹⁷⁴ The GAO Report provides new information corroborating Petitioner’s concerns regarding climate change and demonstrating that a number of climate risks are reasonably foreseeable, and therefore provides

¹⁶⁹ See, e.g. *In the Matter of Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), LBP-83-22, 17 NRC 608, 617 (1983) (describing a GAO Report as “making ‘important contributions’ on the state of emergency planning around nuclear facilities” and “forming a part of the basis for the Commission’s conclusion that more stringent emergency planning and preparedness requirements should be adopted for nuclear power plants”) (citing 44 Fed. Reg. at 75,169); *In the Matter of Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-818, 22 NRC 651 (1985) (describing GAO report as an impetus for rulemaking regarding emergency planning) (*reversed and remanded by* CLI-86-13, 24 NRC 22 (1986)); Decommissioning Recordkeeping and License Termination: Documentation Additions, RIN 3150-AD98, 1993 WL 356491 (July 12, 1993) (noting that a GAO Report identified serious concerns that resulted in a rulemaking).

¹⁷⁰ See *In the Matter of Va. Electric & Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), LBP-77-68, 6 NRC 1127 (1977) (citing a GAO Report as a relevant and reliable source of information regarding allegedly poor construction practices at a nuclear plant); *In the Matter of Virginia Electric & Power Co.* (North Anna Power Station, Unit 3), ASLBP No. 08-883-01-COL, 68 NRC 294 (2008) (citing a GAO report as a relevant source of information regarding disposal facilities); *In the Matter of Radiac Research Corp.*, DD-04-4, 60 NRC 387 (2004) (citing GAO report as a relevant and “accurate” source of information regarding security threats); *In the Matter of Mixed Oxide Fuel*, CLI-78-10, 7 NRC 711 (1978) (citing to GAO Report recommendations as relevant information regarding domestic reprocessing policy); *In the Matter of Holtec Int’l* (HI-STORE Consolidated Interim Storage Facility), LBP-19-4, 89 NRC 353 (2019) (citing GAO Report recommendations as relevant source of information regarding spent nuclear fuel).

¹⁷¹ See *supra* Section IV.1 Amended Contention 1.

¹⁷² See FPL Answer at 50-55.

¹⁷³ NRC Staff Answer at 65-66.

¹⁷⁴ See 10 C.F.R. 2.309(f).

ample factual basis for Contentions 3-A.¹⁷⁵ Staff cannot show how the new information has been incorporated into its analysis simply because it has not done so.

CONTENTION 3-B: THE 2024 FSEIS FAILS TO ADEQUATELY UPDATE ITS EVALUATION OF FPL'S SAMA ANALYSIS TO REFLECT THE EFFECTS OF CLIMATE CHANGE ON ACCIDENT RISK.

In addition to satisfying the good cause requirement, Contention 3-B meets the admissibility requirements.

1. Contention 3-B raises a genuine dispute regarding a material issue

FPL and NRC Staff mistakenly suggest that Petitioner has failed to identify a material dispute because it has not “identif[ied] specific SAMAs or specific inputs that would change the SAMA analysis.”¹⁷⁶ This assertion misconstrues the criteria for admissibility. Section 2.309(f) does not require that Petitioner conduct a full SAMA analysis, identify specific SAMA mitigation measures on FPL’s behalf, or conduct its own cost-benefit analysis in order to identify a genuine dispute at this stage. Rather, as NRC Staff itself admits, Petitioner need only demonstrate that “[its] challenges to SAMA analyses *could* change the cost-benefit conclusions.”¹⁷⁷ Petitioner has done just that. Petitioner “does not have to prove its contentions at the admissibility stage,”¹⁷⁸ nor does the Board adjudicate disputed facts at this juncture.¹⁷⁹ As a Board explained in *McGuire*, “[w]hile the contention might have been more detailed or

¹⁷⁵ See Miami Waterkeeper Motion at 54-67.

¹⁷⁶ FPL Answer at 57; see also NRC Staff Answer at 68-69.

¹⁷⁷ NRC Staff Answer at 67 (emphasis added) (citing *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315–17 (2010); *McGuire*, CLI-02-17, 56 NRC at 8, 11–12 (finding that the relevant inquiry to determine if a SAMA analysis meets the materiality contention admissibility requirement is whether the contention could change the cost-benefit analysis)).

¹⁷⁸ *Clinch River*, 86 NRC at 150 (quoting *Peach Bottom*, 8 AEC at 21).

¹⁷⁹ *Id.*

otherwise better supported, the Petitioners have done enough to *raise a question about the adequacy* of the probability figures used in Duke's SAMA analyses, namely, whether they should have incorporated or otherwise acknowledged information" from a specific study.¹⁸⁰ "Whether the SAMA analysis in fact should have addressed the study [is] a question for the merits."¹⁸¹

Petitioner satisfies the admissibility standard by identifying material shortfalls in NRC Staff's evaluation of FPL's SAMA analysis, including its reliance on historic climate data rather than climate projections. The GAO Report identifies specific external hazards that NRC Staff is not adequately considering in its SAMA analysis: flooding, storm surge, hurricanes, rising temperatures, and droughts.¹⁸² Thus, Petitioner identifies a genuine dispute regarding a material issue. Petitioner need not, nor is it best positioned to, complete the full SAMA analysis on FPL or NRC Staff's behalf—and especially not at this stage of the proceeding.

NRC Staff effectively admits that FPL's 2002 SAMA analysis is out of date, and its use here presents a material dispute as to the adequacy of the Staff's analysis. According to NRC Staff, the 2002 SAMA evaluation "did not identify any fundamental weaknesses or vulnerabilities of Turkey Point to severe accident risk with regard to the separate matter of external events related to seismic, fire, high winds, flood, and other external hazards."¹⁸³

Notably, the GAO—an **independent** government agency conducting a study at the request of Congress—reached the exact opposite conclusion 22 years later: the Report specifically found

¹⁸⁰ *McGuire*, 56 NRC 1, 8 (emphasis added).

¹⁸¹ *Id.* at 9 (citing 55 NRC at 126).

¹⁸² As discussed above, the GAO Report contains site-specific findings regarding the Turkey Point plant's exposure to various hazards. *See* GAO Report at 15, 19, 23, 42, 55 (Table 1). Moreover, even where a study "does not on its face purport to address the current design, operation, or maintenance" of a specific plant, "the Board nonetheless found that a sufficient question had been raised about the SAMA analyses' failure to address or otherwise acknowledge results" from the study upon which Petitioner based its contention. *McGuire*, 56 NRC 1 at 9-10.

¹⁸³ NRC Staff Answer at 69-70.

that Turkey Point’s “flood hazard level” was “high,” “hurricane storm surge level” was “high,” and “wildfire potential level” was “high/very high.”¹⁸⁴ It’s hard to envision a more material dispute than where each party relies on evidence that points to a different conclusion. Moreover, NRC Staff’s citation to a 22-year-old analysis that relies on historic data rather than climate projections demonstrates precisely the inadequacy that Petitioner is contesting. NRC Staff’s suggestion that it may rely on historical data because “external events are a low contributor to overall [core damage frequency] in FPL’s SAMA analysis” is circular.¹⁸⁵ NRC Staff cannot know the extent to which external events contribute to the risk of severe accidents unless it considers the current and future risk levels posed by climate change, which it failed to do by ignoring climate projections. This is the precise concern that GAO staff identified in their report.¹⁸⁶

As discussed at length in the initial Motion, the information in the GAO Report is new and significant: it provides a “seriously different picture” than the current FSEIS.¹⁸⁷ Whereas the 2024 FSEIS’s SAMA evaluation does not use climate projections to consider how climate change will affect the risk of flooding, hurricane, and temperature-related severe accidents, the GAO Report warns that severe accidents due to climate change are reasonably foreseeable. NRC Staff’s current SAMA evaluation relies on circular reasoning, asserting that because “no potentially cost-beneficial SAMAs were identified during the Turkey Point initial license renewal review, it is unlikely that FPL would have found any potentially cost-beneficial SAMAs

¹⁸⁴ GAO Report at 56.

¹⁸⁵ NRC Staff Answer at 70.

¹⁸⁶ GAO Report at 34-35.

¹⁸⁷ Miami Waterkeeper Motion at 77 (citing 2024 FSEIS at D-4).

for the SLR term.”¹⁸⁸ NRC Staff never factored in climate change projections to see if they altered the risk level, and therefore the cost-benefit analysis of particular mitigation measures.¹⁸⁹

If NRC Staff were to update the SAMA evaluation to reflect the risks identified in the GAO Report, it might very well “call into question the [FSEIS’s] overall conclusions regarding the probability-weighted consequences of potential severe accidents.”¹⁹⁰ As a previous Board explained, “the cost/risk equation that is the SAMA ‘bottom line’ is only accurate if the risk assessment is valid.”¹⁹¹ Petitioner raises “the possibility that the overall cost-benefit assessment was skewed or incomplete because of a failure to include—or at least acknowledge and discount—the higher event frequencies” from the GAO Report.¹⁹²

By FPL’s own admission, it elected to do site-specific supplemental EIS in accordance with CLI-22-03.¹⁹³ This means that FPL must conduct a site-specific SAMA analysis, and NRC Staff needs to evaluate the adequacy of this analysis.¹⁹⁴ FPL and NRC Staff both acknowledge that the pending NRC rulemaking, which would redefine SAMA as a Category 1, will not affect the proceeding.¹⁹⁵ NRC Staff is correct that it must “look[] to new and significant information in its update to the previous SAMA analysis.”¹⁹⁶ As explained at length in the Petition and above, the GAO report provides such new and significant information not considered in NRC Staff’s

¹⁸⁸ Miami Waterkeeper Motion at 71 (citing 2024 FSEIS at D-5).

¹⁸⁹ 2024 FSEIS at D-1–D-8.

¹⁹⁰ Miami Waterkeeper Motion at 77-78 (citing *In the Matter of Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), CLI-16-10, 83 NRC 494 (June 2, 2016)).

¹⁹¹ *McGuire*, 56 NRC 1, 8.

¹⁹² *Id.* at 10.

¹⁹³ FPL Answer at 6-7.

¹⁹⁴ *See id.*

¹⁹⁵ FPL Answer at 6-9; NRC Staff Answer at 82-86.

¹⁹⁶ NRC Staff Answer at 72-73.

SAMA evaluation. NRC Staff does not address Petitioner’s concerns, instead reiterating that it identified no new and significant information in its SAMA evaluation.¹⁹⁷

2. *Contention 3-B is within the scope of this proceeding*

Contrary to NRC Staff’s assertion, Petitioner’s challenge of the SAMA evaluation is subject to NEPA review and well within the scope of this proceeding, because severe accidents can have severe environmental impacts. As NRC Staff acknowledges, “[a] SAMA analysis is an alternatives analysis carried out under NEPA in order to determine if there are any procedures, training activities, or plant-design alternatives that could *significantly reduce environmental risks at a reactor site in the event of a severe accident.*”¹⁹⁸ Precedent shows that SAMA analysis is rightly the subject of NEPA review.¹⁹⁹

That SAMA analysis implicates safety concerns, in addition to environmental concerns, does not place it outside of the scope of NEPA review. NRC Staff specifically takes issue with Petitioner’s claim that “it is unclear whether the safety margins for nuclear power plants . . . are adequate to address the risks that climate change poses to plants.”²⁰⁰ Far from “cloaking current licensing basis safety concerns in an environmental cloth,” this framing simply acknowledges that safety and environmental issues are intertwined when it comes to severe accidents—for example, a flooding or hurricane-related nuclear release is a safety issue that would have severe impacts on the surrounding environment. Thus, FPL’s assertion that “SAMA analyses are environmental reviews; they have no safety purpose whatsoever” is incorrect—by identifying

¹⁹⁷ See NRC Staff Answer at 69.

¹⁹⁸ NRC Staff Answer at 73 (citing 5 “Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications,” NRC Regulatory Guide 4.2, Suppl. 1, Rev. 1, ADAMS Accession No. ML13067A354 (Jun. 2013) at 44–45) (emphasis added).

¹⁹⁹ *Limerick Ecology*, 869 F.2d 719 (3d Cir. 1989).

²⁰⁰ NRC Staff Answer at 74 (citing Miami Waterkeeper Motion at 76).

and adopting all cost-effective measures to prevent and mitigate severe accidents, SAMA both reduces environmental impact and protects safety.

NRC Staff also mischaracterizes Contention 3-B as a challenge to the adequacy of the underlying current licensing basis.²⁰¹ Contention 3-B, however, squarely challenges the adequacy of NRC Staff’s SAMA evaluation—not the current licensing basis. Although the GAO Report certainly contains information relevant to current plant safety, and NRC Staff should independently re-evaluate the safety of its current operations, Petitioner here is simply challenging the adequacy of the SAMA evaluation for the license renewal period. All of the aging issues studied for license renewal are also managed through the current licensing basis. Such management does not exempt these issues from study at the license renewal stage. For this same reason, NRC Staff’s assertion that it is not required to discuss climate change impacts on accident risk must be rejected.²⁰² Petitioner is raising an environmental contention challenging the adequacy of the SAMA analysis. The Commission does not have the power to limit the scope of such analyses, because the study is mandated by NEPA and not the AEA.²⁰³ If new information shows the need to update SAMA, then that information is within the scope of license renewal.²⁰⁴

²⁰¹ NRC Answer at 76. NRC Staff also mischaracterizes Contention 3-B as a contention of omission; however, Contention 3-B challenges the adequacy of the existing SAMA analysis. *See id.*; 2024 Petition at x.

²⁰² NRC Staff Answer at 75-76.

²⁰³ *Limerick Ecology*, 869 F.2d at 730-31, 741 (finding that “the NRC was required to address [SAMAs] and cannot now look to sufficiency under the AEA to avoid that obligation” because “simply meeting the requirements of the AEA does not exempt the Commission from complying with NEPA’s procedural requirements.”).

²⁰⁴ *Limerick Ecology*, 869 F.2d 719, 755 (3d Cir. 1989)

V. WAIVER

A. A Waiver is unnecessary.

Petitioner agrees with FPL that a waiver is not needed for the Board to consider Contention 3-B, as it challenges a site-specific SAMA evaluation in the 2024 FSEIS.²⁰⁵ Petitioner submitted the waiver out of an abundance of caution.²⁰⁶

All parties agree that FPL opted out of the generic review process and that NRC Staff is now bound to analyze “all environmental impacts in [sic] a site-specific basis.”²⁰⁷ Therefore, NRC Staff’s assertion that “a waiver of the Commission’s regulations is still required to challenge a SAMA when one has already previously been conducted” does not hold up.²⁰⁸ The reasoning in *Limerick* does not apply here,²⁰⁹ because FPL elected to do a site-specific analysis of all environmental impacts, rather than relying on generic, Category 1 findings. NRC Staff reasons that because FPL previously conducted a site-specific SAMA analysis, and the 2013 LR GEIS designates SAMA as a category 2 issue, “the 2019 FSEIS or the 2024 FSEIS were not affected by the Commission’s rulings in CLI-22-2 and CLI-22-3.”²¹⁰ FPL, having elected to proceed through a site specific review, understands that a generic finding does not apply here; NRC Staff cannot now hide behind a generic finding.

²⁰⁵ FPL Answer at 60.

²⁰⁶ Miami Waterkeeper’s Petition for Waiver of 10 C.F.R. §§ 51.53(C)(3) and 51.71(D) and 10 C.F.R. Part 51, Subpart A, Appendix B, ADAMS Accession No. ML24129A221 (May 8, 2024) (hereinafter “Miami Waterkeeper Waiver Petition”) at 5.

²⁰⁷ NRC Staff Answer at 79.

²⁰⁸ NRC Staff Answer at 80.

²⁰⁹ *In the Matter of Exelon Generation Co.* (Limerick Generating Station, Units 1 and 2), CLI-13-7, 78 NRC 199, 211-12 (2013).

²¹⁰ NRC Staff Answer at 80.

NRC Staff acknowledges in the 2024 FSEIS that it is required to update the SAMA evaluation where “new and significant information” comes to light.²¹¹ As explained in detail above, the GAO Report constitutes such new and significant information. Petitioner need only demonstrate that “[its] challenges to SAMA analyses *could* change the cost-benefit conclusions.”²¹² Petitioner has met this burden and does not need a waiver.

As discussed above, Petitioner is challenging the adequacy of NRC Staff’s SAMA evaluation, and not the current licensing basis, and therefore is not seeking a waiver for 10 C.F.R. § 54.30.²¹³

B. If the Board determines that a waiver is necessary, it should grant the waiver.

In the event that the Board interprets Contention 3-B as a rule challenge, the Board should grant the waiver because Petitioner meets all three *Millstone* waiver criteria.

1. Millstone Factor 1: Purpose for which the regulation was adopted

SAMA analysis is designed to evaluate the risk of beyond-design basis severe accidents and determine whether measures to reduce the risks of severe accidents that could release radiation are cost justified.²¹⁴ In the context of NEPA, SAMA is intended to determine when risk mitigation measures are justified to reduce the effects of severe accidents on the environment.²¹⁵ Here, Petitioner raises concerns that NRC Staff does not know whether there

²¹¹ 2024 FSEIS at D-4–D-7.

²¹² NRC Staff Answer at 67 (emphasis added) (citing *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315–17 (2010); *McGuire*, 56 NRC at 8, 11–12 (finding that the relevant inquiry to determine if a SAMA analysis meets the materiality contention admissibility requirement is whether the contention could change the cost-benefit analysis)).

²¹³ See NRC Staff Answer at 71.

²¹⁴ 2024 FSEIS at A-5.

²¹⁵ *In the Matter of Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), CLI-16-10, 83 NRC 494 (June 2, 2016).

are cost-effective mitigation measures that would further SAMA’s goal because FPL and NRC Staff failed to do adequate evaluation in light of climate change projections. As a previous Board explained, “the cost/risk equation that is the SAMA ‘bottom line’ is only accurate if the risk assessment is valid.”²¹⁶ The GAO Report makes it clear that climate change has and will increase the risk of certain external events such as hurricanes and flooding that may result in severe accidents. Therefore Petitioner raises “the possibility that the overall cost-benefit assessment was skewed or incomplete because of a failure to include—or at least acknowledge and discount—the higher event frequencies” from the GAO Report.²¹⁷ Interpreting Sections 51.53(c)(3) and 51.71(d) and Appendix B to prevent Petitioner from challenging the sufficiency of the SAMA evaluation would undermine SAMA’s goal of accurately determining whether additional mitigation measures are warranted and ensuring that the environment is adequately protected from severe accidents.

2. *Millstone Factors 2 and 3: Special circumstances unique to the plant*

NRC Staff suggests that because “[c]limate change is a global phenomenon,” there can be no special circumstances that justify a waiver in this case.²¹⁸ Neither NRC Staff nor FPL address the fact that the GAO Report identified Turkey Plant as one of most vulnerable plants in the country to flooding, storm surge, and hurricanes that could cause severe accidents. As explained in the Motion and the Petition Waiver, these factors are exacerbated by the plant’s unique CCS,

²¹⁶ *McGuire*, 56 NRC 1, 8.

²¹⁷ *Id.* at 10.

²¹⁸ NRC Staff Answer at 81.

which is located at sea level and sits on the shore of Biscayne Bay,²¹⁹ making it particularly vulnerable to these risks and the resultant environmental impacts.²²⁰

FPL claims that “Petitioner identifies no information in the GAO Report that is surprising or unexpected in the context of severe accident analysis,” or information that “NRC was unaware when it promulgated the rule.”²²¹ But Turkey Point's unique vulnerability to the effects of climate—as demonstrated in the recent analysis of Turkey Point-specific climate risks provided by the GAO Report—was not adequately considered in SAMA-related rulemakings or the current GEIS for subsequent license renewal proceedings. This issue therefore constitutes a new, site-specific issue with respect to Turkey Point.

FPL’s assurances that “Turkey Point’s ability to withstand flooding and strong hurricanes has been part of its design basis since the time of its construction, and the NRC certainly considered the risk of hurricanes in its GEIS analyses of postulated accidents” completely miss the point.²²² As Petitioner explains in its motion, the plant was sited and designed in the 1960s, before scientific consensus around anthropogenic climate change had emerged.²²³ The design certainly did not account for climate change worsening flooding, storm surge, hurricanes; nor do the 2013 GEIS or NRC Staff’s most recent SAMA evaluation, which rely on historic climate data.

²¹⁹ NUREG-1437 Supplement 5, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Regarding Turkey Points Units 3 and 4, Final Report, ADAMS Accession No. ML020280119 (Jan. 2002), at 2-1.

²²⁰ Miami Waterkeeper Waiver Petition at 7-8.

²²¹ FPL Answer at 62.

²²² *Id.* at 62-63.

²²³ Miami Waterkeeper Motion at 78-79.

3. Millstone Factor 4: Significant problem

Waiver is necessary to permit Petitioner to raise new information regarding reasonably foreseeable severe accidents caused by climate change—undoubtedly a significant problem. NRC Staff acknowledges that “[t]he fourth *Millstone* factor may also apply to a significant environmental issue.”²²⁴ FPL simply asserts that the GAO Report discusses “potential” impacts of climate, rather than conducting a full risk analysis. As discussed at length above, the potential—that is, reasonably foreseeable—impacts of climate change are precisely what NRC Staff must consider in its NEPA analysis.²²⁵ The GAO Report identifies a number of ways that climate change increases the likelihood of severe accidents at Turkey Point in a way that the existing SAMA analysis does not account for. That the GAO Report does not contain a formal risk analysis is no issue, since Petitioner is not required to conduct a full, independent SAMA analysis on FPL’s behalf in order to identify a significant problem.²²⁶

Petitioner explains at length why the existing SAMA analysis is deficient, and failure to re-evaluate these risks constitutes a “significant problem.”²²⁷ At worst, it could lead to a preventable severe accident, while at minimum it would undermine public confidence in the NRC as a regulator.

VI. CONCLUSION

Petitioner has demonstrated good cause and satisfied the admissibility criteria for each of its contentions, and we are entitled to a hearing on these contentions.

²²⁴ NRC Staff Answer at 78 (citing *Limerick*, CLI-13-07, 78 NRC at 209).

²²⁵ See discussion, *supra* Contention 3-B at (2.).

²²⁶ *See id.*

²²⁷ Miami Waterkeeper Motion at 69-77.

Respectfully submitted,

/Signed (electronically) by/ Cameron
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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:)	
)	
FLORIDA POWER & LIGHT COMPANY)	Docket No. 50-250-SLR-2
)	Docket No. 50-251-SLR-2
(Turkey Point Nuclear Generating Units 3 and 4))	
)	June 12, 2024
(Subsequent License Renewal Application))	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I certify that, on this date, the foregoing “*Miami Waterkeeper’s Reply in Support of Motion to Admit Amended and New Contentions*” was served upon the Electronic Information Exchange (“EIE,” the NRC’s E-Filing System), in the above-captioned docket, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.

/Signed (electronically) by/ Cameron
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ATTACHMENT A

	Salinity	TDS	chloride
	(PSU)	(mg/l)	(mg/l)
Standard seawater	35*	35,000	19,400
FDEP Consent Order (20 Jun 2016) and draft NPDES permit:			
hypersaline	(>34)*	(>34,000)	>19,000
saltwater interface	(10)	10,000	(5500)
CCS average (after 4 years)	<34	(<34,000)	(<~19,000)
Florida groundwater classification:			
Class G-III	(>10)	>10,000	(>5,500)
Class G-II	(<10)	<10,000	(<5,500)
Class G-I	(<3)	<3,000	(<1,700)
USGS: mapped saltwater interface (Prinos 2017)	(2)	(1800)	1000
FPL Attribution Study: saltwater interface	0.05	(50-1800)	1000
EPA Drinking Water Standard		500	250
* Values in Bold are quoted from the source document.			
* Values in parentheses are computed by dilution from standard seawater.			

Standard seawater	
FDEP Consent Order (20 Jun 2016) and draft NPDES permit:	
hypersaline	"hypersaline water/plume" as used in this Order...
saltwater interface	"saltwater interface" ("SWI") as used in this Order means the intersection of the G-II and G-III groundwaters"
CCS average (after 4 years)	
Florida groundwater classification:	https://edis.ifas.ufl.edu/fe601#:~:text=What%20are%20the%20state%20groundwater%20classifications%3F&text=Class%20G%2DII%20water%20is,10%2C000%20mg%2FL%20or%20greater.
Class G-III	
Class G-II	
Class G-I	
USGS: mapped saltwater interface (Prinos 2017)	The approximate saltwater interface is represented by the 1,000-mg/L isochlor at the base of the Biscayne aquifer.
FPL Attribution Study: saltwater interface	"salinity > 0.05 (1000 mg/L Cl)"
EPA Drinking Water Standard	https://www.epa.gov/sites/production/files/2018-03/documents/dwtable2018.pdf