

**UNITED STATES
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD**

-----X
In re: Docket Nos. 50-247-LR; 50-286-LR

License Renewal Application Submitted by ASLBP No. 07-858-03-LR-BD01

Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc. June 29, 2012
-----X

**STATE OF NEW YORK
REVISED STATEMENT OF POSITION
CONSOLIDATED CONTENTION NYS-12-C**

Office of the Attorney General
for the State of New York
The Capitol
State Street
Albany, New York 12224

TABLE OF CONTENTS

PRELIMINARY STATEMENT1

INTRODUCTION.....1

LEGAL FRAMEWORK.....3

A. Courts Must Ensure that Agencies Comply with NEPA to the Fullest Extent Possible.....3

B. As the Applicant, Entergy Bears the Burden of Proof for Each Contention in This Proceeding.....4

C. As the Federal Agency Charged with Determining Whether to Relicense Indian Point, NRC Bears the Ultimate Burden of Complying With NEPA.....5

D. Having Chosen the SAMA Analysis as the Methodology for Evaluating Environmental Impacts and Mitigation Measure Alternatives Associated With Severe Accidents, NRC Has the Burden of Ensuring that the SAMA Analysis Complies With NEPA6

E. While NEPA Does Not Require Analysis of a “Worst-Case Scenario,” It Requires NRC Staff to Take a “Hard Look” at Environmental Impacts.....6

ARGUMENT

POINT I

BY RELYING ON SAMPLE PROBLEM A NRC STAFF FAILED TO MEET ITS BURDEN UNDER NEPA7

A. NUREG-1150’s “Pedigree” Does Not Justify the Use of Sample Problem A9

1. Sample Problem A’s Decontamination Cost Values Are Based Upon a Document That Does Not Appear to Have Been Published, Let Alone Subject to Peer Review10

2. Sample Problem A’s Decontamination Time Values Are Based Upon a Document That Contains Completely Unrealistic Assumptions and Is Inconsistent With NUREG-115011

- 3. **It Was Unreasonable to Rely Upon Sample Problem A Because NUREG-1150 Itself Supports Developing Site-Specific Cost Estimates12**
- B. **NRC Staff Failed to Meet Its Burden of Showing that Entergy’s Use of Sample Problem A Was Reasonable.....13**

POINT II

- IT WAS UNREASONABLE TO RELY UPON SAMPLE PROBLEM A BECAUSE NRC HAS CONDUCTED A SITE-SPECIFIC ANALYSIS AT INDIAN POINT14**

POINT III

- IT WAS UNREASONABLE TO RELY UPON SAMPLE PROBLEM A VALUES WITHOUT COMPARING THEM TO MORE RECENT DATA16**

POINT IV

- THE STATE HAS EASILY MET ITS PRIMA FACIE EVIDENTIARY BURDEN IN THIS PROCEEDING THROUGH ITS PRE-FILED EXPERT TESTIMONY AND EXHIBITS, AND THE BOARD SHOULD RESIST ANY ATTEMPT BY NRC STAFF TO DELEGATE ITS NEPA OBLIGATIONS.....18**

- A. **The ISR Report Is Not, and Should Not Be an Independent SAMA Analysis, Nor Is It a Substitute for a Proper SAMA Analysis That Satisfies NEPA19**
- B. **ISR’s Analysis Is Not Based on a Worst-Case Scenario.....20**
- C. **Many of the Points Raised by NRC Staff and Entergy Are of No Consequence22**
- D. **Entergy and NRC Staff’s Technical Arguments Regarding Decontamination Time Do Not Affect the Ultimate Conclusion That the SAMA Analysis Unreasonably Underestimates the Costs Associated With a Severe Accident at Indian Point24**
- E. **Entergy and NRC Staff’s Technical Arguments Regarding Decontamination Costs Do Not Affect the Ultimate Conclusion That the SAMA Analysis Unreasonably Underestimates the Costs Associated With a Severe Accident at Indian Point25**

POINT V

**THE BOARD SHOULD REJECT ENTERGY’S ATTEMPT TO
RELITIGATE ITS UNSUCCESSFUL MOTION IN LIMINE27**

A. The Board Should Not Reverse Its Ruling Based on *Seabrook*28

B. The Board Should Not Reverse Its Ruling Based on *Pilgrim*30

POINT VI

NRC SHOULD BE REQUIRED TO SUPPLEMENT THE FEIS.....31

CONCLUSION31

PRELIMINARY STATEMENT

In accordance with 10 C.F.R. Section 2.1207(a)(2) and the Board’s July 1, 2010 and April 18, 2012 Orders, the State of New York (“the State” or “New York”) submits this Revised Statement of Position on the State’s admitted consolidated contentions 12, 12A, 12B, and 12C (collectively “Consolidated Contention 12C”). This Revised Statement of Position is supported by the June 29, 2012 Pre-Filed Rebuttal Testimony of Dr. François Lemay, of International Safety Research (“ISR”), (NYS000420) (“Lemay Rebuttal Test.”), and exhibits thereto; as well as the December 21, 2011 ISR Expert Report (NYS000242) (“ISR Report”), the December 21, 2011 Pre-Filed Testimony of François J. Lemay (NYS000241) (“Lemay Test.”), and exhibits thereto.

INTRODUCTION

Entergy and Nuclear Regulatory Commission (“NRC”) Staff have ignored their obligation to conduct a site-specific Severe Accident Mitigation Alternative (“SAMA”) analysis in violation of the National Environmental Policy Act (“NEPA”). They admit they did not develop a site-specific estimate for the costs associated with a severe accident at Indian Point. Instead, despite compelling evidence that site-specific inputs would yield up to a seven-fold increase in the costs of a severe accident, Entergy and NRC Staff chose to use decades-old information in “Sample Problem A,” developed for the Surry reactor in rural Virginia in the SAMA analysis for Indian Point—which is surrounded by the most densely-populated area of any U.S. nuclear power plant and sits approximately 38 miles from the financial center of the United States. Entergy’s and NRC Staff’s use of Sample Problem A to estimate the costs associated with a severe accident at Indian Point is unsound, unreasonable, and deprives millions of New Yorkers and others living around Indian Point of the potential benefits of mitigation

measures that could protect them in the event of a severe accident. This is a NEPA violation with substantive impacts, and one that the Atomic Safety and Licensing Board (“Board”) should not countenance.

Neither NRC Staff nor Entergy have explained why it was reasonable under NEPA to rely upon Sample Problem A in lieu of site-specific inputs. They argue that the “pedigree” of Sample Problem A supports its continued use because its values were sourced from NUREG-1150, *Severe Accident Risks: An Assessment for Five US Nuclear Power Plants* (June 1989) (NYS00252A - NYS00252D). But the decontamination cost estimates in Sample Problem A are based upon a reference that was never published, let alone peer-reviewed. Similarly, the Sample Problem A decontamination time values fare no better; the ultimate source of those values makes assumptions that, if applied here, would support the 90-day decontamination scenario set forth in Sample Problem A *only* if 1.5 million people were deployed to clean up following a severe accident. Lemay Rebuttal Test. at 22.

In addition to relying upon unsupported data, NRC failed to disclose—in the Final Supplemental Environmental Impact Statement (“FSEIS”) or in disclosures for this relicensing proceeding—a site-specific case study of the consequences of a severe accident at Indian Point that it conducted in the 1980s. Thus, while NRC has claimed that there is no reasonable way to conduct a site-specific severe accident analysis at Indian Point, NRC itself had actually done such an analysis and buried it in a finalized, but never published, NUREG.

Rather than defending their own lack of site-specific data inputs, NRC Staff and Entergy attempt to find fault with the State’s evidence. The State shows, however, ISR’s conclusion that the costs associated with a severe accident at Indian Point were significantly underestimated is not countered by Entergy’s or NRC Staff’s claims.

For these reasons, and the reasons set forth in the State’s previous submissions for this contention, the relicensing application should be denied. As required by NEPA, NRC Staff should be directed to conduct a reasonable site-specific SAMA analysis using up-to-date, accurate data, and to include an explanation of that analysis in a further supplement to the FSEIS subject to public review and comment.

LEGAL FRAMEWORK

The State’s Initial Statement of Position (NYS000240 at 9-12) contains a detailed discussion of the legal framework applicable to NYS-12C. The following discussion responds to Entergy and NRC Staff’s presentation of the applicable legal framework in Entergy’s Statement of Position Regarding Consolidated Contention NYS-12C (Severe Accident Mitigation Alternatives Analysis) (ENT000449) (“Entergy SOP”) and NRC Staff’s Initial Statement of Position on Consolidated Contention NYS-12C (NRC000039) (“Staff SOP”).

A. Courts Must Ensure that Agencies Comply with NEPA to the Fullest Extent Possible

Courts evaluate compliance with NEPA under a “rule of reason,” and “implicit in this rule of reason is the overriding statutory duty of compliance with impact statement procedures ‘to the fullest extent possible.’” *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973) (citation omitted). While NRC Staff (Staff SOP at 4) is correct that a NEPA review “does not mean that the courts are to ‘fly speck’ environmental impact statements. . . . But the courts can, and should, require full, fair, bona fide compliance with NEPA.” *Lathan v. Brinegar*, 506 F.2d 677, 693 (9th Cir. 1974) (affirming district court’s ruling that an EIS did not satisfy the requirements of NEPA). *See also Dubois v. U.S. Dep’t of Agriculture*, 102 F.3d 1273, 1287-88 (1st Cir. 1996) (holding that the agency could not claim its

“failure to consider an alternative . . . was a de minimis or ‘fly speck’ issue” where “[t]he record indicates [the project entails] serious adverse consequences”). Courts have cautioned that NEPA review “must not [be] reduce[d] . . . to a ‘rubber-stamp’ of agency action.” *See North Carolina Wildlife Federation v. North Carolina Dept. of Transp.*, 677 F.3d 596, 601 (4th Cir. 2012) (citing *Fed. Mar. Comm’n v. Seatrain Lines, Inc.*, 411 U.S. 726, 745–46 (1973)). “[G]rudging, pro forma compliance [with NEPA] will not do.” *Lathan v. Brinegar*, 506 F.2d 677, 693 (9th Cir.1974) (en banc).

B. As the Applicant, Entergy Bears the Burden of Proof for Each Contention in This Proceeding

In their Statements of Position, Entergy (Entergy SOP at 24-25) and NRC Staff (Staff SOP at 4-5) cite inapposite decisions discussing intervenors’ burden at the contention admissibility stage. Here, there is no question that New York, an intervenor party, has satisfied the standards contained in 10 C.F.R. § 2.309 governing contention admissibility. *See* NYS, Initial Statement of Position, NYS-12C (NYS000240) at 4-9 (“NYS SOP”). At this point in the proceeding, as is to be expected, the State is presenting additional supporting evidence on the merits of its contentions. The burden of proof, however, ultimately rests with Entergy, as the applicant, who must prove to the Board that it should reject the State’s contentions. *See In Matter of Louisiana Power and Light Co.*, 17 N.R.C. 1076, 1093 (1983) (Where a party has introduced a contention, “that party has the burden of going forward with evidence to buttress that contention. Once he has introduced sufficient evidence to establish a prima facie case, the burden then shifts to the applicant who, as part of his overall burden of proof, must provide a sufficient rebuttal to satisfy the Board that it should reject the contention as a basis for denial of the permit or license.”) (quoting *Consumers Power Co. (Midland Plant, Units 1 and 2)*, 6 A.E.C.

331, 345 (1973)).

C. **As the Federal Agency Charged With Determining Whether to Relicense Indian Point, NRC Bears the Ultimate Burden of Complying with NEPA**

Entergy and NRC Staff's discussions of burdens also lose sight of which party is responsible for NEPA compliance. NRC Staff bears the burden of complying with NEPA, which "insures the integrity of the agency process by forcing it to face those stubborn, difficult-to-answer objections without ignoring them or sweeping them under the rug" and serves as an "environmental full disclosure law so that the public can weigh a project's benefits against its environmental costs." *Sierra Club v. U.S. Army Corps of Eng'rs*, 772 F.2d 1043, 1049 (2d Cir. 1985) (citing *Silva v. Lynn*, 482 F.2d 1282, 1285 (1st Cir. 1973)).

NRC Staff cannot delegate this responsibility to Entergy or any other party. *See, e.g., In the Matter of Progress Energy Florida, Inc.*, (Combined License Application, Levy County Nuclear Power Plant, Units 1 and 2), Nuclear Reg. Rep. P 31605, 2010 WL 87737 (N.R.C.), *5 (2010) (Commission recognizes that "the ultimate burden with respect to NEPA lies with the NRC Staff"); *In the Matter of Duke Power Co., et al* (Catawba Nuclear Station, Units 1 and 2), 17 N.R.C. 1041, 1049 (1983) (as the proponent of the agency action at issue, an applicant generally has the burden of proof in a licensing proceeding, *see* 10 C.F.R. § 2.325, but when NEPA contentions are involved, the burden shifts to the Staff, because the NRC, not an applicant, has the burden of complying with NEPA); 10 C.F.R. § 51.70(b) (NRC Staff must "independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement").

D. Having Chosen the SAMA Analysis as the Methodology for Evaluating Environmental Impacts and Mitigation Measure Alternatives Associated With Severe Accidents, NRC Has the Burden of Ensuring that the SAMA Analysis Complies With NEPA

Entergy's (Entergy SOP at 23-25) and NRC Staff's (Staff SOP at 4-5) statements regarding the legal standard for challenging an agency's methodology under NEPA are irrelevant because the State is not challenging the NRC's methodology here. NYS-12C does not challenge NRC's decision to allow Entergy to evaluate mitigation measures for severe accidents using a SAMA cost-benefit analysis, 10 C.F.R. § 51.53(c)(3)(ii)(L), or the use of the MACCS2 code to perform the SAMA analysis. Instead, New York contends that Entergy and NRC Staff underestimated the cleanup costs of severe accidents by relying on Sample Problem A, rather than values that are specific to Indian Point and its developed setting. NRC's choice of methodology must meet NEPA standards and ensure that the SAMA analysis is reasonably based on accurate severe accident cost estimates.

E. While NEPA Does Not Require Analysis of a "Worst-Case Scenario," It Requires NRC Staff to Take a "Hard Look" at Environmental Impacts

While NEPA does not require analysis of a so-called "worst-case scenario" (Entergy SOP at 21), NEPA's "hard look" requirement obligates the agency to evaluate "reasonable foreseeable significant adverse impacts on the human environment." *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016, 1033 (9th Cir. 2006). Such impacts "include[] impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." 40 C.F.R. § 1502.22(b)(4); *cf. New York v. NRC*, 2012 WL 2053581, 9 (D.C. Cir. 2012) ("Only if the harm in question is so 'remote and speculative' as to reduce the effective probability of its occurrence to zero may the agency

dispense with the consequences portion of the [NEPA] analysis.”).

This Board has recognized the importance of the “hard look” requirement: “[t]he FSEIS must demonstrate that the NRC [S]taff has received sufficient information to take a hard look at SAMA candidates as required by 10 C.F.R. § 51.53(c)(3)(ii)(L), has in fact taken that hard look, and has adequately explained its conclusions” July 14, 2011 Board Order at 14. A “conclusory statement ‘unsupported by empirical or experimental data, scientific authorities, or explanatory information of any kind’” is not reasonable under NEPA. *Silva*, 482 F.2d at 1285 (1st Cir. 1973) (citing *Natural Res. Def. Council, Inc. v. Grant*, 355 F. Supp. 280, 287 (E.D.N.C. 1973)).

ARGUMENT

The central issue raised by this contention is whether it was reasonable for Entergy and NRC Staff to rely upon Sample Problem A inputs instead of developing site-specific inputs for Indian Point. It was not. Because the FSEIS accepts a SAMA analysis that significantly and unreasonably underestimates the costs of a severe accident at Indian Point, and thus underestimates the benefit of each SAMA, NRC Staff has not satisfied its NEPA obligations and Entergy has not met its burden of proof on NYS-12C.

POINT I

BY RELYING ON SAMPLE PROBLEM A NRC STAFF FAILED TO MEET ITS BURDEN UNDER NEPA

Because “the potential consequences [of a severe accident] will largely be the product of the location of the plant,” the SAMA analysis Entergy performed to satisfy NRC Staff’s environmental obligations under NEPA must be site-specific. *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 738 (3d Cir. 1989); 10 C.F.R. § 51.53(c)(3)(ii)(L). Entergy and NRC Staff

admit that they took most of their MACCS2 inputs from Sample Problem A, rather than developing site-specific and timely data for Indian Point.¹ Entergy SOP at 29; Entergy Test. at A76; NRC Test. at A61. They also acknowledge that Sample Problem A was developed for Surry (Entergy Test. at A77), a site surrounded by farmland in rural Virginia (ISR Report at 7; Lemay Test. at 21-22).

As shown below, Entergy and NRC Staff have failed to defend their use of Sample Problem A in light of the State's evidence against its continued validity and reasonableness. NRC Staff sidestepped its obligation to take a "hard look" at the impacts of a severe accident at Indian Point by failing to ensure that the economic assumptions Entergy made in estimating the costs of a severe accident using Sample Problem A were reasonable. *See In the Matter of Private Fuel Storage, L.L.C.*, CLI-04-22, 60 N.R.C. 125, 125 (2004) ("The use of misleading economic assumptions in an EIS could thwart NEPA[.]").

Given the fact that a severe accident at Indian Point would likely implicate an extraordinary array of public resources,² basing the SAMA analysis on unreasonable economic assumptions does not foster reasonable consideration of mitigation measures under NEPA. *C.f. Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989) ("An adverse effect that can be fully remedied by, for example, an inconsequential public expenditure is certainly not as

¹Contrary to Entergy's implication (Entergy SOP at 2, Entergy Test. at A78), the State does not allege that the Sample Problem A values are or should be default values. Indeed, the State alleges exactly the contrary: that Entergy and other applicants are essentially using Sample Problem A values as default values in a way that they were never intended to be used. *Id.* The State maintains that Sample Problem A values are example values provided in the MACCS2 User Guide so that a user can test whether the MACCS2 code is running properly. NYS SOP at 17-19.

² In the event of an actual severe accident, the federal government must indemnify the nuclear industry for the vast majority of clean up costs. Price Anderson Act, 42 U.S.C. § 2210 (2006).

serious as a similar effect that can only be modestly ameliorated through the commitment of vast public and private resources.”). In the face of the unprecedented evidence supplied by the State that developing site-specific MACCS2 inputs is technically feasible, scientifically defensible, and results in much higher costs for a severe accident at Indian Point than Entergy estimated, it is clear that Entergy’s and NRC Staff’s continuing reliance on Sample Problem A lacks a rational basis and is unreasonable.

A. NUREG-1150’s “Pedigree” Does Not Justify the Use of Sample Problem A

Entergy argues that using Sample Problem A was reasonable because its values are taken from NUREG-1150 and, thus, have “have a long-established and appropriate technical basis, are widely accepted within the PRA community, and continue to be used today in PRAs and SAMA analyses.” Entergy’s Statement of Position Regarding Consolidated Contention NYS-12C (Severe Accident Mitigation Alternatives Analysis) (Mar. 30, 2012) (ENT000449) (“Entergy SOP”) at 29. *See also* Entergy SOP at 5; Testimony of Entergy Experts Lori Potts, Kevin O’Kula, and Grant Teagarden on NYS-12C (ENT000450) (“Entergy Test.”) at A26, A35, A72, A76, A78, A160. The testimony submitted by NRC Staff makes a similar claim. *See* Testimony of NRC Staff Experts Nathan Bixler, S. Tina Gosh, Joseph A. Jones, and Donald Harrison Concerning NYS 12/16 (NRC000041) (“Staff Test.”) at A39 (“NUREG-1150 . . . was subjected to an extensive peer review and public comment.”). This argument utterly fails because the ultimate source of NUREG-1150’s cost values does not exist; therefore, the assumptions upon which its time values are based lack a rational basis. Indeed, Entergy and NRC Staff’s claim regarding NUREG-1150 amounts to a “conclusory statement ‘unsupported by empirical or experimental data, scientific authorities, or explanatory information of any kind[,]’” which constitutes a violation of NEPA. *Silva*, 482 F.2d at 1285 (citing *Natural Res. Def. Council, Inc.*,

355 F. Supp. at 287).

1. Sample Problem A's Decontamination Cost Values Are Based Upon a Document That Does Not Appear to Have Been Published, Let Alone Subject to Peer Review

NUREG-1150 contains a gaping hole—the source of the economic cost parameters in NUREG 1150, and thus Sample Problem A, simply does not exist. Neither NUREG-1150 itself nor its companion, NUREG/CR-4551 (NRC000057), explain how the Sample Problem A costs were obtained. NUREG/CR-4551 cites NUREG/CR-3673 (NRC00058), as a reference for the Sample Problem A decontamination cost values, but NUREG/CR-3673 states only that:

The cost estimates used in this study for various levels of decontamination effort in an area are taken from a detailed review of decontamination effectiveness and costs performed at Sandia National Laboratories (SNL) [Os84].

NRC00058 at 4-15. “[Os84]” is listed as “Ostmeyer, R.M., and G.E. Runkle, An Assessment of Decontamination Costs and Effectiveness for Accident Radiological Releases. Albuquerque, N.M.: Sandia National Laboratories, *to be published*,” in NUREG/CR-3673’s references section. NRC00058 at 8-8 (emphasis added).

NRC Staff has not produced [Os84], and in fact has admitted that it does not exist, at least in any available form. *See* Email from Brian Harris, Esq. to Kathryn Liberatore, Esq. (April 25, 2012) (“[T]he Staff’s experts from Sandia and the Staff searched for but were not able to locate the requested article (Ostmeyer, R.M. and G.E. Runkle, An Assessment of Decontamination Costs and Effectiveness for Accident Radiological Releases, Sandia National Laboratories to be published”), attached hereto as Exh. NYS000421. Thus, [Os84] appears to have never been published, let alone peer-reviewed. Ironically, Entergy faulted the State for “not acknowledg[ing] the source and pedigree of the inputs used by Entergy,” Entergy Test. at A76, when the State’s research reveals that neither Entergy nor NRC Staff had investigated the lineage

of NUREG-1150.

Entergy's and NRC Staff's reliance upon undocumented and unsupported decontamination costs from Sample Problem A violates NEPA and undermines its fundamental goal of ensuring that environmental values are fully considered in the agency's decision-making process. *See Balt. Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 97 (1983); *San Luis Obispo Mothers for Peace*, 449 F.3d at 1020. The complete absence of support for those costs in Sample Problem A also made it impossible for the FSEIS to set forth sufficient information which would allow the general public to make an informed evaluation of the environmental consequences of an action. *Sierra Club v. United States Army Corps of Engineers*, 701 F.2d 1011, 1029 (2d Cir.1983). *See also Town of Huntington v. Marsh*, 859 F.2d 1134, 1143 (2d Cir. 1988) (agency violated NEPA because, among other things, evaluating the merits of proposed project "was made difficult or impossible by the lack of sufficient data in the EIS submitted").

2. Sample Problem A's Decontamination Time Values Are Based Upon a Document That Contains Completely Unrealistic Assumptions and Is Inconsistent With NUREG-1150

As NRC Staff notes, NUREG-1150 itself does not provide analysis to support the Sample Problem A decontamination time (i.e., TIMDEC) inputs. NRC Staff Test. at A61. NUREG-1150 directs a "reader seeking extensive discussion of the methods used" to NUREG/CR-4551 (NRC000057). NYS00252A at 2-20. But NUREG/CR-4551 also fails to provide a detailed explanation for decontamination times, therefore, NRC Staff appears to rely upon NUREG/CR-3673, "Economic Risks of Nuclear Power Reactor Accident" (NRC000058) for support. NRC Staff Test. at A81. NUREG/CR-3673 does not provide the necessary support.

NUREG/CR-3673 describes a timeline and explains its assumptions for the duration of

decontamination, however, it is based upon unreasonable assumptions and is inconsistent with NUREG-1150. Lemay Rebuttal Test. at 21-23. ISR has determined that applying the assumptions used for the cleanup scenario in NUREG/CR-3673 to Indian Point would require deployment of 1.5 million workers for 90 days, which is entirely unreasonable. Lemay Rebuttal Test. at 22; *see also* NYS000431. Even extending the cleanup to one year would require 363,000 workers, which is also unreasonable. *Id.* Moreover, internal inconsistencies in the timelines for decontamination in these documents render them unreliable. Lemay Rebuttal Test. at 21-23 (explaining how in NUREG/CR-3673's timeline, decontamination begins 30 days after the severe accident while NUREG-1150's timeline starts only seven days after the accident).

3. It Was Unreasonable to Rely Upon Sample Problem A Because NUREG-1150 Itself Supports Developing Site-Specific Cost Estimates

Although Entergy argues that NUREG-1150 supports its use of Sample Problem A, the comments received on a draft of NUREG-1150 suggest that its authors expected that site-specific estimates of decontamination costs would be developed. NUREG-1150d states:

[PUBLIC] COMMENT: The models used in calculating the cost of a severe accident lack many factors that should be taken into account. Many of the assumptions are questionable and unfounded. The models have not been benchmarked. Some interpretations and conclusions that were made in draft NUREG-1150 are questionable. The cost estimates need to be more thoroughly documented to understand and evaluate the calculations.

[NRC] RESPONSE: The present version of NUREG-1150 provides a limited set of risk-reduction calculations, principally related to the potential benefits of accident management strategies in reducing core damage frequency. *It does not assess the cost of these or other improvements. Such analyses are more properly considered in the context of specific regulatory action.*

* * *

[PUBLIC] COMMENT: Decontamination costs used in the calculations may be based on decontamination of test sites in deserts instead of agricultural, residential, and commercial property.

[NRC] RESPONSE: The draft NUREG-1150 cost/benefit analyses reflected the conventional NRC methods for assessing costs and benefits. *Because cost/benefit analyses are more properly considered in the context of specific regulatory activities, they are not provided in this version of NUREG-1150.*

NUREG-1150 (NYS00252D) at D-31 to D-32 (emphasis added). These comments support the State's point: reliance on Sample Problem A instead of developing site-specific inputs for this relicensing proceeding is patently unreasonable.

B. NRC Staff Failed to Meet Its Burden of Showing that Entergy's Use of Sample Problem A Was Reasonable

Even though NRC Staff's "responsibility is not simply to sit back, like an umpire, and resolve adversary contentions at the hearing stage," *Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n*, 449 F.2d 1109, 1119 (D.C. Cir. 1971), NRC Staff's SOP fails to even explain why it was reasonable to rely upon Sample Problem A. NRC Staff's SOP contains a section entitled "The Costs Utilized By Entergy and Reflected in the FSEIS Are Reasonable and Site Specific," but nothing in that section explains why reliance on Sample Problem A is reasonable and how those inputs are site-specific for Indian Point. Staff SOP at 10.

Additionally, NRC Staff's finding that Entergy's SAMA analysis was "consistent" with that of other plants (FESIS at G-24; Entergy SOP at 20), illustrates the basic flaw in their NEPA review. While the State has not developed any opinion about the appropriateness of using Sample Problem A for other plants, it is unreasonable to use it for Indian Point, which is located in the most densely populated area of any American nuclear reactor site. *See Nw. Ecosystem Alliance v. Rey*, 380 F. Supp. 2d 1175, 1196 (W.D. Wash. 2005) (the fact that older data had been used for a previous NEPA analysis is not a justification for its continued use where more recent data dictated a different result) (citing *Friends of the Clearwater v. Dombeck*, 222 F.3d 552, 557 (9th Cir. 2000) ("The agency must be alert to new information that may alter the results

of its original environmental analysis”)). Therefore, Entergy’s use of Sample Problem A is unreasonable, regardless of whether it is consistent with what other plants have done.

POINT II

IT WAS UNREASONABLE TO RELY UPON SAMPLE PROBLEM A BECAUSE NRC HAS CONDUCTED A SITE-SPECIFIC ANALYSIS AT INDIAN POINT

Entergy argues that it was reasonable to use Sample Problem A because NUREG-1150 is the only source of data “readily available to licensees to use in a SAMA analysis to satisfy the purposes of NEPA.” Entergy Test. at A72. But, in the 1980s, NRC commissioned a site-specific case study to estimate the costs associated with a severe accident at Indian Point that it failed to disclose in the FSEIS or this proceeding. The NRC’s site-specific analysis is described in Chapter 5 of “NUREG/CR-5148 Property-Related Costs of Decontamination,” dated February 1990. NYS000424. Donald P. Cleary, a former NRC Staff member and witness for Entergy on other contentions, is on the distribution list for this report. *See* NYS0424BB at p. 4.

According to this 1990 document, the results of the Indian Point-specific study were produced and circulated in final draft form, but never published. The State’s experts discovered it during their review of NUREG-1150, which cites “NUREG/CR-3413 Off-Site Consequences of Radiological Accidents: Methods, Costs and Schedules for Decontamination” (NYS000425). NUREG/CR-3414 describes a database and computer program called DECON developed by an NRC contractor to conduct a decontamination analysis of a large, radiologically contaminated area.³ Lemay Rebuttal Test. at 26, 28. An email exchange between Dr. Tawil, one of the authors

³ DECON was designed to be used with CRAC2, a predecessor to the MACCS2 code, and appears to be similar to CONDO, which was one of the methodologies that ISR previously described as one of several bases that could be used to calculate site-specific costs (NYS000250) and was also one of the methodologies that Entergy and NRC Staff criticized ISR for using. Lemay Rebuttal Test. at 26, 28.

of NUREG/CR-3413, and ISR reveals that NRC Staff was concerned about the results of a site-specific study at Indian Point. Dr. Tawil wrote:

I think the primary difficulty was that my last project for the NRC was to characterize the off-site consequences of reactor accidents . . . for three reactor sites, one of which was Indian Point *I think the NRC was a little shocked at the magnitude of the off-site consequences of an SST-5 at Indian Point and decided not to publish the report.*

NYS000426. The State's library located a copy of the site-specific study that Dr. Tawil was referencing: NUREG/CR-5148.

The results of the study disclose that NRC has actually conducted a site-specific analysis of the decontamination costs associated with a severe accident at Indian Point, without using NUREG-1150 values, and, therefore, without relying upon Sample Problem A. Thus, a site-specific analysis was not only required under NEPA and NRC's regulations, but eminently possible and had been completed in conjunction with NUREG/CR-5148. *See Limerick Ecology Action, Inc.*, 869 F.2d at 729-31 (holding that NEPA requires NRC to examine, on a site-specific basis, the environmental effects of significant accidents at nuclear power plants). Indeed, NUREG/CR-5148 actually supports the approach ISR discussed in its expert report. For example, in urban areas, unlike the rural Virginia area used to create Sample Problem A, the cost of decontaminating the contents of a building can exceed the cost of decontaminating land and structures. NYS00424G, Figure 4.3, at 4.26 - 4.28. Additionally, decontaminating building contents is labor intensive and labor costs constitute a large portion of the cost of decontamination. NYS00424B - NYS00424E, Section 2.4, at 2.8 - 2.71.

Unfortunately, NRC Staff decided not to "face those stubborn, difficult-to-answer" issues of estimating the costs of a severe accident at Indian Point and decided instead to "ignore[e] them or sweep[] them under the rug," in violation of NEPA. *Sierra Club v. United States Army*

Corps of Eng'rs, 772 F.2d 1043, 1049 (2d Cir. 1985) (citation omitted). Moreover, NRC Staff's failure to disclose its own site-specific study of the consequences of a severe accident at Indian Point violates not only NEPA, but also its disclosure obligations in this proceeding. The FSEIS did not reference this document, let alone provide an explanation why the NRC Staff chose not to use it, thus preventing decision makers and the public from considering it. *See Found. on Econ. Trends v. Heckler*, 756 F.2d 143, 147 (D.C. Cir.1985) ("NEPA's dual mission is thus to generate federal attention to environmental concerns and to reveal that federal consideration for public scrutiny").

POINT III

IT WAS UNREASONABLE TO RELY UPON SAMPLE PROBLEM A VALUES WITHOUT COMPARING THEM TO MORE RECENT DATA

An EIS must also contain "high quality" information and "accurate scientific analysis." 40 C.F.R. § 1500.1(b). *See also Lands Council v. Powell*, 395 F.3d 1019, 1031-32 (9th Cir. 2005); *Conservation Northwest v. Rey*, 674 F. Supp. 2d 1232, 1249 (W.D. Wash. 2009) (citing *Ctr. for Biological Diversity v. U.S. Forest Svc.*, 349 F.3d 1157, 1167 (9th Cir. 2003)). But neither Entergy nor NRC Staff performed any bounding or benchmarking to determine whether relying upon Sample Problem A was scientifically reasonable. As Dr. Lemay explains, "benchmarking consists of establishing points of reference by comparing one's current practices with what others in the field are doing." Lemay Rebuttal Test. at 7. "In the nuclear industry, benchmarking is an essential exercise because it provides for an important exchange of information amongst experts in the field, leading to the use of the best data and methodologies." *Id.*

Neither Entergy nor NRC Staff explain why they did not perform a benchmarking

analysis for the Level 3 probabilistic risk assessments (“PRA”)—the final level of the SAMA analysis where the MACCS2 code is used to calculate the costs associated with a severe accident.⁴ Lemay Rebuttal Test. at 8-10. This is especially troublesome, considering Entergy conducted extensive “peer reviews and benchmarking to verify the reasonableness and robustness of the Level 1 and Level 2 PRA.” *Id.* The Level 3 PRA analysis is further complicated by NRC Staff’s incorrect, conclusory claim that “existing margin in the SAMA analysis account for uncertainties.” Staff Test. at A6b.

As explained by Dr. Lemay, it is unreasonable for Entergy and NRC Staff to “expend[] considerable effort to verify the source term and core damage frequency used in accident assessment—Level 1 and Level 2,” only to rely upon generic Sample Problem A values in Level 3 without any verification or benchmarking. Lemay Rebuttal Test. at 9. As Dr. Lemay explains, “Entergy’s SAMA analysis is not defensible” because “[w]ithout this benchmarking, Entergy and NRC have not quantified the reasonableness and the uncertainty of the key parameters they used to calculate the OECR [(offsite economic cost risk)].” *Id.* at 10. In failing to determine whether the Sample Problem A values were reasonable, NRC Staff violated NEPA.

⁴ See Lemay Rebuttal Test. at 8-9 (“The PRA for a commercial power reactor has traditionally been divided into three levels: Level 1 is the evaluation of the combinations of plant failures that can lead to core damage; Level 2 is the evaluation of core damage progression and possible containment failure resulting in an environmental release for each core-damage sequence identified in Level 1; and Level 3 is the evaluation of the consequences that would result from the set of environmental releases identified in Level 2. All three levels of the PRA are required to perform a SAMA analysis, and the MACCS2 code is used to perform the consequence analysis in the Level 3 portion of the PRA.”)

POINT IV

THE STATE HAS EASILY MET ITS PRIMA FACIE EVIDENTIARY BURDEN IN THIS PROCEEDING THROUGH ITS PRE-FILED EXPERT TESTIMONY AND EXHIBITS, AND THE BOARD SHOULD RESIST ANY ATTEMPT BY NRC STAFF TO DELEGATE ITS NEPA OBLIGATIONS

In support of NYS-12C, the State submitted unprecedented and extensive technical justification for its conclusions that developing site-specific MACCS2 inputs is not only possible, but also the only reasonable way of estimating the costs associated with an accident at Indian Point. Entergy and NRC Staff focus their submissions to the Board on criticizing ISR's analysis and conclusions rather than proving that the use of Sample Problem A was reasonable. But it is NRC Staff—not intervenors—who bears the burden of performing a reasonable SAMA analysis under NEPA.

The ISR Report and Testimony was never intended to be, nor did it need to be, an independent SAMA analysis. Instead, the ISR Report shows that Entergy and NRC Staff's analyses are unreasonable because developing site-specific MACCS2 inputs is technically feasible, scientifically defensible, and ultimately results in much higher costs for a severe accident at Indian Point. Lemay Rebuttal Test. at 5.

In any event, Entergy's and NRC Staff's criticism of the ISR Report is largely irrelevant. ISR's ultimate conclusion does not change—Entergy and NRC Staff significantly underestimated the costs of a severe accident at Indian Point by as much as seven times. Lemay Rebuttal Test. at 3, 55. This significant underestimation of costs leads to an underestimation of the benefits associated with the SAMA candidates, skewing the SAMA cost-benefit analysis and rendering fewer SAMA candidates cost-beneficial. This analysis and its result are plainly unreasonable.

A. The ISR Report Is Not, and Should Not Be an Independent SAMA Analysis, Nor Is It a Substitute for a Proper SAMA Analysis That Satisfies NEPA

NEPA obligates NRC Staff to ensure that the FSEIS takes a “hard look” at environmental impacts, evaluates a reasonable range of alternatives, and appropriately considers mitigation measures. As part of its NEPA obligations, NRC Staff must review and ensure that the SAMA analysis performed by Entergy for Indian Point is reasonable. NRC Staff cannot shift the burden of ensuring that its environmental analysis is adequate onto Entergy, intervenors, or any other entity. *See Harlem Val. Transp. Ass’n v. Stafford*, 500 F.2d 328, 336 (2d Cir. 1974) (An agency cannot be “content to place the burden on intervenors whose resources might be limited to challenge any environmental statements that the [applicants] might make in their applications . . . [Such a] passive approach . . . shifts to intervenors a large part of the burden of evaluating environmental issues which Congress placed on agencies of the government”); *Greene County Planning Board v. FPC*, 455 F.2d 412, 419-20 (2d Cir. 1972), *cert. denied*, 409 U.S. 849 (1972) (a federal agency cannot abdicate its responsibility independently to evaluate federal actions proposed to it by other, non-federal entities). The State’s burden on this contention is to bring forth evidence demonstrating that the SAMA analysis for Indian Point is unreasonable. It is not the State’s burden to perform an independent SAMA analysis.

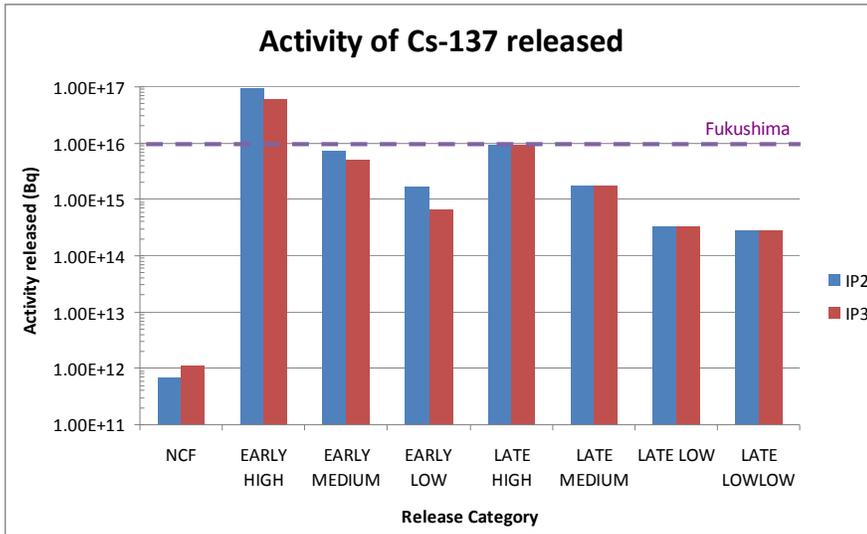
As explained in the State’s Initial Statement of Position (NYS SOP at 12-33), the ISR Report and Dr. Lemay’s testimony easily meets the State’s evidentiary burden by demonstrating that the SAMA analysis underestimated the economic costs of a severe accident at Indian Point through the use of generic assumptions concerning decontamination costs that are not applicable to the densely populated area surrounding IP2 and IP3 found in the NYC metropolitan region. The result of ISR’s work is a detailed explanation of four reasonable approaches that Entergy

and NRC Staff could have used to develop site-specific decontamination cost, decontamination time, and other sensitive MACCS2 inputs. *See* NYS SOP at 12-33. By using the four reasonable approaches, ISR shows that Entergy's economic costs are significantly underestimated by a factor of as much as seven. *Id.*

B. ISR's Analysis Is Not Based on a Worst-Case Scenario

Entergy and NRC Staff claim that ISR's analysis improperly used a worst-case, scenario to develop MACCS2 inputs. Entergy SOP at 5, NRC SOP at 13. That claim is unsupported for several reasons.

Although NRC Staff faults ISR for considering the severe accident at Fukushima and claims that it represents a worst-case scenario (Staff SOP at 13), in its SAMA analysis, Entergy itself modeled accidents that would release more radiation than the severe nuclear reactor accident at Fukushima released. Lemay Rebuttal Test. at 13. Of the eight categories of severe accidents Entergy selected to model in the MACCS2 code, which are called "release categories," one category is six to ten times higher than Fukushima and two other categories are similar to Fukushima. *Id.* This is shown in the following bar chart comparing the release categories modeled by Entergy (i.e., NCF, Early High, Early Medium, etc.) to Fukushima, which is represented by the purple dotted line. *Id.* at 12.



Since Entergy itself has chosen to model severe accidents with greater releases than Fukushima in the SAMA analysis, with NRC Staff’s approval, Entergy and NRC Staff have no basis for labeling Fukushima a worst-case scenario and dismissing it as irrelevant.

Additionally, the State’s analysis does not “combine[] all the worst case scenarios for deposition, clean-up costs, and decontamination times,” as argued by NRC Staff. Staff SOP at 8. Because the OECR is comprised of the total offsite economic cost for each of the eight release categories, weighted by their respective frequencies, some release categories contribute to OECR more than others. Lemay Rebuttal Test. at 11, 14-15. As a result, the OECR calculated by the MACCS2 code is a frequency-averaged cost, and it is not correct to use input parameters that represent an average of all the release categories, as NRC suggests (Staff Test. at A6d.). Lemay Rebuttal Test. at 15-16. In the case of Indian Point, the three most severe release categories make the largest contribution to the total OECR and, therefore, values for input parameters should more closely align with the accidents that are relatively more severe. *Id.*

C. Many of the Points Raised by NRC Staff and Entergy Are of No Consequence

In their submissions, Entergy and NRC Staff allege there are issues and inconsistencies in ISR's analysis regarding Population Dose Risk ("PDR"), ISR's discussion of IP2 instead of IP3, dose reduction factors, the validity of the MACCS2 code, and probabilistic analysis methods used in the SAMA. As summarized below, Dr. Lemay's rebuttal testimony addresses each of these claims and explains that they are of no consequence to ISR's conclusion that Entergy significantly underestimated the costs associated with a severe accident at Indian Point.

First, Entergy claims that ISR should have considered not only OECR, but also the changes in another MACCS2 output used in the SAMA analysis called PDR. Entergy Test. at A82. As Dr. Lemay explains, the State provided Entergy and NRC Staff with all of the MACCS2 output files, which also contain their population dose results for the calculations of PDR. Lemay Rebuttal Test. at 33. While changes to some input parameters may affect PDR differently than OECR, the change in PDR as calculated in ISR's MACCS2 runs had no appreciable impact on ISR's conclusions because the PDR changed by less than 4%. *Id.* at 33-34.

Second, NRC Staff argues that ISR's conclusions apply only to IP2 and ignore differences between IP2 and IP3. Staff Test. at A27, A28. As Dr. Lemay explains, ISR ran the MACCS2 code for IP2 to illustrate how site-specific inputs change the calculated OECR, and that using IP2 as an example was reasonable because, despite some differences between IP2 and IP3, resulting OECR values for IP2 and IP3 are comparable. Lemay Rebuttal Test. at 34-35.

Third, Entergy (Entergy SOP at 30-31) and NRC Staff (Staff SOP at 10) raise various points about differences between dose reduction factor and decontamination factor. This discussion is irrelevant because ISR used the same dose reduction inputs, i.e. 3 and 15, as

Entergy in its analysis.⁵ Lemay Rebuttal Test. at 30-31.

Fourth, and in a similar vein, NRC Staff's claims about deposition velocity (Staff SOP at 9, Staff Test. at A41-A43) do not affect ISR's conclusions because ISR did not modify the deposition velocity chosen by Entergy for its calculations. *Id.*

Fifth, Entergy's discussion of the merits of the MACCS2 code (Entergy SOP at 28) is irrelevant to NYS-12C because the State is not challenging the use of the MACCS2 code. *See* Lemay Rebuttal Test. at 6 ("ISR has not commented on the use of the MACCS2 code itself or any limitations of the MACCS2 code.").

Finally, despite the fact that Dr. Lemay's initial and rebuttal testimony discusses probabilistic analysis methods at length (Lemay Test. at 11, Lemay Rebuttal Test. at 8-9) Entergy alleges that New York "overlooks" the probabilistic analysis methods used in the SAMA analysis (Entergy SOP at 27). Entergy goes on to allege that the State fails to recognize that the SAMA analysis "estimates average consequence results for the entire 50-mile radius region around the IPEC site . . . , not just the comparatively small region of New York City." Entergy SOP at 27-28. As explained in more detail in Dr. Lemay's rebuttal testimony, ISR applies different costs to the relatively small area that represents New York City than it does to the remainder of the 50-mile radius of Indian Point. Lemay Rebuttal Test. at 32-33.

⁵ Additionally, NRC Staff takes issue with the proposition that decontamination factors greater than 10 cannot be achieved without full demolition. Staff SOP at 10. Whether or not this is true does not affect ISR's conclusion, but NRC Staff misquotes the State. The ISR Report states that cited references suggest "decontamination of an entire building to a level greater than 10 *may not be possible*[" not that it definitively is not possible. ISR Report at 12 (citing NYS000249, NYS000250, NYS000251) (emphasis added). Furthermore, while the references cited in the ISR Report demonstrate that using a decontamination factor of 15 is likely not reasonable, ISR's analysis used the same decontamination factors as Entergy for purposes of comparison. Lemay Rebuttal Test. at 30-31.

D. Entergy and NRC Staff's Technical Arguments Regarding Decontamination Time Do Not Affect the Ultimate Conclusion That the SAMA Analysis Unreasonably Underestimates the Costs Associated With a Severe Accident at Indian Point

NRC Staff and Entergy argue that the discussion of decontamination time (TIMDEC) in ISR's report is inconsistent with the intention of the MACCS2 decontamination model. Staff SOP at 13; Entergy SOP at 31-33. ISR, however, explains why it is reasonable to look at a range of values for decontamination time based on real-world experience with actual severe accidents such as Fukushima and Chernobyl. Lemay Rebuttal Test. at 50. For example, ISR examined the current experience in the Fukushima Prefecture. *Id.* at 50-51. Based on the Fukushima experience, it is reasonable that the minimum time between evacuation and returning home is one year for areas requiring light decontamination and two years for areas requiring heavy decontamination. *Id.* at 51. Maximum times would be 15 years for light and 30 years for heavy decontamination. *Id.* It is not reasonable under NEPA for Entergy and NRC Staff to ignore real-world experience in favor of the Sample Problem A values of 60 days for light and 120 days for heavy decontamination following a severe accident. The Sample Problem A values in NUREG-1150 create an unrealistic decontamination scenario without justifying their use or how 60 and 120 days were calculated.

E. Entergy and NRC Staff's Technical Arguments Regarding Decontamination Costs Do Not Affect the Ultimate Conclusion That the SAMA Analysis Unreasonably Underestimates the Costs Associated With a Severe Accident at Indian Point

Entergy and NRC Staff fail to explain why it is reasonable to rely upon Sample Problem A in light of the approaches described in Dr. Lemay's testimony and the ISR Report that demonstrate how a site-specific value for decontamination costs (CDNFRM) could reasonably be calculated. As explained by Dr. Lemay, these approaches include using data from *Site*

Restoration as modified by Luna’s *Survey of Costs*⁶ (Approach A); data from Barbara Reichmuth’s presentation of results from radiological dispersal device economic consequence analysis in the U.S.⁷ (Approach B); CONDO⁸ (Approach C); and data from RISO⁹ (Approach D). Instead of explaining why Sample Problem A is reasonable given these approaches, Entergy and NRC Staff attempt to discredit them.

First, Entergy and NRC Staff criticize the State for relying on studies and reports that deal with the release from a nuclear weapons accident or “dirty bomb,” in the *Site Restoration* report and the Reichmuth papers. See Entergy SOP at 28; Entergy Test. at A26; Staff SOP at 10-12. But as the ISR Report and Dr. Lemay’s testimony explain, these studies are relevant sources of data. ISR Report at 16-19; Lemay Rebuttal Test. at 37-42. ISR explains that “*Site Restoration* used historical data (from various actual releases of plutonium and other radionuclides) to derive the costs of a cleanup following plutonium dispersal in an urban area” ISR Report at 16. As Dr. Lemay also explains in his rebuttal testimony, the ISR Report responds directly to NRC Staff’s arguments regarding cesium and plutonium (Staff SOP at 11) and explains why NRC Staff’s dismissal of *Site Restoration* is untenable, especially in light of

⁶ R. Luna, H. Yoshimura & M. Soo Hoo. *Survey of Costs Arising from Potential Radionuclide Scattering Events*, WM2008 Conference, February 24-28, 2008, Phoenix AZ. (“*Survey of Costs*”). (NYS000255).

⁷ B. Reichmuth, S. Short, T. Wood, *Economic Consequences of a Rad/Nuc Attack: Cleanup Standards Significantly Affect Risk*, Pacific Northwest Laboratory, Working Together Conference, April 28, 2005, Boston, MA. (“Reichmuth”) (NYS000256).

⁸ CONDO: Software for estimating the consequences of decontamination options, Report for CONDO version 2.1, T Charnock, J Brown, AL Jones, W Oatway and M Morrey, NRPB-W43 (May 2003). (“CONDO”) (NYS000250).

⁹ J. Roed, K.G. Anderson, H. Prip. 1995. *Practical Means for Decontamination 9 Years after a Nuclear Accident*. RISO National Laboratory, Roskilde, Denmark. RISO-R-828(EN) (December 1995). (“RISO”) (NYS000251).

Staff's chosen alternative, Sample Problem A. Lemay Rebuttal Test. at 39-40. Moreover, ISR explains how Reichmuth is an important data source because it actually addresses decontamination in major metropolitan centers in the U.S. ISR Report at 18.

Site Restoration and Reichmuth data are appropriate sources for radiological decontamination costs, even though the data are not from a severe nuclear reactor accident. ISR Report at 17 (“Because *Site Restoration* derived the costs of a cleanup following a plutonium dispersal, ISR determined that an appropriate multiplicative factor for the overall costs shown for plutonium in Table 2 is required to estimate the costs of the decontamination of cesium, which is the radionuclide of primary concern in a severe nuclear accident.”); ISR Report at 18-19 (“While the mechanisms for dispersal differ between a reactor accident and an RDD event, the key factor in determining cost is removal of cesium from porous substances, such as concrete, found in urban areas.”).¹⁰ A reasonable SAMA analysis would have considered references like *Site Restoration* and Reichmuth.

Second, with respect to CONDO and RISO, Entergy alleges that ISR erred in its application of decontamination techniques and costs under both approaches. Entergy SOP at 37-40. A detailed explanation of the CONDO and RISO approaches was provided in the ISR Report. ISR Report at 19-22. Dr. Lemay's testimony rebuts, in specific and technical detail, Entergy's allegations and explains why the use of CONDO and RISO was sound. Lemay Rebuttal Test. at 42-47. Furthermore, as discussed above in note 3, the document uncovered by the State which discusses NRC's site-specific analysis for IP revealed that a model very similar to the CONDO model was used in their evaluation. *Id.* at 26.

¹⁰ Furthermore, Figure 3 of the ISR Report contains a flowchart clearly delineating ISR's various approaches to deriving CDNFRM values for Indian Point. ISR Report at 15.

As is described above and in further detail in Dr. Lemay's testimony, most of Entergy and NRC Staff's criticisms do not alter ISR's overall conclusion. In some instances, however, ISR re-ran its calculations to determine whether the ultimate calculation of OECR would change based on the assumptions Entergy and NRC Staff provided in their testimony. Lemay Rebuttal Test. at 35-37. ISR concluded that, even when these assumptions were taken into consideration, Entergy has still underestimated OECR by at least a factor of seven. *Id.* In sum, Entergy and NRC Staff miss the fundamental issue—reliance on Sample Problem A is unreasonable when site-specific inputs are available from many data sources outside of NUREG-1150.

POINT V

THE BOARD SHOULD REJECT ENTERGY'S ATTEMPT TO RELITIGATE ITS UNSUCCESSFUL MOTION IN LIMINE

A detailed procedural history is provided in New York's Initial Statement of Position on Consolidated Contention 12C (NYS000240 at pp. 4-9) filed on December 21, 2011.¹¹ On January 30, 2012, after the State filed its Initial Statement of Position, Entergy filed a motion in limine seeking to exclude portions of the pre-filed testimony, report, and exhibits for New York's admitted Consolidated Contention NYS-12C. On February 10, 2012, NRC Staff filed an answer in support of Entergy's motion in limine. On February 17, 2012, New York submitted an answer and declaration of Dr. François Lemay opposing Entergy's motion in limine.

On March 6, 2012, the Board denied Entergy's motion in limine as to NYS-12C finding that "[i]ssues like those delineated in New York's testimony relating to decontamination and

¹¹ In sum, after reviewing Entergy's Environmental Report, the State filed Contention 12. The State updated the contention following the release of the DSEIS in Contention 12A, Entergy's 2009 SAMA Reanalysis in Contention 12B, and the FSEIS in Contention 12C. Contentions 12, 12A, 12B, and 12C were consolidated as Consolidated Contention 12C. *In the Matter of Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3) NYS-12-C, 8-9 (July 6, 2011) (ML111870344).

clean up costs are the heart of NYS-12C, and all of the evidence filed by New York is within the scope of the admitted Contention’s reasonably inferred bounds.” Licensing Board Order (Granting in Part and Denying in Part Applicant’s Motions in Limine) at 6 (Mar. 6, 2012) (unpublished). The Board further found that “One can hardly say the contested inputs are outside the scope of NYS-12C when they, in fact, go to the core of the question of property values and how they might be affected by a radionuclide-releasing accident at IPEC and the resulting decontamination process.” *Id.* at 7. With respect to Dr. Lemay’s modifications of the MACCS2 code, the Board found that “Dr. LeMay’s [sic] source code modifications illustrate the effect of varying MACCS2’s assumptions to address alternative inputs – something that was conceptualized by the Contention as described in the original Board Memorandum and Order admitting it.” *Id.*

Now, in its Statement of Position, Entergy seeks to relitigate its unsuccessful motion in limine based on the Commission’s decisions in *Seabrook* and *Pilgrim*. Neither decision justifies reversal of the Board’s ruling.

A. The Board Should Not Reverse Its Ruling Based on *Seabrook*

Entergy argues that the Board should reconsider Entergy’s motion in limine, citing the Commission’s decision in *Seabrook*¹² for the proposition that “NYS’s challenges to numerous CHRONC input values other than the nonfarm decontamination cost value (i.e., CDNFRM) constitute new bases not relied upon by NYS or the Board in admitting the contention.” Entergy SOP at 13. As the State explained in answering Entergy’s motion in limine, Entergy’s argument that New York is seeking to add new bases to its contentions conflates the contentions’ bases

¹² *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC __ slip op. (Mar. 8, 2012) (“*Seabrook*”).

with their supporting evidence. State of New York’s Answer to Entergy’s Motion in Limine to Exclude Portions of Pre-Filed Testimony and Exhibits for Consolidated Contention NYS-12C (Feb. 17, 2012) (“NYS Answer to MIL”). New York’s challenge of CHRONC input values is further evidence supporting the bases of NYS-12C. *Id.* at 14-19. The State is allowed, and expected, to supplement its supporting evidence as the relicensing proceeding progresses. *Id.* at 5-6. *Seabrook* does not advise otherwise. In *Seabrook*, the Commission was having trouble determining the scope of a contention because the board had not adequately explained the bases for its admission. *Seabrook* at 10 (“The scope of the contention as admitted by the Board is difficult to discern.”). In the footnote relied upon by Entergy that “an admitted contention is defined by its bases,” Entergy SOP at 13 (quoting *Seabrook* at 11, n. 50), the Commission was emphasizing that the reach of a contention hinges upon its terms, coupled with its stated bases, and reminded boards to articulate the specific bases upon which they are relying when admitting contentions. *See Seabrook* at 10-11. Thus, *Seabrook* involved whether the stated bases were adequately supported, not whether new bases could be added. *Id.* Even if the State was seeking to add new bases, and it is not, *Seabrook* did not prohibit the addition of new bases to a contention if they are determined to be within the contention’s reach. *Id.*

Entergy also cites *Seabrook* to compare NYC-12C to the SAMA contention at issue there. In *Seabrook*, the MACCS2 contention at issue attempted to generically challenge the MACCS2 code; the State is not seeking a generic challenge to MACCS2 here. In further contrast to *Seabrook*, New York State has submitted unprecedented expert analysis and exhibits in support of NYS-12C. *See Seabrook* at 43 (“Friends/NEC do not provide any factual or expert support challenging . . . specific economic cost parameters.”).

B. The Board Should Not Reverse Its Ruling Based on *Pilgrim*

Entergy also argues that *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-12-01, 75 NRC ___, slip op. at 3 (Feb. 9, 2012) (“*Pilgrim*”) demonstrates that “Dr. Lemay’s modifications to the MACCS2 source code are improper both in the context of the admitted contention (which foreclosed challenges to the MACCS2 code) and NEPA’s requirements (which do not warrant modifications of widely-used and NRC-accepted computer codes like MACCS2).” *Id.* at 13.¹³ As explained in the State’s response to Entergy’s motion in limine and Dr. Lemay’s declaration in support, ISR made two modest modifications to the MACCS2 code to simply increase the maximum input values that the code would accept for two parameters, CDNFRM and TIMDEC. NYS Answer to MIL at 23; Decl. of Dr. Francois Lemay in Support of Answer (Feb. 17, 2012) (“Feb. 17, 2012 Lemay Declaration”). These changes, which were disclosed in ISR’s report, were necessary so that the MACCS2 code could be used to estimate site-specific decontamination and cleanup costs at Indian Point. NYS Answer to MIL at 23; Feb. 17, 2012 Lemay Declaration at ¶ 15. They cannot be fairly characterized as a challenge to the MACCS2 source code because they did not modify the code’s algorithms, which continue to operate in the same way. *Id.*

In contrast, the *Pilgrim* intervenors sought the addition of an entirely new module to the MACCS2 code—a variable trajectory plume model—to replace the code’s straight-line Gaussian plume model. *Pilgrim* at 29. The Commission rejected their request on the ground that “NEPA does not require the NRC to engage in an *extensive revision* of the MACCS2 code, particularly

¹³ This *Pilgrim* decision was issued on February 9, 2012 over a week before briefing on the MIL was complete on February 17, 2012. Entergy has not explained why it is only now bringing this decision to the Board’s attention instead of filing a notice of supplemental authority so that the Board could consider it in connection with briefing on Entergy’s MIL.

when the Board concluded—based on considerable expert evidence—that *a different plume model* would not change the overall results” *Id.* (emphasis added). Including a completely different module is an extensive revision; modifying two lines of code is not. Feb. 17, 2012 Lemay Declaration at ¶ 15. Thus, the Board should not reverse its ruling based on *Pilgrim*.

POINT VI

NRC SHOULD BE REQUIRED TO SUPPLEMENT THE FSEIS

Although not expressly argued with respect to NYS-12C, in its Statements of Position on Contentions 17B and 37, Entergy suggests that the deficiencies in NRC’s FSEIS raised by those contentions may be cured by a Board ruling that the FSEIS is supplemented by submissions made by NRC Staff, Entergy, and intervenors during the hearing process. See ENT000131 at 16; ENT000478 at 15. The Board should reject this end-run around the NRC’s NEPA obligations. NRC Staff may cure its NEPA deficiencies only by supplementing the FSEIS and circulating the supplement for public review and comment. For the same reasons discussed in the revised SOPs for 17B and 37, the appropriate relief for the NEPA violations described in NYS-12C is a remand to NRC Staff to supplement the FSEIS.

CONCLUSION

When reasonable, accurate and scientifically defensible information is used to determine site-specific inputs for the area surrounding Indian Point, the estimates of costs associated with a severe accident in the SAMA analysis increase by as much as a factor of seven. In turn, reasonable, accurate, and scientifically defensible cost estimates demonstrate that additional SAMA candidates are cost-beneficial.

For the above reasons, Entergy’s application to renew the operating licenses for Indian Point Unit 2 and Unit 3 should be denied. The Board should remand the proceeding and direct

NRC Staff to conduct a reasonable site-specific SAMA analysis using up-to-date, accurate data; and to include an explanation of that analysis in a supplement to FSEIS that is circulated for public comment before it is finalized.

Respectfully submitted,

Kathryn M. Liberatore
Assistant Attorney General

Signed (electronically) by _____

John J. Sipos
Assistant Attorney General
Office of the Attorney General
for the State of New York
The Capitol
Albany, New York 12227
(518) 402-2251

Dated: June 29, 2012