

**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD**

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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,  
Entergy Nuclear Indian Point 3, LLC, and  
Entergy Nuclear Operations, Inc.

DPR-26, DPR-64

June 29, 2012

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**STATE OF NEW YORK  
REVISED STATEMENT OF POSITION  
CONTENTION NYS-16/16A/16B (“NYS-16B”)**

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

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## **INTRODUCTION**

In accordance with 10 C.F.R. Section 2.1207(a)(2) and the July 1, 2010 and April 18, 2012 Orders issued by the Atomic Safety and Licensing Board (“Board”), the State of New York (“State”) submits this Revised Statement of Position on the State’s admitted Contention 16/16A/16B (“NYS-16B”). NYS-16B contests Entergy’s severe accident mitigation alternatives (“SAMA”) analysis, which NRC staff accepted in its Final Supplemental Environmental Impact Statement (“FSEIS”), on the ground that the SAMA analysis underestimates the population within fifty miles of Indian Point in 2035 that is likely to be exposed to radiation during a severe accident and, based on that underestimation, underestimates the costs of a severe accident and the corresponding benefit of any given SAMA.

This Revised Statement responds to Entergy’s Statement of Position Regarding Consolidated Contention NYS-16B (Severe Accident Mitigation Alternatives Analysis) (ENT000002) (“Entergy SOP”); the Testimony of Entergy Witnesses Lori Potts, Kevin O’Kula, Grant Teagarden, and Jerry Riggs on Consolidated Contention NYS-16B (Severe Accident Mitigation Alternatives Analysis) (ENT000003) (“Entergy Test.”) and the exhibits thereto; NRC Staff’s Initial Statement of Position on Consolidated Contention NYS-16B (NRC000040) (“Staff SOP”); the NRC Staff Testimony of Nathan E. Bixler, S. Tina Ghosh, Joseph A. Jones, and Donald G. Harrison Concerning NYS’ Contentions NYS 12/16 (NRC000041) (“Staff Test.”) and the exhibits thereto.

In its Initial Statement of Position, the State showed, based on the Report and Pre-Filed Testimony of Dr. Stephen Sheppard, Ph.D., that the population estimate in the SAMA analysis failed to account for commuters and census undercount, causing an omission of approximately 1.2 million individuals. In response, Entergy argues that it is not required to account for

commuters or census undercount in its population estimate, and even if it did, there would be no material effect on the SAMA analysis. Likewise, NRC Staff argues that Entergy's population estimates are reasonable, that Staff adequately addressed the State's concerns regarding the population estimate, and that the information presented in the FSEIS is accurate.

As explained below and in Dr. Sheppard's Rebuttal Testimony, NRC Staff and Entergy have not met their burden of proving that the omission of 1.2 million people from the population estimate is reasonable.

## **ARGUMENT**

### **POINT I**

#### **NRC BEARS THE BURDEN OF SHOWING THAT THE FSEIS COMPLIES WITH NEPA**

Entergy and NRC Staff mistakenly argue that the State has the burden of proving that the FSEIS fails to comply with NEPA. NEPA requires NRC Staff—not intervenors—to ensure that the FSEIS takes a “hard look” at the environmental impacts of relicensing, including the impacts of a severe accident, and analyzes measures that would mitigate those impacts.<sup>1</sup> By placing the burden of complying with NEPA on NRC Staff, NEPA “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.” *See Sierra Club v. United States Army Corps of Eng'rs*, 772 F.2d 1043, 1049 (2d Cir. 1985) (citing *Silva v. Lynn*, 482 F.2d

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<sup>1</sup> *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, \*5 (2010) (Commission recognizes that “the ultimate burden with respect to NEPA lies with the NRC Staff”); *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 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, 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.”).

1282, 1285 (1st Cir. 1973)). Thus, 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). Staff cannot—as it attempts to do here—shift the burden of ensuring that its environmental analysis is adequate to intervenors. *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 . . .”); *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 to independently evaluate federal actions proposed to it by other, non-federal entities).

Entergy’s and NRC Staff’s argument that the State has the burden of proving that the FSEIS is inadequate mistakenly relies on decisions discussing interveners’ burden at the contention admissibility stage. *See* Entergy SOP at 14-15; Staff SOP at 4-6. Those decisions are inapposite because the Board has already found that the State satisfied that burden, as established in the standards in 10 C.F.R. § 2.309 governing contention admissibility. *See Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), LBP-08-13, 68 N.R.C. 43 (July 31, 2008) (admitting NYS-16); Ruling on New York State’s New and Amended Contentions (June 16, 2009) (admitting NYS-16A and consolidating it with NYS-16); and Ruling on the Admissibility of New York’s New and Amended Contentions 12B, 16B, 35, and 36 (July 6, 2011) (admitting NYS-16B and consolidating it with 16/16A).

Where, as here, a party’s contention has been admitted, “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.” *In Matter of Louisiana Power and Light Co.*, 17 N.R.C. 1076, 1093 (quoting *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB–123, 6 A.E.C. 331, 345 (1973)). Thus, the State’s burden at the hearing stage is to establish a prima facie case that the FSEIS is deficient. Neither Entergy nor NRC Staff claim that the State has failed to present a prima facie case that the population estimate in the SAMA analysis is flawed, nor could they. The State’s Initial Statement of Position and Dr. Sheppard’s Report and Testimony present evidence of serious errors in the population estimate used in the FSEIS. *See* State of New York Initial Statement of Position Contention NYS-16B (NYS000206) (“State SOP”); Pre-Filed Written Testimony of Dr. Stephen C. Sheppard, Ph.D., Regarding Contention NYS-16B (NYS000207) (“Sheppard Pre-Filed Test.”); and Report of Dr. Stephen C. Sheppard, Ph.D., In Support of NYS-16B (NYS000209) (“Sheppard Report”).

Because the State has presented a prima facie case, NRC Staff has the burden under NEPA of proving that the FSEIS, including the SAMA analysis, is reasonable. Likewise, in order to refute NYS-16B, Entergy has the burden of proving that NRC Staff met its burden. Neither NRC staff nor Entergy has established that the FSEIS is reasonable and complies with NEPA.

## **POINT II**

### **NEITHER ENTERGY NOR NRC STAFF HAS DEMONSTRATED THAT THE OMISSION OF APPROXIMATELY ONE MILLION COMMUTERS FROM THE SAMA ANALYSIS IS REASONABLE UNDER NEPA**

#### **A. The SAMA Analysis Was Required to Include Commuters**

The State showed in its Initial Statement of Position that the population estimate in the SAMA analysis is unreasonable because it omits approximately one million people who

commute from outside the fifty-mile radius of Indian Point to workplaces within that radius. Entergy and NRC Staff do not contest that close to a million commuters who work within the fifty-mile zone were not included in the population estimate used in the SAMA analysis. *See* Staff Test. at 17, A7 and 100, A93; Entergy Test. at 28, A55; ENT000027 at 2. They argue instead that the commuters were properly omitted for several reasons, but fail to meet their burden of proving that the omission was reasonable.

First, Entergy argues that its SAMA analysis complied with industry guidance, NEI 05-01, Rev. A (NYS000287), by including only tourists and business travelers in the transient population. That guidance instructed Entergy to use the same transient population in its SAMA analysis that it included in its site emergency plan. NEI 05-01, Rev. A, at 13. Although Entergy included only tourists and business travelers in the transient population in its site emergency plan, it neglects to mention that its site emergency plan also covered commuters but labeled them as “employees” rather than “transients”. That difference in labels did not justify, as Entergy suggests, omitting commuters from the SAMA analysis. Indeed, commuters should have been included in the SAMA analysis because they were included in the site emergency plan. Moreover, as explained in Dr. Sheppard’s rebuttal testimony, at least three NRC guidance documents concerning site emergency plans define transients to *include* commuters. Rebuttal Testimony of Dr. Stephen C. Sheppard Regarding Contention NYS 16B (NYS000404) (“Sheppard Rebuttal Test.”) at 8-10.<sup>2</sup> One of these documents (NYS000407) was authored by NRC Staff’s expert Mr. Jones, Staff Test. at 4, A2c, who now claims that commuters need not be included in the transient population. Sheppard Rebuttal Test. at 10.

Second, NRC Staff’s expert Mr. Jones argues that it was reasonable for Entergy to include tourists and business travelers but not commuters in the population estimate because the

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<sup>2</sup> Citing NYS000405, NYS000406, and NYS000407.



former “are in the modeled SAMA area for an extended time and could potentially accumulate dose as a result of an accident at Indian Point,” while commuters “are only in the SAMA area about a third of [the] day (8 hours plus commuting time).” Staff Test. at 101, A94. But tourists and business travelers are not necessarily in the area for an extended period of time. For example, Entergy’s transient population includes individuals, such as shoppers, who enter the fifty-mile region and leave on the same day. Entergy Test. at 28, A56; Sheppard Rebuttal Test. at 11. Moreover, if a severe accident were to occur at Indian Point, tourists and business travelers would not have to re-enter the region after evacuation, but commuters would need to re-enter the region to go to work, creating a greater potential for long-term exposure to radiation. *Id.*; see Staff Test. at 39, A34 (“[T]he returning population receives a dose that contributes to the population dose.”).

**B. Dr. Sheppard’s Estimate of the Number of Commuters Was Accurate**

In addition to arguing that the SAMA analysis was not required to cover commuters, Entergy and NRC Staff argue that Dr. Sheppard’s estimate of the commuter population was inaccurate for several reasons. First, they argue that a very small portion of Dr. Sheppard’s estimate—35,672 people of the 999,765 commuters—should not be included. Entergy Test. at 45, A83; Staff Test. at 102, A95; ENT000027 at 12. These individuals reside over 150 miles from the 50-mile radius of Indian Point, so Entergy claims they are not commuters, but business travelers who have already been included in the transient population. Entergy Test. at 45, A83. In his rebuttal testimony, Dr. Sheppard explains why these individuals should be considered commuters and not business travelers. Scholars recognize a small but growing number of commuters who travel very long distances to work on a daily or weekly basis (Exhibit NYS000408).

Entergy's experts also reduced Dr. Sheppard's commuter estimate by fifty percent on the ground that commuters are expected to be in the fifty-mile radius of Indian Point only one-third to one-half of the time and are not expected to have tangible property in the area. Entergy Test. at 48-49, A87. They point to no regulation, guidance, or other supporting reference recommending that reduction, and fail to prove that reducing the commuter population in this way is reasonable. The SAMA analysis should consider the costs of an accident that occurs while all commuters are present in the fifty-mile zone.

As Dr. Sheppard explains, the risks to commuters are not necessarily dependent on the time they spend in the area. Both population dose risk ("PDR") and off-site economic cost risk ("OECR") are relevant to commuters—the PDR calculates the radiation that commuters may be exposed to in a severe accident and the OECR calculates variables such as lost income that commuters may experience because their job sites are impacted by interdiction. Entergy Test. at 29-30. Additionally, the number of commuters contributes to decontamination costs because they increase building density. Sheppard Rebuttal Test. at 32-33; *see* Staff Test. at 41, A35 ("The cost of achieving the DF [decontamination factor] is input in terms of dollars per person (\$/person)). By using a per person basis, this approach takes into account the site-specific high population density of New York City and the correspondingly high density of buildings."). Commuters also have tangible property such as automobiles that could be contaminated in a severe accident. Sheppard Rebuttal Test. at 32.

Entergy's experts also assert that, if Dr. Sheppard includes people who commute into the Indian Point area in the population estimate, then he should subtract from the estimate people who live in the area but commute to workplaces outside of it. Entergy Test. at 46, A84. They mistakenly believe that Dr. Sheppard's estimate is intended "to reflect the 'work day.'" *Id.* at 44,

A83. It is not. In his rebuttal testimony, Dr. Sheppard explains that he did not attempt to estimate the population at any particular time of day, but instead to estimate the population that spends a significant amount of time within fifty miles of Indian Point during a given twenty-four hour period, because that is the population that will likely contribute to the costs of a severe accident at Indian Point. Sheppard Rebuttal Test. at 15-16. It is reasonable to include commuters because both permanent residents and commuters may be present in the zone during a severe accident and affect the calculation of the costs associated with a severe accident. It is certainly not, as NRC Staff suggests (Staff Test. at 103, A95), a “worst case scenario” for commuters and permanent residents to be present within the zone simultaneously—this occurs on a daily basis during rush hour. Reducing the population to the number of people present during the “work day,” as Entergy’s experts do, results in an underestimate of the population at risk, and therefore is not the conservative estimate recommended by NEI 05-01, Rev. A. *See* Sheppard Rebuttal Test. at 15-17. Moreover, as noted above, NRC guidance recommends including commuters in the transient population, and no industry or NRC guidance document recommends subtracting permanent residents who work outside the fifty-mile radius from the population used for a SAMA analysis.

Finally, NRC Staff’s expert Mr. Jones asserts that Dr. Sheppard’s commuter estimate is inflated by twenty-five percent, but provides no data or analysis supporting that claim. Staff Test. at 104, A95. In the absence of any support, there is no reason for the Board to consider his assertion. *See Silva v. Lynn*, 482 F.2d 1282, 1285 (1st Cir. 1973) (A “conclusory statement unsupported by empirical or experimental data, scientific authorities, or explanatory information of any kind” is not reasonable under NEPA.).

### POINT III

#### **NEITHER ENTERGY NOR NRC STAFF HAS DEMONSTRATED THAT THEIR FAILURE TO ACCOUNT FOR CENSUS UNDERCOUNT IS REASONABLE UNDER NEPA**

Entergy relied on the 2000 decennial census to establish the population estimate in the SAMA analysis but, as the State also showed in the testimony of Dr. Sheppard, failed to take into account the fact that, as recognized by the Census Bureau, Congress, and scholars who utilize census data, the census counts minorities at lower rates than non-minorities. Sheppard Pre-Filed Test. at 10-13. As the State also showed, this error was particularly egregious because the region surrounding Indian Point has a relatively large minority population, and therefore, is subject to census undercount at higher rates than regions of the country with lower minority populations. *Id.* at 11. Dr. Sheppard, the State's expert, has estimated that this error resulted in undercounting the minority population that would be exposed to a severe accident by approximately 231, 632 people. Sheppard Report at 8.

Neither NRC Staff nor Energy has met the burden of proving that ignoring the census undercount was reasonable under NEPA. NRC Staff argues that this omission is justified because accounting for census undercount is "controversial." Staff Test. at 99, A90. But any controversy surrounding census undercount is a *political* one because of the effects that adjusting for census undercount can have on apportioning seats in the U.S. House of Representatives, drawing the boundaries of U.S. electoral districts, and allocating federal funds. Sheppard Rebuttal Test. at 18-19. The political repercussions of adjusting the census for undercount are irrelevant to Entergy's SAMA analysis, the purpose of which is to establish a reasonable estimate of the population to determine the costs of a severe accident at Indian Point.

Entergy's expert, Mr. Riggs, dismisses Dr. Sheppard's testimony on the ground that the A.C.E. Revision II Technical Assessment ("A.C.E. assessment") superseded the demographic analysis on which he relied, and the A.C.E. assessment showed a census overcount. Entergy Test. at 40, A73. But while that assessment showed an overcount of the entire population, it also showed an undercount of the minority population and, as discussed above, the area surrounding Indian Point has a higher percentage of minority residents than the nation as a whole. Sheppard Rebuttal Test. at 26-27.

The A.C.E. assessment also found that census undercount occurred at a higher rate in places where more than 100,000 people live, and approximately 60% of places whose population is larger than 100,000 had a net undercount. ENT000016 at 25, Table 10. It states: "The fact that the largest places ( $\geq 100,000$  people) have more estimated net undercounts than overcounts may be due to some concentration of hard-to-count populations in large urban areas." ENT000016 at 22. Since Indian Point is located close to one of the largest urban areas in the country, a conservative population estimate should account for census undercount.

#### **POINT IV**

##### **ENTERGY'S CONSERVATIVE ASSUMPTIONS DO NOT COMPENSATE FOR THE COMMUTER AND CENSUS UNDERCOUNT OMISSIONS**

NRC's expert Mr. Jones argues that the 2010 census validates Entergy's population estimate because Entergy's estimate of the population in 2010 exceeded the actual census count by 326,878 people. Staff Test. at 100-101. As an initial matter, the errors shown by Dr. Sheppard led to the omission of 1.2 million people from Entergy's 2035 estimate, which is almost four times the number of people by which Entergy's 2010 estimate exceeded the 2010 census. Sheppard Rebuttal Test. at 29. Furthermore, Entergy performed its population

estimates using 2000 census data. *Id.* at 27. While it would be possible to estimate the population using the 2010 census numbers, all of the relevant data from the 2010 census, including worker flow files, would need to be used to predict the 2035 population surrounding Indian Point. *Id.* The population estimate for the SAMA analysis must look at changes in population over a 20 year period and picking one year—2010 from the 2010 census—as Mr. Jones has done here is not reasonable because it does not provide a comprehensive view of population over time or show what the population would be in 2035 based upon 2010 census data. *Id.* at 29.

## **POINT V**

### **REASONABLENESS, NOT MATERIALITY IS THE CORRECT STANDARD FOR ASSESSING AN FSEIS BUT, NONETHELESS, ENTERGY AND NRC STAFF HAVE FAILED TO SHOW THAT THE ERRORS FOUND BY DR. SHEPPARD ARE IMMATERIAL**

#### **A. Materiality Is Not the Proper NEPA Standard**

In their Statements of Position, Entergy and NRC Staff argue that the errors found by Dr. Sheppard are irrelevant unless they result in a material change to the SAMA analysis. Entergy SOP at 14-15; Staff SOP at 4-6. But the standard for assessing whether the population estimate in the FSEIS complies with NEPA is not whether any errors in it were material. Instead, as this Board recognized, “[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 . . .” *Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), LBP-11-17, at 14 (July 14, 2011) (ML111950712). The omission of 1.2 million individuals from the population estimate in the SAMA analysis—including *everyone* who commutes into the fifty-mile area surrounding Indian Point— is unreasonable in violation of NEPA because it does not provide an accurate

assessment of the environmental costs associated with relicensing, and also fails to achieve the public disclosure goals central to NEPA. In *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996), the court emphasized that “[m]isleading economic assumptions can defeat the first function of an EIS by impairing the agency’s consideration of the adverse environmental effects of a proposed project” and “the second function of an EIS by skewing the public’s evaluation of a project” (citation omitted); *see also Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989) (Without a reasonably complete discussion of possible mitigation measures “neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.”); *Sierra Club v. United States Army Corps of Engineers*, 701 F.2d 1011, 1029 (2d Cir.1983) (an EIS must set forth sufficient information for the general public to make an informed evaluation).

Moreover, since the SAMA analysis methodology that NRC has chosen for studying mitigation alternatives is essentially a cost-benefit analysis, NRC Staff can comply with NEPA only by ensuring that the SAMA analysis is based on accurate severe accident cost estimates. In particular, NRC Staff has an obligation to ensure that the inputs and assumptions used to determine the costs of a severe accident are reasonable.<sup>3</sup> *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[] . . . .”) (citing *Hughes River Watershed Conservancy* 81 F.3d at 448).

Entergy argues, based on *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power

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<sup>3</sup> NRC Staff argues that Staff was not responsible for responding to the State’s comments submitted on March 19, 2010, because they were submitted late. NRC SOP at 12-15. However, the State’s comments were responding to Entergy’s December 2009 SAMA Reanalysis, which was released after the comment period for the DSEIS closed. The 2009 SAMA Reanalysis fundamentally altered the original SAMA Analysis and constituted new and significant information for which NRC Staff should have prepared a supplement to the DSEIS that was subject to public comment.

Station), CLI-10-11, 71 N.R.C. 287, 317 (Mar. 26, 2010) (“*Pilgrim*”), that errors in a SAMA analysis violate NEPA only if “it looks genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated.” *Pilgrim* cites no legal support for this proposition, nor could it, because the correct standard under NEPA is not materiality. Under the correct NEPA standard, the issue is whether an FSEIS that omits 1.2 million individuals from the population estimate qualifies as a “reasonably adequate compilation of relevant information” that can “provide the basis for an informed evaluation or a reasoned decision.” *Sierra Club v. United States Army Corps of Engineers*, 701 F.2d 1011, 1030 (2d Cir.1983).

Furthermore, *Pilgrim* did not involve the merits of a SAMA contention, but instead requirements for admission of a contention. As discussed above, there is no question that the State has satisfied the standards for admitting NYS-16B. Therefore, these decisions are inapposite.

**B. Entergy and NRC Staff Have Failed to Show that the Errors Found by Dr. Sheppard Are Immaterial**

**1. Entergy’s Sensitivity Analysis Is Flawed and Inconclusive**

Putting aside the correct NEPA standard, Entergy and NRC Staff have failed to show that the errors in the population estimate are not material. Entergy argues that its experts performed a sensitivity analysis to adjust for those errors, and that the analysis did not identify any additional cost-beneficial SAMAs. Entergy SOP at 5. But Entergy’s sensitivity analysis was flawed for several reasons. First, Entergy improperly viewed two of the State’s SAMA contentions (NYS-16B and NYS-12C) in isolation. To determine what result increasing population has on PDR and OECR, Entergy would need to run the MACCS2 code with both sets of inputs, which it has not done.



Second, Entergy failed to analyze the effect on PDR and OECR of Dr. Sheppard's entire 1.2 million person population increase. Instead, Entergy's sensitivity analysis increased the estimate by only 729,520 people on the ground that Dr. Sheppard's commuter estimate should be cut in half to reflect the amount of time that commuters spend in the fifty-mile zone. Entergy Test. at 48-49, A87. By failing to consider the entire population increase, Entergy has not shown that the increase is immaterial. Furthermore, as shown above, Entergy's arbitrary reduction in Dr. Sheppard's estimate is unreasonable.

Entergy's sensitivity analysis also suffers from technical flaws that distort its cost-benefit conclusions. As Dr. Sheppard explains, the proper way to distribute the population increases to each grid element in the MACCS2 code is to multiply the pre-existing population estimate by the percentage of population increase, so that the increases are distributed proportionately throughout the fifty-mile region. Sheppard Rebuttal Test. at 33-35. Instead, Entergy's experts allocated the population increases "based on visual alignment of counties to [the] 50 mile grid." ENT000006 at 1. The result of this unscientific method is that a smaller population was allocated to those grid elements located closest to Indian Point. Sheppard Rebuttal Test. at 34-35. This is significant because the model's calculation of population dose is sensitive to distance from Indian Point, with higher doses attributed to those located closest to the plant. See Staff Test. at 26, A19 (The model "calculates the location of the plume and the concentration of each released isotope for each spatial grid cell and further determines how much contamination falls out of the plume to be finally deposited into each spatial grid cell."), 71, A64 ("[C]ontamination is heaviest near the plant and lightest at the outer boundary of the 50-mile region"), and 102, A95 (stating that those closer to the plant receive a higher dose in the MACCS2 model). Dr. Sheppard conducted an analysis showing that, if Entergy's experts had used their estimate of

729,520 people but distributed the population properly, the population in the area within ten miles of Indian Point would increase by 14,815 persons, rather than 4,367 people as found by Entergy. Exhibit NYS000409; Sheppard Rebuttal Test. at 34. This is nearly three times the number of potentially affected people.

**2. NRC Staff's Unsupported Assumptions Do Not Prove That the Errors Found by Dr. Sheppard's Population Changes Are Immaterial**

NRC Staff's expert, Mr. Jones, attempts to rely on a series of unsupported assumptions to show that the errors identified by Dr. Sheppard are not material. For example, referring to the error in the estimate that resulted from the census undercount, he states that "[i]n my opinion, the increase in cost from the addition of 230,000 people located in the outer limits of the SAMA area would not materially affect the conclusions of the SAMA analysis," Staff Test. at 100, A92, but presents no data or documentation to support this opinion. Unsupported assumptions cannot refute Dr. Sheppard's criticism of the population estimates in the FSEIS. *See Monroe County Conservation Council v. Volpe*, 472 F.2d 693, 697 (2d Cir. 1972)"); *Natural Res. Defense Council v. Callaway*, 524 F.2d 79, 93 (2d Cir.1975).

Mr. Jones also contends that commuters will not change the outcome of the SAMA analysis based on a series of unsupported assumptions, including that most commuters work in New York City and will either leave before the plume arrives or be shielded by their buildings. Staff Test. at 101-106, A95. Even if Mr. Jones provided support for his assumptions, which he does not, the MACCS2 code accounts for the location of population and determines the economic costs associated with a severe accident based on different accident models with different plume pathways. In the absence of a properly conducted sensitivity analysis, his assumptions do not satisfy NRC Staff's burden of showing that excluding commuters from the SAMA analysis had no effect. Sheppard Rebuttal Test. at 37-38.

### **C. The Errors Found by Dr. Sheppard Are Material**

Under *Pilgrim*, the State has shown that it is “genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated.” *Pilgrim* at \*39. In *Pilgrim*, the intervenors challenged several input parameters used by the applicant (also Entergy) in its SAMA analysis. After running a sensitivity analysis to evaluate the effects of changing those input parameters, Entergy concluded that changing the parameters would increase the PDR and the OECR by less than four percent. Because the benefit would have to increase by more than 100 percent to make any additional SAMAs cost effective, those increases were insufficient. *Pilgrim* at \*6-7. The additional SAMA that came closest to being cost effective would produce a benefit of \$2.5 million but would cost \$5 million to implement. *Id.* at \*7.

In comparison, according to Entergy an increase in benefits of eleven percent would make an additional SAMA (IP2 SAMA 025, Improve MSIV design) cost effective here. Entergy Test. at 49, A89. Entergy’s sensitivity analysis, which adjusted by the population estimate by only half of Dr. Sheppard’s suggested commuter population and utilized a flawed population distribution, yielded increases in the PDR and OECR of 3.1 percent and 3.2 percent, respectively. It is genuinely plausible that adding an additional 500,000 commuters to the sensitivity analysis and distributing the population increases proportionately by grid cell, will yield results that could change the outcome of the SAMA analysis. Furthermore, it is easily genuinely plausible that considering the errors in other input parameters raised by NYS-12C along with the population errors will yield results that could change the outcome of the SAMA analysis.

## POINT VI

### ENTERGY'S ATTEMPT TO RELITIGATE ITS UNSUCCESSFUL MOTION IN LIMINE FAILS

On January 30, 2012, after the State filed its Initial Statement of Position, Entergy filed a motion in limine seeking to exclude those portions of the pre-filed testimony, report, and exhibits for New York's admitted Contention NYS-16B that concern census undercount. On March 6, 2012, the Board denied that motion, finding that "the issue of 'undercount' is neither outside the scope nor a new issue; rather it is within the scope of the Contention's reasonably inferred bounds." Licensing Board Order (Granting in Part and Denying in Part Applicant's Motions in Limine) at 10 (Mar. 6, 2012) (unpublished). Entergy seeks to relitigate its unsuccessful motion in limine, Entergy SOP at 10-12, but has failed to provide any basis for the Board to reverse itself.

Entergy argues based on the Commission's recent decision in *Seabrook* that "NYS's census undercount argument is a new basis not relied upon by NYS or the Board in admitting the contention." Entergy SOP at 12. But, as the State explained when it answered Entergy's motion in limine, Entergy's argument confuses a contention's basis with the evidence supporting the contention. State of New York's Answer to Entergy's Motion in Limine to Exclude Portions of Pre-Filed Testimony and Exhibits for Consolidated Contention NYS16B at 4-6 (Feb. 17, 2012) (ML12048B414). Here, the basis for NYS-16B is that the population estimate in the SAMA analysis was incorrect, and census undercount provides evidence supporting that basis.

Even if census undercount were a new basis—which it is not—*Seabrook* does not rule that new bases cannot be added to a contention. In that proceeding, the Commission had difficulty discerning the scope of a contention because the board had not adequately explained the bases for admitting it, and the Commission reminded boards to explain the specific bases

upon which they are relying when admitting contentions. *Seabrook* at 10-11. Thus, the issue there was whether the intervenor's stated bases were adequately supported, not whether the intervenor could add a new basis that was within the reach of a contention. *Id.*

## **POINT VII**

### **NRC SHOULD BE REQUIRED TO SUPPLEMENT THE FSEIS**

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 interveners during the hearing process. *See* ENT000131 at 16; ENT000478 at 15. As the State has shown in response to those SOPs, NRC Staff may cure those deficiencies only by supplementing the FSEIS and circulating the supplement for public comment before it is finalized.

Notably, Entergy has not made the same argument with respect to NYS-16B, presumably because the submissions that NRC Staff and Entergy have made to the Board do not revisit the SAMA analysis to correct the errors in the population estimate. As a result, even if supplementing the FSEIS at the hearing stage were an appropriate way to cure deficiencies—which it is not—nothing has been submitted by NRC Staff or Entergy which would correct the deficiencies identified in this contention. As a result, the Board should remand the FSEIS to NRC Staff to correct those errors in a revised SAMA analysis. In the unlikely event that the Board determines that the hearing record could supplement the FSEIS, it should nonetheless remand for the reasons stated in the State's response to Entergy's argument in Contentions 17B and 37.

## CONCLUSION

For the above reasons the Board should find that NRC Staff and Entergy have failed to meet their burden of rebutting the State's prima facie case for NYS-16B. Accordingly, Entergy's application to renew the operating licenses for Indian Point Unit 2 and Unit 3 should be denied. NRC Staff should be directed to conduct a reasonable SAMA analysis that addresses both commuters and census undercount; and to include an explanation of that analysis in a supplement to the FSEIS that is circulated for public comment before it is finalized.

Respectfully submitted,

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***Signed (electronically) by***

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