UNITED STATES
NUCLEAR REGULATORY COMMISSION

BEFORE COMMISSIONERS
KRISTINE L. SVINICKI,
WILLIAM C. OSTENDORFF, AND
JEFF BARAN AND
CHAIRMAN STEPHEN G. BURNS

ON PETITION FOR REVIEW OF
LBP-13-13 PURSUANT TO 10 C.F.R. § 2.341

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 May 11, 2015

STATE OF NEW YORK REPLY TO NRC STAFF'S RESPONSE TO COMMISSION ORDER CLI-15-3 REQUESTING FURTHER BRIEFING ON CONTENTION NYS-35/36 CONCERNING THE SITE-SPECIFIC INDIAN POINT SEVERE ACCIDENT MITIGATION ALTERNATIVES ANALYSIS

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GLOSSARY OF TERMS, ACRONYMS, & ABBREVIATIONS

AEA	Atomic Energy Act
APA	Administrative Procedure Act
Board	Atomic Safety and Licensing Board
GEIS	Generic Environmental Impact Statement
FSEIS	Ex. NYS00133A-J, Ex. NRC000004[1] Final Supplemental Environmental Impact Statement NUREG-1437, *Volumes 1-3: Supplement 38: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 – Final Report* (Dec. 2010)
LBP-11-17	*Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), LBP-11-17, 74 N.R.C. 11 (July 14, 2011)
LBP-13-13	Partial Initial Decision, *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating, Units 2 and 3), LBP-13-13, 78 N.R.C. 246 (Nov. 27, 2013) (ML13331B465)
NRC	Nuclear Regulatory Commission
NRC Staff Response	NRC Staff's Response to the Commission's Memorandum and Order of February 18, 2015 (CLI-15-3), Regarding Contention NYS-35/36 (Mar. 30, 2015) (ML15089A576)
State PFR Answer	State of New York's Answer to Entergy and Staff Petitions for Review of Atomic Safety and Licensing Board Decisions LBP-08-13 and LBP-13-13 With Respect to Contention NYS-8 and for Interlocutory Review of LBP-10-13 and LBP-11-17 With Respect to Contention NYS-35/36 at 39-47 (Mar. 25, 2014) (ML14085A001)

[1] NRC000004 is a one-page exhibit that "[i]ncorporates New York Exhibit NYS000133A-J."

I. INTRODUCTION

Pursuant to the Commission's Memorandum and Order, CLI-15-3, the State of New York provides this reply to NRC Staff's response[1] to the Commission's questions regarding NRC Staff's and Entergy's petitions for review of Consolidated Contention NYS-35/36 ("NYS-35/36") concerning the severe accident mitigation alternatives ("SAMA") analysis for Indian Point. The State incorporates by reference its previous submissions on NYS-35/36.[2]

The federal government approved the Indian Point site for nuclear power reactors in 1956—before the Atomic Safety Commission had promulgated regulations for the siting of such

[1] NRC Staff's Response to the Commission's Memorandum and Order of February 18, 2015 (CLI-15-3), Regarding Contention NYS-35/36 (Mar. 30, 2015) (ML15089A576) ("NRC Staff Response").

[2] The State incorporates its previous presentations on NYS-35/36 by reference, including: State of New York's Motion for Leave to File New and Amended Contentions Concerning the December 2009 Reanalysis of Severe Accident Mitigation Alternatives ("NYS-35/36 Motion for Leave"), with Contentions NYS-35 and NYS-36 attached (Mar. 11, 2010) (ML100780366); State of New York's Combined Reply to Entergy and NRC Staff Answers to the State's New and Amended Contentions Concerning the December 2009 Severe Accident Mitigation Alternatives Analysis (Apr. 12, 2010) (ML101160415); Tr. (ASLB conference) at 830-99 (Apr. 19, 2010) (ML101160416); The State of New York and the State of Connecticut's Combined Reply to Entergy and NRC Staff Petitions for Interlocutory Review of the Atomic Safety & Licensing Board's Decision Admitting Contentions 35 and 36 (LBP-10-13) (Jul 26, 2010) (ML102110086); State of New York's Motion for Summary Disposition of Consolidated Contention NYS-35/36 (Jan. 14, 2011) (ML110270252); State of New York's Combined Reply to Entergy and Staff Cross-Motions for Summary Disposition on NYS Combined Contentions 35 and 36 Concerning the December 2009 Severe Accident Mitigation Alternative Reanalysis (Feb. 23, 2011) (ML110660425); The State of New York and the State of Connecticut's Joint Answer in Opposition to Entergy's Petition for Interlocutory Review of LBP-11-17 (Aug. 11, 2011) (ML11228A030); The State of New York and the State of Connecticut's Combined Motion for Leave to File a Brief Reply to NRC Staff's Answer to Applicant's Petition for Review of LBP-11-17 (Aug. 16, 2011) (ML11265A109); The State of New York and the State of Connecticut's Combined Reply to NRC Staff's Answer in Support of Entergy's Petition for Interlocutory Review of LBP-11-17 (Aug. 16, 2011) (ML11265A109); The State of New York and the State of Connecticut's Combined Motion to Strike Entergy's Unauthorized Reply in Support of NRC's Answer to Entergy's Petition for Review (Aug. 17, 2011); The State of New York's Request for Oral Argument on the Merits of Entergy's Petition for Review Should the Commission Accept Interlocutory Review (Aug. 11, 2011) (ML11228A030); Tr. (ALSB conference) at 4486-4559 (Jun. 10, 2013) (ML13170A126); State of New York's Answer to Entergy's Motion for Clarification Regarding the Timing of Adjudicatory Submissions Related to Entergy Letter NL-13-075 (Jul. 5, 2013) (ML13186A215); State of New York's Answer to Entergy and Staff Petitions for Review of Atomic Safety and Licensing Board Decisions LBP-08-13 and LBP-13-13 With Respect to Contention NYS-8 and for Interlocutory Review of LBP-10-13 and LBP-11-17 With Respect to Contention NYS-35/36 at 39-47 (Mar. 25, 2014) (ML14085A001) ("State PFR Answer").

facilities. Federal authorization of the Indian Point site took place before the Price Anderson Act, the National Environmental Policy Act ("NEPA"), the promulgation of NEPA regulations, the Third Circuit's 1989 *Limerick* ruling, and NRC's 1996 rule requiring site-specific review of severe accidents at most reactors that seek permission to operate beyond the 40-year term in their initial operating licenses. The 50-mile radius around the Indian Point site has the highest surrounding population of any reactor site in the United States, hyper-dense real estate development, drinking water reservoirs, iconic landmarks, and unique and critical infrastructure. Entergy projects that more than 19 million people will live within 50 miles of the site when the proposed 20-year operating licenses expire. No other reactor site in the Nation comes close to having this suite of characteristics.

Entergy's initial 2007 severe accident analysis contained various errors including the direction that an airborne radiation plume would travel from Indian Point. When Entergy corrected the wind direction error, its 2009 SAMA Reanalysis identified more than 20 cost-effective mitigation measures for the two remaining reactors at the site. That is, even with the probabilistic discounting of the likelihood of a severe accident, Entergy's own 2009 analysis showed that 20 mitigation measures provided more benefit than they cost. In response to this information, NRC Staff told Entergy and the State of New York that the mitigation measures did not need to be examined any further in the license renewal proceeding. After considering the parties' argument on this point, the three-judge Atomic Safety and Licensing Board granted summary disposition in favor of the State of New York and against NRC Staff. The Board's ruling was correct and should be upheld.

In response to the Commissioners' four questions in CLI-15-6, NRC Staff continues to suggest that severe accident analysis be delayed, repeated, and diverted to outside the licensing

proceeding. Staff's responses are contrary to Staff's obligations in this proceeding to protect the State's citizens and environment.

II. REPLY TO NRC STAFF'S RESPONSE TO QUESTIONS

1) The Indian Point SAMA analysis concludes that "risk can be further reduced in a cost-beneficial manner through the implementation of the identified, cost-beneficial SAMAs," and that "[g]iven the potential for cost-beneficial risk reduction . . . further evaluation of these SAMAs by Entergy is warranted."[3]

Does the Staff have a process in place to follow up with the licensee to determine which "potentially cost-beneficial" mitigation alternatives ultimately were found by the licensee to be cost-beneficial, if any, and which alternatives, if any, the licensee implemented? If not, explain why follow-up by the Staff is unwarranted.

NRC Staff has not identified "a process in place to follow up with the licensee" as Commission Question 1 requests. Instead, Staff sidesteps the Commissioners' question and instead identifies steps Staff itself might potentially take outside of the NEPA process in narrow circumstances. First, Staff states that, if a cost-beneficial SAMA candidate is "relate[d] to adequately managing the effects of aging during the period of extended operation, then further evaluation and implementation of that SAMA would be addressed, as appropriate, as a condition of any renewed license."[4] Second, Staff states that "if the Staff determines that one or more of the potentially cost-beneficial SAMAs may warrant implementation outside of the license renewal process, the Staff would follow the requirements for backfitting."[5] Staff does not provide any additional details about timeline or processes. Nor does Staff explain what it means by "may warrant implementation outside of the license renewal process." As discussed in Commission Question 2 below, although NRC Staff discusses its backfitting process, it does not

[3] *See* Ex. NYS00133I, "Final Report, Generic Environmental Impact Statement for License Renewal of Nuclear Plants," NUREG-1437, Supplement 38, Vol. 3, regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (Dec. 2010), App. G at G-49 (FSEIS).

[4] NRC Staff Response at 5.

[5] *Id.*

explain *when* it will undertake a backfit analysis to evaluate cost-beneficial SAMA candidates.

Even if NRC Staff had a robust follow-up process in place to determine which SAMA candidates Entergy ultimately determined were cost-beneficial and whether any of those were implemented, such a process would not satisfy its NEPA obligations. As an initial matter, as the federal regulatory agency, NRC Staff must comply with NEPA—not the applicant or any other party.[6] Since Staff deemed the SAMA analysis in the Final Supplemental Environmental Impact Statement ("FSEIS") sufficient, any follow-up to determine whether an applicant performed additional analyses or implemented any SAMA candidates would occur *after* the FSEIS was finalized.[7] Thus, such follow-up could not satisfy NEPA requirements. As the Board correctly held, "NRC Staff's decision to allow Entergy to complete its SAMA review outside of the license renewal process, by deferring the evaluation of SAMAs found to be potentially cost-beneficial until after relicensing, does not provide an adequate record for the agency to make its decision on the impacts of relicensing IP2 and IP3."[8]

NRC Staff's response to Commission Question 1 also seeks to minimize NEPA's requirement that the FSEIS itself—not some vague, ill-defined, post-FSEIS follow-up—include a detailed discussion of possible mitigation measures and the extent to which adverse environmental effects can be avoided.[9] The governing CEQ regulations reiterate the duty to discuss mitigation, requiring that federal agencies "use all practicable means . . . to . . . avoid or

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[6] *See, e.g.*, *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").

[7] As the host state, New York has a keen interest in fully participating in the process by which the federal agency reviews whether or not to renew the operating licenses for an additional 20 years.

[8] *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), LBP-11-17, 74 N.R.C. 11, 15 (July 14, 2011) ("LBP-11-17").

[9] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989).

minimize any possible adverse effects of their actions upon the quality of the human environment."[10] NRC's own regulations state that the FSEIS must discuss "alternatives available for reducing or avoiding adverse environmental effects."[11] The "omission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects."[12]

The SAMA requirement is rooted in *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719 (3d Cir. 1989), which held that NEPA requires NRC to examine the environmental impacts of significant accidents at nuclear power plants and measures to mitigate those impacts on a site-specific basis. The severe accident impacts and mitigation discussed in *Limerick* were not limited to managing the effects of aging; instead it is clear that the Atomic Energy Act ("AEA") does not preclude or limit consideration of severe accidents under NEPA, and NRC must comply with NEPA "to the fullest extent possible."[13] Although NRC's predecessor agency "had continually asserted, prior to NEPA, that it had no statutory authority to concern itself with the adverse environmental effects of its actions," since the early 1970s "its hands are no longer tied" because "[i]t is not only permitted, but compelled, to take environmental values into account."[14]

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[10] 40 C.F.R. § 1500.2(f); *see also* 40 C.F.R. §§ 1502.14(f), 1502.16(h), 1508.25(b)(3).

[11] 10 C.F.R. § 51.71(d); *see also* 10 C.F.R. § 51.103(a)(4) (NRC regulations requiring that the agency "[take] all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected, and if not, to explain why those measures were not adopted").

[12] *Robertson*, 490 U.S. at 351-52.

[13] *Limerick*, 869 F.2d at 729-30 (quoting 42 U.S.C. § 4332). The Third Circuit held that it is "unreasonable to suppose that [environmental] risks are automatically acceptable, and may be imposed upon the public by virtue of the AEA, merely because operation of a facility will conform to the Commission's basic health and safety standards." *Id.* at 730 (quoting *Citizens for Safe Power, Inc. v. NRC*, 524 F.2d 1291, 1299 (D.C. Cir. 1975)).

[14] *Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n*, 449 F.2d 1109, 1112 (D.C. Cir. 1971).

"Perhaps the greatest importance of NEPA is to require the Atomic Energy Commission and other agencies to consider environmental issues just as they consider other matters within their mandates."[15]

In 1996, following the Third Circuit's 1989 decision and mandate in *Limerick*, NRC promulgated regulations outlining the procedure for evaluating the risk of severe accidents on a site-specific basis in a SAMA analysis.[16] However, even though *Limerick* dealt with mitigation measures that could be implemented during construction, NRC decided to allow operating reactors to defer their SAMA analysis until license renewal.[17] Because Indian Point Units 2 and 3 received permission to operate in 1973 and 1975, the license renewal SAMA analysis is the first and only time NRC Staff is analyzing severe accident mitigation under NEPA at the Indian Point site and surrounding 50-mile radius, including the New York City metropolitan area. There is nothing in NRC regulations limiting the SAMA analysis to aging management related candidates. Thus, NRC Staff's decision to only consider license conditions for SAMA candidates "relate[d] to adequately managing the effects of aging" does not comport with *Limerick*, the SAMA regulations, or NEPA.

As the Board correctly held, "we disagree with the Staff as a matter of law that its citation to the aging management limitations of Part 54 constitutes the requisite rational basis for refusing to require implementation of SAMAs whose benefits, at this juncture and on this record, clearly

[15] *Id.*

[16] 10 C.F.R. § 51.53(c)(3)(ii)(L).

[17] *Id.* ("if the [S]taff has not previously considered severe accident mitigation alternatives for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment, a consideration of alternatives to mitigate severe accidents must be provided.").

outweigh their costs."[18] In fact, "[t]he principal mitigation design alternative that could have been considered [in *Limerick*] appears to have been a 'filtered-vented containment,' a secondary structure that acts as a giant filter connected to an emergency vent in the primary containment vessel."[19] This mitigation measure would have been implemented during plant construction and, therefore, is not "relate[d] to adequately managing the effects of aging during the period of extended operation" (NRC Staff Response at 5). Thus, the Board correctly determined that, "[o]ther than the Staff's misplaced citation to Part 54's limitations, we are left with no explanation at all for why it has decided not to require implementation of these cost-beneficial SAMAs by setting conditions for the license renewal, by directing a backfit, or through some other procedure."[20] Also, as discussed more fully in the State's earlier submissions, Staff's position is also inconsistent with the Commission's firm rejection of a 2001 petition from NEI to eliminate the SAMA analysis from license renewal proceedings.[21]

[18] LBP-11-17, 74 N.R.C. at 26. Additionally, as the State explained in response to the petitions for review, the Commission has rejected NRC's argument that the SAMA analysis need not be completed for any SAMA candidate not within Part 54's aging management provisions. State PFR Answer at 53-60.

[19] *Limerick*, 869 F.2d 731, n.11.

[20] LBP-11-17, 74 N.R.C. at 26.

[21] NRC, "Nuclear Energy Institute; Denial of Rulemaking," PRM 51-7, 66 Fed. Reg. 10834 (Feb. 20, 2001). *See, e.g.* State of New York's Motion for Summary Disposition of Consolidated Contention NYS-35/36 (Jan. 14, 2011) (ML110270252) at 14-15; State of New York's Combined Reply to Entergy and Staff Cross-Motions for Summary Disposition on NYS Combined Contentions 35 and 36 Concerning the December 2009 Severe Accident Mitigation Alternative Reanalysis (Feb. 23, 2011) (ML110660425) at 3, 8, 17; State PFR Answer at 53-55.

2) The SAMA analysis concludes that "any potentially cost-beneficial SAMAs that do not relate to 10 C.F.R. Part 54 requirements would be considered, to the extent necessary or appropriate, under the agency's oversight of a facility's current operating license in accordance with 10 CFR Part 50 requirements."[22]

Under what circumstances, if any, would the Staff judge a "potentially cost-beneficial" mitigation alternative to warrant further NRC consideration outside of the license renewal review, either via a backfit analysis under 10 C.F.R. § 50.109 or as part of another process? For example, is there any level of reduction in risk metric values—e.g., core damage frequency or large early release frequency—that is or ought to be considered to determine whether a potentially cost-beneficial mitigation alternative warrants additional NRC consideration under Part 50?

As an initial matter, Staff confines its response to Commission Question 2 to the Part 50 "backfit" process and does not discuss or identify "another process."

NRC Staff's response makes clear Staff's position that any backfit process to analyze cost-beneficial SAMA candidates would occur outside of license renewal proceeding and would not implicate or delay the issuance of renewed 20 year operating licenses at Indian Point Units 2 and 3.[23] As discussed in response to Commission Question 1, a process that occurs outside of license renewal and the NEPA process does not satisfy NRC Staff's obligations to evaluate severe accident mitigation measures under NEPA and the Administrative Procedure Act ("APA"). The SAMA analysis must be completed as part of the license renewal process.[24] As the Board correctly held, "the FSEIS must demonstrate that the NRC Staff has received sufficient information to take a hard look at SAMAs 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 that may, but need not, include requiring the implementation of cost-effective SAMAs."[25] As

[22] *See* Ex. NYS00133C, FSEIS, Vol. 1, Main Report at 5-11.

[23] NRC Staff Response at 6-7.

[24] *See* 10 C.F.R. §51.101(a).

[25] LBP-11-17, 74 N.R.C. at 27.

the State has previously noted, a properly completed SAMA cost benefit analysis could suffice and support consideration (and potential implementation) of cost beneficial mitigation measures.[26]

NRC Staff's response to Commission Question 2 overlooks the fact that the backfit process is only one source of Staff's authority to implement plant changes. Completion of the SAMA analysis, within license renewal, may not necessarily require a backfit analysis.[27] Once Staff has a final list of cost-beneficial SAMA candidates, Staff must determine—prior to its publication of the FSEIS—whether any of the SAMAs warrant implementation. Staff's record of decision must "[s]tate whether the Commission has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected, and if not, to explain why those measures were not adopted."[28] Staff should also "[s]ummarize any license conditions and monitoring programs adopted in connection with mitigation measures."[29] Staff cannot complete the SAMA analysis, with the required rational basis for its decision, in a backfit process outside of license renewal.

Although NRC Staff's response to Commission Question 2 provides a description of the backfit process and relevant regulatory guidance on performing a backfit analysis, Staff does not provide any specific indication of how Staff would "judge a 'potentially cost-beneficial' mitigation alternative to warrant further NRC consideration outside of the license renewal review" or how the fundamentals of a backfit analysis are different from a completed SAMA

[26] State PFR Answer at 60-64.

[27] *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), LBP-10-13, 71 N.R.C. 673, 697 (June 30, 2010) ("NRC Staff must review SAMAs under Part 51 and has the option, if necessary, to institute a backfit prior to license renewal under Part 50 as a result of its SAMA review").

[28] 10 C.F.R. § 51.103(a)(4).

[29] *Id; see also* 40 C.F.R. § 1502.14.

review. As the State explained in its answer, pursuant to 10 C.F.R. § 50.109 the Commission "shall require the backfitting of a facility" upon its determination that "there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection."[30] A properly completed SAMA analysis would provide a rigorous and reliable assessment of whether the § 50.109(a)(3) criteria have been satisfied.[31] Thus, the SAMA analysis may render a backfit analysis unnecessary.

3) The Staff states that it does not require license renewal applicants to "finalize" their "SAMA calculations" by including "engineering project costs" in their analyses.[32]

What level of uncertainty does the Staff consider acceptable for the implementation cost portion of the cost-benefit analysis, and why?

Noting that it "does not seek certainty," Staff generally claims that it "seeks to assure that an applicant's SAMA cost estimates . . . are 'reasonable.'"[33] Staff admits that it has not "established any particular level of uncertainty that must be avoided."[34] In responding to Commission Question 3, NRC Staff attempts to reduce the term "reasonable" to a meaningless and standardless phrase. But NEPA's "rule of reason" does not relax the APA's rationality standard or NEPA's requirement for scientific integrity and accuracy.[35] Evaluating severe

[30] State PFR Answer at 60-61.

[31] *Id.* at 60-64.

[32] *See* Ex. NYS00133I, FSEIS, Vol. 3, App. G at 47-48.

[33] NRC Staff Response at 11.

[34] *Id.*

[35] *See Native Ecosystems Council v. U.S. Forest Serv.*, 418 F.3d 953, 964-65 (9th Cir. 2005) (NEPA requires that agencies rely on high quality data and accurate scientific analysis); 40 C.F.R. § 1500.1(b) (same), § 1502.24 ("Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements"); LBP-11-17, 74 N.R.C. at 22-23 (citing

accident mitigation based on an incomplete analysis does not comport with NEPA's requirements.

The remainder of NRC Staff's response to Commission Question 3 summarizes the guidance available for SAMA analyses—none of which addresses levels of uncertainty that are acceptable in an applicant's calculation of implantation costs.[36] The Regulatory Guide 4.2, Supp. 1 (Ex. ENT000136), NEI 05-01, Rev. A (Ex. NYS000287), and The Environmental Standard Review Plan for License Renewal NUREG-1555, Supp. 1 (Oct. 1999) (Ex. ENT00019A-B) provide general information about the stages of a SAMA analysis, but they do not speak to calculating uncertainty in cost estimates.

Staff states that NUREG/BR-0058 (ENT000013) "indicates that an applicant should provide 'best estimates' of SAMA costs and benefits" and "recognizes that 'uncertainty' may exist in those estimates."[37] Staff informs the Commission that the guidance states that "common sense needs to be applied in determining the level of effort to be given to the consideration and discussion of uncertainty."[38] Essentially, NUREG/BR-0058 is acknowledging that best estimates of costs should be used, but even those best estimates will have some level of uncertainty; NUREG/BR-0058 is not providing an excuse for not completing cost estimates. In fact, incomplete cost estimates cannot be "best estimates." If cost estimates are incomplete, Staff does not have the information to apply common sense and determine what level of uncertainty is

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ShieldAlloy Metallurgical Corp. v. NRC, 624 F.3d 489, 492-93 (D.C. Cir. 2010)) ("NRC would be acting arbitrarily and capriciously if it did not look at relevant data and sufficiently explain a rational nexus between the facts found in its review and the choice it makes as a result of that review.").

[36] *See* NRC Staff Response at 12-17.

[37] NRC Staff Response at 16.

[38] *Id.* (quoting Ex. ENT000013, NUREG/BR-0058 at 23-24).

present. Thus, the discussion of NUREG/BR-0058 is irrelevant to the Commission Question 3, which seeks to understand what level of uncertainty is tolerated by the Staff.

Likewise, the guidance in NUREG/BR-0184 (the Handbook) is inapplicable to incomplete cost estimates like the estimates NRC Staff discussed in the FSEIS. Instead, the Handbook provides guidance on how to calculate uncertainty once complete cost estimates are calculated. According to the Handbook, an "[u]ncertainty/sensitivity analysis for the cost measures is generally simpler than that for exposures" because "such analyses require no more than the straightforward variation of interest rates, labor hours, contingency factors, etc."[39] However, even if an uncertainty analysis for costs is "straightforward," such an uncertainty analysis cannot be undertaken if the cost estimates themselves are incomplete.

Instead of addressing the question of what level of uncertainty is acceptable, NRC Staff tries to bolster its claim that the SAMA analysis is meaningless, even asserting that "the SAMA analysis is not intended to determine whether an identified SAMA is actually cost-beneficial or whether its implementation is warranted."[40] Statements like this are in direct conflict with NEPA and the SAMA regulations, along with NEI guidance that the SAMA analysis be completed "to the point where economic viability of the proposed modification can be adequately gauged"[41] and the Commission's intent that the SAMA process be used to make decisions about whether a SAMA provides sufficient benefits to "warrant implementation."[42]

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[39] *Id.* at 17 (quoting Ex. ENT00010A, NUREG/BR-0184 at 5.8).

[40] *Id.* at 14.

[41] Ex. NYS000287, NEI 05-01(Rev. A) Nuclear Energy Institute, Severe Accident Mitigation Alternatives (SAMA) Guidance Document at 28 (Nov. 2005).

[42] *See, e.g.*, Statement of Considerations Accompanying Adoption of the GEIS, 61 Fed. Reg. 28,467, 28,481 (June 5, 1996); NRC Reg. Guide 4.2, Preparation of Supplemental Environmental Reports for Applications to Renew Nuclear Power Plant Operating Licenses, Supplement 1 (Sept. 2000) at 4.2-S-50 (noting that one of the ER obligations is to list "plant modifications . . . (if any) that have or will be

As discussed in response to Commission Question 1 above, the SAMA analysis is rooted in *Limerick* and was the result of a Commission decision that severe accident mitigation had not been considered in the operating license decision for nuclear power plants and should be. Contrary to Staff's implication, the Commission stated as early as 1980 that "it is also the intent of the Commission that the staff take steps to identify additional cases that might warrant early consideration of either additional features or other actions which would prevent or mitigate the consequences of serious accidents."[43] In short, the SAMA analysis would lack a purpose—except for the generation of paperwork—unless Staff determines whether a SAMA candidate is actually cost-beneficial and considers whether to require implementation of that SAMA candidate.[44] If the SAMA analysis is not completed and is not to be used as a guide for making decisions, it lacks a function and fails to satisfy the twin aims of NEPA: (1) to ensure that environmental values are fully considered in the agency's decision-making process; and (2) to inform the public of what the agency has considered.[45]

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implemented to reduce the severe accident dose consequence risk"); NUREG-1555, Supplement 1(Standard Review Plans for Environmental Reviews of Nuclear Power Plants (Oct. 1999)) at 5.1.1-8 to 5.1.1-9 (noting that the Staff review of the SAMA analysis should conclude with a finding as to whether "further mitigation measures are warranted" or whether "no further mitigation measures are warranted"); Ex. NYS000287, NEI 05-01 (Rev. A) Severe Accident Mitigation Alternatives (SAMA) Guidance Document (Nov. 2005) at 28 (noting the SAMA cost analysis should be completed "to the point where economic viability of the proposed modification can be adequately gauged").

[43] *See* 45 Fed. Reg. 40,101, 40, 103 (Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969 - Statement of Interim Policy) (June 13, 1980).

[44] *See* 40 C.F.R. § 1500.1(c) ("Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork—even excellent paperwork—but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.").

[45] *See Balt. Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 97 (1983); *see also San Luis Obispo Mothers for Peace v. Nuclear Reg. Comm'n*, 449 F.3d 1016, 1020 (9th Cir. 2006). The first purpose ensures that an agency, "in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts." *Robertson*, 490 U.S. at 349. The second purpose "guarantees that the relevant information [concerning environmental impacts] will be

NRC Staff has argued that that additional engineering cost-benefit analysis would not be meaningful and is unnecessary.[46] However, as the Commission stated in *Catawba/McGuire*, the purpose of SAMA review is "to ensure that the agency does not act upon incomplete information, only to regret its decision after it is too late to correct."[47] Hence, the Board correctly rejected Staff's argument that completion of the SAMA cost estimates would be meaningless and unnecessary.[48]

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made available to the larger audience," including the public, "that may also play a role in the decisionmaking process and the implementation of the decision." *Id.*

[46] *See* LBP-11-17, 74 N.R.C. at 19, 26.

[47] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-17, 56 N.R.C. 1, 10 (2002) (quoting *Louisiana Energy Services* (Claiborne Enrichment Center), CLI-98-3, 47 N.R.C. 77, 88 (1998) (internal quotations and citations omitted).

[48] LBP-11-17, 74 N.R.C. at 26 ("Although further review might well result in fewer identified cost-beneficial SAMAs, we cannot accept the NRC Staff's notion that fewer identified cost-beneficial SAMAs equals no gain in information. On the contrary, given that Entergy's SAMA review conducted to date has resulted in the elimination of certain SAMAs and the identification of other SAMAs with favorable cost-to-benefit ratios, it is equally plausible that further SAMA review would provide the agency and the public with a more accurate sense of the costs and benefits of relicensing IP2 and IP3. Accordingly, we find that the NRC Staff has prematurely concluded its review before receiving all the requisite information from Entergy, and that until the NRC Staff receives and analyzes that information, it necessarily cannot take the requisite hard look at Entergy's LRA that is required under NEPA.").

4) The Staff states that even if the NRC had authority to require implementation of mitigation alternatives for license renewal, "there is no reason to require such SAMAs for environmental protection purposes" because the Generic Environmental Impact Statement (GEIS) for reactor license renewal has already found the "probability-weighted consequences of . . . severe accidents" to be "SMALL" for all plants, and Indian Point Units 2 and 3 fall within "these generic determinations."[49]

Given that the "SMALL" probability-weighted impacts finding applies generically to all plants, why does the Staff expect a SAMA analysis to be a "comprehensive, systematic effort to identify and evaluate [] potential plant enhancements to mitigate" severe accidents?[50]

NRC Staff cannot dispense with NEPA's requirement to evaluate mitigation measures by classifying the impacts of a severe accident as "small." As an initial matter, nowhere does Staff contend that severe accident impacts are insignificant. And nowhere does NRC Staff assert that a severe accident will not occur at Indian Point. In fact, if a severe accident were to come to pass, the impacts of such an event would be severe and destabilizing especially at Indian Point, which operates in the most densely-populated and densely-developed area of any U.S. nuclear power plant. NRC's characterization of severe accident impacts as "small" is based on the low probability that such accidents will occur. "Under NEPA, an agency must look at both the probabilities of potentially harmful events *and* the consequences if those events come to pass."[51] Thus, an agency cannot dispense with an analysis based on probability alone.[52] By explicitly requiring a site-specific SAMA analysis, even the GEIS recognizes that NEPA requires a

[49] *See* Staff Petition at 51 n.187.

[50] *See* Ex. NYS000220, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supp. 1: Operating License Renewal," NUREG-1555, Supp. 1 (Oct. 1999), at 5.1.1-7 to 5.1.1-8.

[51] *New York v. NRC*, 681 F.3d 471, 478 (D.C. Cir. 2013) (emphasis added).

[52] *See* 40 C.F.R. § 1502.22(b)(4) (that 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."); *New York*, 681 F.3d at 482 ("[o]nly 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.).

discussion of potential ways to mitigate potential severe accident impacts, despite the low probability of such accidents.[53]

The SAMA analysis is a probabilistic risk assessment, which means that the low probability of a severe accident actually occurring is taken into account in the cost-benefit calculations.[54] Consequently, SAMA candidates found to be cost-effective are cost-effective despite the low probably of a severe accident occurring. Put another way, NRC's reason for labeling severe accident impacts as "small"—the probability— is incorporated into the SAMA analysis because the severe accident costs used are discounted by the probability that a severe accident would occur. The "small" label in no way excuses Staff from its NEPA obligations.

If the Commission believed that the "small" label dispensed with NEPA's requirement to evaluate mitigation measures, it would not have expressly included the requirement to perform a SAMA analysis in its regulations. Additionally, the Commission would have embraced, not firmly rejected, a 2001 petition from NEI to eliminate the SAMA analysis from license renewal proceedings.[55] Instead, the Commission reinforced the importance of the SAMA analysis in denying that petition:[56]

> In the case of license renewal, it is the Commission's responsibility under NEPA to consider all environmental impacts stemming from its decision to allow the continued operation of the entire plant for an additional 20 years. The fact that the NRC has determined that it is not necessary to consider a specific matter in conducting its safety review under Part 54 does not excuse it from considering the impact in meeting its NEPA obligations.

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[53] *See* 10 C.F.R. § 51.53(c)(3)(ii)(L); Part 51, Subpart A, Appendix B, Table B-1.

[54] State of New York's Proposed Findings of Fact and Conclusions of Law for Contention NYS-12/12A/12B/12C ("NYS-12C") ¶ 12 (Mar. 22, 2013) (ML13081A757).

[55] NRC, "Nuclear Energy Institute; Denial of Rulemaking," PRM 51-7, 66 Fed. Reg. 10834 (Feb. 20, 2001).

[56] *Id.* at 10,836.

Furthermore, in *Limerick*, the Third Circuit rejected NRC's attempt to exclude examination of the environmental impacts and mitigation of severe accidents at nuclear reactors through a generic policy statement, especially in light of differences in plant design and location.[57]

In the words of Commissioner McGaffigan, "Perhaps one day we will have nuclear reactor designs so safe that severe accidents will be remote and speculative and their consequences *nihil*, but that is not the case we have today in renewing the licenses of the current generation of reactors."[58]

III. CONCLUSION

For the foregoing reasons, and the reasons set forth in the State's opposition to Entergy and Staff's petitions for review and other filings on NYS-35/36 incorporated by reference, the Commission should affirm the Board's decisions on contention admissibility and summary disposition, resolving NYS-35/36 in favor of the State.

Respectfully submitted,

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[57] *Limerick*, 869 F.2d at 738-39.

[58] VR-SECY-00-0210, Commission Voting Record, Notation Vote Response Sheet (Commissioner McGaffigan's Comments on SECY-00-0210 (Oct. 31, 2000) (ML010520240).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In re:	Docket Nos. 50-247-LR and 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 May 11, 2015

CERTIFICATE OF SERVICE

I hereby certify that on May 11, 2015, copies of the State of New York's Reply to NRC Staff's Response to Commission Order CLI-15-3 Requesting Further Briefing on Contention NYS-35/36 Concerning the Site-Specific Indian Point Severe Accident Mitigation Alternatives Analysis were served electronically via the Electronic Information Exchange on the following recipients:

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