

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	Docket Nos. 50-247-LR and
	)	50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.	)	
	)	
(Indian Point Nuclear Generating Units 2 and 3)	)	
	)	March 22, 2013

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**ENTERGY'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR  
CONTENTION NYS-37 (ENERGY ALTERNATIVES)**

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Pursuant to 10 C.F.R. § 2.1209, and the Atomic Safety and Licensing Board’s (“Board”) February 28, 2013 Order,<sup>1</sup> Entergy Nuclear Operations, Inc. (“Entergy”) submits its Proposed Findings of Fact and Conclusions of Law (“Proposed Findings and Conclusions”) on New York State (“New York”) Contention 37 (“NYS-37”).

The Proposed Findings and Conclusions are based on the evidentiary record in this proceeding, and are submitted in the form of a proposed Partial Initial Decision by the Board. The Proposed Findings and Conclusions are set out in numbered paragraphs, with corresponding citations to the record of this proceeding.

**I. INTRODUCTION**

1. In this Partial Initial Decision, the Board presents its Findings of Fact and Conclusions of Law on Contention NYS-37. NYS-37 raises a National Environmental Policy Act (“NEPA”)<sup>2</sup> challenge to whether the U.S. Nuclear Regulatory Commission (“NRC” or “Commission”) Staff’s Final Supplemental Environmental Impact Statement (“FSEIS”)

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<sup>1</sup> Licensing Board Order (Granting Parties Joint Motion for Alteration of Filing Schedule) at 1 (Feb. 28, 2013) (unpublished).

<sup>2</sup> 42 U.S.C. § 4321 *et seq.* (2006).

reasonably addresses the availability and environmental impacts of energy conservation, renewable generation, and other energy sources that would likely replace Indian Point Nuclear Generating Units 2 and 3's (respectively, "IP2" and "IP3," and collectively, "Indian Point") 2158 megawatts-electric ("MWe") of baseload<sup>3</sup> power under the "no-action alternative" (*i.e.*, denying the IP2 and IP3 renewal application).<sup>4</sup> According to New York, the FSEIS fails to sufficiently acknowledge and evaluate the possibility that IP2 and IP3 would be replaced by energy sources with substantially lower environmental impacts than those energy sources discussed in the FSEIS. New York further argues that the FSEIS overestimates the need for power from Indian Point and thus also does not properly evaluate the costs and benefits associated with the no-action alternative. Based on these alleged errors, New York claims that the FSEIS does not provide a rational basis to "determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable."<sup>5</sup>

2. Having considered all of the record evidence, the Board finds that New York's criticisms of the FSEIS lack merit and that, contrary to New York's claims, the FSEIS takes the required "hard look" at the environmental impacts of a reasonable range of energy scenarios that could replace Indian Point's 2158 MWe of baseload generation under the no-action alternative.

In particular, the FSEIS considers and discusses the environmental impacts associated with a

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<sup>3</sup> "Baseload" power is a power source that is "intended to continuously produce electricity at or near full capacity, with high availability." *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC \_\_\_, slip op. at 50 n.223 (Mar. 8, 2012), *aff'd sub. nom. Beyond Nuclear v. NRC*, 704 F.3d 12 (1st Cir. 2013) (citing *Env'tl. Law & Policy Ctr. v. NRC*, 470 F.3d 676, 679 (7th Cir. 2006)).

<sup>4</sup> Consistent with Commission precedent, the Board focuses its Decision on the FSEIS even though New York's predecessor contentions 9 ("NYS-9") and 33 ("NYS-33"), challenged Entergy's Environmental Report ("ER") and the NRC Staff's Draft Supplemental Environmental Impact Statement ("DSEIS"), respectively. *See La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 84 (1998) (indicating that the Board appropriately treated a NEPA contention as a challenge to the FEIS even though most of the environmental contentions were filed as challenges to the applicant's ER).

<sup>5</sup> 10 C.F.R. §§ 51.95(c)(4), 51.103(a)(5).

fossil alternative (new natural gas-fired generation); an all energy conservation alternative; and two alternative combination scenarios, including a scenario combining considerable amounts of conservation (1000 to 1200 MWe) and renewable generation (400 to 600 MWe) with a natural gas facility (400 to 600 MWe). Given that the actual combinations that might be examined are nearly limitless, this evaluation represented a sound approach to presenting a reasonable range of alternatives. The record also reflects that the NRC Staff developed many of these alternatives specifically to address New York's comments on the DSEIS. In fact, to accommodate New York's comments, the FSEIS exceeds NEPA's requirements and considers several non-baseload energy sources (*i.e.*, conservation and renewables) as replacements to Indian Point's baseload generation even though such analysis is unnecessary under Commission and federal case law, and is directly contrary to New York's own practice under the state-equivalent of NEPA.

3. Based on this proceeding's entire record, the Board also finds insufficient evidence to support New York's position that conservation and renewables would likely play a larger role in replacing Indian Point's baseload generation than assumed in the FSEIS. Initially, we note that because the FSEIS analyzes conservation as a standalone alternative to license renewal, it is hard to imagine how one could, in turn, attribute a larger role for conservation in the alternatives analysis. Moreover, Entergy's experts, Dr. David Harrison, Jr. and Mr. Eugene T. Meehan, demonstrated that New York's approach of citing various, potential energy market developments does not undermine the FSEIS. Specifically, New York's approach: (1) fails to recognize the manner in which market forces and cost-minimization would dictate future developments given New York's deregulated energy markets; (2) incorrectly treats developments that are occurring or would occur regardless of whether IP2 and IP3 license renewal occurs as consequences that would result from the no-action alternative; (3) fails to consider that factors

such as lower natural gas prices make conservation and renewables relatively more expensive compared to fossil generation and thus makes conservation and renewables less likely to replace Indian Point under the no-action alternative; and (4) fails to provide any independent empirical analysis of likely replacement energy sources. Based on their own economic analyses, Dr. Harrison and Mr. Meehan also demonstrated that market forces would primarily dictate that the energy needed to replace Indian Point's baseload power would come mainly from fossil power plants, including natural gas, with a much smaller amount from renewables and conservation. The FSEIS is thus conservative and satisfies NEPA because it assumes more conservation and renewables than one would expect based on the combination of market forces and current conservation and renewable support programs.

4. Finally, the Board finds that New York's various criticisms do not credibly undermine the FSEIS conclusion that, when compared to alternatives, Indian Point's adverse environmental impacts are not so great that preserving the option for license renewal is unreasonable. The FSEIS fully evaluates the environmental impacts of four energy alternatives—natural gas-fired generation, energy conservation, and two combination alternatives. The FSEIS concludes that, except for the conservation alternative, the other three alternatives all have greater environmental impacts than license renewal. The FSEIS further concludes that, similar to license renewal, the conservation alternative has SMALL environmental impacts for all but one relevant environmental issue. Because the Commission has determined that it would only be unreasonable to preserve the option for license renewal if all (or almost all) of the alternatives considered by the NRC have significantly fewer environmental impacts than the proposed action, the Board finds that the adverse environmental

impacts of license renewal for IP2 and IP3 are not so great that preserving the license renewal option is unreasonable.

5. For the reasons fully set forth below, the Board finds that, based on the entire record of this proceeding, the NRC Staff and Entergy carried their respective burdens of proof on this contention, and that the NRC Staff satisfied its obligations under NEPA and 10 C.F.R. Part 51. The Board thus resolves NYS-37 on the merits in favor of the NRC Staff and Entergy. In accordance with well-established NRC adjudicatory practice, the NRC Staff's FSEIS is deemed supplemented by this Decision.<sup>6</sup>

## **II. PROCEDURAL HISTORY OF CONTENTION NYS-37**

### **A. Application Submittal and Original Contention NYS-9**

6. On April 23, 2007, Entergy applied to the NRC to renew the IP2 and IP3 operating licenses for twenty years beyond their current expiration dates of September 28, 2013, and December 12, 2015, respectively.<sup>7</sup>

7. Sections 7.3 (No-Action Alternative) and 8.4 (Proposed Action vs. No-Action) of Entergy's Environmental Report ("ER") evaluated the environmental consequences of the no-action alternative (*i.e.*, denying the IP2 and IP3 renewal application).<sup>8</sup> Both of those sections indicated that the environmental impacts of the no-action alternative would include impacts from

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<sup>6</sup> *Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station)*, CLI-12-01, 75 NRC \_\_\_, slip op. at 30 (Feb. 9, 2012) (citation omitted) ("In an NRC adjudicatory proceeding, the adjudicatory record, Board decision, and any Commission decision become effectively part of the environmental review document (here, a final supplemental EIS). Therefore, the SEIS is deemed supplemented by the Board's decision, and by this decision."). This issue is discussed further in Section III.C below.

<sup>7</sup> Entergy Nuclear Operations, Inc., Indian Point Nuclear Generating Unit Nos. 2 and 3; Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing Regarding Renewal of Facility Operating License Nos. DPR-26 and DPR-64 for an Additional 20-Year Period, 72 Fed. Reg. 42,134 (Aug. 1, 2007) ("Hearing Notice").

<sup>8</sup> Indian Point Energy Center License Renewal Application, App. E, Applicant's Environmental Report, Operating License Renewal Stage, Indian Point Energy Center at §§ 7.3, 8.4 (Apr. 2007) ("ER") (ENT00015B).

energy sources necessary to replace Indian Point's 2158 MWe of baseload power, and that Entergy addressed those impacts in ER Sections 7.5 (Alternative Energy Sources) and 8.2 (Comparison of Environmental Impacts for Reasonable Generation Alternatives).<sup>9</sup>

8. In turn, ER Sections 7.5 (Alternative Energy Sources) and 8.2 (Comparison of Environmental Impacts for Reasonable Generation Alternatives) evaluated the availability and environmental impacts of energy alternatives capable of providing approximately 2158 MWe as baseload generation.<sup>10</sup> Specifically, the ER provided detailed environmental impact evaluations for coal-fired generation, natural gas-fired combined-cycle generation, and advanced nuclear power generation.<sup>11</sup> In characterizing the significance of each specific kind of impact (*e.g.*, land use, air quality, socioeconomics), Entergy used the three significance levels (*i.e.*, SMALL, MODERATE, and LARGE) specified in 10 C.F.R. Part 51, Appendix B, Table B-1.

9. Based on these evaluations, the ER concluded that the no-action alternative would have greater impacts than license renewal.<sup>12</sup> The ER indicated that license renewal would result in only SMALL environmental impacts for all relevant issues, whereas the coal-fired generation, natural gas-fired combined-cycle generation, and advanced nuclear power evaluations indicated that these alternatives would result in MODERATE or greater impacts for at least six relevant issues.<sup>13</sup>

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<sup>9</sup> *Id.* at 7-1, 8-57.

<sup>10</sup> *Id.* at 8-1 to -2.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.* at 8-57, 8-67.

<sup>13</sup> *Compare id.* at 6-2 to -4 tbl. 6-1 (Environmental Impacts Related to License Renewal at IP2 and IP3) *with id.* at 8-29 to -30 tbl. 8-6 (Summary of Environmental Impacts from Coal-Fired Generation Using Closed-Cycle Cooling at an Alternate Greenfield Site), 8-31 tbl. 8-7 (Summary of Environmental Impacts from Coal-Fired Generation Using Once-Through Cooling at an Alternate Greenfield Site), 8-40 to -41 tbl. 8-10 (Summary of Environmental Impacts from Gas-Fired Generation Using Closed-Cycle Cooling), 8-42 tbl. 8-11 (Summary of Environmental Impacts from Gas-Fired Generation Using Once-Through Cooling), 8-47 to -48 tbl. 8-12 (Summary of Environmental Impacts from Nuclear Power Generation Using Closed-Cycle Cooling at

10. In addition, consistent with NRC guidance in NUREG-1437, the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (“GEIS”),<sup>14</sup> ER Section 8.3 (Alternative Generation Not Within the Range of Reasonable Alternatives) discussed certain alternative energy sources (*e.g.*, wind, solar, biomass, and energy conservation) that were eliminated as reasonable alternatives to the proposed action because they were not single, discrete baseload sources capable of supplying 2,158 MWe.<sup>15</sup>

11. On August 1, 2007, the NRC published in the *Federal Register* a “Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing.”<sup>16</sup> The Hearing Notice stated that any person wishing to participate as a party must file a petition for leave to intervene within sixty days of the Notice (*i.e.*, October 1, 2007),<sup>17</sup> a deadline later extended until November 30, 2007.<sup>18</sup>

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Alternate Greenfield Site), 8-49 tbl. 8-13 (Summary of Environmental Impacts from Nuclear Power Generation Using Once-Through Cooling at Alternate Greenfield Site) (ENT00015B).

<sup>14</sup> See NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants at 8-1 (May 1996) (“GEIS”) (NYS00131D) (“While many methods are available for generating electricity, and a huge number of combinations or mixes can be assimilated to meet a defined generating requirement, such expansive consideration would be too unwieldy to perform given the purposes of this analysis. Therefore, NRC has determined that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources and only electric generation sources that are technically feasible and commercially viable.”). The GEIS also makes clear that the analysis is to focus on baseload generation sources. See also *id.* at 8-17 (“The inability to increase the capacity factors of wind power makes the technology an inappropriate choice for baseload power.”); *id.* at 8-19 (“Use of PV cells for baseload capacity requires very large energy storage devices, such as pumped hydro facilities, batteries, or compressed air chambers. Currently available energy storage devices are too expensive to store sufficient electricity to meet the baseload generating requirements.”); *id.* at 8-22 (“Solar thermal systems have constraints similar to those of PV systems in that capital costs are higher than for nonrenewable resources, and solar thermal systems lack baseload capability unless combined with natural gas backup.”); *id.* at 8-25 to 8-27 (NYS00131E) (“Although geothermal plants offer alternative baseload capacity to conventional fossil fuel and nuclear plants, widespread application of geothermal energy is constrained by the geographic availability of the resource and the maturity of the technology.”); *id.* at 8-33 (“Combined-cycle plants . . . are particularly efficient and are used as intermediate and baseload facilities . . .”).

<sup>15</sup> ER at 8-50 to -53 (ENT00015B).

<sup>16</sup> Hearing Notice, 72 Fed. Reg. at 42,134 .

<sup>17</sup> *Id.*

<sup>18</sup> Entergy Nuclear Operations, Inc., Indian Point Nuclear Generating Unit Nos. 2 and 3; Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing Regarding Renewal of Facility Operating License Nos. DPR-26 and DPR-64 for an Additional 20-Year Period: Extension of Time for Filing

12. New York submitted NYS-9 in its November 30, 2007 Petition to Intervene.<sup>19</sup> As originally proffered, NYS-9 alleged that Entergy’s evaluation of the no-action alternative and alternative energy sources in the ER failed “to evaluate energy conservation as an alternative that could displace the energy production of one or both of the Indian Point reactors” and thus failed “to carry out its obligations under 10 C.F.R. § 51.53(c)(2).”<sup>20</sup> In particular, NYS-9 alleged that Entergy’s ER should have evaluated conservation<sup>21</sup> as an alternative to license renewal because conservation represents a viable energy alternative that would yield fewer adverse environmental impacts than license renewal.<sup>22</sup> According to New York, the ER should have, at a minimum, analyzed conservation’s feasibility, costs, and environmental impacts as part of the “no-action” alternative.<sup>23</sup>

13. NYS-9 was supported by declarations from Mr. Peter A. Bradford and Mr. David A. Schlissel.<sup>24</sup> Mr. Bradford claimed that the NRC’s approach to addressing alternatives has been deficient since 1975 because it has not effectively assessed the role that energy efficiency

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of Requests for Hearing or Petitions for Leave To Intervene in the License Renewal Proceeding, 72 Fed. Reg. 55,834 (Oct. 1, 2007).

<sup>19</sup> New York State Notice of Intention to Participate and Petition to Intervene (Nov. 30, 2007) (“New York Petition”), available at ADAMS Accession No. ML073400187.

<sup>20</sup> *Id.* at 106. Section 51.53(c)(2) requires, among other things, that an ER discuss “the environmental impacts of alternatives,” but also clarifies that an ER “is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation.”

<sup>21</sup> Conservation generally refers to behavioral changes that reduce energy consumption (*e.g.*, turning up the thermostat in the summer to reduce electricity consumption), whereas energy efficiency generally refers to technologies that provide essentially the same services but with lower energy use (*e.g.*, a new refrigerator that consumes less electricity without affecting its cooling ability or other features). *See* David Harrison, Jr., Ph.D. et al., NERA Economic Consulting, Potential Energy and Environmental Impacts of Denying Indian Point’s License Renewal Applications at 1 n.3 (2012) (“NERA Report”) (ENT000481). Both conservation and energy efficiency reduce total electricity demand and thus, for purposes of NYS-37, the distinction is irrelevant. Accordingly, in this Decision, we use these terms interchangeably.

<sup>22</sup> New York Petition at 106-107.

<sup>23</sup> *See id.* at 106.

<sup>24</sup> *Id.* at 120.

can play in displacing nuclear power plants.<sup>25</sup> He then cited several historic examples of nuclear power plants that were successfully replaced with energy efficiency and other resources.<sup>26</sup>

Mr. Schlissel summarized the results from his 2007 report prepared for New York while he was employed by Synapse Energy Economics, Inc. (“2007 Synapse Report”), which concluded that, if the units are not relicensed, then the capacity and energy from IP2 and IP3 can be replaced by, among other things, energy efficiency that will be achieved under New York’s “15 by 15” energy plan.<sup>27</sup>

14. Entergy and the NRC Staff opposed admission of NYS-9.<sup>28</sup> Both argued that NYS-9 lacked legal basis, noting that the ER analysis of conservation adhered to NRC guidance in the GEIS and appropriately rejected conservation as a reasonable alternative because conservation is not a single, discrete baseload generation source capable of supplying 2158 MWe.<sup>29</sup>

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<sup>25</sup> Declaration of Peter A. Bradford at 2 (Nov. 28, 2007) (“Bradford Decl.”) (NYS000105).

<sup>26</sup> *See id.* at 3-5.

<sup>27</sup> Declaration of David A. Schlissel at 3 (Nov. 28, 2007) (“Schlissel Decl.”) (NYS000051); *see also* David Schlissel, Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3 (Nov. 28, 2007) (NYS000052). The “15 by 15” goal calls for a 15 percent reduction in energy consumption by 2015, compared to an earlier forecasted “business as usual” electricity consumption in 2015. Testimony of Entergy Witnesses Donald P. Cleary, David Harrison Jr., and Eugene T. Meehan Regarding Contention NYS-37 (Energy Alternatives) at 47-48 (A62) (Mar. 30, 2012) (“Entergy Testimony”) (ENT000479); *see also* Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 2951:2-12 (Oct. 24, 2012) (Schlissel) (“Oct. 24, 2012 Tr.”) (explaining the “15 by 15” program).

<sup>28</sup> Answer of Entergy Nuclear Operations, Inc. Opposing New York State Notice of Intention to Participate and Petition to Intervene (Jan. 22, 2008) (“Entergy Answer”), *available at* ADAMS Accession No. ML080300149; NRC Staff’s Response to Petitions for Leave to Intervene Filed by (1) Connecticut Attorney General Richard Blumenthal, (2) Connecticut Residents Opposed to Relicensing of Indian Point, and Nancy Burton, (3) Hudson River Sloop Clearwater, Inc., (4) the State of New York, (5) Riverkeeper, Inc., (6) the Town of Cortlandt, and (7) Westchester County (Jan. 22, 2008) (“Staff Answer”), *available at* ADAMS Accession No. ML080230543.

<sup>29</sup> Entergy Answer at 74-79; Staff Answer 47.

15. The Board held an oral argument on whether NYS-9 met the Commission's contention admissibility requirements.<sup>30</sup> At the oral argument, New York reiterated its claim that the ER should have considered conservation as a part of the no-action alternative,<sup>31</sup> and further argued that NEPA allows the NRC to examine the need for power as part of the no-action alternative.<sup>32</sup> Entergy and the Staff also reiterated their position that conservation was not a reasonable baseload alternative to license renewal and challenged New York's claim that the need for power can be examined as part of the no-action alternative.<sup>33</sup> Entergy and the NRC Staff relied on 10 C.F.R. § 51.53(c)(2) which specifically states that an ER for license renewal is not required to discuss the need for power.<sup>34</sup>

16. The Board admitted NYS-9, in part, as a "narrow" contention of omission.<sup>35</sup> The Board denied admission of NYS-9, insofar as it alleged that Entergy's energy alternatives analysis was deficient because it ignored energy conservation.<sup>36</sup> In so ruling, the Board held that reasonable energy alternatives for license renewal are limited to discrete baseload generation sources that are technically feasible and commercially available.<sup>37</sup> The Board admitted NYS-9 to the extent it claimed that Entergy's ER should have considered whether the no-action alternative would lead to further conservation measures.<sup>38</sup> As such, the Board limited NYS-9 to

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<sup>30</sup> Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 218:16-233:18(Mar. 10, 2008).

<sup>31</sup> *Id.* at 223:2-24 (Sipos).

<sup>32</sup> *See id.* at 225:11-226:11 (Sipos).

<sup>33</sup> *See id.* at 226:14-230:20 (Chandler).

<sup>34</sup> *See id.*

<sup>35</sup> *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), LBP-08-13, 68 NRC 43, 93 (2008).

<sup>36</sup> *See id.*

<sup>37</sup> *See id.* at 93, 95-96, 99.

<sup>38</sup> *Id.* at 93.

the issue of whether Entergy's ER should have analyzed the environmental impacts of energy conservation, if any, that would result from the no-action alternative.<sup>39</sup>

**B. NRC Staff's Initial Environmental Review, the DSEIS, and Amended Contention NYS-33**

17. As required by NEPA and 10 C.F.R. Part 51, the NRC Staff comprehensively reviewed Entergy's license renewal application. The NRC Staff initiated that process by publishing a notice of intent to prepare a plant-specific supplement to the GEIS (*i.e.*, a supplemental environmental impact statement or "SEIS") and to conduct related environmental scoping activities.<sup>40</sup>

18. As part of that process, the NRC Staff conducted environmental site audits at Indian Point from September 10-14, 2007, and from September 24-27, 2007, which allowed the NRC Staff to tour the site, examine the data Entergy used in preparing the ER, and meet with Entergy personnel and representatives from federal, state, and local government agencies to obtain relevant information.<sup>41</sup>

19. The NRC also invited the applicant, federal, state, local, and tribal government agencies, local organizations, and individuals to participate in the scoping process by providing oral comments at scheduled public meetings and/or submitting written suggestions and

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<sup>39</sup> *Id.*

<sup>40</sup> Entergy Nuclear Operations, Inc., Indian Point Nuclear Generating Unit Nos 2 and 3; Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process, 72 Fed. Reg. 45,075 (Aug. 10, 2007). 10 C.F.R. § 51.20(b)(2) requires the NRC to prepare an EIS or SEIS for renewal of a reactor operating license. In addition, Section 51.95(c) states that the EIS prepared at the operating license renewal stage will be a supplement to the GEIS (NYS00131A-I).

<sup>41</sup> See NUREG-1437, Supp. 38, Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Final Report, Main Report and Comment Responses at xv (Dec. 2010) ("FSEIS") (NYS00133A).

comments by October 12, 2007.<sup>42</sup> The scoping process included two public scoping meetings held on September 19, 2007, in Cortlandt Manor, New York.<sup>43</sup> The Staff received hundreds of written and oral comments during the scoping process.<sup>44</sup>

20. On October 31, 2007, approximately two weeks after the scoping comment deadline, New York submitted comments to the NRC Staff concerning the scope of the SEIS.<sup>45</sup> In one comment, New York stated that the SEIS no-action alternative analysis should consider the possibility that only one Indian Point unit would be renewed,<sup>46</sup> and whether such a decision would impact the feasibility of alternative technologies, such as wind, solar, biomass, and energy conservation.<sup>47</sup> In another comment, New York emphasized the need to consider conservation as an alternative to Indian Point's generation, highlighting New York's recently-announced "15 by 15" plan to reduce energy consumption by fifteen percent by 2015.<sup>48</sup>

21. In preparing the IP2 and IP3 the DSEIS, the Staff reviewed the Indian Point ER and compared it to the GEIS; consulted with numerous federal, state, regional, and local agencies, and Native American Tribes (as listed in Appendix D to the DSEIS); conducted an independent review of issues in accordance with NUREG-1555, Supp. 1 (the Staff's

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<sup>42</sup> See Environmental Impact Statement Scoping Process Summary Report Indian Point Nuclear Generating Station Unit Nos. 2 and 3 Village of Buchanan, New York (Dec. 2008) ("EIS Scoping Summary Report") (NRCR00139).

<sup>43</sup> See *id.* at 1. Both sessions began with NRC Staff members providing a brief overview of the license renewal process and the NEPA process. See *id.*

<sup>44</sup> See *id.*

<sup>45</sup> See New York State Executive Agencies and the Department of Law Scoping Comments on the License Renewal of Indian Point Units 2 and 3 (Oct. 31, 2007) (NRC000135).

<sup>46</sup> Proposed NYS-4 alleged that the ER improperly assumed license renewal of both IP2 and IP3, and should have instead addressed alternative energy sources that could replace the energy from only one unit. NYS Petition at 78-79. We rejected NYS-4 because New York failed to identify any legal requirement mandating such analysis. See *Indian Point*, LBP-08-13, 68 NRC at 77.

<sup>47</sup> New York State Executive Agencies and the Department of Law Scoping Comments on the License Renewal of Indian Point Units 2 and 3, Buchanan, New York at 16-17 (Oct. 31, 2007) (NRC000135).

<sup>48</sup> *Id.* at 17-18.

Environmental Standard Review Plan for license renewal applications);<sup>49</sup> and considered the public comments received during the scoping process,<sup>50</sup> including New York’s late-filed comments.<sup>51</sup>

22. In December 2008, the Staff issued the DSEIS for public comment.<sup>52</sup> DSEIS Section 8.2 (No-Action Alternative) addressed the no-action alternative’s environmental impacts.<sup>53</sup> Section 8.2 explained:

Plant shutdown will result in a net loss of power generating capacity. The power not generated by IP2 and IP3 during the license renewal term would likely be replaced by (1) power supplied by other producers (either existing or new units) using generating technologies that may differ from that employed at IP2 and IP3, (2) demand-side management and energy conservation, or (3) some combination of these options.<sup>54</sup>

As such, the DSEIS indicated that the environmental impacts of these possible replacement actions “also constitute potential consequences of the no-action alternative” and that those impacts are addressed in Section 8.3 (Alternative Energy Sources).<sup>55</sup>

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<sup>49</sup> NUREG-1555, Supp. 1, Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Operating License Renewal (Oct. 1999) (ENT00019B).

<sup>50</sup> See NUREG-1437, Vol. 1, Supp. 38, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment at xiii (Dec. 2008) (“DSEIS”) (NYS00132A). The NRC Staff’s December 2008 Scoping Summary Report documented public comments received during the scoping process and determined to be within the scope of the NRC’s environmental review. Environmental Impact Statement Scoping Process, Summary Report Indian Point Nuclear Generating Station Unit Nos. 2 and 3, Village of Buchanan, New York, at 1 (Dec. 2008) (“Scoping Summary Report”) (excerpt included as NRCR00139).

<sup>51</sup> New York State Scoping Comments on License Renewal of Indian Point, Units 2 and 3 at 16-17 (Oct. 31, 2007) (NRC000135); see also NRC Staff’s Testimony of Andrew L. Stuyvenberg Concerning Contention NYS-9, NYS-33 and NYS-37 (Alternatives, Consolidated) at 29-30 (A29) (Mar. 30, 2012) (“NRC Staff Testimony”) (NRC000133).

<sup>52</sup> DSEIS (NYS00132A-D).

<sup>53</sup> *Id.* at 8-27 to -29 (NYS00132B).

<sup>54</sup> *Id.* at 8-27.

<sup>55</sup> *Id.*

23. DSEIS Section 8.3 in turn provided a detailed environmental impact evaluation for the following four alternatives:

- Supercritical Coal-Fired Generation (2200 MWe).<sup>56</sup>
- Natural Gas-Fired Combined-Cycle Generation (2000 MWe at the Indian Point site or at an alternative site).<sup>57</sup>
- DSEIS Combination 1: Continuing either IP2 or IP3 operations (about 1080 MWe), natural-gas combined-cycle generation (330 MWe), renewable energy sources (200 to 400 MWe, primarily wood and wind), and conservation (300 to 500 MWe).<sup>58</sup>
- DSEIS Combination 2: Natural-gas combined-cycle generation (400 MWe), renewable generation (200 to 400 MWe, primarily wood and wind), conservation (500 to 800 MWe), and purchased/imported power (800 MWe from upstate New York and Canada following the installation of a new transmission line).<sup>59</sup>

24. For these four alternatives, the DSEIS assessed the significance for each relevant environmental issue (*e.g.*, land use, air quality, socioeconomics) using the three significance levels (*i.e.*, SMALL, MODERATE, and LARGE) specified in 10 C.F.R. Part 51, Appendix B, Table B-1. The DSEIS concluded that license renewal would result in SMALL environmental impacts for all but one relevant issue (aquatic impacts), whereas four energy alternatives would result in MODERATE or greater impacts for four or more relevant issues.<sup>60</sup> Based on a comparison between the alternatives and license renewal, the NRC Staff's preliminary recommendation in the DSEIS was that "the adverse environmental impacts of license renewal

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<sup>56</sup> *Id.* at 8-33 to -46 (NYS00132B-C).

<sup>57</sup> *Id.* at 8-46 to -56 (NYS00132C).

<sup>58</sup> *Id.* at 8-65 to -71, 8-76 to -78.

<sup>59</sup> *Id.* at 8-71 to -78.

<sup>60</sup> *See id.* at 9-7. The DSEIS found that the impacts to aquatic ecology from license renewal would be SMALL to LARGE because, depending on the species, impingement and entrainment impacts may vary from SMALL to LARGE, and thermal impacts may be SMALL to MODERATE. *See id.* at 9-9, 9-11. As discussed below, the NRC Staff revised this conclusion in the FSEIS and again in a draft supplement to the FSEIS.

for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.”<sup>61</sup>

25. The DSEIS also considered but dismissed from individual consideration other alternative energy sources that were “individually inadequate to serve as alternatives to IP2 and IP3.”<sup>62</sup> In particular, the DSEIS determined that, *by themselves*, the following alternatives were unsuitable to replace IP2 and IP3’s generation: (1) purchased power; (2) energy conservation; (3) wind; (4) wood and wood waste; (5) hydropower; (6) oil-fired generation; (7) solar power; (8) new nuclear generation; (9) geothermal energy; (10) municipal solid waste; (11) other biomass-derived fuels; (12) fuel cells; and (13) delaying the retirement of other existing plants.<sup>63</sup> Notwithstanding their unsuitability as standalone replacements, the DSEIS considered a number of these alternatives in the “combination” of alternatives analysis.<sup>64</sup>

26. In response to the DSEIS, New York filed NYS-33 in February 2009.<sup>65</sup> In addition to updating NYS-9 to challenge the DSEIS, NYS-33 also alleged that the DSEIS violated NEPA because it ignored significant new energy developments and failed to provide a rigorous analysis of the costs, benefits, and feasibility of conservation, renewable energy sources, expanded transmission capacity, and possible combinations of different energy sources under the “no-action” alternative.<sup>66</sup> New York also claimed the NRC Staff must develop a comprehensive

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<sup>61</sup> See *id.* at 9-7.

<sup>62</sup> *Id.* at 8-58.

<sup>63</sup> See *id.* 8-58 to -65.

<sup>64</sup> See *id.* 8-65 to -78.

<sup>65</sup> See State of New York Contentions Concerning NRC Staff’s Draft Supplemental Environmental Impact Statement at 23-34 (Feb. 27, 2009), *available at* ADAMS Accession No. ML090690303.

<sup>66</sup> See *id.* at 20-34.

cost-benefit analysis of the feasibility of conservation and other measures to replace the power from Indian Point.<sup>67</sup>

27. Furthermore, New York alleged that the DSEIS incorrectly assumed that: (1) conservation could only provide 800 MWe to replace Indian Point's power; and (2) wind power or other renewable sources could only provide 200 to 400 MWe.<sup>68</sup> New York claims that, as a result, the two alternative combinations in the DSEIS were therefore "artificially narrow and arbitrary."<sup>69</sup> According to New York, the NRC Staff should have considered two additional alternative combinations:

- New York Combination 3: Renewables generation (1000 to 1200 MWe), energy efficiency (1200 to 1400 MWe from New York's existing "15 by 15" plan), and combined heat and power (100 to 200 MWe).<sup>70</sup>
- New York Combination 4: Natural-gas combined-cycle generation (400 to 600 MWe from repowering an existing fossil-fired power plant in downstate New York), energy efficiency (1200 to 1500 MWe), and renewable generation (600 to 800 MWe from biomass and wind).<sup>71</sup>

28. New York stated that NYS-33 was supported by the previously filed 2007 declarations from Mr. Bradford and Mr. Schlissel, as well as a new declaration from Mr. Schlissel.<sup>72</sup> In this new declaration, Mr. Schlissel reiterated that New York has taken aggressive actions to implement the "15 by 15" plan, including, for example, the New York Public Service Commission ("NYPSC") issuance of an Energy Efficiency Portfolio Standard

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<sup>67</sup> See *id.*

<sup>68</sup> *Id.* at 25, 27, 33.

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* at 33.

<sup>71</sup> *Id.*

<sup>72</sup> See *id.* at 35-36; see Declaration of David A. Schlissel (Feb. 27, 2009) ("2009 Schlissel Decl.") (NYS000053).

(“EEPS”).<sup>73</sup> He also indicated that the DSEIS underestimated the availability of conservation, renewables, re-powering existing fossil facilities, and transmission enhancements, and he agreed the NRC Staff should consider New York Combinations 3 and 4.<sup>74</sup>

29. Both Entergy and the NRC Staff opposed the admission of NYS-33, emphasizing that conservation and renewables cannot meet the goal of providing 2158 MWe of baseload generation and thus need not be considered under NEPA, whether as part of the no-action alternative or otherwise.<sup>75</sup> Entergy also argued that NYS-33 impermissibly sought to litigate the need for power (an issue that NRC regulations precluded). Entergy also argued that the consideration of substantial conservation already included in the DSEIS analysis rendered moot the originally-alleged omission in NYS-9.<sup>76</sup> The Staff further argued that New York failed to show that the DSEIS would have reached a materially-different conclusion had it considered New York’s proposed additional information.<sup>77</sup>

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<sup>73</sup> 2009 Schlissel Decl. at 1-2 (NYS000053). New York’s consumers fund the EEPS program through a volumetric surcharge that utilities assess in their monthly utility bills. Entergy Testimony at 48 (A62) (ENT000479). Under EEPS, investor-owned distribution utilities incentivize customers to reduce their electricity consumption and also fund new conservation programs at New York State Energy Research and Development Authority (“NYSERDA”). *Id.* Notwithstanding the progress New York has made under the EEPS, and a major intervening recession which also lowered energy consumption, *see* NERA Report at 46-47 (ENT000481), New York is not on track to meet the “15 by 15” energy efficiency goal. Tim Woolf et al., Indian Point Replacement Analysis: A Clean Energy Roadmap (Oct. 11, 2012) at § 3.3 (“Riverkeeper Synapse Report”) (NYS000447) (“In comparison to other states, New York has realized much lower levels of energy savings and is not on track to meet its 15 by 15 energy efficiency goals.”).

<sup>74</sup> 2009 Schlissel Decl. at 3 (NYS000053).

<sup>75</sup> *See* Answer of Entergy Nuclear Operations, Inc. Opposing New and Amended Environmental Contentions of New York State at 31-32 (Mar. 24, 2009) (“Entergy NYS-33 Answer”), *available at* ADAMS Accession No. ML090930204; NRC Staff’s Answer to Amended and New Contentions Filed by the State of New York and Riverkeeper, Inc., Concerning the Draft Supplemental Environmental Impact Statement at 16-23 (Mar. 24, 2009) (“NRC Staff NYS-33 Answer”), *available at* ADAMS Accession No. ML090840116.

<sup>76</sup> Entergy NYS-33 Answer at 32, 37.

<sup>77</sup> *See* NRC Staff NYS-33 Answer at 16-23.

30. The Board admitted NYS-33 and consolidated it with NYS-9.<sup>78</sup> The Board determined that NYS-33 directly challenged the Staff's findings in the DSEIS that conservation would only result in a savings of 800 MWe, and that wind power or other renewable energy sources could only provide 200 to 400 MWe to replace either or both Indian Point units.<sup>79</sup>

31. Meanwhile, to assist the public in formulating comments on the DSEIS, the NRC Staff held two public meetings in Cortlandt Manor, New York.<sup>80</sup> During those meetings, the Staff described the preliminary results of the NRC environmental review (as documented in the DSEIS), answered questions, and provided members of the public with information to assist them in formulating comments.<sup>81</sup> The Staff ultimately received comments from 183 individuals or groups, including New York, and eighty-eight commenters spoke during the public meetings.<sup>82</sup> New York's comments on the DSEIS asserted that the NRC Staff failed to adequately consider conservation, renewable energy sources, expanded transmission capacity, and appropriate combinations of different alternative energy sources under the no-action alternative.<sup>83</sup> New York listed several potential transmission and generation projects that had been or might be built, as well as various past and ongoing state and federal initiatives intended

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<sup>78</sup> Licensing Board Order (Ruling on New York State's New and Amended Contentions) at 13 (June 16, 2009) (unpublished).

<sup>79</sup> *See id.* In so ruling, the Board found that Entergy had not yet properly placed the mootness issue before the Board by filing a summary disposition motion. Licensing Board Order (Denying New York State's Motion to Strike) at 2-3 (June 16, 2009) (unpublished).

<sup>80</sup> The meetings occurred on February 12, 2009. EIS Scoping Summary Report at 1(NRC000139).

<sup>81</sup> *See* FSEIS at xvi (NYS00133A).

<sup>82</sup> *Id.* at A-2 (NYS00133C). Many of these comments supported license renewal. *See id.* at A-58 (NYS00133D).

<sup>83</sup> *See* Comments Submitted by the New York State Office of the Attorney General on the Draft Supplemental Environmental Impact Statement Prepared by the Staff of the Nuclear Regulatory Commission for the Renewal of the Operating Licenses for Indian Points Units 2 and 3, Buchanan, New York at 21-37 (Mar. 18, 2009) ("New York DSEIS Comments") (NYS000134). New York also claimed that the DSEIS should have considered "[t]he no-action alternative as to the relicensing of only one unit." *Id.* at 36.

to encourage conservation and renewable generation.<sup>84</sup> New York also suggested the NRC Staff evaluate New York Combinations 3 and 4 (identified above in NYS-33).<sup>85</sup>

**C. FSEIS Alternatives Evaluation and Contention NYS-37**

32. In December 2010, the NRC Staff issued the FSEIS.<sup>86</sup> Like the DSEIS, FSEIS Section 8.2 addresses the no-action alternative. That section explains that power not generated by IP2 and IP3 during the license renewal term would likely be replaced by: (1) power supplied by other producers; (2) conservation; or (3) a combination of these first two options.<sup>87</sup> As with the DSEIS, the FSEIS also indicates that the environmental impacts from these energy replacement activities “also constitute potential consequences of the no-action alternative” and that those impacts are addressed in Section 8.3 (Alternative Energy Sources).<sup>88</sup>

33. In response to comments submitted by New York (and others) on the DSEIS, the NRC Staff substantially modified and augmented FSEIS Section 8.3 by considering several non-baseload alternatives.<sup>89</sup> In particular, the FSEIS evaluates the environmental impacts of the following alternatives:

- Natural Gas-Fired Combined-Cycle Generation (2000 MWe at Indian Point site or at an alternative site).<sup>90</sup>
- Energy Conservation (as a complete, standalone replacement for IP2 and IP3).<sup>91</sup>

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<sup>84</sup> *Id.* at 25-32.

<sup>85</sup> *Id.* at 35-36. To support its proffered combinations, New York stated that “[a]lready existing and identified New York State programs are in place to achieve these results.” *Id.* at 36 (citing 2009 Schlissel Decl. at 3 (NYS000053)).

<sup>86</sup> FSEIS (NYS00133A-J).

<sup>87</sup> *Id.* at 8-22 (NYS00133C).

<sup>88</sup> *Id.*

<sup>89</sup> Compare DSEIS at 8-31 to -78 (NYS00132B-C) with FSEIS at 8-26 to -72 (NYS00133C).

<sup>90</sup> FSEIS at 8-26 (NYS00133C).

<sup>91</sup> *Id.*

- FSEIS Combination 1: Continuing either IP2 or IP3 operations (about 1080 MWe), renewable energy sources (600 MWe, primarily wind, but also hydropower, biomass, and landfill gas, all at sufficient capacity to compensate for wind's intermittency), and conservation (600 MWe).<sup>92</sup>
- FSEIS Combination 2: Natural-gas combined-cycle generation (400 to 600 MWe at either a downstate repowered site or at the Indian Point site), renewable generation (600 MWe, primarily wood, biomass, wind, new hydropower, and landfill gas), and conservation (1000 to 1200 MWe).<sup>93</sup>

34. Thus, unlike the DSEIS, the FSEIS specifically considers energy conservation as a potential standalone alternative “because of efforts made by the State of New York and comments received during preparation of [the FSEIS].”<sup>94</sup> The FSEIS also discusses the New York State “15 by 15” plan and several reports describing conservation progress within New York.<sup>95</sup>

35. For these four alternatives, the FSEIS assesses the significance for each relevant environmental issue using the SMALL, MODERATE, and LARGE significance definitions in 10 C.F.R. Part 51, Appendix B, Table B-1. The FSEIS concludes that license renewal would result in SMALL environmental impacts for all but one relevant issue (aquatic impacts), whereas the natural gas alternative and two combination alternatives each had environmental impacts in at least four resource areas that are greater than SMALL.<sup>96</sup> Similar to license renewal, the

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<sup>92</sup> *Id.* at 8-27.

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* at 8-42.

<sup>95</sup> *Id.*

<sup>96</sup> *See id.* at 9-7. The FSEIS found that impacts to aquatic ecology from license renewal would be SMALL to LARGE because impingement and entrainment impacts are MODERATE, but thermal impacts could potentially range from SMALL to LARGE. *Id.* at 9-10. That conclusion, however, is undergoing revision and the Staff now proposes to find that impacts to aquatic ecology from license renewal would be SMALL to MODERATE because impingement and entrainment impacts are MODERATE, and thermal impacts are SMALL. *See* NUREG-1437, Supp. 38, Vol. 4 Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment at 21 (June 2012), *available at* ADAMS Accession No. ML12174A244.

conservation alternative has SMALL environmental impacts for all but one relevant issue.<sup>97</sup>

Based on a comparison between the alternatives and license renewal, the FSEIS ultimately finds that “the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.”<sup>98</sup>

36. Also unlike the DSEIS, which indicated that purchased power was not a viable stand-alone option for replacing IP2 and IP3, the FSEIS recognizes that “purchased power could be an alternative to IP2 and IP3.”<sup>99</sup> The FSEIS notes that Entergy, as a merchant generator, does not purchase power from other generators,<sup>100</sup> but nonetheless, given New York State’s competitive power market, indicates that all alternative generation sources considered in the FSEIS could provide purchased power so long as there are not electric transmission constraints.<sup>101</sup> The FSEIS notes that new transmission capacity would likely be needed to move purchased power into southern load centers Indian Point currently serves and discussed two potential transmission projects, including the Champlain Hudson project, to illustrate transmission improvements that could increase purchased power’s availability.<sup>102</sup> The Staff did not, however, separately evaluate the environmental impacts of any specific transmission project because the primary impacts from purchased power are likely to result from power generation.<sup>103</sup>

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<sup>97</sup> FSEIS at 8-73 (NYS00133C).

<sup>98</sup> *Id.* at 9-8.

<sup>99</sup> *Compare* DSEIS at 8-57 (NYS00132C) *with* FSEIS at 8-41 (NYS00133C).

<sup>100</sup> FSEIS at 8-39 (NYS00133C).

<sup>101</sup> *Id.* at 8-39.

<sup>102</sup> *Id.* 8-40.

<sup>103</sup> *See id.* at 8-41.

FSEIS Section 8.3.2 further explains that each power generation source has its own set of environmental impacts and those impacts are evaluated elsewhere in the FSEIS.<sup>104</sup>

37. The FSEIS also considers but dismisses the following alternatives as reasonable standalone alternatives: (1) wind; (2) wood and wood waste; (3) hydropower; (4) oil-fired generation; (5) solar power; (6) new nuclear generation; (7) geothermal energy; (8) municipal solid waste; (9) other biomass derived fuels; (10) fuel cells; (11) delaying the retirement of other existing plants; (12) combined heat and power (which was considered in the FSEIS based on public comments); and (13) supercritical coal-fired generation (which was removed from the reasonable alternatives section based on public comments).<sup>105</sup> The FSEIS explains that wind cannot provide baseload power because it has a high degree of intermittency that results in a relatively low capacity factor.<sup>106</sup> Crediting New York's DSEIS comments, the FSEIS indicates that combined heat and power can provide power as well as heat for use in nearby industries or buildings, but concludes that combined heat and power is not a reasonable alternative to the proposed action given that IP2 and IP3 do not provide heat, there is no indication that the surrounding area needs heat from such a facility, and the environmental impacts would be very similar to (if not greater than) the impacts from other fossil generation alternatives already considered.<sup>107</sup>

38. In February 2011, New York submitted NYS-37, which updated consolidated contention NYS-9/33 to apply to the FSEIS, and further challenged the Staff's analysis and

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<sup>104</sup> *Id.*

<sup>105</sup> *Id.* at 8-43 to -49.

<sup>106</sup> *Id.* at 8-44.

<sup>107</sup> *Id.* at 8-49; *see also* NRC Staff Testimony at 16-17 (A17) (NRC000133).

recommendations in the FSEIS.<sup>108</sup> Specifically, New York argued that the FSEIS: (1) fails to meaningfully consider significant new information about non-fossil fuel alternatives; (2) fails to respond to New York's DSEIS comments; (3) fails to meaningfully analyze renewable sector generation, energy efficiency and conservation, purchased electrical power, and combined heat and power; and (4) relies on outdated and inaccurate information.<sup>109</sup>

39. In addition to the previous declarations and reports cited in NYS-9/33, NYS-37 was supported by new declarations from Mr. Schlissel, Mr. Bradford, and Mr. Peter J. Lanzalotta.<sup>110</sup> In his new declaration, Mr. Schlissel discussed future energy and peak demand forecasts (which are lower than in recent years because of a recession) and recent and planned existing energy efficiency programs, renewable projects, transmission system enhancements and upgrades, and planned gas-fired generation facilities and repowering projects.<sup>111</sup> Mr. Lanzalotta claimed that the FSEIS does not adequately address the capabilities of the existing electric transmission system and the status of related transmission system enhancements and upgrades.<sup>112</sup> Mr. Bradford cited many of the same developments as Mr. Schlissel and Mr. Lanzalotta and claimed that the failure to consider these developments caused the FSEIS to overstate the need for power from Indian Point and therefore the FSEIS would mislead decisionmakers about the environmental impacts and feasibility of the alternatives to relicensing one or both of the Indian Point units.<sup>113</sup> In particular, Mr. Bradford claimed that because the FSEIS does not compare the economics of Indian Point to the economics of alternatives, it fails to give decisionmakers any

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<sup>108</sup> State of New York Contention Concerning NRC Staff's Final Supplemental Environmental Impact Statement at 17, 26 (Feb. 3, 2011) ("NYS-37"), available at ADAMS Accession No. ML110680290.

<sup>109</sup> See *id.* at 3.

<sup>110</sup> See *id.* at 43-44.

<sup>111</sup> Declaration of David A. Schlissel (Jan. 31, 2011) (NYS000054).

<sup>112</sup> Declaration of Peter J. Lanzalotta (Feb. 1, 2011) (NYS000098).

<sup>113</sup> Declaration of Peter A. Bradford (Feb. 2, 2011) (NYS000106).

sense of which among these alternatives would likely be deployed under the no-action alternative.<sup>114</sup>

40. Without waiving its arguments opposing the admission of NYS-9/33, Entergy did not oppose admission of NYS-37 to the extent it sought to “update” or incorporate the underlying support for NYS-9/33.<sup>115</sup> Entergy, however, opposed the remainder of NYS-37 because, among other reasons, New York argued in NYS-37 that the FSEIS overestimates the need for power and such a claim is outside the scope of a license renewal proceeding.<sup>116</sup> Specifically, Entergy argued that NYS-37 impermissibly called for the NRC Staff to perform detailed econometric analyses of market forecasts to demonstrate that there was a need for power from Indian Point.<sup>117</sup>

41. The NRC Staff opposed NYS-37 in its entirety, arguing that the contention was not limited to the admitted scope of NYS-9/33 (*i.e.*, a challenge to the no-action alternative), but rather, impermissibly challenged the FSEIS energy alternatives analysis.<sup>118</sup> The Staff also argued that the contention was untimely to the extent that New York relied on documents and information that was available before the FSEIS was published.<sup>119</sup> Additionally, the Staff

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<sup>114</sup> *Id.* at 2.

<sup>115</sup> Applicant’s Answer to New York State’s Contention 37 Concerning the NRC Staff’s Evaluation of Energy Alternatives at 2, 13 (Mar. 7, 2011).

<sup>116</sup> *Id.* at 13-14.

<sup>117</sup> *Id.* at 13-14, 24.

<sup>118</sup> NRC Staff’s Answer to the State of New York’s Motion for Leave to File a New Contention, and New Contention 37, Concerning the Final Supplemental Environmental Impact Statement at 13 (Mar. 7, 2011) (“Staff Answer to NYS-37”), *available at* ADAMS Accession No. ML110670497.

<sup>119</sup> *Id.* at 11-12 nn.23 & 25; *see, e.g.*, NYISO 2010 Reliability Needs Assessment (Sept. 2010) (NYS000058); NYPSC, Commission Approves Transmission Line to NYC: Power Line Would Improve Reliability, Increase Supply, Press Release (Sept. 8, 2010) (NYS000072).

claimed that New York failed to show that the FSEIS would have reached a materially-different conclusion had it considered New York's proposed additional information.<sup>120</sup>

42. The Board admitted NYS-37 to the extent that it updated and superseded NYS-9/33 to apply to the FSEIS and consolidated all three contentions as NYS-37.<sup>121</sup> The Board, however, made clear that it was “not authorizing a broad-ranged inquiry into alternative scenarios and the need for power which would be precluded by Commission regulations, and which [the Board had] previously excluded.”<sup>122</sup> In other words, litigation of NYS-37 would consider which energy resources would likely replace all of Indian Point's baseload power, including any additional energy conservation occurring *as a result of* the no-action alternative. Therefore, the Board will begin its analysis from the premise that IP2 and IP3 satisfy a need for power and will consider energy conservation only to the degree it would result as a consequence of adopting the no-action alternative.

**D. New York's December 2011 Prefiled Testimony and Related Filings**

43. On December 14, 2011, New York filed its Statement of Position,<sup>123</sup> written direct testimony,<sup>124</sup> and supporting exhibits on NYS-37.<sup>125</sup> New York's three testifying witnesses were Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta.<sup>126</sup> Their prefiled testimony overlapped on many energy planning-related issues, but Mr. Schlissel focused primarily on

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<sup>120</sup> Staff Answer to NYS-37 at 14-15.

<sup>121</sup> See Licensing Board Memorandum and Order (Ruling on Pending Motions for Leave to File New and Amended Contentions) at 34, 71 (July 6, 2011) (unpublished) (“July 6, 2011 Order”).

<sup>122</sup> *Id.* at 35 (citation omitted).

<sup>123</sup> New York Position Statement (NYS000045).

<sup>124</sup> Pre-filed Written Testimony of David A. Schlissel (Dec. 14, 2011) (“Schlissel Direct Testimony”) (NYS000046); Pre-filed Written Testimony of Peter J. Lanzalotta (Dec. 13, 2011) (“Lanzalotta Direct Testimony”) (NYS000047); Pre-filed Written Testimony of Peter A. Bradford (Dec. 14, 2011) (“Bradford Direct Testimony”) (NYS000048).

<sup>125</sup> See Exhibits NYSR00045-NYS000134.

<sup>126</sup> Schlissel Direct Testimony (NYS000046); Lanzalotta Direct Testimony (NYS000047); Bradford Direct Testimony (NYS000048).

conservation and alternative generation sources;<sup>127</sup> Mr. Lanzalotta on transmission grid issues;<sup>128</sup> and Mr. Bradford on the need for power from Indian Point and the no-action alternative's economic costs and benefits.<sup>129</sup>

44. The main crux of New York's testimony was that, in developing alternatives to Indian Point's baseload generation, the FSEIS purportedly does not sufficiently account for:
- a. New York's goal of meeting thirty percent of electricity demand from renewables by 2015 ("30 by 15") and the additional renewable generation that goal has encouraged;<sup>130</sup>
  - b. New York's goal of reducing electricity demand by fifteen percent by 2015 ("15 by 15") and the energy conservation that goal has spawned;
  - c. Significant decreases in electricity demand in New York and associated decreases in forecasted future electricity demand due to the recession;
  - d. New York's recent and proposed generation capacity additions;
  - e. Increased supply and lower future prices forecasted for natural gas; and
  - f. Recently planned and proposed transmission lines that New York maintains will increase the transfer capability to deliver power to the downstate region Indian Point serves.<sup>131</sup>

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<sup>127</sup> Schlissel Direct Testimony at 4:20-5:14 (NYS000046).

<sup>128</sup> Lanzalotta Direct Testimony at 3:4-18 (NYS000047).

<sup>129</sup> Bradford Direct Testimony at 4:18-5:12 (NYS000048).

<sup>130</sup> As Dr. Harrison and Mr. Meehan explained, the Renewable Portfolio Standard ("RPS") is the primary mechanism New York has adopted to achieve its goal of meeting 30 percent of electricity demand in 2015 with renewable sources (*i.e.*, the "30 by 15" program). Entergy Testimony at 46 (A60) (ENT000479). Because New York hydroelectric plants historically generate substantial amounts of power, roughly two-thirds of the goal was met when it was established. *Id.*; Oct. 24, 2012 Tr. at 2959:22 - 2960:4 (Schlissel) (estimating that New York, by 2009, had already achieved "roughly 70 percent, say, closer to 80 percent" of the thirty percent goal). To satisfy most of the remaining goal, NYSERDA administers the RPS program, which New York's electricity consumers fund through volumetric surcharges in their monthly utility bills. Entergy Testimony at 46 (A60) (ENT000479). Notwithstanding the progress New York has made under the RPS and federal incentives that also help promote renewable development, New York is not on track to meet its "30 by 15" renewable goal. *See* Riverkeeper Synapse Report at § 4.2 (NYS000447) ("New York is not currently on track to meet its RPS goals."). New York's RPS differs from programs in most other states in that it does not include a requirement that companies supply a specific percentage of renewable electricity. New York instead includes a renewable energy subsidy funded by non-bypassable volumetric wire charges on retail customers and allocated through a competitive bidding process administered by NYSERDA. NERA Report at 69 (ENT000481).

<sup>131</sup> *See* New York Position Statement at 43-55 (NYS000045).

45. In addition to discussing these various New York State policy and energy market developments, New York’s experts also referred to various third-party reports estimating the level of potential future resources that *could* potentially replace Indian Point’s generation—including renewables, energy conservation, and purchased power through transmission additions and upgrades.<sup>132</sup> These third-party estimates, however, do not themselves predict that these potential resources *actually would* be put in place in New York’s competitive electricity market if Indian Point generation were not available.<sup>133</sup> Notably, despite calling for a “site-specific environmental impact analysis of the no-action alternative,”<sup>134</sup> New York’s experts provided no site-specific empirical estimates identifying the actual likely change in the generation mix, or of the resulting adverse environmental impacts, were Indian Point’s specific baseload energy unavailable.<sup>135</sup>

46. In addition, all three New York witnesses asserted that the FSEIS includes a need for power analysis and then proceeded to argue that this analysis is somehow flawed.<sup>136</sup> For example, they all claimed to identify “deficiencies” in the FSEIS consideration of the “need for power” from Indian Point because the FSEIS does not recognize that recent electricity demand projections and forecasts for New York are lower than projections from previous years.<sup>137</sup>

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<sup>132</sup> See, e.g., Schlissel Direct Testimony at 18:22-19:6 (NYS000046) (noting that a presentation by Optimal Energy has projected 61,506 GWh of economical *potential* energy efficiency in New York State).

<sup>133</sup> See, e.g., *id.* at 36:3-9 (stating that transmission “enhancements and upgrades *could* increase the capability to import power into the Hudson River Valley and Downstate New York” (emphasis added)).

<sup>134</sup> New York Position Statement at 70 (NYS000045).

<sup>135</sup> See, e.g., Bradford Direct Testimony at 29:13-17 (NYS000048) (indicating only that “the impacts of the no-action alternative under a combination of energy conservation with renewables (and perhaps a small share of natural gas) *might* well be smaller than the impacts of relicensing or the FSEIS’s combination no-action alternative scenarios” (emphasis added)).

<sup>136</sup> See, e.g., Schlissel Direct Testimony at 5:9-14, 7:11-16, 12:12-17, 33:4-6 (NYS000046); Lanzalotta Direct Testimony at 3:14-18, 12:9-11 (NYS000047); Bradford Direct Testimony at 5:7-12, 13:18-22, 14:6-8 (NYS000048).

<sup>137</sup> See Schlissel Direct Testimony at 5:9-14, 11:23-12:17, 47:3-6 (NYS000046); Lanzalotta Direct Testimony at 3:14-18 (NYS000047); Bradford Direct Testimony at 5:7-12, 9:21-22 (NYS000048).

47. On January 30, 2012, Entergy filed a Motion in Limine to exclude portions of New York’s direct testimony and certain supporting exhibits related to New York’s need for power argument.<sup>138</sup> Entergy argued that issues related to the need for power (*e.g.*, regional energy sales, load growth, demand, capacity, and associated forecasts) are outside the scope of NYS-37.<sup>139</sup> The Staff supported Entergy’s Motion in Limine.<sup>140</sup>

48. New York opposed Entergy’s Motion in Limine.<sup>141</sup> New York acknowledged that “there is no dispute” that approximately 2200 MWe of electricity will not be delivered to New York customers if Indian Point is not relicensed, and it is necessary to make some judgments about the likely scenarios that will evolve as a result.<sup>142</sup> New York, however, argued that the Staff must determine “how much of Indian Point’s capacity must be replaced” and that the Staff opened the door for a discussion of the need for power.<sup>143</sup>

49. On March 6, 2012, the Board denied Entergy’s Motion in Limine, but reminded New York that it “may not conduct ‘a broad-ranged inquiry into . . . the need for power’ because such an inquiry in this proceeding is prohibited by 10 C.F.R. § 51.95(c)(2).”<sup>144</sup> As such, the Board disagreed that the Staff opened the door to New York’s need for power challenge.

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<sup>138</sup> Entergy’s Motion in Limine to Exclude Portions of the Pre-filed Testimony and Exhibits for Contention NYS-37 (Energy Alternatives) (Jan. 30, 2012), *available at* ADAMS Accession No. ML12030A210.

<sup>139</sup> *See id.* at 1-2.

<sup>140</sup> NRC Staff’s Answer in Support of Entergy’s Motion in Limine to Exclude Portions of Pre-Filed Testimony and Exhibits for Contention NYS-37 (Energy Alternatives) (Feb. 9, 2012), *available at* ADAMS Accession No. ML12040A264. Staff argued that, contrary to the Board’s prior rulings and Commission regulations, New York’s testimony and exhibits directly challenged the need for power from Indian Point. *See id.*

<sup>141</sup> State of New York’s Answer to Entergy’s Motion in Limine to Exclude Portions of Pre-Filed Testimony and Exhibits for Contention NYS-37 (Energy Alternatives) at 1-2 (Feb. 17, 2012) (“New York MIL Answer”), *available at* ADAMS Accession No. ML12048B408.

<sup>142</sup> *Id.* at 8.

<sup>143</sup> *Id.* at 7, 9.

<sup>144</sup> Licensing Board Order (Granting in Part and Denying in Part Applicant’s Motions *in Limine*) at 19 (Mar. 6, 2012) (“March 6, 2012 Order”) (unpublished) (citation omitted).

**E. Entergy's and the NRC Staff's March 2012 Prefiled Testimony**

50. On March 30, 2012, Entergy filed its Statement of Position,<sup>145</sup> prefiled written testimony,<sup>146</sup> and supporting exhibits.<sup>147</sup> Entergy's three testifying witnesses were Mr. Donald P. Cleary, Mr. Meehan, and Dr. Harrison.<sup>148</sup> In its Position Statement, Entergy argued that the FSEIS fully satisfies NEPA and reasonably considers the environmental impacts of a broad range of energy scenarios that are treated as possible alternatives to Indian Point's baseload generation.<sup>149</sup> Entergy and its experts also asserted that, contrary to New York's assertions emphasizing an emergence of renewables and conservation, the no-action alternative would, in fact, mostly likely result in Indian Point's baseload generation being replaced primarily by fossil-fired generation, not renewables and conservation.<sup>150</sup> According to Entergy, this conclusion is largely explained by New York's competitive electricity market and the relatively lower price of natural gas as compared to conservation and renewables. Therefore, Entergy concluded that, if anything, the FSEIS understates the environmental impacts of the no-action alternative.<sup>151</sup> Entergy further argued that New York's claims about replacement sources and their environmental impacts lacked merit because, among other reasons, New York provided no empirical analyses of how the electric system would respond to the loss of Indian Point's baseload generation.<sup>152</sup>

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<sup>145</sup> Entergy's Statement of Position on Contention NYS-37 (Energy Alternatives) (Mar. 30, 2012) ("Entergy Position Statement") (ENT000478).

<sup>146</sup> Entergy Testimony (ENT000479).

<sup>147</sup> See Exhibits ENT000478-ENT000519.

<sup>148</sup> Entergy Testimony (ENT000479).

<sup>149</sup> See Entergy Position Statement at 4, 43-44 (ENT000478).

<sup>150</sup> See *id.* at 24-32.

<sup>151</sup> See *id.*

<sup>152</sup> *Id.* at 38.

51. Entergy's supporting exhibits included Dr. Harrison and Mr. Meehan's expert report. In that report, Dr. Harrison and Mr. Meehan offered detailed criticisms of the New York experts' testimony, including their failure to recognize the importance of market forces and cost-minimization in New York's competitive energy markets, and their failure to provide any independent empirical analysis.<sup>153</sup> Based on the relative costs of various generation sources and applying basic economic principles, they argued that market forces and cost-minimization would dictate that the energy needed to replace Indian Point's baseload power would come primarily from natural gas and coal power plants, with a much smaller amount from renewables and conservation.<sup>154</sup> Dr. Harrison and Mr. Meehan then also used a state-of-the-art energy model—the National Energy Modeling System (“NEMS”)—to empirically estimate the energy sources that would replace Indian Point's baseload power.<sup>155</sup> Based on that NEMS evaluation, Dr. Harrison and Mr. Meehan again found that almost all of the replacement energy would come from natural gas and coal power plants, while only a small amount would come from renewables and conservation.<sup>156</sup> Dr. Harrison and Mr. Meehan concluded that (1) the FSEIS included a reasonable set of energy alternatives; and (2) the FSEIS reached a reasonable conclusion that the impacts of license renewal did not exceed the impacts of alternatives, including the no-action alternative. Indeed, their analysis indicated that the FSEIS probably understated the adverse environmental impacts of the no-action alternative relative to license renewal.<sup>157</sup>

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<sup>153</sup> NERA Report at E-1 (ENT000481).

<sup>154</sup> Entergy Testimony at 36 (A52) (ENT000479).

<sup>155</sup> NERA Report at 42 (ENT000481).

<sup>156</sup> Entergy Testimony at 36 (A52) (ENT000479).

<sup>157</sup> NERA Report at E-5 to E-6 (ENT000481); Entergy Testimony at 16-17 (A24) (ENT000479); Oct. 24, 2012 Tr. at 3125:9-23 (Harrison).

52. On March 30, 2012, the NRC Staff filed its Statement of Position,<sup>158</sup> Mr. Andrew L. Stuyvenberg's written testimony,<sup>159</sup> and supporting exhibits.<sup>160</sup> In its Position Statement, the Staff argued that: (1) New York continued to impermissibly challenge the need for power from Indian Point;<sup>161</sup> (2) the FSEIS was not required to consider conservation or renewables as alternatives to license renewal because those sources cannot provide baseload power;<sup>162</sup> (3) the FSEIS appropriately addresses New York's comments submitted on the DSEIS and during the scoping process;<sup>163</sup> and (4) the FSEIS complies with NEPA and reasonably considered the environmental impacts of alternatives.<sup>164</sup>

53. New York filed a Motion to Strike portions of Entergy's and the Staff's testimony.<sup>165</sup> New York sought to exclude select testimony which it argued: (1) impermissibly offered legal and regulatory interpretations and conclusions; (2) repetitiously and cumulatively summarized documents already in evidence; and (3) focused on the allegedly irrelevant alternative energy source evaluations rather than the no-action alternative evaluation.<sup>166</sup>

54. Entergy and the Staff opposed New York's Motion to Strike.<sup>167</sup> First, Entergy and the Staff countered that, rather than offering impermissible legal argument or conclusions,

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<sup>158</sup> NRC Staff's Initial Statement of Position on Contention NYS-9, NYS-33 and NYS-37 (Alternatives) (Corrected) (Apr. 2, 2012) ("NRC Staff Position Statement") (NRCR00132).

<sup>159</sup> NRC Staff Testimony (NRC000133).

<sup>160</sup> See Exhibits NRCR00132-NRC000145.

<sup>161</sup> NRC Staff Position Statement at 7-12, 16 (NRC000132).

<sup>162</sup> *Id.* at 6, 17.

<sup>163</sup> *Id.* at 14-16.

<sup>164</sup> *Id.* at 2, 13-14.

<sup>165</sup> State of New York Motion to Strike Portions of Entergy and NRC Staff Witness Testimony as Impermissible Under NRC Regulations (Apr. 30, 2012), available at ADAMS Accession No. ML12121A702.

<sup>166</sup> *Id.* at 1, 6-21.

<sup>167</sup> Entergy's Answer Opposing New York State's Motion to Strike Portions of Entergy Pre-Filed Testimony on Contention NYS-17B (Property Values) and NYS-37 (Energy Alternatives) (May 14, 2012) ("Entergy MIL Answer"), available at ADAMS Accession No. ML12135A715; NRC Staff's Answer in Opposition to "State

their witnesses properly rebutted New York's testimony.<sup>168</sup> Second, Entergy and the Staff argued that their testimony was not repetitious or cumulative, but rather helped further illuminate Entergy's and the Staff's detailed environmental evaluations.<sup>169</sup> Third, Entergy and the Staff claimed that New York sought to exclude testimony concerning alternative energy sources that New York had in fact challenged.<sup>170</sup>

55. The Board denied New York's Motion to Strike.<sup>171</sup> In doing so, we explained that we are "comfortable exercising our responsibility to interpret independently what the law is," and further indicated that the testimony at issue may actually be "helpful" for understanding the context of relevant documents.<sup>172</sup> We also disagreed with New York that Entergy's and the Staff's testimony concerning FSEIS Section 8.3 (Energy Alternatives) was irrelevant to the no-action alternative.<sup>173</sup>

#### **F. New York's June 2012 Prefiled Rebuttal Testimony**

56. New York subsequently filed its Revised Statement of Position,<sup>174</sup> Mr. Schlissel's rebuttal testimony,<sup>175</sup> and a supporting exhibit.<sup>176</sup> Mr. Bradford and Mr. Lanzalotta offered no

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of New York Motion to Strike Portions of Entergy and Staff Witness Testimony as Impermissible under NRC Regulations" (May 14, 2012) ("NRC Staff MIL Answer"), *available at* ADAMS Accession No. ML12135A693.

<sup>168</sup> Entergy highlighted that New York's witnesses provided similar testimony discussing the FSEIS's adequacy and NEPA's requirements. Pre-Filed Direct Testimony of Stephen C. Sheppard, Ph.D. Regarding Contention 17B at 8:13-10:14 (Dec. 16, 2011) (NYSR00224) ("Q. How does the FSEIS address the impact of license renewal, or non-renewal, on land use values in the area around IPEC? . . . Q. What conclusions are drawn in the FSEIS's 'Cumulative Socioeconomic Impact' section?").

<sup>169</sup> Entergy MIL Answer at 2; NRC Staff MIL Answer 5-7.

<sup>170</sup> Entergy MIL Answer at 14-16. The NRC Staff also argued that New York's motion should be denied because New York failed to satisfy the Board's consultation requirements. NRC Staff MIL Answer at 4-5.

<sup>171</sup> Licensing Board Order (Denying New York's Motion *in Limine* and Holding Riverkeeper's Motion *in Limine* in Abeyance) (June 1, 2012) (unpublished).

<sup>172</sup> *Id.* at 6.

<sup>173</sup> *Id.* at 9.

<sup>174</sup> State of New York's Revised Statement of Position Regarding Contention NYS-37 (Jun. 29, 2012) ("New York Rebuttal Position Statement") (NYS000436).

rebuttal testimony. New York and Mr. Schlissel largely focused on Dr. Harrison and Mr. Meehan's NEMS evaluation and argued that their no-action alternative analysis was unreasonable because it predicted too small a role for renewables, conservation, and natural gas-fired combined-cycle plants.<sup>177</sup> New York also reiterated its argument that NEPA required analysis of whether conservation would reduce the need for Indian Point's power.<sup>178</sup>

### **G. Other Prehearing Procedural Matters**

57. On August 8, 2012, New York filed a Motion with respect to its seven "Track 1" contentions,<sup>179</sup> seeking to invoke its purported statutorily-granted cross-examination rights under Section 274(l) of the Atomic Energy Act ("AEA"), 42 U.S.C. § 2021(l).<sup>180</sup> Specifically, New York claimed that as the host state to Indian Point, Section 274(l) confers upon it expansive cross-examination rights that take precedence over the restrictive cross-examination rights allowed pursuant to 10 C.F.R. §§ 2.315(c) and 2.1204(b)(3).<sup>181</sup> It argued that the 2004 modifications to the NRC's Administrative Procedure Act-compliant regulations, which it contended generally restrict the use of cross-examination by most parties, do "not purport to

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<sup>175</sup> Pre-filed Written Rebuttal Testimony of David A. Schlissel Regarding Contention NYS-37 (Jun. 29, 2012) ("Schlissel Rebuttal Testimony") (NYS000437).

<sup>176</sup> See Exhibit NYS000438.

<sup>177</sup> New York Rebuttal Position Statement at 10-14 (NYS000436).

<sup>178</sup> *Id.* at 5-9.

<sup>179</sup> Track 1 contentions consist of Riverkeeper TC-2 (Flow-Accelerated Corrosion), NYS-12C (SAMA Analysis – Decontamination Costs), NYS-16B (SAMA Analysis – Population Estimate), NYS-17B (Land Values), NYS-37 (Energy Alternatives), Clearwater EC-3A (Environmental Justice), NYS-5 (Buried Piping), NYS-6/7 (Non-EQ Cables), and NYS-8 (Transformers). Prior to the October 2012 hearings, the parties settled another Track 1 contention, Riverkeeper EC-3/Clearwater EC-1 (Spent Fuel Pool Leaks to Groundwater). The Board approved that settlement agreement on October 17, 2012. Licensing Board Consent Order (Approving Settlement of Consolidated Contention Riverkeeper EC-3 and Clearwater EC-1) (Oct. 17, 2012) (unpublished).

<sup>180</sup> State of New York Motion to Implement Statutorily-Granted Cross-Examination Rights Under Atomic Energy Act § 274(l) at 1 (Aug. 8, 2012), available at ADAMS Accession No. ML12221A483.

<sup>181</sup> *Id.* at 14-15, 19.

address the rights preserved to the States in [Section 2021(I)].”<sup>182</sup> Thus, New York asserted, 10 C.F.R. §§ 2.135(c) and 2.1204(b)(3) do not apply to it as a host state and do not restrict its right to interrogate witnesses.<sup>183</sup>

58. Both Entergy and the NRC Staff opposed New York’s Motion, stating that it lacked a legal basis,<sup>184</sup> arguing that New York mischaracterized as an “absolute right” what is actually a “reasonable opportunity” to cross-examine witnesses.<sup>185</sup>

59. On August 29, 2012, in accordance with 10 C.F.R. § 2.1207(a)(3) and the Board’s Scheduling Order, Entergy (and the other parties) submitted *in camera* proposed questions for the Board to consider asking to the other parties’ witnesses on Contention NYS-37.<sup>186</sup>

60. In an Order issued on September 21, 2012, the Board granted, in part, New York’s August 8, 2012 Motion for cross-examination of witnesses during the evidentiary hearings.<sup>187</sup> The Board found that New York’s opportunity to cross-examine witnesses is bound by the same 10 C.F.R. Part 2 regulations that govern all parties to this proceeding.<sup>188</sup> As a result, the Board found it unnecessary “to address whether and if so to what extent, in some theoretical sense, the right to cross-examination granted to host states by the AEA may be different from those provided to parties under 10 C.F.R. Part 2.”<sup>189</sup> Citing 10 C.F.R. § 2.1204(b)(1), the Board

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<sup>182</sup> *Id.* at 14.

<sup>183</sup> *Id.* at 15.

<sup>184</sup> Entergy’s Answer Opposing New York State’s Motion to Cross-Examine (Aug. 20, 2012) (“Entergy Answer Opposing New York’s Motion”), *available at* ADAMS Accession No. ML12233A371; NRC Staff’s Answer to State of New York’s “Motion to Implement Statutorily-Granted Cross-Examination Rights under Atomic Energy Act § 274(I)” (Aug. 20, 2012) (“Staff Answer Opposing New York’s Motion”), *available at* ADAMS Accession No. ML12233A742.

<sup>185</sup> Entergy Answer Opposing New York’s Motion; Staff Answer Opposing New York’s Motion.

<sup>186</sup> 10 C.F.R. § 2.1207(a)(3)(iii).

<sup>187</sup> Licensing Board Order (Order Granting, in part, New York’s Motion for Cross Examination) (Sept. 21, 2012) (unpublished).

<sup>188</sup> *Id.* at 5.

<sup>189</sup> *Id.* at 5-6.

noted that in any oral hearing under Subpart L, a party may file a motion (accompanied by a cross-examination plan) seeking cross-examination by the parties on particular admitted contentions or issues.<sup>190</sup> Pursuant to 10 C.F.R. § 2.1204(b)(3), the presiding officer may allow cross-examination by the parties “only if the presiding officer determines that cross-examination by the parties is necessary to ensure the development of an adequate record for decision.”<sup>191</sup>

61. The Board concluded that New York had complied with 10 C.F.R. § 2.1204(b) by filing a Motion for cross-examination and proposed examination questions by the August 29, 2012, deadline for those submittals.<sup>192</sup> Citing the “voluminous and technical” nature of the parties’ evidentiary submissions, the Board determined that granting New York’s request for cross-examination was necessary to ensure development of an adequate record for this proceeding.<sup>193</sup> It thus ruled that during the hearing, New York could examine witnesses following the Board’s examination, as long as New York’s questions were “relevant, reasonable, and non-repetitive.”<sup>194</sup>

62. On September 24, 2012, the Board discussed its Order in a pre-hearing conference call in response to questions from the NRC Staff and Entergy.<sup>195</sup> During that conference, Chairman McDade confirmed that New York would have the opportunity to examine witnesses on “areas that the Board missed” in its own witness examinations.<sup>196</sup> He also suggested that the

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<sup>190</sup> *Id.* at 6.

<sup>191</sup> *Id.* (quoting 10 C.F.R. § 2.1204(b)(3)).

<sup>192</sup> *Id.*

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* at 6-7.

<sup>195</sup> Official Transcript of Proceedings, Indian Point Nuclear Generating Units 1 & 2 [sic—2 & 3] at 1238:1-23 (Judge McDade) (Sept. 24, 2012) (“Sept. 24, 2012 Tr.”).

<sup>196</sup> *Id.* at 1238:1-6 (Judge McDade).

Board might limit New York's questioning if it becomes repetitive<sup>197</sup> and stated that other parties would have a reasonable opportunity to interrogate witnesses on discrete issues through oral motions at the hearing if they made a "sufficiently compelling request" and avoided repetitive questions.<sup>198</sup>

63. Later, on September 28, 2012, Entergy filed an emergency petition for interlocutory review of the Board's Order with the Commission.<sup>199</sup> Entergy requested, and was granted, expedited briefing on its petition.<sup>200</sup> New York opposed Entergy's petition<sup>201</sup> and the Staff supported it.<sup>202</sup>

64. On October 12, 2012, the Commission issued an Order denying Entergy's request for interlocutory review, noting that the Board has the responsibility in the first instance to oversee the development of an adequate case record.<sup>203</sup> In so ruling, the Commission cited Chairman McDade's assurances, made during the September 24, 2012 prehearing conference call, that the Board would prohibit open-ended, lengthy, repetitive, and immaterial cross-examination, and allow all parties a full and fair opportunity to request cross-examination.<sup>204</sup>

The Commission further stated its expectation that the Board would act on cross-examination

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<sup>197</sup> *Id.*

<sup>198</sup> *Id.* at 1239:21-1240:10 (Judge McDade).

<sup>199</sup> Entergy's Emergency Petition for Interlocutory Review of Board Order Granting Cross-Examination to New York State and Request for Expedited Briefing (Sept. 28, 2012), *available at* ADAMS Accession No. ML12272A363.

<sup>200</sup> *Id.*; Commission Order (Oct. 2, 2012) (unpublished).

<sup>201</sup> State of New York Combined Opposition to Entergy's Requests for Emergency Stay and Interlocutory Review of the Board Order Granting Limited Cross Examination (Oct. 1, 2012), *available at* ADAMS Accession No. ML12275A327. Entergy replied in opposition to New York's answer. *See* Entergy's Reply to New York State's Opposition to Entergy's Emergency Petition for Interlocutory Review (Oct. 8, 2012), *available at* ADAMS Accession No. ML12282A002.

<sup>202</sup> NRC Staff's Answer to Entergy's Emergency Petition for Interlocutory Review, and Application for Stay, of the Board's Order of September 21, 2012 (Oct. 5, 2012), *available at* ADAMS Accession No. ML12279A309.

<sup>203</sup> *Entergy Nuclear Generation Co.* (Indian Point Nuclear Generating Units 2 & 3), CLI-12-18, 76 NRC \_\_\_, slip op. at 6 (Oct. 12, 2012).

<sup>204</sup> *Id.* at 3-4.

requests fairly and evenhandedly, rigorously oversee any cross-examination it allows, and limit the cross-examination to “supplemental and genuinely material inquiries, necessary to develop an adequate and fair record.”<sup>205</sup>

65. During the hearing on the first contention (Riverkeeper TC-2), the Board indicated that it would allow questioning of the witnesses by the petitioner (there, Riverkeeper, Inc. (“Riverkeeper”)), Entergy, and the NRC Staff.<sup>206</sup> Entergy objected to examination of witnesses by any party, and requested that the Board close the record.<sup>207</sup> In support of its position, Entergy: (1) noted that Riverkeeper had not made, nor been required to make, the sort of showing contemplated by the Subpart L regulations, which was a circumstance that the Commission had found “troubling”; (2) argued that no sufficient constraints had been placed on examination by parties; (3) noted that the procedure, rather than constituting the “rare occurrence” contemplated by the Commission, was apparently being undertaken as the norm for these proceedings; and (4) argued that, with two full days of Board questioning, additional questioning by the parties was not “truly necessary,” as mandated by the Commission.<sup>208</sup> In the alternative, Entergy requested reciprocal treatment; *i.e.*, that it be afforded the same direct and cross-examination rights as the other parties.<sup>209</sup>

66. The Board denied Entergy’s motion to preclude party examination of witnesses, stating any additional showing need not be articulated, and that the Board envisioned allowing Riverkeeper, then Entergy, and then the Staff brief opportunities to conduct limited interrogation

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<sup>205</sup> *Id.* at 7.

<sup>206</sup> Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 1797:16-24 (Oct. 17, 2012) (Judge McDade) (“Oct. 17, 2012 Tr.”).

<sup>207</sup> *Id.* at 1794:11-1797:15 (Fagg).

<sup>208</sup> *Id.* (Fagg).

<sup>209</sup> *Id.* at 1797:8-14 (Fagg).

of the witnesses.<sup>210</sup> During hearing on the second contention (NYS-12C), Entergy reiterated its objection, which was again denied by the Board, and Entergy asked that the Board recognize Entergy's standing objection on such grounds with respect to all remaining contentions.<sup>211</sup> Upon that basis, Entergy rested upon its standing objection, and did not repeat its procedural arguments in connection with NYS-37 or subsequent contentions.

#### **H. The October and November 2012 Evidentiary Hearing on NYS-37**

67. On October 15, 2012, the Board commenced the evidentiary hearing on the Track 1 contentions at the DoubleTree Hotel located at 455 South Broadway, Tarrytown New York 10591, and admitted into evidence the exhibits proffered by the parties.<sup>212</sup> Before the NYS-37 portion of the hearing began, the parties submitted several motions for leave to file new exhibits and additional proposed questions,<sup>213</sup> which we granted.<sup>214</sup> We held the first portion of the oral evidentiary hearing on NYS-37 on October 24, 2012.<sup>215</sup> Because Mr. Bradford was unavailable to testify on October 24, we held an additional hearing session on November 28, 2012 at NRC Headquarters in Rockville, Maryland.<sup>216</sup>

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<sup>210</sup> *Id.* at 1797:16-1800:10 (Judge McDade).

<sup>211</sup> Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 2315:17-2316:2 (Oct. 18, 2012) (Bessette) ("Oct. 18, 2012 Tr.").

<sup>212</sup> Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3, at 1268:21-1270:6 (Oct. 15, 2012) (Judge McDade) ("Oct. 15, 2012 Tr.").

<sup>213</sup> Entergy Unopposed Motion for Leave to File Additional Exhibits (Oct. 2, 2012), *available at* ADAMS Accession No. ML12276A482; Unopposed Motion by State of New York for Leave to File Additional Exhibits Concerning Contention NYS-37, at 1 (Oct. 9, 2012), *available at* ADAMS Accession No. ML12283A417; Entergy Unopposed Motion for Leave to File Additional Questions on Contention NYS-37 (Oct. 12, 2012), *available at* ADAMS Accession No. ML12286A397; Oct. 15, 2012 Tr. at 1286:7-16 (Mizuno).

<sup>214</sup> Licensing Board Order (Granting Entergy's Motion for Leave to File Additional Exhibits) (Oct. 5, 2012) (unpublished); Licensing Board Order (Granting New York's Motion for Leave to File Additional Exhibits) at 1 (Oct. 11, 2012) (unpublished); Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3, at 1613:10-25 (Oct. 16, 2012) (Judge McDade) ("Oct. 16, 2012 Tr.").

<sup>215</sup> *See* Oct. 24, 2012 Tr.

<sup>216</sup> *See* Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 3175:8-14 (Nov. 28, 2012) (Judge McDade) ("Nov. 28, 2012 Tr.").

68. The Board conducted the hearing in accordance with the provisions of 10 C.F.R. Part 2, Subpart L. Per our September 21, 2012 Order, and the Commission's related guidance in CLI-12-18, the Board permitted limited cross-examination and redirect examination by all parties.<sup>217</sup> Specifically, after the Board completed its questioning of the parties' witnesses, it afforded counsel for all parties the opportunity to ask relevant, non-repetitive redirect and cross-examination questions to the witnesses. Entergy questioned the witnesses first, followed by New York and then the NRC Staff.<sup>218</sup>

69. After the October 24, 2012 hearing but before the November 28, 2012 hearing, New York moved to admit two additional exhibits related to NYS-37.<sup>219</sup> Entergy objected to the admission of Exhibit NYS000447, a report prepared at Riverkeeper's request (a non-party to this contention) by Synapse Energy Economics entitled "Indian Point Replacement Analysis: A Clean Energy Roadmap." Entergy based its objection on the fact that the document had not been referenced in any testimony and New York had not demonstrated that it would be discussed during the November 2012 hearing.<sup>220</sup> On November 14, 2012, the Board granted New York's motion, but indicated that Exhibit NYS000447 might be stricken at the November 2012 hearing if found irrelevant.<sup>221</sup> Because no witness referenced Exhibit NYS000447 in any written or oral

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<sup>217</sup> See generally Oct. 24, 2012 Tr. at 3110:4-3162:15; Nov. 28, 2012 Tr. at 3264:20-3267:7.

<sup>218</sup> See generally Oct. 24, 2012 Tr. at 3110:5-3162:17. Only New York had questions for the witnesses during the November 28th hearing. See Nov. 28, 2012 Tr. at 3264:20-3267:7.

<sup>219</sup> Partially Unopposed Motion by State of New York Motion for Leave to File Additional Exhibits Concerning Contentions NYS-37 and NYS-5 (Nov. 9, 2012), available at ADAMS Accession No. ML12314A302.

<sup>220</sup> Entergy's Answer to New York State's Motion for Leave to File Additional Exhibits on Contentions NYS-37 and NYS-5 (Nov. 12, 2012), available at ADAMS Accession No. ML12318A035. Mr. Schlissel, New York's witness, was formerly employed by Synapse. *Curriculum vitae* of David A. Schlissel (NYS000050).

<sup>221</sup> Licensing Board Order (Granting New York's Partially Unopposed Motion for Leave to File Additional Exhibits) at 2 (Nov. 14, 2012) (unpublished).

testimony, Entergy renewed its objection at the end of the November 2012 hearing.<sup>222</sup> The Board overruled that objection.<sup>223</sup>

70. After the first hearing session concluded on October 24, 2012, the parties jointly submitted proposed corrections to the hearing transcripts on December 5, 2012.<sup>224</sup> The Board issued an Order on December 27, 2012, adopting the parties' proposed transcript corrections with some minor revisions.<sup>225</sup> Likewise, after the second hearing session on NYS-37 concluded on November 28, 2012, the Board adopted the parties' proposed transcript corrections.<sup>226</sup> In addition, after the NYS-37 hearing, Entergy, New York, and NRC Staff submitted several new and revised exhibits, which the Board admitted.<sup>227</sup>

71. On March 22, 2013, the parties submitted proposed findings of fact and conclusions of law in the form of a proposed Initial Decision by the Board.

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<sup>222</sup> Nov. 28, 2012 Tr. at 3262:4-9 (Tenpas).

<sup>223</sup> *Id.* at 3264:1-12 (Judge McDade). The Board, however, recognized that there was a basis for Entergy's objection. *Id.*

<sup>224</sup> Letter from Counsel for Entergy Nuclear Operations, Inc., Counsel for Riverkeeper, Inc., Counsel for the State of New York, Counsel for the NRC Staff, and Counsel for Hudson [River] Sloop Clearwater, Inc., to Lawrence G. McDade, Chairman, Dr. Michael F. Kennedy, and Dr. Richard Wardwell, Atomic Safety and Licensing Board (Dec. 5, 2012), *available at* ADAMS Accession No. ML12340A546.

<sup>225</sup> Licensing Board Order (Adopting Proposed Transcript Corrections with Minor Edits) (Dec. 27, 2012) (unpublished).

<sup>226</sup> Letter from Counsel for Entergy Nuclear Operations, Inc., Counsel for Riverkeeper, Inc., Counsel for the State of New York, Counsel for the NRC Staff, and Counsel for Hudson [River] Sloop Clearwater, Inc., to Lawrence G. McDade, Chairman, Dr. Michael F. Kennedy, and Dr. Richard Wardwell, Atomic Safety and Licensing Board (Feb. 5, 2013) (suggesting corrections to the transcripts for the November 28, 2012, hearing and December hearings), *available at* ADAMS Accession No. ML13036A437; Licensing Board Order (Adopting Proposed Transcript Corrections and Resolving Contested Corrections) (Feb. 28, 2013) (unpublished).

<sup>227</sup> Entergy's and the State of New York's Joint Motion for Leave to File Additional Hearing Exhibits for Admission Into Evidence (Jan. 11, 2013), *available at* ADAMS Accession No. ML13011A396 (NYS000473 is an article that discusses energy demand projections in the wake of the recent financial recession); Licensing Board Order (Scheduling Post-Hearing Matters and Ruling on Motions to File Additional Exhibits) (Jan. 15, 2013) (unpublished); NRC Staff's Unopposed Motion to File Corrected Exhibits (Jan. 18, 2013), *available at* ADAMS Accession No. ML13018A220 (correcting NRCR00139, the NRC Scoping Report, to include four pages of a chart were inadvertently omitted); Licensing Board Order (Granting Staff's Motion to File Corrected Exhibits) (Jan. 30, 2013) (unpublished).

### III. APPLICABLE LEGAL AND REGULATORY STANDARDS

#### A. NRC's NEPA Requirements

72. Two sets of regulatory requirements govern the NRC's review of license renewal applications. Under 10 C.F.R. Part 54, the NRC conducts a health and safety review focused on "the detrimental effects of aging" on the plant.<sup>228</sup> Under 10 C.F.R. Part 51, the NRC completes a NEPA-based environmental review, focusing on the potential impacts from operating for twenty additional years. As explained above, the contention at issue here—NYS-37—arises under NEPA and the NRC's 10 C.F.R. Part 51 NEPA-implementing regulations.<sup>229</sup>

73. NEPA requires that federal agencies, such as the NRC, prepare an environmental impact statement ("EIS") for "major Federal actions significantly affecting the quality of the human environment."<sup>230</sup> NEPA is a procedural statute that does not mandate particular substantive results.<sup>231</sup> Rather, it is designed "to insure a fully informed and well-considered decision," including examining the proposed action's and its reasonable alternatives' environmental impacts.<sup>232</sup> NEPA "merely prohibits uninformed—rather than unwise—agency action."<sup>233</sup>

74. In the license renewal context, an FSEIS is not required to discuss the need for power. Specifically, 10 C.F.R. § 51.95(c)(2) provides:

The supplemental environmental impact statement for license renewal is *not required to include discussion of need for power* or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such

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<sup>228</sup> See Final Rule, Nuclear Power Plant License Renewal: Revisions, 60 Fed. Reg. 22,461, 22,464 (May 8, 1995).

<sup>229</sup> See *Indian Point*, LBP-08-13, 68 NRC at 113-116.

<sup>230</sup> 42 U.S.C. § 4332(2)(C) (2006).

<sup>231</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350–51 (1989).

<sup>232</sup> *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 558 (1978).

<sup>233</sup> *Robertson*, 490 U.S. at 351.

benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation.<sup>234</sup>

As the regulation indicates, need for power is *per se* outside the scope of license renewal NEPA review.<sup>235</sup> In promulgating this regulation, the Commission clearly stated that “the NRC will neither perform analyses of the need for power nor draw any conclusions about the need for generating capacity in a license renewal review.”<sup>236</sup> The Board emphasized this prohibition when it ruled on Entergy’s Motion in Limine.<sup>237</sup> Therefore, as noted above, we will begin our analysis from the premise that IP2 and IP3 satisfy a need for power and will consider energy conservation only to the degree it would result as a consequence of adopting the no-action alternative.

75. NRC regulations require that an EIS evaluate the “no-action” alternative,<sup>238</sup> which in the license renewal context is denying the renewal application.<sup>239</sup> An EIS also considers alternative energy sources.<sup>240</sup> Whether under the no-action alternative or the energy alternatives evaluation, NEPA does not require discussion of every conceivable possibility, but only reasonably foreseeable ones.<sup>241</sup> This rule of reason “governs ‘both *which* alternatives the agency

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<sup>234</sup> 10 C.F.R. § 51.95(c)(2).

<sup>235</sup> *Id.*

<sup>236</sup> Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467, 28,472 (NYS000127).

<sup>237</sup> March 6, 2012 Order at 19 (stating that New York “may not conduct ‘a broad-ranged inquiry into . . . the need for power’ because such an inquiry in this proceeding is prohibited by 10 C.F.R. § 51.95(c)(2).”).

<sup>238</sup> 10 C.F.R. pt. 51, App. A § 4.

<sup>239</sup> *See* NUREG-1555, Supp. 1, Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan for Operating License Renewal, § 8.1, 8.1-3 (Mar. 2000) (“NUREG-1555, Supp. 1”) (ENT00019B).

<sup>240</sup> NUREG-1555, Supp. 1, Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal, at 8.2-1 to 8.2-6 (Oct. 1999) (ENT00019B); Nuclear Energy Institute; Denial of Petition for Rulemaking, 68 Fed. Reg. 55,905, 55,907 (Sept. 29, 2003) (NYS000130).

<sup>241</sup> *See* 40 C.F.R. §§ 1508.7, 1508.8(b); *see also* *USEC Inc. (Am. Centrifuge Plant)*, CLI-06-10, 63 NRC 451, 468 (2006).

must discuss, and the *extent* to which it must discuss them.”<sup>242</sup> An agency need not consider “remote and speculative” alternatives.<sup>243</sup> In this respect, alternatives that require “significant changes in governmental policy or legislation” are not reasonable alternatives.<sup>244</sup> NEPA also does not require a separate analysis of alternatives that are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences.<sup>245</sup> Instead, an agency’s evaluation of alternatives is sufficient if it considers an appropriate range of alternatives, even if it does not consider every available alternative within that range or every piece of new information involving a minor variation of an alternative already discussed in an EIS.<sup>246</sup> With respect to alternatives eliminated from detailed study, NEPA requires only a brief discussion of the reasons for elimination.<sup>247</sup>

76. The terms “reasonable” and “alternatives” are not self-defining.<sup>248</sup> As a result, the courts have held that reasonable project alternatives derive from an EIS’s statement of purpose

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<sup>242</sup> *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195 (DC Cir. 1991) (quoting *Alaska v. Andrus*, 580 F.2d 465, 475 (D.C. Cir. 1978) (emphasis in original).

<sup>243</sup> *Headwaters, Inc. v. Bureau of Land Mgmt.*, 914 F.2d 1174, 1180 (9th Cir. 1990).

<sup>244</sup> *Natural Res. Def. Council v. Callaway*, 524 F.2d 79, 93 (1975); see also *Shasta Res. Council v. U.S. Dep’t of Interior*, 629 F. Supp. 2d 1045, 1059-60 (E.D. Cal. 2009) (holding that agency did not err by failing to consider an alternative that would have required legislative appropriation of additional funds because chances of additional appropriations were remote and speculative).

<sup>245</sup> *Headwaters*, 914 F.2d at 1181.

<sup>246</sup> *Id.*; see also Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026, 18,026-27, 18,035 (Mar. 23, 1981) (ENT000147) (acknowledging that certain projects could involve an infinite number of alternatives, but indicating that an agency need only discuss a “reasonable number of examples, covering the full spectrum of alternatives”). Indeed, requiring an agency to consider every conceivable alternative proposed after an EIS is complete would “task agencies with a sisyphian feat of forever starting over in their environmental evaluations, regardless of the usefulness of such efforts.” *Price Road Neighborhood Ass’n, Inc. v. U.S. Dep’t of Transp.*, 113 F.3d 1505, 1510 (9th Cir.1997); see also *Citizens Against Burlington Inc.*, 938 F.2d at 196 (an agency may not “frame its goals in terms so unreasonably broad that an infinite number of alternatives would accomplish those goals and the project would collapse under the weight of possibilities”).

<sup>247</sup> See 10 C.F.R. Pt. 51, Subpt. A, App. A § 5; 40 C.F.R. § 1502.14(a).

<sup>248</sup> *Citizens Against Burlington Inc.*, 938 F.2d at 194-95.

and need.<sup>249</sup> The Commission follows the approach established by the D.C. Circuit in *Citizens Against Burlington v. Busey*, and has held that an NRC EIS “need only discuss those alternatives that . . . ‘will bring about the ends’ of the proposed action.”<sup>250</sup> As such, the Commission gives “substantial weight” to the applicant’s preferences, including its economic goals.<sup>251</sup> This approach applies equally to no-action alternative analyses, for which the Commission likewise accords “substantial weight” to the applicant’s goals.<sup>252</sup>

77. As the Board previously recognized, the purpose of Indian Point’s license renewal is to provide the option of generating “approximately 2158 MWe of base-load energy for an additional 20 years of operation.”<sup>253</sup> As noted above, “baseload” power is a power source that is “intended to continuously produce electricity at or near full capacity, with high availability.”<sup>254</sup> As the period of renewed operation is expected to begin in 2013 for IP2 and 2015 for IP3, the Staff need only analyze the environmental impacts of alternatives that are “commercially viable and technically capable” of providing baseload power now, or by the start of the period of extended operation.<sup>255</sup> The focus on current commercial viability means that the range of alternatives considered under NEPA excludes alternatives that are economically impractical,

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<sup>249</sup> *Nat’l Parks & Conservation Assoc. v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1071 (9th Cir. 2009) (quoting *Angoon v. Hodel*, 803 F.2d 1016, 1021 (9th Cir. 1986)) (“The BLM’s definition of the project’s purpose will necessarily affect the range of alternatives considered, because when ‘the purpose is to accomplish one thing, it makes no sense to consider the alternative ways by which another thing might be achieved.’”).

<sup>250</sup> See *Seabrook*, CLI-12-05, slip op. at 49 (quoting *Hydro Res. Inc.*, (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 55 (2001), and citing *Citizens Against Burlington Inc.*, 938 F.2d at 195).

<sup>251</sup> *Id.*

<sup>252</sup> See *Am. Centrifuge*, CLI-06-10, 63 NRC at 468.

<sup>253</sup> *Indian Point*, LBP-08-13, 68 NRC at 92.

<sup>254</sup> *Seabrook*, CLI-12-05, slip op. at 50 n. 223 (citing *Envtl. Law & Policy Ctr.*, 470 F.3d at 679); see also *Consumers Power Co.* (Midland Plant, Units 1 & 2), ALAB-452, 6 NRC 892, 951 n.272 (1977) (“‘Baseload’ units are designed to run continuously (except for maintenance) to meet that constant portion of the utility’s load.”).

<sup>255</sup> *FirstEnergy Nuclear Op. Co.* (Davis-Besse Nuclear Power Station, Unit 1), CLI-12-08, 75 NRC \_\_\_, slip op. at 9 (Mar. 27, 2012); *Seabrook*, CLI-12-05, slip op. at 48, 55.

hypothetical, predicted to be available only years from now, or dependent on speculative future events.<sup>256</sup> When evaluating reasonable alternative in this case, the Board must also consider that Indian Point operates in New York’s competitive electricity market.

78. Working from this statement of purpose and need, the Commission has further instructed that in deciding on a license renewal action, the NRC Staff and Board are to “determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.”<sup>257</sup> In establishing this standard, the Commission determined that preserving the license renewal option would only be unreasonable if “the impacts of license renewal sufficiently exceed the impacts of *all or almost all* of the alternatives.”<sup>258</sup> In other words, the Commission would not deny a license renewal application based on NEPA considerations unless all (or almost all) of the alternatives the NRC considered had significantly fewer environmental impacts than the proposed license renewal action.

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<sup>256</sup> See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,472 (NYS000127) (“This approach does not preclude a consideration of economic costs if these costs are essential to a determination regarding the inclusion of an alternative in the range of alternatives considered (*i.e.*, an alternative’s exorbitant cost could render it nonviable and unworthy of further consideration) . . . .”); see also Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. at 18,027 (ENT000147) (“Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense . . . .”); *Seabrook*, CLI-12-05, slip op. at 53 (“Except in rare cases where there is evidence of unusual predictive reliability, it is not workable to consider, for purposes of NEPA analysis, what are essentially hypothetical or speculative alternatives as a source of future baseload power generation.”); *Davis-Besse*, CLI-12-08, slip op. at 9 (“For an alternative energy source to be considered reasonable for purpose of this proceeding, the alternative should be commercially viable and technically capable of producing 908 MWe of baseload power now or in the near future—in this case, no later than 2017, the expiration date of the current Davis-Besse operating license.”).

<sup>257</sup> 10 C.F.R. §§ 51.95(c)(4), 51.103(a)(5).

<sup>258</sup> Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,473 (NYS000127) (emphasis added).

## B. Standard of Review and Evidentiary Burden of Proof

79. The Board reviews contested issues *de novo*.<sup>259</sup> According to the Commission: “[W]hen resolving contentions litigated through the adversary process, [boards must] bring their own ‘*de novo*’ judgment to bear. In such cases, boards must decide, based on governing regulatory standards and the evidence submitted, whether the applicant has met its burden of proof (except where the NRC Staff has the burden).”<sup>260</sup>

80. With respect to NYS-37, New York has the initial “burden of going forward”; *i.e.*, it must provide sufficient evidence to support the claims made in the admitted contention.<sup>261</sup> As a general matter, an intervenor cannot meet its burden by relying on unsupported allegations and speculation.<sup>262</sup> It must introduce sufficient evidence during the hearing phase to establish a *prima facie* case.<sup>263</sup> If it does so, then the burden shifts to the applicant and the NRC Staff to provide sufficient evidence to rebut the intervenor’s contention.<sup>264</sup>

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<sup>259</sup> *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 39 (2005); *Claiborne*, CLI-98-3, 47 NRC at 84.

<sup>260</sup> *Clinton*, CLI-05-17, 62 NRC at 39.

<sup>261</sup> *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 269 (2009) (quoting *Consumers Power Co.* (Midland Plant, Units 1 & 2), ALAB-123, 6 AEC 331, 345 (1973)) (“The ultimate burden of proof on the question of whether the permit or license should be issued is . . . upon the applicant. But where . . . one of the other parties contends that, for a specific reason . . . the permit or license should be denied, 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.”) (emphasis in original), *aff’d sub nom. N.J. Env’tl. Fed’n v. NRC*, 645 F.3d 220 (2011); see also *Vt. Yankee*, 435 U.S. at 554 (upholding this threshold test for intervenor participation in licensing proceedings); *Phila. Elec. Co.* (Limerick Generating Station, Units 1 & 2), ALAB-262, 1 NRC 163, 191 (1975) (holding that the intervenors had the burden of introducing evidence to demonstrate that the basis for their contention was more than theoretical).

<sup>262</sup> See *Oyster Creek*, CLI-09-7, 69 NRC at 268-70; see also *Phila. Elec. Co.* (Limerick Generating station, Units 1 & 2), ALAB-857, 25 NRC 7, 13 (1987) (stating that an intervenor may not merely assert a need for more current information without having raised any questions concerning the accuracy of the applicant’s submitted facts).

<sup>263</sup> See *Oyster Creek*, CLI-09-7, 69 NRC at 268-70.

<sup>264</sup> See, e.g., 10 C.F.R. § 2.325; *La. Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1093 (1983) (citing *Midland*, ALAB-123, 6 AEC at 345).

81. While the NRC Staff, not the applicant, has the burden of complying with NEPA,<sup>265</sup> the applicant also has the burden of proof in this licensing proceeding if it becomes a proponent of the challenged portion of the Staff's FSEIS.<sup>266</sup> From an evidentiary standpoint, the applicant's and the NRC Staff's positions must be supported by a preponderance of the evidence.<sup>267</sup>

### **C. The Board's Decision Supplements and Amends the FSEIS**

82. In accordance with these NEPA and administrative law principles, NRC hearings must focus on whether the NRC Staff has taken the required "hard look" at relevant, non-speculative environmental impacts from the proposed action and its reasonable alternatives.<sup>268</sup> Thus, NRC hearings must focus on whether the Staff has "unduly ignored or minimized pertinent environmental effects."<sup>269</sup> But it is not a game of "gotcha," in which the Staff's work can be rejected based on trivial, speculative, regulatorily-foreclosed, or irrelevant considerations.<sup>270</sup>

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<sup>265</sup> See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

<sup>266</sup> *La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), LBP-96-25, 44 NRC 331, 338-39 (1996) (citing *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), ALAB-471, 7 NRC 477, 489 n.8 (1978), *rev'd on other grounds*, CLI-97-15, 46 NRC 294 (1997)). As a practical matter, we note that Entergy and the NRC Staff are generally aligned in their positions; *i.e.*, they both view the FSEIS alternatives analysis as reasonable under NEPA and New York's criticisms of that analysis as legally and factually unjustified.

<sup>267</sup> See *Pac. Gas & Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), CLI-08-26, 68 NRC 509, 521 (2008) (ruling in favor of the NRC Staff and applicant because the record, which included written submissions and oral argument, "by a preponderance of the evidence," indicated that the intervenor's contention lacked merit); *Pac. Gas & Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-763, 19 NRC 571, 577 (1984) ("In order to prevail . . . , the applicant's position must be supported by a preponderance of the evidence."). A preponderance of the evidence "requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence." *Concrete Pipe & Products of Cal., Inc. v. Constr. Laborers Pension Trust for Southern Cal.*, 508 U.S. 602 (1993) (internal quotation marks omitted).

<sup>268</sup> See *Claiborne*, CLI-98-3, 47 NRC at 87-88; see also *Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 97-98 (1983) (NEPA requires agency to take a "hard look" at environmental consequences prior to taking major action).

<sup>269</sup> *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-03-17, 58 NRC 419, 431 (2003); see also *Exelon Generating Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-05-29, 62 NRC 801, 811 (2005) ("There may, of course, be mistakes in the [EIS], but in an NRC adjudication, it is Intervenor's burden to show their significance and materiality. Our boards do not sit to flyspeck environmental documents or to add details or nuances.") (internal quotes omitted).

<sup>270</sup> See, e.g., *Clinton*, CLI-05-29, 62 NRC at 811.

83. In determining whether the environmental record in this proceeding is sufficient under NEPA and 10 C.F.R. Part 51, the Board considers the record as a whole, including the FSEIS and the evidentiary record for the hearing, as developed by the Board and the parties.<sup>271</sup>

As the Commission has explained:

Boards frequently hold hearings on contentions challenging the staff's final environmental review documents. In such cases, "[t]he adjudicatory record and Board decision (and . . . any Commission appellate decisions) become, in effect, part of the FEIS." Put another way, under our longstanding practice, the Staff's review (the FEIS itself) and the adjudicatory record will become part of the environmental record of the decision.<sup>272</sup>

84. Thus, after the Board considers the entire record of this proceeding, the FSEIS will be "deemed supplemented" by the Board's decisions on NEPA contentions and by any subsequent Commission decision.<sup>273</sup> Likewise, the NRC's record of decision ultimately will include the Board and Commission decisions, which are based on the adjudicatory record.<sup>274</sup>

This process is codified at 10 C.F.R. § 51.102(c), which specifies:

When a hearing is held on the proposed action under the regulations in part 2 of this chapter or when the action can only be taken by the Commissioners acting as a collegial body, the initial decision of the presiding officer or the final decision of the Commissioners acting as a collegial body will constitute the record of decision. An initial or final decision constituting the record of decision will be distributed as provided in § 51.93.<sup>275</sup>

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<sup>271</sup> See, e.g., *Nuclear Innovation North America LLC* (South Texas Project, Units 3 & 4), CLI-11-6, 74 NRC \_\_\_ (Sept. 9, 2011).

<sup>272</sup> *Id.* at 8 (quoting *Claiborne*, CLI-98-3, 47 NRC at 89).

<sup>273</sup> *Pilgrim*, CLI-12-01, slip op. at 30 (citing *La. Energy Services, L.P.* (National Enrichment Facility), CLI-05-28, 62 NRC 721, 731 (2005)).

<sup>274</sup> See, e.g., *La. Energy Servs. L.P.* (Nat'l Enrichment Facility), CLI-06-15, 63 NRC 687, 707 n. 91 (2006) ("Adjudicatory findings on NEPA issues, including our own in this decision, become part of the environmental 'record of decision' and in effect supplement the FEIS."); *Claiborne*, CLI-98-3, 47 NRC at 89.

<sup>275</sup> Final Rule, Amendments to Adjudicatory Process Rules and Related Requirements, 77 Fed. Reg. 46,562, 46,600 (Aug. 3, 2012).

85. The Commission and its Boards have followed this process routinely and without exception, not only in the relatively-recent decisions cited above but also in many more cases dating back decades.<sup>276</sup> Under this well-established process, the Board may modify EIS conclusions and, if warranted, remedy an otherwise deficient EIS through its adjudicatory decision.<sup>277</sup> The Commission may also do so on appeal.<sup>278</sup>

86. The Commission has repeatedly authorized supplementation through the hearing record, most recently last year, when it revised and clarified Section 51.102(c).<sup>279</sup> The well-established process in Section 51.102(c), which governs the resolution of environmental issues following an adjudicatory hearing, requires the Board to consider the adjudicatory record as a whole when evaluating the environmental impacts of the proposed action, to supplement the FSEIS as necessary, and to modify the NEPA analysis and conclusions, if warranted.

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<sup>276</sup> See, e.g., *Diablo Canyon*, CLI-08-26, 68 NRC at 526; *Hydro Res., Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-04, 53 NRC 31, 53 (2001) (“[T]he Presiding Officer’s incorporation into LBP-99-30 of a staff affidavit on costs and benefits also does not require FEIS supplementation . . . in an adjudicatory hearing, to the extent that any environmental findings by the Presiding Officer (or the Commission) differ from those in the FEIS, the FEIS is deemed modified by the decision.”); *Phila. Elec. Co.* (Limerick Generating Station, Units 1 and 2), ALAB-819, 22 NRC 681, 705-07 (1985), *aff’d in part and review otherwise declined*, CLI-86-5, 23 NRC 125 (1986), *remanded in part on other grounds sub nom. Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719 (3d Cir. 1989); *Niagara Mohawk Power Corp.* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347 (1975).

<sup>277</sup> *S. Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-09-7, 69 NRC 613 (2009) (“[T]he record *now contains* sufficient evidence on dry cooling to support a conclusion that dry cooling would not be preferable to the proposed wet cooling system at the Vogtle site. We thus conclude that the agency’s NEPA obligations relative to the discussion of design alternatives have been satisfied with regard to dry cooling, and contention EC 1.3 is resolved on the merits in favor of the staff and SNC.”) (emphasis added).

<sup>278</sup> See *Dominion Nuclear N. Anna, LLC* (Early Site Permit for North Anna ESP Site), CLI-07-27, 66 NRC 215, 230 (2007) (“But *our own* examination of the entire administrative record leads us to conclude that the Staff’s underlying review was sufficiently detailed to qualify as “reasonable” and a “hard look” under NEPA – even if the Staff’s description of that review in the FEIS was not. Our explanation below provides an additional detailed discussion as part of the record on the alternative site review. We direct the Staff to include a similar level of detail in future FEIS analyses of alternative sites.”).

<sup>279</sup> See Final Rule, Amendments to Adjudicatory Process Rules and Related Requirements, 77 Fed. Reg. at 46,586, 46,600 (amending 10 C.F.R. § 52.102(c) to cover all hearings under 10 C.F.R. Part 2, without altering the meaning or intent of the regulation).

87. The U.S. Courts of Appeals, across multiple circuits, have consistently upheld the NRC’s practice as consistent with the AEA<sup>280</sup> and NEPA.<sup>281</sup> Supplementation through public hearings, moreover, is not confined to the NRC.<sup>282</sup> The rationale for allowing supplementation through the hearing process is straightforward—the NRC’s hearing process allows for *greater* public participation than NEPA otherwise requires.<sup>283</sup> In this respect, the Commission and the courts have uniformly rejected New York’s argument that supplementing an EIS with the adjudicatory record in a contested proceeding would frustrate public participation in the NEPA process.<sup>284</sup>

88. Despite this definitive governing Commission and federal court precedent, New York argues that the process of supplementing a final EIS with the hearing record is inconsistent with 10 C.F.R. § 51.92, which requires that the Staff prepare a supplemental EIS when there are substantial changes to the proposed action or new and significant information.<sup>285</sup> According to

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<sup>280</sup> *Nuclear Info. & Res. Serv. v. NRC*, 509 F.3d 562 (D.C. Cir. 2007) (holding that supplementing an EIS through the hearing record does not violate the AEA).

<sup>281</sup> *Citizens for Safe Power, Inc. v. NRC*, 524 F.2d 1291 1294 n. 5 (D.C. Cir. 1975) (holding that the “deemed modified” principle did not depart “from either the letter or the spirit” of NEPA); *Ecology Action v. AEC*, 492 F.2d 998, 1001–02 (2d Cir. 1974) (omissions from an FEIS can be cured by subsequent consideration of the issue in an agency hearing); *New England Coalition on Nuclear Pollution v. NRC*, 582 F.2d 87, 94 (1st Cir. 1978) (having “no trouble finding” that the NRC’s supplementation process satisfies NEPA); *see also Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), CLI-78-1, 7 NRC 1 (1978).

<sup>282</sup> *See, e.g., Pacific Alaska LNG Company, et al.*, 9 FERC ¶ 61,334, 61,709 (1979) (“[T]he CEQ General Counsel suggests that the matter should also be considered in the FEIS because the Commission proceeding does not provide the broad public review and comment required by NEPA. We disagree. Our final decision will address this issue in detail, based on the record in the proceeding. All interested parties have had an opportunity to contribute to that record, and our decision will therefore be based on full information. This procedure fully comports with the letter and spirit of NEPA.”) (citing *Aberdeen & Rockfish R.R. v. SCRAP*, 422 U.S. 289, 320-21 (1975); *New England Coalition on Nuclear Pollution*, 582 F.2d 87 (1st Cir. 1978)).

<sup>283</sup> *Hydro Res, Inc.*, CLI-01-04, 53 NRC at 53 (“[T]he hearing process itself “allows for additional and *more rigorous* public scrutiny of the FES than does the usual ‘circulation for comment.’”) (quoting *Limerick*, 22 NRC at 707) (emphasis added).

<sup>284</sup> *See, e.g.,* New York Rebuttal Position Statement at 16 (NYS000436).

<sup>285</sup> *See, e.g., id.* at 15.

New York, this regulation requires that an FSEIS supplement address any new and significant information brought to light during the hearing.<sup>286</sup>

89. New York's argument is incorrect for two reasons. First, despite Section 51.92's longstanding existence, the Commission has repeatedly authorized supplementation through the hearing record, most recently, in reaffirming and clarifying Section 51.102(c) last year.<sup>287</sup> Second, "[a] basic tenet of statutory construction, equally applicable to regulatory construction, [is] that a statute should be construed so that effect is given to all its provisions."<sup>288</sup> New York's claim that Section 51.92—a more general regulation governing all EISs prepared by the NRC Staff—prohibits the supplementation of an EIS through the hearing record would render meaningless the more specific provisions in Section 51.102(c), governing resolution of environmental issues following an adjudicatory hearing. Because New York's argument would give no effect to Section 51.102(c), it must be rejected as a matter of law.<sup>289</sup>

90. None of the cases on which New York relies is relevant to interpreting the NRC's regulations in Part 51, nor do these cases establish that those regulations somehow undermine the NEPA public participation process. The only two arguably-pertinent cases were considered and distinguished by the NRC Appeal Board decades ago. Appeal Boards determined that neither

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<sup>286</sup> *See id.*

<sup>287</sup> *See* Final Rule, Amendments to Adjudicatory Process Rules and Related Requirements, 77 Fed. Reg. at 46,586, 46,600.

<sup>288</sup> *Hydro Res., Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-11, 63 NRC 483, 491 (2006).

<sup>289</sup> Nor does the supplementation of an EIS through the hearing process necessarily mean that there is new and significant information. On the contrary, supplementation of the record through the Section 51.102 process is appropriate when the record of hearing shows *no* significant new picture of the environmental impacts of the proposed action. *See Hydro Res., Inc.*, CLI-01-04, 53 NRC at 53.

case applies to the NRC hearing process and those Appeal Board decisions remain binding in this proceeding and thus mandate that we reject New York's theory.<sup>290</sup>

91. First, New York cites the Second Circuit's 1975 *I-291 Why?* decision, which invalidated an agency decision because subsequent studies—which were not circulated for review and comment and were available only to agency officials and not the public—showed that the EIS was inadequate.<sup>291</sup> Later in 1975, in ALAB-262, the *Limerick* Appeal Board readily distinguished that case from circumstances identical to those here, where the NRC's hearing record supplemented the Staff's EIS.<sup>292</sup> The Appeal Board found significant distinctions between the unpublished supplemental studies that the court invalidated in *I-291 Why?* and any supplemental NEPA analysis that may result from the NRC's contested, public adjudicatory proceeding.<sup>293</sup> This proceeding is no different than that in *Limerick*, in that the environmental issues have been tested through a public, adversarial adjudicatory proceeding.

92. Second, New York cites the First Circuit's 1980 *Grazing Fields Farms v. Goldschmidt* decision. In *Grazing Fields*, the First Circuit held that the Federal Highway Administration's reliance on certain studies and memoranda that were in the administrative record, but not incorporated into the EIS, was inappropriate.<sup>294</sup> In 1985, however, the Appeal Board, in ALAB-819, a separate *Limerick* decision, "easily distinguished" *Grazing Fields* from

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<sup>290</sup> New York's remaining authorities stand for the general principles that NEPA requires public participation in agency decisionmaking and the publication of relevant environmental information. See *Minn. Pub. Interest Research Grp. v. Butz*, 541 F.2d 1292 (8th Cir. 1976); *Ohio Valley Envt'l Coalition v. Hurst*, 604 F. Supp. 2d 860 (S.D.W.Va. 2009); *Custer Cnty. Action Ass'n v. Garvey*, 256 F.3d 1024 (10th Cir. 2001); 40 C.F.R. § 1500.1(b); *Natural Res. Def. Council v. Callaway*, 527 F.2d 79 (2d Cir. 1975). These principles are not violated by 10 C.F.R. § 51.102(c) or the application of that regulation in this proceeding as New York and other members of the public have fully participated in the process.

<sup>291</sup> See *I-291 Why? Ass'n v. Burns*, 517 F.2d 1077, 1081 (2d Cir. 1975).

<sup>292</sup> *Limerick*, ALAB-262, 1 NRC at 163.

<sup>293</sup> See *id.* at 197 n.54.

<sup>294</sup> *Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068 (1st Cir. 1980).

supplementation through the NRC hearing process.<sup>295</sup> Noting that the *Grazing Fields* decision did not even cite to the First Circuit’s earlier *New England Coalition* opinion upholding the NRC’s hearing supplementation rule, the Appeal Board approved the licensing board applying Section 51.102 to explicitly amend the Limerick final environmental statement through its decision.<sup>296</sup> Once again, the circumstances before this Board are no different. As in *Limerick*, the relevant environmental issues have been fully and rigorously ventilated through a public adjudicatory hearing, in which New York participated to protect its interests.<sup>297</sup> ALAB-262 and ALAB-819 therefore control, and mandate the rejection of New York’s argument.

93. In summary, Section 51.102(c), which governs the resolution of environmental issues following an adjudicatory hearing, requires that we consider the adjudicatory record as a whole when evaluating the NEPA issues presented in NYS-37, to supplement the FSEIS as necessary, and to modify the NEPA analysis and conclusions, if warranted.<sup>298</sup> Having actively participated in the hearing process, New York can claim no prejudice to its interests.<sup>299</sup>

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<sup>295</sup> *Limerick*, ALAB–819, 22 NRC at 706 n.33.

<sup>296</sup> *See id.* at 705-07 & n.33 (citing *New England Coalition on Nuclear Pollution*, 582 F.2d at 94). The Appeal Board also rejected the argument that certain changes made to Part 51 in 1984 required the recirculation of NEPA documents following a hearing, holding that “section 51.102 serves the same purpose as its differently worded predecessor,” incorporating the adjudicatory decision into the environmental record of decision. *See id.* As detailed above, the Commission and its Boards have uniformly followed this interpretation of Section 51.102 ever since.

<sup>297</sup> *See id.* at 707.

<sup>298</sup> *See* Final Rule, Amendments to Adjudicatory Process Rules and Related Requirements, 77 Fed. Reg. at 46,586, 46,600.

<sup>299</sup> *See id.*

#### IV. FACTUAL FINDINGS AND LEGAL CONCLUSIONS

##### A. Witnesses and Evidence Presented

###### 1. **Entergy's Expert Witnesses**

94. Entergy presented a three-person witness panel consisting of Mr. Cleary, Dr. Harrison, and Mr. Meehan. Entergy's witnesses submitted written direct testimony and gave oral testimony at the evidentiary hearing.<sup>300</sup>

95. Mr. Cleary is an Environmental Safety Consultant with Talisman International, LLC.<sup>301</sup> He holds a Bachelor of Arts degree in Economics from the University of Massachusetts, Amherst and a Master of Arts degree in Economics from the University of Florida. He has more than thirty-eight years professional experience in the nuclear industry, including more than twenty-five years with the NRC Staff. As an NRC Staff manager, Mr. Cleary oversaw the development of environmental impact assessment methodologies for new nuclear power plant construction and operation, including those involving need for power, alternative energy sources, and regional socioeconomic impact assessments. Mr. Cleary has extensive experience developing and applying NRC's NEPA regulations and guidance and in evaluating energy alternatives and socioeconomic impacts.

96. Dr. Harrison is a Senior Vice President at NERA Economic Consulting ("NERA").<sup>302</sup> He holds a Master of Science degree in Economics from the London School for Economics and a Ph.D. in Economics from Harvard University. He has more than thirty-five years professional experience analyzing the benefits, costs, and other impacts of energy and

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<sup>300</sup> Entergy Testimony (ENT000479).

<sup>301</sup> Mr. Cleary's professional qualifications are provided in his statement of qualifications (ENT000133) and summarized in his testimony. *See* Entergy Testimony at 1-3 (A1-4) (ENT000479).

<sup>302</sup> Dr. Harrison's professional qualifications are provided in his statement of qualifications (ENT000480) and summarized in his testimony. *See* Entergy Testimony at 4-7 (A5-8) (ENT000479).

environmental policy. He has worked for or consulted to the U.S. Environmental Protection Agency (“EPA”), the President’s Council of Economic Advisors, and for several states and foreign governments. Dr. Harrison has extensive experience modeling New York State’s competitive electricity market and economic methods for determining the effects of alternatives to nuclear power plants. He also has extensive experience assessing the environmental benefits and costs of energy projects and their alternatives.

97. Mr. Meehan is also a Senior Vice President at NERA.<sup>303</sup> He holds a Bachelor of Arts in Economics from Boston College. He has more than thirty-five years professional experience advising electric and gas utility clients in the areas of strategic planning, regulatory strategy, and financial and economic analysis. Mr. Meehan also has extensive experience evaluating economic issues associated with electric power markets in the United States, including in the New York Independent System Operator (“NYISO”) region.

98. Based on the foregoing, and the respective backgrounds and experience of Mr. Cleary, Dr. Harrison, and Mr. Meehan, the Board finds that all three Entergy witnesses are qualified to testify as experts on the issues raised in Contention NYS-37.

## **2. NRC Staff’s Expert Witnesses**

99. The NRC Staff presented testimony from one witness, Mr. Stuyvenberg. He submitted direct testimony and gave oral testimony at the evidentiary hearing.<sup>304</sup> Mr. Stuyvenberg has been a Project Manager in the Division of License Renewal in the Office of Nuclear Reactor Regulation (“NRR”) for over six years.<sup>305</sup> He is NRR’s energy alternatives

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<sup>303</sup> Mr. Meehan’s professional qualifications are provided in his statement of qualifications (ENT000482) and summarized in his testimony. *See* Entergy Testimony at 7-10 (A9-12) (ENT000479).

<sup>304</sup> NRC Staff Testimony (NRC000133).

<sup>305</sup> Mr. Stuyvenberg’s professional qualifications are provided in his statement of qualifications (NRC000134) and summarized in his testimony. *See* NRC Staff Testimony at 1-3 (A1-3) (NRC000133).

subject-matter expert and has worked on the alternative analyses for nineteen EISs. He holds a Masters degree in Environmental Management / Environmental Economics and Policy.

100. Based on the foregoing, and Mr. Stuyvenberg's background and experience, the Board finds he is qualified to testify as an expert on the issues raised in Contention NYS-37.

### **3. New York's Expert Witnesses**

101. New York presented testimony from three witnesses, Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta. These witnesses submitted written direct testimony and gave oral testimony at the evidentiary hearing.<sup>306</sup>

102. Mr. Schlissel is President of Schlissel Technical Consulting and has forty years experience as a consultant, expert witness, and attorney addressing management, engineering, economic, energy, and environmental issues.<sup>307</sup> He has a Bachelor of Science Degree and a Master of Science degree in Astronautical Engineering from the Massachusetts Institute of Technology and Stanford University, respectively. He also holds a Juris Doctor degree from Stanford University School of Law.

103. Mr. Bradford is Chief Executive Officer of Bradford Brook Associates, a consulting firm that advises on utility regulation, power supply planning and procurement, and energy policy.<sup>308</sup> Mr. Bradford has over forty years experience in utility regulation, power supply procurement, and energy policymaking. He was an NRC Commissioner from 1977 to 1982 and chaired the NYPSC from 1987 to 1995. He also served on the New York State Energy Planning Board, the Board of the NYSERDA, the New York Environmental Board, and as chair

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<sup>306</sup> Schlissel Direct Testimony (NYS000046); Lanzalotta Direct Testimony (NYS000047); Bradford Direct Testimony (NYS000048).

<sup>307</sup> Mr. Schlissel's professional qualifications are provided in his statement of qualifications (NYS000050) and summarized in his testimony. *See* Schlissel Direct Testimony at 2:1-3:2 (NYS000046).

<sup>308</sup> Mr. Bradford's professional qualifications are provided in his statement of qualifications (NYS000104) and summarized in his testimony. *See* Bradford Direct Testimony at 1:21-3:14 (NYS000048).

of the New York State Energy Facilities Siting Board. Mr. Bradford is also an adjunct professor at Vermont Law School.

104. Mr. Lanzalotta is a Principal with Lanzalotta & Associates LLC.<sup>309</sup> He has more than 30 years experience as an electric utility employee and as a consultant on electric system planning and operating matters. Mr. Lanzalotta holds a Bachelor of Science degree in Electric Power Engineering from Rensselaer Polytechnic Institute and a Master of Business Administration degree in Finance from Loyola College.

105. Based on the foregoing, and the respective backgrounds and experience of Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta, the Board finds that all three New York witnesses have the expertise to testify about the energy alternatives that might replace Indian Point's baseload power. The Board, however, has concerns about whether New York's witnesses have the necessary expertise to testify on the environmental impacts caused by those alternatives, which is an essential element of NYS-37. Mr. Bradford, for example, conceded that most of the specific environmental resource areas evaluated in the FSEIS "are not areas in which [he has] specific expertise."<sup>310</sup> To ensure a full and complete record, however, we allowed each of New York's witnesses to fully testify on those and other issues at the hearing. It now appears that the limited testimony that New York's witnesses offered on environmental impacts might be excluded as going beyond a particular witness's technical expertise. Nonetheless, given that the testimony is already in the record, as discussed in this Decision, the Board instead has simply chosen to admit that testimony, but to then give all evidence its appropriate weight (which may

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<sup>309</sup> Mr. Lanzalotta's professional qualifications are provided in his statement of qualifications (NYS000097) and summarized in his testimony. *See* Lanzalotta Direct Testimony at 2:1-16 (NYS000047).

<sup>310</sup> Nov. 28, 2012 Tr. at 3256:7-9 (Bradford).

be no weight at all if the testimony is not properly supported or purely conclusory) in resolving this contention's merits.

**B. The FSEIS Is Not Required to Evaluate the Need for Power**

106. Before addressing whether the record evidence substantiates New York's claim that the FSEIS insufficiently addresses the availability of conservation, renewables, and other energy sources, we first address New York's claim that the FSEIS contains a deficient need for power analysis.<sup>311</sup> As discussed above, 10 C.F.R. § 51.95(c)(2) states that the FSEIS "is not required to include [a] discussion of [the] need for power."<sup>312</sup> Notwithstanding that regulation's plain language, which precludes us from considering such issues, we fully examine New York's various arguments on this topic.

107. By way of background, as part of the environmental review for new plants, the NRC conducts a need for power analysis that reviews, among other factors, the existing power system's characteristics and regional electricity demand and supply.<sup>313</sup> The NRC performs that analysis "in connection with new power plant construction so that the NRC may weigh the likely benefits (*e.g.*, electrical power) against the environmental impacts of constructing and operating a nuclear power reactor."<sup>314</sup>

108. In its Position Statement, New York argued that NEPA requires a similar need for power analysis to properly assess the costs and benefits associated with the proposed license renewal action and the no-action alternative.<sup>315</sup> According to New York, the FSEIS includes an

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<sup>311</sup> See New York Position Statement at 36-38 (NR000045).

<sup>312</sup> 10 C.F.R. § 51.95(c)(2) (emphasis added).

<sup>313</sup> See NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants," §§ 8.0 - 8.4 (Oct. 1999) ("NUREG-1555") (ENT00019A).

<sup>314</sup> 68 Fed. Reg. at 55,910 (NYS000130).

<sup>315</sup> New York Position Statement at 17-18 (NYSR00045).

“implicit” need for power analysis that is deficient because it overestimates the need for power from Indian Point.<sup>316</sup>

109. Similarly, in their prefiled written testimony, New York’s witnesses, Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta, all asserted throughout their testimony that the FSEIS includes a need for power analysis, and then argued that analysis is flawed.<sup>317</sup> Citing regional energy sales, load growth, demand, capacity, and associated forecasts, they argued that recent energy demand projections are generally lower than previously projected.<sup>318</sup> At hearing, in response to Board questions, New York’s witnesses confirmed that the need for power was at the core of many issues raised in their testimony.<sup>319</sup> Mr. Schlissel, for example, testified that significant aspects of his testimony concerned the need for power.<sup>320</sup> Similarly, Mr. Lanzalotta indicated that, from his perspective as a transmission expert, “need for power is always relevant.”<sup>321</sup> But as noted above, while such issues may be relevant for new nuclear plant construction and operation, or in their other professional endeavors, they are not for purposes of license renewal.

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<sup>316</sup> *Id.* at 36-38.

<sup>317</sup> *See, e.g.*, Schlissel Direct Testimony at 5:9-14, 7:11-16, 12:12-17, 33:4-6 (NYS000046); Lanzalotta Direct Testimony at 3:14-18, 12:9-11 (NYS000047); Bradford Direct Testimony at 5:7-12, 13:18-22, 14:6-8 (NYS000048).

<sup>318</sup> *See, e.g.*, Schlissel Direct Testimony at 11:6 -16, 11:23-12:17, 47:3-6 (NYS000046); Lanzalotta Direct Testimony at 12:9-13:9 (NYS000047); Bradford Direct Testimony at 9:21-22 (NYS000048).

<sup>319</sup> *See, e.g.*, Oct. 24, 2012 Tr. at 2991:14-18 (Schlissel); *id.* at 2992:5-9 (Lanzalotta).

<sup>320</sup> *Id.* at 2991:15-18 (Schlissel) (“I’m somewhat confused by exactly what is excluded from the discussion of need for power and what we’ve been talking about for the last hour and forty minutes.”).

<sup>321</sup> *Id.* at 2992:8-9 (Lanzalotta). Mr. Lanzalotta further stated, “I’ve already said I wasn’t familiar with the regulation and exactly what is stated. But when you look at system adequacy, the need for transmission, the need for system reinforcement, *the need for power is an intimate factor.*” *Id.* at 2992:25-2993:5 (Lanzalotta) (emphasis added).

110. In contrast, the NRC Staff and Entergy both argued that New York and its witnesses impermissibly challenged the need for power from Indian Point.<sup>322</sup> Testifying for the NRC Staff and Entergy, respectively, Mr. Stuyvenberg and Mr. Cleary explained that the FSEIS does not and is not required to discuss the need for power.<sup>323</sup> They further indicated that instead of conducting a need for power analysis, the FSEIS evaluates alternatives available to replace all of Indian Point’s baseload power.<sup>324</sup> In other words, as Mr. Stuyvenberg put it, the FSEIS assumes that any reasonable alternative (or combination of alternatives) “would have to replace the capacity currently provided by Indian Point.”<sup>325</sup> He pointed out, however, that the FSEIS nevertheless considers conservation as a complete and partial replacement to Indian Point even though conservation produces no power, but rather involves lowering the demand for power.<sup>326</sup> Mr. Stuyvenberg also indicated that the NRC Staff considered conservation as an alternative based, in large part, on New York’s scoping and DSEIS comments.<sup>327</sup>

111. In its Rebuttal Position Statement, New York argued that Section 51.95(c)(2) does not preclude the NRC Staff from considering the need for all (or some) of Indian Point’s power “when it analyzes what is likely to happen in the no-action alternative if Indian Point is not relicensed.”<sup>328</sup> As such, New York argued that the NRC Staff’s no-action alternative analysis should have considered the extent to which likely conservation measures would replace all (or

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<sup>322</sup> Entergy Position Statement at 3, 18-19 (ENT000478); NRC Staff Position Statement at 7-12, 16 (NRCR00132).

<sup>323</sup> Entergy Testimony at 23-24 (A31) (ENT000479); NRC Staff Testimony at 31 (A31) (NRC000133).

<sup>324</sup> Entergy Testimony at 23-24 (A31) (ENT000479); NRC Staff Testimony at 31-32 (A31) (NRC000133).

<sup>325</sup> NRC Staff Testimony at 32 (A32) (NRC000133).

<sup>326</sup> See NRC Staff Testimony at 10-12 (A14) (NRC000133).

<sup>327</sup> *Id.* at 10 (A14).

<sup>328</sup> New York Rebuttal Position Statement at 8 (NYS000436).

some) of Indian Point’s power under the no-action alternative.<sup>329</sup> According to New York, an analysis of whether likely conservation measures would replace the need for power is at the “heart” of the no-action alternative analysis.<sup>330</sup>

112. We agree with the NRC Staff and Entergy that pursuant to Section 51.95(c)(2), the FSEIS is not required to discuss the need for power.<sup>331</sup> In explaining why a need for power analysis is not required for license renewal, the Commission observed that unlike for a new plant, “the significant environmental impacts associated with the siting and construction of a nuclear power plant have already occurred by the time a licensee is seeking a renewed license.”<sup>332</sup> Because the impacts for license renewal are more limited, the NRC does not assess the proposed action’s benefits (*e.g.*, electrical power), but instead determines only “whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.”<sup>333</sup> That determination involves a comparison between the impacts of license renewal and its alternatives, but it does not entail a need for power analysis to assess the proposed action’s benefits.<sup>334</sup>

Therefore, the Board only considers conservation to the extent that the no-action alternative

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<sup>329</sup> *Id.* at 6-7.

<sup>330</sup> *See id.* at 5-7.

<sup>331</sup> *See* Entergy Testimony at 23-24 (A31) (ENT000479); NRC Staff Testimony at 31 (A31) (NRC000133); *see also* Nov. 28, 2012 Tr. at 3218:6-13 (Stuyvenberg) (“[T]he regulation indicates that at license renewal stage, there is no requirement to perform an analysis of need for power.”).

<sup>332</sup> Nuclear Energy Institute; Denial of Petition for Rulemaking, 68 Fed. Reg. at 55,910 (NYS000130).

<sup>333</sup> 10 C.F.R. §§ 51.95(c)(4), 51.103(a)(5); *see also* Nuclear Energy Institute; Denial of Petition for Rulemaking, 68 Fed. Reg. at 55,910 (NYS000130).

<sup>334</sup> *See* 10 C.F.R. § 51.95(c)(2) (“The supplemental environmental impact statement for license renewal is *not required to include discussion of need for power . . .*” (emphasis added)). In promulgating that regulation, the Commission clearly stated that “the NRC will neither perform analyses of the need for power nor draw any conclusions about the need for generating capacity in a license renewal review.” Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,472 (NYS000127); *see also id.* at 28,484 (“The Commission has concluded that, for license renewal, the issues of need for power and utility economics should be reserved for State and utility officials to decide.”). As NUREG-1555, Supp. 1 further indicates, “[t]he no-action alternative does not involve the determination of whether any power is needed or should be generated.” NUREG-1555, Supp. 1 at 8.1-2 (ENT00019B).

results in additional conservation and not to analyze whether existing conservation efforts have reduced the present need for power from Indian Point.

113. Furthermore, we find that that the need for power analysis demanded by New York would have been superfluous given the cautious approach taken by the NRC Staff in the FSEIS. As Mr. Stuyvenberg testified, the NRC Staff gave full credence to New York's assertions on the efficacy of its conservation programs and, as a result, fully evaluated the environmental impacts of a standalone conservation alternative.<sup>335</sup> Mr. Stuyvenberg's testimony demonstrates that the NRC Staff included conservation as both a complete and partial replacement to Indian Point's baseload power, and did so without having to specifically consider whether sufficient conservation measures could or would be put in place under the no-action alternative.<sup>336</sup> In other words, demand projection changes and other economic considerations cited by New York's witnesses would not have changed the alternatives considered in the FSEIS because the Staff already treated conservation as a reasonable alternative to replace all and part of Indian Point's baseload power.<sup>337</sup> As such, the need for power "deficiencies" alleged by Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta<sup>338</sup> are not material to the FSEIS's alternatives evaluation.<sup>339</sup>

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<sup>335</sup> See Oct. 24 2012 Tr. at 2994:3-18 (Stuyvenberg).

<sup>336</sup> See Nov. 28, 2012 Tr. at 3218:14-19 (Stuyvenberg) (indicating that demand projection changes would not impact the NRC Staff's alternatives analysis).

<sup>337</sup> *Id.* at 3218:14-19 (Stuyvenberg) (indicating that demand projection changes would not impact the NRC Staff's alternatives analysis); NRC Staff Testimony at 33 (A33) (NRC000133).

<sup>338</sup> Schlissel Direct Testimony at 5:9-14 (NYS000046); Lanzalotta Direct Testimony at 3:14-18 (NYS000047); Bradford Direct Testimony at 5:7-12 (NYS000048).

<sup>339</sup> See 10 C.F.R. § 51.95(c)(2) (stating that the FSEIS need only discuss "economic costs and economic benefits" to the extent they are "essential for a determination regarding the inclusion of an alternative in the range of alternatives considered"). Because the Staff assumed that conservation could replace all of Indian Point's baseload power, we need not further address New York's alleged need for power arguments. The Board does, however, consider New York's related energy conservation arguments when addressing the FSEIS's alternatives evaluation in the remainder of this Decision. But in doing so, we assume that all of Indian Point's baseload power must be replaced with alternative energy sources and that the no-action alternative evaluation

**C. The FSEIS No-Action Alternative Evaluation Reasonably Cross-References the Energy Alternatives Evaluations**

114. In its Position Statement, New York criticized FSEIS Section 8.2 (No-Action Alternative) for not providing a separate environmental impact analysis of conservation and replacement energy sources.<sup>340</sup> Notably, New York offered no expert testimony supporting that criticism and its witnesses, Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta, recognized that the FSEIS addresses conservation and replacement energy sources in Section 8.3 (Alternative Energy Sources), and accordingly, focused their testimony on that section of the FSEIS.<sup>341</sup>

115. In response, Mr. Stuyvenberg testified that FSEIS Section 8.2 analyzes the environmental impact of the no-action alternative.<sup>342</sup> He also explained that while Section 8.2 indicates that the environmental impacts from alternative energy sources are potential consequences of the no-action alternative, it explicitly states that the environmental impacts from alternative energy sources are addressed in Section 8.3.<sup>343</sup> Mr. Stuyvenberg also testified that the FSEIS analysis of conservation and generation sources would have been the same if it appeared in Section 8.2.<sup>344</sup>

116. Furthermore, Mr. Cleary pointed out that the no-action alternative need not duplicate the evaluation of issues considered elsewhere in an EIS (such as in the separate section on energy alternatives), but may simply cross-reference these other evaluations.<sup>345</sup> As support

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need only consider sources (one of which may include conservation) that would likely replace Indian Point's baseload power.

<sup>340</sup> See New York Position Statement at 11 (NYS000045).

<sup>341</sup> Schlissel Direct Testimony at 5:5-9 (NYS000046); Bradford Direct Testimony at 5:4-7 (NYS000047); Lanzalotta Direct Testimony at 3:11-18 (NYS000048).

<sup>342</sup> NRC Staff Testimony at 22-23 (A22) (NRC000133).

<sup>343</sup> *Id.*; see also Nov. 28, 2012 Tr. at 3223:18-3224:1 (Stuyvenberg).

<sup>344</sup> NRC Staff Testimony at 23 (A24) (NRC000133).

<sup>345</sup> Entergy Testimony at 22 (A30) (ENT000479) (citing NUREG-1555, Supp. 1, at 8.1-3 n.(a) (ENT00019B)).

for that argument, Mr. Cleary cited to NRC guidance in NUREG-1555, Supp. 1,<sup>346</sup> which states that “the staff’s discussion of the no-action alternative need not exhaustively treat issues treated elsewhere in the EIS; it may refer to these other discussions.”<sup>347</sup>

117. We agree with Mr. Stuyvenberg and Mr. Cleary that the FSEIS no-action alternative section reasonably includes a cross-reference to the energy alternatives section. As Mr. Stuyvenberg testified, the NRC’s longstanding approach has been to address energy sources as an alternative to meet the project’s purpose, not as consequences of the no-action alternative.<sup>348</sup> This approach was developed as part of the rulemaking process for the GEIS and associated regulations.<sup>349</sup> Further, to the extent that New York objects to the heading under which the FSEIS analyzes alternative energy sources, such an argument puts form over substance. As Mr. Stuyvenberg testified, the FSEIS analysis of conservation and generation sources would have been the same if it appeared under a different heading in Section 8.2.<sup>350</sup> Nothing in the record demonstrates otherwise. Accordingly, the Board finds that FSEIS no-action alternative evaluation reasonably cross-references the alternative energy source evaluation.<sup>351</sup>

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<sup>346</sup> *Id.* (citing NUREG-1555, Supp. 1, at 8.1-3 n.(a) (ENT00019B)).

<sup>347</sup> NUREG-1555, Supp. 1, at 8.1-3 n.(a) (ENT00019B)

<sup>348</sup> NRC Staff Testimony at 24-25 (A25) (NRC000133); Nov. 28, 2012 Tr. at 3223:18-24 (Stuyvenberg).

<sup>349</sup> *See* Final Rule, Environmental Review of Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,472 (NYS000127) (explaining that the license renewal “environmental review will include a characterization of alternative energy sources as being the alternatives to license renewal and not merely the consequences of the no-action alternative”).

<sup>350</sup> NRC Staff Testimony at 23(A24) (NRC000133).

<sup>351</sup> *See* 10 C.F.R. Pt. 51, App. A, § (b) (“The techniques of tiering and incorporation by reference described respectively in 40 CFR 1502.20 and 1508.28 and 40 CFR 1502.21 of CEQ’s NEPA regulations may be used as appropriate to aid in the presentation of issues, eliminate repetition or reduce the size of an environmental impact statement.”); 40 C.F.R. § 1502.21 (“Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action.”).

**D. The FSEIS Is Not Required to Evaluate Non-Baseload Energy Sources**

118. We next address New York’s primary argument claiming that the FSEIS inadequately addresses the availability of conservation and renewables.<sup>352</sup> In support of this argument, New York pointed to the GEIS statement that the no-action alternative may result in energy conservation.<sup>353</sup> In response, the NRC Staff and Entergy asserted that the FSEIS is only required to consider baseload energy sources and, therefore, is not required to evaluate the environmental impacts of conservation and renewables.<sup>354</sup> As the NRC Staff and Entergy noted, Commission case law instructs that the FSEIS need only analyze alternatives that are capable of providing “technically feasible and commercially viable” baseload power during the license renewal period.<sup>355</sup> New York does not argue that conservation and renewables provide baseload power, but rather that the baseload power limitation does not apply to the “no-action” alternative.<sup>356</sup>

119. Before addressing these arguments, it is helpful to provide context. We thus provide a brief overview of Indian Point’s role in New York’s deregulated and competitive electricity market. With that background, we also review the FSEIS stated purpose and need for the proposed action, which helps determine what type of energy sources the NRC Staff must consider in the alternatives analysis. Within that framework, we then consider whether the FSEIS was required to evaluate the environmental impacts of conservation and renewables.

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<sup>352</sup> New York Position Statement at 44-49, 55-65 (NYSR00045).

<sup>353</sup> *Id.* at 8 n.9 (citing GEIS at 8-2).

<sup>354</sup> Entergy Position Statement at 3 (ENT000479); NRC Staff Position Statement at 17 (NRRCR00132).

<sup>355</sup> *See Seabrook*, CLI-12-05, slip op. at 55.

<sup>356</sup> *See* New York Position Statement at 11 (NYS000045).

## 1. Indian Point's Role in the New York State Electricity Market

120. As Dr. Harrison and Mr. Meehan testified, New York and most other states in the Northeast have vertically disintegrated electricity systems wherein regulated investor-owned utilities buy most of their power from wholesale merchant generators, such as Entergy, that are not subject to traditional rate-of-return price regulation.<sup>357</sup> The New York Independent System Operator (“NYISO”) manages markets with a cost-minimizing objective using supply and demand.<sup>358</sup> In the NYISO markets, generators bid to provide power to the system, and NYISO determines what price ensures sufficient power is supplied to meet demand.<sup>359</sup> All bidders with bids at or below this “market-clearing price” will receive this price.<sup>360</sup> Thus, New York has a competitive electricity market that essentially determines which units generate electricity to meet demand based on a cost-minimizing objective.<sup>361</sup>

121. Entergy is a merchant power producer that sells Indian Point's power in New York's competitive market. The parties all agree that Indian Point is a large baseload power facility,<sup>362</sup> meaning that because it has relatively low marginal costs and cannot cycle its power level up and down rapidly, it generally operates at near 100 percent power, 24-hours per day, 365 days per year, except for periodic outages.<sup>363</sup> In other words, because Indian Point is a low-bid facility, its generation serves the “baseload” demand and is dispatched first before generation

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<sup>357</sup> Entergy Testimony at 41 (A56) (ENT000479).

<sup>358</sup> Market Participant's User Guide, New York Independent System Operator at 2-1 (May 2011) (ENT000483).

<sup>359</sup> Entergy Testimony at 41 (A56) (ENT000479).

<sup>360</sup> *Id.*

<sup>361</sup> *Id.*

<sup>362</sup> *See id.* at 19 (A26); NRC Staff Testimony at 33 (A33) (NRC000133); Oct. 24, 2012 Tr. at 2937:23-2938:3, 2945:5-11 (Schlissel) (agreeing that Indian Point is a baseload plant, which “you want to operate as much as you can, flat out,” and that, “you want to get as much energy out of the plant as you can while operating it safely and efficiently.”).

<sup>363</sup> Oct. 24, 2012 Tr. at 2937:23-2938:3, 2945 (Schlissel)

from intermediate and peaking generation sources.<sup>364</sup> Mr. Schlissel acknowledged that Indian Point continues to supply this baseload power notwithstanding recent energy developments (*e.g.*, lower electricity demand following the recession, lower natural gas prices).<sup>365</sup> As Dr. Harrison and Mr. Meehan noted, Indian Point’s annual generation in 2010 provided approximately 16.3 million megawatt-hours (“MWh”), which was about 10 percent of New York State’s total electricity consumption and about 17 percent of southeastern New York’s consumption.<sup>366</sup>

## **2. The Proposed License Renewal Action and Its Purpose**

122. As noted above, the FSEIS definitions of the proposed action and its purpose help determine the type of energy resources that need to be considered in the alternatives analysis.<sup>367</sup> The FSEIS defines the proposed action as the renewal of the IP2 and IP3 operating licenses, and specifically noted that IP2 generates 1078 MWe and IP3 generates 1080 MWe.<sup>368</sup> The FSEIS adopts the GEIS definition of the purpose and need for the proposed action, namely to provide an option that allows for power generation capability beyond the current nuclear power plant operating license terms.<sup>369</sup> In other words, as the Board recognized when it originally admitted

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<sup>364</sup> See *id.* at 2945:5-18, 2964:10-19 (Schlissel); *id.* at 3089:2-3090:1 (Meehan). Experts sometimes conceive of the ordering of units as a stack, or “dispatch stack.” As demand increases or decreases during a day or seasonally, generating units are added or subtracted from the “top” of the stack, resulting in increased or decreased output. “Baseload” plants such as Indian Point are at the “bottom” of the stack because they are the cheapest to run constantly and have the technical ability to do so. “Peaking” plants are at the “top” of the stack because they are the most expensive to run (although they may have the technical ability to run constantly) and thus run only when needed at peak time (*e.g.*, the hottest days of the year). Wind generation has relatively low marginal costs but does not have the technical ability to run constantly because the wind does not blow all the time.

<sup>365</sup> *Id.* at 2952:13-2953:2 (Schlissel).

<sup>366</sup> NERA Report at 1 (ENT000481).

<sup>367</sup> See *supra* Section III.A.

<sup>368</sup> FSEIS at 1-6 to -7 (NYS00133A); see also Entergy Testimony at 28 (A40) (ENT000479).

<sup>369</sup> FSEIS at 1-7 (NYS00133A) (citing GEIS § 1.3 (NYS00132A)); see also Entergy Testimony at 29 (A40) (ENT000479); NRC Staff Testimony at 7 (A11) (NRC000133). Mr. Stuyvenberg testified that the FSEIS analysis is “an outgrowth of the purpose and need for the proposed federal action . . . to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license in order to meet future system generating needs.” *Id.* (citing GEIS at 8-1).

this contention, the purpose of Indian Point’s license renewal is to preserve the option for producing 2158 MWe of baseload power.<sup>370</sup> These definitions are not in dispute.

123. The Commission and the courts have consistently held that it is appropriate for the NRC to account for a nuclear power plant’s baseload generation capability when defining the proposed action and its purpose.<sup>371</sup> Therefore, the Board finds that the FSEIS reasonably and appropriately defines the proposed action and its purpose.

### **3. The FSEIS Is Not Required to Consider Conservation and Renewables Alternatives**

124. As noted above, the NRC Staff and Entergy initially argue that the Board need not consider New York’s claim concerning conservation and renewables because they are not baseload energy sources.<sup>372</sup> With the foregoing background, we now address that argument.

125. The parties’ witnesses all agreed that conservation and renewables cannot provide baseload power.<sup>373</sup> At hearing, New York’s witness, Mr. Schlissel readily conceded this point.<sup>374</sup> Rather than offering evidence that conservation and renewables can provide baseload power, New York instead argued that the baseload power limitation described above does not apply to

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<sup>370</sup> See *Indian Point*, LBP-08-13, 68 NRC at 93.

<sup>371</sup> *Beyond Nuclear*, 704 F.3d at 18 (upholding the NRC’s stated purpose of generating baseload power against petitioner’s allegation that the NRC “defin[ed] the objectives of the proposed actions so narrowly that it engaged in ‘outcome-controlled rigging.’” (citation omitted)); *Env’tl. Law & Policy Ctr.*, 470 F.3d at 684 (holding that Board’s determination that applicant’s purpose was generating baseload power was not arbitrary); *Davis-Besse*, CLI-12-8, slip op. at 9 (holding that for an alternative to be considered viable, it must be capable of producing an equivalent amount of baseload power).

<sup>372</sup> Entergy Position Statement at 3-4 (ENT000478); NRC Staff Position Statement at 14, 17 (NRCR00132).

<sup>373</sup> See Oct. 24, 2012 Tr. at 2938:16-19 (Schlissel) (“I don’t think that it’s feasible to think about retiring a large generating unit or in this case two large generating units in three or four years and instantly replacing them by energy efficiency.”); see also *id.* at 2946:8-10 (Schlissel) (“I agree that you can’t replace a base load power plant only with wind. I have no argument with that.”); *id.* at 3139:6-18 (Schlissel) (agreeing that conservation efficiency and demand side management are not baseload alternatives).

<sup>374</sup> See *id.*

the “no-action” alternative because conservation and renewables are possible consequences of the no-action alternative.<sup>375</sup> We are not persuaded by New York’s argument for three reasons.

126. First, neither the Commission nor the courts have suggested that an applicant’s baseload power goal should be ignored in the no-action alternative evaluation. In explaining why the NRC need only analyze the environmental impacts of baseload power alternatives, the Commission and the courts have recognized that under NEPA’s rule of reason, the NRC should appropriately consider an applicant’s economic goals (*e.g.*, the goal of generating baseload power) when developing reasonable alternatives.<sup>376</sup> That principle applies equally to the no-action alternative.<sup>377</sup> Specifically, in the *USEC* proceeding, the Commission made clear that when evaluating the no-action alternative, the NRC still considers and accords substantial weight to an applicant’s economic goals.<sup>378</sup> Accordingly, the Board finds that application of this case law precludes the Board from finding that the FSEIS must consider non-baseload alternatives under the no-action alternative.<sup>379</sup>

127. Second, we find nothing inconsistent with this conclusion and the GEIS statement that conservation is a potential consequence of the no-action alternative.<sup>380</sup> As an initial matter, the GEIS alternatives discussion establishes no binding requirements.<sup>381</sup> Even so, for non-

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<sup>375</sup> See New York Rebuttal Position Statement at 2-3 (NYS000436).

<sup>376</sup> See *Beyond Nuclear*, 704 F.3d at 19 (holding that an agency need only consider a means which will “bring about the ends’ of the proposed action” (citing *Citizens Against Burlington, Inc.*, 938 F.2d at 195); *Env’tl. Law & Policy Ctr.*, 470 F.3d at 679; *Seabrook*, CLI-12-05, slip op. at 49 (holding that reasonable alternatives are those that will enable the proposed action’s end while considering the private applicant’s economic goals); *Davis-Besse*, CLI-12-08, slip op. at 9.

<sup>377</sup> See *Am. Centrifuge*, CLI-06-10, 63 NRC at 468.

<sup>378</sup> *Id.* at 467-68.

<sup>379</sup> We also noted that New York’s proposed exception to the baseload power limitation is so broad that it would render Commission and federal case law meaningless. An intervenor could circumvent an applicant’s baseload power goal by simply recasting its non-baseload alternative as a no-action alternative.

<sup>380</sup> See GEIS at 8-2 (NYS00131D).

<sup>381</sup> *Seabrook*, CLI-12-05, slip op. at 49.

merchant applicants, implementing conservation measures may very well be a reasonable alternative.<sup>382</sup> For such applicants, the GEIS discussion of conservation provides potentially helpful information that can be used in a site-specific review.<sup>383</sup> That GEIS conservation discussion does not, however, establish that we should ignore Entergy’s economic goal as the merchant operator of a baseload plant.

128. Third, New York’s position that conservation and renewables are reasonable alternatives for baseload generation is directly contrary to how New York itself evaluates the no-action alternative under the New York State equivalent of NEPA. In the recent State Environmental Quality Review Act (“SEQRA”)<sup>384</sup> Finding Statement for the Cricket Valley natural-gas fired “baseload” generation project, the New York State Department of Environmental Conservation (“NYSDEC”) reached conclusions consistent with those taken by Entergy and the Staff in this proceeding.<sup>385</sup> As Mr. Schlissel conceded at hearing,<sup>386</sup> NYSDEC found in the SEQRA evaluation for Cricket Valley that conservation and renewables do not provide baseload power and, based on that determination, excluded conservation and renewables as reasonable alternatives to a baseload plant.<sup>387</sup> Notably, NYSDEC provided no separate

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<sup>382</sup> See *S.C. Elec. & Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 & 3), CLI-10-1, 71 NRC 1, 20-21 (2010) (holding that conservation may be a viable alternative for a public utility that produces power for a designated service territory).

<sup>383</sup> See GEIS at 8-1 (NYS00131D).

<sup>384</sup> SEQRA is the New York State-level counterpart of NEPA. See *Jackson v. N.Y. State Urban Dev. Corp.*, 67 N.Y.2d 400, 415, 494 N.E.2d 429, 434 (1986) (noting SEQRA is modeled after NEPA).

<sup>385</sup> New York State Department of Environmental Conservation, State Environmental Quality Review (SEQR) at 29 (Sept. 26, 2012) (“Cricket Valley SEQR”) (NYS000444) (finding that conservation and renewables do not provide baseload power and, based on that determination, excluded conservation and renewables as reasonable energy alternatives).

<sup>386</sup> Oct. 24, 2012 Tr. at 3140:21-23 (Schlissel) (indicating that SEQRA concluded that demand side management “does not displace the base load power from the proposed Cricket Valley facility”).

<sup>387</sup> Cricket Valley SEQR at 29 (Sept. 26, 2012) (NYS000444) (examining demand side management and renewable technologies).

evaluation of conservation measures and renewables under the no-action alternative.<sup>388</sup> Each of these points directly contradicts positions that New York has taken in this proceeding.<sup>389</sup>

Therefore, the Board finds that New York's claim that the FSEIS must further evaluate the environmental impacts of conservation and renewables in this proceeding is unsupported.

129. In summary, the Board finds that conservation and renewables are not baseload power sources and therefore, the FSEIS is not required to further analyze those sources as replacements for Indian Point's baseload merchant generation under the no-action alternative. Nonetheless, we recognize that the FSEIS in fact considers a conservation alternative and alternative combinations with considerable amounts of conservation and renewables. Thus, we next addresses the merits of New York's arguments that the FSEIS evaluation is still insufficient.

**E. The FSEIS Considers a Reasonable Range of Alternative Energy Scenarios**

130. Based on the preceding section, we find that NEPA does not require that the FSEIS contain any consideration of conservation, renewables, or other non-baseload energy alternatives. Assuming, however, that it were necessary to address these energy sources, the following discussion addresses the merits of New York's claims concerning the FSEIS discussion of conservation, renewables, and other energy sources.

131. On this issue, New York's experts, Mr. Schlissel, Mr. LanzaLotta, and Mr. Bradford, initially offered a broad list of energy issues that the FSEIS allegedly does not adequately address. Specifically, they claim that the FSEIS does not properly consider:

(1) energy conservation associated with New York's "15 by 15" conservation goal and overall

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<sup>388</sup> *Id.* at 28-29, 33. At hearing, Entergy's expert confirmed that the NYSDEC concluded that demand-side management, wind, and solar alternatives were incapable of replacing 1000 MWe of baseload power. *See* Oct. 24, 2012 Tr. at 3117:3-3118:6 (Meehan).

<sup>389</sup> *See* New York Position Statement at 25, 43, 50 (NYSR00045); New York Rebuttal Position Statement at 2-3, 5, 9-10 (NYS000436). New York provided no rationale for its contrary positions in state and federal proceedings.

lower electricity demand due to the recession; (2) renewable resources associated with New York's "30 by 15" renewable generation goal; (3) combined heat and power as a potential contributor to a combination of alternatives; (4) natural gas generation and forecasted low natural gas prices; and (5) purchased power potentially available over various proposed and constructed new transmission lines.<sup>390</sup>

132. In response, the NRC Staff's expert, Mr. Stuyvenberg, explained point-by-point how each of these issues was addressed in the FSEIS and why the Staff's approach was reasonable.<sup>391</sup> In addition, Entergy's experts, Dr. Harrison and Mr. Meehan, argued that New York's approach of citing various actual and proposed energy developments in New York did not undermine the FSEIS because that approach: (1) failed to recognize that market forces and cost-minimization fundamentally dictate which sources would replace Indian Point's generation; (2) conflated developments that are occurring or would occur regardless of whether IP2 and IP3 continue operations with developments that would occur as a result of the no-action alternative; (3) failed to consider that changes in the background context, such as lower natural gas prices, make conservation and renewables relatively more expensive and thus less likely to replace Indian Point under the no-action alternative; and (4) failed to provide independent empirical analyses of likely replacement energy sources.<sup>392</sup> Based on their own analyses, Dr. Harrison and Mr. Meehan argued that market forces would dictate that the energy needed to replace Indian Point's baseload power would almost all come from fossil power plants, while only a small

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<sup>390</sup> See New York Position Statement at 43-55 (NYS000045); Schlissel Direct Testimony at 9:15-10:11, 16:8-12 (NYS000046); Lanzaotta Direct Testimony at 5:14-6:22 (NYS000047); Bradford Direct Testimony at 19:12-20:2 (NYS000048).

<sup>391</sup> NRC Staff Testimony at 6-7 (A11), 35 (A36) (NRC000133).

<sup>392</sup> Entergy Testimony at 38-40 (A55) (ENT000479).

amount would come from renewables and conservation.<sup>393</sup> Dr. Harrison and Mr. Meehan therefore concluded that the FSEIS bounds a reasonable range of energy scenarios because it considers an all fossil scenario (natural gas), an all conservation scenario, and a scenario with a combination of conservation, renewables, and natural gas (FSEIS Combination 2).<sup>394</sup>

133. At hearing, New York’s experts conceded that Mr. Stuyvenberg adequately addressed some of their initial concerns with the FSEIS.<sup>395</sup> Mr. Schlissel also agreed with several points raised by Dr. Harrison and Mr. Meehan, including that market forces are important and would likely dictate that natural gas generation would replace Indian Point’s baseload generation,<sup>396</sup> that already existing and planned conservation and renewables cannot count as replacements to Indian Point’s baseload power,<sup>397</sup> and that neither he nor any other New York witness had performed any empirical analysis to determine the energy mix that would replace Indian Point’s baseload power.<sup>398</sup> When asked to identify any remaining concerns with the FSEIS, Mr. Schlissel and Mr. Bradford identified three primary issues: (1) the need for FSEIS Combination 2 to consider even more renewables; (2) the need to emphasize or better acknowledge that conservation is a “realistic” option that may have socioeconomic benefits; and (3) the allegedly improper dismissal of combined heat and power.<sup>399</sup> In addition, at hearing,

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<sup>393</sup> *Id.* at 39 (A55).

<sup>394</sup> *Id.* at 36-37 (A52).

<sup>395</sup> *See, e.g.*, Oct. 24, 2012 Tr. at 2943:21-2944:22 (Schlissel) (agreeing with Mr. Stuyvenberg that the FSEIS appropriately accounts for the capacity credit from wind power); *id.* at 3055:19-3056:2 (Schlissel) (agreeing that the FSEIS appropriately concludes that solar cannot be a standalone alternative).

<sup>396</sup> Schlissel Rebuttal Testimony at 23:16-24:6 (NYS000437).

<sup>397</sup> Oct. 24, 2012 Tr. at 2942:2-13, 3078:24-3079:23 (Schlissel).

<sup>398</sup> *Id.* at 2956:7-18, 3075:9-17, 3079:24-3080:3 (Schlissel).

<sup>399</sup> *Id.* at 2976:11-2977:7, 3003:12-3004:5; Nov. 28, 2012 Tr. at 3202:19-3203:14, 3259:4-16. Mr. Schlissel did, however, dispute the validity of the NEMS empirical results showing that renewables and conservation would play only a small role in replacing Indian Point’s baseload power. Oct. 24, 2012 Tr. at 3023:15-3024:19 (Schlissel).

Mr. Schlissel identified a completely new issue, claiming that the FSEIS should have considered “dynamic” energy scenarios (that change over time) rather than remain constant over the license renewal period.<sup>400</sup>

134. Given the overall weight of the evidence and, as discussed further below, we find that New York’s criticisms are insufficient for us to conclude that the NRC Staff has not taken a “hard look” at a reasonable range of energy scenarios under the no-action alternative. We find on behalf of the NRC Staff and Entergy for three reasons. First, the FSEIS reasonably addresses New York’s comments on the DSEIS and considers a reasonable range of energy scenarios that bound the likely possibilities under the no-action alternative. Second, as Dr. Harrison and Mr. Meehan testified, New York’s citation to various recent and planned energy developments does not undermine the FSEIS because, among other reasons, New York did not appropriately account for the importance of market forces in New York’s competitive energy markets. Third, Dr. Harrison and Mr. Meehan’s empirical analyses, using the well-respected NEMS model, confirm the FSEIS bounds a reasonable range of likely energy scenarios.

**1. The FSEIS Reasonably Addresses New York’s Comments and Considers a Reasonable Range of Energy Scenarios**

135. As discussed above, New York’s hearing testimony focused primarily on the need for FSEIS Combination 2 to consider more renewables, the need to identify conservation as a more “realistic” option, and the allegedly improper dismissal of combined heat and power.<sup>401</sup> We next address these issues and, to ensure a complete record, also address New York’s earlier concerns regarding natural gas-fired generation and purchased electrical power.<sup>402</sup> Finally, we

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<sup>400</sup> See Oct. 24, 2012 Tr. at 2938:20-2939:7 (Schlissel).

<sup>401</sup> *Id.* at 2976:11-2977:7, 3003:12-3004:5 (Schlissel); Nov. 28, 2012 Tr. at 3202:19-3203:14, 3259:4-16 (Bradford).

<sup>402</sup> See New York Position Statement at 43-55 (NYS000045); Nov. 28, 2012 Tr. at 3191:5-3192:13 (Bradford).

address New York’s additional claim, first raised at the hearing, regarding “dynamic” alternative combination scenarios.<sup>403</sup>

**a. *The FSEIS Considers a Reasonable Amount of Renewables Resources***

136. New York argued that the FSEIS overstates the adverse environmental impacts from FSEIS Combinations 1 and 2 because those combinations only include 600 MWe from renewable resources.<sup>404</sup> Mr. Schlissel testified that there was 7935 MWe of renewable capacity (most of which is wind ) in the NYISO interconnection queue and that if only 20 percent of these proposed projects come online, there would be an additional 1587 MWe in wind generation by 2017 that *could* replace Indian Point’s generation.<sup>405</sup> In addition, Mr. Schlissel claimed that the FSEIS “limit” of 600 MWe of renewables contradicted another statement in the FSEIS forecasting that 1765 MWe of wind would be available by 2015.<sup>406</sup> Mr. Schlissel further testified that the FSEIS emphasizes “the negative environmental impacts of wind, while discounting its positive environmental benefits.”<sup>407</sup>

137. In response, Mr. Stuyvenberg testified that the FSEIS appropriately considers wind and other renewable generation.<sup>408</sup> As Mr. Stuyvenberg noted,<sup>409</sup> FSEIS Section 8.3.5 evaluates the environmental impacts of two combinations that included 600 MWe of renewable generation.<sup>410</sup> He further explained that the 600 MWe of renewable generation in FSEIS Combinations 1 and 2 is actually consistent with Mr. Schlissel’s 1765 MWe when accounting for

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<sup>403</sup> See Oct. 24, 2012 Tr. at 2938:20-2939:7 (Schlissel).

<sup>404</sup> New York Position Statement at 59, 61 (NYSR0045).

<sup>405</sup> Schlissel Direct Testimony at 28:1-16 (NYS00045).

<sup>406</sup> *Id.* at 32:11-21.

<sup>407</sup> *Id.* at 33:6-8.

<sup>408</sup> NRC Staff Testimony at 45 (A59) (NRC000132).

<sup>409</sup> *Id.* at 13 (A14).

<sup>410</sup> FSEIS at 8-67 (NYS00133C).

the “capacity factor” and “capacity credit for wind.”<sup>411</sup> Mr. Stuyvenberg explained that because wind speed is not constant, wind power has a capacity factor of approximately thirty percent, which is a much lower capacity factor than that of a baseload plant.<sup>412</sup> He also noted that NYISO grants wind a “capacity credit” of slightly less than ten percent.<sup>413</sup> Thus, as Mr. Stuyvenberg noted, when one adjusted Mr. Schlissel’s 1765 MWe to reflect the capacity factor and capacity credit for wind, it resulted in the less renewable generation than was used in the FSEIS.<sup>414</sup> In other words, the FSEIS is optimistic in the wind capacity it projected.

138. At the hearing, Mr. Schlissel agreed that it was necessary to consider the capacity factor and capacity credit for wind in determining whether the FSEIS evaluation is reasonable.<sup>415</sup> Mr. Schlissel also conceded that a thirty percent capacity factor was reasonable, meaning that 1765 MWe of wind would only generate the equivalent of about 530 MWe.<sup>416</sup> He also agreed that that wind receives only a ten percent capacity credit in New York, meaning that for planning purposes in New York, 1765 MWe of wind would only count for about 177 MWe.<sup>417</sup> Given this testimony, we find that the FSEIS reasonably considers 600 MWe of renewable generation in FSEIS Combinations 1 and 2.

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<sup>411</sup> NRC Staff Testimony at 48-50 (A61-62) (NRC000133). “Capacity” is a power plant’s maximum output at a given time, typically expressed in megawatts (“MW”). Oct. 24, 2012 Tr. at 2939:20-22, 2940:8-10 (Schlissel); NERA Report at 1 (ENT000481). “Energy” or “generation” generally refers to power over time, as measured by the MWh or gigawatt hour (“GWh”). Oct. 24, 2012 Tr. at 2939:23 (Schlissel); NERA Report at 1 (ENT000481). A plant’s “capacity factor” is determined by dividing its actual annual generation by its annual potential generation if it operated at full capacity throughout the entire year. NERA Report at 1 (ENT000481). “Capacity credit” refers to the percentage of full capacity that NYISO credits a wind facility for energy planning purposes given the intermittent nature of wind generation. NRC Staff Testimony at 48-50 (A61-62) (NRC000133).

<sup>412</sup> NRC Staff Testimony at 45 (A59) (NYS00133C).

<sup>413</sup> *Id.*

<sup>414</sup> *Id.* at 48-50 (A61-62).

<sup>415</sup> Oct. 24, 2012 Tr. at 3054:8-10 (Schlissel).

<sup>416</sup> *Id.* at 2943:7-18 (Schlissel).

<sup>417</sup> *Id.* at 2942:23-2943:3 (Schlissel)

139. In addition, we note that in comments on the DSEIS, New York requested that the NRC Staff consider New York Combination 4, which consisted of: (1) “400-600 MW from repowering an existing fossil-fired power plant in downstate New York as an efficient new gas-fired combined cycle unit”; (2) “1200-1500 MW from energy efficiency;” and (3) “600-800 MW from renewable resources such as biomass and wind.”<sup>418</sup> As New York requested, FSEIS Combinations 1 and 2 include 600 MWe of renewables, and FSEIS Combination 2 is essentially identical to New York’s suggested combination.<sup>419</sup> The Board thus finds that the FSEIS reasonably addresses New York’s comment.

140. However, we recognize that New York also requested that the NRC Staff consider New York Combination 3, which included 1000 to 1200 MWe of renewables.<sup>420</sup> We find that the NRC Staff was reasonable in not analyzing a combination with that amount of renewables for two reasons.

141. First, New York has not shown that 1000 to 1200 MWe of renewables is likely to replace Indian Point’s baseload generation under the no-action alternative. To the contrary, as discussed in more detail in Section IV.E.2, any renewables constructed as a result of the RPS or other government programs would be put in place regardless of whether or not Indian Point’s generation is available and thus cannot count as additional generation that would be “available” under the no-action alternative.<sup>421</sup> And, as discussed in Section IV.E.2 and 3, the no-action alternative would likely only result in a small amount of additional renewables based on the relatively higher cost of renewables compared to lower cost natural-gas fired-generation.<sup>422</sup>

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<sup>418</sup> New York DSEIS Comments at 36 (NYS000134).

<sup>419</sup> *Compare id. with* FSEIS at 8-60 (NYS00133C).

<sup>420</sup> New York DSEIS Comments at 35-36 (NYS000134).

<sup>421</sup> Entergy Testimony at 59 (A73) (ENT000479).

<sup>422</sup> *Id.*

142. Second, New York has not shown that additional renewable generation would have significantly different or fewer environmental impacts than FSEIS Combination 2. Although Mr. Schlissel implied that renewable generation has minimal environmental impacts, New York's own documents contradict this position.<sup>423</sup> In particular, the NYSDEC SEQRA Finding Statement for the proposed Cricket Valley natural project concluded that wind generation would require thousands of acres of land.<sup>424</sup> Wind generation would require even more land to replace Indian Point's energy output and thus would cause greater land-use impacts because Indian Point has twice the capacity of the proposed Cricket Valley facility. Given that FSEIS Combinations 1 and 2 have SMALL to MODERATE land-use impacts primarily due to the land disturbance associated with 600 MWe of wind, we find that the FSEIS selects a reasonable quantity of wind to minimize environmental impacts.<sup>425</sup>

143. Furthermore, as Dr. Harrison and Mr. Meehan testified, in addition to land use, renewable generation causes other acknowledged adverse environmental impacts.<sup>426</sup> For example, they testified that wind generation has the following potential adverse environmental impacts: bird and bat mortality; decreased aesthetic qualities; and increased noise in the areas where the wind turbines are built.<sup>427</sup> In light of this evidence, the Board finds that the NRC Staff selected a reasonable combination between the natural gas alternative and the conservation alternative that minimized the adverse environmental impacts of wind generation. In other words, rather than highlighting the negative environmental impacts from wind generation as

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<sup>423</sup> Schlissel Direct Testimony at 33:6-8 (NYS000046) (claiming that that the FSEIS emphasizes "the negative environmental impacts of wind, while discounting its positive environmental benefits").

<sup>424</sup> Cricket Valley SEQR at 29 (NYS000444).

<sup>425</sup> See FSEIS at 8-62 to -63, 8-68 (NYS00133C).

<sup>426</sup> See Entergy Testimony at 63-70 (A76-83) (ENT000479).

<sup>427</sup> *Id.* at 63-64 (A76).

New York claimed, the FSEIS makes wind generation look relatively environmentally favorable by keeping the total amount of wind at a modest level in the two FSEIS alternative combinations.

**b. *The FSEIS Meaningfully Considers the Conservation Alternative***

144. According to New York, the FSEIS fails to adequately acknowledge that conservation is a “realistic” option that may have socioeconomic benefits.<sup>428</sup> In his prefiled testimony, Mr. Schlissel supported this position and claimed that conservation represented a “viable no-action generation alternative[] in the event the units are not relicensed.”<sup>429</sup>

145. Mr. Stuyvenberg and Mr. Cleary testified that FSEIS Section 8.3.3 reasonably evaluates the environmental impacts of conservation.<sup>430</sup> As Mr. Stuyvenberg pointed out, the FSEIS considers conservation as a potential standalone alternative “because of efforts made by the State of New York and comments received during preparation of [the FSEIS].”<sup>431</sup>

Mr. Stuyvenberg and Mr. Cleary also noted the FSEIS cites several reports describing energy conservation success within New York State<sup>432</sup> and specifically discusses the New York State “15 by 15” plan.<sup>433</sup>

146. At hearing, Mr. Bradford made clear his critique was one merely of FSEIS emphasis or tone, not that it fails entirely to acknowledge conservation.<sup>434</sup> We find no merit in Mr. Bradford’s claim for several reasons. First, another New York witness, Mr. Schlissel

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<sup>428</sup> New York Position Statement at 12 (NYS000045).

<sup>429</sup> Schlissel Direct Testimony at 8:13-18 (NYS000046).

<sup>430</sup> NRC Staff Testimony at 8-9 (A13) (NRC000133); Entergy Testimony at 30 (A44) (ENT000479).

<sup>431</sup> FSEIS at 8-42 (NYS00133C).

<sup>432</sup> Such reports included a 2005 report from the New York State Energy Research and Development Authority which “estimated that its energy efficiency programs had reduced peak energy demands in New York by 860 MW(e),” and a 2006 Report for the National Research Council forecasting that the “technical potential of its efficiency programs in New York would result in a cumulative 3800 MW(e)-reduction of peak load by 2012 and 7400 MW(e) by 2022.” *Id.* at 8-42.

<sup>433</sup> *See id.* at 8-42.

<sup>434</sup> *See* Nov. 28, 2012 Tr. at 3258:23-3259:3 (Bradford) (“[T]he FSEIS gives relatively short shrift to the most benign of the alternatives . . .”).

conceded that it would not be feasible to replace all of Indian Point baseload generation with conservation in 2015.<sup>435</sup> Although Mr. Schlissel testified that there might be additional, cost-effective conservation programs that might be able to replace Indian Point's generation at some unspecified some point in the future,<sup>436</sup> NEPA does not require that NRC consider such speculative changes.<sup>437</sup> Given this, the FSEIS might well have been justified in ignoring conservation altogether.

147. Second, the FSEIS did present a standalone conservation alternative that recognizes that impacts from conservation are generally lower than those from other alternatives.<sup>438</sup> In light of Mr. Schlissel's concession that replacing Indian Point's baseload generation with conservation in 2015 is not feasible, we find that, if anything, the FSEIS conservation discussion is therefore optimistic in considering conservation as a stand-alone alternative; *i.e.*, reviewing conservation as a standalone alternative hardly constitutes underemphasis or, in Mr. Bradford's words, "short shrift." Further, in terms of the availability of conservation programs, the FSEIS discusses the New York State "15 by 15" energy efficiency program and, as Mr. Stuyvenberg testified, the FSEIS relies heavily on that program and New York's assertions about the availability of state conservation programs as the basis for including a standalone conservation alternative in the FSEIS.<sup>439</sup> Thus, again, there is no problem of

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<sup>435</sup> Oct. 24, 2012 Tr. at 2938:16-19 (Schlissel).

<sup>436</sup> *See id.* at 2938:14-15, 3099:15-23 (Schlissel) (answering that he believes demand could be reduced sufficiently to decrease baseload power).

<sup>437</sup> *See Callaway*, 524 F.2d at 93 (holding that NEPA does not require consideration of "significant changes in governmental policy or legislation"); *Shasta Res. Council*, 629 F. Supp. 2d at 1059-60 (holding that agency did not err by failing to consider an alternative that would have required legislative appropriation of additional funds because chances of additional appropriations were remote and speculative).

<sup>438</sup> FSEIS at 9-9 to 9-10 tbl. 9-1 (NYS00133C).

<sup>439</sup> NRC Staff Testimony at 8-9 (A13) (NRC000133).

underemphasis.<sup>440</sup> The Board thus finds that the FSEIS appropriately considers energy conservation and does not, as Mr. Bradford asserts, give “short shrift” to that analysis.<sup>441</sup>

148. To the extent that New York challenges the FSEIS discussion of the environmental impacts of conservation, we note that the FSEIS concludes that those impacts would generally be SMALL.<sup>442</sup> Despite this conclusion, Mr. Schlissel and Mr. Bradford claimed that the FSEIS improperly incorporates findings from the Shearon Harris and TMI-1 license renewal SEISs.<sup>443</sup> Mr. Stuyvenberg, however, explained that the FSEIS references the Shearon Harris and TMI SEISs to incorporate two prior NRC evaluations of conservation programs, both of which found that such programs have SMALL environmental impacts.<sup>444</sup> Because New York’s witnesses did not dispute that conservation generally has SMALL environmental impacts, we find their argument concerning the Shearon Harris and TMI-1 license renewal SEISs to be immaterial.

149. With regard to potential socioeconomic benefits of conservation, Mr. Stuyvenberg and Mr. Cleary testified that FSEIS Section 8.3.3 does provide a site-specific analysis and that the FSEIS concludes that the benefits of conservation would not offset the SMALL to MODERATE adverse impacts resulting from the significant reduction in Entergy’s PILOT and

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<sup>440</sup> We note, further, that arguments challenging an FSEIS due to its emphasis or whether it devotes insufficient text to an alternative must be treated with great skepticism. How much discussion “is enough” would be a terribly elusive concept and would impermissibly turn NEPA-challenges into a game of “gotcha.” *See Clinton*, CLI-05-29, 62 NRC at 811 (indicating that “boards do not sit to flyspeck environmental documents or to add details or nuances”) (citation and internal quotes omitted).

<sup>441</sup> *See* Nov. 28, 2012 Tr. at 3258:22-3259:23 (Bradford).

<sup>442</sup> *See* FSEIS at 8-43 (NYS00133C). Table 9-1 of the FSEIS summarizes the environmental impacts from energy conservation.

<sup>443</sup> Schlissel Direct Testimony at 23:21-24:9 (NYS000046); Bradford Direct Testimony at 20:7-23 (NYS000048).

<sup>444</sup> Oct. 24, 2012 Tr. at 3001:25-3002:21; 2006:11-25 (Stuyvenberg); *see also* NUREG-1437, Supp. 33, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Shearon Harris Nuclear Power Plant, Unit 1 (Aug. 2008) (NYS000065); NUREG-1437, Supp. 33, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Three Mile Island Nuclear Station, Unit 1 (June 2009) (NYS000066).

other taxes payments after IP2 and IP3 cease operations.<sup>445</sup> New York’s witnesses provided no data suggesting otherwise, but instead only generally claimed that conservation has socioeconomic benefits.<sup>446</sup> We find that general claim is insufficient to call into question the FSEIS’s conclusion of SMALL to MODERATE adverse socioeconomic impacts. As Mr. Stuyvenberg reasonably noted, the positive socioeconomic impacts of conservation programs are much more diffuse than the loss of tax and PILOT revenue in the jurisdictions closest to Indian Point.<sup>447</sup> The FSEIS thus reasonably concludes that these more concentrated adverse socioeconomic impacts would not be effectively offset by any positive conservation-based socioeconomic impacts that would be spread across a larger geographic region.<sup>448</sup> Thus, the Board finds that the FSEIS appropriately considers the environmental impacts of the conservation alternative.

**c. *The FSEIS Is Not Required to Further Consider Combined Heat and Power***

150. New York argued that the FSEIS exaggerates the adverse environmental impacts from the combination alternatives because it does not consider a combination that included combined heat and power.<sup>449</sup> According to Mr. Schlissel and Mr. Bradford, the FSEIS erroneously eliminates combined heat and power because its heat may substitute for heat that is

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<sup>445</sup> See FSEIS at 8-43 (NYS00133C) (concluding that “loss of tax and PILOT revenue paid to municipalities near IP2 and IP3, as well as lost jobs, may result in SMALL to MODERATE socioeconomic impacts, which will not be offset by conservation”).

<sup>446</sup> Schlissel Direct Testimony at 24:21-25:7 (NRC000046); Bradford Direct Testimony at 22:3-4 (NRC000048).

<sup>447</sup> Oct. 24, 2012 Tr. at 3002:24-3003:7 (Stuyvenberg).

<sup>448</sup> See FSEIS at 8-43 (NYS00133C).

<sup>449</sup> New York Position Statement at 59, 61 (NYSR0045); New York DSEIS Comments at 35-36 (NYS000134) (requesting consideration of 1000 to 1200 MWe of renewable resources, 1200 to 1400 MWe from energy efficiency, and 100 to 200 MWe from combined heat and power).

produced electrically or may free up natural gas that is burned to make heat as an alternative to electricity for other purposes.<sup>450</sup>

151. Mr. Stuyvenberg testified that in comments on the DSEIS, New York suggested that the NRC Staff consider 100 to 200 MWe of combined heat and power as part of a combination (New York Combination 3, which also included renewables generation (1000 to 1200 MW) and energy efficiency (1200 to 1400 MW)).<sup>451</sup> According to Mr. Stuyvenberg, FSEIS Combination 2 had substantially similar environmental impacts as New York Combination 3.<sup>452</sup> Given these similarities and because combined heat and power serves a purpose that IP2 and IP3 do not serve, namely providing heat for industrial or other purposes, the NRC Staff did not include combined heat and power in the FSEIS alternative combinations.<sup>453</sup>

152. For the following two reasons, we find that the FSEIS reasonably dismisses combined heat and power from further consideration. We further find that New York has offered only speculation that combined heat and power would play any role in replacing Indian Point's baseload power under the no-action alternative.

153. First, as Mr. Stuyvenberg explained, Indian Point does not provide heat and there is no indication that the surrounding area needs waste heat.<sup>454</sup> Mr. Schlissel did not disagree, but instead noted that combined heat can be used for various purposes such as in refineries and to melt snow.<sup>455</sup> While these are potential additional benefits of combined heat and power,

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<sup>450</sup> Schlissel Direct Testimony at 34:5-16 (NRC000046); Bradford Direct Testimony at 23:3-20 (NRC000048); Oct. 24, 2012 Tr. at 2975:20-2977:7 (Schlissel).

<sup>451</sup> NRC Staff Testimony at 16 (A17) (NRC000133); *see also* New York DSEIS Comments at 35-36 (NYS000134).

<sup>452</sup> NRC Staff Testimony at 16 (A17) (NRC000133)

<sup>453</sup> *Id.*

<sup>454</sup> Oct. 24, 2012 Tr. at 2977:10-14 (Stuyvenberg); *see also* FSEIS at 8-49 (NYS00133C).

<sup>455</sup> Oct. 24, 2012 Tr. at 2979:9-2981:11 (Schlissel).

Mr. Schlissel did not identify any need for waste heat in the areas currently served by Indian Point.<sup>456</sup> Mr. Meehan confirmed that there is very little prospect for the development of combined heat and power in New York because the need for such facilities has generally been exhausted.<sup>457</sup> Thus, Mr. Schlissel and New York appear to offer as a suggested partial alternative a facility that would serve a solution for a non-existent problem. Clearly such a facility need not be regarded or treated as an alternative to be analyzed given that there is no apparent market for it.

154. Second, as Mr. Stuyvenberg noted, the environmental impacts from adding New York's suggested amount of combined heat to FSEIS Combination 2 would not significantly change that alternative's environmental impacts.<sup>458</sup> As Mr. Stuyvenberg testified, the power from the combined heat and power would likely come from natural gas.<sup>459</sup> Such natural gas generation, however, would be less efficient than the natural gas generation in FSEIS Combination 2 because heat that would otherwise be recovered to increase electrical generation capabilities (*e.g.*, in a combined-cycle natural gas facility), would instead be used to provide direct heat for industrial or other purposes.<sup>460</sup> As such, a combined heat and power facility would release higher air emissions to produce an equivalent amount of power as a combined-cycle natural gas facility.<sup>461</sup> In turn, it is not a likely or practical alternative; *i.e.*, it is not likely that there will be large scale heat and power installed where a more efficient "power only" technology could provide the same electricity. Given this, and given the absence of a need for

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<sup>456</sup> *Id.*

<sup>457</sup> *Id.* at 3119:16-3120:21 (Meehan).

<sup>458</sup> NRC Staff Testimony at 16-17 (A17) (NRC000133).

<sup>459</sup> Oct. 24, 2012 Tr. at 3132:10-3133:12 (Stuyvenberg).

<sup>460</sup> *Id.*

<sup>461</sup> *Id.*

the waste heat from such a facility, we find that the net environmental impacts would be very similar to (if not greater than) the impacts from FSEIS Combination 2. Based on Mr. Stuyvenberg's clarifying testimony, we find that the FSEIS appropriately addresses combined heat and power because NEPA does not require a separate analysis of alternatives which have substantially similar consequences.<sup>462</sup>

**d. *The FSEIS Reasonably Considers Natural Gas-Fired Combined-Cycle Generation***

155. New York also argued that the FSEIS fails to acknowledge natural gas is plentiful and inexpensive, which has resulted in recent newly-constructed and newly-proposed natural gas generation facilities in New York.<sup>463</sup> Mr. Schlissel testified that natural-gas fired generation could provide substantial replacement power for Indian Point's lost baseload generation, particularly due to "favorable" outlooks for natural gas prices and supply.<sup>464</sup> Specifically, he claimed that "new natural gas-fired generating facilities represent viable no-action generation alternatives,"<sup>465</sup> and that repowering older existing facilities "would be a viable alternative to a portion of the capacity and energy generation provided by the two Indian Point units."<sup>466</sup>

156. Mr. Stuyvenberg and Mr. Cleary agreed that natural gas generation is a viable alternative energy source.<sup>467</sup> As they testified, the FSEIS specifically evaluates natural-gas fired

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<sup>462</sup> *Headwaters*, 914 F.2d at 1181.

<sup>463</sup> New York Position Statement at 2 (NYSR0045).

<sup>464</sup> Schlissel Direct Testimony at 16:8-20 (NYS000046) (citing 2011 Schlissel Declaration at 15-17 (NYS000054)).

<sup>465</sup> *Id.* at 8:16-18.

<sup>466</sup> *Id.* at 16:15-17.

<sup>467</sup> *See* NRC Staff Testimony at 40 (A49) (NRC000133); Entergy Testimony at 29 (A42) (ENT000479).

generation as a reasonable alternative to license renewal.<sup>468</sup> They pointed out that FSEIS Section 8.3.1 evaluates the environmental impacts of a 2000 MWe natural gas-fired facility built at the Indian Point site, an alternative site, or as part of repowering an existing fossil facility in downstate New York.<sup>469</sup>

157. In his rebuttal testimony, Mr. Schlissel did not discuss the FSEIS Section 8.3.1 evaluation of the natural-gas combined-cycle alternative.<sup>470</sup> Instead, Mr. Schlissel testified that the projected low costs of natural gas would result in Indian Point's generation being replaced by new natural-gas combined-cycle capacity in New York City or Westchester County.<sup>471</sup>

158. In support of this argument, New York submitted Exhibits NYS000444 and NYS000445, two documents recently prepared by the NYSDEC, which discussed the environmental impacts from the proposed Cricket Valley Energy Center project, a 1000 MWe natural-gas combined-cycle facility in Dutchess County, New York.<sup>472</sup> At hearing, Mr. Schlissel testified that if the Cricket Valley project remained on schedule, then it had the potential to provide power in 2015 or 2016 that could partially replace the generation from IP2 and IP3.<sup>473</sup>

159. The Board finds that Mr. Schlissel's testimony about the Cricket Valley facility (and natural gas generation more generally) does not identify any material deficiency in the FSEIS. Mr. Schlissel did not identify any defect in FSEIS Section 8.3.1, which already evaluates the environmental impacts of a natural gas-fired facility of nearly the identical MWe-capacity of

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<sup>468</sup> NRC Staff Testimony at 40 (A49) (NRC000133); Entergy Testimony at 29 (A42) (ENT000479).

<sup>469</sup> NRC Staff Testimony at 40 (A49) (NRC000133); Entergy Testimony at 29 (A42) (ENT000479).

<sup>470</sup> *See generally* Schlissel Rebuttal Testimony (NYS000437).

<sup>471</sup> *Id.* at 23:16-24:6.

<sup>472</sup> Cricket Valley SEQR (NYS000444); DEC Approves New Cricket Valley Energy Center (CVE), New York State Department of Environmental Conservation (Oct. 2, 2012) (NYS000445).

<sup>473</sup> Oct. 24, 2012 Tr. at 3129:23-3130:6 (Schlissel).

IP2 and IP3.<sup>474</sup> The FSEIS indicates that that such a facility would use relatively-efficient combined-cycle technology,<sup>475</sup> the same technology as the proposed Cricket Valley facility.<sup>476</sup> That FSEIS section fully evaluates the environmental impacts from a natural gas facility, which are summarized in FSEIS Tables 8-3 and 9-1.<sup>477</sup> Thus, that evaluation surely captures, and gave a “hard look” at such a facility as an alternative to IP2 and IP3. The NRC Staff cannot be faulted for not evaluating every newly proposed or approved energy project, particularly those that are simply additional examples of an alternative already discussed in the FSEIS.<sup>478</sup> Accordingly, we find that the FSEIS is not deficient for not specifically discussing the Cricket Valley facility (or any other recent or proposed facility).

160. As to the effects the NRC Staff found would be associated with such a facility, Mr. Schlissel and New York’s other witnesses presented no evidence disputing the FSEIS environmental impact evaluation for a natural gas facility. In particular, they do not dispute the FSEIS estimate of annual air emissions for sulfur oxides, nitrogen oxides, carbon monoxide, and carbon dioxide,<sup>479</sup> or the conclusion that a natural gas facility would have air emissions far greater than Indian Point.<sup>480</sup> Based on those emissions, FSEIS Section 8.3.1 concludes that air-quality impacts from natural gas-fired generation would be SMALL to MODERATE, a

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<sup>474</sup> FSEIS at 8-28 to -29 (NYS00133C). In addition, FSEIS Section 8.3.5.2 evaluates an alternative combination that included a 400 to 600 MWe natural gas plant (along with renewables and conservation). *Id.* at 8-67.

<sup>475</sup> *Id.* at 8-28 to -29.

<sup>476</sup> Cricket Valley SEQR Statement at 1 (NYS000444).

<sup>477</sup> *See* FSEIS at 8-37, 9-9 (NYS00133C).

<sup>478</sup> Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. at 18,035 (ENT000147).

<sup>479</sup> FSEIS at 8-37 (NYS00133C).

<sup>480</sup> *Id.* at 8-37, 8-73.

conclusion supported by Mr. Schlissel's testimony that air emissions would be greater without Indian Point.<sup>481</sup>

161. The Board also notes that the FSEIS evaluation is consistent with the NYSDEC Cricket Valley SEQRA Finding Statement, further supporting the FSEIS's conclusion. That SEQRA evaluation indicates that the proposed 1000 MWe Cricket Valley project would be allowed the following emissions: 191.9 ton per year ("tpy") particulate matter ("PM"); 191.9 tpy PM<sub>10</sub>; 191.9 tpy PM<sub>2.5</sub>; 569.9 tpy carbon monoxide; 46.9 tpy sulfur dioxide; 19.7 tpy hydrogen sulfide; 3,597,766 tpy carbon dioxide equivalent.<sup>482</sup> When those emissions are doubled to provide 2000 MWe (and thus almost match Indian Point's 2158 MWe), it is clear that the emissions levels in the NYSDEC Cricket Valley SEQRA Finding Statement are similar to the emissions from the 2000 MWe natural-gas combined-cycle facility evaluated in the FSEIS.<sup>483</sup> Accordingly, based on this evidence, the Board finds that the FSEIS both considers and appropriately describes a sufficiently illustrative natural gas facility, and reasonably addresses the environmental impacts from such a facility.

**e. *The FSEIS Is Not Required to Further Consider Purchased Electric Power***

162. According to Mr. Schlissel, the purchased power analysis in the FSEIS should have considered several "recently approved" but yet to be completed transmission projects such as the Hudson Transmission Partners line and Linden transformers, which would "increase transmission capacity" into the Indian Point area.<sup>484</sup> Mr. Schlissel also claimed that the FSEIS erroneously references the New York Regional Interconnect ("NYRI") transmission project even

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<sup>481</sup> See Oct. 24, 2012 Tr. at 3033:12-20, 3080:9-11 (Schlissel).

<sup>482</sup> Cricket Valley SEQR at 9 (NYS000444).

<sup>483</sup> See FSEIS at 8-73 (NYS00133C).

<sup>484</sup> Schlissel Direct Testimony at 40:3-14 (NYS000046).

though the applicant for that project withdrew its petition for certification.<sup>485</sup> In his rebuttal, Mr. Schlissel testified that the Champlain Hudson transmission project—another proposed project specifically identified in the FSEIS—“could unlock the capability of bringing large amounts of low cost hydro generated power from Canada into downstate New York.”<sup>486</sup>

163. Mr. Stuyvenberg testified that the FSEIS specifically considers purchased power as a reasonable alternative to license renewal.<sup>487</sup> As he noted,<sup>488</sup> FSEIS Section 8.3.2 states that given New York State’s competitive power market, all alternative generation sources considered in the FSEIS could provide purchased power absent electric transmission constraints.<sup>489</sup>

Mr. Stuyvenberg also explained that the FSEIS finds that the primary impacts from purchased power are likely to result from power generation (*i.e.*, the generation source at the end of the transmission line), and because each generation source has its own set of environmental impacts, those impacts are evaluated elsewhere in the FSEIS.<sup>490</sup>

164. As Mr. Stuyvenberg further pointed out, the FSEIS discusses potential transmission projects—including the Champlain Hudson project—to illustrate possible transmission improvements that could increase purchased power’s availability.<sup>491</sup> He noted, however, that the FSEIS does not separately evaluate the environmental impacts from any

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<sup>485</sup> *Id.* at 40:15-41:12.

<sup>486</sup> Schlissel Rebuttal Testimony at 15:20-16:8 (NYS000437); Oct. 24, 2012 Tr. at 3056:19-3057:23 (Schlissel).

<sup>487</sup> NRC Staff Testimony at 14-15 (A15) (NRC000133).

<sup>488</sup> *Id.*

<sup>489</sup> Entergy Testimony at 29-30 (A43) (ENT000479); FSEIS at 8-41 (NYS00133C).

<sup>490</sup> NRC Staff Testimony at 15 (A15) (NRC000133); FSEIS at 8-41 (NYS00133C).

<sup>491</sup> NRC Staff Testimony at 15 (A15) (NRC000133); FSEIS at 8-41 (NYS00133C).

specific transmission project and therefore, the reference to the NYRI project is immaterial to the FSEIS purchased power evaluation.<sup>492</sup>

165. Dr. Harrison and Mr. Meehan testified that the NRC Staff's decision to not discuss the environmental impacts (beyond the adverse environmental impacts of generation sources) was conservative in the sense that it resulted in the environmental impacts from the no-action alternative being understated. As they noted, the impacts of transmission lines, which include the siting and construction of transmission lines, could result in additional adverse environmental impacts such as the clearing of forested vegetation and subsequent displacement of and impacts on wildlife, including impacts to fish and aquatic invertebrates due to canopy reduction and stream crossings.<sup>493</sup>

166. In addition, Dr. Harrison and Mr. Meehan testified that to the extent that the transmission lines cited by Mr. Schlissel allow for allow greater imports from New Jersey and the rest of the PJM region that is west of New York, additional transmission may result in increased coal generation because the PJM region generates a higher percentage of its power from coal than New York.<sup>494</sup> In turn, these new transmission lines by incentivizing greater coal generation, could lead to greater air emissions than assumed in the FSEIS.<sup>495</sup> Dr. Harrison and

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<sup>492</sup> See NRC Staff Testimony at 15 (A15), 54 (A69) (NRC000133); Nov. 28, 2012 Tr. at 3214:14-19 (Stuyvenberg) ("In addition to the extent that discussion included the New York Regional Interconnect, which was a project that has since been withdrawn, I should note, it was again on an illustrative basis and not as a means of assigning specific impacts."). As noted above, the NRC Staff assumed that the primary impacts of interest would come from energy generation sources (not transmission) and did not rule out any generation sources based on transmission grid constraints. See Oct 24, 2012 Tr. at 2973:21-2974:16 (Stuyvenberg); Nov. 28, 2012 Tr. at 3214:19-23 (Stuyvenberg).

<sup>493</sup> Entergy Testimony at 69-70 (A83) (ENT000479).

<sup>494</sup> *Id.* at 97 (A123).

<sup>495</sup> *Id.* at 109-110 (A147).

Mr. Meehan also explained that purchased power from Canadian hydroelectric generation would also have significant adverse environmental impacts.<sup>496</sup>

167. Accordingly, we find that the FSEIS reasonably addresses purchased power as an alternative to replace Indian Point's baseload power. In response to New York's comments, the FSEIS specifically indicates that all alternatives in the FSEIS could supply purchased power.<sup>497</sup> The FSEIS discusses illustrative transmission expansion projects, even though the FSEIS conservatively does not count any adverse environmental impacts of those projects against the purchased power alternative.<sup>498</sup>

168. We also find that the FSEIS appropriately recognizes that any generation provided through purchased power would have its own environmental impacts.<sup>499</sup> Mr. Schlissel did not dispute that any generating source of purchased power would have environmental impacts or that those impacts are discussed in other sections of the FSEIS.<sup>500</sup> As such, the Board finds that the FSEIS discussion of purchased power is reasonable and satisfies NEPA.

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<sup>496</sup> *Id.* at 99 (A124). Any large-scale hydroelectric generation is ineligible for subsidies under the New York State RPS program because, as Dr. Harrison and Mr. Meehan noted, hydropower construction and operations have significant adverse environmental impacts, including adverse impacts on fish populations and increased greenhouse gas emissions. *Id.* at 46 (A60).

<sup>497</sup> FSEIS at 8-41 (NYS00133C).

<sup>498</sup> *Id.*

<sup>499</sup> *Id.* For example, the FSEIS states that, “[n]ew hydropower in Canada, for example may have substantial environmental impacts during construction and operation.” FSEIS at 8-41 (NYS00133C). As Dr. Harrison and Mr. Meehan testified, building additional hydroelectric generation would have potential adverse environmental impacts, such as increases in greenhouse gas emissions during both construction and operation, ozone layer depletion, increased local humidity, stream erosion and sedimentation, biodiversity and fish population impacts, and aquatic habitat damage, among others. *See* Entergy Testimony at 67-68 (A82) (ENT000479).

<sup>500</sup> *See generally* Schlissel Direct Testimony (NYS000046).

**f. *The FSEIS Is Not Required to Consider “Dynamic” Combination Scenarios***

169. At hearing, Mr. Schlissel raised a new argument concerning the adequacy of the FSEIS.<sup>501</sup> Specifically, Mr. Schlissel testified that the FSEIS should have considered “dynamic” energy scenarios that change over time rather than remain constant over the license renewal period.<sup>502</sup> As Mr. Schlissel testified, a dynamic scenario might involve the NRC Staff considering combinations that changed over the 20 year license renewal period (*e.g.*, relying more on natural gas initially, but then over time relying more on renewables and conservation).<sup>503</sup>

170. As a threshold matter, New York did not previously raise this argument in its contentions, prefiled testimony, or comments on the DSEIS.<sup>504</sup> As Mr. Stuyvenberg noted, prior to the hearing, New York had only suggested that the NRC Staff consider “static” combinations.<sup>505</sup>

171. The Commission has emphasized that intervenors are not permitted to change the scope of a contention as admitted by the Board.<sup>506</sup> In the *Vogtle* proceeding, for example, the Commission emphasized that the scope of a contention is limited to issues of law and fact pled with particularity in the intervention petition, including its stated bases.<sup>507</sup> Based on this

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<sup>501</sup> Oct. 24, 2012 Tr. at 2938:20-2939:7 (Schlissel).

<sup>502</sup> *Id.* (“There needs to be a realization that electric grids and resource planning are dynamic, not static. . . . What will actually replace Indian Point will change over time as new resources are added, as there are outages of some plants. So electric system operation and planning as I say is a dynamic process.”).

<sup>503</sup> *See id.*

<sup>504</sup> Oct. 24, 2012 Tr. at 3161:24-3162:10 (Stuyvenberg).

<sup>505</sup> *Id.*

<sup>506</sup> *S. Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), CLI-10-5, 71 NRC 90, 100 (2010).

<sup>507</sup> *Id.*

standard, the Board declines to consider New York's belated "dynamic" energy scenario claim. Because New York waited until hearing to make this claim, the Board deems it waived.

172. In any event, it is not entirely clear what Mr. Schlissel means by a dynamic energy alternatives scenario, much less what specific dynamic scenario he believes should have been addressed in the FSEIS. Regardless, Commission case law holds that in "most cases a 'reasonable' energy alternative is one that is currently commercially viable, or will become so in the relatively near term."<sup>508</sup> As the Commission emphasized in *Seabrook*, "[e]xcept in rare cases where there is evidence of unusual predictive reliability, it is not workable to consider, for purposes of NEPA analysis, what are essentially hypothetical or speculative alternatives as a source of future baseload power generation."<sup>509</sup> In this case, New York has not explained how such a dynamic analysis would be conducted. Following *Seabrook*, we decline to speculate on how the alternatives mix might evolve over a two decade period, especially where there is no evidence that the environmental impacts from a dynamic scenario would be ultimately different from those already considered in the FSEIS.<sup>510</sup>

**g. Conclusion Regarding the FSEIS Range of Energy Scenarios**

173. In light of the foregoing, the Board finds that New York's various criticisms of the FSEIS relating to conservation, renewables, combined heat and power, natural gas, and purchased power all lack merit and fail to demonstrate any material defect in the FSEIS. The FSEIS bounds a reasonable range of energy scenarios including an all fossil scenario (natural gas), an all conservation scenario, and a scenario with a combination of conservation,

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<sup>508</sup> *Seabrook*, CLI-12-5, slip op. at 53.

<sup>509</sup> *Id.*

<sup>510</sup> See generally Schlissel Direct Testimony (NYS000046); Oct. 24, 2012 Tr.; Nov. 28, 2012 Tr.

renewables, and natural gas (FSEIS Combination 2).<sup>511</sup> In response to comments received from New York, the FSEIS considers scenarios that assume more conservation and renewables than one would expect given the combination of market forces, lower natural gas prices, and current conservation and renewable support programs.<sup>512</sup> As required by NEPA, the FSEIS briefly discusses the reasons why it eliminated from detailed study the combined heat and power alternative (which was not addressed in the DSEIS but is considered in the FSEIS as requested by New York).<sup>513</sup> To address comments from New York, the FSEIS also indicates that all generation alternatives considered in the FSEIS could supply purchased power and that because each generation source has its own set of environmental impacts, those impacts are evaluated elsewhere in the FSEIS.<sup>514</sup> As such, the Board finds that the FSEIS reasonably addresses New York's comments on the DSEIS discussion of the no-action alternative and satisfies the NEPA "hard look" requirement. The Board thus finds that the overall record in this proceeding confirms the reasonableness of the range of energy alternatives considered in the FSEIS given the broad illustrative range that the NRC Staff did address and the obvious point that the number of specific combinations could be endlessly multiplied, frustrating NEPA's goal of ensuring that any FSEIS be reasonable in scope.

**2. Dr. Harrison and Mr. Meehan's Criticisms of New York's Claims Further Confirm the Reasonableness of the FSEIS Alternatives Evaluation**

174. Notwithstanding the overall finding that the range of energy alternatives considered in the FSEIS is reasonable, we think it valuable to specifically discuss various additional criticisms relating to New York's claims. As noted before, all three New York

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<sup>511</sup> FSEIS at 8-26 to -72 (NYS00133C).

<sup>512</sup> *Id.* at 8-42.

<sup>513</sup> *See id.* at 8-49; *see also* 10 C.F.R. Pt. 51, Subpt. A, App. A § 5; 40 C.F.R. § 1502.14(a).

<sup>514</sup> FSEIS at 8-60 (NYS00133C).

witnesses, Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta, cited to various recent and proposed energy projects and related developments allegedly ignored by the FSEIS, including New York State programs to encourage renewables and energy conservation as well as recent reductions in projected electricity demand and natural gas prices.<sup>515</sup> For Entergy, Dr. Harrison and Mr. Meehan testified that these criticisms do not undermine the FSEIS because New York: (1) failed to recognize the manner in which market forces and cost-minimization would dictate future developments given New York's deregulated energy markets; (2) incorrectly treated developments that are occurring or would occur regardless of whether IP2 and IP3 license renewal occurs as consequences that would result from the no-action alternative; (3) failed to consider that factors such as lower natural gas prices make conservation and renewables relatively more expensive compared to fossil generation and thus makes conservation and renewables less likely to replace Indian Point under the no-action alternative; and (4) failed to provide any independent empirical analysis of likely replacement energy sources.<sup>516</sup> As discussed below, we agree with Dr. Harrison and Mr. Meehan that the approach taken by Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta suffered from these four flaws and this provides a further basis to conclude that their testimony does not undermine the FSEIS alternatives evaluation.

**a. *New York Failed to Recognize the Importance of Market Forces and Cost-Minimization***

175. Dr. Harrison and Mr. Meehan testified that New York's witnesses failed to account for the key role that market forces would play in determining the resources that would, in fact, be constructed and/or dispatched to replace Indian Point's lost baseload generation under

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<sup>515</sup> See New York Position Statement at 1-5 (NYS000045).

<sup>516</sup> Entergy Testimony at 38-40 (A55) (ENT000479).

the no-action alternative (as distinct from simply hypothesizing what “could” happen).<sup>517</sup> They explained that New York has a competitive electricity market, meaning that merchant entities will generally build the lowest-cost facilities and will operate their existing facilities in a manner that provides energy at minimum cost while meeting reliability and operating requirements.<sup>518</sup>

176. Dr. Harrison and Mr. Meehan further explained that in the short-term, increased generation is likely to come from existing facilities that have both excess capacity (*i.e.*, are not already operating at their full technical capacity) and the lowest marginal costs.<sup>519</sup> As they noted, increasing generation at existing renewable facilities is not a technically viable option because renewables (such as wind or run-of-river hydro) already operate virtually whenever available because they have low marginal costs relative to potential market-clearing prices.<sup>520</sup> In other words, because existing renewable units already are operating whenever they are available, they cannot increase generation by operating at higher capacity to replace Indian Point’s current baseload power.<sup>521</sup> In contrast, many existing fossil-fuel units have unused capacity and could increase generation at a lower marginal cost compared to other options, simply by operating at higher capacity under the no-action alternative.<sup>522</sup> According to Dr. Harrison and Mr. Meehan, official Energy Information Administration (“EIA”) cost and fuel price projections demonstrate

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<sup>517</sup> See *id.* at 38-39 (A55), 43-60 (A58-74).

<sup>518</sup> *Id.* at 39 (A55).

<sup>519</sup> *Id.* “Marginal” costs are essentially the additional costs to incrementally increase energy production from an existing power plant. See NERA Report at 8 (ENT000481); Entergy Testimony at 44 (A58) (ENT000479). For example, for a fossil-fuel plant, short-run marginal costs are primarily fuel costs. See NERA Report at 8 (ENT000481). “Levelized” costs are essentially the costs in dollars per megawatt hour (“MWh”) to build and operate a type of power plant over its lifetime. See NERA Report at 8 (ENT000481); Entergy Testimony at 51(A66) (ENT000479). Levelized costs typically include capital costs, other fixed costs, and marginal costs over the plant’s lifetime. See NERA Report at 8 (ENT000481); Entergy Testimony at 51 (A66) (ENT000479).

<sup>520</sup> Entergy Testimony at 44 (A58) (ENT000479).

<sup>521</sup> *Id.* at 58-60 (A72-74).

<sup>522</sup> *Id.*

that among these fossil units, existing coal and natural gas units would likely be the least expensive option in the short-term because they have the lowest marginal costs.<sup>523</sup>

177. In addition, Dr. Harrison and Mr. Meehan explained that in the long-term, increased generation is likely to come from newly constructed facilities with the lowest levelized costs. According to Dr. Harrison and Mr. Meehan, official EIA cost projections demonstrate that the least expensive generation options are likely to come from building new natural gas units, which have the lowest levelized costs.<sup>524</sup> As such, they argued that, in the long-term, the market would likely select lower-cost natural gas generation, rather than higher-cost renewable generation or energy efficiency to replace to replace Indian Point's baseload generation.<sup>525</sup>

178. Dr. Harrison and Mr. Meehan recognized that as a result of ambitious renewable and conservation goals and resulting substantial subsidy programs, renewable and conservation resources will likely increase in the future. However, because these increases would take place regardless of whether or not Indian Point's generation is available, Dr. Harrison and Mr. Meehan focused on determining whether market forces would result in *additional* renewables and conservation *beyond current goals* capable of replacing Indian Point's baseload generation under the no-action alternative. They concluded that the relatively high cost of additional renewables and conservation would likely preclude those alternatives from replacing Indian Point unless there was a significant increase in current subsidy levels.<sup>526</sup>

179. In rebuttal, Mr. Schlissel did not dispute the importance of market forces and cost-minimization.<sup>527</sup> To the contrary, and consistent with Dr. Harrison's and Mr. Meehan's

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<sup>523</sup> *Id.*

<sup>524</sup> Entergy Testimony at 51 (A66) (ENT000479).

<sup>525</sup> *Id.* at 35 (A50).

<sup>526</sup> *Id.* at 58-60 (A72-74).

<sup>527</sup> *See generally* Schlissel Rebuttal Testimony (NYS000437).

testimony, Mr. Schlissel testified that “[i]t is reasonable to expect that current or new market participants would seek to add new capacity in New York City or Westchester County close to the downstate loads” and that “[g]iven the current and projected low costs of natural gas, and the financial risks faced by new coal plants, . . . the new generating capacity that would be added would be clean and efficient natural gas combined cycle units.”<sup>528</sup> In other words, New York’s own expert witness suggested that Indian Point’s generation would be replaced, in large part, with natural gas-fired combined-cycle generation.<sup>529</sup>

180. Mr. Schlissel also claimed that Dr. Harrison and Mr. Meehan’s argument that fossil generation has lower costs is based only on “hypothesis and conjecture.”<sup>530</sup> We disagree. We see no reason—and certainly New York provided none—to discount official EIA cost and fuel price projections as “hypothesis and conjecture.”<sup>531</sup> To the contrary, because the EIA is the agency within the U.S. Department of Energy charged with collecting and analyzing energy data and information,<sup>532</sup> it would be unreasonable for us to ignore such information in resolving the merits of NYS-37.

181. In addition, Mr. Schlissel asserted that Table 1, “Estimates of Marginal Costs of Generation,” on page 58 of Entergy’s testimony “misleadingly” understated the marginal cost of generating energy at existing fossil units because Dr. Harrison and Mr. Meehan relied on heat rates for new units rather than for less efficient (and thus more expensive) existing units.<sup>533</sup> We are not persuaded by Mr. Schlissel’s claim that Table 1 in Entergy’s testimony is inaccurate or

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<sup>528</sup> *Id.* at 23:16-22.

<sup>529</sup> As discussed above in Section IV.F.2, the FSEIS reasonably addresses the natural gas-fired combined-cycle generation alternative.

<sup>530</sup> Schlissel Rebuttal Testimony at 8:3-7 (NYS000437).

<sup>531</sup> *Id.*

<sup>532</sup> *See* 42 U.S.C. § 7135 (2011).

<sup>533</sup> Schlissel Rebuttal Testimony at 18:9-19 (NYS000437).

misleading.<sup>534</sup> Dr. Harrison and Mr. Meehan included Table 1 to make two points. First, existing fossil plants generally can increase their utilization in response to market forces, but existing renewables cannot.<sup>535</sup> Second, coal and natural-gas combined cycle units are the most likely existing fossil fuel units to increase their utilization as replacement generation for Indian Point because these two, among other fossil generation technologies (*e.g.*, oil combustion turbine), have the lowest marginal costs.<sup>536</sup> Mr. Schlissel's claim that new plants have different heat rates than existing plants, assuming it is true, would not undermine either of these two points and, thus, is not material.<sup>537</sup> Thus, the Board finds that Mr. Schlissel did not offer any substantive reason to question Dr. Harrison and Mr. Meehan's conclusion that fossil generation would play a major role in the no-action alternative because of its low relative cost.

182. Ultimately, Mr. Schlissel's rebuttal testimony demonstrates that neither he nor New York's other witnesses properly accounted for the key role of market forces when they suggested that Indian Point's baseload power would primarily be replaced with renewables and conservation.<sup>538</sup> In fact, at the hearing, Mr. Schlissel acknowledged that the discussion of alternatives in his direct testimony did not focus on cost,<sup>539</sup> even though market forces (primarily cost) would determine the energy sources that would replace Indian Point's lost baseload generation under the no-action alternative.<sup>540</sup>

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<sup>534</sup> See *id.* at 5:24-27, 18:9-19:4.

<sup>535</sup> See *Energry Testimony* at 57-58 (A71) (ENT000479). At hearing, Mr. Schlissel agreed that existing wind plants already operate whenever they can and thus cannot increase generation to replace Indian Point's generation. Oct. 24, 2012 Tr. at 2958:6-14 (Schlissel).

<sup>536</sup> See *Energry Testimony* at 57-58 (A71) (ENT000479).

<sup>537</sup> Mr. Schlissel also did not present any data suggesting that using heat rates for existing plants instead of heat rates for new plants would have materially altered the relative competitiveness of fossil generation listed in Table 1 or the conclusion that coal and natural-gas combined cycle facilities have the lowest marginal costs.

<sup>538</sup> See *generally* Schlissel Direct Testimony (NYS000437).

<sup>539</sup> Oct. 24, 2012 Tr. at 3067:18-24 (Schlissel).

<sup>540</sup> See *Energry Testimony* at 39- 40 (A55), 43-60 (58-74) (ENT000479).

183. In summary, the Board finds that Dr. Harrison and Mr. Meehan demonstrated, and EIA data corroborated, that because of relative costs, additional fossil fuel generation would constitute the majority of replacement generation under the no-action alternative. The FSEIS is thus reasonable because, in other alternatives, it assumes more conservation and renewables than one would expect based on the combination of market forces and current conservation and renewable support programs.

**b. *New York Cited to Developments That Have Occurred or Will Occur Regardless of the No-Action Alternative and Thus Cannot Be Considered Consequences of the No-Action Alternative***

184. Dr. Harrison and Mr. Meehan testified that New York also improperly focused on recent or planned developments that relate to “baseline” conditions.<sup>541</sup> According to Dr. Harrison and Mr. Meehan, these recent and planned developments cannot be considered consequences of the no-action alternative because they have occurred or will occur regardless of the no-action alternative.<sup>542</sup>

185. Mr. Schlissel did not address this issue in his rebuttal testimony,<sup>543</sup> but at hearing agreed that renewables under the “30 by 15” goal and conservation under the “15 by 15” goal cannot count as replacements for Indian Point’s baseload generation in the no-action alternative.<sup>544</sup> In other words, Mr. Schlissel conceded that these renewables and conservation resources would exist irrespective of Indian Point’s status.<sup>545</sup>

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<sup>541</sup> *Id.* at 39-40 (A55).

<sup>542</sup> *Id.* at 81 (A104).

<sup>543</sup> *See generally* Schlissel Rebuttal Testimony (NYS000437).

<sup>544</sup> Oct. 24, 2012 Tr. at 3078:17-24 (Schlissel) (agreeing that New York’s current conservation and renewable plans cannot count as replacements for Indian Point under the no-action alternative).

<sup>545</sup> *See id.*

186. Similarly, statements by Mr. Schlissel regarding federal support for renewable energy under the American Recovery and Reinvestment Act of 2009 (“ARRA”) provide another example of New York conflating changes expected to occur with or without IP2 and IP3, with incremental impact changes resulting only from the no-action alternative.<sup>546</sup> As Dr. Harrison and Mr. Meehan demonstrated, ARRA provided temporary federal support for renewable energy as a response to the recession, but several associated support mechanisms have already expired.<sup>547</sup> Thus, federal support mechanisms under ARRA will not contribute to replacing Indian Point’s baseload energy with renewable energy in the future.<sup>548</sup>

187. Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta also cited recent expansions in New York’s transmission system as evidence that power from other regions can replace Indian Point’s baseload power.<sup>549</sup> Such statements further exemplify two problems. First, it conflates things that will happen with or without IP2 and IP3, with those that will only occur as a consequence of the no-action alternative.<sup>550</sup> Second, by focusing on what “can” happen, rather than what will or probably would happen, he ignores that markets will drive outcomes under the no-action alternative and that these markets will favor fossil generation, even if it is fossil that is brought into New York through transmission.<sup>551</sup>

188. In summary, we find that Mr. Schlissel, Mr. Bradford, and Mr. Lanzalotta cited numerous developments that are not directly relevant to the no-action alternative because those developments would occur irrespective of Indian Point’s status. In other words, the various

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<sup>546</sup> *Id.* at 84 (A107) (ENT000479); *see also* Schlissel Direct Testimony at 48:1-7 (NYS000046).

<sup>547</sup> Entergy Testimony at 84 (A107) (ENT000479).

<sup>548</sup> *Id.*

<sup>549</sup> *See* Schlissel Direct Testimony at 9:15-10:11 (NYS000046); Bradford Direct Testimony at 9:6-11:17 (NYS000048); Lanzalotta Direct Testimony at 10:12-13 (NYS000047).

<sup>550</sup> Entergy Testimony at 109-10 (A147) (ENT000479).

<sup>551</sup> *Id.*

developments New York and its experts identify—such as additional renewable generation or energy efficiency resulting from New York State goals—would not be “available” to replace lost Indian Point baseload generation because they would exist regardless of Indian Point’s status. Accordingly, the Board finds that New York has not demonstrated that the FSEIS analysis suffers from a material defect.

**c. *New York Failed to Evaluate the Impacts of Recent Energy Developments***

189. Dr. Harrison and Mr. Meehan indicated recent energy developments cited by New York’s witnesses, including lower natural gas prices, would, if anything, reduce the roles of additional conservation and renewables as replacements to Indian Point.<sup>552</sup> As Dr. Harrison and Mr. Meehan explained, lower natural gas prices and lower electricity demand would tend to increase the subsidies that would be necessary to fund conservation and renewable projects—while at the same time decreasing the marginal costs of fossil resources.<sup>553</sup> As a result, they testified that these market developments will make renewables and conservation relatively more expensive compared to fossil-fueled power options.<sup>554</sup> Thus, under New York’s competitive energy markets renewables and energy efficiency will actually be less economic relative to fossil-fueled power options due to these market developments.<sup>555</sup>

190. In rebuttal, Mr. Schlissel appeared to agree that lower natural gas prices make it less likely that renewables and conservation would play a significant role under the no-action alternative. Specifically, as noted above, Mr. Schlissel testified that the projected low costs of natural gas would result in Indian Point’s generation being replaced by new natural-gas

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<sup>552</sup> See *id.* at 40 (A55), 81 (A104), 89-100 (A116-25).

<sup>553</sup> *Id.* at 40 (A55).

<sup>554</sup> *Id.*

<sup>555</sup> *Id.*

combined-cycle capacity in New York City or Westchester County.<sup>556</sup> Thus, New York’s own expert witness suggested that recent natural gas price trends would, if anything, result in additional conservation and renewables having a small role in replacing Indian Point’s baseload generation under the no-action alternative.<sup>557</sup>

191. Mr. Schlissel also did not dispute that one would expect to see costs increase as additional conservation is implemented. Dr. Harrison and Mr. Meehan presented a NYISO analysis supporting this point.<sup>558</sup> Their testimony comports well with common sense because existing conservation programs have already taken advantage of the “low hanging fruit,” making any incremental conservation programs under the no-action alternative more difficult and expensive than prior conservation programs.<sup>559</sup> In turn, given this cost analysis, it seems unlikely conservation would play a major role in replacing Indian Point.

192. Mr. Schlissel did, however, dispute that one would expect to see costs increase as additional renewables are implemented.<sup>560</sup> According to Mr. Schlissel, Dr. Harrison and Mr. Meehan ignored “the very real possibility that the cost of renewable resources will decrease over time, in part as the result of economies of scale” and instead presented only “theoretical graphs that are not empirically tied to actual costs and circumstances in New York State.”<sup>561</sup> We are not persuaded by Mr. Schlissel’s testimony.

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<sup>556</sup> Schlissel Rebuttal Testimony at 23:16-24:6 (NYS000437).

<sup>557</sup> As discussed above in Section IV.F.2, the FSEIS reasonably addresses the natural gas-fired combined-cycle generation alternative.

<sup>558</sup> Entergy Testimony at 55-56 (A70) (ENT000479); *see also* NERA Report at 22 (ENT000481) (presenting NYISO’s upward sloping supply curve for conservation based on recent experience in New York, which shows that cost rises substantially as the level of energy saved increases).

<sup>559</sup> Entergy Testimony at 55-56 (A70) (ENT000479); *see also* NERA Report at 22 (ENT000481).

<sup>560</sup> Schlissel Rebuttal Testimony at 16:3-8 (NYS000437).

<sup>561</sup> *Id.*; *see also* Oct. 24, 2012 Tr. at 3068:5-11 (Schlissel).

193. As Mr. Meehan testified, increasing costs for wind energy (and other renewables) is based on more than just theory, it is supported by the increasing subsidies needed from NYSERDA to support renewable development under the 30 by 15 program.<sup>562</sup> Moreover, beyond this evidence, Mr. Meehan reasonably noted, notwithstanding any economies of scale from the recent increases in deployment of wind, the price for wind will likely continue to rise because, among other reasons, higher quality renewable sites are developed before lower quality sites.<sup>563</sup> In other words, economies of scale are likely to be insufficient to appreciably reduce the overall cost for renewables in a manner that makes them likely as a result of market forces on anything near the scale New York hypothesizes.<sup>564</sup>

194. In summary, the Board finds that to the extent that the developments cited by New York's experts have or will occur, those developments generally would, if anything, make it less likely that conservation and renewables replace Indian Point under the no-action alternative. Thus, a future with lower natural gas prices, higher renewable levels, and higher conservation levels, would make it even more likely that natural gas would replace Indian Point's baseload energy under the no-action alternative than if those developments had not occurred.

**d. *New York Failed to Provide Empirical Analysis of the Likely Alternatives That Would Replace Indian Point's Generation***

195. Dr. Harrison and Mr. Meehan testified that New York's experts did not provide any studies or other analyses quantifying how the electric system would respond to the loss of

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<sup>562</sup> See Oct. 24, 2012 Tr. at 3070:5-3071:8 (Meehan); see generally *id.* at 2961:2-17 (Meehan).

<sup>563</sup> *Id.* at 3070:3-15 (Meehan). Similarly, Dr. Harrison pointed out that economic research shows that the costs rise as you deploy more renewable resources because, among other reasons, over time, only less desirable sites remain. *Id.* at 3100:22-3101:12 (Harrison).

<sup>564</sup> Essentially, Mr. Schlissel only indicated that “[t]here *might* be instances where renewable generation is higher with Indian Point than without” but made clear that he has “not done the analysis” to show that is likely. *Id.* at 2956:14-16 (Schlissel) (emphasis added).

Indian Point baseload generation.<sup>565</sup> Instead, New York’s experts simply listed various proposals, plans, and studies of possible alternatives, some available now but most likely not available until sometime in the future.

196. In rebuttal, Mr. Schlissel did not dispute that empirical modeling could be helpful in addressing whether the FSEIS explores a reasonable range of energy scenarios.<sup>566</sup> At the hearing, Mr. Schlissel agreed that an empirical model can help determine how New York’s competitive market would respond to replace Indian Point’s generation under the no-action alternative<sup>567</sup> and that it is “good to use a model.”<sup>568</sup> He further testified that he “would have loved the opportunity” to provide empirical modeling, but that he did not perform such an analysis because it related to the need for power and thus he “thought it was outside the scope of this hearing.”<sup>569</sup>

197. We are not persuaded by Mr. Schlissel’s rationale for not providing any empirical analysis. It is unclear why Mr. Schlissel concluded that an empirical analysis of energy alternatives under the no-action scenario would have involved impermissibly considering the need for power.<sup>570</sup> New York offered no reason why the exclusion of a need for power analysis in 10 C.F.R. § 51.95(c)(2) would prohibit an empirical analysis estimating which generation would replace Indian Point’s generation under the no-action alternative. Having chosen to not perform any such evaluation, New York’s experts failed to provide any empirical analysis that

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<sup>565</sup> See Entergy Testimony at 40 (A55), 81 (A104), 111 (A151), 116 (A156) (ENT000479).

<sup>566</sup> See generally Schlissel Rebuttal Testimony (NYS000437).

<sup>567</sup> Oct. 24, 2012 Tr. at 2957:1-13 (Schlissel).

<sup>568</sup> *Id.* at 3028:13-14 (Schlissel).

<sup>569</sup> *Id.* at 3075:9-16 (Schlissel).

<sup>570</sup> We note that Mr. Schlissel and New York’s other witnesses provided testimony on demand projections and other issues that appear more clearly linked to the need for power and did so without any concern that those issues may have been outside the scope of this proceeding. See *id.* at 2991:4-18 (Schlissel); see generally *supra* Section IV.B (discussing New York’s need for power arguments).

cast doubt on the reasonableness of the range of alternatives the NRC Staff evaluated in the FSEIS.<sup>571</sup>

**3. Dr. Harrison and Mr. Meehan's NEMS Analysis Also Confirms the Reasonableness of the FSEIS Alternatives Evaluation**

198. In the preceding sections, we found that the FSEIS presents a reasonable range of energy scenarios and that New York's criticisms of the FSEIS lack merit. We next address Dr. Harrison's and Mr. Meehan's testimony that their expert report confirms our conclusions and further refutes New York's claims of additional, allegedly unexamined alternatives that have fewer environmental impacts than the proposed action.<sup>572</sup> As discussed in more detail below, the Board agrees with Dr. Harrison and Mr. Meehan that their economic modeling using NEMS confirmed the small role renewables and conservation would play in the no-action alternative, and thus demonstrates the reasonableness of the FSEIS energy and no-action alternative evaluations.

199. Dr. Harrison and Mr. Meehan used NEMS, a widely-respected energy model maintained by the EIA, to model the energy sources that would replace Indian Point's baseload power under the no-action alternative.<sup>573</sup> As they noted, NEMS is widely used by Congress, the White House, the U.S. Department of Energy, and other federal agencies, as well as by national laboratories, academics, think tanks, and the private sector to model long-term energy and

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<sup>571</sup> See Entergy Testimony at 40 (A55) (ENT000479). This is not to suggest that economic modeling is necessary to develop a reasonable range of alternatives but only that it can be useful in addressing whether the FSEIS explores a reasonable range of energy scenarios.

<sup>572</sup> *Id.* at 71-81 (A84-103).

<sup>573</sup> *Id.*

environmental projections.<sup>574</sup> NEMS incorporates all current federal and state environmental regulations.<sup>575</sup>

200. Using the NEMS 2012 Annual Energy Outlook, Dr. Harrison and Mr. Meehan developed estimates of potential energy and environmental impacts of the no-action alternative by comparing the NEMS results for: (1) a baseline scenario in which Indian Point continues to operate; and (2) a no-action alternative in which Indian Point's baseload power is lost.<sup>576</sup> The differences between these two scenarios represent NEMS's predictions of how electricity markets in New York State and other regions would respond to the loss of Indian Point's annual 16.7 million megawatt-hours ("MWh") of baseload generation.<sup>577</sup>

201. As Dr. Harrison and Mr. Meehan testified, the NEMS model indicates without IP2 and IP3, almost all of the replacement generation would come from natural gas-fired plants (9.7 million MWh annually) and coal (7.5 million MWh annually), with a very small role for additional energy conservation (0.3 million MWh per year on average over the period 2016 to 2025) and renewables (0.2 million MWh per year) under the no-action alternative.<sup>578</sup> In total, approximately 98 percent of replacement generation would come from natural gas or coal.<sup>579</sup> The increased fossil fuel generation would come not only from new, highly efficient low-emitting natural gas combined cycle units—which are the units the FSEIS evaluates in the natural gas alternative—but also from currently under-utilized, less efficient, existing units

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<sup>574</sup> *Id.* at 72 (A88).

<sup>575</sup> *Id.* at 73 (A90).

<sup>576</sup> *Id.* at 74 (A91).

<sup>577</sup> *Id.* at 76-77 (A96).

<sup>578</sup> *Id.* at 76-78 (A96-97).

<sup>579</sup> *See id.* at 77-79 (A97-98).

fueled by coal and natural gas.<sup>580</sup> The NEMS analysis confirms Dr. Harrison’s and Mr. Meehan’s assessment based on the relative costs of alternative generation technologies, which similarly found that most replacement energy would come from natural gas and coal.<sup>581</sup>

202. Dr. Harrison and Mr. Meehan also testified that NEMS modeling indicates that the no-action alternative would result in adverse environmental impacts, including increased air emissions such as sulfur dioxide, nitrogen oxides, and carbon dioxide.<sup>582</sup> As Mr. Cleary noted, the NEMS empirical estimate of the increase in air emissions was similar to the FSEIS’s estimate of emissions from a new 2200 MWe supercritical coal-fired plant, which the NRC Staff found to have MODERATE air quality impacts.<sup>583</sup>

203. In rebuttal, Mr. Schlissel offered several criticisms concerning Dr. Harrison and Mr. Meehan’s use of NEMS. As discussed in more detail below, we find that Mr. Schlissel’s criticisms lack merit, and that the NEMS modeling confirms the reasonableness of the FSEIS.

204. First, Mr. Schlissel argued that the NEMS results are not credible because Dr. Harrison and Mr. Meehan “assume” that the power necessary to replace Indian Point would come from fossil units that would otherwise retire in approximately 2015 (*i.e.*, additional generation would come from fossil units that would defer retirement under the no-action alternative).<sup>584</sup> As Dr. Harrison and Mr. Meehan made clear at the hearing, their conclusions were not assumptions, but were the NEMS results.<sup>585</sup> As Mr. Meehan explained, these results

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<sup>580</sup> See *id.* at 71 (A85).

<sup>581</sup> See *id.* at 79 (A99).

<sup>582</sup> *Id.* at 79-80 (A101).

<sup>583</sup> *Id.* at 80-81 (A103).

<sup>584</sup> Schlissel Rebuttal Testimony at 12:5-10, 17:2-17 (NYS000437). Mr. Schlissel, however, provided no analysis or calculations to support this criticism. See generally Schlissel Rebuttal Testimony (NYS000437).

<sup>585</sup> Oct. 24, 2012 Tr. at 3017:13-19, 3018:8-14; 3020:12-21 (Harrison); *id.* at 3027:1-9 (Meehan). Mr. Schlissel acknowledged that these were the modeling results, but still indicated that it was incorrect to believe that older fossil plants, which otherwise would retire if Indian Point continued to operation, would continue operating

reflect that when Indian Point is removed from the model, the market economics change and units that would otherwise retire continue to operate due to that change.<sup>586</sup> We find this explanation and the NEMS results reasonable.

205. Second, Mr. Schlissel claimed that the NEMS analysis “ignores the very real possibility that the cost of renewable resources will decrease over time, in part as the result of economies of scale.”<sup>587</sup> At the hearing, however, Mr. Meehan testified that the NEMS model essentially incorporates a “learning curve” whereby costs are assumed to decrease as progress is made to deploy new technologies.<sup>588</sup> Thus, NEMS specifically accounts for Mr. Schlissel’s concern. As Mr. Meehan further noted, notwithstanding any economies of scale from the recent increase in wind capacity, the overall cost of wind generation has continued to rise for a number of reasons, including the fact that higher quality renewable sites are developed before lower quality sites.<sup>589</sup> We find that NEMS treats renewables in a reasonable manner and does not ignore potential economies of scale benefits.<sup>590</sup>

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under the no-action alternative. *Id.* at 3018:22-3019:8; 3022:4-24 (Schlissel). In other words, it appears that he simply disagrees with the results.

<sup>586</sup> *Id.* at 3027:6-7 (Meehan).

<sup>587</sup> Schlissel Rebuttal Testimony at 16:3-8 (NYS000437).

<sup>588</sup> Oct. 24, 2012 Tr. at 3071:24-25 (Meehan).

<sup>589</sup> *Id.* at 3070:13-17, 3072:3-4 (Meehan).

<sup>590</sup> We also disagree with Mr. Schlissel’s related claimed that the NEMS analysis ignores potential low cost renewable energy from the proposed 1000 MW Champlain-Hudson Power Express Project, which could bring hydro generated power from Canada into downstate New York. Schlissel Rebuttal Testimony at 15:17-16:8 (NYS000437). As an initial matter, there is no indication that this proposed project would be an actual consequence of the no-action alternative particularly because new large-scale hydro development is excluded as an eligible resource under the RPS program due to its significant adverse environmental impacts (*i.e.*, the Champlain-Hudson Power Express Project would not count towards the “30 by 15” goal). *See* Entergy Testimony at 45 (A59) (ENT000479). Moreover, Mr. Schlissel did not examine whether including the Champlain-Hudson project would affect the NEMS results estimating the mix of energy resources that would replace Indian Point under the no-action alternative. Thus, we see no reason to conclude that the NEMS analysis should have included the Champlain-Hudson project or, if it had, that the resulting environmental impacts would be significantly different than those already disclosed in the NEMS analysis or the FSEIS.

206. Third, Mr. Schlissel argued that the NEMS analysis fails to consider the New York Energy Highway, which would include: “(1) building new transmission lines or rebuilding and upgrading existing ones; (2) repowering aging power plants to increase their efficiency and making them more environmentally friendly; and (3) building new plants including those powered by natural gas and by wind and other renewable fuels.”<sup>591</sup> Nothing in the record, however, suggests that the New York Energy Highway yet consists of any specific plans to build any new transmission or generation or, in any event, that such actions are dependent on whether Indian Point operates or not.<sup>592</sup> As such we find nothing improper with the NEMS analysis not specifically considering the New York Energy Highway initiative. Further, given the vast array of possible actions that may, or may not, be taken under the umbrella of the Energy Highway initiative, we conclude that it would be impractical to consider them for purposes of this NEPA analysis. Moreover, it is also clear NEMS does specifically consider the type of actions that may result under the New York Energy Highway initiative, including the construction of new transmission and fossil-fired and renewable capacity.<sup>593</sup>

207. Fourth, Mr. Schlissel asserted that NEMS does not model New York State’s “15 by 15” energy efficiency goal in either the license renewal baseline or the no-action alternative.<sup>594</sup> We also find that this assertion fails to undermine the NEMS analysis. At hearing, Mr. Meehan explained that the NEMS model forecasts that New York State would miss

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<sup>591</sup> Schlissel Rebuttal Testimony at 24:17-25:1 (NYS000437).

<sup>592</sup> See, e.g., New York Energy Highway Task Force, New York Energy Highway Blueprint at 5 (Oct. 22, 2012) (NYS00448A) (indicating that in response to a request for proposals, New York Energy Highway Task Force received 135 responses from 85 entities, and then recommending actions with regard to “electric transmission and generation construction, development of renewable energy sources, and upgrades to electric and natural gas infrastructure”).

<sup>593</sup> Oct. 24, 2012 Tr. at 3025:1-7 (Harrison); Assumptions to 2012 Annual Energy Outlook, U.S. Energy Information Agency at 98 (Aug. 2012) (“Annual Energy Outlook 2012 Assumptions”) (ENT000587) (indicating that NEMS allows for the addition of transmission capacity).

<sup>594</sup> Schlissel Rebuttal Testimony at 13:11-14 (NYS000437).

its “15 by 15” goal by about one percent,<sup>595</sup> which he indicated was reasonable, particularly because it is comparable to NYISO’s projections, which likewise indicate that New York is not expected to meet its “15 by 15” goal.<sup>596</sup> Mr. Schlissel did not dispute these points and New York’s own exhibits confirm that New York is unlikely to meet its “15 by 15” goal.<sup>597</sup> Thus, the Board finds nothing inappropriate with the NEMS model not relying on New York fully meeting the “15 by 15” goal.<sup>598</sup>

208. Finally, Mr. Schlissel claimed that Dr. Harrison and Mr. Meehan inappropriately used NEMS for purposes for which it was not designed, and that Entergy should have used another model, such as GE-MAPS, to evaluate the economic and environmental impacts of the no-action alternative.<sup>599</sup> Dr. Harrison and Mr. Meehan addressed this issue at hearing and explained that the purpose of their empirical modeling was to assess whether the FSEIS considers a reasonable range of alternatives by gaining, through form modeling, an understanding of what resources would, in fact, replace Indian Point’s baseload generation.<sup>600</sup> They further explained that they selected NEMS because, in their professional judgment, NEMS

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<sup>595</sup> Oct. 24, 2012 Tr. at 3111:8-3112:1 (Meehan).

<sup>596</sup> NERA Report at 20 (ENT000481); New York Independent System Operator, Power Trends 2010, at 9 (2010) (NYS000108).

<sup>597</sup> Riverkeeper Synapse Report at § 3.3 (NYS000447) (“In comparison to other states, New York has realized much lower levels of energy savings and is not on track to meet its 15 by 15 energy efficiency goals.”).

<sup>598</sup> We also disagree with Mr. Schlissel that the NEMS model does not properly address energy efficiency. Contrary to Mr. Schlissel’s claim, NEMS does account for existing efficiency programs. *See* Oct. 24, 2012 Tr. at 3031:22-3032:3 (Harrison); Annual Energy Outlook 2012 Assumptions at 32, 44, 179 (ENT000587). Further, Mr. Schlissel offered only speculation that if energy efficiency were somehow treated differently in NEMS, then efficiency would be a low-cost resource that, in New York’s competitive market, would replace Indian Point’s generation. *See, e.g.,* Schlissel Direct Testimony at 8:11-9:12 (NYS000046). Notably, Mr. Schlissel agreed that NEMS appropriately found that the no-action alternative would only result in a small amount of conservation because of price effects (*i.e.*, electricity consumers would lower their demand somewhat in response to higher prices without Indian Point). *See* Oct. 24, 2012 Tr. at 3099:15-17 (Schlissel); *see also* Entergy Testimony at 59-60 (A74) (ENT000479).

<sup>599</sup> Schlissel Rebuttal Testimony at 11:11-18 (NYS000437).

<sup>600</sup> *See* Oct. 24, 2012 Tr. at 3024:22-3027:15 (Schlissel).

is capable of conducting such an analysis—it creates new units and retires old units as needed based on least-cost market forces, and thus, predicts plant additions and retirements over time.<sup>601</sup>

209. A report by Synapse Energy Economics, Mr. Schlissel’s former firm, demonstrates that GE-MAPS and similar models lack this feature because those models rely on the user to manually input the new plant additions and retirements.<sup>602</sup> Because GE-MAPS and similar models cannot independently project additions and retirements that are based on demand and the costs of different generation alternatives, we find there is no basis to conclude that other models are superior to NEMS for the stated purpose. We thus find that Dr. Harrison and Mr. Meehan reasonably selected NEMS to address New York’s claims. Although this type of economic modeling is not required for the NRC Staff to produce a reasonable energy alternatives evaluation, we find that this analysis is directly responsive to New York’s statement that “in order for NRC Staff to evaluate the likely environmental impact of the no-action alternative, it must make some judgments about the likely scenarios that will evolve if Indian Point is not relicensed.”<sup>603</sup> The NEMS modeling confirms the reasonableness of the NRC Staff’s judgments regarding the range of energy alternative addressed in the FSEIS.

210. The Board also finds that New York’s Cricket Valley SEQRA document confirms the reasonableness of the NEMS results and the NRC Staff’s judgments. That document indicated that, without the proposed Cricket Valley baseload facility, the energy required to serve

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<sup>601</sup> *Id.* at 3025:1-10 (Schlissel).

<sup>602</sup> Synapse Energy Economics, *Estimating the Emission Reduction Benefits of Renewable Electricity and Energy Efficiency in North America: Experience and Methods* at 7, 10 (Sept. 22, 2003) (ENT000588) (explaining that dispatch models such as PROMOD and GE-MAPPS “are not designed to predict plant additions or retirements over time” and that when “used to simulate a multi-year period,” the user must direct “the model to add specific generating units (or unit types) in specific years or to maintain a certain capacity reserve margin by adding a specific type of plant as needed”; in contrast, “when analysts want a model to predict the capacity mix in the future, they turn to a forecasting model” such as NEMS).

<sup>603</sup> New York MIL Answer at 8.

consumers would come from fossil plants, not from conservation or renewables.<sup>604</sup> The Board thus finds that the Cricket Valley evaluation confirms Dr. Harrison and Mr. Meehan’s NEMS results, which indicate that the no-action alternative would cause a net increase in fossil-fired generation and associated significant increases in air emissions.

211. In summary, based on the foregoing, the Board finds that Dr. Harrison and Mr. Meehan appropriately used NEMS—a detailed, widely used, state-of-the-art energy model—to estimate the resources that would likely replace Indian Point’s generation under the no-action alternative and that their analysis demonstrates that the FSEIS range of alternatives is reasonable.

**F. Based on the Comparison of Energy Alternatives, Preserving the License Renewal Option Is Not Unreasonable**

212. The Board next addresses New York’s argument that the FSEIS no-action alternative analysis is so deficient that it does not contain sufficient information to allow the Board to make a finding pursuant to 10 C.F.R. § 51.95(c)(4) and 51.103(a)(5) regarding whether “the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.”<sup>605</sup> According to Mr. Bradford, the “combined effect” of the flaws in the alternatives analysis as alleged by New York and discussed throughout this Decision are “likely to mislead decisionmakers as to the environmental impact and feasibility of the no-action alternative to relicensing one or both of the Indian Point units.”<sup>606</sup> We are not persuaded by New York’s argument.

213. The overall standard for evaluating the environmental impacts of the proposed license renewal action and the environmental impacts of the alternatives is found in 10 C.F.R. § 51.95(c)(4) and 51.103(a)(5), which indicate that the Board must “determine whether or not the

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<sup>604</sup> See Cricket Valley SEQR at 33 (NYS000444).

<sup>605</sup> See New York Position Statement at 2, 70-71 (NYSR00045).

<sup>606</sup> Bradford Direct Testimony at 34:15-23 (NYS000048).

adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.”<sup>607</sup> In establishing this standard, the Commission determined that it would only be unreasonable to preserve the license renewal option when “the impacts of license renewal sufficiently exceed the impacts of all or almost all of the alternatives.”<sup>608</sup>

214. Based on that comparison between alternatives and license renewal, Mr. Cleary testified<sup>609</sup> that the FSEIS reasonably finds that “the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.”<sup>610</sup> Mr. Stuyvenberg testified that Table 9-1 summarizes the environmental impacts of license renewal, the no-action alternative and alternatives generation sources considered in detail (*i.e.*, natural gas-fired generation, energy conservation, and FSEIS Combination 1, and FSEIS Combination 2).<sup>611</sup> As Mr. Stuyvenberg confirmed at hearing, Table 9-1 does not establish that the license renewal operation is unreasonable as compared to the alternatives.<sup>612</sup> When asked by the Board about this table, Mr. Bradford, indicated that he does not have “specific expertise” to address the environmental impacts addressed in Table 9 and thus offered no contrary opinion.<sup>613</sup>

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<sup>607</sup> 10 C.F.R. § 51.95(c)(4), 51.103(a)(5).

<sup>608</sup> Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,473 (NYS000127).

<sup>609</sup> Entergy Testimony at 34 (A48) (ENT000479).

<sup>610</sup> FSEIS at 9-8 (NYS00133C).

<sup>611</sup> Oct 24, 2012 Tr. at 3049:11-3050:7, 3131:7-18 (Stuyvenberg); Nov. 28, 2012 Tr. at 3245:19-3255:23 (Stuyvenberg).

<sup>612</sup> Oct. 24, 2012 Tr. at 3049:11-3050:7, 3131:7-18 (Stuyvenberg); Nov. 28, 2012 Tr. at 3245:19-3255:23 (Stuyvenberg).

<sup>613</sup> Nov. 28, 2012 Tr. at 3256:7-9 (Bradford).

215. As discussed in the preceding sections of this Decision, the FSEIS analyzes the environmental impacts of a reasonable range of energy scenarios and New York has not satisfactorily demonstrated any material flaw in that analysis. We thus rely on Table 9-1 in evaluating whether preserving the license renewal option is unreasonable. Table 9-1 demonstrates that license renewal would result in SMALL environmental impacts for all but one relevant issue (aquatic impacts), whereas the natural gas alternative and two combination alternatives each had environmental impacts in at least four resource areas that are greater than SMALL.<sup>614</sup> Similar to license renewal, the conservation alternative has SMALL environmental impacts for all but one relevant issue.<sup>615</sup> As such, the Board finds that the impacts of license renewal do not exceed the impacts of all or almost all of the alternatives. Accordingly, the Board finds that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decisionmakers is unreasonable.

**V. SUMMARY OF FINDINGS OF FACT AND CONCLUSIONS OF LAW**

216. Based upon a review of the entire record of this proceeding and the proposed findings of fact and conclusions of law submitted by the parties, and based upon the findings set forth above, which are supported by reliable, probative, and substantive evidence in the record, the Board has decided all matters in controversy on NYS-37 and the reaches the following conclusions.

217. The Board finds that New York's criticisms of the FSEIS lack merit. Contrary to New York's claims, the FSEIS takes the required "hard look" at the environmental impacts of a reasonable range of energy scenarios that could replace Indian Point's 2158 MWe of baseload

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<sup>614</sup> See FSEIS at 9-7 (NYS00133C).

<sup>615</sup> *Id.* at 8-73.

generation under the no-action alternative. In particular, the FSEIS considers and discusses the environmental impacts associated with a fossil alternative (new natural gas-fired generation); an all energy conservation alternative; and two alternative combination scenarios, including a scenario combining considerable amounts of conservation (1000 to 1200 MWe) and renewable generation (400 to 600 MWe) with natural gas (400 to 600 MWe). Given that the actual combinations that might be examined is nearly limitless, this approach represented a sound approach to presenting a reasonable range of alternatives. The record also reflects that the NRC Staff developed many of these alternatives specifically to address New York's comments on the DSEIS. In fact, to accommodate New York's comments, the FSEIS exceeds NEPA's requirements and considers several non-baseload energy sources as replacements to Indian Point's baseload generation even though such analysis is unnecessary under Commission and federal case law, and is directly contrary to New York's own practice under the state-equivalent of NEPA.

218. Based on this proceeding's entire record, the Board also finds insufficient evidence to support New York's position that conservation and renewables would likely play an even larger role in replacing Indian Point's baseload generation under the no-action alternative than assumed in the FSEIS. Initially, we note that the FSEIS analyzes conservation as a standalone alternative to license renewal. It is hard to imagine how one could, in turn, attribute a larger role for conservation in the alternatives analysis. Moreover, Entergy's experts demonstrated that New York's approach of citing various past, present, and future energy developments does not undermine the FSEIS because that approach: (1) fails to recognize the manner in which market forces and cost-minimization would dictate future developments given New York's deregulated energy markets; (2) incorrectly treats developments that are occurring

or would occur regardless of whether IP2 and IP3 license renewal occurs as consequences that would result from the no-action alternative; (3) fails to consider that factors such as lower natural gas prices make conservation and renewables relatively more expensive compared to fossil generation and thus makes conservation and renewables less likely to replace Indian Point under the no-action alternative; and (4) fails to provide any independent empirical analysis of likely replacement energy sources. In contrast, Entergy's economic analyses demonstrated that market forces would dictate that the energy needed to replace Indian Point's baseload power would come primarily from fossil power plants (including natural gas plants), with a much smaller amount from renewables and conservation. The FSEIS is thus not unreasonable for the reasons New York claims because the FSEIS assumes more conservation and renewables than one would expect based on the combination of market forces and current conservation and renewable support programs.

219. Finally, the Board finds that New York's various criticisms do not credibly undermine the FSEIS conclusion that, when compared to alternatives, Indian Point's adverse environmental impacts are not so great that preserving the option for license renewal is unreasonable. The FSEIS fully evaluates the environmental impacts for four energy alternatives—natural gas-fired generation, energy conservation, and two combination alternatives. The FSEIS concludes that, except for the conservation alternative, the other three alternatives all have greater environmental impacts than license renewal. Similar to license renewal, the conservation alternative has SMALL environmental impacts for all but one relevant environmental issue. Because the Commission has determined that it would only be unreasonable to preserve the option for license renewal if all (or almost all) of the alternatives considered by the NRC had significantly fewer environmental impacts than the proposed action,

the Board finds that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the license renewal option would be unreasonable.

220. In summary, the preponderance of the evidence establishes that the FSEIS considers the environmental impacts of a reasonable range of energy scenarios that could replace Indian Point's baseload generation under the no-action alternative. In fact, to accommodate New York's comments, the FSEIS exceeds NEPA's requirements and considers several non-baseload energy sources as replacements to Indian Point's baseload generation. The preponderance of the evidence also shows that when compared to alternatives, IP2 and IP3's adverse environmental impacts are not so great that preserving the license renewal option for decisionmakers is unreasonable. Accordingly, the Board finds that the NRC Staff and Entergy carried their respective burdens of proof, and that, based on the entire record of this proceeding, the NRC Staff has satisfied its NEPA obligations under 10 C.F.R. Part 51. Issues, motions, and arguments presented by the parties but not addressed herein have been found to be without merit, unnecessary, or not relevant to the Board's findings on NYS-37.

## **VI. ORDER**

WHEREFORE, IT IS ORDERED, pursuant to 10 C.F.R. §§ 2.1210 and 51.104(a)(3), that the New York's Contention NYS-37 is resolved on the merits in favor of the NRC Staff and Entergy.

IT IS FURTHER ORDERED, this Partial Initial Decision will constitute a final decision of the Commission forty (40) days from the date of issuance (or the first agency business day following that date if it is a Saturday, Sunday, or federal holiday, *see* 10 C.F.R. § 2.306(a)), unless a petition for review is filed in accordance with 10 C.F.R. § 2.1212, or the Commission directs otherwise.

IT IS FURTHER ORDERED that any party wishing to file a petition for review on the grounds specified in 10 C.F.R. § 2.341(b)(1) must do so within twenty-five (25) days after service of this Partial Initial Decision. The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before seeking judicial review. Within twenty-five (25) days after service of a petition for review, parties to the proceeding may file an answer supporting or opposing Commission review. Any petition for review and any answer shall conform to the requirements of 10 C.F.R. § 2.341(b)(2)-(3).

Although this ruling resolves all matters before the Board in connection with Contention NYS-37, NRC Staff issuance of the renewed operating licenses under 10 C.F.R. Part 54 must abide, among other things, the resolution of the remaining admitted contentions, including those contentions designated for future hearings.

Respectfully submitted,

Executed in Accord with 10 C.F.R. § 2.304(d)

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COUNSEL FOR ENTERGY NUCLEAR  
OPERATIONS, INC.

Dated in Washington, D.C.  
this 22nd day of March 2013

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	Docket Nos. 50-247-LR and
	)	50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.	)	
	)	
(Indian Point Nuclear Generating Units 2 and 3)	)	
	)	March 22, 2013

**CERTIFICATE OF SERVICE**

Pursuant to 10 C.F.R. § 2.305 (as revised), I certify that, on this date, copies of “Entergy’s Proposed Findings of Fact and Conclusions of Law For Contention NYS-37 (Energy Alternatives)” were served upon the Electronic Information Exchange (the NRC’s E-Filing System), in the above-captioned proceeding.

*Signed (electronically) by Lance A. Escher*

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