

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

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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 28, 2012

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**ENTERGY'S STATEMENT OF POSITION ON  
CONTENTION NYS-17B (PROPERTY VALUES)**

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Pursuant to 10 C.F.R. § 2.1207(a)(1) and the Atomic Safety and Licensing Board’s (“Board”) Order Granting NRC Staff’s Unopposed Time Extension Motion,<sup>1</sup> Entergy Nuclear Operations, Inc. (“Entergy”) submits this Statement of Position (“Statement”) on New York State (“NYS”) Contention 17B (“NYS-17B”). This Statement is supported by the Prefiled Testimony of Entergy Witnesses Donald P. Cleary, C. William Reamer, and George S. Tolley (“Entergy Testimony”), and the exhibits thereto (Entergy Exhibits ENT00015B, ENT00019B, and ENT000133 through ENT000181). For the reasons discussed below, NYS-17B lacks merit and should be resolved in favor of Entergy and the U.S. Nuclear Regulatory Commission (“NRC” or “Commission”) Staff.

**I. PRELIMINARY STATEMENT**

NYS-17B, an environmental contention, challenges whether Entergy and the NRC Staff correctly analyze the impacts on offsite land use and property values in the area surrounding Indian Point Nuclear Generating Units 2 and 3 (respectively, “IP2” and “IP3,” and collectively,

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<sup>1</sup> Licensing Board Order Granting NRC Staff’s Unopposed Time Extension Motion and Directing Filing of Status Updates (Feb. 16, 2012) (unpublished).

“Indian Point” or “IPEC”) under the no-action alternative (*i.e.*, under the assumption that the operating licenses for IP2 and IP3 are not renewed), to the extent required by the National Environmental Policy Act (“NEPA”).<sup>2</sup> According to NYS, the testimony of its witness, Dr. Stephen C. Sheppard, shows that the Staff’s Final Supplemental Environmental Impact Statement (“FSEIS”) is incorrect because the no-action alternative might, at some point, result in increased residential property values in the communities surrounding Indian Point after decommissioning and reclaiming the site for alternative uses. The increase in property values, according to NYS, could be more than \$1 billion, an increase of more than 27% from January 2011 values.<sup>3</sup> Thus, according to NYS, the socioeconomic impacts of the no-action alternative, which include offsite land use impacts, cannot be classified as adverse and SMALL to MODERATE, as described in the FSEIS, but instead should be considered positive and LARGE.<sup>4</sup>

In their testimony, Entergy’s experts thoroughly explain why NYS and Dr. Sheppard have not substantiated their allegations of significant offsite land use and property value impact with reasonable and reliable evidence. Entergy’s experts first provide background on the NRC’s well-established, comprehensive approach for assessing land use impacts, which appropriately focuses on the two effects most likely to cause offsite land use impacts—tax revenue effects and population change effects. They then explain that the FSEIS assessment of offsite land use impacts resulting from the no-action alternative is consistent with NRC guidance, 10 C.F.R. Part 51 regulations, and NEPA.

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<sup>2</sup> See State of New York Initial Statement of Position Contention NYS-17B at 1 (Dec. 17, 2011) (“NYS Position Statement”) (NYS000223).

<sup>3</sup> See *id.* at 27-28 (NYS000223).

<sup>4</sup> See *id.* at 17, 30 (NYS000223).

Entergy’s witnesses also address the key factual questions the Board found in dispute when it considered whether any property value impact evaluation was even necessary under NEPA.<sup>5</sup> Specifically, they establish that there is not a “reasonably close causal relationship” between NYS’s alleged property value impacts and any physical environmental impacts, and that such property value impacts are dependent on unlikely or speculative future actions—and as a result, need not be examined under NEPA.<sup>6</sup> Thus, NYS fails to establish that the FSEIS ignores any effects that NEPA requires be examined.

In addition, Entergy’s witnesses refute NYS’s claim of additional, allegedly unexamined property value-driven land use impacts, explaining it lacks merit for two primary reasons. First, Indian Point-specific property values assessments conducted by Dr. Tolley, using hedonic price modeling,<sup>7</sup> the well-accepted and reliable methodology for determining property value impacts, demonstrate that proximity to Indian Point has no discernible adverse impact on residential property values within the vicinity of Indian Point. This conclusion is consistent with other peer-reviewed studies of nuclear power plant property value impacts. In turn, the absence of any adverse property value impacts means that there are no property value-driven land use impacts.

Second, well-established land use development patterns will continue in the future, and public services and regulatory controls are in place to support and guide land use and development. Thus, even if there were hypothetical future property value changes due to the no-

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<sup>5</sup> See Licensing Board Memorandum and Order (Denying Entergy’s Motion for the Summary Disposition of NYS Contention 17/17A) at 12-13 (Apr. 22, 2010) (unpublished) (“Apr. 22, 2010 Order”).

<sup>6</sup> See *id.*

<sup>7</sup> Hedonic modeling allows researchers to use statistical regression to estimate the price effect that a single attribute (*e.g.*, proximity to a nuclear power plant) has on property values by controlling for other housing characteristics that also impact property values (*e.g.*, number of rooms, lot size, and proximity to amenities such as parks). See Testimony of Entergy Witnesses Donald P. Cleary, C. William Reamer, and George S. Tolley Regarding Contention NYS-17B (Property Values) at A91-92 (Mar. 28, 2012) (“Entergy Testimony”) (ENT000132).

action alternative, significant offsite land use impacts are still unlikely given historic land use patterns, current land use regulations and zoning ordinances, tax rates and incentives, population growth trends, and pending and proposed development plans. Simply put, there is no reasoned basis for NYS to directly equate property value impacts with land use impacts given the many factors that influence and control land use.

Entergy's experts also address Dr. Sheppard's property value claims point-by-point, demonstrating that they lack merit for multiple, independent reasons. As just one example, Dr. Sheppard's various prior reports submitted to support earlier versions of the contention are based on the results from a 1974 study involving a coal plant built in the early 1900s that is simply inapplicable to Indian Point. Nonetheless, Dr. Sheppard uses this coal-plant derived property value impact estimate to compare license renewal impacts to no-action alternative impacts. In doing so, Dr. Sheppard incorrectly finds that the no-action alternative has net benefits compared to license renewal because he: (1) incorrectly assumes the site will be decommissioned far quicker after shutdown under the no-action alternative than with license renewal; (2) applies an unreasonably low discount rate to far-off future events that would not influence current property values; and (3) assumes, without adequate basis, that Entergy's Payment-in-Lieu-of-Taxes ("PILOT"), property taxes, and other taxes remain the same under the no-action and license renewal alternatives.

In the additional report submitted with NYS's prefiled testimony, Dr. Sheppard abandons his reliance on the coal plant approach and instead embarks on an unprecedented and illogical new approach. Dr. Sheppard likens IP2 and IP3 commencing full power operations in the period from 1974 to 1976 to an "event." He hypothesizes that anyone holding properties near Indian Point during this period suffered a property value decline, resulting in a lower return on his or

her investment. To test this theory, Dr. Sheppard compares returns on properties for which the holding period was from before 1974 to after 1976, called the “treatment group,” to returns on properties for which the holding period was entirely before 1974 or entirely after 1976, called the “control group.” Dr. Sheppard estimates there is an approximately 3 percent difference in rate of return between the “control group” and “treatment group.” Based on that alleged lower return, Dr. Sheppard asserts that residential property values, as of January 2011, would allegedly increase over \$1 billion, or more than 27 percent, following the decommissioning and removal of Indian Point. Dr. Sheppard, however, does not account of changes in PILOT and other tax payments accompanying cessation of operations, predict when his property value recovery would happen, or apply a discount rate to estimate the difference between license renewal and the no-action alternative.

In contrast, Entergy’s witness, Dr. Tolley, does consider such issues and shows that license renewal provides a net positive gain to area residents even assuming Dr. Sheppard’s \$1 billion claimed impact. As Dr. Tolley further demonstrates, Dr. Sheppard’s latest approach is contrary to established and accepted methodologies in the field of economics, and unreasonable for multiple, independent reasons. First, Dr. Sheppard’s underlying data contain an extraordinary number of errors. Second, the higher returns in Dr. Sheppard’s “control” group are easily explained by the fact that it is heavily weighted toward the post-1999 period that includes unprecedented returns associated with that period’s housing bubble. Third, Dr. Sheppard incorrectly defines the “event” of interest because any property value impacts would have happened well before IP2 and IP3 operations commenced due to anticipatory effects. Fourth, Dr. Sheppard violates a number of methodological requirements for a valid event study, including the need to have the event occupy a small time window. Finally, Dr. Sheppard

inexplicably avoids the well-established hedonic approach even though his own data were more than adequate for such an analysis. Dr. Tolley does perform a hedonic evaluation using Dr. Sheppard's own data and shows that Indian Point has no discernible effect on property values.

## **II. PROCEDURAL HISTORY OF CONTENTION NYS-17B**

As discussed below, NYS and its expert, Dr. Stephen C. Sheppard, have continually revised their arguments and theories, often in ways that appear to be inconsistent with their earlier filings. The evolving nature of NYS-17B has left a less-than-coherent theory of how, why, or when NYS and Dr. Sheppard believe IP2 and IP3 have impacted offsite land use and property values, or why such an impact would dissipate under the no-action alternative.

### **A. Original Contention NYS-17**

On April 23, 2007, Entergy applied to renew the IP2 and IP3 operating licenses for 20 years beyond their current expiration dates of September 28, 2013, and December 12, 2015, respectively. After the NRC published a Federal Register notice of opportunity for hearing,<sup>8</sup> NYS filed a petition to intervene, proposing various contentions.<sup>9</sup>

Of relevance here, Contention NYS-17, as originally proposed, claimed that Entergy's Environmental Report ("ER") ignored alleged positive offsite land use impacts that would result from predicted property value increases under the no-action alternative (*i.e.*, denial of the License Renewal Application ("LRA") and renewed operating licenses).<sup>10</sup> NYS-17 assumed

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<sup>8</sup> 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).

<sup>9</sup> See New York State Notice of Intention to Participate and Petition to Intervene (Nov. 30, 2007) ("NYS Petition"); *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), LBP-08-13, 68 NRC 43, 57-58 (2008).

<sup>10</sup> See NYS Petition at 169; *Indian Point*, LBP-08-13, 68 NRC at 113-15.

that, absent license renewal, decommissioning and removal of all spent fuel would take place by 2025, at which time the site would be available for unrestricted use.<sup>11</sup> According to NYS-17, at that time, properties adjacent to Indian Point would be available for “beneficial uses” and would increase in value.<sup>12</sup> To support this theory, NYS relied on the 2007 Sheppard Report, which speculated that putting the site to its “highest and best alternative use” would involve “a combination of attractive riverfront development that would be likely to include employment and other attractive locations.”<sup>13</sup> Adapting a coefficient from a 1974 hedonic study involving an Illinois coal plant, Dr. Sheppard calculated that—but for the presence of the Indian Point facility and its spent fuel—property values within 2 miles of the site would be approximately \$576 million higher (*i.e.*, about 13 percent higher).<sup>14</sup>

The Board originally admitted NYS-17 as a “contention of omission,” allowing litigation on whether Entergy’s offsite land use evaluation should have considered property value impacts.<sup>15</sup> In this regard, the Board found that NRC regulations do not limit consideration of offsite land use to tax-driven land-use changes.<sup>16</sup>

#### **B. Amended Contention NYS-17A**

Following issuance of the Draft Supplemental Environmental Impact Statement (“DSEIS”), NYS submitted NYS-17A, which argued that the DSEIS similarly ignored the

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<sup>11</sup> See NYS Petition at 168.

<sup>12</sup> *Id.*

<sup>13</sup> Stephen Sheppard, *Potential Impacts of Indian Point Relicensing on Property Values* at 3 (Nov. 29, 2007) (“2007 Sheppard Report”) (NYS000226).

<sup>14</sup> *Id.* at 6 (NYS000226).

<sup>15</sup> *Indian Point*, LBP-08-13, 68 NRC at 116.

<sup>16</sup> *Id.*

alleged property value impacts flowing from the no-action alternative.<sup>17</sup> As support for NYS-17A, NYS referenced the previously-filed 2007 Sheppard Report as well as a new 2009 Sheppard Report.<sup>18</sup> Using the alleged \$576 million impact from the earlier report, Dr. Sheppard, in his 2009 Report, applied a 3.25 percent discount rate, and compared a no-action option assuming decommissioning and removal of all spent fuel would take place by 2025 (*i.e.*, 10 years beyond 2015), with license renewal options delaying decommissioning and spent fuel removal until sometime between 2095 and 2155 (*i.e.*, 60 to 140 years beyond 2035).<sup>19</sup> Dr. Sheppard found that such delays would impose an alleged \$300 to \$340 million present value burden on nearby properties, depending on the assumed decommissioning date.<sup>20</sup> This new estimate was less than his originally-asserted \$576 million adverse impact.<sup>21</sup>

The Board subsequently determined that NYS-17A updated the original contention “to reflect that New York contends that the NRC Staff erred in a similar manner to Entergy and that the original contention is now relevant to the [DSEIS], as well as to the ER,”<sup>22</sup> and thus, admitted NYS-17A and consolidated it with NYS-17.<sup>23</sup>

### **C. Entergy Summary Disposition Motion on Contention NYS-17/17A**

Entergy moved for summary disposition of NYS-17/17A for several independent reasons, including that: (1) NEPA does not require consideration of alleged financial impacts arising

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<sup>17</sup> See State of New York Contention Concerning NRC Staff’s Draft Supplemental Environmental Impact Statement at 15 (Feb. 27, 2008) (“NYS-17A”).

<sup>18</sup> Stephen Sheppard, *Potential Impacts of Indian Point Relicensing with Delayed Site Reclamation* (Feb. 26, 2009) (“2009 Sheppard Report”) (NYS000227).

<sup>19</sup> *Id.* at 2, 3-4.

<sup>20</sup> See *id.* at 2-5.

<sup>21</sup> See 2007 Sheppard Report at 6 (NYS000226).

<sup>22</sup> Licensing Board Order (Ruling on New York State’s New and Amended Contentions) at 8 (June 16, 2009) (unpublished).

<sup>23</sup> *Id.*

from the public's perception of risk at Indian Point; (2) the Waste Confidence Rule bars any claims based on spent fuel storage; and (3) NEPA does not require consideration of environmental impacts that depend on speculative actions to be taken by unknown third parties many decades in the future.<sup>24</sup>

NYS opposed Entergy's Motion.<sup>25</sup> NYS argued this is not a case about the public's perception of risk, but instead involves the continued "presence" of the spent fuel storage casks and an operating nuclear facility.<sup>26</sup> In support, NYS included the 2010 Sheppard Report, which vaguely referenced "nuisance and disamenity," but did not otherwise specify the cause of the alleged property value impact.<sup>27</sup> At the same time, NYS, but not Dr. Sheppard, pointed to issues addressed in the DSEIS (*e.g.*, noise, aesthetics, groundwater), and argued for the first time that these were physical environmental impacts that caused the alleged adverse property value impacts.<sup>28</sup> Dr. Sheppard's testimony and reports, however, never discuss noise, aesthetics, or groundwater impacts.

In addition, NYS argued that it was entitled to assume that offsite waste storage will be available by 2025, citing the Waste Confidence Rule.<sup>29</sup> While acknowledging that NRC regulations allow up to 60 years for decommissioning, NYS nonetheless asserted, without support, that the NRC would order a shorter decommissioning period to allow nearby property

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<sup>24</sup> Entergy Nuclear Operation, Inc. Motion for Summary Disposition of New York State Contention 17/17-A (Property Values) at 2 (Feb. 26, 2010) ("Motion for Summary Disposition of NYS-17/17A").

<sup>25</sup> State of New York's Response to Entergy's Motion for Summary Disposition on New York Contentions 17 and 17A (Mar. 18, 2010) ("NYS Summary Disposition Response").

<sup>26</sup> *Id.* at 5.

<sup>27</sup> See Stephen Sheppard, *Determinants of Property Values* at 2 (Mar. 15, 2010) ("2010 Sheppard Report") (NYS000228).

<sup>28</sup> See NYS Summary Disposition Response at 7-8. As noted later, the DSEIS (and later the FSEIS) characterize all such impacts as SMALL. See DSEIS at 4-6, 4-37, 4-62 (NYS00132B); FSEIS at 4-6, 4-43, 4-69 (NYS00133B).

<sup>29</sup> NYS Summary Disposition Response at 9-10.

values to increase sooner.<sup>30</sup> NYS also claimed that, contrary to its earlier filings,<sup>31</sup> its arguments do not depend on the Indian Point site or nearby property being turned into “attractive riverfront development” or any particular development.<sup>32</sup>

Although it denied Entergy’s motion for summary disposition, the Board agreed with Entergy that NEPA “contentions relating to on-site spent fuel storage are outside the scope of this proceeding due to the Waste Confidence Rule (codified as 10 C.F.R. § 51.23).”<sup>33</sup> The Board also found that a question of fact existed regarding whether there was a “reasonably close causal relationship” between any changes to the physical environment resulting from the no-action alternative and the property value impact NYS alleged.<sup>34</sup> The Board also found a question of fact existed concerning the likelihood of offsite land use changes near the Indian Point site under the no-action alternative.<sup>35</sup>

**D. Amended Contention NYS-17B**

After the NRC issued a final updated Waste Confidence Rule and the Staff separately issued the FSEIS, NYS submitted NYS-17B, which included numerous new bases related to the Waste Confidence Rule, an alternative request for waiver or exemption from the Waste Confidence Rule, and sought to apply the already-admitted contention to the FSEIS.<sup>36</sup> As support for NYS-17B, NYS referenced Dr. Sheppard’s previously-filed reports as well as his

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<sup>30</sup> *Id.* at 11-12.

<sup>31</sup> *See* 2007 Sheppard Report at 3.

<sup>32</sup> NYS Summary Disposition Response at 10-11.

<sup>33</sup> Apr. 22, 2010 Order at 13.

<sup>34</sup> *Id.* at 12.

<sup>35</sup> *See id.* at 13.

<sup>36</sup> *See* NYS-17B at 6-9.

new January 2011 Report.<sup>37</sup> To start his analysis, Dr. Sheppard used the \$576 million property value impact estimation from his 2007 Report. Dr. Sheppard, however, again altered his methodology. In the January 2011 Report, he calculated the discounted present value of alleged property value impacts, using a 4 percent discount rate, for three different license renewal scenarios relative to a no-action alternative baseline scenario in which the IP2 and IP3 operating licenses are not renewed.<sup>38</sup> He assumed a 32-year decommissioning period in his no-action baseline case, and 42, 72, and 102 year decommissioning periods in the license renewal scenarios.<sup>39</sup> Dr. Sheppard also added new discussions of other potential socioeconomic impacts that had gone unmentioned in his earlier submissions. In particular, he considered property tax revenue impacts caused by property value impacts, and impacts associated with Entergy's PILOT and other tax payments to local communities.<sup>40</sup> Based on this assessment, Dr. Sheppard concluded that, relative to the baseline no-action alternative, the license renewal scenarios impose on the local communities a present value cost of between \$169 million and \$238 million.<sup>41</sup> This new January 2011 estimate was again less than his two prior property value cost estimates (\$576 million and \$300 to \$340 million).<sup>42</sup>

The Board determined that NYS-17B differed from previously-admitted NYS-17/17A “primarily in the substitution of the FSEIS for the DSEIS” and thus admitted NYS-17B and

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<sup>37</sup> See Stephen Sheppard, *Potential Economic Impacts Related to Property Value Diminution in Communities Surrounding the IPEC* (Jan. 24, 2011) (“January 2011 Sheppard Report”) (NYS000230).

<sup>38</sup> *Id.* at 1, 3-5.

<sup>39</sup> *See id.* at 1, 4-6 (NYS000230).

<sup>40</sup> *See id.* at 2-3 (NYS000230).

<sup>41</sup> *See id.* at 6 (NYS000230).

<sup>42</sup> *See* 2007 Sheppard Report at 6 (NYS000226); 2009 Sheppard Report at 5 (NYS000227).

consolidated it with NYS-17/17A.<sup>43</sup> The Board, however, denied NYS-17B to the extent that it proposed new bases and challenges related to the Waste Confidence Rule. The Board found the NYS argument concerning the timeframe for spent fuel removal from the site and the Waste Confidence Rule “irrelevant because the Waste Confidence Rule has never specified a timetable for removing spent fuel and NRC regulations have long envisioned the possibility of spent fuel remaining on reactor sites until the end of site decommissioning.”<sup>44</sup> The Board therefore declined to consider NYS’s request for exemption and waiver.<sup>45</sup>

In the July 6 Order, the Board also ruled that “to argue that the presence of spent fuel itself on the site affects property values is to assert that there is an environmental impact from the presence of spent fuel that must be assessed on a site-specific basis, contradicting the language of the Waste Confidence Rule . . . which states that there is no such requirement.”<sup>46</sup> The Board later clarified that “any impact of spent fuel alone need not be given any role in assessment of property values” and “whatever hypothesized impact IPEC has on property values during the period of extended operations is not affected to a measurable degree by any one component (including the presence or absence of spent fuel).”<sup>47</sup>

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<sup>43</sup> Licensing Board Order (Ruling on Pending Motions for Leave to File New and Amended Contentions) at 16 (July 6, 2011) (“July 6, 2011 Order”).

<sup>44</sup> *Id.* at 16.

<sup>45</sup> *See id.* at 18.

<sup>46</sup> July 6, 2011 Order at 17.

<sup>47</sup> Licensing Board Order (Granting Entergy’s Request for Clarification) at 4 (Aug. 10, 2011) (unpublished). New York and several groups are challenging the NRC’s Waste Confidence Rule in federal court. *See New York v. NRC*, Nos. 11-1045, 11-1051, 11-1056, 11-1057 (D.C. Cir. filed Feb. 15, 2011)

### **E. NYS's Testimony and Positions**

On December 17, 2011, NYS filed its statement of position and Dr. Sheppard's direct testimony.<sup>48</sup> Dr. Sheppard is a professor of economics at Williams College in Williamstown, Massachusetts. Although he has written on housing markets and hedonic modeling, he does not appear to have experience in financial market or event study analysis.<sup>49</sup>

Dr. Sheppard's testimony focuses primarily on his new, December 2011 Report that contains a yet another approach to estimating property value impacts.<sup>50</sup> Dr. Sheppard characterizes his new approach as similar "in spirit" to "event studies" that are applied to the values of stocks and other financial assets.<sup>51</sup> In short, Dr. Sheppard attempts to infer property value impacts by calculating financial returns to holding properties over various time periods.

In his analysis, Dr. Sheppard treats IP2 and IP3 commencing full power operations from 1974 to 1976 as an "event."<sup>52</sup> Dr. Sheppard hypothesizes that anyone holding properties during that time and within 3.1 miles (5 kilometers) of Indian Point would have suffered a property value decline, resulting in a lower return on that property than if the holding period was entirely before 1974 or entirely after 1976.<sup>53</sup>

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<sup>48</sup> See NYS Statement of Position (NYS000223); Pre-filed Direct Testimony of Stephen C. Sheppard, Ph.D. Regarding Contention 17B (Dec. 16, 2011) (revised Jan. 30, 2012) ("Sheppard Testimony") (NYSR00224).

<sup>49</sup> See *Curriculum Vita*, Stephen Charles Sheppard (Sept. 23, 2011) (NYS000208)

<sup>50</sup> See Sheppard Testimony at 4, 13-40 (NYSR00224); Stephen Sheppard, *Impacts of the Indian Point Energy Center on Property Values* (Dec. 11, 2011) (revised Jan. 30, 2012) ("December 2011 Sheppard Report") (NYSR00231). Although this new approach is the focus of Dr. Sheppard's testimony, he references his earlier reports and they are included as exhibits. See Sheppard Testimony at 4 (NYSR00224) (noting that the final report, "like its predecessors, reflects [his] analysis and opinions").

<sup>51</sup> December 2011 Sheppard Report at 4 (NYSR00231).

<sup>52</sup> Sheppard Testimony at 29.

<sup>53</sup> See *id.* at 30-31, 37.

Using a sample of properties located within 3.1 miles of Indian Point and sold between 1999 and 2009, as well as pre-1999 sales information of these same properties,<sup>54</sup> Dr. Sheppard estimates returns to holding properties in his sample that turned over one or more times prior to the most recent sale.<sup>55</sup> Dr. Sheppard then compares returns on properties for which the holding period was from before 1974 to after 1976, called the “treatment group,” to returns for which the holding period was entirely before 1974 or entirely after 1976, called the “control group.”<sup>56</sup> He expects to find returns for the “treatment group” to be lower than for the “control group,” and attributes the expected difference to lower property values due IP2 and IP3 commencing operations.<sup>57</sup>

Dr. Sheppard performs a regression analysis of his data and reports that being in the “treatment group” lowers the annual nominal rate of return approximately 3 percent.<sup>58</sup> He assumes the difference between the “control group” return and the “treatment group” return is an estimate of IP2 and IP3’s impact. Thus, Dr. Sheppard concludes that IP2 and IP3 commencing operations reduced the nominal rate of annual return by almost 3 percent for residential properties within 3.1 miles.<sup>59</sup>

Dr. Sheppard then uses 2000 U.S. Census data to estimate the total value of residential properties within 3.1 miles of Indian Point and a house price index to calculate their value at the end of 1976.<sup>60</sup> Using these values, he calculates the total reduction in property values as of

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<sup>54</sup> See *id.* at 23-24, 32-34; December 2011 Sheppard Report at 5 (NYSR00231).

<sup>55</sup> See Sheppard Testimony at 23-24 (NYSR00224).

<sup>56</sup> See *id.* at 29-30.

<sup>57</sup> See *id.* at 30-31.

<sup>58</sup> See December 2011 Sheppard Report at 9 (NYSR00231).

<sup>59</sup> Sheppard Testimony at 32 (NYSR00224).

<sup>60</sup> *Id.* at 34.

December 1976, factoring in his earlier calculation in the reduction in the nominal rate of return on residential property and the average amount of time residential property is held.<sup>61</sup> He then again uses the house price index to translate these values to residential property values as of January 2011.<sup>62</sup> According to Dr. Sheppard, this value is \$1.07 billion and represents the recovery that property values might see following the removal and decommissioning of Indian Point sometime in the future.<sup>63</sup> Put more precisely, Dr. Sheppard acknowledges this is actually an estimate of the impact of IP2 and IP3 commencing operations, and he simply assumes that “when IPEC is gone and the site is restored these changes will be undone.”<sup>64</sup>

Contrary to his earlier submissions, Dr. Sheppard does not predict when or why this recovery would happen, or apply a discount rate to estimate the difference between license renewal and the no-action alternative. Nor does his evaluation account for potential changes in PILOT or property tax payments and associated impacts, as was done in his January 2011 Report.

### **III. APPLICABLE LEGAL AND REGULATORY STANDARDS**

#### **A. Controlling NEPA Principles**

NYS-17B arises under NEPA, which requires that federal agencies, such as the NRC, prepare an environmental impact statement (“EIS”) in conjunction with “major Federal actions significantly affecting the quality of the human environment.”<sup>65</sup> NEPA does not mandate substantive results; rather, it imposes procedural restraints on agencies, requiring them to take a “hard look” at a proposed action’s environmental impacts and reasonable alternatives to that

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<sup>61</sup> *Id.* at 34-36.

<sup>62</sup> *Id.* at 38.

<sup>63</sup> *See id.*

<sup>64</sup> *Id.* at 39.

action.<sup>66</sup> In this regard, the Commission has emphasized that NRC hearings must focus on whether the “NRC Staff has failed to take a ‘hard look’ at significant environmental questions— i.e., the Staff has unduly ignored or minimized pertinent environmental effects.”<sup>67</sup>

In determining whether the FSEIS is sufficient under NEPA, the Board considers the record as a whole. The record of decision ultimately includes the adjudicatory record and the Board decision.<sup>68</sup> Thus, in NRC licensing proceedings, “the ultimate NEPA judgments regarding a facility can be made on the basis of the entire record before a presiding officer, such that the EIS can be deemed to be amended *pro tanto*.”<sup>69</sup> Therefore, the Board may consider the full record before it, including the testimony and exhibits at the hearing, to conclude that “the aggregate is sufficient to satisfy the agency’s obligation under NEPA” to take a “hard look” at license renewal environmental impacts and alternatives.<sup>70</sup>

Moreover, in determining whether the agency has satisfied its obligation, both the NRC and the federal courts have emphasized that there are limits to what can be demanded of an

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<sup>65</sup> 42 U.S.C. § 4332(2)(C).

<sup>66</sup> *See La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 87-88 (1998); *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>67</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 intervenors’ 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), *aff’d sub nom., Env’tl. Law & Policy Ctr. v. NRC*, 470 F.3d 676 (7th Cir. 2006).

<sup>68</sup> *See, e.g., La. Energy Servs.* (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.”); *LES*, CLI-98-3, 47 NRC at 89 (“In NRC licensing adjudications . . . it is the Licensing Board that compiles the final environmental ‘record of decision’ . . . . The adjudicatory record and Board decision . . . become, in effect, part of the FEIS.”).

<sup>69</sup> *La. Energy Servs.* (Nat’l Enrichment Facility), LBP-05-13, 61 NRC 385, 404 (2005).

<sup>70</sup> *La. Energy Servs.* (Nat’l Enrichment Facility), LBP-06-8, 63 NRC 241, 286 (2006).

agency.<sup>71</sup> Overall, the “hard look” requirement is subject to a “rule of reason.”<sup>72</sup> As a result, NEPA “does not call for certainty or precision, but an estimate of anticipated (not unduly speculative) impacts.”<sup>73</sup> For example, NEPA does not require consideration of future land use development that is “unlikely or difficult to anticipate.”<sup>74</sup> Nor must an EIS “be so all-encompassing in scope that the task of preparing it would become either fruitless or well nigh impossible.”<sup>75</sup> And, because there “will always be more data that could be gathered,” agencies enjoy “discretion to draw the line and move forward with decisionmaking.”<sup>76</sup>

The rule of reason governs both *which* alternatives the agency must discuss, and the *extent* to which it must discuss them.<sup>77</sup> An agency need not consider every available alternative, but only those alternatives that are necessary to permit a reasoned choice.<sup>78</sup> NRC regulations require consideration of the “no-action” alternative.<sup>79</sup> The Commission has held that the no-

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<sup>71</sup> See, e.g., *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 776 (1983) (“The scope of the agency’s inquiries must remain manageable if NEPA’s goal of ‘ensur[ing] a fully informed and well considered decision,’ is to be accomplished.”).

<sup>72</sup> *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), LBP-05-19, 62 NRC 134, 167 (2005), *aff’d* CLI-05-29, 62 NRC 811 (2005); see also *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 767-69 (2004) (rule of reason is inherent in NEPA and its implementing regulations).

<sup>73</sup> *La. Energy Servs., L.P.* (Nat’l Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005).

<sup>74</sup> *Soc’y Hill Towers Ass’n. v. Rendell*, 210 F.3d 168, 182 (3d Cir. 2000).

<sup>75</sup> *New York v. Kleppe*, 429 U.S. 1307, 1311 (1976) (citing *Natural Res. Def. Council v. Callaway*, 524 F.2d 79, 88 (2d Cir. 1975)).

<sup>76</sup> *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010).

<sup>77</sup> *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195 (D.C. Cir. 1991) (citation omitted).

<sup>78</sup> *Headwaters, Inc. v. Bureau of Land Mgmt.*, 914 F.2d 1174, 1180-81 (9th Cir. 1990).

<sup>79</sup> 10 C.F.R. Pt. 51, Subpt. A., App. A § 4.

action alternative is most easily viewed as simply maintaining the *status quo*.<sup>80</sup> In a license renewal proceeding, the no-action alternative involves denying the license renewal application.<sup>81</sup>

## **B. NRC's NEPA Implementing Regulations**

The NRC NEPA regulations are set forth in 10 C.F.R. Part 51. In 1996, the Commission amended Part 51 to address the scope of its license renewal environmental review.<sup>82</sup> To make Part 51 more efficient and focused, the NRC prepared the Generic Environmental Impact Statement (“GEIS”) to evaluate environmental impacts based on experience gained from the existing U.S. nuclear power plant fleet operations.<sup>83</sup> Based on the GEIS, the NRC divided the license renewal environmental requirements into generic and plant-specific components.<sup>84</sup>

Those issues that could be resolved generically for all plants are designated as “Category 1” issues and are not evaluated further in a license renewal proceeding (absent the Commission waiving or suspending the rule based on new and significant information).<sup>85</sup> The applicant’s ER addresses remaining plant-specific, “Category 2” issues and “new and significant information” about license renewal environmental impacts.<sup>86</sup> The NRC Staff must then

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<sup>80</sup> *LES*, CLI-98-3, 47 NRC at 97 (citing *Ass’n of Pub. Agency Customers v. Bonneville Power Admin.*, 126 F.3d 1158, 1188 (9th Cir. 1997)); see also *Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage Installation), CLI-04-4, 59 NRC 31, 41 (2004).

<sup>81</sup> NUREG-1555, Supp. 1, § 8.1 (ENT00019B).

<sup>82</sup> See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467 (June 5, 1996), amended by 61 Fed. Reg. 66,537 (Dec. 18, 1996).

<sup>83</sup> See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,490; see also NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, Vols. 1 & 2 (May 1996), available at ADAMS Accession Nos. ML040690705 and ML040690738 (“GEIS”).

<sup>84</sup> See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,490.

<sup>85</sup> Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,468, 28,470, 28,474; *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-01-17, 54 NRC 3, 12 (2001).

<sup>86</sup> See 10 C.F.R. § 51.53(c); *Turkey Point*, CLI-01-17, 54 NRC at 11-12.

supplement the GEIS, preparing a site-specific evaluation that addresses applicable site-specific Category 2 issues and any “new and significant information.”<sup>87</sup>

The NRC codified its generic findings and this classification of issues in Table B-1, Appendix B to Subpart A of 10 C.F.R. Part 51 (“Table B-1”). Table B-1 assigns significance levels for environmental issues based on the following definitions:

**SMALL:** Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission’s regulations are considered small.

**MODERATE:** Environmental effects are sufficient to alter noticeably, but not to destabilize, any important attributes of the resource.

**LARGE:** Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.<sup>88</sup>

In a license renewal proceeding, past plant construction and current operating experience establish the environmental “baseline.”<sup>89</sup> License renewal impacts, if any, are determined by assessing changes that may result from license renewal and comparing them to this baseline.<sup>90</sup> Thus, the NRC takes existing conditions as the baseline from which to measure any different impacts from license renewal or alternatives to license renewal.<sup>91</sup>

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<sup>87</sup> 10 C.F.R. § 51.53(c)(3)(ii), (iv).

<sup>88</sup> 10 C.F.R. Subpt. A, Pt. 51, App. B, Tbl. B-1.

<sup>89</sup> See Proposed Rule, Environmental Review for Renewal of Operating Licenses, 56 Fed. Reg. 47,016, 47,020 (Sept. 17, 1991) (NYS000125).

<sup>90</sup> See *id.*

<sup>91</sup> See CEQ Guidance on Consideration of Past Action in Cumulative Effects Analysis 1-2 (June 24, 2005) (ENT000146).

**C. NRC’s Regulations Governing Offsite Land Use Impacts**

As noted above, NYS-17B concerns offsite land use impacts. Table B-1 lists offsite land use impacts (license renewal term) as a Category 2 (*i.e.*, site-specific) issue because such impacts may be SMALL, MODERATE, OR LARGE, and because “[s]ignificant changes in land use may be associated with population and tax revenue changes resulting from license renewal.”

NYS-17B also inherently challenges housing impacts. Separate from offsite land use, but relevant to the NYS-17B claims concerning property value-driven impacts, Table B-1 also lists housing impacts as a Category 2 issue. As discussed later, the potential housing impacts NRC Staff considered included housing marketability impacts. But Table B-1 indicates that housing impacts “are expected to be of small significance at plants located in a medium or high population area and not in an area where growth control measures that limit housing development are in effect.”

**D. NEPA Only Requires Consideration of Socioeconomic Impacts With a Reasonably Close Causal Relationship to Physical Environmental Impacts**

NEPA is concerned with actual physical impacts to the environment.<sup>92</sup> As the Supreme Court in *Metropolitan Edison* explained, the “theme of [NEPA] is sounded by the adjective ‘environmental,’” which means that NEPA does not require an agency to assess every impact on a project, but only those that have a “reasonably close causal relationship” with “a change in the physical environment.”<sup>93</sup> In *Metropolitan Edison*, the Supreme Court rejected a claim that NEPA required that the NRC consider allegations that the restart of one of the reactors at Three Mile Island after another unit had malfunctioned would result in severe psychological health damage to nearby residents. The Supreme Court found that fear arising from the “risk” of a

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<sup>92</sup> *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 772-74 (1983).

<sup>93</sup> *Id.* at 772, 773.

nuclear accident was not an effect caused by a change in the physical environment and, thus, did not warrant consideration under NEPA.<sup>94</sup> Specifically, the Supreme Court held that the causal chain between the change in the environment and the “effect” at issue was “too attenuated.”<sup>95</sup>

Consistent with this controlling Supreme Court precedent, both Council on Environmental Quality (“CEQ”) regulations and subsequent federal court rulings make clear that an EIS need only discuss socioeconomic impacts if they are interrelated with physical environmental effects.<sup>96</sup> This principle has been specifically applied in the context of allegations involving changes to property values. For example, in *Olmstead Citizens for a Better Community v. United States*, the court found that the Bureau of Prisons was not required to consider the impact on nearby property values resulting from a decision to convert a hospital facility to a medical center for federal prisoners.<sup>97</sup> The court ruled that NEPA does not require evaluation of potential property value changes when “the *threshold requirement* of a primary impact on the *physical environment* is missing.”<sup>98</sup>

The Commission has similarly applied the principle that it need not consider socioeconomic impacts that are not “directly related to the physical environment.”<sup>99</sup> For example, in the reactor license renewal context, the Commission found that the GEIS was not required to consider the effect that spent fuel shipments would have on property values because

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<sup>94</sup> See *id.* at 775-76.

<sup>95</sup> *Id.* at 773-74.

<sup>96</sup> See 40 C.F.R. § 1508.14; see also 10 C.F.R. § 51.14(b) (adopting the CEQ definition in 40 C.F.R. § 1508.14); *Tongass Conservation Soc’y v. Cheney*, 924 F.2d 1137, 1144 (D.C. Cir. 1991) (*citing* 40 C.F.R. § 1508.14); *Hammond v. Norton*, 370 F. Supp. 2d 226, 243 (D.D.C. 2005) (“Only when socioeconomic effects somehow result from a project’s environmental impact must they be considered.”).

<sup>97</sup> See *Olmstead Citizens for a Better Cmty. v. United States*, 606 F. Supp. 964, 973 (D. Minn. 1985), *aff’d*, 793 F.2d 201 (8th Cir. 1986).

<sup>98</sup> *Id.* at 974 (emphasis added).

<sup>99</sup> Final Rule, Changes to Requirements for Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 64 Fed. Reg. 48,496, 48,502.

these impacts would arise from the public’s perception of risk rather than from an impact to the physical environment.<sup>100</sup> Accordingly, in considering socioeconomic impacts under NEPA, the Commission, like the courts, distinguishes between socioeconomic impacts that arise directly from a physical impact to the environment and those that do not.

In ruling on Entergy’s summary disposition motion, the Board recognized this bedrock NEPA principle, finding that a question of fact existed regarding whether there was a “reasonably close causal relationship” between any changes to the physical environment resulting from the no-action alternative and NYS’s alleged property value impact.<sup>101</sup>

#### **E. Burden of Proof**

At the hearing stage, an intervenor has the initial “burden of going forward”; *i.e.*, it must provide sufficient evidence to support the claims made in the admitted contention.<sup>102</sup> The mere admission of the contention does not satisfy that burden. Moreover, an intervenor cannot meet its burden by relying on unsupported allegations and speculation.<sup>103</sup> Rather, it must introduce

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<sup>100</sup> *Id.* The GEIS evaluation of socioeconomic impacts is also consistent with the NEPA principle that socioeconomic impacts only need be discussed if they are directly related to physical environmental effects. See GEIS at 4-99 (NYS00131B) (explaining that “only those [socioeconomic impacts] directly affecting the natural and built environment are carried forward to the decision to renew an operating license”).

<sup>101</sup> Apr. 22, 2010 Order at 12.

<sup>102</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.”), *aff’d sub nom. N.J. Envtl. Fed’n v. NRC*, 645 F.3d 220 (2011); see also *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 554 (1978) (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>103</sup> See *Oyster Creek*, CLI-9-07, 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).

sufficient evidence during the hearing phase to establish a *prima facie* case.<sup>104</sup> If it does so, then the burden shifts to the applicant to provide sufficient evidence to rebut the intervenor's contention.<sup>105</sup> While the NRC Staff, not the applicant, has the burden of complying with NEPA,<sup>106</sup> the applicant also has the burden of proof in licensing proceedings if it becomes a proponent of the challenged portion of the Staff's FSEIS.<sup>107</sup> Ultimately, a preponderance of the evidence must support the applicant's position.<sup>108</sup>

#### IV. ARGUMENT

##### A. Entergy's Witnesses

This Statement of Position on NYS-17B summarizes testimony from Entergy's witnesses listed below. The testimony, evidence, and opinions these witnesses present are based on their technical and regulatory expertise, professional experience, and personal knowledge of the issues raised in NYS-17B. Collectively, these witnesses demonstrate that NYS-17B lacks merit.

##### 1. **Donald P. Cleary**

Mr. Cleary is an Environmental Safety Consultant with Talisman International, LLC. As summarized in his *curriculum vitae* (ENT000133), he holds a Bachelor of Arts degree in Economics from the University of Massachusetts, Amherst, a Master of Arts degree in Economics from the University of Florida, and has taken additional graduate courses in Natural Resource Economics and Policy at the University of Michigan. Mr. Cleary has more than 38

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<sup>104</sup> See *Oyster Creek*, CLI-9-07, 69 NRC at 268-70.

<sup>105</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).

<sup>106</sup> See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

<sup>107</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)).

<sup>108</sup> See *Pac. Gas & Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-763, 19 NRC 571, 577 (1984).

years of professional experience in the nuclear industry, including more than 25 years a member of the NRC Staff. As an NRC Staff manager, Mr. Cleary oversaw the development of methodologies to assess socioeconomic impacts from the construction and operation of nuclear power plants, including land use and property value impacts.

Mr. Cleary has extensive experience developing and applying NRC's NEPA regulations and guidance, and in evaluating offsite land use and other socioeconomic impacts. Furthermore, he is familiar with the GEIS and Indian Point FSEIS assessments of such issues, and the most current land use planning documents from the Village of Buchanan, the Town of Cortlandt, the City of Peekskill, and Westchester County.

## **2. C. William Reamer**

Mr. Reamer is a Senior Regulatory and Nuclear Safety Consultant with Talisman International, LLC. As summarized in his *curriculum vitae* (ENT000140), he holds a Bachelor of Arts in Political Science from Ohio University, a J.D. from Duke University, an L.L.M. from the University of California at Berkeley, and is a member of the District of Columbia bar. Mr. Reamer has more than 30 years experience in the nuclear industry, including extensive experience in the areas of environmental protection, decommissioning of nuclear facilities and sites, and waste management.

Mr. Reamer has extensive experience with NRC's environmental protection, decommissioning, and waste management regulations and guidance. Furthermore, he is familiar with Indian Point decommissioning and spent fuel management plans.

## **3. George S. Tolley**

Dr. Tolley is the President of RCF Economic & Financial Consulting, Inc., and a Professor Emeritus of Economics at the University of Chicago. As summarized in his *curriculum vitae* (ENT000143), he holds Master and Doctorate degrees in Economics from the

University of Chicago, where he has been a Professor or Professor Emeritus of Economics since 1966. Dr. Tolley also holds an Honorary Doctoral degree from North Carolina State University, where he was a member of the faculty in the Department of Economics and Business from 1955 to 1966. Dr. Tolley has more than 50 years of professional experience in the practice of economics and is an expert in assessing the economic benefits and costs of activities that may affect the environment and the development and application of methodologies, such as hedonic models, to estimate direct and indirect impacts on potential property values and associated land use changes.

Dr. Tolley has extensive experience developing and applying economic techniques to assess the benefits and costs of activities that may affect the environment, including those used to estimate potential property value impacts and any likely associated land use changes. Dr. Tolley has independently assessed the potential for property value impacts to areas surrounding Indian Point, which is documented in his report entitled, “Property Value Effects of Indian Point License Renewal.”<sup>109</sup> As part of that assessment, he visited the area around the site to obtain a better understanding of current offsite land use and the potential for property value impacts. Based on these experiences, Dr. Tolley is familiar with offsite land uses in the vicinity of Indian Point and the potential for property value and land use impacts under the no-action alternative.

**B. Entergy’s Statement of Position**

In their testimony, Entergy’s experts explain why the FSEIS appropriately concludes that the offsite land use impacts under the no-action alternative are SMALL and the overall socioeconomic impacts under the no-action alternative are SMALL to MODERATE.

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<sup>109</sup> George Tolley, Property Value Effects of Indian Point License Renewal (Mar. 2012) (“Tolley Report”) (ENT000144).

Entergy’s experts also establish that there is not a “reasonably close causal relationship” between NYS’s alleged property value impacts and any physical environmental impacts, and that such property value impacts are dependent on unlikely or speculative future actions—all contrary to NEPA.<sup>110</sup> In addition, Entergy’s experts demonstrate, based on accepted hedonic modeling, using local property data, that IP2 and IP3 have not and do not adversely impact property values, so there cannot be the windfall economic recovery that Dr. Sheppard asserts would result under the no-action alternative. Entergy’s experts also address and refute Dr. Sheppard’s property value claims point-by-point, thereby demonstrating that NYS-17B and supporting evidentiary submissions lack merit. Key aspects of their detailed testimony are summarized below.

#### **1. Offsite Land Use Regulations and Guidance**

In Section IV of Entergy’s testimony, Mr. Cleary and Mr. Reamer provide background on NRC’s NEPA regulations, guidance, and the license renewal GEIS. Specifically, they focus on the GEIS’s consideration of offsite land use, housing (including housing marketability), and spent fuel storage impacts, as well as the no-action alternative.<sup>111</sup>

Mr. Cleary explains that to evaluate offsite land use impacts (and other socioeconomic issues) in the GEIS, the NRC Staff conducted an extensive review, including detailed case studies of seven nuclear power reactor sites, including Indian Point.<sup>112</sup> Mr. Cleary further explains the GEIS cast a wide net looking for potential drivers for land use changes and identified only two significant mechanisms—population and tax revenue changes.<sup>113</sup> These offsite land use impact predictors are incorporated in NUREG-1555, Supplement 1, “Standard

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<sup>110</sup> See Apr. 22, 2010 Order at 12-13.

<sup>111</sup> See Entergy Testimony at A30-47 (ENT000132).

<sup>112</sup> *Id.* at A37

<sup>113</sup> *Id.* at A37-40.

Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan for Operating License Renewal” (Mar. 2000) (NUREG-1555, Supplement 1) (ENT00019B) and Table B-1.<sup>114</sup> As such, this approach is accorded special weight in adjudicatory proceedings.<sup>115</sup>

## **2. Entergy and the NRC Staff Reasonably and Appropriately Evaluate Offsite Land Use and Other Socioeconomic Impacts**

In Sections V and VI of Entergy’s testimony, Mr. Cleary describes Entergy and the NRC Staff evaluations of offsite land use and other socioeconomic impacts. He explains that these assessments are fully consistent with NRC guidance and appropriately focus on identifying potential new license renewal land use impacts that might result from: (1) plant-related population growth; and (2) local tax-related development as identified in the GEIS.<sup>116</sup>

As Mr. Cleary explains, IP2 and IP3 license renewal will not result in population-related land use impacts because Entergy has no plans to add non-outage employees during the renewed operating period (*i.e.*, there would be no noticeable IP2 and IP3 attributable population change to drive changes in land use conditions in the vicinity).<sup>117</sup> Likewise, license renewal will not result in tax-driven land use impacts because Entergy’s annual PILOT payments and property taxes would remain relatively unchanged during the renewed operating period, and land use in the

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<sup>114</sup> *Id.* at A40-41.

<sup>115</sup> *See NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC \_\_\_, slip op. at 16 n.78 (Mar. 8, 2012); *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-05-15, 61 NRC 365, 375 n.26 (2005) (“We recognize, of course, that guidance documents do not have the force and effect of law. Nonetheless, guidance is at least implicitly endorsed by the Commission and therefore is entitled to correspondingly special weight”) (citations and internal quotation marks omitted); *Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264 (2001) (“Where the NRC develops a guidance document to assist in compliance with applicable regulations, it is entitled to special weight”), *petition for review held in abeyance, Devia v. NRC*, 492 F.3d 421 (D.C. Cir. 2007).

<sup>116</sup> *See* Entergy Testimony at A49, 59, 72 (ENT000132).

<sup>117</sup> *See id.* A50, 60.

local communities has not changed significantly since Entergy started making these payments after purchasing the units in 2000 to 2001.<sup>118</sup>

Mr. Cleary then explains that, consistent with NRC guidance, the FSEIS bases its conclusion on possible socioeconomic impacts on the offsite land use evaluation, as well as the evaluation of other socioeconomic issues (*e.g.*, public services, aesthetic impacts), and concludes that license renewal socioeconomic impacts would be SMALL.<sup>119</sup>

With regard to the no-action alternative, land use impacts would not be significant because shutting down the plant is expected to result in few changes to local land use, and transition to alternate uses is expected over an extended timeframe.<sup>120</sup> As for other socioeconomic impacts, Mr. Cleary explains that local communities would no longer benefit from the positive economic impacts resulting from Indian Point operations, including PILOT and tax revenue. As Mr. Cleary notes, the FSEIS notes that a report by a Westchester County consultant finds that shutdown of IP2 and IP3 might result in increased property values, which might increase tax revenues.<sup>121</sup> Ultimately, however, the FSEIS finds that because Entergy's PILOT and other taxes account for a significant portion of revenues for these communities, helping to provide important public and community services, revenue losses would likely be SMALL to MODERATE (with MODERATE effects felt for the Hendrick Hudson Central School District, the Village of Buchanan, the Town of Cortlandt, and the Verplanck Fire District due to impacts resulting from loss of revenue).<sup>122</sup>

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<sup>118</sup> *See id.* at A51, 61.

<sup>119</sup> *See id.* at A65, 72.

<sup>120</sup> *See id.* at A69, 72.

<sup>121</sup> *See id.* at A57, 70.

<sup>122</sup> *See id.*

In summary, Mr. Cleary demonstrates that the analysis and conclusions reached in the FSEIS are adequate, reasonable, and consistent with the GEIS and NUREG-1555, Supplement 1. Any challenges to a review that is consistent with Staff guidance that has been implicitly endorsed by the Commission must be specifically and substantially supported in order to overcome the special weight accorded to such documents.<sup>123</sup> As discussed in the remainder of this Statement, NYS has not done so here.

### **3. NYS's Postulated Changes in Property Values Are Not Directly Related to Physical Environmental Impacts**

In Section VII.B of the testimony, Dr. Tolley explains that in published, peer-reviewed journal articles, economic researchers frequently cite public perception of risk and fear of nuclear power as the potential cause for nuclear power plant property value impacts, if such impacts do exist.<sup>124</sup> Thus, Dr. Tolley further explains that although economic modeling can detect an adverse property value impact finding, this does not mean that such a property value impact is the result of a physical change to the environment, rather than public perception.<sup>125</sup> Moreover, economists readily acknowledge that real estate preferences may be shaped by factors completely unrelated to physical environmental impacts.<sup>126</sup> Simply put, some people may not like living near certain types of facilities for reasons unrelated to physical changes to the environment that those facilities cause.<sup>127</sup>

This is particularly important given that the Board recognized that NEPA does not require consideration of property values impacts if such impacts lack a “reasonably close causal

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<sup>123</sup> See *Seabrook*, CLI-12-05, slip op. at 16 n.78.

<sup>124</sup> Entergy Testimony at A94 (ENT000132).

<sup>125</sup> See *id.*

<sup>126</sup> See *id.*

<sup>127</sup> *Id.*

relationship” to physical environmental impacts.<sup>128</sup> Based on the record before the Board, NEPA does not require any further consideration of property value impacts because NYS has not demonstrated a “reasonably close causal relationship” whereby changes to the physical environment resulting from either license renewal or the no-action alternative cause an alleged property value impact.<sup>129</sup> In fact, beyond vague and unsupported assertions, NYS has not provided any evidence demonstrating that the alleged impact on nearby properties that supposedly flows from the no-action alternative is interrelated with *any* physical impact.

Admittedly, Dr. Sheppard asserts that the “presence” of Indian Point impacts property values. But other than vague references to “external factors” and labeling the plant a “nuisance and disamenity,” it is unclear what particular attribute or attributes of Indian Point Dr. Sheppard believes cause these alleged lower property values (other than the legally irrelevant “public aversion” factor discussed below) or why they would be eliminated under the no-action alternative.<sup>130</sup> Over the entire course of this proceeding, the only place NYS provided any explicit indication of the potential for physical environmental impacts to effect property values was in its Summary Disposition Response.<sup>131</sup> As noted above, NYS argued that noise, aesthetics, and groundwater impacts discussed in the DSEIS qualified as physical environmental impacts that caused the alleged adverse property value impacts.<sup>132</sup> The FSEIS, however, found

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<sup>128</sup> Apr. 22, 2010 Order at 12-13.

<sup>129</sup> Apr. 22, 2010 Order at 12.

<sup>130</sup> Sheppard Testimony at 8 (NYSR00224); 2010 Sheppard Report at 2 (NYS000228).

<sup>131</sup> See NYS Summary Disposition Response at 7-8 (claiming that the “direct effects are substantial” because “Indian Point can be seen from Hudson River and Village of Buchanan,” the “superheater stack for IP1; and IP2 and IP3 buildings; and “IP reactor containment structures ‘dominate the local landscape and can be seen from the Hudson River;” “noise from units is ‘detectable off site;” and that “tritium, strontium, cesium and nickel, are leaking into groundwater and reaching Hudson River”) (citations omitted).

<sup>132</sup> See *id.*

that all such impacts are SMALL.<sup>133</sup> NYS and Dr. Sheppard do not cite or otherwise challenge those conclusions in testimony.

Instead, as Dr. Tolley points out, Dr. Sheppard cites to prior hedonic studies involving nuclear power plants that suggest that any impacts on property values from the presence of nuclear power plants is the result of risk and public aversion to nuclear power rather than any physical impacts to the environment.<sup>134</sup> Thus, the very studies Dr. Sheppard relies upon suggest that any nuclear power plant impacts on property values are the result of risk and public aversion to nuclear power rather than any physical impacts to the environment.<sup>135</sup> Accordingly, neither NYS nor its expert has met their burden under NEPA to establish the necessary causal link from effects on the physical environment to the purported adverse property value impacts. Simply put, “the threshold requirement of a primary impact on the physical environment is missing.”<sup>136</sup>

In an apparent attempt to cure this fundamental deficiency, NYS has attempted to weave in a physical environmental impact by pointing to supposed spent fuel storage-related impacts.<sup>137</sup> Nonetheless, the Board has made clear that “any impact of spent fuel alone need not be given any role in assessment of property values.”<sup>138</sup> Accordingly, the FSEIS need not consider NYS’s property value claims because NYS failed to establish a “reasonably close causal relationship” between any such property values impacts and physical environmental impacts.

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<sup>133</sup> See FSEIS at 4-6, 4-43, 4-69 (NYS00133B).

<sup>134</sup> See Entergy Testimony at A111 (ENT000132).

<sup>135</sup> *Id.*

<sup>136</sup> *Olmstead*, 606 F. Supp. at 974; see also *Ashley Creek Phosphate Co. v. Norton*, 420 F.3d 934, 943 (9th Cir. 2005) (holding that nothing in NEPA “suggests that an EIS must address an economic concern that is not tethered to the environment”).

<sup>137</sup> NYS Statement of Position at 23-24 (NYS000223); see also December 2011 Sheppard Report at 1 (NYSR00231).

<sup>138</sup> Licensing Board Memorandum and Order (Granting Entergy’s Request for Clarification) at 4 (Aug. 10, 2011) (unpublished).

#### 4. Future Positive Offsite Land Use Impacts Are Remote and Speculative

In Section VII.A of the testimony, Entergy's witnesses explain why, even assuming that property value impacts will occur and that those property value impacts are sufficiently caused by physical effects to be recognized under NEPA, NYS and Dr. Sheppard still are incorrect to equate property value impacts with offsite land use impacts.<sup>139</sup> Instead, a more appropriate method to evaluate potential offsite land use impacts would consider historic land use patterns, current land use regulations and zoning ordinances, tax rates and incentives, population growth trends, and pending and proposed development plans.<sup>140</sup> Mr. Cleary further explains that a review of the Indian Point-specific case study included in the GEIS, in conjunction with more recent information in local land use plans, allows for such an evaluation. As he demonstrates, such an evaluation belies NYS's claims that significant adverse offsite land use impacts would somehow disappear under the no-action alternative.<sup>141</sup>

Specifically, as Entergy's witnesses further explain, even if property values did change as a result of the no-action alternative, a number of intervening steps would be necessary for those changes to result in significant changes to offsite land use.<sup>142</sup> These intervening steps would include significant alterations to the current industrial land use pattern that has dominated development along the Hudson River in Buchanan for decades.<sup>143</sup> Because the industrial land use pattern is well-established, and local regulatory controls are in place to guide land use

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<sup>139</sup> See Entergy Testimony § VIII (ENT000132).

<sup>140</sup> *Id.* at A74, 109.

<sup>141</sup> See *id.* at A75.

<sup>142</sup> *Id.* at A86.

<sup>143</sup> *Id.*

development, there is no reason to believe that denial of the IP2 and IP3 license renewal application could cause such significant changes.<sup>144</sup>

Furthermore, Mr. Cleary concludes that for significant offsite land use changes to occur, numerous uncertain future steps would have to take place, including zoning changes, shutting down other nearby industrial facilities along the Hudson River, and then developing the surrounding properties.<sup>145</sup> However, current land use plans anticipate only minor long-term shorefront zoning changes, making any such long-term, significant future changes highly speculative.<sup>146</sup> Therefore, even assuming for the sake of argument that property values would increase as a result of the no-action alternative, there would be no subsequent significant land use changes.<sup>147</sup>

Entergy's witnesses also explain that NYS has provided no details about what type of specific new development would take place if IP2 and IP3 shut down, making it essentially impossible to assess any hypothetical subsequent future changes.<sup>148</sup> Assessing any potential land use changes under the no-action alternative is made all the more impractical given that such changes would not occur, if they occur at all, until an unspecified remote future time after Indian Point is decommissioned.<sup>149</sup> Given the speculative and unreliable nature of making assumptions about future land use changes many decades from now, the FSEIS appropriately concludes that offsite land use changes would not be significant, declining to hypothesize about possible

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<sup>144</sup> *Id.* at A86.

<sup>145</sup> *Id.* at A87.

<sup>146</sup> *Id.* at A88; *see also* Village of Buchanan, Comprehensive Master Plan at IIB-11 (Mar. 2005) (ENT000137).

<sup>147</sup> Entergy Testimony at A86 (ENT000132).

<sup>148</sup> *Id.* at A89.

<sup>149</sup> *Id.*

unlikely future land use changes resulting from yet-uncertain steps by unknown third parties.<sup>150</sup>

As noted above, NEPA does not require considerations of remote and speculative impacts, including future land use development that is “unlikely or difficult to anticipate.”<sup>151</sup>

Accordingly, NYS has not demonstrated that its predicted positive LARGE offsite land use impacts of the no-action alternative are anything but remote and speculative.<sup>152</sup>

The Commission’s *USEC* decision is directly on point.<sup>153</sup> In that case, the petitioner argued that the no-action alternative should have considered the beneficial job-creation impacts that allegedly would result if the proposed uranium enrichment facility site was used for some other alternative industrial development.<sup>154</sup> The Commission’s rationale rejecting that contention applies equally to the merits of NYS-17B:

[Petitioner’s] contention puts forth the idea of an “industrial heaven” employing thousands at the . . . site if the [facility] license is denied and if the site “were cleaned up.” Yet not only did the contention lack support for this claim, as the Board found, but the “no-action” alternative “is most simply viewed as maintaining the *status quo*.” For the “industrial heaven” idea to become reality would involve numerous future, yet-uncertain steps by unknown third parties.<sup>155</sup>

NYS has provided no evidence that the current “*status quo*” industrial land use pattern along the Hudson River in Buchanan is likely to be converted to an “attractive riverfront development” or some other “beneficial” use simply as a result of the no-action alternative.<sup>156</sup>

And whether Dr. Sheppard’s analysis still assumes that an “attractive riverfront development”

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<sup>150</sup> *Id.*

<sup>151</sup> *Rendell*, 210 F.3d at 182.

<sup>152</sup> *See* Apr. 22, 2010 Order at 12.

<sup>153</sup> *See USEC (Am. Centrifuge Plant)*, CLI-06-10, 63 NRC 451, 466-69 (2006).

<sup>154</sup> *Id.* at 467.

<sup>155</sup> *Id.* at 468 (citations omitted).

<sup>156</sup> *See* NYS Petition at 168.

would replace Indian Point, historic land use patterns and current local land use plans make clear any such long-term, significant future changes are remote and speculative.<sup>157</sup>

**5. The GEIS Demonstrates IP2 and IP3 Have Not and Will Not Result in Adverse Property Value Impacts**

In Section VII.A of Entergy’s testimony, Mr. Cleary discusses the GEIS evaluation of housing, including impacts to property values (referred to as housing marketability impacts), which is based on, among other things, extensive interviews with local realtors and planners.<sup>158</sup> He explains that the GEIS finds that at all case study sites—including Indian Point—only small impacts on housing value and marketability are projected during the license renewal term.<sup>159</sup> In fact with regard to Indian Point, local realtors generally agree that housing values in communities neighboring the plant have not been depressed because of the presence of Indian Point, and that homes in the immediate area are moderately priced and sell very fast.<sup>160</sup> Thus, in light of the GEIS finding that there are currently no adverse property value impacts associated with Indian Point, the no-action alternative will not result in significant positive property value impacts.<sup>161</sup> And because there are no significant property value impacts expected, there can be no property value-driven land use impacts.<sup>162</sup>

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<sup>157</sup> See Entergy Testimony at A88-89 (ENT000132); see also Village of Buchanan, Comprehensive Master Plan (Mar. 2005) (ENT000137); Town of Cortlandt, Comprehensive Master Plan (July 2004) (ENT000138); Westchester County, Context for County and Municipal Planning in Westchester County and Policies to Guide County Planning (Jan. 2010) (ENT000139).

<sup>158</sup> See Entergy Testimony at A43 (ENT000132).

<sup>159</sup> See *id.* at A43, 81-82.

<sup>160</sup> *Id.* at A81.

<sup>161</sup> See *id.* at A86.

<sup>162</sup> See *id.* at A85-86.

**6. Economic Modeling Also Demonstrates IP2 and IP3 Have Not and Will Not Result in Adverse Property Value Impacts**

In Section VII.B of Entergy’s testimony, Dr. Tolley explains that hedonic price modeling is the accepted, widely-used method for determining and quantifying property value impacts.<sup>163</sup> This approach allows researchers to control for housing characteristics that impact property values such as the number of rooms, total square footage, lot size, and proximity to amenities (such as parks and high-quality schools) or remoteness of disamenities (such as noisy freeways or polluting facilities).<sup>164</sup> Using such an approach and controlling for these other variables, one would expect to find an increase in property values with increasing distance from a nuclear plant if there was in fact an adverse property value impact.<sup>165</sup>

Dr. Tolley explains that there have been a number of published, peer-reviewed hedonic site-specific studies of the property value effects of nuclear power generation facilities.<sup>166</sup> Studies focused on a reasonable geographic area around specific nuclear power plants are the most relevant and applicable for assessing the likelihood for property value impacts from Indian Point, and the weight of the evidence from these studies indicates that there is no reliable basis for concluding that proximity to nuclear power plants causes lower property values.<sup>167</sup> Thus, Dr. Tolley finds it unlikely that Indian Point currently has any significant adverse impact on property values.<sup>168</sup>

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<sup>163</sup> *Id.* at A91-92.

<sup>164</sup> *Id.* at A92.

<sup>165</sup> *Id.*

<sup>166</sup> *See id.* at A93-95.

<sup>167</sup> *See id.* at A95-98.

<sup>168</sup> *Id.* at A98.

For purposes of this proceeding, Dr. Tolley conducted an original econometric hedonic pricing study to determine the potential for current impacts on property values from Indian Point, entitled, “Property Value Effects of Indian Point License Renewal” (ENT000144).<sup>169</sup> His results are clear—proximity to the Indian Point site is not a disamenity and, thus, Indian Point does not adversely impact property values.<sup>170</sup> Dr. Tolley’s hedonic regression results are both reliable and reasonable.<sup>171</sup>

In addition, as discussed in Section VIII.D of the testimony, after correcting for obvious data errors, Dr. Tolley used underlying assessment record data from the December 2011 Sheppard Report to perform an additional hedonic analysis (*i.e.*, using Dr. Sheppard’s own data).<sup>172</sup> Dr. Tolley explains that the results do not support Dr. Sheppard’s claim that Indian Point depresses property values.<sup>173</sup> Thus, given the lack of discernible adverse property value effects, the no-action alternative would not cause property value-driven offsite land use impacts.<sup>174</sup>

In summary as Dr. Tolley explains, the two best pieces of evidence available on the effects of Indian Point on property values are his two hedonic regressions.<sup>175</sup> Both regression results show that there is no scientific basis to establish that Indian Point depresses property values.<sup>176</sup>

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<sup>169</sup> See *id.* at A99-107; Tolley Report (ENT000144).

<sup>170</sup> See Entergy Testimony at A103 (ENT000132).

<sup>171</sup> *Id.* at A107.

<sup>172</sup> See *id.* at A143-44.

<sup>173</sup> *Id.* at A162.

<sup>174</sup> *Id.* at A107.

<sup>175</sup> *Id.* at A162.

<sup>176</sup> *Id.*

## 7. Dr. Sheppard's Property Value Impact Evaluations Are Unreasonable

As noted previously, Dr. Sheppard has prepared various, sometimes overlapping but largely divergent, reports and declarations in support of his positions. As discussed below, Entergy's witnesses demonstrate each of Dr. Sheppard's approaches are invalid, unreliable, and do not affect the FSEIS no-action alternative conclusions.

### a. The 2007 Sheppard Report Is Unreasonable

Adapting a coefficient from a 1974 hedonic study by Glenn Blomquist involving an old Illinois coal plant,<sup>177</sup> Dr. Sheppard calculates that—but for the presence of the Indian Point facility and its spent fuel—property values within 2 miles of the site would be approximately \$576 million higher (*i.e.*, about 13 percent higher).<sup>178</sup> As Dr. Tolley explains, the basis for the \$576 million impact in the 2007 Sheppard Report is seriously flawed for three primary reasons: (1) based on prior economic assessments of other nuclear power plants, Dr. Sheppard should have applied a zero property value effect rather than the negative property value effect derived from the coal plant study; (2) even if the coal plant study had been applicable, which it is not, Dr. Sheppard overestimates Indian Point's effects on rental properties; and (3) Dr. Sheppard uses abnormally high housing prices, which overstates property value effects.<sup>179</sup>

The first of these errors was most serious, because the direct evidence from several more recent studies from actual nuclear sites (and Dr. Tolley's own direct estimate) indicates that the *most likely estimate is zero*.<sup>180</sup> Instead, Dr. Sheppard inappropriately justifies his reliance on the 1974 Blomquist coal plant study by citing to another study by David Clark and Leslie Nieves,

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<sup>177</sup> G. Blomquist, *The Effect of Electric Utility Power Plant Location on Area Property Value*, 50 Land Econ. 97 (Feb. 1974) (NYS000234).

<sup>178</sup> See 2007 Sheppard Report at 6 (NYS000226).

<sup>179</sup> Entergy Testimony at A113 (ENT000132).

<sup>180</sup> *Id.* at A114.

which Dr. Sheppard claims found that nuclear power plant impacts are larger than coal-fired plant impacts.<sup>181</sup> Dr. Tolley explains that the Clark and Nieves study cannot provide a valid basis to apply the Blomquist coal plant study to Indian Point because Clark and Nieves focused on broad geographic areas rather than areas associated with any specific nuclear power plants, and produced inconsistent and unreliable results.<sup>182</sup>

**b. The January 2011 Sheppard Report Is Unreasonable**

In his January 2011 Report, Dr. Sheppard uses the \$576 million property value impact estimation from his 2007 Report as the starting point for his analysis.<sup>183</sup> Using this value as the assumed current property value impact, Dr. Sheppard calculates the discounted present value, using a 4 percent discount rate, for three different license renewal scenarios relative to a no-action baseline scenario in which the IP2 and IP3 operating licenses are not renewed.<sup>184</sup> In this evaluation, Dr. Sheppard also considers impacts to: (1) property values associated with distance from the site; (2) property tax revenues caused by property value impacts; and (3) Entergy's PILOT and other tax payments.<sup>185</sup> Based on these factors, the 2011 Sheppard Report concludes that, relative to the baseline no-action alternative, the four license renewal scenarios impose a cost on the local communities whose present value is between \$169 million and \$238 million.<sup>186</sup>

As Entergy's experts explain, the conclusions in the January 2011 Sheppard Report are completely invalid because this report begins with the unsupportable \$576 million impact

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<sup>181</sup> See 2007 Sheppard Report at 3 (NYS000226) (citing D. Clark and L. Nieves, *An Interregional Hedonic Analysis of Noxious Facility Impacts on Local Wages and Property Values*, J. of Env't'l Econ. & Mgmt., Vol. 27 (Nov. 1994) (NYS000235)).

<sup>182</sup> See Entergy Testimony at A96, 115 (ENT000132).

<sup>183</sup> See January 2011 Sheppard Report at 1 (NYS000230).

<sup>184</sup> See *id.* at 3-5.

<sup>185</sup> See *id.* at 2.

<sup>186</sup> See *id.* at 6.

derived from the 2007 Sheppard Report.<sup>187</sup> Furthermore, Dr. Sheppard includes unreasonable and unexplained assumptions regarding: (1) the expected length of the decommissioning period; (2) the discounting of future events; and (3) the level of PILOT payments, property taxes, and other taxes during the license renewal period and after IP2 and IP3 cease operations.<sup>188</sup>

As Mr. Reamer explains, the various assumed decommissioning timeframes in the January 2011 Sheppard Report are unreasonable because Dr. Sheppard does not appropriately account for NRC regulations or Entergy's decommissioning plans, both of which allow for up to a 60-year decommissioning period.<sup>189</sup> Notwithstanding this, Dr. Sheppard applies a 32-year decommissioning period for the no-action alternative, but without justification includes license renewal decommissioning scenarios well in excess of 60 years.<sup>190</sup> These erroneous assumptions bias Dr. Sheppard's calculations and inflate the alleged adverse impact of license renewal.<sup>191</sup>

Dr. Tolley also explains that people apply limited horizons when they make future decisions because uncertainty increases as increasingly distant years are contemplated.<sup>192</sup> Beyond some point, the most realistic decision-making procedure is to not count far-off events at all, but rather to focus instead on the more important near-term events that will affect well-being within buyers' lifetimes.<sup>193</sup> A 25-year cutoff may be a generous estimate of the horizon within which future events are of concern.<sup>194</sup> But even if one assumed (contrary to the conclusions of

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<sup>187</sup> Entergy Testimony at A120 (ENT000132).

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

<sup>189</sup> *See id.* at A122.

<sup>190</sup> *See id.*

<sup>191</sup> *See id.* at A122.

<sup>192</sup> *See id.* at A123-24.

<sup>193</sup> *See id.*

<sup>194</sup> *Id.* at A124.

Dr. Tolley's and previous nuclear-related studies) that there were in fact a property value effect leading to a property value rebound after decommissioning, the rebound may not occur at until 2073.<sup>195</sup> This is far beyond a 25-year cutoff and so realistically would not be expected to influence current property values at all.<sup>196</sup>

Putting aside that a time horizon cut-off is necessary to a sound analysis, even if such a cut-off were ignored, Dr. Tolley demonstrates that Dr. Sheppard's 4 percent discount rate is far too low to calculate the alleged present value Indian Point property value impact.<sup>197</sup> Although a more realistic rate would be 18 percent, Dr. Tolley applies a 7 percent discount rate and an assumed 60-year decommissioning timeframe to show that, even if one assumes Dr. Sheppard's \$576 property value impact, the difference between the no-action alternative and license renewal scenarios is only \$9.86 million—far less than Dr. Sheppard's estimates of between \$169 million and \$238 million.<sup>198</sup>

As Entergy's witnesses further demonstrate, Dr. Sheppard's estimate also does not include reasonable assumptions about PILOT payments.<sup>199</sup> Dr. Sheppard unreasonably assumes that PILOT payments would be the same during license renewal and under the no-action alternative.<sup>200</sup> Messrs. Cleary and Reamer, however, show that although PILOT and tax payments would remain relatively unchanged from current levels under license renewal, after current operations cease and electricity is no longer being generated, it is unlikely that PILOT

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<sup>195</sup> *Id.*

<sup>196</sup> *Id.*

<sup>197</sup> *Id.* at A125.

<sup>198</sup> *Id.* at A129.

<sup>199</sup> *See id.* at A130.

<sup>200</sup> January 2011 Sheppard Report at 4 (NYS000230).

payments, property taxes, and other taxes would remain at their current levels and would most likely decrease to approximately 18 percent of what they are now.<sup>201</sup>

Correcting Dr. Sheppard's assumptions about PILOT payments, and again using an assumed 60-year decommissioning period and 7 percent discount rate, license renewal has a net positive impact on area residents.<sup>202</sup> In other words, even starting with Dr. Sheppard's incorrect assumption of a \$576 million adverse impact, the no-action alternative results in a net present value loss of \$172 million to local communities surrounding Indian Point.<sup>203</sup>

**c. The December 2011 Sheppard Report Is Unreasonable and Riddled With Errors**

In the December 2011 Sheppard Report and prefiled testimony, Dr. Sheppard inexplicably departs from the Blomquist coal plant study that was the cornerstone of his earlier claims that IP2 and IP3 depress property values. In this latest report and in the prefiled testimony, Dr. Sheppard presents a new assessment, which he states is similar "in spirit" to "event studies" that are applied to the values of stocks and other financial assets.<sup>204</sup> Based on this analysis, he now predicts a \$1.07 billion positive impact from the no-action alternative—more than four times his most recent prior estimate.<sup>205</sup>

As an initial matter, it bears emphasis that Dr. Sheppard does not predict when his \$1.07 billion recovery would happen, apply a horizon cut-off or discount rate to estimate the difference between license renewal and the no-action alternative, or account for PILOT or property tax payments as was done in his January 2011 Report. Dr. Tolley, however, shows that,

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<sup>201</sup> Entergy Testimony at A131 (ENT000132).

<sup>202</sup> *Id.* at A132.

<sup>203</sup> *Id.*

<sup>204</sup> December 2011 Sheppard Report at 3 (NYSR00231).

<sup>205</sup> *See* December 2011 Sheppard Report at 12 (NYS0000231).

including the correct assumptions about differences in PILOT payments and again using a 60-year decommissioning period and a conservative 7 percent discount rate, license renewal has a net positive impact on area residents.<sup>206</sup>

Dr. Tolley also shows that Dr. Sheppard has taken an unprecedented approach for estimating property value impacts that is unreasonable for multiple, independent reasons.<sup>207</sup> Specifically, the December 2011 Sheppard Report: (1) contains an extraordinary number of data errors; (2) fails to use a realistic “control” group; (3) incorrectly defines the period of 1974 to 1976 as the “event” of interest; (4) violates a number of important methodological requirements for a valid event study; and (5) inexplicably avoids the well-established hedonic approach.<sup>208</sup>

First, Dr. Sheppard’s underlying data has an extraordinarily high error rate. Dr. Tolley found that more than 25 percent of Dr. Sheppard’s observations should not have been included in the sample (*e.g.*, sales of vacant lots, sales between family members).<sup>209</sup> In the so-called “treatment group,” the error rate was even higher—more than 50 percent of the sample should have been excluded.<sup>210</sup> Given such an extraordinarily high error rate, Dr. Tolley explains that it is inappropriate to place any reliance on Dr. Sheppard’s analysis.<sup>211</sup>

Second, Dr. Sheppard failed to use a realistic “control group.”<sup>212</sup> The “control” group contains a significant number of observations during the 1999 to 2009 period, when the housing

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<sup>206</sup> Entergy Testimony at A132 (ENT000132).

<sup>207</sup> *Id.* at A142.

<sup>208</sup> *Id.*

<sup>209</sup> *Id.* at A144.

<sup>210</sup> *Id.*

<sup>211</sup> *Id.*

<sup>212</sup> *Id.* at A142, 145-50.

bubble affecting all parts of the U.S. economy led to unprecedented property values increases.<sup>213</sup> Specifically, the “control group” observations are much more heavily weighted toward the post-1999 period than the “treatment group” observations.<sup>214</sup> A similar problem exists with regard to the 1984 to 1987 housing surge.<sup>215</sup> Thus, even if holding a property during 1974 to 1976 had no effect whatsoever on returns, the average rate of return for the “control group” would have been higher than for the “treatment group.”<sup>216</sup> By appropriately removing sales from 1984 to 1987 and 1999 to 2009, Dr. Tolley demonstrates that Dr. Sheppard’s hypothesis is incorrect as the rate of return for the “control group” is actually *less* than for the “treatment group.”<sup>217</sup> This result, by itself, demonstrates the unreliability of Dr. Sheppard’s method.

Third, Dr. Sheppard’s choice of commencement of IP2 and IP3 operations as the “event” causing a possible decline in property values is also flawed.<sup>218</sup> Dr. Tolley explains that economists universally recognize that prices are affected by news events.<sup>219</sup> If IP2 and IP3 operations were expected to have a disamenity effect, then buyers would have taken account of the effect when plans for the facilities were first reported and construction commenced in the 1960s, years before the 1974 to 1976 period; *i.e.*, there would have been anticipatory effects prior to the completion of construction.<sup>220</sup>

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<sup>213</sup> *Id.* at 146.

<sup>214</sup> *Id.* at A148.

<sup>215</sup> *See id.* at A149.

<sup>216</sup> *See id.* at A148.

<sup>217</sup> *See id.* at A149-50.

<sup>218</sup> *See id.* at A151.

<sup>219</sup> *Id.* at A152.

<sup>220</sup> *Id.*

Fourth, Dr. Sheppard violates other important methodological requirements for a valid event study.<sup>221</sup> Dr. Tolley explains event studies are only reliable when the event occupies a very small time window and is unambiguously defined.<sup>222</sup> Failure to do so makes the results unreliable because of the potential for confounding information that can distort or camouflage the actual impact of interest.<sup>223</sup> Whereas event studies typically use a one-day sample period, Dr. Sheppard's is far too long and spans over 2 years.<sup>224</sup> Dr. Sheppard fails to account for or even mention confounding events such as the oil embargo and the associated 1973 to 1975 recession, as well as the many different socioeconomic factors unrelated to the presence of Indian Point that could have affected the area's rate of return to housing.<sup>225</sup> Thus, Dr. Sheppard's unprecedented methodology is unreliable for these reasons as well.<sup>226</sup>

Finally, Dr. Sheppard fails to perform a hedonic regression analysis, the approach used authoritatively in other studies on nuclear plant property value impacts.<sup>227</sup> Dr. Tolley explains that Dr. Sheppard's own data contain sufficient information for a hedonic regression analysis.<sup>228</sup> In fact, as discussed above in Section IV.B.5, Dr. Tolley used Dr. Sheppard's own data to perform such an analysis and demonstrates that Indian Point has no discernible effect on property values.<sup>229</sup> Dr. Sheppard cannot claim that he was unaware or unable to perform such an

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<sup>221</sup> *Id.* at A154.

<sup>222</sup> *Id.*

<sup>223</sup> *See id.* at A155.

<sup>224</sup> *See id.* at A145-46, 157-58.

<sup>225</sup> *Id.* at A158.

<sup>226</sup> *Id.*

<sup>227</sup> *Id.* at A159.

<sup>228</sup> *See id.* at A159-60.

<sup>229</sup> *See id.* at A161-62.

evaluation, as he cites to a number of hedonic studies<sup>230</sup> and has written extensively on this approach.<sup>231</sup> In fact, Dr. Sheppard even cites to a thesis by one of his undergraduate students that uses hedonic modeling to study property value impacts associated with another nuclear plant.<sup>232</sup> Thus, Dr. Sheppard inexplicitly ignored the standard, well-accepted approach for studying property value impacts and instead undertakes an unreliable and unprecedented approach.

## V. CONCLUSION

For the foregoing reasons, the FSEIS assessment of offsite land use impacts resulting from the no-action alternative is consistent with NRC guidance, 10 C.F.R. Part 51 regulations, and NEPA. NYS fails to establish NEPA requires any further consideration of property value impacts beyond that already contained in the FSEIS. Nor has NYS substantiated its allegations of significant offsite land use or property values impacts with reasonable and reliable evidence as it is required to do. Accordingly, Entergy respectfully requests that the Board resolve Contention NYS-17B in favor of Entergy and the NRC Staff.

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<sup>230</sup> See, e.g., D. Clark, L. Michelbrink, T. Allison, and W. Metz, *Nuclear Power Plants and Residential Housing Prices*, 28 *Growth & Change* 496 (Fall 1997) (NYS000236); G. Blomquist, *The Effect of Electric Utility Power Plant Location on Area Property Value*, 50 *Land Econ.* 97 (Feb. 1974) (NYS000234).

<sup>231</sup> See *Curriculum Vita*, Stephen Charles Sheppard at 2, 4, 6 (Sept. 23, 2011) (NYS000208)

<sup>232</sup> December 2011 Sheppard Report at 12-13 (citing B. Prest, *Measuring the Externalities of Nuclear Power: A Hedonic Study* (unpublished thesis, Williams College) (2009) (NYS000232)). Although Dr. Tolley explains that particular study has problems that make it unreliable, it nonetheless attempts to use the appropriate, accepted methodology. See Tolley Report at 49.

Respectfully submitted,

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Dated in Washington, D.C.  
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**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 28, 2012	

**CERTIFICATE OF SERVICE**

I certify that, on March 28, 2012, copies of Entergy's Statement of Position, Testimony, and associated exhibits on Contention NYS-17B were served electronically with the Electronic Information Exchange on the following recipients:

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