

October 9, 2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF'S TESTIMONY OF
JEFFREY J. RIKHOFF, ANDREW L. STUYVENBERG, AND JOHN P. BOSKA
CONCERNING CONTENTIONS NYS-17, 17A and 17B (LAND USE)

Q.1. Please state your names, occupations, and by whom you are employed.

A.1. My name is Jeffrey J. Rikhoff.¹ I am a Senior Environmental Scientist/Socioeconomist in the Division of License Renewal, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, in Washington, D.C. I have been employed by the NRC for over five years. My statement of qualifications is attached hereto (NRC000082).

My name is Andrew L. Stuyvenberg. I am employed as a project manager in the Division of License Renewal in the Office of Nuclear Reactor Regulation. I also serve as a subject-matter expert in the area of energy alternatives. A statement of my professional qualifications is attached hereto (NRC000083).

My name is John P. Boska. I am employed as a senior project manager in the Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. I have been employed by the NRC for about 12 years. A statement of

¹ In this testimony, answers provided by specific witnesses are identified by denoting those witnesses' initials at the beginning of the answer. Where an answer is provided by all witnesses, the witnesses' initials are not provided.

my professional qualification is attached hereto (NRC000084).

Q.2. Please describe the nature of your current responsibilities.

A.2(a). (JJR) I conduct land use, socioeconomic, cultural resource, and environmental justice impact assessments in support of license renewal environmental reviews. I have been working on National Environmental Policy Act (NEPA) environmental reviews for 23 years. Prior to working for the NRC, I worked for over 17 years as a government contractor preparing environmental NEPA documentation for the U.S. Department of Energy (DOE) and Department of Defense (DoD). I specialize in preparing environmental impact statements (EISs) and environmental assessments (EAs); and conducting cost analyses; socioeconomics and environmental justice impact analyses; comprehensive land-use and facility development planning studies; regulatory review and permitting studies; and consultations with American Indian tribal representatives. I have been conducting environmental justice impact assessments for the Federal government for the past 11 years.

A.2(b). (ALS) I currently provide analyses of potential alternatives to license renewal for NRC environmental impact statements. To date, I have performed, overseen, or reviewed alternatives analyses in nineteen NRC staff environmental impact statements that either have been published or are currently in progress.

I also provide environmental expertise to agency processes, including the update of the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, issues identified by the Fukushima Site Team, and proposed actions by the Japan Lessons-Learned Directorate.

Recently, I have worked with other NRC staff members to develop guidance on how to address greenhouse gas impacts in agency environmental impact statements, how to consider terrorism in reviews of projects located in the territory of the 9th Circuit U.S. Court of Appeals, and how to address Severe Accident Mitigation Alternatives (SAMA) reviews at the license-

renewal stage for facilities that completed a design-stage SAMA review. I have also overseen the need-for-power analysis for the proposed operation of Watts Bar Unit 2. Finally, I am a credentialed agency meeting facilitator, a capacity in which I assist agency staff with planning and facilitating public and internal meetings.

Prior to joining the NRC staff, I worked for the North Carolina Sustainable Energy Association (NCSEA) – a 501(c)(3) clean-energy advocacy organization – where I coordinated the organization’s intervention in an electric-utility integrated-planning process. In that process, we alleged that North Carolina’s utilities had inadequately considered demand-side management approaches to reducing power demand and had unreasonably excluded renewable energy from their plans. While working for NCSEA, I also initiated a new proceeding at the North Carolina Utilities Commission in which NCSEA alleged that one utility was unreasonably pursuing new baseload coal capacity when less-expensive demand-side resources were available.

I have a Masters Degree in Environmental Management in Environmental Economics and Policy. My coursework included environmental and natural resource economics, statistical methods for surveys, econometrics, land-use policy, and financial evaluation of public sector expenditures.

A.2(c). (JPB) I primarily manage technical and regulatory reviews for the licensing actions associated with my assigned nuclear power reactor. From May 2005 through March 2012, I was assigned as the licensing project manager for Indian Point Nuclear Generating Unit Nos. 2 and 3. As of April 9, I will be assigned as the licensing project manager for Oconee Nuclear Station Units 1, 2 and 3. As the licensing project manager for Indian Point, I planned the activities associated with changes to the Indian Point plant license, which included the Technical Specifications, and issued the revisions to the license after receiving the appropriate reviews and approvals. My duties included issuing the NRC review of the Indian Point

decommissioning cost estimate and schedule.

Q.3. Please explain what your duties have been in connection with the Staff's review of the license renewal application (LRA) submitted by Entergy Nuclear Operations, Inc. ("Entergy" or "Applicant") for Indian Point Nuclear Generating Units 2 and 3 ("IP2" and "IP3, or "Indian Point").

A.3(a). (JJR) Since approximately May 2007 until today, I have served as Senior Environmental Scientist/Socioeconomist in the Division of License Renewal. As part of my responsibilities, I served as the principal reviewer of the socioeconomic portions of Entergy's environmental report for the IP2/IP3 LRA. In this regard, I was also responsible for preparing Section 4.4 of the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Final Report," NUREG-1437, Supplement 38, issued on December 3, 2010 ("Final SEIS" or "FSEIS") and the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report," NUREG-1437, Supplement 38, issued on December 22, 2008 ("Draft SEIS" or "DSEIS").

A.3.(b).(ALS) From February of 2008 through October of 2011, I managed the environmental review for the proposed license renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3. I coordinated the preparation and publication of the Indian Point DSEIS and FSEIS. From April 2007 until the FSEIS was published in December of 2010, I was also responsible for the alternatives analysis. In addition, I responded to public comments related to alternatives and need for power. Finally, I am responsible for the analysis of greenhouse gas emissions in Chapter 6 of FSEIS.

A.3(c). (JPB) I have not been directly involved in the review of the LRA for Indian Point. However, personnel involved in the LRA review sometimes consult with me to learn specific details about the Indian Point plant or to learn the current licensing basis in specific areas.

Q.4. What is the purpose of your testimony?

A.4(a). (JJR) The purpose of my testimony is to discuss the Staff's analysis of offsite land use in the DSEIS and the FSEIS and the analysis of housing values in the Generic Environmental Impact Statement.

A.4(b). (ALS) The purpose of my testimony to present the Staff's views regarding the analysis of offsite land use impacts in the No-Action Alternative discussion in the DSEIS and the FSEIS and to discuss deficiencies in the testimony submitted by NYS in support of this contention.

A.4(c). (JPB) The purpose of my testimony is to provide information regarding the schedule of decommissioning activities at Indian Point.

Q.5. Please identify the documents that you have used to prepare your testimony.

A.5(a). (JJR) NUREG-1437, The Generic Environmental Impact Statement for License Renewal of Nuclear Plants (May 1996) ("GEIS") (NYS0000131A to I); the Environmental Report in the License Renewal Application filed on April 23, 2007 by Entergy Nuclear Operations, Inc. for Indian Point Nuclear Generating Units 2 and 3 ("ER"); the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38 regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (December 2008) ("DSEIS") (NYS000132A to D); the Final Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38 regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 (December 2010) ("FSEIS") (NYS000133A to J); Supplement 1 to Regulatory Guide 4.2, Preparation of Supplemental Environmental Reports for Applications To Renew Nuclear Power Plant Operating Licenses (September 2000) ("RG 4.2, S1") (Agencywide Document Access and Management System ("ADAMS") Accession No. ML003710495) (ENT000136); and Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan for Operating License Renewal (October 1999) (NUREG-1555, Supplement 1)

(NYS000220).

A.5(b). (ALS) Levitan and Associates, Inc. 2005, "Indian Point Retirement Options, Replacement Generation, Decommissioning/Spent Fuel Issues, and Local Economic / Rate Impacts", prepared for the County of Westchester and the County of Westchester Public Utility Service Agencies (NYS000056); NRC Information Digest (NUREG-1350), Dataset, Appendix B (NRC000085) and Dataset, Appendix A (NRC000086).

A.5(c). (JPB) Title 10 of the Code of Federal Regulations; Letter from J. Boska, U.S. Nuclear Regulatory Commission, to Vice President, Operations, Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit Nos. 1 and 2 - Safety Evaluation Re: Spent Fuel Management Program And Preliminary Decommissioning Cost Estimate (TAC Nos. ME0020 and ME0021), March 17, 2010 (ADAMS Accession No. ML100280544) (ENT000159) and documents referenced therein; and Letter from J. Boska, U.S. Nuclear Regulatory Commission, letter to Vice President, Operations, Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit No. 3 -Safety Evaluation Re: Spent Fuel Management Program And Preliminary Decommissioning Cost Estimate (TAC No. ME5257), June 22, 2011 (ADAMS Accession No. ML11147A004) (ENT000160) and the documents referenced therein.

Q.6. Have you reviewed the State of New York Initial Statement of Position ("SOP"), Contention NYS-17B?

A.6. Yes.

Q.7. Have you reviewed the Pre-Filed Direct Testimony of Stephen C. Sheppard that accompanied the SOP?

A.7(a). (JJR and AS) Yes.

A.7(b). (JPB) No.

Q.8. Have you reviewed the exhibits Dr. Sheppard identifies on pages 5-6 of his testimony?

A.8(a). (JJR and AS) Yes.

A.8(b). (JPB) No.

Q.9. Are you familiar with Contentions NYS 17, 17A, and 17B?

A.9 (JJR and AS) Yes. Contention NYS 17 states: "The Environmental Report fails to include an analysis of adverse impacts on off-site land use of license renewal and thus erroneously concludes that relicensing of IP2 and IP3 'will have a significant positive economic impact on the communities surrounding the station' (ER section 8.5) and understates the adverse impact on offsite land use (ER sections 4.18.4 and 4.18.5) in violation of 10 C.F.R. Part 51, Subpart A, Appendix B."

Contention NYS 17A states: "The DSEIS fails to address the impacts of the continued operation of IP2 and IP3 for another 20 years on off-site land use, including real estate values in the surrounding area in violation of 10 C.F.R. §§ 51.71(a), 51.71.(d), 51.95(c)(1), and 51.95(c)(4)."

Contention NYS 17B states: "The FSEIS fails to address the impacts of the continued operation of IP2 and IP3 for another 20 years on off-site land use, including real estate values in the surrounding area in violation of 10 C.F.R. §§ 51.71(a), 51.71.(d), 51.95(c)(1), and 51.95(c)(4)."

Q.10. Do you agree with Contentions NYS 17, 17A and 17B?

A.10. (JJR) No. Entergy and the Staff are not required to address the impact of continued operations on real estate values in the area surrounding Indian Point. As discussed in the 1996 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," NUREG-1437, published in May 1996 ("GEIS"), the offsite land use issue only considers the impact of license renewal on the use of offsite land (e.g., the use of the land for agricultural, residential, commercial, or industrial purposes), not its value. The issue is whether continued nuclear power plant operations would cause offsite land use to change. For example, would

nuclear power plant operations during the license renewal term cause agricultural land to be converted to residential use for housing or commercial use for retail services?

Members of the public, environmental interest groups, industry representatives, and other Federal, state, and local governmental agencies assisted the NRC in identifying 92 license renewal environmental (NEPA) issues during the preparation of the 1996 GEIS (see Section 1.5 of the 1996 GEIS). Tax-revenue and population-driven offsite land use impacts during the license renewal term and refurbishment were identified as Category 2 issues needing to be addressed in plant-specific environmental reviews. No other “categories” of offsite land use impacts were identified during this vetting process.

With respect to the impacts of license renewal on the offsite use of the land that Entergy and the Staff are required to address, Entergy adequately addressed those impacts in the ER and the Staff adequately addressed those impacts in the DSEIS and FSEIS.

Q.11. Why is the discussion of offsite land use in the ER adequate?

A.11. (JJR) The ER’s discussion of offsite land use is adequate because it meets the requirements in 10 CFR § 51.53(c)(3)(ii)(I). That regulation states that an applicant must provide an assessment of land use impacts in its ER for license renewal. Specifically, this regulation requires the applicant to assess “the impact of the proposed action [license renewal] on . . . land use . . . within the vicinity of the plant”. Entergy provided an assessment of the impacts of license renewal on land use within the vicinity of the plant in Section 4.18 of the ER.

Regulatory Guide 4.2, Supplement 1 (ENT000136), provides guidance to license renewal applicants on the format and content of the ER, and Section 4.17, Offsite Land Use, describes the information and analysis content of the assessment to be conducted and submitted in the ER with respect to offsite land use impacts. The primary focus of the assessment is on potential population and tax revenue changes resulting from license renewal. Entergy provided this information in section 4.18 of the ER. Accordingly, Entergy’s ER met the

requirements of 10 CFR § 51.53(c)(3)(ii)(I) by providing an assessment of the impacts of license renewal on land use within the vicinity of the plant. The impact assessment was consistent with information and analysis content outlined in RG 4.2, S1, Section 4.17.2.

Q.12. Why is the discussion of offsite land use in the DSEIS adequate?

A.12. (JJR) The discussion of offsite land use in the DSEIS is adequate because it meets the regulatory requirements at 10 CFR § 51.71(d). That regulation describes the requirements for preparing the DSEIS.

Unless excepted in this paragraph or § 51.75, the draft environmental impact statement will include a preliminary analysis that considers and weighs the environmental effects of the proposed action; the environmental impacts of alternatives to the proposed action; and alternatives available for reducing or avoiding adverse environmental effects and consideration of the economic, technical, and other benefits and costs of the proposed action and alternatives and indicate what other interests and considerations of Federal policy, including factors not related to environmental quality if applicable, are relevant to the consideration of environmental effects of the proposed action identified under paragraph (a) of this section. The draft supplemental environmental impact statement prepared at the license renewal stage under § 51.95(c) need not discuss the economic or technical benefits and costs of either the proposed action or alternatives except if benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation . . . The draft supplemental environmental impact statement for license renewal prepared under § 51.95(c) will rely on conclusions as amplified by the supporting information in the GEIS [Generic Environmental Impact Statement] for issues designated as Category 1 in appendix B to subpart A of this part. The draft supplemental environmental impact statement must contain an analysis of those issues identified as Category 2 in appendix B to subpart A of this part that are open for the proposed action.

NUREG-1555, S1, Section 4.4.3, "Offsite Land Use During Operations" (NYS000220), provides guidance to NRC Staff on the format and content of environmental impact statements and describes the information required and the process for assessing offsite land use impacts. This guidance helps the NRC Staff to comply with the regulatory requirements of 10 CFR § 51.71(d). We assessed offsite land use impacts per NUREG-1555, S1, Section 4.4.3 (NYS000220). Accordingly, the assessment of offsite land use impacts in the DSEIS is

adequate because it meets the requirements of 10 CFR § 51.71(d) and is consistent with NRC Staff guidance outlined in NUREG-1555, S1, Section 4.4.3.

Specifically, we conducted a plant-specific environmental review of offsite land use impacts resulting from continued nuclear plant operations during the license renewal term due to potential changes in population (resulting from changes in the workforce at IP2 and IP3) and changes in tax revenue paid to local jurisdictions. Accordingly, these impacts are analyzed in the DSEIS in Section 4.4.3. We found that there would be no offsite land use impacts as a result of population changes associated with license renewal at Indian Point, because Entergy does not plan to increase the number of workers at IP2 and IP3 during the license renewal term. DSEIS, p. 4-41. We also found that land use conditions in those jurisdictions have not changed because of Entergy's property tax payments, which suggests that Entergy's property tax payments have had little or no effect on offsite land use. *Id.* Because Entergy is not planning any new construction or other improvements in connection with license renewal, the assessed value of the Indian Point property and property tax payments would remain relatively unchanged. *Id.* Therefore there would be no tax revenue related impacts on offsite land use as a result of license renewal. *Id.*

Q.13. Why is the discussion of offsite land use in the FSEIS adequate?

A.13. (JJR) The discussion of offsite land use in the FSEIS is adequate because it meets the regulatory requirements in 10 CFR § 51.95(c) That regulation describes the requirements for preparing the FSEIS.

In connection with the renewal of an operating license or combined license for a nuclear power plant under parts 52 or 54 of this chapter, the Commission shall prepare an environmental impact statement, which is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (May 1996), which is available in the NRC Public Document Room, 11555 Rockville Pike, Rockville, Maryland.

(1) The supplemental environmental impact statement for the operating

license renewal stage shall address those issues as required by § 51.71. In addition, the NRC staff must comply with 40 CFR 1506.6(b)(3) in conducting the additional scoping process as required by § 51.71(a).

(2) The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b). The analysis of alternatives in the supplemental environmental impact statement should be limited to the environmental impacts of such alternatives and should otherwise be prepared in accordance with § 51.71 and Appendix A to subpart A of this part.

(3) The supplemental environmental impact statement shall be issued as a final impact statement in accordance with §§ 51.91 and 51.93 after considering any significant new information relevant to the proposed action contained in the supplement or incorporated by reference.

(4) The supplemental environmental impact statement must contain the NRC staff's recommendation regarding the environmental acceptability of the license renewal action. In order to make its recommendation and final conclusion on the proposed action, the NRC staff, adjudicatory officers, and Commission shall integrate the conclusions, as amplified by the supporting information in the generic environmental impact statement for issues designated Category 1 (with the exception of offsite radiological impacts for collective effects and the disposal of spent fuel and high level waste) or resolved Category 2, information developed for those open Category 2 issues applicable to the plant in accordance with § 51.53(c)(3)(ii), and any significant new information. Given this information, the NRC staff, adjudicatory officers, and Commission shall determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

In accordance with 10 CFR § 51.95(c), the FSEIS included the analysis of the effect of license renewal on offsite land use. The analysis of the environmental impacts of license renewal on offsite land use is in Section 4.4.3 of the FSEIS. In addition, we assessed offsite land use impacts per NUREG-1555, S1, Section 4.4.3 (NYS000220). This guidance helps NRC Staff to comply with the regulatory requirements of 10 CFR § 51.91(c). Accordingly, the

assessment of offsite land use impacts in the FSEIS is adequate because it meets the requirements of 10 CFR § 51.95(c) and is consistent with NRC Staff guidance outlined in NUREG-1555, S1, Section 4.4.3. Because the factual basis for its analysis had not changed between the issuance of the DSEIS and the FSEIS, the analysis and conclusions in the FSEIS were the same as in the DSEIS. Since there would be no increase in employment or new construction or other improvements during the license renewal term, there would be no population or tax revenue-related impacts on offsite land use as a result of license renewal. FSEIS, pp. 4-46 to 4-47.

Pursuant to 10 C.F.R. § 51.95(c)(4), we determined that the adverse environmental impacts of license renewal were not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

Q.14. What is the relationship of the GEIS to the DSEIS and the FSEIS?

A.14. (JJR) The assessment of license renewal impacts in the GEIS was used as the basis for the analysis of offsite land use impacts in the DSEIS and FSEIS. The GEIS evaluated the impact of plant-induced changes on local land-use and development patterns produced by plant operation during the license renewal term. The magnitude of change to offsite land use is considered small if very little new development and minimal changes to an area's land-use pattern result. Moderate change results if considerable new development and some changes to the land-use pattern occur. The magnitude of change is large if large-scale new development and major changes in the land use pattern occur. During the renewal term, new land-use impacts could result from plant-related population growth or from the use by local governments of the plants' tax payments to provide public services that encourage development. This analysis examines the land-use changes associated with past operations to project the potential new impacts of operations during the license renewal term. Conflicts between offsite land use and nuclear plant operations are not expected because federal regulations (10 CFR Part 54) require each licensee to ensure that its nuclear plant remains appropriately protected from any site-related hazards (e.g., airplanes, toxic gases), new or existing at the time the plant was licensed.

GEIS, pp. 4-107 to 4-108.

It was predicted in the GEIS that population growth due to a conservatively projected increase in the number of workers at a nuclear power plant during the license renewal term

would result in small land-use impacts. *Id.* at p. 4-108. In contrast, new tax revenue-driven land-use impacts were predicted to be moderate to large during the license renewal term. *Id.* The assumption is that property tax money paid by the owners of the nuclear power plant to local jurisdictions would be used “to provide public services (e.g., sewer and water lines, roads) necessary to support substantial industrial development.” *Id.* Jobs created by industrial development would attract workers and their families to the community thereby increasing the population and the demand for new houses. The increased demand for housing would result in land use changes such as land being converted from agricultural use to residential use – thus creating a land use impact.

Based on the assessment of license renewal impacts in the GEIS, the offsite land use issue is a Category 2 issue. Category 2 issues require a plant-specific environmental review because one or more of the criteria for Category 1 issues could not be met since the environmental impacts would either (1) not apply to all plants; (2) not have a single significance level; and/or (3) mitigation has not been considered in the analysis, and it has not been determined whether mitigation measures would be sufficiently beneficial to warrant implementation. Accordingly, the offsite land use issue was addressed as a Category 2 issue in the Indian Point DSEIS and FSEIS.

Q.15. What is the impact of license renewal on offsite land use for land near Indian Point?

A.15. (JJR) Offsite land use for the land near Indian Point would not be impacted during the license renewal term beyond what has already occurred. As explained in the DSEIS and FSEIS, offsite land use in the vicinity of Indian Point would not be impacted during the license renewal term beyond what has already occurred because the applicant has indicated that it has no plans to increase the number of non-outage operations workers at Indian Point and, because it also has no plans for new construction, property tax payments to local

jurisdictions are not likely to change during the license renewal term.

Q.16. Was Entergy in the ER or the Staff in its DSEIS and FSEIS required to analyze the impacts of license renewal on property values?

A.16. (JRR) No. Entergy in the ER and Staff in the DSEIS and FSEIS are not required to analyze the impacts of license renewal on offsite property values. See Table B-1, 10 CFR Part 51. 10 CFR Part 51 regulations do not require an assessment of offsite property **value** impacts, only offsite land **use** impacts. Offsite land use impacts consist of changes in offsite land use resulting from property tax revenue and any additional workers needed to support continued operations during the license renewal term and refurbishment activities related to license renewal at IP2 and IP3.

Q.17. While not required by the regulations, has the Staff addressed the impact of license renewal on offsite housing value and marketability for land near nuclear power plants?

A.17. (JJR) Yes. The GEIS discusses the impact of license renewal on housing marketability and projects only small impacts on housing value and marketability. GEIS section 4.7.1.2 provides:

The prevailing belief of realtors and planners in communities surrounding the case study plants is that the plants have had little if any effect on the marketability or value of homes in their vicinity. Housing choices of local residents are rarely affected by the presence of the plant. However, buyers from outside the community are occasionally averse to purchasing properties close to a nuclear power plant. Housing markets have not been affected by this situation because of its infrequency. The value of housing units in close proximity to the plants has experienced only small impacts. A slight negative impact did result because of the accident at Three Mile Island Unit 2; the price of houses in two small subdivisions close to the plant dropped slightly below fair market value after the accident and stayed that way for a brief period following it. At some sites, housing values have increased slightly because of amenities such as sewer systems and improved school systems that were made possible because of tax payments by the nuclear plant.

The license renewal term of the plants will be very much like the original operations period but will include additional safety and maintenance activities. Thus, impacts on housing marketability and values that have occurred during operations will continue during the license renewal term. At all case study sites,

only small impacts on housing value and marketability are projected to continue.

Q.18. Has the Staff addressed the impact of license renewal on offsite property values for land near Indian Point?

A.18. (JJR) Yes. Indian Point was one of the case study plants used in the development of the GEIS in 1996 and Indian Point is discussed in detail in Appendix C and at C.4.4.2.1 and C.4.4.2.2. With respect to the impact of construction and operation of the plant on property values in the vicinity of Indian Point, the GEIS stated:

Most local planners and realtors believe that the operation of the Indian Point plants has not inhibited residential growth in neighboring communities of Buchanan, Peekskill, and Verplank, and the town of Cortlandt. Rather, the low property taxes and good school district have served to encourage residential development and facilitate the quick sale of existing housing. Local residents express no reluctance about living near the plants, although occasionally an outside buyer is deterred from the area because of the plants. However, there are always other buyers for the property, so the housing market has not slowed. Conversely, one realtor maintains that more development in communities neighboring Indian Point would have occurred had it not been for Indian Point.

Local realtors agree that housing values in communities neighboring the plant have not been deflated because of the presence of Indian Point. Homes in the immediate area are moderately priced and are currently selling very fast on the market. Developments within 3 km (2 miles) of the plant include homes in the \$400,000 to \$600,000 range. Representatives of the Westchester County Office of Community Development believe otherwise, however, and indicated that the presence of the plant perpetuated the image of these communities being low to middle class.

In summary, it appears that neither construction nor operation of the Indian Point plants has considerably affected housing in the communities neighboring the plants or in the whole of Westchester and Dutchess counties.

The GEIS concluded that, based on the Indian Point case study, "Housing impacts related to housing value and marketability that occur during the license renewal term are the same as those currently being experienced." Over 15 years later, the same reasoning applies. Because any impact to property values would have occurred prior to or during plant construction, that impact is already reflected in existing property values. Because license renewal will mean that the plant will continue to operate, it is reasonable to assume that the impacts of operation,

including any impact on property values, will continue as well.

Q.19. What is the No-Action Alternative?

A.19. (ALS) The No-Action Alternative is a situation in which the NRC decides to not renew the IP2 and IP3 operating licenses and Entergy would cease operating the plant at the end of the current operating license.

Q.20. Did the applicant analyze the impact of the no-action alternative on offsite land use for land near Indian Point?

A.20. (ALS) Yes. Entergy's ER addressed land-use impacts from the no-action alternative.

At page 7-1 of the ER, Entergy indicated that the impacts from the no-action alternative would include "the environmental impacts from decommissioning IP2 and IP3," and "the environmental impacts from a replacement power source or sources." ER at 7-1. Entergy further asserted that "Environmental impacts associated with decommissioning are discussed in Section 7.4. The environmental impacts of . . . various types of replacement power are discussed in Section 8 of this ER." *Id.* To determine whether Entergy addressed land use impacts in its ER, then, we look to both Section 7.4 and Section 8 of the ER.

In section 7.4 of the ER, Entergy adopts the GEIS analysis of decommissioning impacts from the 1,155 MW Columbia Nuclear Power Plant for its analysis of decommissioning impacts. ER at 7-2. The GEIS focuses its socioeconomic analysis of decommissioning on incremental work force, tax revenue, public services, and housing. GEIS at 7-24 to 7-25. The GEIS then concludes that the socioeconomic impact from decommissioning is a Category 1 issue. Note that land use, in the GEIS, is a subset of socioeconomic impacts. GEIS at 4-99. Further, the conclusion in the GEIS that land use impacts from continued operation (rather than decommissioning) is a Category 2 issue rested on changes to tax revenues. GEIS at 4-109. Entergy also notes that the impacts from decommissioning under the no-action alternative are

not “substantially different” than those occurring after license renewal. ER at 7-2. This last conclusion is consistent with the GEIS findings at 7-25, in section 7-4, “Conclusions.” GEIS at 7-25.

In Chapter 8 of the ER, then, Entergy evaluated the impacts of land use from each of the alternatives to license renewal that it deemed to be reasonable: at 8-21 (coal with closed-cycle cooling), at 8-31 (coal with open-cycle cooling), at 8-32 to 8-33 (natural gas with closed-cycle cooling), at 8-42 (gas with open-cycle cooling), at 8-43 to 8-44 (new nuclear with closed-cycle cooling), and at 8-49 (new nuclear with open-cycle cooling). Entergy also considered land-use impacts from closed-cycle cooling retrofit at the existing Indian Point units (at 8-8 and 8-9 of the ER). Entergy addressed closed-cycle cooling retrofit even though it assumes continued operation of the Indian Point units.

Further, the Entergy ER provides an assessment of impacts from plant shutdown beginning in section 8.4 (on page 8-57). The applicant discusses resource-specific impacts beginning on page 8-58. On page 8-63, the applicant notes that the “the short-term impacts would include loss of Payment-in-Lieu-of-Taxes (PILOT) for Westchester County and the other counties surrounding the site, due to loss of revenue to vendors and contractors, loss of employment, and secondary impacts.”

In summary, then, Entergy considered the land-use impacts from no action through its adoption of the GEIS’s analysis of socioeconomic impacts from decommissioning and its consideration of land-use impacts that could result from various types of replacement power. Entergy, in addition, provided an assessment of impacts from plant shutdown that addressed the potential for changes to revenue for local governmental units, which is a driver of land-use impacts.

Q.22. Did the Staff analyze the impact of the no-action alternative on offsite land use for land near Indian Point?

A.22. (ALS) Yes, in FSEIS Section 8.2, No-Action Alternative, pp. 8-22 to 8-25, the Staff stated that long term impacts on offsite land use resulting from Indian Point shutdown may include the removal of transmission lines, the failure to maintain transmission line right-of-ways and the possibility that those right-of-ways could be made available for some other use. FSEIS, p. 8-22. The Staff also noted that a reduction in uranium-mining land-use may occur. *Id.* Population-driven changes to offsite land use under the No-Action Alternative were not viewed as significant. FSEIS, p. 8-24. Any socioeconomic impacts from the loss of jobs associated with plant shutdown (out-migration) would be absorbed by the general surrounding population and housing base. *Id.*

While Staff noted that the no-action alternative could result in loss of tax and other payments, the loss would only have a noticeable impact on several local jurisdictions (Hendrick Hudson Central School District, Village of Buchanan, Town of Cortlandt, and the Verplanck Fire District). FSEIS, p. 8-25. Significantly, the Staff noted, “The shutdown of IP2 and IP3 may result in increased property values of the homes in the communities surrounding the site.” *Id.* The Staff noted that these increases could trigger compensatory tax revenues to replace some of those lost from shutdown of IP2 and IP3, but that some taxing jurisdictions may have to raise tax rates to fully compensate for the losses. *Id.* This conclusion is based on a 2005 report developed by Levitan and Associates for Westchester County. (NYS000056). The Staff concluded by noting that Levitan did not indicate the overall magnitude of the property value and tax effect or whether the net effect on tax revenues would be positive or negative. *Id.*

The Staff also addressed potential land-use impacts from other alternatives to Indian Point—which are potential consequences of no action—including natural-gas combined-cycle capacity at the Indian Point site, a new site, or a repowered site (FSEIS at 8-29 to 8-30); conservation/energy efficiency (FSEIS at 8-43); combination 1 (FSEIS at 8-62); and combination 2 (FSEIS at 8-67 to 8-68).

We further noted that revenue losses from Indian Point operation would affect the communities closest to and most reliant on the plant's tax revenue and PILOT. If property values and property tax revenues increase, then some of these effects would be smaller. We concluded that the socioeconomic impacts of plant shutdown would likely be SMALL to MODERATE (with MODERATE effects for some local jurisdiction, including the Hendrick Hudson Central School District, Village of Buchanan, Town of Cortlandt, and the Verplanck Fire District). Finally, we directed readers to see Appendix J to NUREG-0586, Supplement 1 (a supplement to the Generic Environmental Impact Statement for Decommissioning, published in 2002) for additional discussion of the potential impacts of plant shutdown.

Q.23. Did the Staff address the impact of the no-action alternative on offsite property values for the area around Indian Point?

A.23. (ALS) Yes. In FSEIS Section 8.2, No-Action Alternative, Socioeconomics subsection on page 8-24 to 8-25, the Staff indicated that the shutdown of IP2 and IP3 may result in increased property values of the homes in the communities surrounding the site, and relied on an assessment performed by Levitan and Associates, Inc., in 2005 for Westchester County. (NYS000056)

Q.24. What do NRC regulations require Entergy to do to decommission IP2 and IP3?

A.24. (JPB) Title 10 of the Code of Federal Regulations, Section 50.2 (10 CFR 50.2) defines decommissioning as the safe removal of a facility from service and reduction of residual radioactivity to a level that permits termination of the NRC license. Note that spent fuel management is covered under 10 CFR 50.54(bb), and not under the decommissioning rules. The NRC-required decommissioning trust fund is not designed to pay for spent fuel management. The NRC does not require any specific sum of money to cover spent fuel management, only that the licensee have a plan for it, which is submitted to the NRC for preliminary approval 5 years prior to the expiration of the license. Entergy included its plan for

spent fuel management with its decommissioning plan.

The regulations in 10 CFR 50.82 and 10 CFR 20.1401 through 20.1406 (10 CFR 20 Subpart E) require Entergy to remove radioactive material as part of decommissioning. Entergy has currently decided to use the delayed decommissioning option, which the NRC refers to as SAFSTOR, as permitted by 10 CFR 50.82. SAFSTOR allows Entergy to delay decommissioning activities as long as decommissioning is completed within 60 years of the permanent cessation of operations. "Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors," NUREG-1713, published in December 2004 (Staff Land Use Exhibit 4), discusses SAFSTOR and other options. If Entergy is issued a renewed license, decommissioning of IP2 must be completed by the end of 60 years following the cessation of operations in 2033, or by the end of 2093. If Entergy's license is not renewed, decommissioning of IP2 must be completed by the end of 60 years following the cessation of operations. Normally this would be by the end of 2073. However, under the timely renewal provisions of 10 CFR 2.109(b), if the license renewal proceedings have not been completed by the current expiration date of IP2's operating license, IP2 will be permitted to continue to operate until the license renewal application has been finally determined. This would mean that the decommissioning completion date of 60 years following the cessation of operations would be adjusted based on the actual day that plant operation is terminated. Although IP3's license extends about 2 years past IP2's license, Entergy's current plan is to decommission IP1, IP2, and IP3 within the required dates set for IP2.

NRC regulations in 10 CFR 20, Subpart E, only cover radiological decommissioning, or the removal of radioactive material. They do not cover or require the removal of all structures and buildings. NRC regulations do not require that the plant site be converted to greenfield (unrestricted use) status. They only require that radioactive materials (excluding spent fuel) be removed from the site such that radiation exposure for a typical user of the site would not

exceed 25 millirem per year, or some higher value if approved by the NRC.

Q.25. What is the schedule for decommissioning of IP2 and IP3?

A.25. (JPB) Entergy's current schedule for decommissioning assumes that the operating license for IP2 will expire on September 28, 2013. With the use of the SAFSTOR option, Entergy expects to begin removal of radioactive material in 2064. Letter from J. Boska, U.S. Nuclear Regulatory Commission, to Vice President, Operations, Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit Nos. 1 and 2 - Safety Evaluation Re: Spent Fuel Management Program And Preliminary Decommissioning Cost Estimate (TAC Nos. ME0020 and ME0021), March 17, 2010 (ADAMS Accession No. ML100280544) (Staff Land Use Exhibit 4) and documents referenced therein; and Letter from J. Boska, U.S. Nuclear Regulatory Commission, letter to Vice President, Operations, Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit No. 3 -Safety Evaluation Re: Spent Fuel Management Program And Preliminary Decommissioning Cost Estimate (TAC No. ME5257), June 22, 2011 (ADAMS Accession No. ML11147A004) (Staff Land Use Exhibit 5) and the documents referenced therein. All radioactive material that could cause doses to be above the limits of 10 CFR 20, Subpart E, except for spent fuel, must be removed from the IP2 unit by September 28, 2073, unless permission is received from the NRC to extend that date. *Id.* at p. 5.

Q.26 When must decommissioning be completed?

A.26. (JPB) If license renewal is denied prior to the expiration of the current licenses (i.e., timely renewal is not a factor), then decommissioning must be completed by 2073 for IP2 and 2075 for IP3. If Entergy's operating licenses are renewed prior to expiration of the current licenses, decommissioning must be completed by 2093 for IP2 and 2095 for IP3. Please note, these dates, and all the dates in my testimony, do not take into account the potential effect of timely renewal pursuant to 10 CFR 2.109(b), as explained in my answer to Q24 above. If the NRC resolves the IP license renewal application after the expiration of the licenses, the

decommissioning completion date of 60 years following the cessation of operations would be adjusted based on the actual day that plant operation is terminated.

Q.27. Does Indian Point have an independent spent fuel storage installation ("ISFSI")

A.27. (JPB) Yes. There are about 19 dry storage casks loaded with spent fuel already on the concrete pad. All of the IP1 spent fuel is in 5 storage casks. The other 14 casks contain spent fuel from IP2.

Q.28. What do the regulations provide regarding the ultimate removal of the Indian Point ISFSI?

A.29 (JPB) Congress passed the Nuclear Waste Policy Act (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear power plants to the Department of Energy. 10 CFR 50.54(bb) requires that licensees have a program to manage spent fuel and provide funding for the management of spent fuel until possession of the fuel is transferred to the DOE. Once the fuel is transferred to the DOE, any remaining radioactivity associated with the ISFSI must be disposed of under the decommissioning plan.

Q.30. When will Indian Point's ISFSI be removed?

A.30. (JPB) The Indian Point ISFSI will be removed after the Department of Energy takes possession of the spent fuel. The licensee currently estimates that the DOE will finish taking possession of all the spent fuel from Indian Point in 2047, but there is a lot of uncertainty with that date.

Q.31. Will the date by which the ISFSI will be removed be determined by how much spent fuel is in storage? Will license renewal result in the creation of additional spent fuel and so extend the period of time before the ISFSI is removed?

A.31 (JPB) There is a general agreement that the DOE will take possession of spent fuel starting with the oldest fuel. DOE will probably start with those sites that are already

reduced to just an ISFSI. Also, there will be a limit to how much fuel the DOE can take per year, once the DOE starts taking spent fuel. So the more spent fuel there is at Indian Point, the longer it will take to transfer it to the DOE, which will affect the date when the ISFSI can be removed. License renewal will result in the creation of additional spent fuel and that will extend the period of time required to remove all the fuel and thus extend the time before the ISFSI can be removed. However, given that the licensee expects to use a delayed decommissioning approach (SAFSTOR), it is possible that all the spent fuel could be removed from the site before the full-scale site decommissioning work is started. As I stated earlier, the licensee currently estimates that the DOE will finish taking possession of all the spent fuel from Indian Point in 2047, but there is a lot of uncertainty with that date. In addition, and again as I stated earlier, the dates I have provided do not take into account any period of time associated with timely renewal pursuant to 10 CFR 2.109(b).

Q.32. Please discuss the deficiencies that you found in Dr. Sheppard's testimony. Pre-Filed Direct Testimony of Stephen C. Sheppard, Ph.D., Regarding Contention 17B ("Sheppard Testimony") (NYS000024).

A.32. (ALS) I found numerous problems and inaccuracies in Dr. Stephen Sheppard's testimony. In the following paragraphs, I will examine the seven issues that I found most problematic.

1. DR. SHEPPARD CHOSE THE WRONG "TREATMENT GROUP": Dr. Sheppard's approach is flawed from an historical perspective. Dr. Sheppard claims that Unit 2 was constructed in 1974 and Unit 3 was constructed in 1976. Sheppard Testimony at 29. Dr. Sheppard used these end points to construct his "treatment group." The historical record, however, presents a different picture of events at the Indian Point site. By October of 1971, construction for Indian Point Unit 2 was "substantially completed," and the Atomic Energy Commission (AEC) authorized fuel loading and subcritical testing. See Facility Operating

License DPR-026, page 1, at “a”; ADAMS Accession No. ML003775074. Unit 1 had been licensed to operate in 1962 and would shut down in 1974. See Dataset, Appendix B from NRC Information Digest, NUREG-1350 (NRC000085). In 1971, then, Unit 1 was in operation and Unit 2 structures were in place to allow fuel loading and testing. Unit 3 had been approved for construction in 1969 and would be substantially complete by the time its operating license was issued in late 1975. See Dataset, Appendix A from NUREG-1350 (NRC000086).

Dr. Sheppard claims that ownership periods that began and ended before 1974 would have been affected only by the presence of Unit 1, Sheppard Testimony at 29, though the substantially-completed Unit 2 was also present at the site, and a permit had been issued to construct Unit 3. Dr. Sheppard attempts to minimize the existence of Indian Point 1 by saying it was a “much smaller unit,” Sheppard Testimony at 29, although none of Dr. Sheppard’s statements to date suggest that relative generation capacity determines the size of the effect on property values from a nuclear power plant. While smaller in generating capacity than Units 2 and 3, the Unit 1 plant and its support structures were not unobtrusive: one of the most visible structures at the Indian Point site today is the superheater stack from Unit 1. Further, the construction and operation of Unit 1 marks the time when land at the Indian Point site was committed for use in nuclear power generation.

Based on the foregoing facts, then, evaluating the change in prices for homes sold both prior to 1974 and after 1976 does not appear to capture the effect of Indian Point’s conversion to a nuclear power plant site or the introduction of plant structures to the site.

2. DR. SHEPPARD PRESENTS HISTORICAL IMPACTS AS CURRENT IMPACTS: Dr. Sheppard’s analysis states that the effect of Indian Point was realized in 1976, but then presents impacts as though they continue to occur today.

Dr. Sheppard notes, Sheppard Testimony at 30, that homeowners who purchased homes after 1976 would have found housing prices that already reflected the presence of Indian

Point. Dr. Sheppard notes: “The existence of Indian Point would have been known to those buyers who would have factored that information into their purchase price. So Indian Point might have affected the value of the property but the purchase price would have reflected it.” *Id.*

Thus, according to Dr. Sheppard, properties purchased after 1976 were likely less expensive for buyers than they would have been if Indian Point had not been there. The effect – loss of value – that Dr. Sheppard identifies would have affected those sellers who made the first post-1976 sale. Most of the first post-1976 sales would have taken place from the late-1970s and through the 1980s.

Dr. Sheppard acknowledges that this claimed loss in value actually occurred in 1976, and then notes that he has used a price index to carry the losses forward to January 2011 housing values. Sheppard Testimony at 35. These losses, however, were not realized by homeowners in January 2011 or on an ongoing basis, but would likely have been realized 20 or more years before January of 2011. The homeowners who purchased a home since 1976 received an average return of nine percent on their initial home investment, a return that Dr. Sheppard indicated an investor would consider “good.” Sheppard Testimony at 31.

The proper time to account for any losses, then, was either when the losses occurred to home owners (in the first post-1976 sale) or in 1976, when Dr. Sheppard indicates the effect occurred. In either case, license renewal does not impose new losses on existing homeowners unless they happen to be one of the very few remaining owners who have owned a home since 1976 or earlier. Because it is likely that almost all homeowners in the area have purchased their homes since 1976 (a 35-year homeownership period is more than 3 standard deviations from Dr. Sheppard’s mean homeownership period), Dr. Sheppard’s analysis indicates that virtually no current homeowners would experience any loss.

3. DR. SHEPPARD EXCLUDES CURRENT DATA: Dr. Sheppard’s analysis of property values within 5 kilometers of Indian Point relies on home sales through mid-2009. As a result,

Dr. Sheppard fails to use the most-recent home sales data, which would have better reflected the effects of the recent real-estate collapse. The Case-Shiller Index reported that home prices in the New York, NY, metropolitan housing market were lower in the last half of 2009, on average, than in the first half of 2009. See New York, New York, Seasonally Adjusted Home Price Index, S&P/Case-Shiller Home Price Indices, Home Price Index Levels, December 2011, available at <http://www.standardandpoors.com/indices/sp-case-shiller-home-price-indices/en/us/?indexId=spusa-cashpidff--p-us---->. The Case-Shiller index uses a sales-pair approach to changes in valuation that is similar to Dr. Sheppard's methodology. Rather than reporting home values in dollar figures, the Case-Shiller index uses an indexed value.

As reported in the Case-Shiller index, prices in all but two months of 2010 were lower than those in 2009. *Id.* By the end of 2010, home prices had dropped more than 7 percent compared to prices at the beginning of 2009. *Id.* Had Dr. Sheppard included sales from 2010, his overall claims of housing value gains would have been smaller. It is also worth noting that the Case-Shiller index continued to decline in 2011, to the point that by December 2011, the index was almost the same as it had been in December of 2003. *Id.* Dr. Sheppard noted this trend in his testimony when he indicated that nationwide housing prices had fallen by 16% from early 2007 to the first quarter of 2011. Sheppard Testimony at 40. If this trend of decline continues to the point where it undoes all of the last decade's housing gains – or even if housing values remain relatively flat compared to current values – then by 2014 or 2015, a home held for 8 years would likely show a marked drop in value compared to its previous sale in 2006 or 2007, which were the peak years of the housing market. Dr. Sheppard's approach, however, would allow one to potentially attribute this drop in prices—and apparent loss in property values—to either the expiration or renewal of the Indian Point 2 and 3 licenses.

4. DR. SHEPPARD'S ANALYTICAL WORK DOES NOT CONNECT INDIAN POINT'S PRESENCE TO ANY LAND-USE EFFECTS: None of Dr. Sheppard's analytical work, no

matter how rigorous, connects Indian Point to effects on land use. Dr. Sheppard presents information about how to mathematically derive the value of housing, and then presents the limited results of his analysis of Indian Point's effects on housing values. Dr. Sheppard connects this mathematically derived effect on housing values to land use only by his opinion; he presents no evidence to support his assertion. Sheppard Testimony at 39-40. Finally, Dr. Sheppard neglects to present a specific effect on land use, other than to assert that higher property values would cause owners to "make more careful use of land and allocate the land to different types of uses." Sheppard Testimony at 40.

5. DR. SHEPPARD'S PRESENTATION IS INAPPOSITE TO THE LICENSE RENEWAL DECISION: Dr. Sheppard has presented his results in a way that makes it difficult to tease out the differences among license renewal and its alternatives. His previous declarations made a straightforward comparison of license renewal to the no-action alternative. His pre-filed testimony, however, Dr. Sheppard merely presents the impacts that he claims have occurred during current operation. Recall that the decision before the NRC is whether to allow Units 2 and 3 to continue operating for 20 additional years.

In Dr. Sheppard's January 2011 Declaration, he provided a comparison among site decontamination schedules. While several of his 2011 scenarios were not reflective of Entergy's plans for the site, two of them – the 2077 and 2107 site clearance scenarios – provided somewhat similar timeframes to the potential decommissioning times of the site under the no-action and license renewal alternatives. By my calculations, based on Dr. Sheppard's scenarios and the residential property stock Dr. Sheppard described in his 2007 declaration, the average loss if the Indian Point site were decontaminated in 2107 compared to 2077 is 2.33% of a residence's value based on Dr. Sheppard's year 2000 home prices (as submitted in his 2007 declaration) or 1.21% based on 2007 home prices (as submitted in his 2007 declaration). Admittedly, home prices are likely somewhat lower than Dr. Sheppard's reported 2007 data

suggest and higher than his 2000 data suggest, so the real answer is likely somewhere between the two figures. Nonetheless, this is a far smaller effect than the 27% that Dr. Sheppard claims has occurred from the current operation of Indian Point.

Finally, the issue at hand is not whether to allow Indian Point to operate for its initial 40-year period—when Dr. Sheppard’s claimed losses would have occurred—and it is also not about what type of decommissioning approach Indian Point should use. It is about whether to allow 20 additional years of operation.

6. THE GEIS ADDRESSED THE EFFECT OF LICENSE RENEWAL ON HOUSING VALUES AND FOUND IT TO BE OF SMALL SIGNIFICANCE: NRC staff, in the 1996 GEIS, investigated the effect of continued operation on housing values. In Section 4.7.1, “Housing” (GEIS at pages 4-102 to 4-103), the NRC presented an analysis of both housing demand and housing marketability. In the “Housing Marketability” discussion (GEIS at 4-103), the NRC determined that the presence of nuclear power plants “have had little if any effect on the marketability of homes in the vicinity.” *Id.* Further, the NRC reported “The value of housing units in close proximity to the plants has experienced only small impacts.” *Id.* In addition, “At some sites, housing values increased slightly because of amenities such as sewer systems and improved school systems that were made possible because of tax payment by the nuclear plant.” *Id.* NRC made these determinations, in part, as a result from NRC’s case studies. As you’ll recall, these case studies included a site-specific study of Indian Point. The NRC concluded that “At all case study sites, only small impacts on housing value and marketability are projected to continue.” *Id.*

Q.33. Does this conclude your testimony?

A.33. Yes.

October 9, 2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

AFFIDAVIT OF JEFFREY J. RIKHOFF

I, Jeffrey J. Rikhoff, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accord with 10 C.F.R. § 2.304(d)

Jeffrey J. Rikhoff
Senior Environmental Scientist
Office of Nuclear Reactor Regulations
Division of License Renewal
Environmental Review Branch
U.S. Nuclear Regulatory Commission
Mailstop 11F1
Washington, DC 20555-0001
(301) 415-1090
Jeffrey.Rikhoff@nrc.gov

Dated at Rockville, Maryland
This 9th day of October, 2012

October 9, 2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

AFFIDAVIT OF ANDREW L. STUYVENBERG

I, Andrew L. Stuyvenberg, do hereby declare under penalty of perjury that my statements in the foregoing Testimony Concerning Contention NYS-17 (Land Use) and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accord with 10 C.F.R. § 2.304(d)

Andrew L. Stuyvenberg
Project Manager
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mailstop 11F1
Washington, DC 20555-0001
(301) 415-4006
Andrew.Stuyvenberg@nrc.gov

Dated at Rockville, Maryland
This 9th day of October, 2012

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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(Indian Point Nuclear Generating)
Units 2 and 3))

AFFIDAVIT OF JOHN P. BOSKA

I, John P. Boska, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accord with 10 C.F.R. § 2.304(d)

John P. Boska
Senior Project Manager
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mailstop 8C2
Washington, DC 20555-0001
(301) 415-2901
John.Boska@nrc.gov

Dated at Rockville, Maryland
This 9th day of October, 2012