

RAS E-445

UNITED STATES
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

DOCKETED
February 03, 2011 (4:58 p.m.)
OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

-----X
In re:

License Renewal Application Submitted by

Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.
-----X

Docket Nos. 50-247-LR; 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

February 3, 2011

STATE OF NEW YORK'S MOTION FOR LEAVE TO FILE
NEW AND AMENDED CONTENTIONS CONCERNING
CHAPTER 8 OF THE DECEMBER 3, 2010 FINAL SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

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

TEMPLATE = SECY 041

503

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
ADDITIONAL FACTUAL BACKGROUND	2
A. The Contentions Meet All The Requirements of 10 C.F.R. § 2.309(f)(2).....	4
1. Information Not Previously Available.....	5
2. The New Information Is Materially Different Than Previously Available Information.....	6
3. The Contention Is Timely	6
B. The Contentions Also Meet The Requirements of 10 C.F.R. § 2.309(c)	7
1. Good Cause.....	7
2. The State of New York’s Interest In This Proceeding, Its Standing And Its Unique Position As A Sovereign State Have Been Established	9
3. Admission Of These New Contentions Will Not Delay the Hearing And Will Assist In Developing The Record	9
CONCLUSION.....	10
Certification pursuant to 10 C.F.R. § 2.323 and ASLB Scheduling Order	10
List of Attachments.....	A-1

INTRODUCTION

The State of New York respectfully submits this additional contention based on the Final Supplemental Environmental Impact Statement (“FSEIS”) issued by Staff of the Nuclear Regulatory Commission (“NRC”) on December 3, 2010.¹ The State herein submits this contention (i.e. Contention 37), which updates the State’s two previously submitted contentions, Contentions 9 (ML073400187) and 33 (ML090690303), which asserted respectively that the Applicant’s Environmental Report (“ER,”) and Staff’s Draft Supplemental Environmental Impact Statement (“DSEIS”) failed to give meaningful consideration to non-fossil fuel alternatives to license renewal. Furthermore, Contention 37 challenges NRC’s analysis and recommendations with respect to new alternatives included in the FSEIS, and asserts the FSEIS does not provide a rational basis for the NRC’s Record of Decision (“ROD”).

In the first instance, Parts A and B of Contention 37 assert that the FSEIS fails to address previously identified defects contained in the Applicant’s ER and Staff’s DSEIS, and that NRC Staff failed to meaningfully respond to this criticism and largely incorporated those defects into the FSEIS. While recognizing that the NRC regulations may not require the State to submit this category of supplemental contentions, the State presents them now out of an abundance of caution to preclude any subsequent assertion by Staff, the Applicant or a reviewing tribunal that the State has not pursued its rights as secured by the U.S. Constitution, The National Environmental Policy Act (“NEPA”), 42 U.S.C. § 4323 *et seq.*, or regulations promulgated by the Council on Environmental Quality (“CEQ”) and the NRC, or the Administrative Procedures Act (“APA”) 5 U.S.C. § 551 *et seq.* As to this category of issues, the State raises them at this

¹ In its Order and Memorandum dated December 27, 2010, the Board extended the deadline for filing this contention to February 3, 2011. *See* Order and Memorandum dated December 27, 2010.

juncture in order to preserve these issues for further litigation and to create a complete record, and to address the specific deficiencies of the FSEIS, as distinct from the ER and DSEIS.

The second category of issues raised by this contention, Parts C and D, assert that the FSEIS is flawed because it relies on outdated information about how utilities operating in New York State meet their energy needs. As a result of this flaw, the FSEIS is deficient in how it addresses new and significant information and how it analyzes the consequences of the no-action alternative. Although NRC Staff has modified the FSEIS to give putative recognition to non-fossil fuel alternatives to license renewal not previously given consideration in the DSEIS, Staff nonetheless fail to provide a meaningful and objective "hard look" at the comparative impacts of those alternatives. In the absence of a meaningful alternatives analysis, Part 51 of the NRC's regulations do not permit the Board or Commissioners to adopt the recommendation of Staff's FSEIS into the Record of Decision.

ADDITIONAL FACTUAL BACKGROUND

As set forth in Contention 9 in this proceeding, dated November 28, 2007, the State has challenged (1) the adequacy of the ER's analysis of the benefits and costs of the "no action" alternative, which contained virtually no analysis of energy conservation and renewable energy resources and no consideration of the substantial available information on these options and their feasibility; (2) the ER's failure to even consider alternatives such as transmission line upgrades and re-powering of existing facilities; and (3) the ER's failure to consider that one of the benefits of the "no action" alternative and that one of the costs of the approval of the project is the impact of that decision on the development and implementation of environmentally preferable energy options, including energy conservation and renewable energy sources. In support of Contention 9, the State provided factually supported analysis of energy efficiency potentials, transmission

upgrades, repowering opportunities, and renewable sector generation capacity as viable and reasonable alternatives to license renewal. *See* Schlissel Declaration, dated November 28, 2007; Schlissel, Synapse Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 and 3. The State also supported Contention 9 with the Declaration of Peter Bradford (“Bradford Decl.”), former Commissioner of the NRC, discussing the extent to which license renewal “crowds out” investment in energy efficiency and renewable sector generation. *See* Bradford Decl., dated November 28, 2007, ¶¶ 8,9 (ML073400205).

On February 27, 2009 the State filed supplemental contentions concerning NRC Staff’s DSEIS, including Contention 33. Contention 33 alleged the DSEIS discussion of energy alternatives violated NEPA because it ignored significant new information and failed to provide a rigorous analysis of the cost, benefits, and feasibility of energy conservation and other measures under the “no-action” alternative. The DSEIS failed to consider the alternatives to license renewal the State recommended in its 2007 Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 and 3, including: energy conservation, purchased electrical power, combined heat and power, significant renewable generation (especially wind) and or plant retirements and/or repowering). Contention 33 incorporated the evidence relied upon in Contention 9, and provided additional supporting evidence, including a second Declaration of David A. Schlissel, dated February 27, 2009 (ML090690303), which outlined the significant developments in New York State’s energy policies and markets that had occurred since 2007, relevant to alternatives to license renewal, that were not considered by NRC Staff as part of the DSEIS.

On December 3, 2010 NRC Staff filed the FSEIS for Indian Points Units 2 and 3. The FSEIS discussion of alternatives to the proposed project differed from that offered in the DSEIS

in several respects, the most significant being: (1) Staff included energy conservation as an alternative and adopted the findings from SEISs done in two other license renewal proceedings to conclude impacts, FSEIS § 8.3.3; (2) Staff included purchased electrical power as an alternative, but determined the specific impacts were too difficult to determine, FSEIS § 8.3.2; (3) Staff removed coal generation as an alternative, but nonetheless incorporated the lengthy DSEIS impact analysis into the FSEIS, FSEIS § 8.3.4.13; (4) Staff increased renewable generation by 200MW in a combined alternative together with (a) the continued operation of one IP unit installed with cooling towers FSEIS § 8.3.5.1 ((an action Applicant has neither committed to, nor which is currently required as a condition of license renewal), or (b) a gas-fired plant, constructed either at the IP site, at a repowered site, or at a different location. FSEIS § 8.3.5.2. Staff then concluded:

the no-action alternative has the smallest effect, but it would necessitate additional actions to replace generation capacity (whether with newly-constructed power plants or purchased power) and/or to institute conservation programs. Impacts of the likely consequences of the no-action alternative would be similar to those of the energy alternatives that the NRC staff has considered. All other alternative actions have impacts in at least four resource areas that reach SMALL to MODERATE or higher significance. Often these impacts are the result of constructing new facilities or infrastructure.

FSEIS § 9.2., p. 9-7. Based on the above analysis, Staff recommended that “the Commission determine that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.” *Id.* at 9-8.

A. The Contentions Meet All The Requirements of 10 C.F.R. § 2.309(f)(2)

The proposed contention, Contention 37, fully meets 10 C.F.R. § 2.309(f)(2), which requires for admissibility, in pertinent part, a showing that:

(i) The information upon which the amended or new contention is based was not previously available;

(ii) The information upon which the amended or new contention is based is materially different than information previously available; and

(iii) The amended or new contention has been submitted in a timely fashion based on the availability of the subsequent information. *Id.*

This contention is based on NRC Staff's Final Supplemental Environmental Statement and the analysis and recommendations contained therein, which was first released for public consideration on December 3, 2010 and was not previously available.

1. Information Not Previously Available

Because this contention is based upon a document first filed on December 3, 2010, and because it relies on the new information contained in that document regarding the environmental impact of those alternatives deemed by NRC Staff to be reasonable alternatives to license renewal, the contention relies on information not previously available and thus meets the first prong of the test set forth in 10 C.F.R. § 2.309(f)(e)(i).

Furthermore, the information upon which the contention is based is materially different than information previously available because it considers the failure of NRC Staff to incorporate significant developments in the project's market environment that have occurred since the DSEIS was issued, that directly impact the timing, viability, and feasibility of alternatives to license renewal. Additionally, the contention addresses deficiencies in Staff's analysis of new alternatives not previously given serious consideration in these proceedings by NRC Staff or Applicant, including Staff's views on the viability and environmental impact of: energy conservation, purchased electrical power, and marginally increased levels of renewable

generation and conservation in combination with the operation of one Indian Point unit operating with installed cooling towers.

To the extent the contention addresses alternatives previously given consideration by Applicant and/or Staff, this contention contends that the FSEIS fails to meaningfully respond to the State's opposing views on the DSEIS, and that NRC Staff gave little more than lip service to the extensive evidence offered by the State during these proceedings on material developments in New York's energy market, and non-fossil fuel alternatives. The contention argues that the recommendations contained in the FSEIS, which are specific to the set of alternatives contained therein, lack a rational basis in light of these deficiencies.

2. The New Information Is Materially Different Than Previously Available Information

It was not until NRC Staff had completed its final environmental impact statement in December 2010, that the State of New York was able to determine that (1) deficiencies identified in previously admitted Contentions 9 and 33 were being perpetuated in the FSEIS, (2) that NRC Staff had given only putative and insufficient consideration to alternatives not previously analyzed in the DSEIS, and (3) that the information and analysis contained in the FSEIS fails to provide a rational basis for the NRC's Record of Decision on license renewal.

3. The Contention Is Timely

Pursuant to Orders issued by the Board and referenced above, Contentions based on the December 2010 FSEIS were due to be filed on or before February 3, 2011. This Contention has been filed on February 3, 2011. Thus, the State of New York State has demonstrated that its proposed new Contention meets the requirements for admissibility set forth in 10 C.F.R. § 2.309(f)(2).

B. The Contentions Also Meet The Requirements of 10 C.F.R. § 2.309(c)

Although a party is not required to demonstrate compliance with 10 C.F.R. § 2.309(c) where, as here, it meets the requirements of 10 C.F.R. § 2.309(f)(2), NRC Staff has argued in other proceedings that a new contention is required to meet the provisions of both sections.² Since the State easily meets both sets of standards and, out of an abundance of caution, it provides the following demonstration of its compliance with the requirements of 10 C.F.R. § 2.309(c).

1. Good Cause

Contention 37 addresses, pursuant to NEPA and NRC regulations, the scope and quality of NRC's consideration of the energy alternatives to license renewal. The FSEIS states that the NRC has adopted a statement of purpose and need for license renewal from the GEIS:

The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and where authorized, Federal (other than NRC) decision makers.

The NRC's decision standard with respect to license renewal considers the comparative environmental impacts of alternatives to the proposed project and determines whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable. 10 C.F.R.

² 10 C.F.R. § 2.309(c) is only applicable to "late filed contentions." Contentions that meet the requirements of 10 C.F.R. § 2.309(f)(2) are, by meeting subpart iii, "timely" and thus do not need to meet the provisions of § 2.309(c). See *In the Matter of Entergy Nuclear Vermont Yankee L.L.C. and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station) Docket No. 50-271-OLA, ASLBP No. 04-832-02-OLA (Dec. 2, 2005) LBP-05-32, slip op. at 9-10. See also *In the Matter of Entergy Nuclear Vermont Yankee L.L.C. and Entergy Nuclear Operations, Inc.* (Vermont Yankee) LBP 07-015 (Nov. 7, 2007), ML073110424, slip op. at 6, n. 12.

§ 51.95(c)(4) and 10 C.F.R. § 51.103(a)(5). Given the NRC's view that its decision provides an option that could affect New York's economy, environment and energy infrastructure, the State has good cause to challenge NRC's analysis of the alternatives to the proposed project, and whether or not the FSEIS permits a rational decision maker to determine the comparative impacts relative to license renewal.

The State has taken seriously the admonition that “[a]ll parties are obligated, in their filings before the presiding officer and the Commission, to ensure that their arguments and assertions are supported by appropriate and accurate references to legal authority and factual basis, including, as appropriate, citations to the record. Failure to do so may result in appropriate sanctions, including striking a matter from the record or, in extreme circumstances, dismissal of the party.” 10 C.F.R. § 2.323(d); *see* 69 Fed. Reg. 2182, 2183, Statement of Considerations, Changes to Adjudicatory Process (Jan. 14, 2004) referring to “existing requirements . . . to proffer specific, adequately supported contentions in order to be admitted as a party to the proceeding.” The State of New York has presented substantial evidence in the form of expert reports and declarations, and publicly available studies which support the State's assertions of numerous inaccuracies in the FSEIS, and of unexamined alternatives to license renewal that are feasible and not speculative. Each option the State proposed is and has been supported by evidence of its feasibility as demonstrated by government agencies and others that are taking concrete actions to implement such actions. The State has also shown how it disagrees with Staff's cursory analysis and/or cursory rejection of many of these options, and its failure to consider others.

2. The State of New York's Interest In This Proceeding, Its Standing And Its Unique Position As A Sovereign State Have Been Established.

As an admitted party, the State of New York has already demonstrated that it has a right to be in the proceeding, that it has a substantial interest in the proceeding and that its interest will be substantially impacted by any order entered in this proceeding. *See also* 42 U.S.C. § 2021(l) (recognizing important role of States in AEA matters). Thus, it fulfills the provisions of 10 C.F.R. §§ 2.309(c)(ii, iii, and iv). Similarly, no other party can adequately represent the interests of the State of New York, a sovereign governmental entity, particularly on the issues raised here, which issues have not been raised by any other party. Thus, the State also fulfills the provisions of 10 C.F.R. §§ 2.309(c)(v and vi).

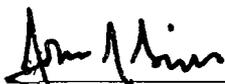
3. Admission Of These New Contentions Will Not Delay the Hearing And Will Assist In Developing The Record

Contention 37 reaffirms the relevance of previously admitted Contentions 9 and 33. The admission of this contention will not delay the hearing and will avoid any dispute over whether it is actually addressed to the energy alternatives relevant to this proceeding. Finally, new Contention 37 will facilitate the development of a fuller record upon which the Board will be able to base its decision on whether, pursuant to NEPA, the reasonable alternatives to license renewal were identified, developed, and objectively studied by NRC Staff, and if the FSEIS provides an accurate, rational, and objective basis for a decision regarding license renewal. Since the obligation to analyze all reasonable alternatives to the proposed project is imposed by statute, case law and Commission regulation, it will be beneficial to have this fuller record in carrying out the Board's obligations under 10 C.F.R. § 2.340(a).

CONCLUSION

For the foregoing reasons, the State respectfully requests that the Board admit the State's Contention 37 concerning energy alternatives.

Respectfully submitted,



John Sipos
Assistant Attorney General
Office of the Attorney General
The Capitol
Albany, New York 12224
(518) 402-2251
john.sipos@ag.ny.gov

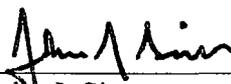
s/ 

Susan C. von Reusner
Assistant Attorney General
Office of the Attorney General
The Capitol
Albany, New York 12224
(518) 474-1968
susan.vonreusner@ag.ny.gov

February 3, 2011

Certification pursuant to 10 C.F.R. § 2.323 and ASLB Scheduling Order

Pursuant to 10 C.F.R. § 2.323(b) and this Atomic Safety and Licensing Board's July 1, 2010 Scheduling Order ¶ G.6, I certify that I have made a sincere effort to contact the other parties in this proceeding, to explain to them the factual and legal issues raised in this motion, and to resolve those issues, and I certify that my efforts have been unsuccessful.



John J. Sipos

**List of Attachments
to State of New York Motion for Leave
to File New And Amended Contentions
Concerning Chapter 8 of the
December 3, 2010 Final Supplemental Environmental Impact Statement**

- | | |
|--------------|--|
| Attachment 1 | November 28, 2007 Declaration, Curriculum Vitae, and Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3 of David A. Schlissel. |
| Attachment 2 | November 28, 2007 Declaration and Resume of Peter A. Bradford. |
| Attachment 3 | February 27, 2009 Declaration of David A. Schlissel. |
| Attachment 4 | January 31, 2011 Declaration of David A. Schlissel. |
| Attachment 5 | February 1, 2011 Declaration and Curriculum Vitae of Peter J. Lanzalotta. |
| Attachment 6 | February 2, 2011 Declaration of Peter A. Bradford. |

**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

ATOMIC SAFETY AND LICENSING BOARD

-----x
In re: Docket Nos. 50-247-LR; 50-286-LR

License Renewal Application Submitted by ASLBP No. 07-858-03-LR-BD01

Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc. February 3, 2011
-----x

**STATE OF NEW YORK CONTENTION CONCERNING NRC STAFF'S
FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT**

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

TABLE OF CONTENTS

	<u>Page</u>
PRELIMINARY STATEMENT	1
The FSEIS Discussion o Energy Alternatives (Chapter 8) Fails to Provide a Meaningful Analysis of Energy Alternatives or Responses to Criticism of the DSEIS, in Violation of the Requirements of 42 U.S.C. §§ 4331 and 4332; 10 C.F.R. §§ 51.91(A)(1), and (C), 51.92(2), 51.95(C)(4), and Part 51, Subpart A, Appendix A and Appendix B; 40 C.F.R. §§ 1052.1, 1052.2(G), 1502.9, and 1502.14; and 5 U.S.C. § 551 <i>et seq.</i>	2
A. The FSEIS Fails to Take a “Hard Look” at Alternatives to License Renewal Because in Preparing It NRC Staff Relied on Obsolete Information, in Violation of 10 C.F.R. §§ 51.72 and 51.91 and 40 C.F.R. § 1502.24.	8
B. The FSEIS Fails to Take a “Hard Look” at Alternatives to License Renewal Because in Preparing It NRC Staff Ignored and Failed to Respond to Extensive Timely and Relevant Comments, In Violation of 10 C.F.R. §§ 51.90 and 51.91	15
C. The FSEIS Fails to Take a “Hard Look” at Non-Fossil Fuel Alternatives.....	17
1. Renewable Sector Generation.....	18
2. Energy Efficiency/Energy Conservation	23
3. Purchased Electrical Power.....	28
4. Combined Heat and Power	30
D. The FSEIS Discussion of Energy Alternatives (Chapter 8) Does Not Permit a Rational Decision Maker to Determine Whether the Adverse Environmental Impacts of License Renewal Are So Great That Preserving the Option of License Renewal For Energy Planning Decision Makers Would Be Unreasonable	31
SUPPORTING EVIDENCE.....	43

PRELIMINARY STATEMENT

The State of New York respectfully submits this Contention 37 based on the Final Supplemental Environmental Impact Statement ("FSEIS") issued by Staff of the Nuclear Regulatory Commission ("NRC") on December 3, 2010.¹ This contention updates previously submitted State Contentions 9 and 33, which respectively assert that the Applicant's Environmental Report ("ER") and the NRC staff's Draft Supplemental Environmental Impact Statement ("DSEIS") failed to give meaningful consideration to non-fossil fuel alternatives to license renewal. Furthermore, this contention raises the new issue that Chapter 8 of the FSEIS does not provide a rational basis for the NRC's Record of Decision ("ROD").

Part A of Contention 37 asserts that the FSEIS fails to address previously identified deficiencies in the ER and the DSEIS.

Part B states that the FSEIS fails to meaningfully respond to criticism of the defects in the ER and DSEIS. Parts A and B fully incorporate the bases and supporting evidence relied upon in Contentions 9 and 33, and add to the supporting evidence offered in support of those contentions.

While recognizing that NRC regulations may not require the State to submit the supplemental contentions set out for Parts A and B, the State presents them now to forestall any claim that the State has not pursued its rights as secured by the U.S. Constitution, the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4323 *et seq.*, regulations promulgated by the Council on Environmental Quality ("CEQ") and the NRC, or the Administrative Procedure Act, 5 U.S.C. § 551 *et seq.*

¹ The Board extended the deadline for filing this contention to February 3, 2011. *See* Order and Memorandum dated December 27, 2010.

The second part of this contention, Parts C and D, sets forth new bases and new supporting evidence that the NRC Staff's choice of energy alternatives and analysis of the comparative environmental impacts of those alternatives is so deficient, arbitrary, and biased that it renders the FSEIS a nullity with respect to the Staff's recommendation that the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable. Although the FSEIS gives putative recognition to non-fossil fuel alternatives to license renewal not previously given consideration in the DSEIS, NRC Staff nonetheless fails to provide a meaningful and objective "hard look" at the comparative impacts of alternatives.² In the absence of a meaningful alternatives analysis, 10 C.F.R. Part 51 does not permit the Board or the Commissioner to adopt this recommendation into the Record of Decision.

CONTENTION 37

THE FSEIS DISCUSSION OF ENERGY ALTERNATIVES (CHAPTER 8) FAILS TO PROVIDE A MEANINGFUL ANALYSIS OF ENERGY ALTERNATIVES OR RESPONSES TO CRITICISM OF THE DSEIS, IN VIOLATION OF THE REQUIREMENTS OF 42 U.S.C. §§ 4331 AND 4332; 10 C.F.R. §§ 51.91(A)(1), AND (C), 51.92(2), 51.95(C)(4), AND PART 51, SUBPART A, APPENDIX A AND APPENDIX B; 40 C.F.R. §§ 1052.1, 1052.2(G), 1502.9, AND 1502.14; AND 5 U.S.C. § 551 *et seq.*

BASES

1. NEPA, 42 U.S.C. §§ 4321-37, requires all federal agencies to examine environmental impacts that could be caused by their discretionary actions. The Supreme Court has identified NEPA's twin aims as (1) obligating a federal agency to consider every significant

² NEPA mandates a genuine federal agency commitment to scrutiny. Because NEPA's purpose is procedural, an agency "may not merely go through the motions. An agency's '[g]rudging, pro forma' compliance with these regulations violates NEPA's procedural safeguards." *Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1116 (C.A.9 2002) (internal quotations and citation omitted).

aspect of the environmental impact of a proposed action and (2) ensuring that the federal agency informs the public that it has indeed considered environmental concerns in its decision-making process.³ As a federal agency, NRC must comply with NEPA.⁴ Compliance with NEPA imposes continuing obligations on an agency after it completes an environmental analysis. An agency that receives new and significant information casting doubt upon a previous environmental analysis must reevaluate the prior analysis.⁵ This requirement is codified in the NRC's own regulations, which require the NRC Staff to "independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement." 10 C.F.R. § 51.70(b). *See also* 10 C.F.R. § 51.92(a). Not surprisingly, the NRC's license renewal application regulations, at 10 C.F.R. § 51.95(3), provide that an FSEIS shall be issued "after considering any new information relevant to the proposed action," and pursuant to § 51.91(a)(1)(iii) and (iv) shall include factual corrections and supplementation or modification of analyses in response to comments on a draft environmental impact statement.

2. NEPA compels consideration in a draft environmental impact statement of alternatives to any proposed federal action. *See* 42 U.S.C. § 4332(2)(c)(iii). NEPA section 102(2)(E) further requires federal agencies to "study, develop, and describe appropriate

³ *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 97 (1983); *see also* 42 U.S.C. § 4332(2)(c) (identifying requirements of an environmental impact statement).

⁴ *Calvert Cliffs Coordinating Comm. v. United States Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971) (NEPA applies to NRC predecessor).

⁵ *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989); *see also* *Natural Res. Def. Council v. United States Forest Serv.*, 421 F.3d 797, 809, 813-14 (9th Cir.2005) (remanding for a fresh consideration of alternatives because the Forest Service used inaccurate data for market demand in developing its original NEPA analysis, rendering the initial consideration of alternatives inadequate, because it was impossible to tell what other alternatives the agency might have considered based on accurate information).

alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” This “alternatives provision” requires federal agencies to give “full and meaningful consideration to all reasonable alternatives.”⁶ Thus, when preparing an environmental impact statement, an agency must “[r]igorously explore and objectively evaluate all reasonable alternatives.”⁷ An environmental impact statement must do more than merely list alternative courses of action to the one recommended by the agency; alternative courses of action must be affirmatively studied, and the study of alternatives must be exhibited in the statement.⁸ In this regard, “general statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided.”⁹

3. An environmental impact statement must contain “high quality” information and “accurate scientific analysis.”¹⁰ This requires the federal agency, here the NRC, to ensure “the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.” 40 C.F.R. § 1502.24. To take the required “hard look” at a

⁶ See also 40 C.F.R. § 1502.1; *In the Matter of Pa'ina Hawaii, LLC (Materials License Application)*, CLI-10-18, Docket No. 30-36974-ML101890843, July 8, 2010, 2010 WL 2753784.

⁷ See also *In the Matter of Pa'ina Hawaii, LLC (Materials License Application)*, CLI-10-18, Docket No. 30-36974-ML, July 8, 2010, 2010 WL 2753784.

⁸ *Rankin v. Coleman*, 394 F.Supp. 647 (E.D.N.C.1975), *modified on other grounds* 401 F. Supp. 664.

⁹ “We have warned that ‘general statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided.” *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1380 (9th Cir.1998).

¹⁰ 40 C.F.R. § 1500.1(b); *Conservation Northwest v. Rey*, 674 F. Supp. 2d 1232, 1249 (W.D. Wash. 2009) (*citing Ctr. for Biological Diversity v. U.S. Forest Svc.*, 349 F.3d 1157, 1167 (9th Cir. 2003)).

proposed project's effects, an agency may not rely on incorrect assumptions or data.¹¹

Furthermore, NEPA obliges a federal agency to consider "the *relevant* factors" that bear on its decision, regardless of whether they are within the agency's control.¹²

4. NEPA's "alternatives" requirements have been incorporated into Part 51 of the NRC's regulations, which requires that "NRC's site-specific comparison of the impacts of license renewal with impacts of alternative energy sources will involve consideration of information provided by State agencies and other members of the public" so as to "satisfy the States' concerns relative to a meaningful analysis of alternative energy sources."¹³ Here, 10 C.F.R. § 51.91(3)(c) requires the FSEIS to quantify to the fullest extent practicable the various factors considered, including the economic and/or technical benefits and costs associated with the proposed license renewal and its alternatives to the extent that consideration of such information is necessary for a determination regarding the inclusion of reasonable and relevant alternatives. Furthermore, "the consideration of alternative energy sources in individual license renewal reviews will consider those alternatives that are reasonable for the region, including power purchases from outside the applicant's service area. In assessing the environmental

¹¹ *Id.* at § 1500.1(b) ("Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."); *Native Ecosystems Council v. U.S. Forest Svc.*, 418 F.3d 953, 964, 965 (9th Cir. 2005).

¹² *Conservation Northwest v. Rey*, 674 F. Supp. 2d 1232, 1251 (W.D. Wash. 2009) (citing *Idaho Sporting Congress*, 137 F.3d 1146, 1149 (*emphasis added*)).

¹³ Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467 (June 5, 1996).

impacts of new generating capacity it will not necessarily be assumed that the capacity would be constructed on the site under review.”¹⁴

5. Pursuant to 10 C.F.R. §§ 51.90 and 51.91, NRC Staff must prepare an FSEIS in accordance with 10 C.F.R. §§ 51.70(b) and 51.71 (regulating the ER and DSEIS)¹⁵ that “develops and evaluates alternatives not previously given serious consideration,” and based on comments on the DSEIS. The FSEIS must include “consideration of major points of view concerning the environmental impacts of the proposed action and the alternatives, and contain an analysis of significant problems and objections raised by other Federal, State, and local agencies, by any affected Indian tribes, and by other interested persons” (10 C.F.R. § 51.71(b)), and discuss and respond to any relevant responsible opposing view not adequately discussed in the DSEIS. 10 C.F.R. § 51.91(3)(b). These NRC requirements mirror the regulations adopted by the CEQ requiring federal agencies to fully analyze all feasible alternatives and explain the basis for their acceptances or rejections. *Id.*; *see also* 40 C.F.R. §§ 1503.4, 1505.1(e).

6. Appendix A to Subpart A to Part 51 requires analysis of the no-action alternative. Part 51, Subpart A, Appendix A, Section 4. Pursuant to 10 C.F.R. § 51.71, the environmental impact statement must analyze the evidence offered regarding the availability and environmental impacts of alternatives that would likely be implemented if no action were taken to relicense either Indian Point 2 (“IP2”) or Indian Point (“IP3”). Appendix A to 10 C.F.R. Part 51

¹⁴ Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 66,537, 66,541 (December 18, 1996).

¹⁵ At 10 C.F.R. § 51.71(a) NRC regulations explain that the scope of the Staff's final environmental review encompasses the requirements to which the Staff and the Applicant are held in the DEIS and ER, which under 10 C.F.R. § 51.53(c)(3)(iv) includes the obligation that the Applicant (and by reference, Staff) examine significant new information. *See* 10 C.F.R. § 51.71(a); 10 C.F.R. 51.53(c)(3)(iv); and 10 C.F.R. Part 51, Subpart A, Appendix B; *see also* 10 C.F.R. § 51.95.

emphasizes the importance of the examination of alternatives: "This section is the heart of the environmental impact statement. It will present the environmental impacts of the proposal and the alternatives in comparative form." Appendix A to 10 C.F.R. Part 51 at Section 5. CEQ regulations also require a federal agency to "include the alternative of no action." 40 C.F.R. § 1502.14(d). In addition, CEQ's regulations require the agency to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). Likewise, the CEQ requires a supplement to a draft environmental impact statement if "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. § 1502.9(c)(1)(I). Thus NRC requirements, guidance and decisions echo the regulations adopted by CEQ. *See* 40 C.F.R. § 1502.14, which, with a single exception not relevant here, has been accepted by NRC.¹⁶

7. These statutory and regulatory requirements to identify, develop, describe and objectively evaluate the site-specific alternatives to the proposed projects are conditions precedent to the NRC's license renewal decision and to the issuance of a Record of Decision.

8. Pursuant to 10 C.F.R. §§ 51.91(3)(c), 51.95(c)(4), and 51.103(a)(3), (5), the FSEIS shall render a recommendation based on the information and analysis set forth, and shall state how the alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA and of any other relevant and applicable environmental laws and policies.

9. Prior to issuing a Record of Decision, NRC must discuss preferences among alternatives based on relevant factors that it balanced in making its decision and must state how

¹⁶ *Limerick Ecology Action, Inc. v. Nuclear Regulatory Commission*, 869 F.2d 719, 725 (3d Cir. 1989).

these considerations entered into its decision. NRC must further determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable. 10 C.F.R. § 51.95(c)(4) and 10 C.F.R. § 51.103(a)(5). This standard “focuses on an analysis of whether the environmental impacts anticipated for continued operation during the term of the renewed license reasonably compare with the impacts that are expected from the set of alternatives considered for meeting generating requirements.”¹⁷

A. THE FSEIS FAILS TO TAKE A “HARD LOOK” AT ALTERNATIVES TO LICENSE RENEWAL BECAUSE IN PREPARING IT NRC STAFF RELIED ON OBSOLETE INFORMATION, IN VIOLATION OF 10 C.F.R. §§ 51.72 and 51.91 and 40 C.F.R. § 1502.24.

10. As shown in the attached declarations of David A. Schlissel [Att. 4], Peter Lanzalotta [Att. 5], and Peter Bradford [Att. 6], the FSEIS fails to provide a comprehensive no-action alternative that accurately represents the status quo at time of the final supplement, in violation of 10 C.F.R. §§ 51.72(a)(1) and (2), 51.91(a)(1)(iii) and (iv), and 40 C.F.R. § 1502.24. Specifically, the FSEIS ignores:

- a. The addition of significant new supply, transmission and DSM resources in New York State. Since 2000, New York has added over 7,800 MW of new generation, nearly 1,300 MW of new transmission, and nearly 2,400 MW of demand response, 80% of which has been occurred where demand is the greatest in the New York City, Long Island and the Hudson Valley region;¹⁸
- b. Significant actual and forecast declines in the demand for electric power, which are attributable only in part to the recession;

¹⁷ Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 66,537, 66,541 (December 18, 1996).

¹⁸ New York Independent System Operator *2010 Summer Outlook*, May 2010, p. 10-11.

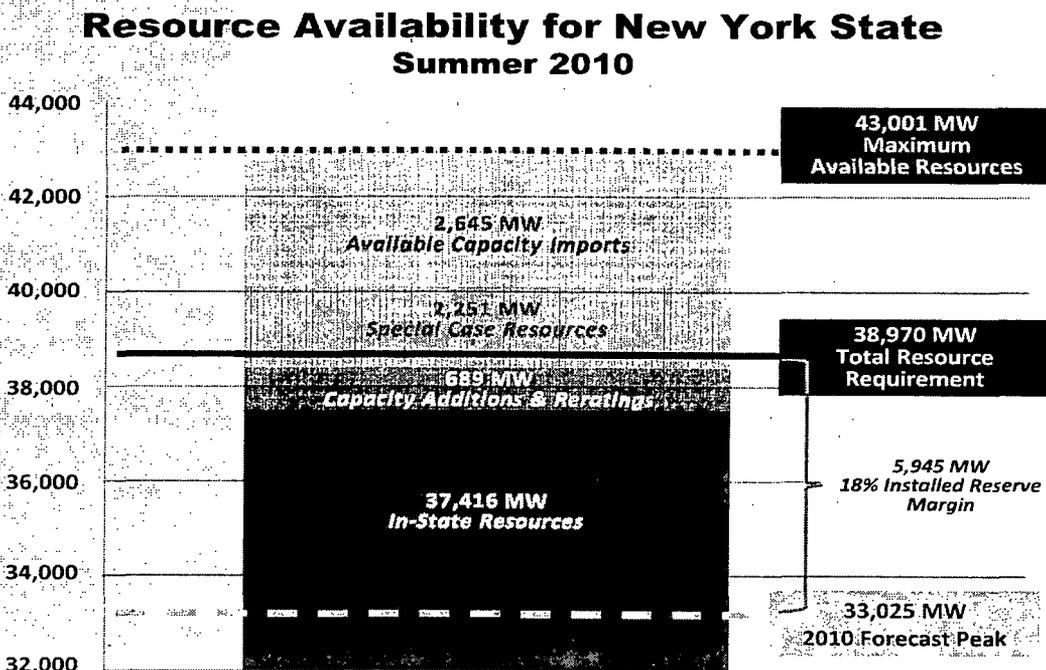
- c. Major electrical transmission line developments that directly impact and increase New York State's capacity to import electrical power and utilize off-site renewable generation as alternatives to the power supplied by Indian Point, which include a significant expansion of transmission capacity into Metro NYC markets, innovative steps to integrate wind generation, and mandatory inclusion of renewable sector, energy efficiency and demand response programs into New York State's energy transmission and energy planning process;
- d. The declining price and increased availability of natural gas to meet New York and Northeastern energy needs;
- e. New York's progress in implementing its Renewable Portfolio Standard, especially wind power;
- f. New York's progress in implementing energy efficiency pursuant to the 15 x 15 program and the 45 x 15 Clean Energy Program, including the impact of federal stimulus revenues and state incentives; and
- g. The impact of the federal stimulus American Recovery and Reinvestment Act of 2009 ("ARRA") and state incentives since 2007 that significantly support the expansion of energy efficiency programs and renewable electricity generation in New York State and increase the viability and effectiveness of those alternatives.

11. The FSEIS No-Action Alternative is identical in all respects to the DSEIS No-Action Alternative and continues to repeat and advance outdated assumptions such that it no longer accurately represents the project environment. The NRC Staff relies primarily on obsolete or stale economic data and studies (National Research Council 2006, Levitan 2005 and GE/NERA 2002) that pre-date both the 2007 financial crisis and subsequent recession, and New York's implementation of aggressive state-wide policies and programs to significantly increase energy efficiency, conservation and renewables throughout the state, in general, and in the zones currently receiving power from Indian Point, in particular.

12. For example, relying primarily on a single study that pre-dates the above developments (National Research Council 2006), the FSEIS assumes a need for too much power: "[b]ased on currently scheduled unit retirements and demand growth projections, the NYISO

predicted in 2006 that up to 1600MW(e) from new projects not yet under construction would be needed by 2010 and a total of up to 3300MW(e) by 2015.” FSEIS § 8.3.2. p. 8-39.

13. Made in May 2006, the National Research Council’s estimates are not a credible basis for decisions to be made in 2011. See Bradford Declaration, ¶ 8 [Att. 6]. The 2006 estimates, which rely on data from 2005 and earlier, have been superseded by numerous dramatically lower forecasts that are readily obtainable. In fact, the current market reality is that Indian Point serves a market in which total resource capability for 2010 is 43,000 MW - nearly 10,000 MW more than its 33,000 MW forecast peak demand, and nearly 5,000 MW in addition to its installed reserve margin requirement.



SOURCE: 2010 Load and Capacity Data Report - New York Independent System Operator

14. The potential institutional constraints on which the National Research Council Report placed particular emphasis¹⁹ have, in fact, not proven to be a barrier to New York's moving from a position in which ability to construct new generation at an adequate pace was in doubt to one in which the New York Independent System Operator ("NYISO") sees no likelihood of generation constraints well into the future. *See* Bradford Declaration, ¶ 8 [Att. 6].

15. The FSEIS relies on obsolete market assumptions to summarily exclude alternatives from consideration. For example, the NRC Staff reasons that "given that the demand for electricity is increasing and, in the near term, planned new sources within the NYCA are just keeping pace with retirements, the NRC staff does not consider delays in the retirements of existing plants to be a feasible alternative to compensate for the loss of power from IP2 and IP3." FSEIS § 8.3.4.11. In fact, the demand for electricity in New York State, and in the zones specifically supplied by Indian Point, has sharply decreased as a result of the economic recession, the State's energy efficiency programs, and aggressive demand response programs.

16. The FSEIS ignores the fact that New York State experienced a 4.1% drop in power demand due to the recession and weak economic recovery.²⁰ This trend is forecast to continue over the proposed period of license renewal. The NYISO recently noted that annual peak demand growth in New York is expected to decline from an average annual rate of 0.68% in the past decade, to 0.47% over the years 2010 to 2014 and to decline further to 0.27% over the

¹⁹ "It is problematic whether the existing legal, regulatory and financial mechanisms provide sufficient incentive to build new capacity resources in New York," (2006 National Research Council Report, p. 4).

²⁰ NYISO 2009 Annual Report, p. 6.

years 2014 through 2018.²¹ The New York State Energy Plan further projects that increases in conservation programs, coupled with moderated economic growth, will cause lower expected energy use per capita through 2018.²² As set forth more fully in the attached declarations of David Schlissel [Att. 4], and Peter Bradford [Att. 6], the projected decline in demand growth over the period in which the Indian Point units would be either granted license renewal, or retired, is directly relevant to the timing, cost, and viability of license renewal relative to other energy generation alternatives.

17. The NYISO's *2009 Annual Report, Energizing the Empire State* summarizes the recent and fundamental changes to New York's energy markets as follows:

The number of participants in New York's wholesale electricity markets has tripled – from 120 in 2000 to approximately 400 in 2009. The value of transactions in the NYISO markets has grown to more than \$75 billion. Demand response programs, providing incentives for energy conservation during peak periods, were created and have flourished. They now total over 2,300 megawatts, an amount equal to four medium sized power plants.

Market prices reached historic lows in 2009 – 50 percent lower than in 2008 -- driven by lower electricity use and drops in the prices of natural gas (one of New York's chief generating fuels). Discounting fluctuations in the cost of fuel used to generate electricity, wholesale electricity costs dropped by 18 percent, representing a \$2.2 billion savings on a current annual basis. In the market environment, power producers have invested heavily in new generation and upgrades to existing facilities. Consumers have benefited through prices that are lower than they might have been otherwise.

Environmental quality has been enhanced by the addition of more emission-free, renewable power resources and enhanced power plant efficiencies that have contributed to reduced emission rates. For example, the system-wide heat rate of fossil-fueled power plants improved by 21 percent. Power plant emission rates, measured in tons per year for sulfur dioxide, nitrogen oxides, and carbon dioxide,

²¹ NYISO *2009 Comprehensive Review of Resource Adequacy*, March 10, 2010, p. A-18.

²² *2009 NYS Energy Plan: Energy Price and Demand Annual Long-Term Forecast: 2009-2028*, p.

have dropped by double digits since 2000. NYISO markets continued to evolve in 2009 as innovations made New York the first to integrate wind in economic dispatch and adopt pioneering design to enable new energy storage technologies to provide regulation-only service.²³

18. None of the above developments are reflected in the FSEIS. The NRC Staff's reliance on obsolete studies of Indian Point's market environment produces fundamental errors in reasoning that directly impact the set of alternatives included in the FSEIS. For example, the FSEIS continues to rely on a 2006 Department of Energy study²⁴ to assume, with no further analysis, that Zones H, I, J, and K are "critical congestion areas" and that this situation will continue indefinitely. FSEIS § 8.3, p. 8-27. Furthermore, the FSEIS assumes that a purchased power alternative must be supported by 2100 MW of new transmission construction. FSEIS § 8.3.2. Likewise, the FSEIS's analysis of natural gas-fired combined-cycle (NGCC) generation relies on a single study (Levitan 2005) that also pre-dates significant and fundamental structural changes in the natural gas sector. FSEIS § 8.3.1. As set forth in the attached Declarations of David Schlissel [Att. 4], and Peter Bradford [Att. 6], these developments directly impact plant viability, plant retirement, and new gas-fired generation in New York State during the anticipated retirement period of the Indian Point units. Cumulatively, these reduced energy sales, peak loads, and gas prices affect the need for the energy and capacity from Indian Point

²³ NYISO 2009 Annual Report: *Energizing the Empire State*, Markets, p 12.

²⁴ The State challenged NRC Staff's reliance on this study in Contention 33 because Staff failed to acknowledge that this DOE decision was the subject of judicial challenge. *See* Contention 33 ¶ 15 (ML090690303). The 2006 DOE Congestion Study and subsequent National Interest Electric Transmission Corridor (NIETC) designations have since been vacated because DOE failed to properly consult with the affected States in conducting the Congestion Study and failed to comply with the requirements of NEPA. *Wilderness Society et al. U.S. Department of Energy*, WL294087, slip op. Feb. 1, 2011 (9th Cir. No. 08-71074) (Failure to consult was not harmless error under the APA).

Units 2 and 3 and “are essential for a determination regarding the inclusion of alternatives considered or relevant.” 10 C.F.R. 51.95(c)(2).

19. Moreover, the FSEIS categorically fails to recognize that the State’s energy efficiency and energy conservation programs (collectively referred to as demand side management or “DSM”) have become a fully integrated, and critical element of New York State’s energy market, energy planning mechanisms, and energy infrastructure. Since the New York State Public Service Commission (“NYSPSC”) implemented its jurisdictional portion of the Governor’s initiative to lower energy consumption on the electricity system by 15% of the 2007 forecasted levels by 2015, the NYISO has implemented a revised transmission planning process that gives equal weight to generation, transmission, and DSM in the planning of transmission and energy services.²⁵ Recently, the NYISO observed that the State’s projected energy efficiency gains were a significant factor why no reliability needs were identified in the NYISO’s most recent reliability needs assessment.²⁶

20. Despite these fundamental changes in New York’s energy markets and energy infrastructure, the FSEIS’s “no-action” alternative parrots verbatim the same outdated assumptions contained in the DSEIS’s “no-action” regarding New York’s energy grid, and fails to provide accurate, current information on the range of potential solutions available to address the capacity, congestion, and reliability concerns relevant to the license renewal. *See* Lanzalotta Declaration ¶¶ [3-20] [Att. 5].

²⁵ See discussion regarding reliability concerns on page 11, *supra*.

²⁶ NYISO 2009 *Comprehensive Review of Resource Adequacy Covering the New York Control Area for the Period 2010 to 2014: Final Report Approved by NPCC RC*, March, 2010, A-12.

21. Because NRC Staff has failed to accurately portray New York's energy markets, sources of generation, transmission grid conditions, and alternative sources of generation reasonably available to replace the power supplied by IP2 and IP3 over the period of license renewal, the FSEIS distorts the analysis of the amount, location, and timing, of new and/or alternative sources of necessary to replace the power supplied by Indian Point.

B. THE FSEIS FAILS TO TAKE A "HARD LOOK" AT ALTERNATIVES TO LICENSE RENEWAL BECAUSE IN PREPARING IT NRC STAFF IGNORED AND FAILED TO RESPOND TO EXTENSIVE TIMELY AND RELEVANT COMMENTS, IN VIOLATION OF 10 C.F.R. §§ 51.90 AND 51.91.

22. In addition to its obligation to diligently seek out information about the potential environmental impacts of renewing operating licenses for Indian Point and to take a "hard look" at the information it obtains on its own, NRC Staff has a separate and independent duty to take a "hard look" at information supplied by others and to "include responses to any comments on the draft environmental impact statement or to any supplement to the draft environmental impact statement." 10 C.F.R. § 51.91. NRC Staff has defaulted on its duty to examine and respond to the large majority of the State's opposing views on the viability of non-fossil fuel alternatives to license renewal reasonably available to mitigate the environmental impacts of license renewal, including comments made as early as November 2007, setting forth viable alternatives that remain unexamined by Staff today.²⁷

23. Specifically, the FSEIS wholly ignores, and fails to respond to the November 28, 2007 Report prepared by David A. Schlissel of Synapse Energy Economics, entitled *Report on*

²⁷ New York State Notice of Intention to Participate and Petition to Intervene, dated November 30, 2007, NRC Docket Nos. 50-247-LR and 50-286-LR, ML073400187.

the Availability of Replacement Capacity and Energy for Indian Point Units 2 and 3 (contained in ML073400205). [Att. 1]. That report:

- a. quantified the achievable energy efficiency potentials for the capacity zones currently supplied by Indian Point (pp. 3-6);
- b. quantified the renewable generation capacity forecasted to be available statewide by generation type at the time of license renewal, and rebutted the technical assumptions relied upon by Entergy to discount wind generation's contribution (pp. 7-11);
- c. developed a combined energy conservation and renewable energy alternative to license renewal (pp. 9-12), which remains unexamined by the NRC Staff;
- d. developed an alternative to license renewal based on power plant repowering which included a list of currently proposed plant repowering projects (pp. 12-13), which remains unexamined by the NRC Staff;
- e. outlined transmission system enhancements and upgrades as part of the portfolio of options for replacing the capacity and energy from the IP2 and IP3, identifying current and proposed transmission projects to enable a purchased power alternative (pp. 14-15); and
- f. identified new generation and natural gas developments relevant to the choice, timing, and cost of alternatives to license renewal (pp. 15-18).

24. The FSEIS ignores and fails to respond to the declaration of Peter Bradford, dated November 28, 2007 (contained in ML073400205) [Att. 2], and the arguments contained therein, including that the NRC Staff limits the analysis of energy alternatives to a comparison of nuclear energy to fossil fuels, at the expense of a meaningful consideration of conservation and renewable generation. [Att. 2, at ¶¶ 8, 9].

25. The FSEIS also ignores a second declaration by David Schlissel, dated February 27, 2009 (ML090690303) [Att. 3], which noted that reduced energy sales and peak loads will delay and defer the need for the energy and capacity from the Indian Point Units 2 and 3 if the operating licenses were not renewed, and which identified deficiencies in the DSEIS that

significantly underestimated the impact of energy efficiency, energy conservation, renewable energy, facility re-powering, and transmission-/ interconnection enhancements in New York State and in NYCA Zones H, I, J, and K, and which proposed two additional sets of combinations of energy alternatives as set forth in the State's supplemental contention. *See also* NYS Contention 33 at ¶ 21 (ML090690303). The FSEIS fails to examine these two proposed energy alternatives.

26. As set forth more fully below, while the FSEIS gives a limited response to the State's opposing view on energy conservation, purchased electric power, and renewable generation²⁸ by including a conservation alternative (FSEIS § 8.3.3), a purchase power alternative (FSEIS § 8.3.2), and combined alternatives with slightly greater (200 MW more) renewable generation (FSEIS § 8.3.5.1 and FSEIS § 8.3.5.2), the NRC Staff nonetheless largely ignores the above declarations, studies, and reports, and similarly ignores substantial evidence that directly contradicts key assumptions fundamental to the choice of alternatives and analysis of comparative environmental impacts.

27. That the State's comments provide much of the same information that NRC Staff should have located on its own, but did not, does not obviate that the fact that the Staff's failure to address the State's comments is a separate and distinct violation of the Staff's duty to take a "hard look."

C. THE FSEIS FAILS TO TAKE A "HARD LOOK" AT NON-FOSSIL FUEL ALTERNATIVES

28. Although the FSEIS is facially responsive to the State's comments on the DSEIS because, in contrast to the DSEIS, the FSEIS considers conservation (FSEIS § 8.3.3), purchased

²⁸ *See, e.g.*, Contention 9, ¶¶ 4, 8, 9 (ML073400187), Contention 33 ¶¶ 5-21 (ML090690303).

electrical power (FSEIS § 8.3.2), and combined alternatives with slightly greater (200 MW more) renewable generation (FSEIS § 8.3.5.1 and FSEIS § 8.3.5.2) as alternatives to license renewal, the NRC Staff nonetheless fails to meaningfully describe, study, and objectively evaluate those alternatives, and have not afforded non-fossil fuel alternatives the “hard look” demanded by § 102(2)(C)(iii) and (E) of NEPA, 40 C.F.R. §§ 1502.14, and 10 C.F.R. §§ 51.91(3)(b) and 51.91(a)(1)(iii).

1. RENEWABLE SECTOR GENERATION

29. The NRC Staff's investigation of renewable sector generation sector as an alternative to license renewal is neither consistent nor thorough. For example, the Staff relies on the Department of Energy / Energy Information Administration's (“DOE/EIA”) report “Annual Energy Outlook 2010 with Projections to 2035” Department of Energy (DOE/EIA 2010) report to “help select reasonable alternatives to license renewal,” FSEIS § 8.3. pp. 8-28, l. 37. NRC Staff adopts DOE/EIA's conclusion that coal generation is forecast to decline, but ignores the DOE/EIA's conclusion that renewable generation is forecast to sharply increase over the time period relevant to license renewal.

30. According to the DOE/EIA, escalating construction costs for capital-intensive generation technologies, Federal tax incentives, State energy programs, and rising prices for fossil fuels have sharply increased the competitiveness of renewable generation.²⁹ The NRC Staff wholly ignores these factors in its consideration of renewable generation.

31. DOE/EIA forecasts that the renewable sector will account for 37 percent of new capacity additions over the forecast period, with wind generation providing the largest share of

²⁹ U.S. Energy Information Administration, *Annual Energy Outlook 2010 with Projections to 2035*, April 2010, Executive Summary.

this growth, as compared with 12 percent for coal-fired plants, and only 3 percent for nuclear.

Id. The NRC Staff ignores these facts, and the related fact that in New York State, specifically, the renewable sector's share of electricity generation increased sharply in 2009, with wind generation providing the largest share of this growth, while generation from fossil fuels decreased.³⁰

32. This strong growth in New York's renewable sector is partly a result of New York State's Renewable Portfolio Standard ("RPS"), adopted in 2004 - the State's primary policy initiative to promote the development of renewable resources. The 2004 RPS goal aims to increase the amount of electricity delivered to New York consumers generated by renewable resources to 25 percent by 2013.

33. In his 2009 State of the State address, Governor Paterson proposed to raise the renewables target by announcing New York's "45 x 15" clean energy goal.³¹ This goal challenges the State to meet 45 percent of its electricity needs by 2015 through increased energy efficiency and renewable energy. The goal calls for a reduction in electricity end-use by 15 percent, primarily through the expansion of energy efficiency activities, while simultaneously meeting 30 percent of the State's electricity supply needs through renewable resources.³² The FSEIS briefly mentions, but does not study, the impact of the State's "45 x 15" policy on the renewable sector. *See* FSEIS § 8.3.3. p. 8-43.

³⁰ NYISO 2010 Summer Outlook, May 2010, p. 25.

³¹ Governor David A. Paterson, *Our Time to Lead: State of the State Address*, 2009. Available at: http://www.state.ny.us/governor/keydocs/speech_0107091.html.

³² *New York State Energy Plan. Renewable Energy Assessment*, December 2009, at p. 1.

34. As noted above, New York State is already well on its way towards achieving its renewable energy goals, and the renewable sector's share of electricity generation is expected to continue to increase relative to fossil fuels and nuclear power over the proposed period of license renewal. The *Renewable Energy Assessment* in the 2009 New York State Energy Plan presents evidence of a technical/practical potential for renewable resources of more than 141,000 gigaWatt-hour ("GWh") by the year 2018.³³ The Long Island Power Authority ("LIPA"), while not bound by the RPS target, said that it would provide approximately 2,000 GWh of renewable energy toward the goal by 2013.³⁴ The voluntary market, where customers pay a premium to purchase electricity generated from renewable sources, is expected to contribute another 2,000 GWh toward the RPS by 2013. Combined, Indian Point Units 2 and 3 produce approximately 15,000 GWh annually.

35. The FSEIS fails to provide any critical analysis of the State's RPS program or "45 x 15" clean energy goals. The NRC Staff failed to update the FSEIS's "no action alternative" (FSEIS § 8.2) to reflect the implementation of either program. Section 8.3 of the FSEIS, which describes the NRC Staff's "alternatives process" for selecting alternatives likewise fails to consider the State's RPS program and clean energy goals. (FSEIS § 8.3 pp. 8-26- 828). Furthermore, FSEIS § 8.3.3 "Combination of Alternatives," gives only passing mention to the existence of New York State's RPS program and instead relies on two stale studies (Levitan 2005 and the National Research Council 2006), both of which pre-date the State's "45 x 15"

³³ The technical/practical potential of a renewable resource reflects technical constraints such as energy generation capacity factors and manufacturing base, developable land resources, and limited social constraints, to the "pure" technical potential value to produce a more achievable estimate. *New York State Energy Plan: Renewable Energy Assessment*, December 2009, at p.7.

³⁴ *Renewable Energy Assessment New York State Energy Plan*, December 2009, at p. 12.

program, to evaluate the renewable sector generation's current and future potential as an alternative to license renewal.

36. Contrary to substantial evidence in the record, the FSEIS erroneously concludes, without any critical analysis and with only bare assertions regarding NRC Staff's beliefs, that there are too many obstacles to implementing sufficient wind power or other renewable energy sources such that these source could not provide anything more than 600 MW to replace either or both IP units. *See* FSEIS § 8.3.5. 8-59 to 8-61. This Staff belief is obviously arbitrary since the FSEIS, itself, contradicts it by forecasting a total amount of 1,765 MW combined renewable generation to be online and available by 2015.³⁵ FSEIS § 8.3.5. 8-61.

37. Indeed, as of 2009, 1,300 MW of wind projects had *already* come on line in New York. Wind projects also comprise a dominant portion of the proposed new generation projects in the NYISO's interconnection queue. Wind power developers have been particularly active in recent years, and as of the end of 2009, New York ranked 7th among U.S. states in terms of the amount of wind generating capacity built and in operation. Some 7,000 MW of additional wind power have been proposed for interconnection with the New York electric grid between 2010 and 2017.³⁶ Historically, a large portion of the requests that enter the Interconnection Queue are

³⁵ Moreover, the FSEIS claims that "in the years 2011 through 2015, NYSDPS expects 1076 MW of wind power to come online." (8-61, lines 20-21). By contrast, page one of the 2009 NYS Energy Plan: Renewable Energy Assessment states "as of the end of 2008, 791 wind turbines had [already] been installed in the State with a total capacity of 1,260.8 megawatts (MW)." Furthermore, the NYISO reports that in 2009, it became the first grid operator to integrate wind-generated electricity into economic dispatch and a wind power milestone was achieved in February 2009, as the actual capacity of New York's wind power generation totaled 1,275 megawatts, with proposed projects offering the potential of another 7,000 megawatts. *NYISO 2009 Annual Report*, p. 6.

³⁶ *NYISO Power Trends 2010: New York's Emerging Energy Crossroads*, p. 16. Furthermore, the NYISO expanded the eligibility of intermittent resources for special market rules from 500 MW to 3,300 MW to accommodate increased penetration levels of wind plants on the system. *Id.*

not actually constructed. However, even if only 20% of the proposed projects come online, there would still be an *additional* 1,587 MW increase in New York wind generating units by 2017.

38. Nonetheless, NRC Staff continues to apply bare assertions and obsolete assumptions to limit consideration of wind generation,³⁷ and to arbitrarily insist that wind generation must be supported by back-up generation even when considered in combination with the continued operation of one IP unit, FSEIS § 8.3.5.1, or with a gas plant. FSEIS § 8.3.5.2. The NRC Staff simply ignores the State's opposing view on this issue,³⁸ and the significant steps taken by the NYISO to allow the New York grid to accommodate sharply increasing levels of wind generation. In its 2009 Annual Report, the NYISO states that it has implemented a state-of-the-art wind forecasting system, and "became the first grid operator to integrate wind-generated electricity into economic dispatch."³⁹ It is planning for more wind energy by considering new operating procedures, market rules, storage technologies, and transmission reinforcements that would increase "the amount of wind that could be reliably integrated into the bulk power system and delivered to the load."⁴⁰ Indeed, the most recent NYISO wind study concluded that "the addition of up to 8,000 MW of wind generation to the New York power

³⁷ The NRC Staff continues to assume a 10% capacity credit for all wind power, that energy storage technologies are too expensive to support wind generation, and that intermittency issues can only be addressed by other readily dispatchable power sources like hydropower. FSEIS §§ 8.3.4.1

³⁸ See, e.g., Contention 33 (ML090690303) and Synapse Report, pp. 7-11. [Att. 1]

³⁹ NYISO *Energizing the Empire State: 2009 Annual Report*, 2009, p. 6. See also NYISO *Power Trends 2010*, p. 16.

⁴⁰ NYISO *Integration of Wind into System Dispatch*, October 2008, p. 5-1.

system will have no adverse reliability impact (and) would supply in excess of 10% of the system's energy requirement."⁴¹

39. The FSEIS acknowledges that energy storage devices, when combined with wind power, may enable wind to function as a baseload generator, FSEIS § 8.3.4.1. Nonetheless, the NRC Staff ignores the development of the nation's first full-scale flywheel energy storage plant, located less than 100 miles from Indian Point, and ignores additional storage projects proposed to come online in 2014. *See* Schlissel Declaration, at ¶ 31 [Att. 4]. The NRC Staff likewise ignores steps taken by private and semi-private entities across New York to integrate wind power into the grid. General Electric, for example, has recently announced the launch of its WindInertia technology, which will aid in replacing lost frequency response as the New York State wind industry shifts from rotating energy generation to inverter-based generation. NYISO 2009 Annual Report, p. 33.

2. ENERGY EFFICIENCY / ENERGY CONSERVATION

40. The FSEIS is marginally more realistic than the ER and the DSEIS in that it does appear to consider energy conservation and energy efficiency as a stand alone alternative to the relicensing of the Indian Point units. FSEIS § 8.3.3. However, it falls well short of NRC's NEPA obligation to take a "hard look" at specific alternatives in order to provide a rational basis for choosing among the alternatives, and to make relevant information available to other entities that may also play a role in the decision making process.

41. The NRC Staff fails to clearly describe and identify the FSEIS's conservation alternative. To begin with, it is not clear whether the FSEIS examines energy conservation as a

⁴¹ NYISO *Growing Wind: Final Report of the NYISO 2010 Wind Generation Study*, September 2010, at iv.

stand-alone or as a partial alternative to license renewal. On the one hand the FSEIS states: “NRC Staff examines conservation in this SEIS as an alternative to replace at least part of the output of IP2 and IP3,” FSEIS § 8.3.3. p. 8-42, and “NRC staff here considers an energy conservation/energy efficiency alternative, and will also include energy conservation in the combination alternatives.” *Id.* at 8-43. The FSEIS furthermore suggests that “energy efficiency and demand side management could replace at least 800 MW(e) of the energy produced by IP2 and IP3” *id.*, and “possibly much more.” *Id.* However, the FSEIS never states whether NRC Staff has determined that energy conservation can replace all of the power supplied by IP2 and IP3.⁴² Furthermore, the FSEIS also purports to include, inexplicably, an unquantified amount of “the energy-saving impacts of solar power” in its conservation estimates. FSEIS § 8.3.4.5. p. 8-46. The NRC Staff then fails to affirmatively analyze these impacts, since there is no further analysis of the impact of solar generation to be found anywhere in the FSEIS.⁴³

42. Notably, the FSEIS does not develop, describe, and analyze a site-specific conservation alternative for Indian Point. Instead, NRC Staff adopts the results of two license renewal FSEISs for out-of-state plants. Specifically, the FSEIS incorporates NUREG-1437, Supplement 33 (Shearon Harris, located in North Carolina) (2008) and NUREG-1437, Supplement 37, (Three Mile Island, Unit 1 located in Pennsylvania) (2009) to summarily

⁴² In footnote 4 of Section 8.3.3. Staff states that it considered both energy efficiency and conservation measures, but fails to define what combination of measures was specifically analyzed.

⁴³ The FSEIS relies on the 2006 National Research Council study estimate that solar PV can generate 325 MW in the NYCA by 2015 if PV costs decline and there is a long-term commitment to expand New York’s PV program. FSEIS § 8.3.4.1. The NRC Staff summarily dismisses solar PV from consideration as an alternative to license renewal, however, with no analysis of PV costs, which have declined sharply since 2006, and no analysis of the impact of New York’s RPS and 45x15 policies on the State’s share of solar generation. *See, e.g.* Synapse Report, p. 11 [Att. 1].

conclude that, for conservation, all impacts, except socio-economic impacts, are SMALL.

FSEIS § 8.3.3 8-43, lines 20-23. With respect to socio-economic impacts, the FSEIS summarily concludes in one line that “loss of tax and PILOT revenue paid to municipalities near IP2 and IP3, as well as lost jobs, may result in SMALL to MODERATE socioeconomic impacts, which will not be offset by conservation.” FSEIS § 8.3.3 8-43, lines 24-26. The NRC Staff provides no further analysis in support of this later assertion.⁴⁴ The NRC Staff ignores substantial evidence that associates energy conservation with economic development and job creation.⁴⁵

The Staff further ignores the argument that New York State’s EEPS program is designed to also stimulate economic development and create jobs in the clean energy sector for New Yorkers.

Thus, the NYSPSC approved a Workforce Development Program administered by the New York State Energy Research and Development Authority (“NYSERDA”) to support in 2010-2011 the training needs of over 6,200 workers necessary for the State’s energy conservation and energy efficiency programs.⁴⁶

⁴⁴ New York State has previously argued that when the plants are shutdown and decommissioned, the value of adjacent land will increase substantially, thus providing new tax payments and the site itself will be available to be developed for another productive purpose. See ¶¶ 3,4,11 NYS Contentions 17/17A, admitted by the Board in *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), Memorandum and Order (Ruling on Petitions to Intervene and Requests for Hearing) LBP-08-13 at 82-83, 68 NRC 43 (July 31, 2008) and Order (Ruling on New York State’s New and Amended Contentions) (June 16, 2009) at 8; and ¶¶ 4,5 of New York State Contention 17B (filed on January 24, 2011).

⁴⁵ See, e.g., Entergy sponsored paper: *Energy Efficiency Equals Economic Development: The Economics of Public Utility System Benefit Funds*, Jerrold Oppenheim & Theo MacGregor, June 2008 available at: http://www.entergy.com/global/our_community/advocate/Poverty_book.pdf.

⁴⁶ NYSPSC Case 07-M-0548, Order dated June 18, 2009, available at: http://www.dps.state.ny.us/07M0548/ORDER_AUTHORIZING_WORKFORCE_DEVELOPMENT_INITIATIVE_June-22-2009.pdf

43. The FSEIS bases its conservation alternatives for Indian Point entirely on NUREG-1437, Supplement 33 and NUREG-1437, Supplement 37. This sole reliance on data from two other states is inconsistent with the site-specific environmental impact statement contemplated by the 1996 revisions to Part 51.⁴⁷ Moreover, NRC Staff has not shown that conditions in Pennsylvania and Ohio are comparable to those in New York. In fact, the conditions are not comparable. Neither Pennsylvania (Three Mile Island, Unit 1) nor North Carolina (Shearon Harris) has energy efficiency programs and goals as aggressive as New York's.⁴⁸ Furthermore, North Carolina is a fully regulated electric power jurisdiction, which creates a DSM framework very different from New York's competitive power market. North Carolina also has not adopted any program comparable to the Regional Greenhouse Gas Initiative. As a result of these differences, the FSEIS provides no meaningful evaluation of the potential of conservation and energy efficiency programs to aid decisionmakers in assessing their viability as alternatives to license renewal for one or both Indian Point units.

44. The FSEIS gives only passing lip service to the State of New York's energy efficiency and energy conservation programs, and wholly ignores the expert report, prepared by David Schlissel and Synapse and submitted in this proceeding by the State in 2007 (ML073400205), that quantified the energy efficiency potential forecasts for the proposed license renewal period for the market zones currently supplied by IP2 and IP3. *See* Synapse Report, pp. 3-6, [Att. 1].

⁴⁷ *Supra*, p. 39, ¶ 68-70.

⁴⁸ Pennsylvania ranks 16th on the American Council for an Entergy-Efficient Economy's ("ACEEE") 2010 ranking; North Carolina ranks 24th. New York is fourth. (ACEEE 2010 *State Energy Efficiency Scorecard*, p. 66).

45. As set forth in the attached 2011 Declaration of David Schlissel, New York State has continued to make impressive energy efficiency gains, and there is sufficient energy efficiency potential in New York to meet the State's goal of "15 by 15." The *2009 New York State Energy Plan's Energy Efficiency Assessment Report* estimates New York's achievable energy efficiency potential through 2015 to be 26,000 GWh.⁴⁹ (By comparison, Indian Point Units 2 and 3, generate approximately 15,000 GWh). Of this 26,000 GWh of achievable potential, approximately 38% (9,824 GWh) of the savings can be realized in New York City, 14% (3,603 GWh) in Long Island, and the remaining 48% (12,573 GWh) in the rest of New York State.⁵⁰ This estimated efficiency potential only takes into account policies that are currently in effect, however. Energy efficiency studies that take into account policies related to improved building codes and appliance standards that have passed but not yet taken effect, or for which implementation is highly likely in the next ten years, conclude that additional electricity savings of 11,000 GWh, or an extra 5.7% from forecasted demand, are likely.⁵¹ If the same percentages apply to the regional savings values stated above, New York City's (NYCA Zone J) total potential would increase to just over 14,000 GWh and Long Island's (NYCA Zone K) total potential would increase to more than 5,000 GWh. Additional potential in NYCA Zones H and I, if achieved with that in New York City and Long Island could more than offset the energy generated each year at Indian Point. See Schlissel Declaration ¶¶ 19- 23 [Att. 4].

⁴⁹ Optimal Energy, Inc. *Achievable Electric Energy Efficiency Potential in New York State*, 2008. As cited in the New York State Energy Plan: *Energy Efficiency Assessment*, December 2009, page 6.

⁵⁰ *Id.*

⁵¹ *Id.* at page 5.

46. Furthermore, these energy efficiency potentials are reasonably achievable. New York has a long history of investments in energy savings, first through the implementation of the Systems Benefit Change ("SBC") by the NYSPSC, and now through the Energy Efficiency Portfolio Standard ("EEPS") also under the auspices of NYSPSC. The NYISO's Demand Response programs, which enlist electricity customers to conserve power in response to system conditions, are also effectively and aggressively reducing the need for additional capacity. One of the NYISO's Demand Response programs, called Special Case Resources, currently has registrations of 2,084 MW, an increase of 761 MW from last year.⁵² The FSEIS contains no analysis of these programs.

3. PURCHASED ELECTRICAL POWER

47. The FSEIS identifies purchased electrical power as an alternative to license renewal. FSEIS § 8.3.2. Based on its outdated view of Indian Point's market, NRC Staff erroneously assumes that 2,100 MW of additional transmission capacity must be installed in order to support a New York purchased power alternative. FSEIS § 8.3.2. p.8-40. In fact, as noted above, the NRC Staff's underlying assumption is patently obsolete⁵³ and unsupported by

⁵² NYISO *Reliability Summary 2009-2018*, p. 5-6.

⁵³ New York State's capacity to import purchased electrical power is dynamic. In 2009, NYISO, in conjunction with grid operators serving the Mid-Atlantic, Midwest and New England regions of the U.S. and the Canadian province of Ontario, developed a series of "broader regional markets" initiatives for submission to the FERC. The proposals address ways to improve coordination of power transactions between regional grid operators to expand the benefits of markets to consumers throughout the region. In 2009, the NYISO helped lead the formation of the Eastern Interconnection Planning Collaborative (EIPC). The EIPC was awarded \$16 million in federal stimulus funding. The DOE also awarded \$14 million to the Eastern Interconnection States' Planning Council to assist the states in developing a consensus to identify renewable resources and other policy options as part of this pioneering interregional planning effort. 2009 NYISO Annual Report, p. 15.

current data on generation capacity, transmission enhancements, demand response programs, and demand load forecasts in the relevant market zones.

48. Relying on its stale assumption, NRC Staff posits the environmental impacts of two transmission projects: New York Regional Interconnect, which was formally withdrawn in 2009,⁵⁴ and Champlain-Hudson-Power Express, Inc. (“CHPEI”) as “illustrative” of the kinds of projects necessary to enable a purchased power alternative. FSEIS § 8.3.2. p. 8-8-40 to 8-41. NRC Staff summarily concludes that because these projects lack “any specific route information,” “the actual environmental impacts of purchased power are difficult to determine.” *Id.* at 8-40.

49. Notably, the FSEIS ignores two significant transmission developments, namely:

- a. The Hudson Transmission Partners (“HTP”) line was approved by the NYSPSC on September 8, 2010. This 345 kV line will connect PJM to midtown Manhattan, running between the Bergen Substation in Ridgefield, New Jersey and Consolidated Edison substations in New York City. It is expected initially to provide 320 MW of firm capacity from the Pennsylvania-New Jersey-Maryland power pool (“PJM”) to New York City, with the potential to provide 660 MW of firm capacity if investments are made to upgrade PJM facilities. In the Order approving this line, the NYSPSC stated “the HTP facility will assist in maintaining system reliability in the event that one or both of the Indian Point plants close.”⁵⁵
- b. The three Linden Variable Frequency Transformers that began operating at the Linden, New Jersey cogeneration facility on December 8, 2009 and have the capability to convert up to 315 MW of electricity from the New Jersey power system and feed it into New York City. These transformers help to

⁵⁴ On April 21, 2009 the NYSPSC recognized and approved NYRI’s application to formally *withdraw* its petition for a certificate under Article VII of the Public Service Law. The PSC *granted* NYRI’s withdrawal request, with prejudice, and dismissed NYRI’s application. NYSPSC Case 06-T-0650, PSC Correspondence (Issued April 21, 2009); *see also* FERC Docket No. OA08-52-003, *New York Independent System Operator, Inc.*, Order on Rehearing, 126 FERC ¶ 61, 320 (Issued March 31, 2009).

⁵⁵ NYSPSC Case No. 08-T-0034, Order Granting Certificate of Environmental Compatibility and Public Need, September 15, 2010, p. 44.

stabilize New York City's power grid, increase reliability, and reduce the need for new capacity inside the city.

50. Because HTP's and the Linden project's capabilities and locations are known, NRC Staff could reasonably consider their impacts.⁵⁶ Moreover, as the FSEIS admits, "that to the extent that new transmission projects allow other existing facilities to provide additional power to downstate New York, the environmental impacts are likely to be only the incremental impacts of additional operation." Information on the type, location, and output of the generators likely to supply additional power in the event IP2 and IP3 are off-line and/or not relicensed is reasonably known and available through the NYISO. By failing to examine HTP and the Linden project, and in failing to inform itself on the actual, generation capacity, and demand load conditions in the relevant market zones, NRC Staff "has averted its eyes from what is in plain view before it."⁵⁷ The State provided NRC Staff information on these transmission projects, and other currently pending transmission projects as early as November 2007. *See Synapse Report*, pp. 14-15. [Att. 1].

4. COMBINED HEAT AND POWER

51. Combined heat and power ("CHP") also known as "cogeneration," is self-production of electricity on-site, with beneficial recovery of the heat byproduct from the generator. A 2002 NYSERDA study estimates the CHP potential statewide to be 2,169 MW,

⁵⁶ *See, e.g.*, NYSPSC Order approving the Hudson Transmission Partners Line, Case No. 08-T-0034, September 15, 2010, p. 47-55 (discussing the environmental impacts of the project, including projected increased emissions from additional purchased power, as analyzed by the New York State Department of Environmental Conservation and Applicant).

⁵⁷ *Center for Biological Diversity v. United States Dept. of Interior*, 623 F.3d 633 (9th Cir. 2010).

and 1,319.7 MW for the downstate region by 2012. *See* David Schlissel and Synapse Report, p.11 [Att. 1].

52. NRC Staff's entire basis for eliminating consideration of combined heat and power from consideration as a partial alternative to license renewal can be found in a few sentences in FSEIS § 8.3.4.12, ¶ 3.

The NRC Staff notes that the current IP2 and IP3 are only used to produce electrical power, and do not supply heat to any offsite users. Combined heat and power, then, fulfills a need not currently met by IP2 and IP3 and is not a direct alternative to IP2 and IP3 license renewal.

53. Based on this erroneous conclusion, the FSEIS summarily ignores the potential of CHP as a partial alternative to license renewal, and provides no further analysis of CHP generation capacity.

54. The electrical portion of CHP is, of course, a potential replacement for IP power. The heat may also substitute for any heat produced electrically or may free up natural gas as an alternative to electricity for other purposes. This erroneous assessment of combined heat and power results in a serious underassessment of the potential impact of this source in any replacement scenario.

D. THE FSEIS DISCUSSION OF ENERGY ALTERNATIVES (CHAPTER 8) DOES NOT PERMIT A RATIONAL DECISION MAKER TO DETERMINE WHETHER THE ADVERSE ENVIRONMENTAL IMPACTS OF LICENSE RENEWAL ARE SO GREAT THAT PRESERVING THE OPTION OF LICENSE RENEWAL FOR ENERGY PLANNING DECISION MAKERS WOULD BE UNREASONABLE.

55. Pursuant to the GEIS, the FSEIS does not evaluate either the need for the power from Indian Point or the economic costs and benefits of the alternatives that it describes, reasoning that energy planning and procurement are not part of the NRC's responsibilities.

56. Nevertheless, the NRC reasons that a decision to extend the Indian Point licenses by 20 years does nothing more than “provide a comparison that allows NRC to determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.” FSEIS § 8.0.

57. NRC Staff recommends “that the Commission determine that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.”

58. The FSEIS is inadequate to support NRC Staff's recommendation. Because it does not discuss the economics of the Indian Point units in comparison to the economics of alternatives, it gives decision makers no sense of which among the alternatives are likely to be deployed in what quantities in the event that the no action alternative is pursued. This NRC Staff oversight violates 10 C.F.R. § 51.95(c)(2), which expressly permits the NRC to consider the need for power and economic considerations insofar as they are “essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation.”

59. Thus the NRC Staff's conclusions regarding irreversible or irretrievable resource commitments (FSEIS § 9.1.2.) and short-term use versus long-term productivity (FSEIS § 9.1.3.) are unsupported by factual analysis and are conclusory. Likewise, NRC Staff's conclusion that “the no-action alternative has the smallest effect, but would necessitate additional actions to replace generation capacity” (FSEIS § 9.2.) is meaningless in the absence of accurate information on the current status of New York's energy markets, need for additional generation capacity, and the present and forecasted availability of generation alternatives.

60. The FSEIS is not rational because it does not address substantial evidence that contradicts the evidence upon which it relies. The NRC Staff's avoidance of contradicting evidence leads to numerous FSEIS errors that substantially undermine its usefulness in assessing environmental impacts:

- a. p. 8-27, lines 32-34 – “Because of the area’s dependence on local power generation from natural gas and oil fuels, the area has high electricity rates.” In fact, Downstate New York’s high rates are a result in substantial part of the costs of serving a dense urban territory, clean air requirements, and high property taxes. Today’s low natural gas prices cannot explain New York City’s high electric rates.
- b. p. 8-39, lines 3-5 – “Based on currently scheduled unit retirements and demand growth projections, the NYISO predicted in 2006 that up to 1600 MW(e) from new projects not yet under construction would be needed by 2010 and a total of up to 3300 MW(e) by 2015.” Made in 2006, these estimates are not the best available data for decisions in 2011. As noted above, the 2006 estimates have been replaced by dramatically lower forecasts that are readily available.
- c. p. 8-40, lines 26-29 – The FSEIS states that “as of November 10, 2010 the New York Regional Interconnection (NYRI) is still seeking the approval of the New York State Public Service Commission (NYSPSC)” to build a major transmission project, when in fact the project was formally withdrawn from development consideration before the NYSPSC on April 21, 2009. Moreover, the NYRI environmental impacts considered by the FSEIS would have been substantially higher than those of the transmission projects actually approved in New York.
- d. p. 8-42, lines 1-7 – The FSEIS uses data from the 2006 ACEEE state energy efficiency rankings. The 2010 edition was published in October 2010. New York’s overall ranking has improved from seventh to fourth in the intervening five years.
- e. p. 8-43, lines 24-26 – “The NRC staff also notes that loss of tax and PILOT revenue paid to municipalities near IP2 and IP3, as well as lost jobs, may result in SMALL to MODERATE socioeconomic impacts, which will not be offset by conservation.” The NRC staff ignores the estimated 6,200 jobs created by New York State’s 2009 Green Jobs initiative, and offers no proof that investments in energy conservation do not increase building values and therefore tax revenues by an amount sufficient to offset losses from IP2 and IP3, especially since municipalities with discontinued nuclear plants often

continue to receive substantial payments for serving as interim spent fuel sites. Furthermore, studies have shown that reducing the demand for energy supply can result in significant reductions in the market clearing price of energy. As demand is reduced, the need to call on the most costly supply resources is minimized, thereby resulting in lower prices for all consumers.⁵⁸

- f. p. 8-49, lines 11-13 – “The NRC staff notes that the current IP2 and IP3 are only used to produce electrical power, and do not supply heat to any offsite users. Combined heat and power, then, fulfills a need not currently met by IP2 and IP3 and is not a direct alternative to IP2 and IP3 license renewal.” This statement is wrong in two respects. First, the electrical portion of CHP is, of course, a potential replacement for IP power. Secondly, CHP heat may substitute for heat that is produced electrically or may free up natural gas as an alternative to electricity for other purposes.
- g. p. 8-61, lines 20-21 - Section 8.3.5.1 (Impacts of Combination Alternative 1) cites the NYSPSC as stating that 1,076 MW of new wind generation is anticipated to be available in the years 2011 through 2015 (together with almost 700 MW of other renewables). However, these numbers are inconsistent with the Renewable Energy Assessment portion of the NYS 2009 Energy Plan. The FSEIS then limits the total share of renewable generation to 600 MW in the Combination Alternatives analysis. By contrast, the April 2010 NYISO report *Powertrends* (p. 17) is just one among several recent documents noting that 7,000 MW of new wind power alone has been proposed for New York, in addition to the almost 1,300 MW already connected to the NY grid.
- h. p. 8-62 - Section 8.3.5.1. (Impacts of Combination Alternative 1) cites to 2009 National Renewable Energy Laboratories (“NREL”) study as stating that “total land disturbance (temporary and permanent) would be approximately 1 ha (2.5 ac) per MW” of wind generation. In fact, the NREL study found for most of the projects it analyzed that land use was significantly less (the “average permanent direct impact value reported was 0.3 ± 0.3 hectares/MW of capacity).”⁵⁹

⁵⁸ For example, a NYSERDA study on price effects from natural gas efficiencies concluded that even a relatively low efficiency scenario (of reducing load in 5 years by less than 2%) resulted in a supply decrease that, when translated to all New York gas consumers exceeded the projected program cost, roughly doubling societal benefits. NYSERDA Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report: Executive Summary, October 31, 2006 *available at*: <http://www.nyserda.org/publications/Final%20Statewide%20Natural%20Gas%20Efficiency%20Potential%20Study.pdf>.

⁵⁹ National Renewable Energy Laboratory, *Land-Use Requirements of Modern Wind Power Plants in the United States*, Paul Denholm, Maureen Hand, Maddalena Jackson, and Sean Ong, August, 2009, p. 22.

- i. p. 8-29 - Section 8.3.1. (Natural Gas Combined Cycle) the NRC Staff assumes, with no analysis, that the environmental impacts of a natural gas combined cycle plant would be the same for a repowered facility as for a facility constructed at Indian Point. In fact, as outlined in report prepared by David Schlissel and Synapse and submitted by the State in November 2007 (ML073400205), repowered plants have unique and compelling environmental impacts and cost advantages. Furthermore, the location of the plant is relevant to transmission congestion, reliability and socio-economic impacts. See Synapse Report, pp. 12-13 [Att. 1].

61. The FSEIS errors set out immediately above plus the shortcomings listed previously overstate the need for the relicensing. Taken together with the admittedly unnecessary discussion of the impacts of the coal-fired alternative,⁶⁰ the combined effect has produced an FSEIS likely to mislead decision makers as to the environmental impact and feasibility of relicensing one or both of the Indian Point units. Cumulatively, the FSEIS defects marginalize meaningful consideration of non-fossil fuel alternatives, and reduce the impacts analysis to a comparison of nuclear and fossil fuels.⁶¹ To the extent the FSEIS restricts consideration of non-fossil fuel alternatives in favor of a comparison of license renewal to fossil fuel generation, the FSEIS exhibits bias and conflicts with the Energy Reorganization Act of

⁶⁰ The FSEIS bafflingly devotes nearly 10 pages to discussion of the environmental impacts of a coal fired alternative that it “dismissed from individual consideration”. This gratuitous coal discussion greatly exceeds the pages devoted to discussion of more environmentally benign alternatives such as conservation (2 pages) and renewables (wind and solar: 1 page each).

⁶¹ Indeed, the current FSEIS appears to be a modern variant of the pattern identified by former Commissioner Peter Bradford wherein the two principal energy alternatives examined by the Commission are a large coal plant or nuclear reactor. See November 2007 Declaration of Peter Bradford, at ¶¶ 8, 9; see also Gerald Warburg, Memorandum, *A Study of NRC Procedures for Assessing Need for Power and Alternative Energy Sources in Fulfillment of NEPA Requirements for Environmental Impact Statements* (1979).

1974, 42 U.S.C. § 5801 *et seq.*, which limits the role of the NRC to regulation and not promotion of nuclear power.⁶²

62. Thus, the FSEIS also does not consider alternative scenarios involving only energy conservation and/or renewable energy, the sources having the lowest environmental impacts. The FSEIS does acknowledge that NYS energy conservation programs (8-42, 43) and renewable generation (8-28, 8-61) are growing rapidly and that the choice of generation in NYS will be driven increasingly by carbon and other environmental considerations (8-28). However, it fails to consider relicensing based entirely on a non-fossil fuel alternative. As a result, the FSEIS overstates the environmental impacts of the alternative scenarios as well as the no action alternative. Specifically, the FSEIS:

- a. Limits its analysis of renewable generation to combined options in conjunction with (a) NRC Staff's environmental analysis of new cooling towers at one IP unit (something applicant has neither committed to, nor which is currently required as a condition of this proceeding) or (b) the construction impacts of building a new gas plant;
- b. Recommends license renewal on the grounds that Staff's comparative weighting of the combination alternatives (with or without continued operation of one IP unit) indicates that the renewable combinations "are likely to have small aquatic impacts than continued operation of IP2 and IP3, while they have potentially larger impacts in other areas, including air quality, aesthetics, and land use." In fact, these impacts are attributed in the FSEIS to the installation of cooling towers on one of the IP units;
- c. Assumes wind generation must be supported by biomass and/or hydro generation in a combined alternative where nuclear or gas generation is also already assumed available to provide such back-up generation;

⁶² See 40 C.F.R. § 1502.2(g) "Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."

- d. Assumes with respect to land impacts, that 100 percent (600 MW) of renewable generation is generated by wind, resulting in an alleged total land disturbance of 600 ha (1482 ac) FSEIS § 8.3.5.1. p. 6-62;
- e. But assumes with respect to air quality impacts, that 60 percent of generation deemed necessary for backup for the wind generation would come from biomass and landfill gas FSEIS § 8.3.5.1. p. 6-65;
- f. Assumes, with no supporting analysis, that waste construction impacts for all renewable generation types are similar to those of constructing one cooling tower on the IP site, resulting in LARGE impacts for all generation types; FSEIS § 8.3.5.1. p. 6-62;
- g. Assumes “the biomass alternative would have impacts similar to a coal-fired plant of similar capacity,” FSEIS § 8.3.5.1. p. 8-61, but provides no analysis in support of this proposition;
- h. Excludes solar and combined heat and power in its renewable alternatives, in favor of biomass and/or new hydroelectric construction, despite evidence of market trends to the contrary;
- i. States that solar is “a contributor to the Renewable Portfolio Standard” that may contribute to the combination alternatives addressed in Section 8.3.5” FSEIS, § 8.3.4.5. p. 8-46, but nonetheless excludes solar generation in the environmental impact analysis provided in Sections 8.3.5.1 or 8.3.5.2; and
- j. Equates and compares short-term new construction impacts for renewable generation with the long term operational impacts of license renewal, and fails to discuss, and appropriately weigh, the environmental benefits associated with the long-term, operational impacts of renewable energy.

63. All of NRC Staff's assumptions set out above overstate the adverse impacts of a renewable sector alternative.

64. NRC Staff also indirectly advocates for license renewal insofar as the Staff improperly raises reliability and electricity grid concerns throughout the FSEIS.⁶³ This is a transparent attempt to suggest the alleged indispensability of the Indian Point units. The FSEIS does not discuss, meaningfully and objectively, reliability and grid related concerns in light of

⁶³ See, e.g., FSEIS § 8.2 p. 8-22, § 8.3 p. 8-27, and Appendix A, p. A-151.

recent market and transmission line developments,⁶⁴ and fails to study the possible solutions to these concerns. Instead, NRC Staff bases its alternatives analysis on one potential remedy (the possibility of operating the IP generators as synchronous condensers) to the exclusion of all other remedies. Notably, Staff neither quantifies the reactive power needed if Indian Point retires nor mentions the possibility of supplying reactive power through other means.

65. Indeed, NRC Staff improperly suggests that the NYISO has already recommended that the Indian Point units be utilized as synchronous condensers in the event IP2 and IP3's licenses are not renewed.⁶⁵ In fact, as set forth in the Declaration of Peter Lanzalotta, the NYISO has made no such recommendation, and in the event that transmission issues arise, the NYISO's tariff requires the NYISO to issue a timely call for market-based solutions and to impose remedies if market solutions are not forthcoming. *See* Lanzalotta Declaration, ¶¶ 14-20 [Att. 5].

66. Moreover, the NRC Staff's single-minded focus on IP's potential use as a synchronous condenser is anachronistic in today's energy markets. Since 2006, the NYISO and New York's energy planners and utilities have moved to a sophisticated and systems-based reliability planning paradigm that gives equal consideration to demand response management,

⁶⁴ The specific nature of any reliability and electricity grid concerns related to Indian Point are a function of a number of factors, including: regional decreased peak demand load forecasts, new generation, demand response programs, any market-based solutions instituted by the NYISO, and regional transmission line developments. *See* Lanzalotta Declaration, ¶¶ 14-20 [Att. 5].

⁶⁵ FSEIS, Appendix A, p. A-151 "NYISO has indicated that Indian Point plays an important role in electric reliability and supply in downstate New York, and has also indicated a potential need for Indian Point's generators to continue operating as synchronous condensers in the event that the reactors themselves shut down. (A synchronous condenser is required to provide the necessary reactive power loading for electric grid operation.)" No citation is provided for this statement, and the NYISO's 2010 Comprehensive Reliability Plan ("CRP") does not recommend the need to operate the generators as synchronous condensers, and does not refer to having modeled synchronous condensers or any other form of reactive power source in order to deal with voltage performance associated with the retirement of IP.

generation, and transmission enhancements. In today's markets, energy efficiency gains have become an integral component in forecasting New York State's energy market. For example, commencing in the summer of 2009, the NYISO's Comprehensive Reliability Plan initiated a new economic planning process called the Congestion Assessment and Resource Integration Study ("CARIS"), to evaluate transmission constraints and potential economic solutions to the congestion identified: using this approach, all three resource types (generation, transmission and DSM) are now considered on a comparable basis as potential economic solutions for alleviating the identified congestion."⁶⁶ As noted above, using conservative assumptions appropriate to a baseline reliability analysis and current authorized spending levels, the NYISO has already determined that there should be a reduction of approximately 5% of peak load from the previously forecasted levels by 2015 resulting in a 2,100 MW decrease in the peak load forecast in 2018, with no identified reliability needs in the Base Case, and has further stated that additional EEPS program spending would further postpone reliability needs.⁶⁷ *See also* Lanzalotta Declaration, ¶¶ 3 -20 [Att. 5]. Thus, in the event that electricity grid issues constrain the implementation of alternatives to license renewal, it is likely that a combination of existing transmission enhancements, DSM, energy efficiency programs, and existing or already proposed new generation, will be part of the solution.

67. NRC Staff's analysis of energy conservation, a critical part of New York State's energy infrastructure, is not only fundamentally deficient, it is wholly inconsistent with the 1996 revisions to Part 51. The FSEIS analysis of the impact of the DSM alternative relies entirely on

⁶⁶ NYISO 2009 *Comprehensive Review of Resource Adequacy Covering the New York Control Area for the Period 2010 to 2014: Final Report Approved by NPCC RC*, March, 2010, A-12.

⁶⁷ *Id.* at A-6,A7, Table 3.1 and Figure 3.1.

earlier analyses of energy conservation done for the relicensing of the Three Mile Island and Shearon Harris units. This sole reliance on data from two other states is inconsistent with the site specific environmental impact statement required by the 1996 revisions to Part 51.

68. The 1996 revisions to the NRC's regulations sought to streamline the requirements for the environmental review and consideration of energy alternatives in applications to renew the operating licenses of nuclear power plants. During the consideration of the 1996 revisions, NRC Staff initially proposed to generically analyze the environmental impacts of energy alternatives to license renewal.⁶⁸ This proposal was categorically rejected by a number of states, including New York, and by CEQ as contrary to NEPA, and "preemptive of the states' responsibility to decide on the appropriate mix of energy alternatives in their respective jurisdictions."⁶⁹ In response to these concerns, NRC adopted regulations that required "site-specific comparison of the impacts of license renewal with impacts of alternative energy sources [that] will involve consideration of information provided by State agencies and other members of the public," thus allowing for "a meaningful analysis of alternative energy sources." *Id.* A "meaningful analysis" was further defined as requiring individual plant reviews, information codified in the rule, information developed in the GEIS, and any significant new information introduced during the plant-specific review, including any information received from the State, and other members of the public." *Id.*

⁶⁸ Environmental Review for Renewal of Operating Licenses - Part 51, 56 Fed. Reg. 47,016 (September 17, 1991); see also NUREG-1440, *Regulatory Analysis of Proposed Amendments to Regulations Concerning the Environmental Review for Renewal of Nuclear Power Plant Operating Licenses: Draft Report for Comment* (August 1991).

⁶⁹ Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467, 28,473 (June 5, 1996).

69. NRC Staff's ill-considered adoption of energy efficiency and conservation analysis from other FSEISs for the relicensing of power reactors located in other states is problematic and inconsistent with NEPA. Even if a valid conservation analysis leads to the same conclusion (the State does not assume any such conclusion), NEPA mandates that the federal agency actually engage in critical, thorough, and meaningful analysis of alternatives.⁷⁰ Here, the Staff's failure to identify, develop, describe, and objectively evaluate a site-specific energy efficiency / energy conservation alternative undermines NEPA's function as a mechanism for public participation in the environmental review of federal agency action. Because there is no site-specific efficiency and conservation alternative in the FSEIS, the State's energy conservation measures remain hidden from the Board's view, from public discussion on the FSEIS, and from consideration by New York State's energy planning decision makers.⁷¹ Therefore, the FSEIS fails to "sharply defin[e] the issues and provid[e] a clear basis for choice among options by the decision maker and the public." 40 C.F.R. § 1502.14. The effective exclusion of energy efficiency and conservation from the public discourse is "preemptive of the states' responsibility to decide on the appropriate mix of energy alternatives in their respective jurisdictions." 61 Fed. Reg. 28,473 (June 5, 1996).

⁷⁰ NEPA mandates a genuine commitment to scrutiny by the federal agencies. Because the NEPA's purpose is procedural, an agency "may not merely go through the motions. An agency's '[g]rudging, pro forma' compliance with these regulations violates NEPA's procedural safeguards." *Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1116 (9th Cir. 2002) (internal quotations and citation omitted); *Center for Biological Diversity v. United States Dept. of Interior*, 623 F.3d 633 (9th Cir. 2010) (holding that an agency's failure to take a "hard look" at alternatives to the proposed project violated NEPA and rendered its action arbitrary and capricious).

⁷¹ "Discussion of alternatives in environmental impact statement is subject to a construction of reasonableness, but a good faith discussion is necessary to inform the decision makers and the public of all possible options, and is not to be employed to justify a decision already reached. *Citizens Against Destruction of Napa v. Lynn*, 391 F.Supp. 1188 (N.D.Cal.1975).

70. In failing to provide the Board and the public with a good faith, unbiased discussion of the energy alternatives that addresses public and state comments on the DSEIS, the NRC Staff has executed an end-run around NEPA's core requirements, and "swept serious criticism under the rug."⁷² Furthermore, in failing to meaningfully consider non-fossil fuel alternatives to license renewal, NRC Staff "never considered an entire category of reasonable alternatives and [has] thereby ruined its environmental impact statement."⁷³

71. Likewise, pursuant to sections 556 and 557 of the Administrative Procedure Act, the NRC's decision license renewal decision must rest upon "reliable, probative, and substantial evidence" and must objectively consider all "material issues of fact." An agency must objectively consider contradictory evidence or evidence from which conflicting inferences could be drawn. *Universal Camera Corp. v. National Labor Review Board*, 340 U.S. 474 (1951). Furthermore, an agency must articulate with clarity and precision its findings and the reasons for its decisions, taking into account such contradictory evidence, so as to permit judicial review of the administrative decision. *Id.* Furthermore, section 706(a)(A) of the Administrative Procedure Act ("APA") requires a finding that the actual choice made was not "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

72. Accordingly, the FSEIS is contrary to 10 C.F.R. § 51.92(c) because it has not and cannot state "how the alternatives considered in it and decisions based on it will or will not achieve the requirement of sections 101 and 102(1) of NEPA and of any other relevant and applicable environmental laws and policies." 10 C.F.R. § 51.92(c); *see also* 40 C.F.R. § 1502.14

⁷² *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664 (7th Cir.1997).

⁷³ *Id.*

(the EIS must sharply define the issues and provide a clear basis for choice among options by the decision maker and the public.).

73. Because the alternatives considered in the FSEIS are arbitrary, incomplete, generic, and/or based on inaccurate information, the FSEIS “does not permit a rational decision maker to determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.” 10 C.F.R. 51.95(c)(4).

74. The FSEIS’s failure to make a meaningful comparison among alternatives precludes the Board’s and/or the Commission’s adoption of the recommendations contained therein, and therefore does not provide a rational and articulate basis for a Record of Decision that “identifies all alternatives considered,” and “discusses preferences among alternatives based on relevant factors,” “to determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.” 10 C.F.R. §§ 51.103 (a)(2), (3), and (5).

SUPPORTING EVIDENCE

75. The January 31, 2011 Declaration of David A. Schlissel, which accompanies this submission and the documents and references to documents that are contained therein.

76. The February 2, 2011 Declaration of Peter Bradford, which accompanies this submission the documents and references to documents that are contained therein.

77. The February 1, 2011 Declaration of Peter Lanzalotta, which accompanies this submission the documents and references to documents that are contained therein.

78. Actions and Orders taken by the NYSPSC in PSC Case 08-T-0034 and related cases its docket related to the Hudson Transmission Partner's line, which is accessible at <http://www.dps.state.ny.us>.

79. Actions and Orders taken by the NYSPSC in PSC Case 07-M-0548 and related cases on its docket authorizing the NYSERDA Workforce Development Initiative, which is accessible at <http://www.dps.state.ny.us>.

80. Actions and Orders taken by the NYSPSC in PSC Case 06-T-0650 and related cases on its docket granting New York Regional Interconnect's application to withdraw its petition for a certificate under Article VII of the Public Service Law.

81. The State also incorporates by reference the following documents and references to documents that are contained in its Notice of Intention to Participate and Petition to Intervene filed on November 30, 2007 and in its Contentions Concerning NRC's Draft Supplemental Environmental Impact Statement filed on February 27, 2008 and have already been served on the parties in this proceeding:

- (1) From Contention 9, Basis, paragraph 9 and Supporting Evidence paragraphs 10-27;
- (2) From Contention 10, Basis, paragraph 6 and Supporting Evidence paragraphs 7-33;
- (3) Supporting Declarations Volume 1, the November 2007 Declarations of David A. Schlissel and Peter Bradford with their attachments and the Synapse Report; and
- (4) The supporting declaration of David A. Schlissel, dated February 27, 2009.

82. The State of New York also relies on the following reports and documents, which appear in the footnotes of this contention:

- (1) United States Energy Information Administration, Department of Energy, Annual Energy Outlook 2010 with Projections to 2035, April 2010, available publicly at: <http://www.eia.doe.gov/oiaf/aeo/pdf/0383%282010%29.pdf>;
- (2) *Energy Efficiency Equals Economic Development: The Economics of Public Utility System Benefit Funds*, Entergy Corporation sponsored paper authored by Jerrold Oppenheim and Theo MacGregor, June 2008, available publicly at http://www.energy.com/global/our_community/advocate/Poverty_book.pdf;
- (3) *Achievable Electric Energy Efficiency Potential in New York State 2008*, Optimal Energy 2008 Draft Study, as cited in Energy Efficiency Assessment Report of the 2009 New York State Energy Plan; and
- (4) *Natural Gas Energy Efficiency Resource Development Potential in New York State*, NYSERDA Final Report, dated October 31, 2006, available publicly at: <http://www.nyserdera.org/publications/Final%20Statewide%20Natural%20Gas%20Efficiency%20Potential%20Study.pdf>.

83. The following sections of the 2009 New York State Energy Plan, which are available publicly at: <http://www.nysenergyplan.com/stateenergyplan.html>:

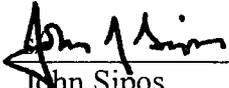
- Energy Price and Demand Annual Long Term Forecast: 2009 – 2028;
- Renewable Energy Assessment; and
- Energy Efficiency Assessment.

84. The following NYISO documents, available publicly at:

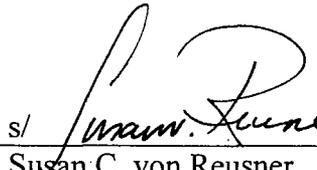
www.nyiso.com/public/webdocs/newsroom

- NYISO 2009 Comprehensive Review of Resource Adequacy, March, 2010;
- 2010 Summer Outlook, May 2010;
- Power Trends 2010: New York's Emerging Energy Crossroads?, April, 2010;
- 2009 Comprehensive System Planning Process Final Report, May 19, 2009;
- 2009 Annual Report: Energizing the Empire State;
- Growing Wind: Final Report of the NYISO 2010 Wind Generation Study, September 2010;
- Integration of Wind into System Dispatch, October 2008; and
- Reliability Summary 2009 - 2018.

Respectfully submitted,



John Sipos
Assistant Attorney General
Office of the Attorney General
The Capitol
Albany, New York 12224
(518) 402-2251
john.sipos@ag.ny.gov



s/ Susan C. von Reusner
Charlie Donaldson
Assistant Attorneys General
Office of the Attorney General
The Capitol
Albany, New York 12224
(518) 474-1968
susan.vonreusner@ag.ny.gov

February 3, 2011

Attachment 1

November 28, 2007
Declaration, Curriculum Vitae, and
Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3 of
David A. Schlissel

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

_____x
In re:

License Renewal Application Submitted by

**Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.**

_____x

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

DECLARATION OF DAVID A. SCHLISSEL

David A. Schlissel, hereby declares under penalty of perjury that the following is true and correct:

1. I am a senior consultant at Synapse Energy Economics, Inc. (Synapse), an energy and economic consulting firm located in Cambridge, Massachusetts.
2. Synapse has been retained by the New York State Office of the Attorney General to provide expert services to the State of New York concerning the proposed relicensing of the two operating reactors located at the Indian Point Nuclear Power Station in the Village of Buchanan in Westchester County (Indian Point Unit 2 and Indian Point Unit 3).

3. When it is in service, Indian Point Unit 2 can produce up to 1,028 MW per year; Indian Point Unit 3 can produce up to 1,041 MW when it is in service. The Indian Point nuclear reactors, however, cannot run indefinitely. Approximately every 24 months, each reactor is taken off line for refueling and maintenance work. According to the Entergy's recent investor report, over the last two years, planned outages for maintenance and refueling at Indian Point Unit 2 and Unit 3 have lasted approximately three to four weeks (24 to 31 days). See Entergy Statistical Report and Investor Guide 2006, p. 52. In addition, from time to time, each unit may experience unplanned outages.

4. Attached hereto and made a part of this sworn statement is a report prepared by me concerning readily-available means to replace the power generated by Indian Point Unit 2 and/or Indian Point Unit 3. This report examines the availability of: (1) energy conservation and efficiency measures; (2) repowering of existing power plants; (3) renewable energy resources; (4) certain transmission system upgrades and enhancements; and (5) the potential for the addition of new generating facilities. See Synapse Energy Economics, Inc., "Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 and 3" (November 28, 2007).

5. To prepare the attached report, my staff and I have examined various publicly-available information, including, but not limited to, reports prepared by the

New York State Energy Research and Development Authority, the New York Independent System Operator, the New York State Department of Public Service, the U.S. Department of Energy, the U.S. Nuclear Regulatory Commission, Levitan & Associates for the County of Westchester, the New York State Reliability Council, and the National Academy of Sciences. I also examined the April 30, 2007 License Renewal Application filed by Entergy, the accompanying Environmental Report, and the Entergy Statistical Report and Investor Guide 2006.

6. The report that I prepared concludes that the capacity and energy provided by Indian Point Units 2 and 3 can be replaced if the Units are not relicensed. In particular, energy efficiency, renewable resources, the repowering of older generating facilities, transmission upgrades and new natural gas-fired generating facilities represent viable alternatives to the relicensing of Indian Point. Substantial reductions in peak demand and energy requirements will be achieved by 2013 under the state's newly announced "15 by 15" Clean Energy Plan. Significant amounts of new renewable resources will be available as a result of the state's renewable energy portfolio standard and other initiatives. In addition, thousands of megawatts ("MW") of new generating capacity can be provided by the repowering (i.e., rebuilding) of older generating facilities both along the Hudson River and in the downstate area of the state in New York City and on Long Island. At the same time, transmission system upgrades also can increase the amounts of

power that can provided to the downstate region of the State. Finally, there is the potential for the addition of several thousand megawatts of new generating capacity in the Hudson River Valley and in downstate New York.

7. Also attached hereto is a copy of my current Curriculum Vitae (CV).

8. The report and CV are true and correct to the best of my personal knowledge.

9. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated:

November 28, 2007
Cambridge, Massachusetts



David A. Schlissel

David A. Schlissel

Senior Consultant
Synapse Energy Economics
22 Pearl Street, Cambridge, MA 02139
(617) 661-3248 ext. 224 • Fax: (617) 661-0599
www.synapse-energy.com
dschlissel@synapse-energy.com

SUMMARY

I have worked for thirty years as a consultant and attorney on complex management, engineering, and economic issues, primarily in the field of energy. This work has involved conducting technical investigations, preparing economic analyses, presenting expert testimony, providing support during all phases of regulatory proceedings and litigation, and advising clients during settlement negotiations. I received undergraduate and advanced engineering degrees from the Massachusetts Institute of Technology and Stanford University, respectively, and a law degree from Stanford Law School

PROFESSIONAL EXPERIENCE

Electric System Reliability - Evaluated whether new transmission lines and generation facilities were needed to ensure adequate levels of system reliability. Investigated the causes of distribution system outages and inadequate service reliability. Examined the reasonableness of utility system reliability expenditures.

Transmission Line Siting – Examined the need for proposed transmission lines. Analyzed whether proposed transmission lines could be installed underground. Worked with clients to develop alternate routings for proposed lines that would have reduced impacts on the environment and communities.

Power Plant Operations and Economics - Investigated the causes of more than one hundred power plant and system outages, equipment failures, and component degradation, determined whether these problems could have been anticipated and avoided, and assessed liability for repair and replacement costs. Examined power plant operating, maintenance, and capital costs. Analyzed power plant operating data from the NERC Generating Availability Data System (GADS). Evaluated utility plans for and management of the replacement of major power plant components. Assessed the adequacy of power plant quality assurance and maintenance programs. Examined the selection and supervision of contractors and subcontractors.

Power Plant Repowering - Evaluated the environmental, economic and reliability impacts of rebuilding older, inefficient generating facilities with new combined cycle technology.

Power Plant Air Emissions – Investigated whether proposed generating facilities would provide environmental benefits in terms of reduced emissions of NO_x, SO₂ and CO₂. Examined whether new state emission standards would lead to the retirement of existing power plants or otherwise have an adverse impact on electric system reliability.

Power Plant Water Use – Examined power plant repowering as a strategy for reducing water consumption at existing electric generating facilities. Analyzed the impact of converting power plants from once-through to closed-loop systems with cooling towers on plant revenues and electric system reliability. Evaluated the potential impact of the EPA’s Proposed Clean Water Act Section 316(b) Rule for Cooling Water Intake Structures at existing power plants.

Nuclear Power - Examined the impact of the nuclear power plant life extensions and power uprates on decommissioning costs and collections policies. Evaluated utility decommissioning cost estimates and cost collection plans. Examined the reasonableness of utility decisions to sell nuclear power assets and evaluated the value received as a result of the auctioning of those plants. Investigated the significance of the increasing ownership of nuclear power plants by multiple tiered holding companies with limited liability company subsidiaries. Investigated the potential safety consequences of nuclear power plant structure, system, and component failures.

Electric Industry Regulation and Markets - Investigated whether new generating facilities that were built for a deregulated subsidiary should be included in the rate base of a regulated utility. Evaluated the reasonableness of proposed utility power purchase agreements with deregulated affiliates. Investigated the prudence of utility power purchases in deregulated markets. Examined whether generating facilities experienced more outages following the transition to a deregulated wholesale market in New England. Evaluated the reasonableness of nuclear and fossil plant sales, auctions, and power purchase agreements. Analyzed the impact of proposed utility mergers on market power. Assessed the reasonableness of contract provisions and terms in proposed power supply agreements.

Economic Analysis - Analyzed the costs and benefits of energy supply options. Examined the economic and system reliability consequences of the early retirement of major electric generating facilities. Evaluated whether new electric generating facilities are used and useful. Quantified replacement power costs and the increased capital and operating costs due to identified instances of mismanagement.

Expert Testimony - Presented the results of management, technical and economic analyses as testimony in more than ninety proceedings before regulatory boards and commissions in twenty three states, before two federal regulatory agencies, and in state and federal court proceedings.

Litigation and Regulatory Support - Participated in all aspects of the development and preparation of case presentations on complex management, technical, and economic issues. Assisted in the preparation and conduct of pre-trial discovery and depositions. Helped identify and prepare expert witnesses. Aided the preparation of pre-hearing petitions and motions and post-hearing briefs and appeals. Assisted counsel in preparing for hearings and oral arguments. Advised counsel during settlement negotiations.

TESTIMONY, AFFIDAVITS, DEPOSITIONS AND COMMENTS

West Virginia Public Service Commission (Case No. 06-0033-E-CN) – November 2007
Appalachian Power Company's application for a Certificate of Public Convenience and Necessity for a 600 MW integrated gasification combined cycle generating facility.

Iowa Utility Board (Docket No. GCU-07-01) – October 2007
Whether Interstate Power & Light Company's adequately considered the risks associated with building a new coal-fired power plant and whether that Company's participation in the proposed Marshalltown plant is prudent.

Virginia State Corporation Commission (Case No. PUE-2007-00066) – November 2007
Whether Dominion Virginia Power's adequately considered the risks associated with building the proposed Wise County coal-fired power plant and whether that Commission should grant a certificate of public convenience and necessity for the plant.

Louisiana Public Service Commission (Docket No. U-30192) – September 2007
The reasonableness of Entergy Louisiana's proposal to repower the Little Gypsy Unit 3 generating facility as a coal-fired power plant.

Arkansas Public Service Commission (Docket No. 06-154-U) – July 2007
The probable economic impact of the Southwestern Electric Power Company's proposed Hempstead coal-fired power plant project.

North Dakota Public Service Commission (Case Nos. PU-06-481 and 482) – May 2007
Whether the participation of Otter Tail Power Company and Montana-Dakota Utilities in the Big Stone II Generating Project is prudent.

Indiana Utility Regulatory Commission (Cause No. 43114) – May 2007
The appropriate carbon dioxide ("CO₂") emissions prices that should be used to analyze the relative economic costs and benefits of Duke Energy Indiana and Vectren Energy Delivery of Indiana's proposed Integrated Gasification Combined Cycle Facility and whether Duke and Vectren have appropriately reflected the capital cost of the proposed facility in their modeling analyses.

Public Service Commission of Wisconsin (Docket No. 6630-EI-113) – March 2007
Whether the proposed sale of the Point Beach Nuclear Plant to FPL Energy Point Beach, LLC, is in the interest of the ratepayers of Wisconsin Electric Power Company.

Florida Public Service Commission (Docket No. 070098-EI) – March 2007
Florida Light & Power Company's need for and the economics of the proposed Glades Power Park.

Michigan Public Service Commission (Case No. 14992-U) – December 2006

The reasonableness of the proposed sale of the Palisades Nuclear Power Plant.

Minnesota Public Utilities Commission (Docket No. CN-05-619) – November 2006

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the facility; and whether the proposed project is a lower cost alternative than renewable options, conservation and load management.

North Carolina Utilities Commission (Docket No. E-7, Sub 790) – September 2006 and January 2007

Duke's need for two new 800 MW coal-fired generating units and the relative economics of adding these facilities as compared to other available options including energy efficiency and renewable technologies.

New Mexico Public Regulatory Commission (Case No. 05-00275-UT) – September 2006

Report to the New Mexico Commission on whether the settlement value of the adjustment for moving the 141 MW Afton combustion turbine merchant plant into rate base is reasonable.

Arizona Corporation Commission (Docket No. E-01345A-0816) – August and September 2006

Whether APS's acquisition of the Sundance Generating Station was prudent and the reasonableness of the amounts that APS requested for fossil plant O&M.

U.S. District Court for the District of Montana (Billings Generation, Inc. vs. Electrical Controls, Inc, et al., CV-04-123-BLG-RFC) – August 2006

Quantification of plaintiff's business losses during an extended power plant outage and plaintiff's business earnings due to the shortening and delay of future plant outages.
[Confidential Expert Report]

Deposition in South Dakota Public Utility Commission Case No. EL05-022 – June 14, 2006

South Dakota Public Utility Commission (Case No. EL05-022) – May and June 2006

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the alternatives to the proposed facility; the need and timing for new supply options in the co-owners' service territories; and whether there are alternatives to the proposed facility that are technically feasible and economically cost-effective.

Georgia Public Service Commission (Docket No. 22449-U) – May 2006

Georgia Power Company's request for an accounting order to record early site permitting and construction operating license costs for new nuclear power plants.

California Public Utilities Commission (Dockets Nos. A.05-11-008 and A.05-11-009) – April 2006

The estimated costs for decommissioning the Diablo Canyon, SONGS 2&3 and Palo Verde nuclear power plants and the annual contributions that are needed from ratepayers to assure that adequate funds will be available to decommission these plants at the projected ends of their service lives.

New Jersey Board of Public Utilities (Docket No. EM05020106) – November and December 2005 and March 2006

Joint Testimony with Bob Fagan and Bruce Biewald on the market power implications of the proposed merger between Exelon Corp. and Public Service Enterprise Group.

Virginia State Corporation Commission (Case No. PUE-2005-00018)– November 2005

The siting of a proposed 230 kV transmission line.

Iowa Utility Board (Docket No. SPU-05-15) – September and October 2005

The reasonableness of IPL's proposed sale of the Duane Arnold Energy Center nuclear plant.

New York State Department of Environmental Conservation (DEC #3-3346-00011/00002) – October 2005

The likely profits that Dynegy will earn from the sale of the energy and capacity of the Danskammer Generating Facility if the plant is converted from once-through to closed-cycle cooling with wet towers or to dry cooling.

Arkansas Public Service Commission (Docket 05-042-U) – July and August 2005

Arkansas Electric Cooperative Corporation's proposed purchase of the Wrightsville Power Facility.

Maine Public Utilities Commission (Docket No. 2005-17) – July 2005

Joint testimony with Peter Lanzalotta and Bob Fagan evaluating Eastern Maine Electric Cooperative's request for a CPCN to purchase 15 MW of transmission capacity from New Brunswick Power.

Federal Energy Regulatory Commission (Docket No. EC05-43-0000) – April and May 2005

Joint Affidavit and Supplemental Affidavit with Bruce Biewald on the market power aspects of the proposed merger of Exelon Corporation and Public Service Enterprise Group, Inc.

Maine Public Utilities Commission (Docket No. 2004-538 Phase II) – April 2005

Joint testimony with Peter Lanzalotta and Bob Fagan evaluating Maine Public Service Company's request for a CPCN to purchase 35 MW of transmission capacity from New Brunswick Power.

Maine Public Utilities Commission (Docket No. 2004-771) – March 2005

Analysis of Bangor Hydro-Electric's Petition for a Certificate of Public Convenience and Necessity to construct a 345 kV transmission line

**United States District Court for the Southern District of Ohio, Eastern Division
(Consolidated Civil Actions Nos. C2-99-1182 and C2-99-1250)**

Whether the public release of company documents more than three years old would cause competitive harm to the American Electric Power Company. [Confidential Expert Report]

New Jersey Board of Public Utilities (Docket No. EO03121014) – February 2005

Whether the Board of Public Utilities can halt further collections from Jersey Central Power & Light Company's ratepayers because there already are adequate funds in the company's decommissioning trusts for the Three Mile Island Unit No. 2 Nuclear Plant to allow for the decommissioning of that unit without endangered the public health and safety.

Maine Public Utilities Commission (Docket No. 2004-538) – January and March 2005

Analysis of Maine Public Service Company's request to construct a 138 kV transmission line from Limestone, Maine to the Canadian Border.

California Public Utilities Commission (Application No. AO4-02-026) – December 2004 and January 2005

Southern California Edison's proposed replacement of the steam generators at the San Onofre Unit 2 and Unit 3 nuclear power plants and whether the utility was imprudent for failing to initiate litigation against Combustion Engineering due to defects in the design of and materials used in those steam generators.

**United States District Court for the Southern District of Indiana, Indianapolis Division
(Civil Action No. IP99-1693) – December 2004**

Whether the public release of company documents more than three years old would cause competitive harm to the Cinergy Corporation. [Confidential Expert Report]

California Public Utilities Commission (Application No. AO4-01-009) – August 2004

Pacific Gas & Electric's proposed replacement of the steam generators at the Diablo Canyon nuclear power plant and whether the utility was imprudent for failing to initiate litigation against Westinghouse due to defects in the design of and materials used in those steam generators.

Public Service Commission of Wisconsin (Docket No. 6690-CE-187) – June, July and August 2004

Whether Wisconsin Public Service Corporation's request for approval to build a proposed 515 MW coal-burning generating facility should be granted.

Public Service Commission of Wisconsin (Docket No. 05-EI-136) – May and June 2004

Whether the proposed sale of the Kewaunee Nuclear Power Plant to a subsidiary of an out-of-state holding company is in the public interest.

Connecticut Siting Council (Docket No. 272) – May 2004

Whether there are technically viable alternatives to the proposed 345-kV transmission line between Middletown and Norwalk Connecticut and the length of the line that can be installed underground.

Arizona Corporation Commission (Docket No. E-01345A-03-0437 – February 2004

Whether Arizona Public Service Company should be allowed to acquire and include in rate base five generating units that were built by a deregulated affiliate.

State of Rhode Island Energy Facilities Siting Board (Docket No. SB-2003-1) – February 2004

Whether the cost of undergrounding a relocated 115kV transmission line would be eligible for regional cost socialization.

State of Maine Department of Environmental Protection (Docket No. A-82-75-0-X) – December 2003

The storage of irradiated nuclear fuel in an Independent Spent Fuel Storage Installation (ISFSI) and whether such an installation represents an air pollution control facility.

Rhode Island Public Utility Commission (Docket No. 3564) – December 2003 and January 2004

Whether Narragansett Electric Company should be required to install a relocated 115kV transmission line underground.

New York State Board on Electric Generation Siting and the Environment (Case No. 01-F-1276) – September, October and November 2003

The environmental, economic and system reliability benefits that can reasonably be expected from the proposed 1,100 MW TransGas Energy generating facility in Brooklyn, New York.

Wisconsin Public Service Commission (Case 6690-UR-115209) - September and October 2003

The reasonableness of Wisconsin Public Service Corporation's decommissioning cost collections for the Kewaunee Nuclear Plant.

Oklahoma Corporation Commission (Cause No. 2003-121) – July 2003

Whether Empire District Electric Company properly reduced its capital costs to reflect the write-off of a portion of the cost of building a new electric generating facility.

Arkansas Public Service Commission (Docket 02-248-U) – May 2003

Entergy's proposed replacement of the steam generators and the reactor vessel head at the ANO Unit 1 Steam Generating Station.

Appellate Tax Board, State of Massachusetts (Docket No C258405-406) – May 2003

The physical nature of electricity and whether electricity is a tangible product or a service.

Maine Public Utilities Commission (Docket 2002-665-U) – April 2003

Analysis of Central Maine Power Company's proposed transmission line for Southern York County and recommendation of alternatives.

Massachusetts Legislature, Joint Committees on Government Regulations and Energy – March 2003

Whether PG&E can decide to permanently retire one or more of the generating units at its Salem Harbor Station if it is not granted an extension beyond October 2004 to reduce the emissions from the Station's three coal-fired units and one oil-fired unit.

New Jersey Board of Public Utilities (Docket No. ER02080614) – January 2003

The prudence of Rockland Electric Company's power purchases during the period August 1, 1999 through July 31, 2002.

New York State Board on Electric Generation Siting and the Environment (Case No. 00-F-1356) – September and October 2002 and January 2003

The need for and the environmental benefits from the proposed 300 MW Kings Park Energy generating facility.

Arizona Corporation Commission (Docket No. E-01345A-01-0822) – March 2002

The reasonableness of Arizona Public Service Company's proposed long-term power purchase agreement with an affiliated company.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) – March 2002

Repowering NYPA's existing Poletti Station in Queens, New York.

Connecticut Siting Council (Docket No. 217) – March 2002, November 2002, and January 2003

Whether the proposed 345-kV transmission line between Plumtree and Norwalk substations in Southwestern Connecticut is needed and will produce public benefits.

Vermont Public Service Board (Case No. 6545) – January 2002

Whether the proposed sale of the Vermont Yankee Nuclear Plant to Entergy is in the public interest of the State of Vermont and Vermont ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12RE02) – December 2001

The reasonableness of adjustments that Connecticut Light and Power Company seeks to make to the proceeds that it received from the sale of Millstone Nuclear Power Station.

Connecticut Siting Council (Docket No. 208) – October 2001

Whether the proposed cross-sound cable between Connecticut and Long Island is needed and will produce public benefits for Connecticut consumers.

New Jersey Board of Public Utilities (Docket No. EM01050308) - September 2001
The market power implications of the proposed merger between Conectiv and Pepco.

Illinois Commerce Commission Docket No. 01-0423 – August, September, and October 2001
Commonwealth Edison Company's management of its distribution and transmission systems.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) - August and September 2001
The environmental benefits from the proposed 500 MW NYPA Astoria generating facility.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1191) - June 2001
The environmental benefits from the proposed 1,000 MW Astoria Energy generating facility.

New Jersey Board of Public Utilities (Docket No. EM00110870) - May 2001
The market power implications of the proposed merger between FirstEnergy and GPU Energy.

Connecticut Department of Public Utility Control (Docket 99-09-12RE01) - November 2000
The proposed sale of Millstone Nuclear Station to Dominion Nuclear, Inc.

Illinois Commerce Commission (Docket 00-0361) - August 2000
The impact of nuclear power plant life extensions on Commonwealth Edison Company's decommissioning costs and collections from ratepayers.

Vermont Public Service Board (Docket 6300) - April 2000
Whether the proposed sale of the Vermont Yankee nuclear plant to AmerGen Vermont is in the public interest.

Massachusetts Department of Telecommunications and Energy (Docket 99-107, Phase II) - April and June 2000
The causes of the May 18, 1999, main transformer fire at the Pilgrim generating station.

Connecticut Department of Public Utility Control (Docket 00-01-11) - March and April 2000
The impact of the proposed merger between Northeast Utilities and Con Edison, Inc. on the reliability of the electric service being provided to Connecticut ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12) - January 2000
The reasonableness of Northeast Utilities plan for auctioning the Millstone Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-08-01) - November 1999
Generation, Transmission, and Distribution system reliability.

Illinois Commerce Commission (Docket 99-0115) - September 1999

Commonwealth Edison Company's decommissioning cost estimate for the Zion Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-03-36) - July 1999

Standard offer rates for Connecticut Light & Power Company.

Connecticut Department of Public Utility Control (Docket 99-03-35) - July 1999

Standard offer rates for United Illuminating Company.

Connecticut Department of Public Utility Control (Docket 99-02-05) - April 1999

Connecticut Light & Power Company stranded costs.

Connecticut Department of Public Utility Control (Docket 99-03-04) - April 1999

United Illuminating Company stranded costs.

Maryland Public Service Commission (Docket 8795) - December 1998

Future operating performance of Delmarva Power Company's nuclear units.

Maryland Public Service Commission (Dockets 8794/8804) - December 1998

Baltimore Gas and Electric Company's proposed replacement of the steam generators at the Calvert Cliffs Nuclear Power Plant. Future performance of nuclear units.

Indiana Utility Regulatory Commission (Docket 38702-FAC-40-S1) - November 1998

Whether the ongoing outages of the two units at the D.C. Cook Nuclear Plant were caused or extended by mismanagement.

Arkansas Public Service Commission (Docket 98-065-U) - October 1998

Energys's proposed replacement of the steam generators at the ANO Unit 2 Steam Generating Station.

Massachusetts Department of Telecommunications and Energy (Docket 97-120) - October 1998

Western Massachusetts Electric Company's Transition Charge. Whether the extended 1996-1998 outages of the three units at the Millstone Nuclear Station were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 98-01-02) - September 1998

Nuclear plant operations, operating and capital costs, and system reliability improvement costs.

Illinois Commerce Commission (Docket 97-0015) - May 1998

Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1996 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Service Commission of West Virginia (Case 97-1329-E-CN) - March 1998

The need for a proposed 765 kV transmission line from Wyoming, West Virginia, to Cloverdate, Virginia.

Illinois Commerce Commission (Docket 97-0018) - March 1998

Whether any of the outages of the Clinton Power Station during 1996 were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 97-05-12) - October 1997

The increased costs resulting from the ongoing outages of the three units at the Millstone Nuclear Station.

New Jersey Board of Public Utilities (Docket ER96030257) - August 1996

Replacement power costs during plant outages.

Illinois Commerce Commission (Docket 95-0119) - February 1996

Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1994 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Utility Commission of Texas (Docket 13170) - December 1994

Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1991, through December 31, 1993, were caused or extended by mismanagement.

Public Utility Commission of Texas (Docket 12820) - October 1994

Operations and maintenance expenses during outages of the South Texas Nuclear Generating Station.

Wisconsin Public Service Commission (Cases 6630-CE-197 and 6630-CE-209) - September and October 1994

The reasonableness of the projected cost and schedule for the replacement of the steam generators at the Point Beach Nuclear Power Plant. The potential impact of plant aging on future operating costs and performance.

Public Utility Commission of Texas (Docket 12700) - June 1994

Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in Unit 3 could be expected to generate cost savings for ratepayers within a reasonable number of years.

Arizona Corporation Commission (Docket U-1551-93-272) - May and June 1994

Southwest Gas Corporation's plastic and steel pipe repair and replacement programs.

Connecticut Department of Public Utility Control (Docket 92-04-15) - March 1994

Northeast Utilities management of the 1992/1993 replacement of the steam generators at Millstone Unit 2.

Connecticut Department of Public Utility Control (Docket 92-10-03) - August 1993

Whether the 1991 outage of Millstone Unit 3 as a result of the corrosion of safety-related plant piping systems was due to mismanagement.

Public Utility Commission of Texas (Docket 11735) - April and July 1993

Whether any of the outages of the Comanche Peak Unit 1 Nuclear Station during the period August 13, 1990, through June 30, 1992, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 91-12-07) - January 1993 and August 1995

Whether the November 6, 1991, pipe rupture at Millstone Unit 2 and the related outages of the Connecticut Yankee and Millstone units were caused or extended by mismanagement. The impact of environmental requirements on power plant design and operation.

Connecticut Department of Public Utility Control (Docket 92-06-05) - September 1992

United Illuminating Company off-system capacity sales. [Confidential Testimony]

Public Utility Commission of Texas (Docket 10894) - August 1992

Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1988, through September 30, 1991, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 92-01-05) - August 1992

Whether the July 1991 outage of Millstone Unit 3 due to the fouling of important plant systems by blue mussels was the result of mismanagement.

California Public Utilities Commission (Docket 90-12-018) - November 1991, April 1992, June and July 1993

Whether any of the outages of the three units at the Palo Verde Nuclear Generating Station during 1989 and 1990 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses and program deficiencies could have been avoided or addressed prior to outages. Whether specific plant operating cost and capital expenditures were necessary and prudent.

Public Utility Commission of Texas (Docket 9945) - June 1991

Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in the unit could be expected to generate cost savings for ratepayers within a reasonable number of years. El Paso Electric Company's management of the planning and licensing of the Arizona Interconnection Project transmission line.

Arizona Corporation Commission (Docket U-1345-90-007) - December 1990 and April 1991

Arizona Public Service Company's management of the planning, construction and operation of the Palo Verde Nuclear Generating Station. The costs resulting from identified instances of mismanagement.

New Jersey Board of Public Utilities (Docket ER89110912J) - July and October 1990

The economic costs and benefits of the early retirement of the Oyster Creek Nuclear Plant. The potential impact of the unit's early retirement on system reliability. The cost and schedule for siting and constructing a replacement natural gas-fired generating plant.

Public Utility Commission of Texas (Docket 9300) - June and July 1990

Texas Utilities management of the design and construction of the Comanche Peak Nuclear Plant. Whether the Company was prudent in repurchasing minority owners' shares of Comanche Peak without examining the costs and benefits of the repurchase for its ratepayers.

Federal Energy Regulatory Commission (Docket EL-88-5-000) - November 1989

Boston Edison's corporate management of the Pilgrim Nuclear Station.

Connecticut Department of Public Utility Control (Docket 89-08-11) - November 1989

United Illuminating Company's off-system capacity sales.

Kansas State Corporation Commission (Case 164,211-U) - April 1989

Whether any of the 127 days of outages of the Wolf Creek generating plant during 1987 and 1988 were the result of mismanagement.

Public Utility Commission of Texas (Docket 8425) - March 1989

Whether Houston Lighting & Power Company's new Limestone Unit 2 generating facility was needed to provide adequate levels of system reliability. Whether the Company's investment in Limestone Unit 2 would provide a net economic benefit for ratepayers.

Illinois Commerce Commission (Dockets 83-0537 and 84-0555) - July 1985 and January 1989

Commonwealth Edison Company's management of quality assurance and quality control activities and the actions of project contractors during construction of the Byron Nuclear Station.

New Mexico Public Service Commission (Case 2146, Part II) - October 1988

The rate consequences of Public Service Company of New Mexico's ownership of Palo Verde Units 1 and 2.

United States District Court for the Eastern District of New York (Case 87-646-JBW) - October 1988

Whether the Long Island Lighting Company withheld important information from the New York State Public Service Commission, the New York State Board on Electric Generating Siting and the Environment, and the U.S. Nuclear Regulatory Commission.

Public Utility Commission of Texas (Docket 6668) - August 1988 and June 1989

Houston Light & Power Company's management of the design and construction of the South Texas Nuclear Project. The impact of safety-related and environmental requirements on plant construction costs and schedule.

Federal Energy Regulatory Commission (Docket ER88-202-000) - June 1988

Whether the turbine generator vibration problems that extended the 1987 outage of the Maine Yankee nuclear plant were caused by mismanagement.

Illinois Commerce Commission (Docket 87-0695) - April 1988

Illinois Power Company's planning for the Clinton Nuclear Station.

North Carolina Utilities Commission (Docket E-2, Sub 537) - February 1988

Carolina Power & Light Company's management of the design and construction of the Harris Nuclear Project. The Company's management of quality assurance and quality control activities. The impact of safety-related and environmental requirements on construction costs and schedule. The cost and schedule consequences of identified instances of mismanagement.

Ohio Public Utilities Commission (Case 87-689-EL-AIR) - October 1987

Whether any of Ohio Edison's share of the Perry Unit 2 generating facility was needed to ensure adequate levels of system reliability. Whether the Company's investment in Perry Unit 1 would produce a net economic benefit for ratepayers.

North Carolina Utilities Commission (Docket E-2, Sub 526) - May 1987

Fuel factor calculations.

New York State Public Service Commission (Case 29484) - May 1987

The planned startup and power ascension testing program for the Nine Mile Point Unit 2 generating facility.

Illinois Commerce Commission (Dockets 86-0043 and 86-0096) - April 1987

The reasonableness of certain terms in a proposed Power Supply Agreement.

Illinois Commerce Commission (Docket 86-0405) - March 1987

The in-service criteria to be used to determine when a new generating facility was capable of providing safe, adequate, reliable and efficient service.

Indiana Public Service Commission (Case 38045) - November 1986

Northern Indiana Public Service Company's planning for the Schaefer Unit 18 generating facility. Whether the capacity from Unit 18 was needed to ensure adequate system reliability. The rate consequences of excess capacity on the Company's system.

Superior Court in Rockingham County, New Hampshire (Case 86E328) - July 1986

The radiation effects of low power testing on the structures, equipment and components in a new nuclear power plant.

New York State Public Service Commission (Case 28124) - April 1986 and May 1987

The terms and provisions in a utility's contract with an equipment supplier. The prudence of the utility's planning for a new generating facility. Expenditures on a canceled generating facility.

Arizona Corporation Commission (Docket U-1345-85) - February 1986

The construction schedule for Palo Verde Unit No. 1. Regulatory and technical factors that would likely affect future plant operating costs.

New York State Public Service Commission (Case 29124) – December 1985 and January 1986

Niagara Mohawk Power Corporation's management of construction of the Nine Mile Point Unit No. 2 nuclear power plant.

New York State Public Service Commission (Case 28252) - October 1985

A performance standard for the Shoreham nuclear power plant.

New York State Public Service Commission (Case 29069) - August 1985

A performance standard for the Nine Mile Point Unit No. 2 nuclear power plant.

Missouri Public Service Commission (Cases ER-85-128 and EO-85-185) - July 1985

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Wolf Creek Nuclear Plant.

Massachusetts Department of Public Utilities (Case 84-152) - January 1985

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

Maine Public Utilities Commission (Docket 84-113) - September 1984

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

South Carolina Public Service Commission (Case 84-122-E) - August 1984

The repair and replacement strategy adopted by Carolina Power & Light Company in response to pipe cracking at the Brunswick Nuclear Station. Quantification of replacement power costs attributable to identified instances of mismanagement.

Vermont Public Service Board (Case 4865) - May 1984

The repair and replacement strategy adopted by management in response to pipe cracking at the Vermont Yankee nuclear plant.

New York State Public Service Commission (Case 28347) - January 1984

The information that was available to Niagara Mohawk Power Corporation prior to 1982 concerning the potential for cracking in safety-related piping systems at the Nine Mile Point Unit No. 1 nuclear plant.

New York State Public Service Commission (Case 28166) - February 1983 and February 1984

Whether the January 25, 1982, steam generator tube rupture at the Ginna Nuclear Plant was caused by mismanagement.

U.S. Nuclear Regulatory Commission (Case 50-247SP) - May 1983

The economic costs and benefits of the early retirement of the Indian Point nuclear plants.

REPORTS, ARTICLES, AND PRESENTATIONS

The Risks of Building New Nuclear Power Plants, Presentation to the Utah State Legislature Public Utilities and Technology Committee, September 19, 2007.

The Risks of Building New Nuclear Power Plants, Presentation to Moody's and Standard & Poor's rating agencies, May 17, 2007.

The Risks of Building New Nuclear Power Plants, U.S. Senate and House of Representative Briefings, April 20, 2007.

Carbon Dioxide Emissions Costs and Electricity Resource Planning, New Mexico Public Regulation Commission, Case 06-00448-UT, March 28, 2007, with Anna Sommer.

The Risks of Building New Nuclear Power Plants, Presentation to the New York Society of Securities Analysts, June 8, 2006.

Conservation and Renewable Energy Should be the Cornerstone for Meeting Future Natural Gas Needs. Presentation to the Global LNG Summit, June 1, 2004. Presentation given by Cliff Chen.

Comments on natural gas utilities' Phase I Proposals for pre-approved full cost recovery of contracts with liquid natural gas (LNG) suppliers and the costs of interconnecting their systems with LNG facilities. Comments in California Public Utilities Commission Rulemaking 04-01-025. March 23, 2004.

The 2003 Blackout: Solutions that Won't Cost a Fortune, The Electricity Journal, November 2003, with David White, Amy Roschelle, Paul Peterson, Bruce Biewald, and William Steinhurst.

The Impact of Converting the Cooling Systems at Indian Point Units 2 and 3 on Electric System Reliability. An Analysis for Riverkeeper, Inc. November 3, 2003.

The Impact of Converting Indian Point Units 2 and 3 to Closed-Cycle Cooling Systems with Cooling Towers on Energy's Likely Future Earnings. An Analysis for Riverkeeper, Inc. November 3, 2003.

Energy's Lost Revenues During Outages of Indian Point Units 2 and 3 to Convert to Closed-Cycle Cooling Systems. An Analysis for Riverkeeper, Inc. November 3, 2003.

Power Plant Repowering as a Strategy for Reducing Water Consumption at Existing Electric Generating Facilities. A presentation at the May 2003 Symposium on Cooling Water Intake Technologies to Protect Aquatic Organisms. May 6, 2003.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-tiered Holding Companies to Own Electric Generating Plants. A presentation at the 2002 NASUCA Annual Meeting. November 12, 2002.

Determining the Need for Proposed Overhead Transmission Facilities. A Presentation by David Schlissel and Paul Peterson to the Task Force and Working Group for Connecticut Public Act 02-95. October 17, 2002.

Future PG&E Net Revenues From The Sale of Electricity Generated at its Brayton Point Station. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

PG&E's Net Revenues From The Sale of Electricity Generated at its Brayton Point Station During the Years 1999-2002. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-Tiered Holding Companies to Own Nuclear Power Plants. A Synapse report for the STAR Foundation and Riverkeeper, Inc., by David Schlissel, Paul Peterson, and Bruce Biewald, August 7, 2002.

Comments on EPA's Proposed Clean Water Act Section 316(b) for Cooling Water Intake Structures at Phase II Existing Facilities, on behalf of Riverkeeper, Inc., by David Schlissel and Geoffrey Keith, August 2002.

The Impact of Retiring the Indian Point Nuclear Power Station on Electric System Reliability. A Synapse Report for Riverkeeper, Inc. and Pace Law School Energy Project. May 7, 2002.

Preliminary Assessment of the Need for the Proposed Plumtree-Norwalk 345-kV Transmission Line. A Synapse Report for the Towns of Bethel, Redding, Weston, and Wilton Connecticut. October 15, 2001.

ISO New England's Generating Unit Availability Study: Where's the Beef? A Presentation at the June 29, 2001 Restructuring Roundtable.

Clean Air and Reliable Power: Connecticut Legislative House Bill HB6365 will not Jeopardize Electric System Reliability. A Synapse Report for the Clean Air Task Force. May 2001.

Room to Breathe: Why the Massachusetts Department of Environmental Protection's Proposed Air Regulations are Compatible with Reliability. A Synapse Report for MASSPIRG and the Clean Water Fund. March 2001.

Generator Outage Increases: A Preliminary Analysis of Outage Trends in the New England Electricity Market, a Synapse Report for the Union of Concerned Scientists, January 7, 2001.

Cost, Grid Reliability Concerns on the Rise Amid Restructuring, with Charlie Harak, Boston Business Journal, August 18-24, 2000.

Report on Indian Point 2 Steam Generator Issues, Schlissel Technical Consulting, Inc., March 10, 2000.

Preliminary Expert Report in Case 96-016613, Cities of Wharton, Pasadena, et al v. Houston Lighting & Power Company, October 28, 1999.

Comments of Schlissel Technical Consulting, Inc. on the Nuclear Regulatory Commission's Draft Policy Statement on Electric Industry Economic Deregulation, February 1997.

Report to the Municipal Electric Utility Association of New York State on the Cost of Decommissioning the Fitzpatrick Nuclear Plant, August 1996.

Report to the Staff of the Arizona Corporation Commission on U.S. West Corporation's telephone cable repair and replacement programs, May, 1996.

Nuclear Power in the Competitive Environment, NRRI Quarterly Bulletin, Vol. 16, No. 3, Fall 1995.

Nuclear Power in the Competitive Environment, presentation at the 18th National Conference of Regulatory Attorneys, Scottsdale, Arizona, May 17, 1995.

The Potential Safety Consequences of Steam Generator Tube Cracking at the Byron and Braidwood Nuclear Stations, a report for the Environmental Law and Policy Center of the Midwest, 1995.

Report to the Public Policy Group Concerning Future Trojan Nuclear Plant Operating Performance and Costs, July 15, 1992.

Report to the New York State Consumer Protection Board on the Costs of the 1991 Refueling Outage of Indian Point 2, December 1991.

Preliminary Report on Excess Capacity Issues to the Public Utility Regulation Board of the City of El Paso, Texas, April 1991.

Nuclear Power Plant Construction Costs, presentation at the November, 1987, Conference of the National Association of State Utility Consumer Advocates.

Comments on the Final Report of the National Electric Reliability Study, a report for the New York State Consumer Protection Board, February 27, 1981.

OTHER SIGNIFICANT INVESTIGATIONS AND LITIGATION SUPPORT WORK

Reviewed the salt deposition mitigation strategy proposed for Reliant Energy's repowering of its Astoria Generating Station. October 2002 through February 2003.

Assisted the Connecticut Office of Consumer Counsel in reviewing the auction of Connecticut Light & Power Company's power purchase agreements. August and September, 2000.

Assisted the New Jersey Division of the Ratepayer Advocate in evaluating the reasonableness of Atlantic City Electric Company's proposed sale of its fossil generating facilities. June and July, 2000.

Investigated whether the 1996-1998 outages of the three Millstone Nuclear Units were caused or extended by mismanagement. 1997 and 1998. Clients were the Connecticut Office of Consumer Counsel and the Office of the Attorney General of the Commonwealth of Massachusetts.

Investigated whether the 1995-1997 outages of the two units at the Salem Nuclear Station were caused or extended by mismanagement. 1996-1997. Client was the New Jersey Division of the Ratepayer Advocate.

Assisted the Associated Industries of Massachusetts in quantifying the stranded costs associated with utility generating plants in the New England states. May through July, 1996

Investigated whether the December 25, 1993, turbine generator failure and fire at the Fermi 2 generating plant was caused by Detroit Edison Company's mismanagement of fabrication, operation or maintenance. 1995. Client was the Attorney General of the State of Michigan.

Investigated whether the outages of the two units at the South Texas Nuclear Generating Station during the years 1990 through 1994 were caused or extended by mismanagement. Client was the Texas Office of Public Utility Counsel.

Assisted the City Public Service Board of San Antonio, Texas in litigation over Houston Lighting & Power Company's management of operations of the South Texas Nuclear Generating Station.

Investigated whether outages of the Millstone nuclear units during the years 1991 through 1994 were caused or extended by mismanagement. Client was the Office of the Attorney General of the Commonwealth of Massachusetts.

Evaluated the 1994 Decommissioning Cost Estimate for the Maine Yankee Nuclear Plant. Client was the Public Advocate of the State of Maine.

Evaluated the 1994 Decommissioning Cost Estimate for the Seabrook Nuclear Plant. Clients were investment firms that were evaluating whether to purchase the Great Bay Power Company, one of Seabrook's minority owners.

Investigated whether a proposed natural-gas fired generating facility was need to ensure adequate levels of system reliability. Examined the potential impacts of environmental regulations on the unit's expected construction cost and schedule. 1992. Client was the New Jersey Rate Counsel.

Investigated whether Public Service Company of New Mexico management had adequately disclosed to potential investors the risk that it would be unable to market its excess generating capacity. Clients were individual shareholders of Public Service Company of New Mexico.

Investigated whether the Seabrook Nuclear Plant was prudently designed and constructed. 1989. Clients were the Connecticut Office of Consumer Counsel and the Attorney General of the State of Connecticut.

Investigated whether Carolina Power & Light Company had prudently managed the design and construction of the Harris nuclear plant. 1988-1989. Clients were the North Carolina Electric Municipal Power Agency and the City of Fayetteville, North Carolina.

Investigated whether the Grand Gulf nuclear plant had been prudently designed and constructed. 1988. Client was the Arkansas Public Service Commission.

Reviewed the financial incentive program proposed by the New York State Public Service Commission to improve nuclear power plant safety. 1987. Client was the New York State Consumer Protection Board.

Reviewed the construction cost and schedule of the Hope Creek Nuclear Generating Station. 1986-1987. Client was the New Jersey Rate Counsel.

Reviewed the operating performance of the Fort St. Vrain Nuclear Plant. 1985. Client was the Colorado Office of Consumer Counsel.

WORK HISTORY

2000 - Present: Senior Consultant, Synapse Energy Economics, Inc.

1994 - 2000: President, Schlissel Technical Consulting, Inc.

1983 - 1994: Director, Schlissel Engineering Associates

1979 - 1983: Private Legal and Consulting Practice

1975 - 1979: Attorney, New York State Consumer Protection Board

1973 - 1975: Staff Attorney, Georgia Power Project

EDUCATION

1983-1985: Massachusetts Institute of Technology
Special Graduate Student in Nuclear Engineering and Project Management,

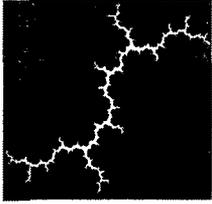
1973: Stanford Law School,
Juris Doctor

1969: Stanford University
Master of Science in Astronautical Engineering,

1968: Massachusetts Institute of Technology
Bachelor of Science in Astronautical Engineering,

PROFESSIONAL MEMBERSHIPS

- New York State Bar since 1981
- American Nuclear Society
- National Association of Corrosion Engineers



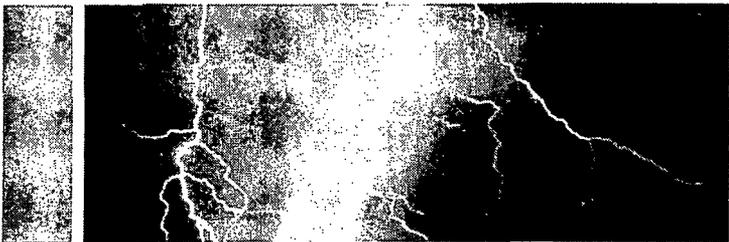
Synapse
Energy Economics, Inc.

**Report on the Availability of
Replacement Capacity and Energy
for Indian Point Units 2 & 3**

November 28, 2007

AUTHOR

David Schlissel



Entergy Nuclear Operations has applied to the Nuclear Regulatory Commission for a renewal the two operating licenses for Indian Point Unit 2 and Unit 3 for an additional 20 years. This report examines the availability of: (1) renewable energy resources, (2) energy conservation and efficiency measures, (3) repowering of existing power plants, (4) transmission system upgrades and enhancements and (5) new power plants. The report concludes that the capacity and energy provided by Indian Point Units 2 and 3 can be replaced if the Units are not relicensed. In particular, energy efficiency, renewable resources, the repowering of older generating facilities, transmission upgrades and new natural gas-fired generating facilities represent viable alternatives to the relicensing of Indian Point. Substantial reductions in peak demand and energy requirements will be achieved by 2013 under the state's newly announced "15 by 15" Clean Energy Plan. Significant amounts of new renewable resources will be available as a result of the state's renewable energy portfolio standard and other initiatives. In addition, thousands of megawatts ("MW") of new generating capacity can be provided by the repowering (i.e., rebuilding) of older generating facilities both along the Hudson River and in the downstate area of the state in New York City and on Long Island. At the same time, transmission system upgrades also can increase the amounts of power that can be provided to the downstate region of the State. Finally, there is the potential for the addition of several thousand megawatts of new generating facilities in the Hudson River Valley and in downstate New York.

This report was prepared by David A. Schlissel. Mr. Schlissel is a Senior Consultant at Synapse Energy Economics. Since 1973, he has served as a consultant, expert witness, and attorney on complex management, engineering, and economic issues, primarily in the fields of energy and the environment. Prior to joining Synapse, Mr. Schlissel was the president of Schlissel Technical Consulting, Inc. and its predecessor, Schlissel Engineering Associates.

Mr. Schlissel has been retained by regulatory commissions, consumer advocates, publicly-owned utilities, non-utility generators, governmental agencies, and private organizations in 23 states to prepare expert analyses on issues related to electric, natural gas, and telephone utilities. He has presented testimony in more than 100 cases before regulatory boards and commissions in 28 states, two federal regulatory agencies, and in state and federal court proceedings.

Recent work has involved the evaluation of electric transmission and distribution system reliability, power plant operations and outages, industry restructuring including quantification of stranded costs, proposed nuclear and fossil power plant sales, and proposed utility mergers. Mr. Schlissel has also examined the impact of nuclear power plant life extension on plant decommissioning costs.

Mr. Schlissel holds BS and MS degrees in Astronautical Engineering from the Massachusetts Institute of Technology (MIT) and Stanford University. He also received a Juris Doctor degree from Stanford University School of Law. He has also studied Nuclear Engineering and Project Management at MIT. He is a member

of the New York State Bar, the National Association of Corrosion Engineers, and the American Nuclear Society.

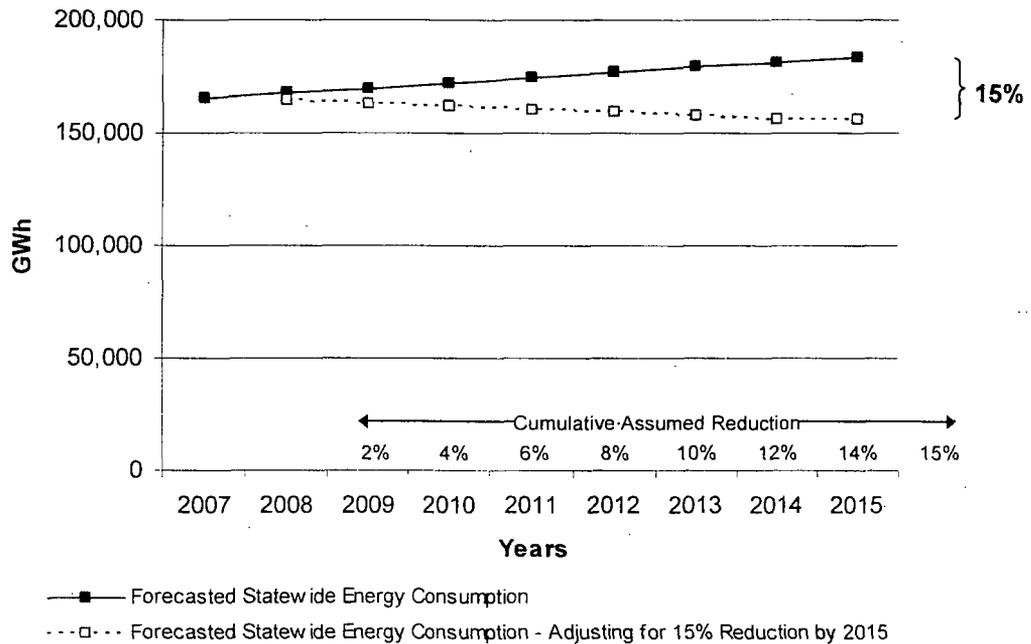
ENERGY EFFICIENCY

New York Governor Eliot Spitzer has announced a “15 by 15” Clean Energy Plan to reduce energy consumption in 2015 by 15 percent to be achieved by energy efficiency alone.¹ The energy efficiency that would be achieved under this Plan would more than replace the capacity and energy provided by both Indian Point Units.

As explained by the Governor, the plan would include taking actions to provide incentives to utilities to conserve energy, strengthening efficiency standards for energy intensive appliances and buildings, and by making the State Government’s use of energy more efficient.

The “15 by 15” plan would reduce statewide electricity consumption by approximately 27,000 GWh by 2015. Figure 1 below illustrates the energy savings that would be achieved under the program assuming a linear implementation.

Figure 1 – Impact of New York State’s “15 by 15” Policy



The reasonably expected annual generation from both Indian Point Units after 2013 would be approximately 15,600 GWh. This reflects a capacity rating of 979MW for

¹ Remarks by Governor Eliot Spitzer. “15 by 15”: A Clean Energy Strategy for New York. 19 Apr 2007. Found at: http://www.state.ny.us/governor/keydocs/0419071_speech.html

Indian Point Unit 2, a 1,000 MW capacity rating for Indian Point Unit 3, and 90 percent average annual capacity factors for both units. The capacity ratings for each unit reflect approximately 4 percent reductions in net plant output due to the potential addition of cooling towers.

To determine the potential of this policy to offset the Indian Point units, we evaluated the potential energy and summer peak capacity savings that can be expected from the “15 by 15” policy using both statewide² and zonal³ forecasts of energy consumption in GWh by the New York Independent System Operator (NY ISO). We used zonal forecasts from Zones H, I, J and K to represent the region that the Indian Point units directly serve. However, it is also relevant to look at the potential for summer peak capacity savings statewide as the region does import power from other regions.

The ramp-in required to achieve the target of 15% energy reduction by 2015 had not been determined. Therefore, we assumed a linear ramp-in of 2% per year starting in 2008 and ending in 2014, with 1% remaining required in 2015 to reach the goal of 15%. We calculated the statewide and regional energy reductions that would be required to achieve this goal by multiplying the total forecasted energy consumption by state and region by the cumulative percentage reduction required for the given year.

We assumed that only 15% reductions would be achieved in the regions of New York State directly served by Indian Points (i.e., Zones H, I, J and K). This is a conservative assumption because it is likely that urban areas such as New York City and Long Island would be able to achieve greater energy reductions than more rural areas which would have fewer energy savings opportunities.

We then converted the energy reductions to summer peak capacity savings in order to assess the ability for these reduction goals to offset the need for the two Indian Point units after 2013. We calculated a ratio between summer peak capacity and energy based on achievable potential estimates from the most recent study of energy efficiency potential in New York State. This study was conducted for NYSERDA in 2003 by Optimal Energy Inc.⁴

Statewide

We used the following methodology to develop ratios to be applied to estimated statewide energy reductions. As zones in the state have a range of avoided costs, I calculated a range of summer peak capacity savings using low and high avoided cost scenarios.

² New York Independent System Operator (NY ISO). 2007 Load and Capacity Data. Table I-1. NYISO 2007 Long Term Forecast - 2007 to 2017: Energy (GWh). Pg. 4.

³ New York Independent System Operator (NY ISO). 2007 Load and Capacity Data. Table I-2a. Forecast of Annual Energy by Zone – GWh. Pg. 5.

⁴ Optimal Energy, Inc. Energy Efficiency and Renewable Energy Resource Development Potential in New York State. Final Report. Volume One: Summary Report. August 2003. Found at: <http://www.nyserda.org/sep/EE&ERpotentialVolume1.pdf>

Low Avoided Cost Scenario: A ratio between the statewide economic potential summer peak capacity savings and energy reductions in 2007 using low avoided costs (0.196) was applied to energy reductions from 2007-2011. A ratio between the statewide economic potential summer peak capacity savings and energy reductions in 2012 using high avoided costs (0.216) was applied to energy reductions from 2012-2015.⁵

High Avoided Cost Scenario: A ratio between the statewide economic potential summer peak capacity savings and energy reductions in 2007 using high avoided costs (0.212) was applied to energy reductions from 2007-2011. A ratio between the statewide economic potential summer peak capacity savings and energy reductions in 2012 using high avoided costs (0.229) was applied to energy reductions from 2012-2015.⁶

The energy reductions were multiplied by these ratios to arrive at summer peak capacity savings. A summary of the statewide results are shown in Table 1 below.

Table 1 – Statewide Summer Peak Capacity Savings Under “15 by 15”

	Cumulative Energy Reduction (GWh)	Cumulative Summer Peak Capacity Savings – Range from Low to High Avoided Costs (MW)	Indian Point – Cumulative Capacity (MW)
2008	3,349	656 – 710	
2009	6,779	1,328 – 1,436	
2010	10,305	2,019 – 2,183	
2011	13,923	2,728 – 2,950	
2012	17,662	3,817 – 4,049	
2013	21,451	4,636 – 4,918	979
2014	25,358	5,480 – 5,813	
2015	27,532	5,950 – 6,311	
2016			1,979

It is clear from this analysis that a statewide 15% energy reduction by 2015 would more than offset the power that would be provided by the two Indian Point units if they were relicensed.

⁵ Optimal Energy, Inc. Energy Efficiency and Renewable Energy Resource Development Potential in New York State. Final Report. Volume One: Summary Report. August 2003. Table 1.5 New York Statewide Economic Potential – Low Avoided Costs. Pg. 3-4. Found at: <http://www.nysersda.org/sep/EE&ERpotentialVolume1.pdf>

⁶ Optimal Energy, Inc. Energy Efficiency and Renewable Energy Resource Development Potential in New York State. Final Report. Volume One: Summary Report. August 2003. Table 1.6 New York Statewide Economic Potential – High Avoided Costs. Pg. 3-4. Found at: <http://www.nysersda.org/sep/EE&ERpotentialVolume1.pdf>

The Need for Indian Point in Downstate New York (Zones H, I, J and K)

We used a similar methodology to develop ratios to be applied to estimated regional energy reductions (including Zones H, I, J and K). The only difference was that we used higher avoided costs rather than the range of avoided costs to represent these zones because these zones typically have the highest avoided costs in the state.

Table 2 – Regional Summer Peak Capacity Savings Under “15 by 15”

	Cumulative Energy Reduction (GWh)	Cumulative Summer Peak Capacity Savings – High Avoided Costs (MW)	Indian Point – Cumulative Capacity (MW)
2008	1,748	370	
2009	3,541	750	
2010	5,394	1,143	
2011	7,301	1,547	
2012	9,288	2,129	
2013	11,282	2,586	979
2014	13,340	3,058	
2015	14,487	3,321	
2016			1,979

Again, a 15% energy reduction in 2015 statewide would more than offset both the energy and capacity from both Indian Point units and would eliminate any need to extend the license of the two units in 2013 and 2016.

Significantly, the 15 percent reduction in statewide energy consumption anticipated under the “15 by 15” plan would not represent all of the economical potential energy efficiency that has been identified in New York State. A recent presentation by Philip Mosenthal of Optimal Energy, Inc., has projected that there is 61,506 GWh of economically potential energy efficiency in the State.⁷

⁷

Electric & Natural Gas Efficiency Potential in New York, presentation by Philip Mosenthal, Optimal Energy, Inc., at the New York State Public Service Commission Energy Efficiency Portfolio Standard Overview Forum, July 19, 2007, slide no. 9.

RENEWABLE ENERGY RESOURCES

According to NYSERDA's August 2007 *New York State Renewable Portfolio Standard Performance Report for the Program Period ending March 2007*, new renewable capacity installed since the onset of the Renewable Portfolio Standard (RPS) program could exceed 1,206 MW by the end of 2008, of which 1,184 MW would be located in New York State (p.2). The 1,206 MW of new installed capacity is expected to produce approximately 3.6 million MWh of electricity per year.⁸

This same Performance Report also noted that the September 24, 2004 New York PSC Order set forth annual energy targets representing how much renewable energy should be used by New York ratepayers to satisfy the 2013 goal of having 25% of the power consumed in New York come from renewable energy. The RPS energy targets set by the PSC in its September 24, 2004 Order are shown in Table 3 below.

Table 3 - RPS Energy Targets Set by New York Public Service Commission

	Main Tier Targets	Customer Sited Tier Targets	EO 111 Targets	Voluntary Market Targets	Combined Targets
2006	1,121,247	25,259	282,812	228,584	1,657,902
2007	2,326,171	50,488	314,579	457,167	3,148,405
2008	3,549,026	75,685	346,366	685,751	4,656,828
2009	4,767,994	100,855	378,174	914,335	6,161,358
2010	6,012,179	125,988	410,002	1,142,919	7,691,088
2011	7,297,746	151,081	391,857	1,571,502	9,212,186
2012	8,556,710	176,123	373,712	1,600,086	10,706,631
2013	9,854,038	201,130	355,568	1,825,670	12,236,406

Note: Not shown are energy targets associated with voluntary compliance by the Long Island Power Authority (LIPA) and the New York Power Authority (NYPA)

To meet these targets, New York will require the addition of the following MW of renewable resources:

Table 4 - Estimated Renewable Energy Capacity for NY through 2013

Type	Capacity (MW)
Co-fire biomass	296
Hydro	1,100
LFG	121
Off-shore wind	579
Wind	2,450
Solar	16
Small wind	1
Fuel cell	28
Grand Total	4,590

⁸ At page 1.

There are an increasing number of analyses of the potential for renewable resources in New York State. It is reasonable to expect that the retirement of either or both Indian Point units at the end of their current NRC licenses would provide a substantial impetus to the development of additional renewable resources.

Wind Powering America: New York, a website sponsored by the US DOE, estimates that the in-state wind energy potential for New York State is 8,400 MW of capacity after land use and environmental exclusions. (available at <http://www.nrel.gov/docs/fy00osti/28090.pdf>).

NYISO's September 2007 *Comprehensive Reliability Plan 2007*, noted the following concerning wind capacity:

The NYISO interconnection queue includes proposals for wind generation that now total in excess of 5,000 MW. Wind generators are intermittent resources and have unique electrical characteristics that pose challenges for planning and operations of the interconnected system. The NYISO has completed a study conducted with GE Energy which evaluated the reliability and operating implications of the large scale integration of wind generation. The study concluded that if state-of-the-art wind technology is utilized, wind generation can reliably interconnect with only minor adjustments to existing planning, operating, and reliability practices.⁹

The study cited in this NYISO report is titled *The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations, Report on Phase 1, Preliminary Overall Reliability Assessment*, prepared for NYSERDA by GE Energy Consulting, 2004. A Phase 2 Report, *System Performance Evaluation*, also was completed in March 2005.

When combined with other energy resources, wind can produce energy in patterns comparable to a baseload generation facility. At the same time, the effects of short term wind variability can be mitigated by building a larger number of wind turbines and by siting the wind turbines in different geographic locations. There is no evidence that any replacement capacity for Indian Point would need to be a fully dispatchable facility. Indeed, the electric grid in New York State will already have a large number of fully dispatchable facilities.

Entergy merely rehashes the same tired old arguments against reliance on wind power. As a detailed 2004 Wind Integration Study – Final Report prepared for Xcel Energy and the Minnesota Department of Commerce has noted:

⁹ New York Independent System Operator, *The Comprehensive Reliability Plan 2007, A Long-Term Reliability Assessment of New York's Bulk Power System*, Final Report, September 2007, Appendices, at page 75.

Many of the earlier concerns and issues related to the possible impacts of large wind generation facilities on the transmission grid have been shown to be exaggerated or unfounded by a growing body of research studies and empirical understanding gained from the installation and operation of over 6000 MW of wind generation in the United States.¹⁰

Contrary to what Entergy has claimed, wind power can reduce the need for the capacity from Indian Point Units 2 and 3 and can provide low cost energy.

An August 2003 study prepared for NYSERDA, *Energy Efficiency and Renewable Energy Resource Development Potential in New York State*, by Optimal Energy, Inc., American Council for an Energy Efficient Economy, the Vermont Energy Investment Corporation and Christine T. Donovan Associates, has provided the following estimates of the potential for renewable resources and energy efficiency in New York State:

Table 5 - New York Statewide Economic Potential – Low Avoided Costs

	2007		2012		2022	
	Annual GWh	Summer Peak MW	Annual GWh	Summer Peak MW	Annual GWh	Summer Peak MW
Energy Efficiency Savings						
Residential	10,124	1,475	12,205	1,981	15,610	2,646
Commercial	27,490	6,173	32,124	8,009	32,994	9,266
Industrial	5,718	840	6,045	896	4,999	752
Total Efficiency	43,332	8,489	50,374	10,886	53,603	12,664
Renewable Supply						
Biomass	5,141	833	5,325	861	6,344	1,022
Fuel Cells	-	-	-	-	-	-
Hydropower	1,512	109	4,336	375	9,123	816
Landfill Gas	-	-	-	-	-	-
Municipal Solid Waste	-	-	682	91	1,421	190
Photovoltaics	-	-	-	-	-	-
Solar Thermal	175	-	181	-	189	-
Windpower	-	-	1,245	100	41,818	3,255
Total Renewable	6,828	942	11,769	1,427	58,894	5,283
Total Efficiency Savings & Renewable Supply	50,159	9,431	62,143	12,313	112,497	17,947

¹⁰ *Wind Integration Study-Final Report*, prepared for Xcel Energy and the Minnesota Department of Commerce by EnerNex Corporation and Wind Logics, Inc., dated September 28, 2004, the Project Summary portion of which is included as Exhibit JI-4-A, at page 19.

Table 6 - New York Statewide Economic Potential - High Avoided Costs

	2007		2012		2022	
	Annual GWh	Summer Peak MW	Annual GWh	Summer Peak MW	Annual GWh	Summer Peak MW
Energy Efficiency Savings						
Residential	12,593	2,433	15,982	3,267	19,660	4,480
Commercial	30,273	7,021	35,340	8,988	36,847	10,225
Industrial	5,718	840	6,045	896	4,999	752
Total Efficiency	48,584	10,294	57,367	13,151	61,506	15,457
Renewable Supply						
Biomass	5,141	833	5,325	861	6,344	1,022
Fuel Cells	-	-	-	-	-	-
Hydropower	2,115	257	5,038	555	10,311	1,095
Landfill Gas	439	59	407	54	419	56
Municipal Solid Waste	-	-	682	91	1,421	190
Photovoltaics	-	-	-	-	-	-
Solar Thermal	175	-	181	-	189	-
Windpower	893	70	3,744	293	41,818	3,255
Total Renewable	8,762	1,219	15,376	1,855	60,501	5,618
Total Efficiency Savings & Renewable Supply	57,347	11,513	72,744	15,006	122,007	21,074

Based on the results of this study, renewable resources have the technical and economic potential to provide between 1427 MW and 1855 MW of new capacity in New York State by 2012 and between 5283 MW and 5618 MW of new capacity by 2022. Energy Efficiency and renewable resources together have the technical and economic potential to provide between 12,313 MW and 15,006 MW in 2012 and between 17947 MW and 21074 MW in 2022. Clearly, this is far more than would be required to replace the approximately 2000 MW of capacity from Indian Point Units 2 and 3.¹¹

The same conclusion is true for the energy that would be supplied by Indian Point Units 2 and 3 if their licenses are renewed. The same tables presented above show that renewable resources, alone have the potential to provide between 11769 and 15376 GWh of energy in 2012 and between 58894 and 60501 GWh of energy in 2022. Similarly, energy efficiency and renewable resources combined could provide between 62,143 GWh and 72,744 GWh in 2012 and between 112,497 GWh and 122,007 GWh in 2022.¹²

The 2003 study for NYSERDA also showed that a significant portion of the energy that could be provided by energy efficiency and renewable resources would be in downstate New York.¹³ For example, the study found that by 2012, energy efficiency and renewable resources have a technical and economic potential of

¹¹ At Volume One, page 3-4.

¹² *Id.*

¹³ *Id.*, Figure 1.8, at page 3-7.

approximately 30,000 GWh just in Zones J and K, which represent New York City and Long Island. It similarly found that by 2022, energy efficiency and renewable resources have a technical and economic potential of more than 50,000 GWh just in these same areas of the state. Again, this would easily replace the energy that would be provided by Indian Point Units 2 and 3.

The May 2007 study, *New York's Solar Roadmap, A Plan for Energy Reliability, Security, Environmental Responsibility and Economic Development in New York State*¹⁴, has noted that a private-sector initiative launched in 2007 R&D, manufacturing, and industry leaders in New York State, has developed the strategic goal of increasing solar power deployment in the State from the current level of about 12 MW of grid-connected electricity as of January 2007 to over 2,000 MW by 2017.¹⁵ This would provide about 5 percent of the peak electric capacity of the state.¹⁶

An October 2002 study by NYSERDA on *Combined Heat and Power, Market Potential for New York State*, has concluded that by 2012 there could be between 763.6 MW and 2,169.1 MW of combined heat and power in the state.¹⁷ Between 525.4 MW and 1,319.7 MW of this combined heat and power could be in the Downstate area of the State.¹⁸

The new administration in New York State already is taking significant actions to increase the amount of energy efficiency and renewable resources:

New York State has announced the following major initiatives as part of their Clean Energy Agenda:

- **Reduce energy consumption.** Governor Spitzer has announced that New York will reduce energy consumption by 15 percent below the forecasted level in 2015 – this is the most aggressive target in the country. New York businesses can raise their profits and New York's families can reduce their utility bills by conserving energy. At the state level, government will lead by example and cut its own use of energy.
- **Invest in and develop renewable energy such as wind, solar, hydropower, and fuel cells.** The Spitzer-Paterson administration will ensure New York will meet the current goal of obtaining 25 percent of our energy from renewable resources by 2013, and the Task Force will evaluate whether to expand this goal. In addition,

¹⁴ This study is available at http://www.neny.org/download.cfm/NENY_Membership_Application.pdf?AssetID=225

¹⁵ Executive Summary, at page 1.

¹⁶ *Id.* at page 2.

¹⁷ *Combined Heat and Power, Market Potential for New York State*, NYSERDA, Final Report 02-12, October 2002, Table ES-4, at page ES-9.

¹⁸ *Id.*

we must continue to support research and development in this area, and encourage renewable energy businesses to locate in New York.

- **Clean Energy Siting Bill.** Streamlining the state approval process for renewable and clean energy sources is an essential part of our effort. Governor Spitzer proposed a new power plant siting law (“Article X”) that would provide a streamlined and expedited review process for wind projects and other clean energy sources.¹⁹

The State also has convened a Renewable Energy Task Force to evaluate, among other issues, whether the state’s Renewable Portfolio Standard should be increased to 30 percent as a result of the Governor’s announced “15 by 15” energy efficiency program.

POWER PLANT REPOWERING

Entergy did not consider the potential repowering of older existing power plants as an alternative to the relicensing of Indian Point Units 2 and 3.

Repowering a generation facility means replacing a plant's old, inefficient and polluting equipment with newer, more efficient equipment. Today, virtually all repowering projects replace old equipment with combined-cycle combustion turbines (CCCTs). CCCTs generate electricity in two stages. In the first stage, fuel is burned to operate a gas turbine generator, and in the second stage, excess heat from the gas turbine is used to drive a steam turbine and generate additional electricity. This two-stage process can turn 50 percent or more of the fuel energy into electricity. Repowering has become commonplace in the electric industry since the early 1990s. One repowering project in the Hudson River Valley was PSEG’s Bethlehem Energy Center outside Albany. Completed in 2005, this project now consists of 793 MW of combined-cycle generating capacity, which includes a net increase of 400 MW relative to the old Albany Steam Plant that was replaced.

In practice, repowering can be done in at least two ways, either by rebuilding and replacing part or all of an existing plant or by closing down an existing power plant, building a new unit next to it and reusing the existing transmission and fuel facilities.

Repowering older power plants provides a number of important environmental and electric system reliability benefits: improved plant availability, lower plant operating and maintenance costs; increased plant capacity and generation; reduced facility heat rates which lead to significantly more efficient fuel use; reuse of industrial sites; up to 99 percent reductions in water intake and related fish impacts; and large reductions in air emissions, both overall and in terms of emissions per MWh of electricity.

¹⁹

Available from http://www.ny.gov/governor/press/lt_conservation.html.

A recent study on repowering KeySpan's generating facilities on Long Island by the Center for Management Analysis at Long Island University concluded that repowering these facilities would provide cost effective generating capacity to carry Long Island at least into the next 20 to 40 years and beyond, and would provide "compelling" environmental benefits:

Improvements in efficiency from about 35 percent to close to 60 percent in the conversion of fuel to electricity can be achieved. The resulting reduction in fuel burned for a given amount of generation will be significantly less nitrogen oxides and carbon monoxide emitted. Modern combined cycle units have state of the art emission control systems in contrast to the older steam electric units with no such controls. The re-powered units achieve emission reductions immediately since they replace higher emitting, older units that would likely continue to operate in an expansion program of new greenfield projects.²⁰

The study by the Center for Management Analysis concluded that converting the major plants on the KeySpan system to combined cycle could increase Long Island's electric supply by about 2,000 MW.²¹ Clearly, the repowering of these existing power plants on Long Island could replace the approximate 2,000 MW of capacity provided by Indian Point Units 2 and 3.

Reliant Energy also received an Article X certificate to repower its aging Astoria Generating facility. This repowering would add another 1,816 MW of combined cycle capacity to the electric system in New York City. This would represent an increase of approximately 650 MW over the capacity of the existing Astoria facility. The retirement of Indian Point Units 2 and 3 would create an incentive for the completion of this repowering project.

Detailed engineering and economic analyses must be performed to determine the optimum size of the repowered unit and the extent to which existing facilities can be refurbished and reused. The types of existing facilities that can be refurbished and reused include boilers, turbine generators, condensers, transmission switchyards, and other auxiliary plant equipment. The reuse of this equipment can lower the cost of building the repowered facility as compared to the cost of constructing a new unit at a new site.

There are a number of older fossil-fueled power plants situated on the river between Albany and New York City: Bowline Point, Roseton, and Danskammer. As noted earlier, one older plant along the river, the old Albany Station, has been replaced with modern power generation equipment. However, the units at the Bowline, Roseton and Danskammer fossil-fueled plants utilize older power generating technology, which is less efficient and has far greater environmental impacts than new generating systems. Most of the boilers and generating units in these four plants are over 25 years old – three of them are over 45 years old – and none of them has been retrofitted with post-combustion emission controls or modern

²⁰ *The Feasibility of Re-Powering KeySpan's Long Island Electric Generating Plants to Meet Future Energy Needs*, Long Island University, Center for Management Analysis, August 6, 2002, at page 8.

²¹ *Id.*, at page 78.

cooling systems that minimize water use from the river. Repowering these plants with new combined cycle technology could add additional generating capacity to replace Indian Point at the same time that it would provide significant economic and environmental benefits.

TRANSMISSION SYSTEM ENHANCEMENTS AND UPGRADES

Entergy has failed to adequately consider transmission system enhancements and upgrades as part of the portfolio of options for replacing the capacity and energy from Indian Point Units 2 and 3. Such enhancements and upgrades could increase the capability to import power into the Hudson River Valley and Downstate New York from New England, PJM²² or upstate New York.

For example, at least two new transmission links between New York and New Jersey have been proposed. Both of these are in the interconnection queue at the New York ISO. One of these is the Hudson Transmission Project that would provide a new controllable line into New York City rated at 600 MW.²³ A second project, the 550 MW Harbor Cable Project and Generating Portfolio, would provide a full controllable transmission pathway from generating sources in New Jersey to New York City.²⁴

At the same time, the 2005 Levitan & Associates study identified three possible transmission alternatives to the retirement of Indian Point Units 2 and 3. The first would include retirement with the construction of two physically separate 500 kV circuits between the Capitol District around Albany to the downstate grid in New York City. Each of the circuits would be controllable and would be able to transmission 1,000 MW of power for a total of 2,000 MW.²⁵ A third proposed project would be the 300 MW Linden Variable Frequency Transformers that would be physically located adjacent to the Linden Cogen plant in northern New Jersey. It would result in a variable 300 MW tie between PJM and New York City.²⁶

The second transmission alternative identified by Levitan & Associates would be to upgrade the existing 345 kV New Scotland-Leeds circuit and the 345 kV Leeds-Pleasant Valley circuit, and construct a new 345 kV line from New Scotland to Pleasant Valley. This would increase the UPNY-SENY interface transfer capability by approximately 600 MW.²⁷

²² PJM is the interconnected regional electric system in 13 states and the District of Columbia. New Jersey and Pennsylvania are two of the state's within PJM.

²³ New York Independent System Operator, *The Comprehensive Reliability Plan 2007, A Long-Term Reliability Assessment of New York's Bulk Power System*, Final Report, September 2007, at page 27.

²⁴ *Id.*

²⁵ *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 Agency, by Levitan & Associates, Inc., June 9, 2005, at pages 35 and 36.

²⁶ *Id.*

²⁷ *Id.* at pages 36 and 37.

Finally, the third transmission alternative would be to convert the existing 345 kV Marcy-New Scotland circuit to a double circuit and to rebuild the New Scotland station to a breaker-and-a-half design. This would increase the Central-East transfer capability by approximately 650 MW and increase the transmission capability into New York City by approximately 450 MW.²⁸

Levitan & Associates also identified a fourth transmission alternative that would upgrade the interconnections between New York and the PJM system by re-conductoring the existing transmission paths from Ramapo to Buchanan and/or constructing a new dedicated (overhead or underground) transmission line from Ramapo to Buchanan. However, Levitan & Associates were unsure of the amount by which this alternative would increase the Total East transfer capability into New York State.

NEW GENERATING FACILITIES

A number of proposed power plant projects received certificates under New York's now-expired Article X statutes. However, some of these projects have not been built because they were unable to secure the needed financing. The Governor of New York has proposed requiring utilities to enter into long-term contracts with prospective suppliers. This would enable plant developers to limit risks, gain the confidence of investors and obtain the financing to build their projects.

The following is list of the approved projects in the Hudson River Valley and downstate New York that have not been built:

- Besicorp – Empire State Newsprint Project – 505 MW – Rensselaer County
- Bowline Unit 3 – 750 MW – Rockland County
- Reliant Energy Astoria Repowering Project – 1816 MW total (net addition 652 MW) – Queens County
- Spagnoli Road Energy Center – 250 MW – Suffolk County

The addition of these units would add over 2,100 MW of new generating capacity.

Other new generating facilities, totaling 1400 MW of new capacity, have been proposed for downstate New York including:

- A second Astoria Repowering Project, submitted by NRG Power Marketing, would add 500 MW (375 MW net) of new combustion turbine power in Queens by 2011.²⁹
- A 600 MW combined cycle unit at Arthur Kill on Long Island by 2012.³⁰

²⁸ Id., at page 37.

²⁹ New York Independent System Operator, *The Comprehensive Reliability Plan 2007, A Long-Term Reliability Assessment of New York's Bulk Power System*, Final Report, September 2007, at page 27.

³⁰ Id.

- A 300 MW Peaking Facility at Indian Point, proposed by Entergy Nuclear Power Marketing. This project would be in service by mid-2011.

As explained in the 2005 *Indian Point Options* study by Levitan & Associates, it is reasonable to expect that the retirement of Indian Point would encourage developers to complete the approved but not yet built projects:

Project developers are keenly tuned to market dynamics in New York. They would realize that retiring IP would cause market energy and capacity values to increase across the downstate region. These price signals would be important, given IP's size and location, to encourage the development of new generation and/or transmission projects that would replace the lost capacity. These new generation projects could include decentralized and renewable resource options. If the retirement of IP were announced in advance, developers would be able to calculate the economic feasibility of their projects and pursue those that make financial sense in time to maintain the state's reliability requirement. In addition, utilities in the downstate regions might offer long-term PPAs for new replacement generation. PPAs offer generators market certainty and reduce price risk, improving the opportunity for owners to obtain debt and equity financing in today's skittish financial markets.

The developers' ability to respond to market price signals and the utilities' interest in contracting for new generation are central to our analysis. We believe that developers would require a minimum of three-to-four years to plan, permit, and construct a gas-fired combined cycle project. Perhaps six months to a year could be shaved off the time for a simple cycle project. The early project development work can often be accomplished at minimal cost, even if a formal retirement plan was not announced, in order for the developer to get a "head start" on competitors. Such tasks encompass conceptual design, site control, preliminary fuel supply and power offtake arrangements, and initial permit applications. The remaining project development and construction time would be approximately three years for a combined cycle plant and less for simple cycle. Thus we would recommend that any voluntary retirement be announced at least three-to-four years in advance, to give the market enough time to develop replacement capacity....

* * * *

The existing NRC license expiration dates of 2013/15 define our Base Case scenario against which we evaluate other options. If Entergy announced an agreement to retire IP2&3 on those dates at least three, and preferably four years in advance, there would be

more than enough time for project developers and downstate utilities to respond.³¹

It is important to realize that gas supply will not be a critical factor in closing Indian Point. According to the 2006 National Academy of Sciences study, “*Committee on Alternatives to Indian Point for Meeting Energy Needs*, at page 5, replacing both Indian Point units would ultimately require an additional 1300-1400 MW of new gas-fired generating capacity. Conservatively assuming a heat rate of 8000 btu/KWh, under peak conditions providing 1400 MW would require a gas supply of 0.26 bcf per day, or about 16% of the combined capacity of the new LNG facilities being developed in Eastern Canada and Massachusetts. There will be more than enough slack in the system to supply the gas needed for additional generating facilities to replace Indian Point from existing and new sources outside New York State.

New gas supplies will be available in the northeastern United States and eastern Canada from new LNG facilities that are expected to be on-line within the next few years. (The Canaport LNG terminal is expected to begin receiving deliveries and transporting gas to the northeast United States through the upgraded Maritimes and Northeast pipeline as soon as 2008) The combined capacity of these LNG terminals would be approximately 1.73 billion cubic feet (bcf) per day, of which 0.73 bcf would be delivered from the Canaport facility (Nova Scotia) and 1.0 bcf from two offshore facilities in Massachusetts. These facilities are well advanced in the permitting process (Canaport is under construction), and they rely on known and proven LNG transfer and regassification technologies.

Note that the two proposed LNG import terminals, located in Massachusetts, to serve the northeast market have been approved by the Governor of Massachusetts.³² In addition, the Repsol Energy North America Corporation, developer of the Canaport LNG facility in Saint John, New Brunswick, has filed a notice with FERC clarifying that they intend and expect to deliver 0.73 bcf of gas into the northeastern United States.³³

The addition of these new LNG facilities in the northeastern United States and eastern Canada will free-up additional pipeline capacity into the New York area from the south so that more gas could be delivered to the Westchester Area. Today, New England gets much of its gas supply from the Algonquin Pipeline which passes through Connecticut from the southeast corner of the state to the northwest corner. This transport—through function accounts for about 90% of the activity on Algonquin in this region. Once additional LNG-based supplies are available in New England, much of that existing pipeline capacity would be available for delivering gas supplies from domestic sources (i.e., the Gulf of Mexico) to the New York area. In addition, decreased competition for this pipeline capacity means that

³¹ *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 Agency, by Levitan & Associates, Inc., June 9, 2005, at pages 30 and 31.

³² http://www.boston.com/news/local/articles/2006/12/20/governor_approves_2_lng_ports/

³³ http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20070111-0066

transportation costs to the New York area are likely to decrease. Thus the availability of new LNG terminals in New England and eastern Canada will provide a benefit to New York and Connecticut in terms of availability of supply, and likely in terms of price, even if the physical molecules of gas are not delivered to the region from those new LNG facilities.

In conclusion, the LNG terminals in Canada and Massachusetts will all add to the available gas supplies for New York and Connecticut. They can do this either directly, by transporting gas to the region through the interstate pipeline system, or indirectly, by releasing pipeline capacity that would otherwise be reserved for moving supplies through the region and northward.³⁴

CONCLUSION

In conclusion, the capacity and energy provided by Indian Point Units 2 and 3 can be replaced if the Units are not relicensed. In particular, energy efficiency, renewable resources, the repowering of older generating facilities, transmission upgrades and new natural gas-fired generating facilities represent viable alternatives to the relicensing of Indian Point. Substantial reductions in peak demand and energy requirements will be achieved by 2013 under the state's newly announced "15 by 15" Clean Energy Plan. Significant amounts of new renewable resources will be available as a result of the state's renewable energy portfolio standard and other initiatives. In addition, thousands of megawatts ("MW") of new generating capacity can be provided by the repowering (i.e., rebuilding) of older generating facilities both along the Hudson River and in the downstate area of the state in New York City and on Long Island. At the same time, transmission system upgrades also can increase the amounts of power that can be provided to the downstate region of the State. Finally, there is the potential for the addition of several thousand megawatts of new generating capacity in the Hudson River Valley and in downstate New York.

³⁴

See *The Proposed Broadwater LNG Import Terminal: An Analysis and Assessment of Alternatives*, March 2006 and *The Proposed Broadwater LNG Import Terminal Update of Synapse Analysis*, January 19, 2007, both are available at www.synapse-energy.com.

Attachment 2

November 28, 2007
Declaration and Resume of
Peter A. Bradford

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In re:

License Renewal Application Submitted by

**Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.**

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

DECLARATION OF PETER A. BRADFORD

Peter A. Bradford, hereby declares under penalty of perjury that the following is true and correct:

1. My name is Peter Amory Bradford. I live in Peru, Vermont. My resume is attached to this declaration.

2. I am President of Bradford Brook Associates, a firm advising on utility regulation and energy policy. I teach a course entitled "Nuclear Power and Public Policy" at Vermont Law School. I have been a member of the Keystone Center "Nuclear Power Joint Fact Finding" (June, 2007) and the National Research Council of the National Academy of Sciences' Committee on "Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs" (June, 2006). I was also a member of the International Expert Panel advising the European Bank for Reconstruction and Development assessing the economic case for completing Khmel'nitsky 2 and Rovno 4 (K2/R4) – two partly built, Russian designed 1,000 MW VVER nuclear units in Ukraine – to replace the two operational 1,000 MW units at Chernobyl (February, 1997).

3. I have chaired the New York Public Service Commission (1987-95). In that capacity, I was an *ex officio* member of the New York State Energy Planning Board.

4. I served on the Maine Public Utilities Commission (1971-1977 and 1982-87) and was Chairman in 1974-1975 as well as 1982-87.

5. I served as a member of the U.S. Nuclear Regulatory Commission (1977-82).

6. The Nuclear Regulatory Commission's approach to assessing alternatives to the construction and operation of nuclear power plants has been deficient since the agency was created in 1975. In particular, the NRC has been ineffective in assessing the role that energy efficiency can play (and has played) in displacing nuclear power plants.

7. Nearly half of all of the more than 200 plants licensed for construction by the NRC in its history have been cancelled, often after expenditures of millions and sometimes billions of dollars. Many others were delayed long past their scheduled completion dates, dates by which the NRC (or its predecessor, the Atomic Energy Commission) found that they would be needed to meet demand for electricity. Another dozen plants have been prematurely closed, some on short notice. In most cases, the licensee cited absence of need as a primary reason for the cancellation or deferral. In very few cases was a central generating facility of equivalent capacity constructed to replace the cancelled capacity. No significant power shortage has resulted from these cancellations, deferrals, or closings.

8. A study done for me when I was an NRC Commissioner in 1979 concluded, *inter alia*:

The Commission has consistently failed to perform full cost-benefit analyses for reasonable alternatives as required by NEPA. Alternatives other than coal are routinely dismissed with boilerplate language in environmental impact statements. Commission estimates always favor nuclear over coal and a NFP (need for power) determination is always made affirmatively. NRC environmental statements display a clear bias in favor central station facilities, and a mix of potentially more cost-effective (and environmentally benign) technologies is never adequately assessed.

Gerald Warburg, "A Study of NRC Procedures for Assessing Need for Power and Alternative Energy Sources in Fulfillment of the NEPA Requirements for Environmental Impact Statements" (1979).

9. The Environmental Report in this proceeding reflects the flaws in the NRC's historic approach to assessing alternatives to the operation of a nuclear plant. In so doing, the applicant seems to be relying on the NRC to accept its flawed analysis despite the NRC's own GEIS requirements to analyze combinations of efficiency and renewables. Not only does the applicant confine the alternatives

analysis to central generating facilities but – by assuming the operation of the two Indian Point units – it assumes away the urgency that has demonstrably been the most effective spur to large scale energy efficiency programs. See Entergy Environmental Report, § 7.0 to 7.5, pp7-1 to 7-5.

10. The National Academy of Sciences panel on alternatives to the continued operation of one or both Indian Point units – while taking no position as to whether Indian Point should continue to operate – concluded:

A wide and varied range of replacement options exists, and *if a decision were definitely made to close all or some part of Indian Point by a date certain*, the committee anticipates that a technically feasible replacement strategy for Indian Point would be achievable [F]rom the committee's analysis, no "right" or clearly preferable supply alternative to Indian Point emerged. A replacement strategy for Indian Point would most likely consist of a portfolio of the approaches discussed in this report, including investments in energy efficiency, transmission, and new generation.

"Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs," the National Research Council, June, 2006, p. 3 (emphasis added).

11. The recent history of the electric power industry in the United States demonstrates beyond dispute the ability of a large power system such as New York effectively to create portfolios of replacement energy resources once a decision has clearly been made to close a particular unit or once unexpected circumstances produce the same result. Consider the following examples:

- A. The 820MW Shoreham nuclear power plant on Long Island was – until 1988 – included in the Long Island Lighting Company's plans for meeting its load from mid-1989 onward. Late in 1988, LILCO and the State of New York agreed that the plant should not operate, and the settlement was affirmed by state regulators and the utility's board of directors by June 1989.

Like the downstate New York region today, Long Island's ability to import power faced substantial transmission constraints. Shoreham's percentage of the LILCO system peak was greater than that of the two Indian Point units in the Lower Hudson River Valley, New York City and Long Island. Many in the electric industry, in the federal government, and in the media forecast serious power shortages on

Long Island in the years following the agreement not to operate the plant.

Once the question of Shoreham's future was clear, LILCO and the State moved rapidly to put together a replacement power program consisting of demand side management, load management, targeted maintenance to assure high availability of other plants at peak times, transmission upgrades, peaking units, and independent power production, some of it renewable.

Though LILCO operated below its reserve requirement for two or three summers after the Shoreham settlement, power supply was at all times adequate.

Through load management programs alone, LILCO gained control of 130MW of its potential load before the 1989 summer peak.

- B. In 1986, the State of Maine and its utilities reached an agreement to end Maine's involvement in the Seabrook nuclear power plant. At the time of this agreement, Seabrook was expected online within two years, which would have meant about 110 megawatts for the three Maine companies. In the years preceding the agreement, Maine had pioneered in the use of competitive bidding for new power resources and had come to realize that the amount of renewable resources – specifically biomass – to be had was far greater than had been forecast in the early 1980s.

The Seabrook power was replaced almost entirely by biomass energy from Maine's forests, with substantial economic advantages to Maine electric customers, taxpayers, wood owners, and workers. These biomass plants would not have been built had Maine remained in Seabrook. They were built to meet the market opportunity created by Maine's decision to get out of Seabrook. A subsequent study showed substantial economic benefit to Maine from the decision to disengage from Seabrook.¹

- C. In June 1989, the voters of Sacramento, California voted to close the Rancho Seco nuclear power plant, which supplied 913 of the Sacramento Municipal Utility District's (SMUD) 2,100 MW load. Using purchased power to bridge the gap, SMUD embarked on a

¹ "Energy Choices Revisited: An Examination of the Costs and Benefits of Maine's Energy Policy", a study for Mainewatch Institute by Economic Research Associates, the American Council for an Energy Efficient Economy and the Tellus Institute, 1994.

program of extensive energy efficiency coupled with cogeneration, renewable energy and purchased power. In hindsight, this program – which clearly would not have happened had the nuclear plant remained in operation – has worked out to the advantage of the Sacramento community.²

- D. Between mid-2000 and mid-2001, the state of California was repeatedly threatened with power shortages and did indeed experience blackouts. However, by the summer of 2001, load management and demand side management programs of various sorts had produced several thousand megawatts in savings above and beyond what had been expected from the California efficiency programs that had been in place a year earlier.³ These rapidly assembled efficiency resources, many of which remain in place, were largely responsible for bringing the California energy crisis to an end and for keeping the lights on until power purchases, new power plant construction and an end to market manipulation restored the state to a more lasting equilibrium.

12. In each of the foregoing cases, the amount of energy efficiency and other resources put into place vastly exceeded the forecasted availability of a few years earlier. It is the realization that generating capacity will not be available that creates the climate in which alternative resources will be developed and put into place. For sound economic and political reasons, the planning and investment necessary to add large blocks of replacement energy efficiency, purchased power, transmission or new generation to a system will not occur without a clear indication that the investments are needed and have a reasonable likelihood of earning a competitive return.

13. Any claim that a decision to extend the license of the two Indian Point units is merely a decision to keep the Indian Point option and need therefore not be regarded as an either/or decision between the nuclear plants and a decision to

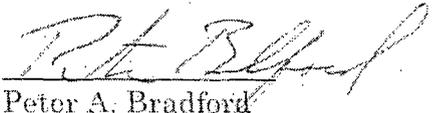
² SMUD's history states, "To replace nuclear power, the SMUD Board moved away from the concept of a large central plant toward diverse power sources, such as cogeneration plants, wind power, low-cost purchased power from the Pacific Northwest and Canada, and research and development of renewable resources and advanced technologies like solar, fuel cells, gas turbines and biomass." SMUD's history: 1990s: Moving Into Leadership on Green Energy, Conservation, available at <http://www.smud.org/about/history-1990s.html> (last visited Nov. 27, 2007).

³ "In the summer of 2001, California's energy efficiency programs and energy conservation-related efforts saved between 3,200 and 5,600 MW and reduced peak demand by an average of 8 percent, which helped the state avert 50 to 160 hours of rolling black outs." Goldman, C., J. Eto, and G. Barbose, "California customer load reductions during the electricity crisis: did they help to keep the lights on?" LBNL-49733. (2002) (available at <http://eetd.lbl.gov/ea/EMS/reports/49733.pdf>), cited in "Energy Efficiency: California's Highest Priority Resource", California Public Utilities Commission and California Energy Commission, June 2006, at 4).

replace them with other resources ignores the realities of power supply planning and procurement. In order to comply with its NEPA obligations the NRC needs an analysis that reveals whether other options are environmentally preferable to extending the Indian Point license. The agency and the licensee cannot discharge this responsibility just by putting the Indian Point units forth as options and trusting to other jurisdictions that the optimal course will be chosen. As the above examples show, it is the realization that the expected generation source will not be available or ought not to be used that brings about the conditions under which the demand side management and renewable alternatives are able to replace them. Only an analysis fully consistent with power supply procurement realities – including the abundance of available energy efficiency and the conditions necessary to bring it into being – will enable the NRC to assess the environmental impacts of its decision on relicensing the Indian Point units.

14. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: November 28, 2007
Peru, Vermont


Peter A. Bradford

RESUME OF PETER A. BRADFORD

Peter Bradford advises and teaches on utility regulation, restructuring, nuclear power and energy policy in the U.S. and abroad. He has been a visiting lecturer in energy policy and environmental protection at Yale University and has taught courses entitled "Nuclear Power and Public Policy" and "The Law of Electric Utility Restructuring" at the Vermont Law School. He has recently served on a Keystone Center fact finding collaboration on nuclear power and a National Academy of Sciences panel evaluating the alternatives to continued operation of the Indian Point Nuclear Power Plants in New York. He is also affiliated with the Regulatory Assistance Project, which provides assistance to state and federal energy regulatory commissions regarding economic regulatory policy and environmental protection. He is vice-chair of the Board of the Union of Concerned Scientists.

He served on a panel advising the European Bank for Reconstruction and Development on how best to replace the remaining Chernobyl nuclear plants in Ukraine and also on an expert panel advising the Austrian Institute for Risk Reduction on regulatory issues associated with the opening of the Mochovce nuclear power plant in Slovakia. He advised the Vermont Legislature on issues relating to spent fuel storage at Vermont Yankee and the Town of Wiscasset, Maine, on issues related to the storage of spent nuclear fuel at the site of the former Maine Yankee nuclear power plant.

He has advised on restructuring issues in many states and has testified on aspects of electricity and telecommunications restructuring in many U.S. states.

He has advised on energy, telecommunications and water utility restructuring issues in China, Armenia, Azerbaijan, Georgia, India, Indonesia, Mongolia, Canada, Russia, South Africa, and Trinidad and Tobago. He is a member of the Policy Advisory Committee of the China Sustainable Energy Program, a joint project of the David and Lucille Packard Foundation and the Energy Foundation.

He chaired the New York State Public Service Commission from 1987 until 1995 and the Maine Public Utilities Commission from 1982 until 1987. During these years, New York resolved its stalemate over the Shoreham nuclear power plant and Maine resolved its similarly controversial involvement in Seabrook, both on favorable economic terms. He was Maine's Public Advocate in 1982 and was President of the National Association of Regulatory Utility Commissioners during 1987.

He served on the U.S. Nuclear Regulatory Commission from 1977 until 1982. During his term, the NRC undertook major upgradings of its regulatory and enforcement processes in the wake of the Three Mile Island accident.

Prior to becoming a member of the NRC, he had served on the Maine Public Utilities Commission (1971-1977) and was Chairman in 1974-1975.

Mr. Bradford was an advisor to Maine Governor Kenneth Curtis from 1968 to 1971, with responsibilities for oil, power, and environmental matters. He assisted in preparing landmark Maine laws relating to oil pollution and industrial site selection and was Staff Director of the Governor's Task Force on Energy, Heavy Industry and the Coast of Maine.

Mr. Bradford is the author of Fragile Structures: A Story of Oil Refineries, National Security and the Coast of Maine, a book published by Harper's Magazine Press in 1975. His articles on utility regulation and nuclear power have appeared in many publications, including The New York Times, The Washington Post, The Los Angeles Times, The Boston Globe, Newsday, and The Electricity Journal.

He is a 1964 graduate of Yale University and received his law degree from the Yale Law School in 1968.

PUBLICATIONS

Books

Fragile Structures: A Story of Oil Refineries, National Security and the Coast of Maine, 1975, Harpers Magazine Press.

Law Review

Maine's Oil Spill Legislation, Texas International Law Journal, Vol.7, No.1, Summer, 1971, pp. 29-43.

Articles

Contribution to New York Times Forum "*Choking on Growth: China and the Environment*," New York Times Online, November 20, 2007, <http://china.blogs.nytimes.com/2007/11/20/answers-from-peter-bradford/#more-24>.

Contributions to the Bulletin of the Atomic Scientists online forum on *Nuclear Power and Climate Change*, (with Amory Lovins and Stephen Berry), <http://www.thebulletin.org/roundtable/nuclear-power-climate-change/>, March-August, 2007.

The Economics of Nuclear Power (with Steven Thomas, Antony Froggatt, and David Millbrow) for Greenpeace International, May, 2007.

Nuclear Power's Prospects in the Power Markets of the 21st Century, for the Nonproliferation Education Center, February, 2005.

China's National Energy Plan: Some Energy Strategy Considerations, (with Thomas Johansson) The Sinosphere Journal, Spring, 2004.

Some Environmental Lessons from Electric Restructuring, IUCN Colloquium on Energy Law for Sustainable Development, Winter, 2004.

Where Have All the Safeguards Gone? Foreword to "Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-Tiered Holding Companies to Own Nuclear Power Plants," The Star Foundation August 7, 2002.

Nuclear Power after September 11, OnEarth, December, 2001.

The Unfulfilled Promises of Electric Restructuring, Nor'easter, Summer, 2001.

Considerations Regarding Recovery of Stranded Investment, PUR Utility Quarterly, December, 1997.

Ships at a Distance: Energy Choice and Economic Challenge, The National Regulatory Research Institute Quarterly Bulletin, Volume 18, Number 3, Fall, 1997, p. 287 (Originally the 1997 George Aiken Lecture at the University of Vermont).

Book Review: *The British Electricity Experiment - Privatization: the Record, the Issues, the Lessons*, Amicus Journal, June, 1997.

Gorillas in the Mist: Electric Utility Mergers in Light of State Restructuring Goals, The National Regulatory Research Institute Quarterly Bulletin, Spring, 1997.

Til Death Do Us Part or the Emperor's New Suit: Does a Regulatory Compact Compel Strandable Investment Recovery?, PUR Utility Quarterly, October, 1996.

Electric Bargain's Cost Is Dirty Air, Newsday, L.A. Times Features Syndicate, April 18, 1996.

A Regulatory Compact Worthy of the Name, The Electricity Journal, November, 1995, pp. 12-15.

Paved with Good Intentions: Reflections on FERC's Decisions Reversing State Power Procurement Processes, (with David Moskovitz), The Electricity Journal, August/September, 1995, pp. 62-68.

That Memorial Needs Some Soldiers and Other Governmental Approaches to Increased Electric Utility Competition, The Electric Industry in Transition, Public Utility Reports & NYSERDA, 1994, pp. 7-13.

Market-Based Speech, The Electricity Journal, September, 1994, p. 85.

In Search of an Energy Strategy, Public Utilities Fortnightly, January 15, 1992.

Parables of Modern Regulation, The Electricity Journal, November, 1992, p. 73.

Foreword to: *Regulatory Incentives for Demand Side Management*, Nickel, Reid, David Woolcott, American Council for Energy-Efficient Economy, 1992, pp. ix-xi.

Boats Against the Current: Energy Strategy in Theory and Practice, The Electricity Journal, October, 1991, p.64.

The Shoreham War Has Got to End Now, Newsday, May 9, 1989.

Parallel to the Nuclear Age, Yale University 25th Reunion book, 1989.

Book Review: *Safety Second, A Critical Evaluation of the Nuclear Regulatory Commission's First Decade* IEEE Spectrum, February, 1988, p. 14.

Somewhere Between Ecstasy, Euphoria and the Shredder: Reflections on the Term 'Pronuclear', Journal of the Washington Academy of Sciences, Vol.78, no.2, June, 1988, pp. 139-142.

Book Review: *Power Struggle: The Hundred Year War Over Electricity*, Amicus Journal, Winter, 1987, pp. 46-47.

Wall Street's Flawed Evaluation of State Utility Regulation, Bangor Daily News, September 3, 1984.

Reflections on the Indian Point Hearings, New York Times, January, 1983.

Paradox and Farce: Trends in Federal Nuclear Energy Policy Los Angeles Times, June 6, 1982.

Keeping Faith with the Public, Nuclear Safety, March-April, 1981.

Regulation or Reassurance, Washington Post, August 16, 1979.

Report of the Governor's Task Force on Energy, Heavy Industry and the Maine Coast, 1972.

A Measured Response to Oil Port Proposals, Maine Times, July, 1971.

PRESENTATIONS CONCERNING NUCLEAR ENERGY

Nuclear Power and Climate Change, Chicago Humanities Festival; November 10, 2007.

Risks, Rewards, Resources, Reality, Briefing on the Loan Guarantee Provisions of the 2007 Energy Legislation; Environmental and Energy Study Institute; Washington, D.C., October 30, 2007

Fool Me Twice? Rules for an Unruly Renaissance, Carnegie International Nonproliferation Conference, Washington D.C., June 26, 2007

Regulation, Reality and the Rule of Law: Issues for a Nuclear Renaissance, Washington and Lee University, June 23, 2007.

The Future of Nuclear Energy, Bulletin of the Atomic Scientists Conference; University of Chicago, November 1, 2006

Nuclear Power and Climate Change, Society of Environmental Journalists, Burlington, Vermont, October 27, 2006

Nuclear Power, Climate Change and Public Policy, National Conference of State Legislatures, April, 2006.

Electric Restructuring after Ten Years: Surprises, Shocks and Lessons, State Legislative Leaders' Foundation, November, 2005.

Nuclear Power's American Prospects, Presentation to the California Energy Commission Nuclear Issues Workshop; August, 2005.

Decommissioning Financing: Alternatives and Policies, Conference on the Future of the Medzamor Nuclear Power Plant, Yerevan, Armenia, June, 2005

The Value of Sites Capable of Extended Storage of High Level Nuclear Waste, report for the Town of Wiscasset, Maine, December, 2004.

Nuclear Power's Prospects, NPEC/FRS/CAP/CEA Workshop, Paris, October, 2004.

Did the Butler Really Do It? The Role of Nuclear Regulation in Raising the Cost of Nuclear Power, Cato Institute, Washington D.C. March, 2004.

China's Energy Regulatory Framework, China Development Forum, Beijing, November 17, 2003.

China's National Energy Plan (with Thomas Johansson), Background Reports to "China's National Energy Strategy and Reform," Development Research Center of the State Council, China Development Forum, November, 2003.

Repeating History: Nuclear Power's Prospects in a Carbon-Conscious World, Yale School of Forestry and Environmental Studies, Leadership Council Meeting, October 24, 2003.

What Nuclear Power Can Learn from Electric Restructuring, and Vice Versa, Aspen Institute, July 5, 2003.

Renewal of the Price Anderson Act, Testimony before the United States Senate Committee on Environment and Public Works Subcommittee on Transportation, Infrastructure and Nuclear Safety, January 23, 2002.

Events Now Long Past: The 20-Year Road from Three Mile Island to Electric Utility Restructuring, TMI 20th Anniversary Commemoration, National Press Club, Washington D.C., March 22, 1999.

Preparing Nuclear Power for Competition, NARUC Conference on "Nuclear Power in a Competitive Era: Asset or Liability?" January 23, 1997.

Call Me Ishmael: Reflections on the Role of Obsession in Nuclear Energy Policy, NARUC annual meeting, November 13, 1989.

Nuclear Power and Climate Change, Harvard Energy and Environmental Policy Center, January 13, 1989.

Somewhere between Ecstasy, Euphoria and the Shredder: Reflections on the Term Pro-Nuclear, Symposium on Nuclear Radiation and Public Health Practices and Policies in the Post-Chernobyl World, Georgetown University, September 18, 1987.

Searching the Foreseeable Past: Nuclear Power, Investor Confidence and Reality, Public Utilities Institute, East Lansing, Michigan, July 30, 1987.

Where Ignorant Armies Clash by Night: Relationships Among Nuclear Regulators and Regulated, NARUC/INPO Seminar on Nuclear Power Plant Safety and Reliability, January 22, 1987.

Why Do We Have a Nuclear Waste Problem, Conference on Nuclear Waste, Naples, Maine, March 22, 1986.

With Friends Like These: Reflections on the Implications of Nuclear Regulation, Institute of Public Utilities, Williamsburg, Virginia, December 13, 1982.

A Framework for Considering the Economic Regulatory Implications of the Accident at Three Mile Island, Iowa State Regulatory Conference, May 20, 1982.

The Man/Machine Interface, Public Citizen Forum, March 8, 1982.

A Perspective on Nuclear Power, The Groton School, January 15, 1982.

Reasonable Assurance, Regulation and Reality, ALI-ABA Course of Study on Atomic Energy Licensing and Regulation, September 24, 1980.

Misdefining the National Security in Energy Policy from Machiasport to Three Mile Island, Environmental Law Institute, University of Maine, May 1, 1980.

Condemned to Repeat It? Haste, Distraction, Rasmussen and Rogovin, Risks of Generating Electricity, Seventh Annual National Engineers' Week Energy Conference, February 21, 1980.

Lightening the Nuclear Sled; Some Uses and Misuses of the Accident at Three Mile Island, Seminar on the Problems of Energy Policy, New York University, November 21, 1979.

The Nuclear Option: Did It Jump or Was It Pushed?, NARUC Regulatory Studies Program, August 2, 1979.

How a Regulatory View of Nuclear Waste Management is Like a Horse's Eye View of the Cart, 90th NARUC Annual Convention, November 15, 1978.

Sentence First: Verdict Later: Some Thoughts on the Level of Acclaim Thus Far Afforded the Nuclear Siting and Licensing Act of 1978, ALI-ABA Course of Study, September 28, 1978.

Some Observations on Recent and Proposed Changes in Nuclear Regulatory Commission Jurisdiction, Atomic Industrial Forum Workshop on Reactor Licensing and Safety, April 5, 1978.

Attachment 3

February 27, 2009
Declaration of David A. Schlissel

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

In re:

License Renewal Application Submitted by

Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

DECLARATION OF DAVID A. SCHLISSEL

David Schlissel, hereby declares under penalty of perjury that the following
is true and correct:

1. I am a senior consultant at Synapse Energy Economics, Inc. (Synapse),
an energy and economic consulting firm located in Cambridge, Massachusetts.
2. Synapse has been retained by the New York State Office of the
Attorney General to provide expert services to the State of New York concerning the
proposed relicensing of the two operating reactors located at the Indian Point
Nuclear Power Station in the Village of Buchanan in Westchester County (Indian
Point Unit 2 and Indian Point Unit 3). I have previously provided a copy of my CV
to the Board as part of my November 2007 submission.
3. As noted in the State of New York's supplemental contention
concerning energy alternatives, the State has taken aggressive actions to

implement its "15x15" plan to reduce electricity usage by 15 percent by 2015. For example, the New York State Public Service Commission issued an "Order Establishing Energy Efficiency Portfolio Standard and Appraising Programs" on June 23, 2008 and an "Order Approving "Fast Track" Utility-Administered Electric Energy Efficiency Programs with Modifications" on January 16, 2009.

4. In addition, as noted in the State's supplemental contention, the federal government recently has taken significant steps to foster greater energy efficiency, energy conservation, and renewable energy.

5. This Board may take judicial notice of the fact that the United States, including New York State, is experiencing a recession. This recession can be expected to lead to lower electricity sales and peak loads for at least this year and, perhaps, even longer. Therefore, the time frame within which the alternatives (e.g., conservation, efficiency, renewables, transmission / interconnection enhancements, re-powering) would need to be implemented under the "no-action" alternative would be extended. These reduced energy sales and peak loads will delay and defer the need for the energy and capacity from Indian Point Units 2 and 3 if the operating licenses were not renewed.

6. Con Edison's sales of electricity were essentially flat between 2007 and 2008, growing at only 0.1 percent for the entire year. Con Edison's sales of electricity during the Fourth Quarter of 2008 were 2.6 percent below its sales during the same three month period in 2007.

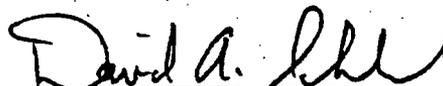
7. The sales of the Long Island Power Authority during 2009 are expected to be the same as its projected 2008 sales and as its actual 2007 sales.

8. I have reviewed the December 22, 2008 Draft Supplemental Environmental Impact Statement prepared by the NRC in this proceeding. The DSEIS ignores much of the information and analysis contained in my November 2007 Report. In addition, the alternatives analysis contained in Chapter 8 of the DSEIS significantly underestimates the impact of energy efficiency, energy conservation, renewable energy, facility re-powering, and transmission / interconnection enhancements in New York State and in Zones H, I, J, and K. In addition, the DSEIS's analysis of the combination of alternatives, *see* DSEIS at 8-65 to 8-66, fails to take into account other combinations of energy alternatives that are conservative and readily achievable under existing and identified New York State programs. I have identified two additional sets of combinations of energy alternatives and these additional combinations are set forth in the State's supplemental contention (at ¶ 21).

9. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated:

February 27, 2009
Cambridge, Massachusetts


David Schlissel

Attachment 4

January 31, 2011
Declaration of David A. Schlissel

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

-----X
In re: Docket Nos. 50-247-LR; 50-286-LR
License Renewal Application Submitted by ASLBP No. 07-858-03-LR-BD01
Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc. January 31, 2011
-----X

DECLARATION OF DAVID A. SCHLISSEL

David A. Schlissel hereby declares under penalty of perjury that the following is true and correct:

1. My name is David A. Schlissel. I am the President of Schlissel Technical Consulting. I have served since 1973 as a consultant, expert witness, and attorney on complex management, engineering, and economic issues, primarily in the fields of energy and the environment. I have been retained by regulatory commissions, consumer advocates, publicly-owned utilities, non-utility generators, governmental agencies, and private organizations in more than 35 states to prepare expert analyses on issues related to electric, natural gas, and telephone utilities. I have presented testimony in more than 100 cases before regulatory boards and commissions in 35 states, two federal regulatory agencies, and in state and federal court proceedings.
2. I hold BS and MS degrees in Astronautical Engineering from the Massachusetts Institute of Technology (MIT) and Stanford University, respectively. I also received a Juris Doctor degree from Stanford University School of Law. I also have studied Nuclear Engineering and Project Management at MIT. I am a member of the New York State Bar and the American Nuclear Society. My recent work has involved the evaluation of utility resource planning analyses, the economics of proposed and existing power plants, electric system reliability, and power plant operations and outages. I also have examined the impact of nuclear power plant life extension on plant decommissioning costs. A copy of my CV was submitted to the Board on November 28, 2007 in support of my earlier submissions in this proceeding.
3. I prepared a *Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3*, dated November 28, 2007 and a second declaration, dated February 27, 2009, which provided additional information on New York's energy markets, energy efficiency, energy conservation, renewable energy, facility repowering, and transmission enhancements, relevant to Chapter 8 of the December 22, 2008 Draft Supplemental

Environmental Impact Statement prepared by NRC in this proceeding. I prepared this updated assessment with the assistance of staff at Synapse Energy Economics, Inc. who worked under my direction and supervision.

4. My November 28, 2007 *Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3* concluded that:

“... the capacity and energy provided by Indiana Point Units 2 and 3 can be replaced if the Units are not relicensed. In particular, energy efficiency, renewable resources, the repowering of older generating facilities, transmission upgrades and new natural gas-fired generating facilities represent viable alternatives to the relicensing of Indian Point. Substantial reductions in peak demand and energy requirements will be achieved by 2013 under the state’s newly announced “15x15” Clean Energy Plan. Significant amounts of new renewable resources will be available as a result of the state’s renewable energy portfolio standard and other initiatives. In addition, thousands of megawatts (“MW”) of new generating capacity can be provided by the repowering (i.e. rebuilding) of older generating facilities both along the Hudson River and in the downstate area of the state in New York City and on Long Island. At the same time, transmission system upgrades also can increase the amounts of power that can be provided to the downstate region of the state. Finally, there is the potential for the addition of several thousand megawatts of new generating capacity in the Hudson River Valley and in downstate New York.¹

5. Developments in the three years since that Report was submitted have confirmed and further supported these conclusions. Since 2000, New York has added over 7,800 MW of new generation, nearly 1,300 MW of new transmission, and nearly 2,400MW of demand response.² Eighty percent of the new generation has been added where demand is the greatest in the New York City, Long Island and Hudson Valley region.³ Substantial transmission capacity has been added, as discussed below, to bring more power to the downstate region from out of state. 2009 also saw a decrease in the generation at fossil fuel-fired power plants and an increase in the generation from renewable resources, as compared to 2008.⁴ The total resource capability in the NYCA (New York Control Area) for 2010 has been 43,000 MW (including demand response): greater than the 118% of the 2010 projected schedules of load and installed capacity.⁵

Lowered Energy and Peak Demand Forecasts

6. This Board may take judicial notice of the fact that the United States, including New York State, is experiencing a prolonged recession. This recession has led to lower

¹ *Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3*, at p. 18.

² *NYISO 2010 Summer Outlook*, May 2010, at pp. 10 and 11.

³ Id.

⁴ Id.

⁵ Id. at p. 9.

electricity sales and peak loads for an extended period of time and will impact directly the time frame within which the alternatives (e.g., conservation, efficiency, renewables, transmission enhancements, and repowering) would need to be implemented under the “no-action” alternative.

7. Lower electricity sales and peak loads have been experienced in recent years in New York State as a result of the ongoing U.S. economic recession. These reduced energy sales and peak loads will affect the need for the energy and capacity from Indian Point Units 2 and 3. For example, according to NYISO’s *2010 Reliability Needs Assessment* (“NYISO 2010 RNA”) the actual sales of electricity in the New York State Control Area (“NYCA”) declined by 1 percent between 2007 and 2008 and by an additional 4.1 percent between 2008 and 2009.⁶ After declining by 5.2 percent between 2006 and 2007, statewide summer peak loads increased by 0.8 percent between 2007 and 2008 before again declining by another 5 percent between 2008 and 2009. Overall, statewide summer peak demand in the NYCA declined by 9 percent between 2006 and 2009. Winter peak demands were essentially flat starting in 2006 before declining by 1.4 percent in the winter of 2008-2009, and another 2.4 percent in the winter of 2009-2010.⁷
8. NYISO reports that electricity sales in Zone J in New York State (New York City) were essentially flat between 2007 and 2008 before declining by approximately 3 percent in 2009.⁸ Sales in Zone K (Long Island) were similarly flat between 2007 and 2008 before declining by approximately 2.6 percent between 2008 and 2009.
9. Con Edison confirms that its sales of electricity in Zones I and J in New York State were essentially flat between 2007 and 2008 and declined by 2.8 percent between 2008 and 2009.
10. According to the NYISO, “the effect of the 2009 recent [has been] to reduce the peak demand forecast for 2011 by 1,400 MW, before any energy efficiency adjustments. This also reduced the projections of peak load[s] in subsequent years.”⁹ For this reason, the NYISO issued a revised 2009 Gold Book forecast that was completed in October 2009. As indicated in Figure 1 below, this revised 2009 Gold Book forecast was significantly lower than the 2009 Gold Book Forecast that had been released earlier in the year. Both the original and the revised 2009 Gold Book forecasts, in turn, were substantially lower than the forecast used in the first Comprehensive Review of Resource Adequacy in 2006.

⁶ NYISO *2010 Reliability Needs Assessment (hereinafter “2010 RNA”)*, September 2010, at p. C-3.

⁷ *Id.*

⁸ *Id.* at p. C-4.

⁹ NYISO *2010 RNA*, September 2010, at p. i.

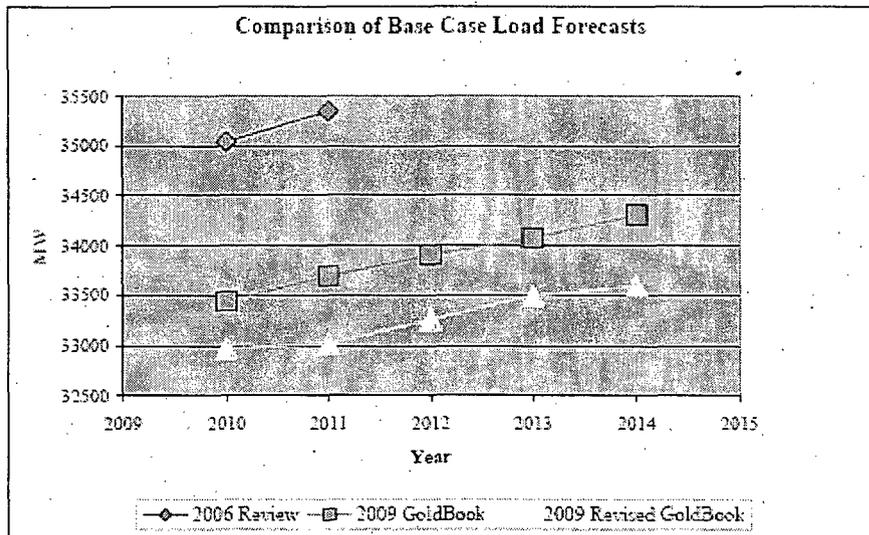


Figure 1. Comparison of NYISO Base Load Forecasts from 2006 and 2009.¹⁰

11. After looking at projected electric load growth, as well as at existing and proposed generating resources, the NYISO's *2009 Comprehensive Review of Resource Adequacy* found that "the anticipated capacity supply (42,536 MW) will exceed the forecasted peak load (34,309 MW) (this includes the required reserve margin of 18%) for the 2010-2011 Capability Year by 2,051 MW in 2014."¹¹ According to the NYISO, there were three reasons for this: reductions in peak load due to the recession and to the New York Energy Efficiency Portfolio Standards ("EEPS"), an increase in generation additions, and Special Case Resources ("SCRs") (customer pledges to cut energy usage on demand), and fewer planned retirements.¹²
12. However, in calculating this 2,051 MW capacity surplus in 2014, the NYISO used the original 2009 Gold Book forecast. If the revised 2009 Gold Book forecast is used, instead, as it should be, the anticipated capacity supply of 42,536 MW will exceed the forecasted peak load of 33,594 MW in 2014 by a total of 8,942 MW, or 2,895 MW more than the required 18 percent reserve margin.
13. Moreover, the revised 2009 Gold Book forecast assumes that only a portion of the 15x15 energy efficiency goal will be achieved.¹³ A more recent NYISO forecast in its *2010 Reliability Needs Assessment Final Report*, issued in September 2010, shows what the projected impact would be of achieving 100 percent of the "15 by 15" energy efficiency goal by 2015. As a consequence, this 2010 RNA 15x15 forecast projects significantly lower peak demands for New York State.

¹⁰ NYISO *2009 Comprehensive Review of Resource Adequacy: Covering the New York Control Area for the period 2010 to 2014*. March 10, 2010, at p. A-7.

¹¹ *Id.* at p. 1.

¹² *Id.*

¹³ According to the NYISO *2010 RNA*, the Gold Book forecast assumes that approximately 51 percent of the 15x15 goal will be achieved by the end of the planning horizon in 2020. NYISO *2010 RNA*, at p. 9.

14. The annual peak forecasts projected between 2011 and 2020 in the NYISO's 2010 RNA's Base Case and 15x15 forecasts are shown in Figure 2, below:

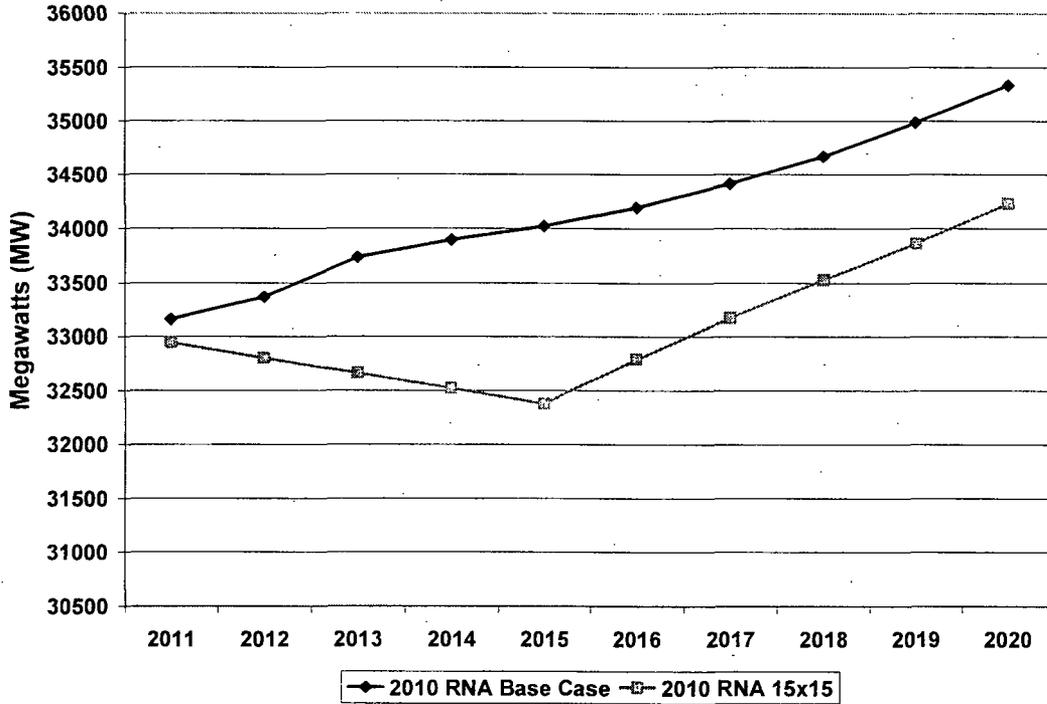


Figure 2. Comparison of NYISO 2010 Reliability Needs Assessment Base Case and 15x15 Load Forecasts.¹⁴

14. If the RNA's 2010 15x15 forecast is used and its projection of a capacity supply of 43,404 MW in 2014 will exceed the projected 32,251 MW peak load by 10,285 MW, or 5,029 MW more than the required 18 percent reserve margin.
15. In fact, data from the NYISO 2010 RNA shows that under the 2010 15x15 forecast, the New York Control Area would have capacity reserves significantly higher than the 18 percent required reserve. This is shown in Figure 3, below:

¹⁴ The data for Figure 2 is taken from Table 3-1 on p. 12 of NYISO's 2010 RNA.

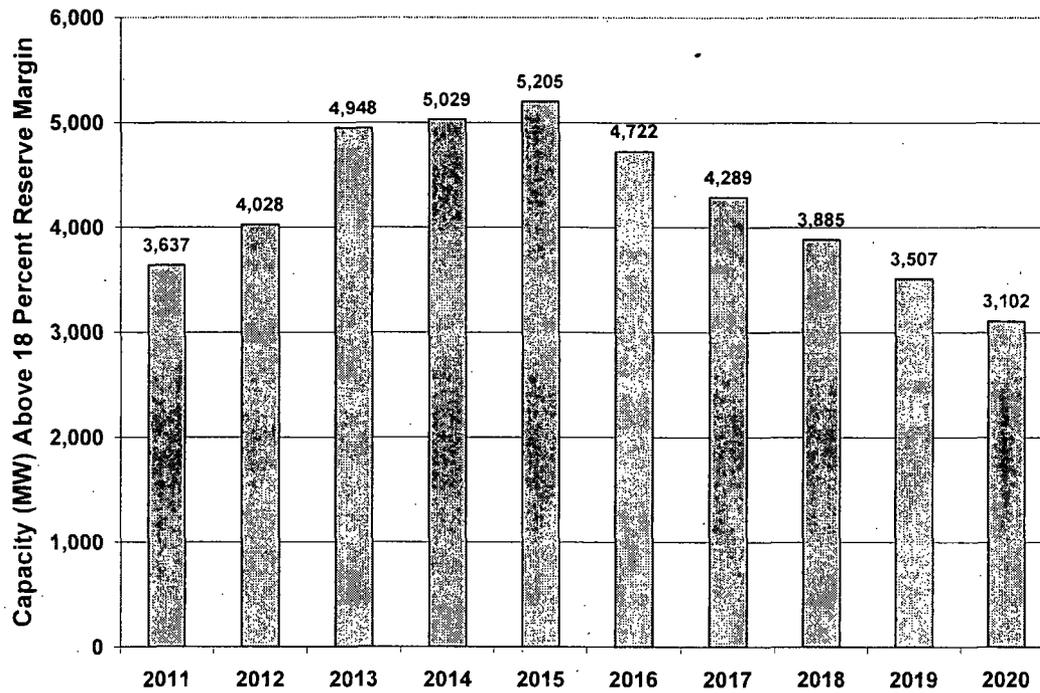


Figure 3. Capacity in Excess of 18 Percent Reserve Margin under NYISO 2010 Reliability Needs Assessment 15x15 Load Forecast.

16. Thus, the reserve margins in the New York Control Area would exceed 18 percent even if the Indian Point Units are not relicensed.
17. Reserve margins in the New York Control Area would exceed 18 percent in each year through 2020 even under the NYISO's 2010 RNA Base Case forecast, as shown in Figure 4 below:

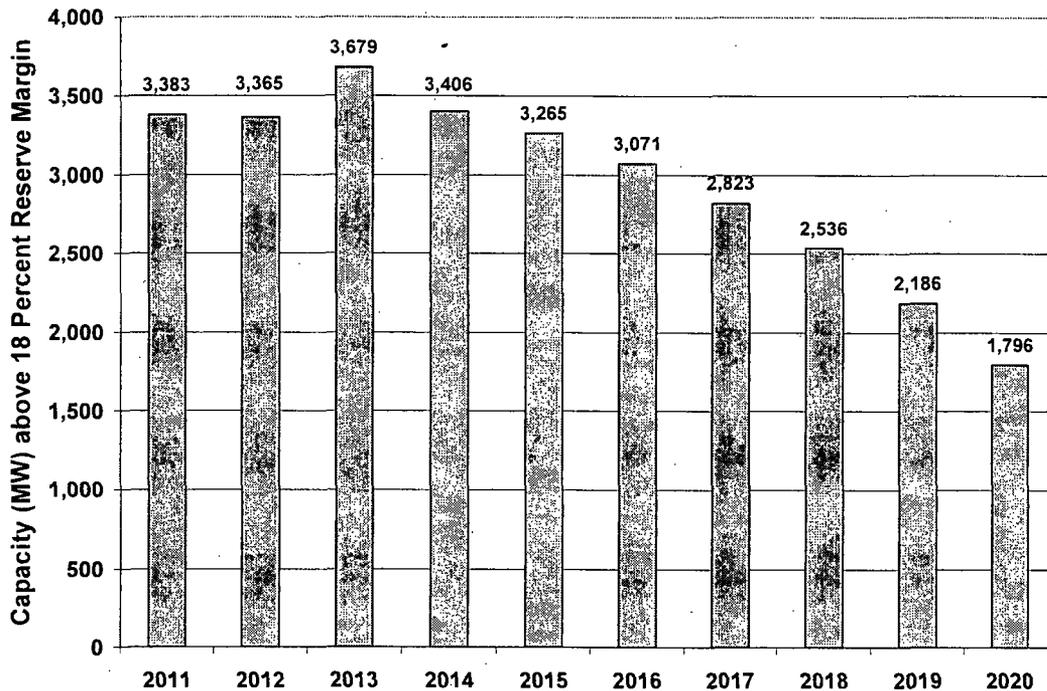


Figure 4. Capacity in Excess of 18 Percent Reserve Margin under NYISO 2010 Reliability Needs Assessment Base Case Load Forecast.

18. As shown in Figure 4, even if the state achieves substantially less than the 15x15 goal, reserve margins would still be significantly higher than 18 percent in each year through 2020. In fact, the reserve margins in the New York Control Area would exceed 18 percent in each year through 2018 even if the Indian Point Units are not relicensed. This would give the state time to accelerate energy efficiency investments (and consequent savings) and to add additional renewable and gas-fired resources, if needed.

Energy Efficiency

19. My November 2007 Report quantifies the annual reductions in electricity consumption needed per year to achieve the state's "15 by 15" goal, on both a statewide and regional basis.¹⁵ As shown in that Report, the state's "15 by 15" energy efficiency goal, if achieved, would offset a significant portion of the energy and capacity provided by the two Indian Point Units.
20. Subsequent to the submittal of my November 2007 Report, Governor Spitzer's goal of a 15 percent decrease in energy demand from forecasted levels by the year 2015 (more than 27,000 GWh) was formalized by the New York PSC's *Order Establishing Energy Efficiency Portfolio Standard and Approving Programs*, adopted on June 23, 2008. The EEPS Order gives funding to specific energy efficiency programs, and energy savings coming directly from those programs are estimated to be approximately 7,639 GWh in

¹⁵ Schlissel, David. *Report on the Availability of Replacement Capacity and Energy for Indian Point Units 2 & 3*. November 28, 2007, at pp. 5 and 6.

2015,¹⁶ which is slightly less than half of what is needed to replace the Indian Point generating Units.

21. According to a draft energy efficiency potential study done in 2008 by Optimal Energy, which updated an earlier 2003 energy efficiency potential study, New York State's achievable energy efficiency potential through 2015 is 26,000 GWh.¹⁷ Of this 26,000 GWh of achievable potential, Optimal Energy concludes that 38% (9,824 GWh) of the savings can be realized in New York City, 14% (3,603 GWh) in Long Island, and the remaining 48% (12,573 GWh) in the rest of New York State.¹⁸

This 26,000 GWh represents a 14% decrease from the 2015 forecast of electricity demand, which is slightly short of the "15 by 15" goal. This estimated efficiency potential only takes into account policies that are currently in effect, however. Optimal Energy also estimates that policies related to improved building codes and appliance standards which have passed but not yet taken effect, or for which implementation is highly likely in the next ten years, can provide additional electricity savings of 11,000 GWh, or an extra 5.7% from forecasted demand.¹⁹ If the same percentages apply to the regional savings values stated above, New York City's (Zone J) total potential would increase to just over 14,000 GWh and Long Island's (Zone K) total potential would increase to more than 5,000 GWh. Along with the additional potential in Zones H and I, if achieved, energy efficiency reductions in New York City and Long Island would more than offset the energy generated each year at Indian Point Units 2 and 3.

22. As quantified by Optimal Energy, there is sufficient energy efficiency potential in the state to meet the state's goal of "15 by 15." New York has a long history of investments in energy savings, first through the implementation of the Systems Benefit Charge program ("SBC"), and now through the EEPS. New York's efforts at energy efficiency to date should indicate that the state can be expected to achieve full implementation of the 2015 goal. Annual energy efficiency savings to date, achieved largely from the SBC program (that was initiated in 1998), already have reached more than 4,000 GWh per year. Savings from EEPS funded programs are expected to be an additional 7,639 GWh in 2015. It is reasonable to expect that some of these savings have and will occur in areas of New York that are served by the Indian Point Units. LIPA and NYPA can be expected to contribute another 3,000 GWh in energy savings by the year 2015 – most, if not all of which will be achieved in those areas of the state that currently rely on Indian Point. Together, all of these energy efficiency savings can offset a significant portion, if not all of, the electric generation that would be generated by Indian Point Units 2 and 3.
23. Furthermore, NYISO Demand Response programs, which enlist electricity customers to conserve power in response to system conditions, are effectively reducing the need for

¹⁶ New York State Energy Plan, *Energy Efficiency Assessment*, December 2009, p. 29.

¹⁷ The November 2007 Report references a presentation by Philip Mosenthal of Optimal Energy which states that New York has an energy efficiency potential of 61,506 GWh. This value represents energy efficiency potential between 2003 and 2022.

¹⁸ Optimal Energy, Inc. *Achievable Electric Energy Efficiency Potential in New York State*, 2008. As cited in the New York State Energy Plan: *Energy Efficiency Assessment*, December 2009, p. 6.

¹⁹ *Id.* at p. 5.

additional capacity. One of the NYISO Demand Response programs, Special Case Resources, currently has registrations of 2,084 MW, an increase of 761 MW from last year.²⁰

Renewable Resources

24. As explained in the *Renewable Energy Assessment* in the 2009 New York State Energy Plan, New York is a leader in developing renewable energy resources, as demonstrated by its commitment to the Renewable Portfolio Standard (“RPS”) and subsequently to the “45 by 15” clean energy goal.

The RPS, adopted in 2004, has been the State’s primary policy initiative to promote the development of renewable resources. The 2004 RPS goal aims to increase the amount of electricity delivered to New York consumers that is generated by renewable resources to 25 percent by 2013. In his 2009 State of the State address, Governor Paterson proposed to increase this goal by announcing New York’s “45 by 15” clean energy goal. This goal challenges the State to meet 45 percent of its electricity needs by 2015 through increased energy efficiency and renewable energy. The goal calls for a reduction in electricity end-use by 15 percent, primarily through the expansion of energy efficiency activities, while simultaneously meeting 30 percent of the State’s electricity supply needs through renewable resources.²¹

25. New York State is already well on its way towards achieving these goals, as shown in Table 1, below, which includes the amounts of electricity generated from in-state renewable resources in each year between 2001 and 2009. These totals only include in-state resources and do not include imported renewable energy; out-of-state renewable energy attributes (Renewable Energy Certificates (“RECs”) acquired through green purchasing in the voluntary market), or customer-sited renewable generation, all of which contribute toward meeting the RPS requirements.

²⁰ NYISO *Reliability Summary 2009-2018*, pp. 5 - 6.

²¹ New York State Energy Plan. *Renewable Energy Assessment*, December 2009, at p. 1.

Table 1. Electricity Generation from New York State Renewable Resources (GWh).²²

Year	Hydro	Wind	Methane, Refuse, Solar, and Wood	Total Statewide Electricity Requirement	Total Generation from Renewable Resources	% of Total Statewide Electricity Requirement (In-State only)
2001	23,084	21	1,781	155,240	24,886	16.03%
2002	25,048	82	1,726	158,507	26,856	16.94%
2003	24,269	41	1,694	158,013	26,004	16.46%
2004	23,990	116	1,795	160,211	25,901	16.17%
2005	25,783	103	1,886	167,208	27,772	16.61%
2006	27,345	518	1,942	162,237	29,805	18.37%
2007	25,253	873	1,941	167,341	28,067	16.77%
2008	25,711	1,282	2,996	144,619	29,989	20.74%
2009	26,420	2,108	2,888	136,501	31,416	23.02%

26. However, there is significantly more renewable energy that could be used to generate electricity in New York State. For example, as shown in the following table, the 2009 New York State Energy Plan *Renewable Energy Assessment* presents evidence that the technical/practical potential for renewable resources is forecast at more than 141,000 GWh by the year 2018.²³

Table 4. New York Renewable Energy Technical/Practical Potential Electricity Generation

Resource	In-State GWh Generation (2007)	Projected In-State GWh Generation based on the Achievement of the 25% RPS Goal (2013) ¹	Projected In-State GWh Technical/Practical Potential (2018)	% of Projected GWh Generation (2018)
Hydro ²	25,253	25,385	31,000	19%
Biomass ³	1,942	3,616	9,400	5.8%
Wind	873	8,476	48,000	29%
Solar-PV ⁴	17	27	53,000	32%
Total	28,085	37,504	141,400	87%

Notes: Assumes a rolling 3-year average NYS fossil fuel conversion factor for renewable electricity resources.

¹Hydro, wind, biomass and solar-PV technical potential was estimated without consideration of cost or market acceptability. The solar-PV 2007 data was estimated based on historical growth rate, and only includes customer-sited, grid-tied electricity generation. All solar-PV data are reported as alternating current (AC) with the exception of LIPA, which is reported as direct current (DC).

²Biomass data do not account for customer-sited applications such as ADG. Biomass in-state potential estimate is based on data from the Optimal Energy study, which allocates only some of the total available biomass to electric generation. Waste-to-electricity potential estimates (which account for 6% of the total biomass potential) are included based on the Optimal Energy study, where 50% of the municipal solid waste was considered biogenic based on EPA historical data.

³Energy generation in 2013 was estimated to show the expected impact of the 25% RPS, based on the 2004 Cost Study. The 2004 RPS Order anticipated that New York would import 8,269 GWh of hydropower, which is not included as projected in-state GWh generation.

⁴Based on the SEP Policy Reference Case of 163,326 GWh presented in the Energy Demand and Price Forecast document.

Sources: Optimal Energy Inc. (prepared for NYSEPD), *Energy Efficiency and Renewable Energy Resource Development Potential in New York State*, 2003; EIA, *State Energy Data System: New York*, 2009; NYSEERDA, *Patterns & Trends - New York State Energy Profiles: 1993 - 2007*, 2009; NYS Renewable Fuels Roadmap preliminary estimates; 2004 Order Supplemental worksheets; DPS, NYSEERDA, Sustainable Energy Advantage, LLC, and LaCapra Associates, *New York Renewable Portfolio Standard Cost Study Report II*, 2004; NYSEERDA, *Market Characterization Report: Anaerobic Digestion Gas-to-Electricity for the Municipal Wastewater Sector in New York*, 2007; DPS and LIPA customer-sited renewable energy data, 2007.

²² Data from 2001 – 2007 were taken from the New York State Energy Plan: *Renewable Energy Assessment*, December 2009, at p. 7.

²³ The technical/practical potential of a renewable resource reflects technical constraints such as energy generation capacity factors and manufacturing base, developable land resources, and limited social constraints, to the “pure” technical potential value to produce a more achievable estimate. New York State Energy Plan: *Renewable Energy Assessment*, December 2009, at p. 7.

27. In fact, the NYISO has already taken steps to allow the grid to accommodate these increasing levels of wind generation. In the 2009 Annual Report, NYISO states that it has implemented a state-of-the-art wind forecasting system, and “became the first grid operator to integrate wind-generated electricity into economic dispatch.”²⁴ It is planning for more wind energy by considering new operating procedures, market rules, storage technologies, and transmission reinforcements that would increase “the amount of wind that could be reliably integrated into the bulk power system and delivered to the load.”²⁵ Indeed, The most recent NYISO wind study concluded that “the addition of up to 8,000 MW of wind generation to the New York power system will have no adverse reliability impact (and) would supply in excess of 10% of the system’s energy requirement.”²⁶
28. New renewable resources continue to be proposed and constructed in New York State. The NYISO Interconnection Queue lists those planned generating units and transmission lines from utilities or merchant generators that have requested interconnection to the electricity grid. (On-site generation is not represented in the Queue.) Figure 5, below, shows the interconnection requests for renewable resources as of July 2, 2010, disaggregated by resource type.

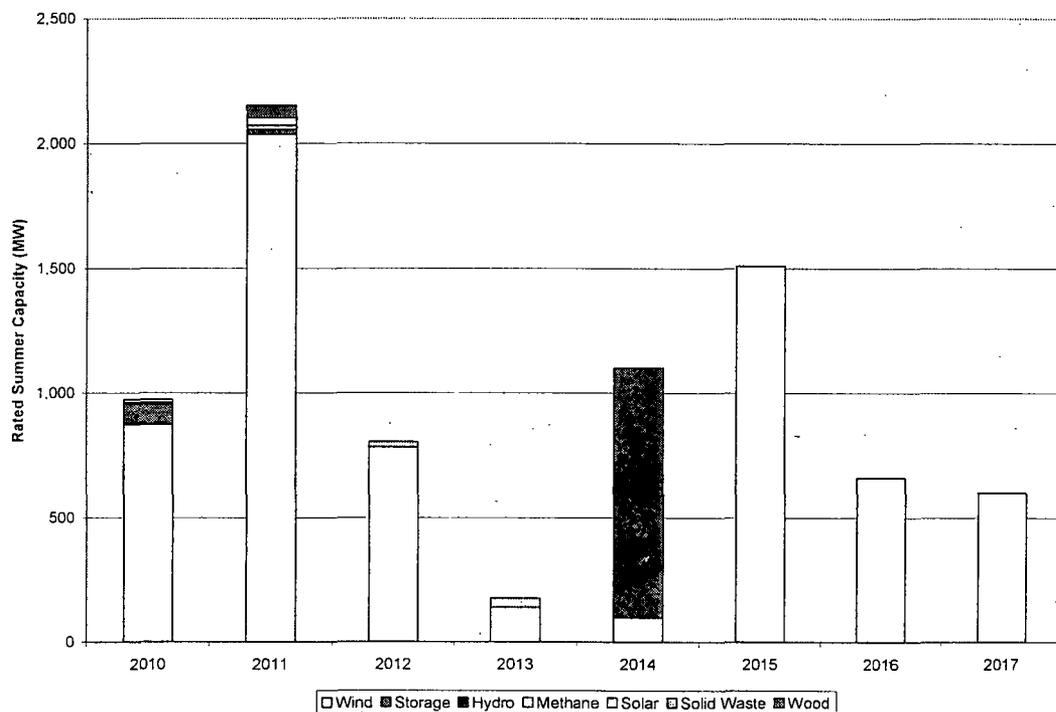


Figure 5. Capacity of Renewable Generating Resources with Pending Interconnection Requests, by Disaggregated by Resource Type (MW).²⁷

²⁴ NYISO. *Energizing the Empire State: 2009 Annual Report*. 2009, p. 6; see also: NYISO. *Power Trends 2010*, p. 16.

²⁵ NYISO. *Integration of Wind into System Dispatch*, October 2008, p. 5-1.

²⁶ NYISO. *Growing Wind: Final Report of the NYISO 2010 Wind Generation Study*, September 2010, at iv.

²⁷ NYISO Interconnection Queue, July 2, 2010.

29. Thus, there is 7,935 MW (rated summer capacity) of renewable capacity awaiting approval for interconnection with the grid between 2010 and 2017. The majority of the proposed resources are for wind generation with over 2,000 MW of wind requesting to be online in 2011, and another 1,500 MW of wind from the Lake Erie and LIPA/Con Edison offshore wind projects requesting to come online in 2015. Additional wind projects totaling more than 500 MW have also requested to be interconnected in 2016 and 2017. Historically, a large portion of the requests that enter the Interconnection Queue are not actually constructed. However, even if only 20% of the proposed projects come online, there would still be a 1,587 MW increase in wind generating units by 2017.
30. LIPA, while not bound by the RPS target, said that it will provide approximately 2,000 GWh of renewable energy toward the goal by 2013.²⁸ The voluntary market, where customers pay a premium to purchase electricity generated from renewable sources, is expected to contribute another 2,000 GWh toward the RPS by 2013.
31. Energy storage projects also could play a significant role in the development of other renewable resources, as they would provide a way to help manage the intermittency of other types of resources. One example of this type of resource that has already begun construction is the Beacon Power flywheel energy storage plant in Stephentown, New York. This project has a capacity of 20 MW and is expected to be the first full-scale flywheel system in the US that provides grid regulation services after it is completed in 2012.²⁹ As shown in Figure 5, one large storage project has requested to be interconnected with the grid in 2014, with several other smaller projects requesting interconnection in other years.

Transmission System Enhancements and Upgrades

32. Since I submitted my November 2007 Report, developers in New York have been actively licensing and building upgrades and enhancements to the transmission system. One project that was referenced in the November 2007 Report as being “proposed” has actually come online. The three Linden Variable Frequency Transformers began operating at the Linden, New Jersey cogeneration facility on December 8, 2009 and have the capability to convert up to 315 MW of electricity from the New Jersey power system and feed it into New York City. These transformers are helping to stabilize NYC’s power grid, increase reliability, and reduce the need for new capacity inside the city.³⁰
33. A number of other transmission projects also have been approved or proposed since November 2007. For example, the Hudson Transmission Partners line, mentioned as “proposed” in the November 2007 Report, was approved by the NY PSC on September 8, 2010. This 345 kV line will connect PJM to midtown Manhattan, running between the Bergen Substation in Ridgefield, New Jersey and terminating at Consolidated Edison substations. It is expected to initially provide 320 MW of firm capacity from PJM to New

²⁸ *Renewable Energy Assessment New York State Energy Plan*, December 2009, at p. 12.

²⁹ NYISO. *Energizing the Empire State: 2009 Annual Report*. 2009, at p. 6.

³⁰ GE Energy Financial Services. *New Jersey and New York City’s Electricity Systems Now Talking to Each Other, Thanks to GE’s Smart Grid Technology & Smart Capital*, Press Release, December 8, 2009.

York City, with the potential to provide 660 MW of firm capacity if necessary investments are made to upgrade PJM facilities.³¹ In the Order approving this line, the NY PSC stated that “the HTP facility will assist in maintaining system reliability in the event that one or both of the Indian Point plants close.”³²

34. Other new transmission proposals to import power into the New York City zone since November 2007 Report include the Cross Hudson Cable and the Champlain-Hudson Power Express (CHPE) line. The Cross Hudson Cable is a 345 kV alternating current line, and will run for 8 miles between the Bergen Switchyard in Ridgefield, New Jersey, owned by PSEG, and the West 49th Street substation in Manhattan, owned by Consolidated Edison. The most recent project updates for the Cross Hudson Cable include a transmission import capability of 700 MW and a projected online date of summer 2013.³³
35. The CHPE line would connect the US-Canadian border with a converter station that will be built in Yonkers, New York and will supply 1,000 MW of new wind and hydro electricity now being targeted for development in Canada into the New York City zone. Modeling performed by London Economics International, and submitted to the NY PSC, assumes in the Baseline scenario that the CHPE line would operate at a 90% capacity factor and deliver 7,640 GWh of renewable generation into New York annually.³⁴ The CHPE line is expected to be operational by 2015. The electricity brought into New York from the CHPE line alone would represent almost half of the generation that can be expected from the Indian Point Units in the future.
36. Combined, these new transmission projects would have the capability to import more than two thousand MW of capacity into the New York City zone. When combined with electric generation imported into downstate New York over other transmission projects, a significant amount, if not all, of the capacity and energy from Indian Point Units 2 and 3 could be replaced.

New Gas-Fired Generating Facilities and Plant Repowering Projects

37. New natural gas-fired capacity is under-construction or is being proposed to come online in New York State in near to mid-term. For example, the NYISO 2010 RNA includes two new generating plants in Zone J (New York City) in 2011 that were not included in previous Reliability Needs Assessments – the 513 MW Bayonne Energy Plant and the

³¹ State of New York Public Service Commission. *Commission Approves Transmission Line to NYC: Power Line Would Improve Reliability, Increase Supply*, Press Release, September 8, 2010. Available at: <http://documents.dps.state.ny.us/public/Common/ViewDoc.aspx?DocRefId={575751AB-6DF9-4C37-92CD-2813A2BD5B7D}>

³² New York Public Service Commission. *Order Granting Certificate of Environmental Compatibility and Public Need*, September 15, 2010. p. 44.

³³ Cavallo Energy. *Cavallo Cross Hudson Management LLC Accepting Open Season Applications for New Transmission Capacity from New Jersey to New York*.

³⁴ London Economics International, LLC. *Projected Energy Market, Capacity Market and Emissions Impact Analysis of the Champlain-Hudson Power Express Transmission Project for New York*. July 16, 2010, at p. 14.

550 MW Astoria Energy II plant.³⁵

38. The Astoria Repowering Project also is being undertaken in Zone J by Astoria Gas Turbine Power LLC, a subsidiary of NRG Energy Inc. The Astoria facility is currently 600 MW, made up of 31 simple-cycle peaking units, and the repowering would convert the peaking facility to intermediate combined-cycle (CC) generating units in two Phases. Phase 1 would replace seven of the peaking turbines with two 260 MW CC units, which are projected to be operational in 2013. Phase 2 would replace the remaining 24 peaking turbines with an additional two CC turbines of 260 MW each. The repowered units will have a combined capacity of 1,040 MW, for a net addition of 440 MW. Upgrading to CC turbines also means that the repowered units will produce more electricity per installed MW of capacity.

Astoria Energy has explained that

...the project will provide greater electric generation capability in megawatts per hour and more available hours per year. Depending on dispatch and contract needs, the new units will be able to operate for more than 7,000 hours per year per turbine, in comparison to just a few hundred hours per year per turbine for the existing units, thus providing a far more reliable electric supply to the grid. The new units will provide more reliable power output in an intermediate operating mode – they can be used both as peaking units and as base loaded units.³⁶

In fact, in its most recent “Progress Report to Stakeholders and Interested Parties,” dated July 2010, Astoria Energy stated that on July 29, 2010 the New York State Department of Environmental Conservation (NYSDEC) submitted the draft environmental permits to the US EPA for a mandatory review. In addition, Astoria Energy has submitted a Petition for a Certificate of Public Convenience and Necessity (CPCN).³⁷ NRG is currently awaiting the issues of both its permits and the CPCN. The NYISO *2010 Reliability Needs Assessment* shows a projected online date for these projects of June 2012.³⁸ Astoria Energy is also currently constructing the Astoria Energy II plant, a new 550 MW unit in Queens, which is expected to go into operation in the summer of 2011.

39. In addition, Astoria City Councilman Peter Vallone is working with US Power Generating Co. on a repowering plan for the 1,280 MW Astoria Generating Station, located in Queens and powered by fuel oil and natural gas. The Company filed for its first permits in January with NYSDEC.³⁹ At the same time, although TransCanada has chosen to install pollution controls at its Ravenswood Generating Station in Long Island City for

³⁵ NYISO *2010 Reliability Needs Assessment*, at pp. i and 17.

³⁶ NRG Astoria Gas Turbine Power LLC – Repowering Project. State Environmental Quality Review (SEQR). Scoping Document for Draft Environmental Impact Statement, October 8, 2008, p. 3. Available at: http://www.dec.ny.gov/docs/permits_ej_operations_pdf/astoriadftscope.pdf

³⁷ Astoria Repowering Project, *Progress Report to Stakeholders and Interested Parties*, July 2010. Available at: <http://www.nrgenergy.com/news-center/astoria/documents.htm>

³⁸ NYISO. *2010 Reliability Needs Assessment*, September 2010, at p. 4.

³⁹ Remizowski, Leigh. *\$1.5B makeover for NRG Energy power plants means better air for residents*, New York Daily News, April 25, 2010.

the short-term, officials say that the Company is hoping to repower the 2,480 MW plant at some point in the near future.⁴⁰ Finally, the opportunities for repowering that I discussed in my November 2007 Report still exist, and the New York Power Authority (NYPA) is investigating additional repowering opportunities at “one or more plants in the city to increase their output while making them cleaner and more efficient.”⁴¹

40. Of the approved or proposed projects that I listed in my November 2007 Report, the Bowline Unit 3 and Arthur Kill projects have been withdrawn. The Empire State Project is listed in the Interconnection Queue with an online date of 2010, and the project website shows the project as under construction with a target online date of September 2010.⁴² The Spagnoli Road Energy Center is listed in the Interconnection Queue with an online date of 2013.

Natural Gas Developments

41. The short and long-term outlooks for natural gas use in electricity generation continue to be favorable, supporting new natural gas capacity in New York State as well as the repowering of existing generating capacity with natural gas turbines. For example, the New York State Energy Plan has noted the following:

Natural gas has become and will continue to be the fuel of choice for new and replacement generation in New York for the next several years due to its economic, operational and environmental advantages. In general, natural gas-fired generation plants have lower capital costs, are cleaner burning, are more energy-efficient, and have a greater degree of operational flexibility than other fossil fueled alternatives.⁴³

42. As a result of an existing and expected future supply glut, current and projected prices of natural gas have been significantly reduced. This has led to what many other utilities, such as the Entergy Corporation, and an increasing number of gas and electric industry sources consider a structural change in the natural gas market.
43. For example, in early April of 2009, Entergy Louisiana informed the Louisiana Public Service Commission of its intent to defer (and perhaps cancel) the proposed retirement of an existing gas-fired power plant and its replacement by a new coal-fired unit. Entergy explained that it no longer believed that a new coal plant would provide economic benefits for its customers due to its current expectation that future gas prices would be much lower than previously anticipated:

Perhaps the largest change that has affected the Project economics is the sharp decline in natural gas prices, both current prices and those forecasted for the longer-term. The prices have declined in large part as a result of a

⁴⁰ Id.

⁴¹ New York Power Authority. *NYPA to Cease Operations of Queens Power Plant on January 31st*. Press Release. January 29, 2010.

⁴² See Empire Generating Co, LLC. Project Timeline. Available at: http://www.empiregen.com/images/stories/pdf/Project_Timeline_2.pdf

⁴³ New York State Energy Plan. *Natural Gas Assessment*, December 2009, at p. 9.

structural change in the natural gas market driven largely by the increased production of domestic gas through unconventional technologies. The decline in the long-term price of natural gas has caused a shift in the economics of the Repowering Project, with the Project currently – and for the first time – projected to have a negative value over a wide range of outcomes as compared to a gas-fired (CCGT) resource.⁴⁴

4. Recent Natural Gas Developments

Until very recently, natural gas prices were expected to increase substantially in future years. For the decade prior to 2000, natural gas prices averaged below \$3.00/mmBtu (2006\$). From 2000 through May 2007, prices increased to an average of about \$6.00/mmBtu (2006\$). This rise in prices reflected increasing natural gas demand, primarily in the power sector, and increasingly tighter supplies. The upward trend in natural gas prices continued into the summer of 2008 when Henry Hub prices reached a high of \$131.32/mmBtu (nominal). The decline in natural gas prices since the summer of 2008 reflects, in part, a reduction in demand resulting from the downturn in the U.S. economy.

* * * *

However, the decline also reflects other factors, which have implications for long-term gas prices. During 2008, there occurred a seismic shift in the North American gas market. “Non-conventional gas” – so called because it involves the extraction of gas sources that previously were non-economic or technically difficult to extract – emerged as an economic source of long-term supply. While the existence of non-conventional natural gas deposits within North America was well established prior to this time, the ability to extract supplies economically in large volumes was not. The recent success of non-conventional gas exploration techniques (e.g., fracturing, horizontal drilling) has altered the supply-side fundamentals such that there now exists an expectation of much greater supplies of economically priced natural gas in the long-run....

* * * *

Of course, it should be noted that it is not possible to predict natural gas prices with any degree of certainty, and [Entergy Louisiana] cannot know whether gas prices may rise again. Rather, based upon the best available information today, it appears that gas prices will not reach previous levels for a sustained period of time because of the newly discovered ability to produce gas through non-traditional recovery methods...⁴⁵ [Emphasis added]

⁴⁴ *Report and Recommendation Concerning the Little Gypsy Unit 3 Repowering Project*, submitted by Entergy Louisiana to the Louisiana Public Service Commission, April 1, 2009, at pp. 6-8.

⁴⁵ *Id.*, at pp. 17, 18 and 22.

44. Entergy's conclusion that there has been a seismic shift in the domestic natural gas industry was confirmed in early June of 2009 by the release of a report by the American Gas Association and an independent organization of natural gas experts known as the Potential Gas Committee, the authority on gas supplies. This report concluded that the natural gas reserves in the United States are 35 percent higher than previously believed. The new estimates show "an exceptionally strong and optimistic gas supply picture for the nation," according to a summary of the report.⁴⁶

45. A Wall Street Journal Market Watch article titled "U.S. Gas Fields From Bust to Boom" similarly reported that huge new gas fields have been found in Louisiana, Texas, Arkansas and Pennsylvania, and cited one industry-backed study as estimating that the U.S. now has enough natural gas to satisfy nearly 100 years of current natural gas-demand.⁴⁷ It further noted that

Just three years ago, the conventional wisdom was that U.S. natural-gas production was facing permanent decline. U.S. policymakers were resigned to the idea that the country would have to rely more on foreign imports to supply the fuel that heats half of American homes, generates one-fifth of the nation's electricity, and is a key component in plastics, chemicals and fertilizer.

But new technologies and a drilling boom have helped production rise 11% in the past two years. Now there's a glut, which has driven prices down to a six-year low and prompted producers to temporarily cut back drilling and search for new demand.⁴⁸

46. The Interconnection Queue in New York State includes some 4,500 MW of potential natural gas-fired generation. It is unlikely that all of these units will be built. However, if only 25 percent of the proposed capacity in the Queue actually is built, that would mean the addition of 1,125 MW of new gas-fired capacity in New York State within the next five years.

47. For these reasons, new generating units fueled by natural gas as well as the repowering of existing units would be a viable alternative to a portion of the capacity and energy generation provided by the two Indian Point Units.

Comments on NRC's Final Supplemental Environmental Impact Statement ("FSEIS")

48. I have reviewed Chapter 8 of the December 3, 2010 Final Supplemental Environmental Impact Statement ("FSEIS") prepared by the NRC in this proceeding and NRC's analysis of energy alternatives contained therein.

49. In my opinion the NRC's analysis of energy alternative in the FSEIS fails to accurately represent the current availability of alternatives to the relicensing project because it:

⁴⁶ *Estimate Places Natural Gas Reserves 35 percent Higher*, New York Times, June 9, 2009.

⁴⁷ "US Gas Companies Go From Bust to Boom" Available at <http://www.ctenergy.org/pdf/WSJ.pdf>.

⁴⁸ *Id.*

- ignores the impact of the recession on short and long term energy and demand forecasts, and the impacts of reduced energy and load demands on the timing and choice of energy alternatives;
 - bases its analysis of natural gas-fired combined-cycle (NGCC) generation on a single study (Levitan 2005) that predates significant structural changes in the natural gas sector, as outlined above, that directly impact the viability of plant repowering, plant retirement and new gas-fired generation in New York State;
 - continues to rely primarily on economic data and studies that pre-date the recession and the implementation of aggressive state-wide policies and programs to significantly increase energy efficiency, conservation, and renewables throughout the state, in general, and in the zones currently receiving power from Indian Point, in particular;
 - fails to recognize significant new developments since 2007 in New York State's transmission grid system that directly impact and increase New York State's capacity to import electrical power and utilize off-site renewable generation as alternatives to the power supplied by Indian Point;
 - does not account for the impact of the federal stimulus (ARRA) and state incentives since 2007 that significantly support the expansion of energy efficiency programs and renewable electricity generation in New York State and which increase the viability and effectiveness of those alternatives;
 - unreasonably fails to examine the present reasonable viability of energy conservation and renewable generation as a combined alternative to Indian Point given the current forecasts for New York State's renewable sector and energy efficiency / conservation programs;
50. The NRC's analysis of energy alternatives in the FSEIS furthermore relies on inaccurate information because it states that "as of November 10, 2010 the New York Regional Interconnection ("NYRI") is still seeking the approval of the New York State Public Service Commission (NYPSC)" to build a major transmission project. In fact, on April 21, 2009 the New York State Public Service Commission recognized and approved NYRI's application to formally withdraw its petition for a certificate under Article VII of the Public Service Law.⁴⁹ The PSC granted NYRI's withdrawal request, with prejudice, and dismissed the application.
51. A rational analysis of the potential for purchased electrical power alternative to license renewal should account for the recently approved Hudson Transmission Partners line and Linden transmission projects that I have noted above, as both of these projects would increase transmission capacity in the zones currently supplied by Indian Point.
52. The NRC's analysis of energy efficiency as an alternative to relicensing Indian Point is:

⁴⁹ NYS PSC Case 06-T-0650, PSC Correspondence (Issued April 21, 2009); *See also* FERC Docket No. OA08-52-003, New York Independent System Operator, Inc., Order on Rehearing, 126 FERC ¶61, 320 (Issued March 31, 2009).

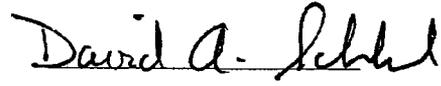
(a) not site specific; (b) methodologically unclear; (c) incomplete; and (d) fails to provide a factual basis for its conclusions for the following reasons;

- NRC staff adopt the finding of Shearon Harris (NUREG-1437, Supplement 33 dated August 2008), which considers utility based conservation as an alternative to license renewal for a 900 MW pressurized water nuclear reactor, located 20 miles outside of Raleigh, North Carolina in a regulated electricity market. The Shearon Harris facility shares little, if any, similarity to the substantially larger, deregulated, Indian Point facilities. The analysis provided in Shearon Harris is based primarily on data from a single 2006 study of North Carolina's energy markets and contains no analysis of New York's energy markets and provides no analysis of utility based conservation programs in New York.
- NRC staff also adopt the findings of Three Mile Island ("TMI") Unit 1 (NUREG-1437, Supplement 37 dated June 2009), which considers Pennsylvania's Alternative Energy Portfolio Standard ("AEPS") as an alternative to license renewal for a 800 MW pressured water reactor. This analysis relies on a single study, conducted in 2004 of Pennsylvania's energy efficiency potential (Pletka). The TMI analysis makes no reference to New York State, Indian Point, or the energy efficiency potential relevant or forecasted to be available in the zones currently receiving power from Indian Point. The TMI analysis also assumes that "because TMI sells power into the PJM interconnection, conservation in other nearby states may also help offset the power produced by TMI." (NUREG-1437, Supplement 37, p. 8-26), an assumption that is not applicable to Indian Point.
- The NRC Indian Point FSEIS is incomplete because it provides no factual support that the analysis contained in NUREG-1437 of North Carolina's regulated program is relevant or substantially similar, to any such program in New York State's deregulated energy market. Likewise, the NRC Indian Point FSEIS analysis of energy conservation/efficiency as an alternative to relicensing is incomplete because it provides no factual support that the energy efficiency programs put in place by the State of Pennsylvania in 2004 are relevant or applicable to the energy efficiency programs already in place, or likely to be in place, and available to replace the power generated by Indian Point. Because the NRC Indian Point FSEIS does not define what energy efficiency and/or energy conservation programs it anticipates will be available to replace the power generated by Indian Point, it is impossible to determine impact, reasonableness, and viability of the NRC's energy efficiency/conservation alternative.
- Likewise, the NRC's conclusion its proposed energy conservation/ energy efficiency alternative will result in "small to moderate socioeconomic impacts, which will not be offset by conservation (8.3.3., p. 8-43)" lacks factual support and/or further analysis. For example, no attempt is made to assess the potential for job creation and/or economic development presented by NRC's energy efficiency alternative, which may vary substantially depending on the specific nature of the efficiency / conservation alternative.

53. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: January 31, 2011

Belmont, Massachusetts

A handwritten signature in cursive script that reads "David A. Schlissel". The signature is written in dark ink and is positioned above the printed name.

David A. Schlissel

Attachment 5

February 1, 2011
Declaration and Curriculum Vitae of
Peter J. Lanzalotta

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

-----X
In re:

License Renewal Application Submitted by

**Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.**

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

-----X
DECLARATION OF PETER J. LANZALOTTA

Peter J. Lanzalotta hereby declares under penalty of perjury that the following is true and correct:

1. My name is Peter Lanzalotta. I am a Principal with Lanzalotta & Associates, LLC with offices at 67 Royal Pointe Drive, Hilton Head Island, South Carolina. I have worked for more than 30 years as an electric utility employee and as a consultant on electric system planning and operating matters, as well as various other electric-utility-related areas. I have a BS in Electric Power Engineering from Rensselaer Polytechnic Institute and an MBA in Finance from Loyola College. I am a registered as a professional engineer in Connecticut and Maryland. I have appeared as an expert witness on electric utility reliability, planning, operation, and rate matters in more than 100 proceedings in 22 states, the District of Columbia, the Provinces of Alberta and Ontario, and before the Federal Energy Regulatory Commission and U. S District Court. Attached hereto is a copy of my current Curriculum Vitae (CV).

2. These comments address aspects of the Final Supplemental Environmental Impact Statement (“final SEIS” or “FSEIS”) for Indian Points Units 2 and 3 (NUREG 1437, Supplement 38) dated December 2010 and address the issues, comments, and assumptions related to electric transmission system planning and electric system reliability contained therein. I have also reviewed a number of other documents that address electric system reliability planning and electric system reliability needs in New York.
3. The FSEIS provides little or no useful information on whether or to what extent to which the capabilities of the existing electric transmission system and related facilities will support or limit the various alternatives discussed in Section 8 of the FSEIS.
4. The FSEIS uses outdated assumptions regarding the availability of transmission system capacity additions from new transmission projects that underscore the difficulties of siting, getting approvals and constructing such new transmission projects, that wholly ignore significant developments in New York State’s electricity markets, energy policies, and transmission grid since 2006. These result in the FSEIS referring to the potential transmission capacity from a project that has been halted, such as the New York Regional Interconnect (“NYRI”), and in the FSEIS apparently ignoring other potential sources of transmission capacity that are successfully progressing, such as the Hudson Transmission Partners (“HTP”) transmission line into NYC.
5. The FSEIS raises the possibility of transmission capacity limitations, which could constrain the transmission system’s ability to move replacement power into the NYC area, but then assumes, with no meaningful analysis of New York State’s current electricity transmission grid system, that any such limitations will be relieved by the construction of large infrastructure projects or by locating the alternatives near to downstate loads. Thus, the FSEIS’s discussion of energy alternatives is not supported by a current, site-specific, factual analysis of the ability of the transmission grid to support any or all of the alternatives to relicensing proposed in the FSEIS.
6. The FSEIS addresses transmission adequacy assumptions on 8-27:

For purposes of this analysis, however, the NRC staff assumes that adequate transmission will exist – either through planned, new projects (e.g., the proposed New York Regional Interconnect –NYRI ; or the Champlain-Hudson Power Express, Inc. – CHPEI – Project, among others) – or by locating the alternatives near to downstate loads.

7. The FSEIS doesn't meaningfully address the need for or the availability of electric transmission system capacity in the event of an Indian Point retirement. In addition, the FSEIS refers to various transmission projects to add electric transmission capacity into the NYC area, some of which are not proceeding, and it fails to address other projects that will add transmission capacity into NYC.
8. For example, the FSEIS incorrectly asserts that NYRI is still seeking approval to build a 190 mile transmission line from upstate New York to the lower Hudson Valley as “illustrative of the potential for new transmission in congested areas of New York State” (8-40, lines 24-25), even though NYRI formally withdrew its application in 2009.¹
9. The FSEIS appears to ignore the approval of the Hudson Transmission Partner Line. This 345 kV line will connect Pennsylvania, New Jersey, Maryland grid (“PJM”) to midtown Manhattan, running between the Bergen Substation in Ridgefield, New Jersey and terminating at Consolidated Edison substations. It is expected to initially provide 320 MW of firm capacity from PJM to New York City, with the potential to provide 660 MW of firm capacity if necessary investments are made to upgrade PJM facilities.²
10. In the Order approving this line, the New York State Public Service Commission (“NY PSC”) stated that “System reliability is enhanced by the HTP facility . . . Examined systematically, there are two real possibilities in the future that warrant our careful consideration in rendering a decision to certificate the HTP facility. [One] serious possibility involves the Indian Point nuclear power facilities located in Westchester. A

¹ NYS PSC Case 06-T-0650, PSC Correspondence (Issued April 21, 2009); *See also* Federal Energy Regulatory Commission (“FERC”) Docket No. OA08-52-003, New York Independent System Operator, Inc., Order on Rehearing, 126 FERC ¶ 61, 320 (Issued March 31, 2009).

² NYS PSC. *Commission Approves Transmission Line to NYC: PowerLine Would Improve Reliability, Increase Supply*. Press Release. September 8, 2010. Available at: <http://documents.dps.state.ny.us/public/Common/ViewDoc.aspx?DocRefId={575751AB-6DF9-4C37-92CD-2813A2BD5B7D}>

segment of the State's population remains deeply concerned about the safety of having a nuclear facility as close as this one is to a major metropolitan area. Indeed, as a party in the Nuclear Regulatory Commission's relicensing proceeding for the Indian Point facilities, the State has opposed the extension of the plants' operating licenses. Also, environmentalists remain active in pursuing updates and modifications to this facility to lessen its current impacts on the environment. We find that the HTP facility will assist in maintaining system reliability in the event that one or both of the Indian Point plants close."³

11. There are a number of transmission-related developments that are relevant to the subject of potential alternatives to the continued operation of Indian Point that are not addressed in the FSEIS. These developments include additional transmission capacity either has been installed, is in the process of being installed, or has been approved to be installed in the New York Control Area, Zones H, I, J, or K. For example, the FSEIS has failed to consider the following recent transmission system developments:

- The Neptune Cable links the Long Island to New Jersey and energy sources in the PJM area. It provides up to 660 megawatts of transmission capacity into Long Island (Zone K).
- In addition, trans-Hudson and trans-Arthur Kill connections and interconnection upgrades are in the New York ISO interconnection queue. These project currently include the Brookfield Power U.S. Harbor Cable Project II (200 MW), and the East Coast Power LLC interconnection upgrade (300 MW; Linden, Staten Island).
- A new transmission link between New York and New Jersey has been proposed. The 550 MW Harbor Cable Project and Generating Portfolio, would provide a full controllable transmission pathway from generating sources in New Jersey to New York City.⁴

³ NYS PSC. *Order Granting Certificate of Environmental Compatibility and Public Need*. September 15, 2010, p. 44.

⁴ Id.

- The 2005 Levitan & Associates study identified three possible transmission alternatives to the retirement of Indian Point Units 2 and 3. The first would include retirement with the construction of two physically separate 500 kV circuits between the Capitol District around Albany to the downstate grid in New York City. Each of the circuits would be controllable and would be able to transmission 1,000 MW of power for a total of 2,000 MW.⁵
- The second transmission alternative identified by Levitan & Associates would be to upgrade the existing 345 kV New Scotland-Leeds circuit and the 345 kV Leeds-Pleasant Valley circuit, and construct a new 345 kV line from New Scotland to Pleasant Valley. This would increase the Upstate New York (“UPNY”) - South End New York (“SENY”) interface transfer capability by approximately 600 MW.⁶
- The third transmission alternative would be to convert the existing 345 kV Marcy-New Scotland circuit to a double circuit and to rebuild the New Scotland station to a breaker-and-a-half design. This would increase the Central-East transfer capability by approximately 650 MW and increase the transmission capability into New York City by approximately 450 MW.⁷
- Levitan & Associates also identified a fourth transmission alternative that would upgrade the interconnections between New York and the PJM grid system by re-conductoring the existing transmission paths from Ramapo to Buchanan and/or constructing a new dedicated (overhead or underground) transmission line from Ramapo to Buchanan. However, Levitan & Associates were unsure of the amount by which this alternative would increase the Total East transfer capability into New York State.

⁵ *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 Agency, by Levitan & Associates, Inc., June 9, 2005, at pages 35 and 36.

⁶ *Id.*, at pages 36 and 37.

⁷ *Id.*, at page 37.

12. Furthermore, the FSEIS fails to acknowledge that electric transmission system adequacy planning addresses the interplay between forecasted peak load, transmission system capacity, electric generation capacity and location, and demand response peak load reduction. There are a number of questions as to the level of projected peak load demand that should be considered when the potential retirement of the IP units is being considered.

13. For example, after looking at projected electric load growth, as well as at existing and proposed generating resources, the NYISO's *2009 Comprehensive Review of Resource Adequacy* found that "the anticipated capacity supply (42,536 MW) will exceed the forecasted peak load (34,309 MW) (this includes the required reserve margin of 18% for the 2010-2011 Capability Year) by 2,051 MW in 2014."⁸ According to the NYISO, there were three reasons for this: reductions in peak load due to the recession and to the New York Energy Efficiency Portfolio Standards ("EEPS"), an increase in generation additions and Special Case Resources (customer pledges to cut energy usage on demand), and fewer planned generator retirements.⁹

- NYISO Demand Response programs, which enlist electricity customers to conserve power in response to system conditions, are effectively reducing the need for additional capacity. One of the NYISO Demand Response programs, called Special Case Resources, currently has registrations of 2,251 MW for 2010, an increase of 315 MW from the previous year.¹⁰

However, in calculating this 2,051 MW capacity surplus in 2014, the NYISO used the original 2009 load and capacity data ("Gold Book") forecast. If the revised 2009 Gold Book forecast is used, instead, as it should be, the anticipated capacity supply of 42,536 MW will exceed the forecasted peak load of 33,594 MW in 2014 by a total of 8,942 MW, or 2,895 MW more than the required 18 percent reserve margin.

⁸ NYISO's *2009 Comprehensive Review of Resource Adequacy*, at page 1.

⁹ Id.

¹⁰ NYISO *2010 Load & Capacity Data – "Gold Book"*, page 6.

- Moreover, the revised 2009 Gold Book forecast assumes that only a portion of the 15x15 energy efficiency goal will be achieved.¹¹ A more recent NYISO forecast in its *2010 Reliability Needs Assessment Final Report*, issued in September 2010, shows what the projected impact would be of achieving 100 percent of the “15 by 15” energy efficiency goal by 2015. As a consequence, this 2010 RNA 15x15 forecast projects significantly lower peak demands for New York State.

14. The FSEIS furthermore raises the possibility of transmission grid stability problems caused by a lack of reactive power if the IP generating units are shut down, but fails to study this possibility and potential remedies, and nonetheless bases its alternatives analysis on one potential remedy, the possibility of operating the IP generators as synchronous condensers, to the exclusion of other remedies, such as capacitors, static var compensators (“SVC”s), and static synchronous compensators (STATCOMs).

15. The FSEIS first addresses reactive power at 8-22:

This FSEIS does not assess the specifics of the need for corrections to reactive power that would be required if IP2 and IP3 were shut down. Reactive power (i.e., power stored in magnetic fields throughout the power grid) is essential for the smooth operation of the transmission grid because it helps hold the voltage to desired levels. It may be possible to use the existing generators at IP2 and IP3 as a source of reactive power even if IP2 and IP3 are shut down. As “synchronous condensers,” the generators could add reactive power (but not real power) to the transmission system (National Research Council 2006). Because it is assumed that the generators would be operated as synchronous condensers only until the reactive power could be supported by new, real replacement power generation, their operation is not considered as a significant contributor to the impacts described below. Further, as a shut-down nuclear power plant may not be decommissioned for many years after shutdown, the continued operation of IP2 and IP3 generators would not necessarily slow or impede decommissioning activities.

16. The FSEIS fails to evaluate the impact of IP closure on reactive power supplies while admitting that the generator portion of the IP units could be operated separately, after

¹¹ According to the NYISO *2010 RNA Final Report*, the 2009 Gold Book forecast assumes that approximately 51 percent of the 15x15 goal will be achieved by the end of the planning horizon in 2020. At page 9.

retirement of the nuclear reactor and steam generation portions of IP, as synchronous condensers. The FSEIS further opines that::

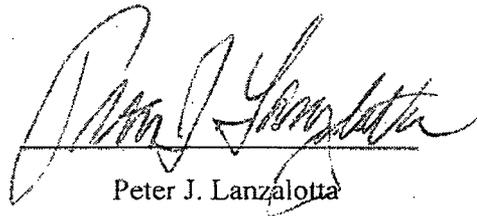
Issues of electrical grid stability that may result from an Indian Point shutdown would be addressed by the New York Independent System Operator (NYISO). NYISO has indicated that Indian Point plays an important role in electric reliability and supply in downstate New York, and has also indicated a potential need for Indian Point's generators to continue operating as synchronous condensers in the event that the reactors themselves shut down. (A synchronous condenser is required to provide the necessary reactive power loading for electric grid operation.) (FSEIS, Appendix A, p. A-151)

17. The above NRC response to a public comment (FSEIS, Appendix A, p. A-151) states that a synchronous condenser is required to provide reactive power needed by the electric grid. Here again, the FSEIS fails to acknowledge that electric transmission system adequacy planning addresses the interplay between forecasted peak load, transmission system capacity, electric generation capacity and location, and demand response peak load reduction.
18. In fact, as noted above, synchronous condensers are only one means of supplying reactive power to the electric system. Other reactive power sources include various capacitors, SVCs (static var compensators), STATCOMS (static synchronous compensators), and in-service electric generating units. These various options cover a wide range of potential costs, space requirements, lead-time requirements, and operating flexibility and capabilities.
19. Moreover, I have reviewed NYISO's most recent Reliability Needs Assessment and Comprehensive Reliability Planning documents and find no indication that NYISO has indicated a potential need for Indian Point's generators to operate as synchronous condensers in the event that the reactors themselves are shut down.
20. In response to issues of electrical grid stability issues related to the retirement of one or both of the Indian Point units, the New York ISO is required to issue a timely call for market based and regulated backstop solutions to ensure the continued, safe, reliable operation of the New York's electrical transmission grid. The call for market based and regulated backstop solutions will involve participation from market participants, based on

the forecasted load demands, current transmission capacity, generation capacity, and demand side management programs available at the time the units are scheduled to retire. Generation, transmission and demand response proposals can be considered in this process as legitimate solutions to meet these needs. Therefore, it is premature for the FSEIS to assume that the Indian Point units will be used as synchronous condensers in the event they are retired from generation.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: February 1, 2011
Fort Myers, Florida



Peter J. Lanzalotta

Peter J. Lanzalotta CV

Mr. Lanzalotta holds a Bachelor of Science in Electric Power Engineering from Rensselaer Polytechnic Institute and a Master of Business Administration with a concentration in Finance from Loyola College of Baltimore. He is a registered professional engineer in the States of Maryland and Connecticut.

He has more than thirty-five years experience in electric utility system planning, bulk power operations, distribution operations, electric service reliability, load and price forecasting, and market analysis and development. Mr. Lanzalotta has appeared as an expert witness on utility reliability, planning, operation, and rate matters in more than 100 proceedings in 22 states, the District of Columbia, the Provinces of Alberta and Ontario, and before the Federal Energy Regulatory Commission and U. S District Court. A list of his testimony appearances is attached. He has developed evaluations of electric utility system cost, value, reliability, and condition. He has participated in negotiations or other interactions between utilities and customers or regulators in more than ten states regarding transmission access, the need for facilities, electric rates, electric service reliability, the value of electric system components, and system operator structure under wholesale competition.

Prior to his forming Lanzalotta & Associates LLC in 2000, he was a Partner at Whitfield Russell Associates for fifteen years and a Senior Associate for approximately four years before that. Prior to joining Whitfield Russell Associates in 1982, Mr. Lanzalotta was employed by the Connecticut Municipal Electric Energy Cooperative ("CMEEC") as a System Engineer. He was responsible for providing operational, financial, and rate expertise to Coop's budgeting, ratemaking and system planning processes. He participated on behalf of CMEEC in the Hydro-Quebec/New England Power Pool Interconnection project and initiated the development of a database to support CMEEC's pool billing and financial data needs.

Prior to his CMEEC employment, he served as Chief Engineer at the South Norwalk (Connecticut) Electric Works, with responsibility for planning, data processing, engineering, rates and tariffs, generation and bulk power sales, and distribution operations. While at South Norwalk, he conceived and implemented, through Northeast Utilities and NEPOOL, a peak-shaving plan for South Norwalk and a neighboring municipal electric utility, which resulted

in substantial power supply savings. He programmed and implemented a computer system to perform customer billing and maintain accounts receivable accounting. He also helped manage a generating station overhaul and the undergrounding of the distribution system in South Norwalk's downtown.

From 1977 to 1979, Mr. Lanzalotta worked as a public utility consultant for Van Scoyoc & Wiskup and separately for Whitman Requart & Associates in a variety of positions. During this time, he developed cost of service, rate base evaluation, and rate design impact data to support direct testimony and exhibits in a variety of utility proceedings, including utility price squeeze cases, gas pipeline rates, and wholesale electric rate cases.

Prior to that, He worked for approximately 2 years as a Service Tariffs Analyst for the Finance Division of the Baltimore Gas & Electric Company where he developed cost and revenue studies, evaluated alternative rate structures, and studied the rate structures of other utilities for a variety of applications. He was also employed by BG&E in Electric System Operations for approximately 3 years, where his duties included operations analysis, outage reporting, and participation in the development of BG&E's first computerized customer information and service order system.

Mr. Lanzalotta is a member of the Institute of Electrical & Electronic Engineers, the Association of Energy Engineers, the National Fire Protection Association, and the American Solar Energy Society. He is also registered Professional Engineer in the states of Maryland and Connecticut.

1. **In re: Public Service Company of New Mexico**, Docket Nos. ER78-337 and ER78-338 before the Federal Energy Regulatory Commission, concerning the need for access to calculation methodology underlying filing.
2. **In re: Baltimore Gas and Electric Company**, Case No. 7238-V before the Maryland Public Service Commission, concerning outage replacement power costs.
3. **In re: Houston Lighting & Power Company**, Texas Public Utilities Commission Docket No. 4712, concerning modeling methods to determine rates to be paid to cogenerators and small power producers.
4. **In re: Nevada Power Company**, Nevada Public Service Commission, Docket No. 83-707 concerning rate case fuel inventories, rate base items, and O&M expense.
5. **In re: Virginia Electric & Power Company**, Virginia State Corporation Commission, Case No. PUE820091, concerning the operating and reliability-based need for additional transmission facilities.
6. **In re: Public Service Electric & Gas Company**, New Jersey Board of Public Utilities, Docket No. 831-25, concerning outage replacement power costs.
7. **In re: Philadelphia Electric Company**, Pennsylvania Public Utilities Commission, Docket No. P-830453, concerning outage replacement power costs.
8. **In re: Cincinnati Gas & Electric Company**, Public Utilities Commission of Ohio, Case No. 83-33-EL-EFC, concerning the results of an operations/fuel-use audit conducted by Mr. Lanzalotta.
9. **In re: Kansas City Power and Light Company**, before the State Corporation Commission of the state of Kansas, Docket Nos. 142,099-U and 120,924-U, concerning the determination of the capacity, from a new base-load generating facility, needed for reliable system operation, and the capacity available from existing generating units.
10. **In re: Philadelphia Electric Company**, Pennsylvania Public Utilities Commission, Docket No. R-850152, concerning the determination of the

capacity, from a new base-load generating facility, needed for reliable system operation, and the capacity available from existing generating units.

11. **In re: ABC Method Proposed for Application to Public Service Company of Colorado**, before the Public Utilities Commission of the State of Colorado, on behalf of the Federal Executive Agencies ("FEA"), concerning a production cost allocation methodology proposed for use in Colorado.
12. **In re: Duquesne Light Company**, Docket No. R-870651, before the Pennsylvania Public Utilities Commission, on behalf of the Office of Consumer Advocate, concerning the system reserve margin needed for reliable service.
13. **In re: Pennsylvania Power Company**, Docket No. I-7970318 before the Pennsylvania Public Utilities Commission, on behalf of the Office of Consumer Advocate, concerning outage replacement power costs.
14. **In re: Commonwealth Edison Company**, Docket No. 87-0427 before the Illinois Commerce Commission, on behalf of the Citizen's Utility Board of Illinois, concerning the determination of the capacity, from new base-load generating facilities, needed for reliable system operation.
15. **In re: Central Illinois Public Service Company**, Docket No. 88-0031 before the Illinois Commerce Commission, on behalf of the Citizen's Utility Board of Illinois, concerning the degree to which existing generating capacity is needed for reliable and/or economic system operation.
16. **In re: Illinois Power Company**, Docket No. 87-0695 before the State of Illinois Commerce Commission, on behalf of Citizens Utility Board of Illinois, Governors Office of Consumer Services, Office of Public Counsel and Small Business Utility Advocate, concerning the determination of the capacity, from a new base-load generating facility, needed for reliable system operation, and the capacity available from existing generating units.
17. **In re: Florida Power Corporation**, Docket No. 860001-EI-G (Phase II), before the Florida Public Service Commission, on behalf of the Federal Executive Agencies of the United States, concerning an investigation into fuel supply relationships of Florida Power Corporation.

18. **In re: Potomac Electric Power Company**, before the Public Service Commission of the District of Columbia, Docket No. 877, on behalf of the Public Service Commission Staff, concerning the need for and availability of new generating facilities.
19. **In re: South Carolina Electric & Gas Company**, before the South Carolina Public Service Commission, Docket No. 88-681-E, On Behalf of the State of Carolina Department of Consumer Affairs, concerning the capacity needed for reliable system operation, the capacity available from existing generating units, relative jurisdictional rate of return, reconnection charges, and the provision of supplementary, backup, and maintenance services for QFs.
20. **In re: Commonwealth Edison Company**, Illinois Commerce Commission, Docket Nos. 87-0169, 87-0427, 88-0189, 88-0219, and 88-0253, on behalf of the Citizen's Utility Board of Illinois, concerning the determination of the capacity, from a new base-load generating facility, needed for reliable system operation.
21. **In re: Illinois Power Company**, Illinois Commerce Commission, Docket No. 89-0276, on behalf of the Citizen's Utility Board Of Illinois, concerning the determination of capacity available from existing generating units.
22. **In re: Jersey Central Power & Light Company**, New Jersey Board of Public Utilities, Docket No. EE88-121293, on behalf of the State of New Jersey Department of the Public Advocate, concerning evaluation of transmission planning.
23. **In re: Canal Electric Company**, before the Federal Energy Regulatory Commission, Docket No. ER90-245-000, on behalf of the Municipal Light Department of the Town of Belmont, Massachusetts, concerning the reasonableness of Seabrook Unit No. 1 Operating and Maintenance expense.
24. **In re: New Hampshire Electric Cooperative Rate Plan Proposal**, before the New Hampshire Public Utilities Commission, Docket No. DR90-078, on behalf of the New Hampshire Electric Cooperative, concerning contract valuation.
25. **In re: Connecticut Light & Power Company**, before the Connecticut

Department of Public Utility Control, Docket No. 90-04-14, on behalf of a group of Qualifying Facilities concerning O&M expenses payable by the QFs.

26. **In re: Duke Power Company**, before the South Carolina Public Service Commission, Docket No. 91-216-E, on behalf of the State of South Carolina Department of Consumer Advocate, concerning System Planning, Rate Design and Nuclear Decommissioning Fund issues.
27. **In re: Jersey Central Power & Light Company**, before the Federal Energy Regulatory Commission, Docket No. ER91-480-000, on behalf of the Boroughs of Butler, Madison, Lavallette, Pemberton and Seaside Heights, concerning the appropriateness of a separate rate class for a large wholesale customer.
28. **In re: Potomac Electric Power Company**, before the Public Service Commission of the District of Columbia, Formal Case No. 912, on behalf of the Staff of the Public Service Commission of the District of Columbia, concerning the Application of PEPCO for an increase in retail rates for the sale of electric energy.
29. **Commonwealth of Pennsylvania, House of Representatives**, General Assembly House Bill No. 2273. Oral testimony before the Committee on Conservation, concerning proposed Electromagnetic Field Exposure Avoidance Act.
30. **In re: Hearings on the 1990 Ontario Hydro Demand\Supply Plan**, before the Ontario Environmental Assessment Board, concerning Ontario Hydro's System Reliability Planning and Transmission Planning.
31. **In re: Maui Electric Company**, Docket No. 7000, before the Public Utilities Commission of the State of Hawaii, on behalf of the Division of Consumer Advocacy, concerning MECO's generation system, fuel and purchased power expense, depreciation, plant additions and retirements, contributions and advances.
32. **In re: Hawaiian Electric Company, Inc.**, Docket No. 7256, before the Public Utilities Commission of the State of Hawaii, on behalf of the Division

of Consumer Advocacy, concerning need for, design of, and routing of proposed transmission facilities.

33. **In re: Commonwealth Edison Company**, Docket No. 94-0065 before the Illinois Commerce Commission on behalf of the City of Chicago, concerning the capacity needed for system reliability.
34. **In re: Commonwealth Edison Company**, Docket No. 93-0216 before the Illinois Commerce Commission on behalf of the Citizens for Responsible Electric Power, concerning the need for proposed 138 kV transmission and substation facilities.
35. **In re: Commonwealth Edison Company**, Docket No. 92-0221 before the Illinois Commerce Commission on behalf of the Friends of Illinois Prairie Path, concerning the need for proposed 138 kV transmission and substation facilities.
36. **In re: Commonwealth Edison Company**, Docket No. 94-0179 before the Illinois Commerce Commission on behalf of the Friends of Sugar Ridge, concerning the need for proposed 138 kV transmission and substation facilities.
37. **In re: Public Service Company of Colorado**, Docket Nos. 95A-531EG and 95I-464E before the Colorado Public Utilities Commission on behalf of the Office of Consumer Counsel, concerning a proposed merger with Southwestern Public Service Company and a proposed performance-based rate-making plan.
38. **In re: South Carolina Electric & Gas Company, Duke Power Company, and Carolina Power & Light Company**, Docket No. 95-1192-E, before the South Carolina Public Service Commission on behalf of the South Carolina Department of Consumer Advocate, concerning avoided cost rates payable to qualifying facilities.
39. **In re: Lawrence A. Baker v. Truckee Donner Public Utility District**, Case No. 55899, before the Superior Court of the State of California on behalf of Truckee Donner Public Utility District, concerning the reasonableness of electric rates.

40. **In re: Black Hills Power & Light Company**, Docket No. OA96-75-000, before the Federal Energy Regulatory Commission on behalf of the City of Gillette, Wyoming, concerning the Black Hills' proposed open access transmission tariff.
41. **In re: Metropolitan Edison Company and Pennsylvania Electric Company** for Approvals of the Restructuring Plan Under Section 2806, Docket Nos. R-00974008 and R-00974009 before the Pennsylvania PUC on behalf of Operating NUG Group, concerning miscellaneous restructuring issues.
42. **In re: New Jersey State Restructuring Proceeding** for consideration of proposals for retail competition under BPU Docket Nos. EX94120585U; E097070457; E097070460; E097070463; E097070466 before the New Jersey BPU on behalf of the New Jersey Division of Ratepayer Advocate, concerning load balancing, third party settlements, and market power.
43. **In re: Arbitration Proceeding In City of Chicago v. Commonwealth Edison** for consideration of claims that franchise agreement has been breached, Proceeding No. 51Y-114-350-96 before an arbitration panel board on behalf of the City of Chicago concerning electric system reliability.
44. **In re: Transalta Utilities Corporation**, Application No. RE 95081 on behalf of the ACD companies, before the Alberta Energy And Utilities Board in reference to the use and value of interruptible capacity.
45. **In re: Consolidated Edison Company**, Docket No. EL99-58-000 on behalf of The Village of Freeport, New York, before FERC in reference to remedies for a breach of contract to provide firm transmission service on a non-discriminatory basis.
46. **In re: ESBI Alberta Ltd.**, Application No. 990005 on behalf of the FIRM Customers, before the Alberta Energy And Utilities Board concerning the reasonableness of the cost of service plus management fee proposed for 1999 and 2000 by the transmission administrator.
47. **In re: South Carolina Electric & Gas Company**, Docket No. 2000-0170-E on behalf of the South Carolina Department of Consumer Affairs before the

Public Service Commission of South Carolina concerning an application for a Certificate of Environmental Compatibility and Public Convenience and Necessity for new and repowered generating units at the Urquhart generating station.

48. **In re: BGE**, Case No. 8837 on behalf of the Maryland Office of People's Counsel before the Maryland Public Service Commission concerning proposed electric line extension charges.
49. **In re: PEPCO**, Case No. 8844 on behalf of the Maryland Office of People's Counsel before the Maryland Public Service Commission concerning proposed electric line extension charges.
50. **In re: GenPower Anderson LLC**, Docket No. 2001-78-E on behalf of the South Carolina Department of Consumer Affairs before the Public Service Commission of South Carolina concerning an application for a Certificate of Environmental Compatibility and Public Convenience and Necessity for new generating units at the GenPower Anderson LLC generating station.
51. **In re: Pike County Light & Power Company**, Docket No. P-00011872, on behalf of Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utility Commission concerning the Pike County request for a retail rate cap exception.
52. **In re: Potomac Electric Power Company and Conectiv**, Case No. 8890, on behalf of the Maryland Office of People's Counsel before the Maryland Public Service Commission concerning the proposed merger of Potomac Electric Power Company and Conectiv.
53. **In re: South Carolina Electric & Gas Company**, Docket No. 2001-420-E on behalf of the South Carolina Department of Consumer Affairs before the Public Service Commission of South Carolina concerning an application for a Certificate of Environmental Compatibility and Public Convenience and Necessity for new generating units at the Jasper County generating station.
54. **In re: Connecticut Light & Power Company**, Docket No. 217 on behalf of the Towns of Bethel, Redding, Weston, and Wilton, Connecticut before the Connecticut Siting Council concerning an application for a Certificate of

Environmental Compatibility and Public Need for a new transmission line facility between Plumtree Substation, Bethel and Norwalk Substation, Norwalk.

55. **In re: The City of Vernon, California,** Docket No. EL02-103 on behalf of the City of Vernon before the Federal Energy Regulatory Commission concerning Vernon's transmission revenue balancing account adjustment reflecting calendar year 2001 transactions.
56. **In re: San Diego Gas & Electric Company et. al.,** Docket No. EL00-95-045 on behalf of the City of Vernon, California before the Federal Energy Regulatory Commission concerning refunds and other monies payable in the California wholesale energy markets.
57. **In re: The City of Vernon, California,** Docket No. EL03-31 on behalf of the City of Vernon before the Federal Energy Regulatory Commission concerning Vernon's transmission revenue balancing account adjustment reflecting 2002 transactions.
58. **In re: Jersey Central Power & Light Company,** Docket Nos. ER02080506, ER02080507, ER02030173, and EO02070417 on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey Board of Public Utilities concerning reliability issues involved in the approval of an increase in base tariff rates.
59. **In re: Proposed Electric Service Reliability Rules, Standards, and Indices To Ensure Reliable Service by Electric Distribution Companies,** PSC Regulation Docket No. 50, on behalf of the Delaware Public Service Commission Staff before the Delaware Public Service Commission concerning proposed electric service reliability rules, standards and indices.
60. **In re: Central Maine Power Company,** Docket No. 2002-665, on behalf of the Maine Public Advocate and the Town of York before the Maine Public Utilities Commission concerning a Request for Commission Investigation into the New CMP Transmission Line Proposal for Eliot, Kittery, and York.
61. **In re: Metropolitan Edison Company,** Docket No. C-20028394, on behalf of the Pennsylvania Office of Consumer Advocate, before the Pennsylvania Public Utility Commission concerning the reliability service complaint of

Robert Lawrence.

62. **In re: The California Independent System Operator Corporation**, Docket No. ER00-2019 *et al.* on behalf of the City of Vernon, California, before the Federal Energy Regulatory Commission concerning wholesale transmission tariffs, rates and rate structures proposed by the California ISO.
63. **In re: The Narragansett Electric Company**, Docket No. 3564 on behalf of the Rhode Island Department of Attorney General, before the Rhode Island Public Utilities Commission concerning the proposed relocation of the E-183 transmission line.
64. **In re: The City of Vernon, California**, Docket No. EL04-34 on behalf of the City of Vernon before the Federal Energy Regulatory Commission concerning Vernon's transmission revenue balancing account adjustment reflecting 2003 transactions.
65. **In re: Atlantic City Electric Company**, Docket No. ER03020110 on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey Board of Public Utilities concerning reliability issues involved in the approval of an increase in base tariff rates.
66. **In re: Connecticut Light & Power Company and the United Illuminating Company**, Docket No. 272 on behalf of the Towns of Bethany, Cheshire, Durham, Easton, Fairfield, Hamden, Middlefield, Milford, North Haven, Norwalk, Orange, Wallingford, Weston, Westport, Wilton, and Woodbridge, Connecticut before the Connecticut Siting Council concerning an application for a Certificate of Environmental Compatibility and Public Need for a new transmission line facility between the Scoville Rock Switching Station in Middletown and the Norwalk Substation in Norwalk, Connecticut.
67. **In re: Metropolitan Edison Company, Pennsylvania Electric Company, and Pennsylvania Power Company**, Docket No. I-00040102, on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utility Commission concerning electric service reliability performance.
68. **In re: Entergy Louisiana, Inc.**, Docket No. U-20925 RRF-2004 on behalf of Bayou Steel before the Louisiana Public Service Commission concerning a proposed increase in base rates.

69. **In re: Jersey Central Power & Light Company**, Docket No. ER02080506, Phase II, on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey Board of Public Utilities concerning reliability issues involved in the approval of an increase in base tariff rates.
70. **In re: Maine Public Service Company**, Docket No. 2004-538, on behalf of the Main Public Advocate before the Maine Public Utilities Commission concerning a request to construct a 138 kV transmission line from Limestone, Maine to the Canadian border near Hamlin, Maine.
71. **In re: Pike County Light and Power Company**, Docket No. M-00991220F0002, on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utility Commission concerning the Company's Petition to amend benchmarks for distribution reliability.
72. **In re: Atlantic City Electric Company**, Docket No. EE04111374, on behalf of the New Jersey Division of Ratepayer Advocate before the New Jersey Board of Public Utilities concerning the need for transmission system reinforcement, and related issues.
73. **In re: Bangor Hydro-Electric Company**, Docket No. 2004-771, on behalf of the Main Public Advocate before the Maine Public Utilities Commission concerning a request to construct a 345 kV transmission line from Orrington, Maine to the Canadian border near Baileyville, Maine.
74. **In re: Eastern Maine Electric Cooperative**, Docket No. 2005-17, on behalf of the Main Public Advocate before the Maine Public Utilities Commission concerning a petition to approve a purchase of transmission capacity on a 345 kV transmission line from Maine to the Canadian province of New Brunswick.
75. **In re: Virginia Electric and Power Company**, Case No. PUE-2005-00018, on behalf of the Town of Leesburg VA and Loudoun County VA before the Virginia State Corporation Commission concerning a request for a certificate of public convenience and necessity for transmission and substation facilities in Loudoun County.
76. **In re: Proposed Electric Service Reliability Rules, Standards, and Indices To Ensure Reliable Service by Electric Distribution Companies**, PSC

Regulation Docket No. 50, on behalf of the Delaware Public Service Commission Staff before the Delaware Public Service Commission concerning proposed electric service reliability reporting, standards, and indices.

77. **In re: Proposed Merger Involving Constellation Energy Group Inc. and the FPL Group, Inc.**, Case No. 9054, on behalf of the Maryland Office of Peoples' Counsel before the Maryland Public Service Commission concerning the proposed merger involving Baltimore Gas & Electric Company and Florida Light & Power Company.
78. **In re: Proposed Sale and Transfer of Electric Franchise of the Town of St. Michaels to Choptank Electric Cooperative, Inc.**, Case No. 9071, on behalf of the Maryland Office of Peoples' Counsel before the Maryland Public Service Commission concerning the sale by St. Michaels of their electric franchise and service area to Choptank.
79. **In re: Petition of Rockland Electric Company for the Approval of Changes in Electric Rates, and Other Relief**, BPU Docket No. ER06060483, on behalf of the Department of the Public Advocate, Division of Rate Counsel, before the New Jersey Board of Public Utilities, concerning electric service reliability and reliability-related spending.
80. **In re: The Complaint of the County of Pike v. Pike County Light & Power Company, Inc.**, Docket No. C-20065942, et al., on behalf of the Pennsylvania Office of Consumer Advocate before the Pennsylvania Public Utilities Commission, concerning electric service reliability and interconnecting with the PJM ISO.
81. **In re: Application of American Transmission Company to Construct a New Transmission Line**, Docket No. 137-CE-139, on behalf of The Sierra Club of Wisconsin, before the Public Service Commission of Wisconsin, concerning the request to build a new 138 kV transmission line.
82. **In re: The Matter of the Self-Complaint of Columbus Southern Power Company and Ohio Power Company Regarding the Implementation of Programs to Enhance Distribution Service Reliability**, Case No. 06-222-EL-SLF, on behalf of The Office of The Ohio Consumers' Counsel, before the Public Utilities Commission of Ohio, concerning distribution system reliability and related topics.

83. **In re: Central Maine Power Company**, Docket No. 2006-487, on behalf of the Maine Public Advocate before the Maine Public Utilities Commission concerning CMP's Petition for Finding of Public Convenience & Necessity to build a 115 kV transmission line between Saco and Old Orchard Beach.
84. **In re: Bangor Hydro Electric Company**, Docket No. 2006-686, on behalf of the Maine Public Advocate before the Maine Public Utilities Commission concerning BHE's Petition for Finding of Public Convenience & Necessity to build a 115 kV transmission line and substation in Hancock County.
85. **In re: Commission Staff's Petition For Designation of Competitive Renewable Energy Zones**, Docket No. 33672, on behalf of the Texas Office of Public Utility Counsel, concerning the Staff's Petition and the determination of what areas should be designated as CREZs by the Commission.
86. **In re: Virginia Electric and Power Company**, Case No. PUE-2006-00091, on behalf of the Towering Concerns and Stafford County VA before the Virginia State Corporation Commission concerning a request for a certificate of public convenience and necessity for electric transmission and substation facilities in Stafford County.
87. **In re: Trans-Allegheny Interstate Line Company**, Docket Nos. A-110172 et al., on behalf of the Pennsylvania Office of Consumer Advocate, before the Pennsylvania Public Utility Commission, concerning a request for a certificate of public convenience and necessity for electric transmission and substation facilities in Pennsylvania.
88. **In re: Commonwealth Edison Company**, Docket No. 07-0566, on behalf of the Illinois Attorney General, before the Illinois Commerce Commission, concerning electric transmission and distribution projects promoted as smart grid projects, and the rider proposed to pay for them.
89. **In re: Commonwealth Edison Company**, Docket No. 07-0491, on behalf of the Illinois Attorney General, before the Illinois Commerce Commission, concerning the applicability of electric service interruption provisions.

90. **In re: Hydro One Networks**, Case No. EB-2007-0050, on behalf of Pollution Probe, before the Ontario Energy Board, concerning a request for leave to construct electric transmission facilities in the Province of Ontario.
91. **In re: PEPCO Holdings, Inc.**, Docket No. ER-08-686-000, on behalf of the Maryland Office of Peoples' Counsel, before the Federal Energy Regulatory Commission, concerning a request for incentive rates of return on transmission projects.
92. **In re: PPL Electric Utilities Corporation and Public Service Electric and Gas Company**, Docket No. ER-08-23-000, on behalf of the Joint Consumer Advocates, including the state consumer advocacy offices for the States of Maryland, West Virginia, before the Federal Energy Regulatory Commission, concerning a request for incentive rates of return on transmission projects.
93. **In re: PPL Electric Utilities Corporation**, Docket Nos. A-2008-2022941 and P-2008-2038262, on behalf of Springfield Township, Bucks County, PA, before the Pennsylvania Public Utility Commission, concerning the need for and alternatives to proposed electric transmission lines and a proposed electric substation.
94. **In re: PEPCO Holdings, Inc.**, Docket No. ER08-1423-000, on behalf of the Maryland Office of Peoples' Counsel, before the Federal Energy Regulatory Commission, concerning a request for incentive rates of return on transmission projects.
95. **In re: Public Service Electric and Gas Company, Inc.**, Docket No. ER09-249-000, on behalf of the New Jersey Division of Rate Counsel, before the Federal Energy Regulatory Commission, concerning a request for incentive rates of return on transmission projects.
96. **In re: New York Regional Interconnect Inc.**, Case No. 06-T-0650, on behalf of the Citizens Against Regional Interconnect, before the New York Public Service Commission, concerning the economics of and alternatives to proposed transmission facilities.
97. **In re: Central Maine Power Company and Public Service of New Hampshire**, Docket No. 2008-255, on behalf of the Maine Public Advocate, before the Maine Public Utilities Commission, concerning CMP's and PSNH's

Petition for Finding of Public Convenience & Necessity to build the Maine Power Reliability Project, a series of new and rebuilt electric transmission facilities to operate at 345 kV and 115 kV in Maine and New Hampshire.

98. **In re: PPL Electric Utilities Corporation, Docket No. A-2009-2082652 et al.** on behalf of the Pennsylvania Office of Consumer Advocate, before the Pennsylvania Public Utility Commission, concerning the Company's application for approval to site and construct electric transmission facilities in Pennsylvania.
99. **In re: Bangor Hydro-Electric,** Docket No. 2009-26, on behalf of the Maine Public Advocate, before the Maine Public Utilities Commission, concerning BHE's Petition for Certificate of Public Convenience & Necessity to build a 115 kV transmission line in Washington and Hancock Counties.
100. **In re: United States, et al. v. Cinergy Corp., et al.** Civil Action No. IP99-1693 C-M/S, on behalf of Plaintiff United States and Plaintiff-Intervenors State of New York, State of New Jersey, State of Connecticut, Hoosier Environmental Council, and Ohio Environmental Council, before the United States District Court for the Southern District of Indiana, concerning the electric system reliability impacts of the potential retirement of Gallagher Power Station Unit 1 and Unit 3.
101. **In re: Application of Potomac Electric Power Company, et al.** Case No. 9179, on behalf of the Maryland Office of Peoples' Counsel before the Maryland Public Service Commission concerning the application for a determination of need under a certificate of public convenience and necessity for the Maryland portion of the MAPP transmission line, and related facilities.

Attachment 6

February 2, 2011
Declaration of Peter A. Bradford

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

-----X
In re:

License Renewal Application Submitted by

**Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.**

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64
-----X

DECLARATION OF PETER A. BRADFORD

Peter A. Bradford hereby declares under penalty of perjury that the following is true and correct:

1. My name is Peter Amory Bradford. I live in Peru, Vermont.
2. I am president of Bradford Brook Associates. I am an adjunct professor at Vermont Law School, where I teach a course entitled "Nuclear Power and Public Policy". I served as a commissioner of the Nuclear Regulatory Commission (NRC), (1977-82) and as chair of the New York (1987-95) and Maine (1982-87) utility regulatory commissions. I was also a member of the National Research Council Committee that produced the 2006 report entitled "Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs" (2006 National Research Council). My complete CV has been previously submitted together with my November 2007 submission in this proceeding.
3. I have had extensive responsibility for state government power supply decisions (including design and implementation of demand side management, transmission expansion and power purchase programs) in both New York and Maine. I was also involved until 1995 in the design of electric industry restructuring in New York.

4. I have previously filed a declaration in this proceeding in November 2007.
5. The framework for my consideration of the Final Supplemental Environmental Impact Statement (FSEIS) includes the following points:
 - a) The NRC has concluded that relicensing of nuclear power plants is an action that substantially affects the environment.
 - b) NEPA requires an evaluation of alternatives to relicensing as well as of the alternative of not proceeding with relicensing.
 - c) Pursuant to the Generic Environmental Impact Statement (GEIS), the FSEIS does not evaluate either the need for the power from Indian Point or the economic costs and benefits of the alternatives that it describes, reasoning that energy planning and procurement are not part of the NRC's responsibilities.
 - d) Nevertheless, the NRC reasons that a decision to extend the Indian Point licenses by 20 years does nothing more than "provide a comparison that allows NRC to determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable." (FSEIS, p. 8-1).
 - e) The NRC staff recommends in the FSEIS "that the Commission determine that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable."
 - f) Because the FSEIS does not discuss the economics of the Indian Point units in comparison to the economics of alternatives, it gives decisionmakers no sense of which among the alternatives are likely to be deployed in what quantities in the event that the no action alternative is in fact pursued.
6. The FSEIS is somewhat more realistic than the 2007 Environmental Report (ER) in that it purports to consider conservation as a stand alone alternative to relicensing the Indian Point units. It also increases the amount of conservation in some combinations of alternatives.
7. However, it falls well short of the NRC's NEPA obligations both to take a hard look at specific alternatives in order to provide a rational basis for choosing among the

alternatives and to make relevant information available to other entities that may also play a role in the decision making process.

8. The FSEIS does not take adequate account of significant developments in the years 2007-2010, including developments very different from those foreseen in the 2006 National Research Council Report on which the FSEIS extensively relies. In particular, the potential institutional constraints on which the 2006 National Research Council report placed particular emphasis¹ have not in fact hindered New York's moving from a position in which ability to acquire new electric resources at an adequate pace was in serious doubt to one in which the New York ISO ("NYISO") sees no likelihood of generation constraints well into the future. Among the significant developments that the FSEIS either ignores or pays inadequate attention to are:

- a) the decline in demand for electric power, which is attributable only in part to the recession². New York State experienced a 4.1% drop in power demand due to the recession³. Increases in demand side management (DSM) coupled with moderate economic growth are projected to cause lower than normally expected energy use per capita through 2018⁴;

- b) the significantly declining price and increased availability of natural gas to meet New York and Northeastern energy needs. The 2006 National Research Council Report stated. "Current supplies of natural gas cannot always accommodate current, let alone increased demand for the product"⁵. Today, natural gas has become and is expected to

¹ "It is problematic whether the existing legal, regulatory and financial mechanisms provide sufficient incentive to build new capacity resources in New York", (2006 National Research Council, p. 4).

² During July, 2010 (one of the hottest months on record) the New York State Independent System Operator ("NYISO") experienced its third highest peak load and its highest single monthly use, *New York Sets Power Usage Record in July, NYISO news release, August 9, 2010*, http://www.nyiso.com/public/webdocs/newsroom/press_releases/2010/pr_nyiso_highestloadmonth_08092010.pdf. This actual 2010 peak was some 1000MW below the 2010 peak forecast used in the 2006 National Research Council Report while the resources available to meet the peak were some 4000MW higher (2006 National Research Council, p. 60, Table 5-1).

³ *NYISO 2009 Annual Report, p. 6*

⁴ *2009 NYS Energy Plan: Energy Demand and Price Forecasts, p. 10.*

⁵ 2006 National Research Council Report, p. 36

continue to be the fuel of choice for new and replacement generation in New York for the next several years due to its economic, operational and environmental advantages⁶;

c) New York's progress in implementing its Renewable Portfolio Standard, especially wind power. By 2009, nearly 1300 MW of wind projects had come on line in New York. Wind projects also comprise a dominant portion of the capacity of proposed new generation projects in the New York Independent System Operator's interconnection queue. Some 7,000 MW of additional wind power have been proposed for interconnection with the New York electric grid⁷.

A recent review of the New York ISO's first decade stated "According to the American Wind Energy Association ("AWEA"), which tracks wind projects and changes in wind capacity in states across the U.S., New York ranks sixth among the 50 states in terms of the amount of wind generating capacity added in the last year, and eighth in terms of total installed wind capacity as of the end of 2009. Furthermore, AWEA and other analysts have assessed the ease of entry of wind capacity into electric systems around the country and have concluded that RTOs like New York's, with open access to transmission and single clearing price competitive markets, provide a relatively supportive environment for renewable project investment⁸";

⁶ *New York State Energy Plan, Natural Gas Assessment*. December 2009, p. 9. Natural gas prices in New York State in 2009 were slightly less than half what they had been in 2008 (*Power Trends*, NYISO, p. 8). The U.S. Department of Energy's Energy Information Administration ("DOE/EIA") recently lowered its gas price forecast through 2035, noting "The annual average natural gas wellhead price remains under \$5 per thousand cubic feet through 2022, but it increases thereafter because significantly more shale wells must be drilled to meet growth in natural gas demand and offset declines in natural gas production from other sources....Natural gas wellhead prices (in 2009 dollars) reach \$6.53 per thousand cubic feet in 2035, compared with \$8.19 in AEO2010 (Annual Energy Outlook Early Release Overview, December 16, 2010)." The 2006 National Research Council report's preferred gas price forecast declined from \$7.80 per MMBTU in 2008 to \$7.00 in 2015 (2006 National Research Council, p. 67).

⁷ *NYISO Power Trends 2010: New York's Emerging Energy Crossroads*, p. 16. The NYISO has expanded the eligibility of intermittent resources for special market rules from 500 MW to 3,300 MW to accommodate increased penetration levels of wind plants on the system. *NYISO Power Trends 2010: New York's Emerging Energy Crossroads*, at 16.

⁸ Susan Tierney, *The New York Independent System Operator: A Ten Year Review*, April, 2010, p. 50.

- d) New York's progress in implementing demand side management (DSM)⁹ pursuant to the 15 X 15 program and the 45 x 15 Clean Energy Program,¹⁰ including the impact of federal stimulus revenues and state incentives;
- e) The implementation of the Regional Greenhouse Gas Initiative (RGGI), pursuant to which New York's cumulative proceeds from the auctions of emissions permits is some \$282 million, most of which is invested in energy efficiency and renewable energy projects. This program is now more than two years old and will continue to hold several permit auctions per year;
- f) The addition of significant additional supply, transmission and DSM resources in New York State. Since 2000, New York has added over 7,800 MW of new generation, nearly 1,300 MW of new transmission, and nearly 2,400 MW of demand response, 80% of which has been added where demand is the greatest in the New York City, Long Island and Hudson Valley region.¹¹ The recently released 2010 NYISO Comprehensive Reliability Plan notes an increase of 2805 gWh in projected cumulative savings from energy efficiency programs when compared to the 2009 forecast.¹²
- g) Major electrical transmission line developments, including a significant expansion of existing and licensed transmission capacity into Metro NYC markets as a result of the Linden Variable Frequency Transformers and approval of the Hudson Transmission Partners project¹³, as well as steps to integrate wind generation, and mandatory inclusion

⁹ Demand side management encompasses energy conservation as defined by the NRC staff in the FSEIS (FSEIS, p.8-41, fn. 4) plus measures designed to control peak loads without necessarily diminishing energy consumption. As nearly as I can tell, the FSEIS does not consider peak load control measures to be part of the conservation alternative. If true, this results in an underestimation of the potential role of DSM, at least in the combination alternatives.

¹⁰ In January 2009, Governor David Paterson announced the '45 by 15' clean energy goal, which proposes to reduce energy electricity end-use by 15 percent below 2015 forecasted levels, while simultaneously meeting 30 percent of the State's electricity supply needs through renewable resources. Governor David A. Paterson. *Our Time to Lead: State of the State Address*. 2009.
[Http://www.state.ny.us/governor/keydocs/speech_0107091.html](http://www.state.ny.us/governor/keydocs/speech_0107091.html)

¹¹ *NYISO 2010 Summer Outlook, May 2010, p. 10 -11.*

¹² *NYISO 2010 Comprehensive Reliability Plan, December 2010, p. 9.*
http://www.nyiso.com/public/webdocs/committees/mc/meeting_materials/2010-12-15/agenda_04_CRP_2010_FINAL_DRAFT_FOR_MC_REVIEW_120610.pdf.

¹³ The three Linden Variable Frequency Transformers began operating at the Linden, New Jersey cogeneration facility on December 8, 2009 and have the capability to convert

of renewable sector, energy efficiency and demand response programs into New York State's energy and transmission planning processes¹⁴;

9. The actual FSEIS "consideration" of a conservation alternative to relicensing the Indian Point units is nonexistent. The FSEIS states "the NRC staff here considers an energy conservation/energy efficiency alternative" (FSEIS, p. 8-42, lines 18-19) and "impacts from the conservation alternative are generally lower than from other alternatives, including the proposed plan" (FSEIS, p. 8-73, lines 10-11). However, this conservation alternative is never described at all. The FSEIS "analysis" of the impact of the conservation alternative is nothing more than a reference to analyses of conservation done for the relicensing of the Three Mile Island and Shearon Harris units.
10. This sole reliance on data from two other states is inconsistent with the site specific environmental impact statement contemplated by the 1996 revisions to Part 51. Neither Pennsylvania nor North Carolina has conservation programs and goals as aggressive as

up to 315 MW of electricity from the New Jersey power system and feed it into New York City. These transformers help to stabilize NYC's power grid, increase reliability, and reduce the need for new capacity inside the city.

The Hudson Transmission Partners line was approved by the NY PSC on September 8, 2010. This 345 kV line will connect PJM to midtown Manhattan, running between the Bergen Substation in Ridgefield, New Jersey and terminating at Consolidated Edison substations. It is expected initially to provide 320 MW of firm capacity from PJM to New York City, with the potential to provide 660 MW of firm capacity if investments are made to upgrade PJM facilities. In the Order approving this line, the NY PSC stated that "the HTP facility will assist in maintaining system reliability in the event that one or both of the Indian Point plants close". Case 08-T-0034: Application of Hudson Transmission Partners, LLC for a Certificate of Environmental Compatibility and Public Need for a 345 kV Submarine/Underground Electric Transmission Link Between Manhattan and New Jersey, p. 44"

¹⁴ "Energy efficiency gains have become an integral component in forecasting New York State's energy market. NYISO's Comprehensive Reliability Plan is the starting point for the new economic planning process called the Congestion Assessment and Resource Integration Study (CARIS), which evaluates transmission constraints and potential economic solutions to the congestion identified. All three resource types (generation, transmission and demand side management (DSM) programs) are now considered on a comparable basis as potential economic solutions for alleviating the identified congestion." 2009 NYISO Final Report *Comprehensive Reliability Plan: Comprehensive System Planning Process*, May 19, 2009, p. 1.

those of New York.¹⁵ Furthermore, North Carolina is a fully regulated jurisdiction, which creates a very different conservation framework than New York's competitive power market. North Carolina has also not adopted any program comparable to the Regional Greenhouse Gas Initiative.

11. As a result of these differences, the FSEIS provides no meaningful specific assessment of the potential of conservation programs to aid decisionmakers in assessing the role of conservation in replacing one or both Indian Point units. The contrast to the Staff's detailed discussion of site specific cooling tower and coal plant impacts, impacts over which the Nuclear Regulatory Commission also has no jurisdiction, is dramatic, leaving one to wonder why site specific analyses of cooling towers and coal plants are presented while a feasible conservation alternative goes undescribed.
12. Furthermore, the FSEIS does not consider an alternative scenario involving only energy conservation and renewable energy, the sources having the lowest environmental impacts. The FSEIS does acknowledge rapid growth in NYS energy conservation programs (8-42, 43) and renewable generation (8-28, 8-61) and that the choice of generation in New York will be driven increasingly by carbon and other environmental considerations (8-28). However, it fails to consider a non-fossil fuel generation alternative to relicensing. As a result, the FSEIS overstates the environmental impacts of the non-conservation alternative scenarios as well as of the no action alternative. Indeed, the FSEIS even overstates the environmental impacts of renewables by combining them not with conservation or DSM but with operation of fossil fuel generation or with one Indian Point unit with a cooling tower.
13. The FSEIS discussion of a purchased power alternative is seriously flawed in ways that undermine its usefulness to decisionmakers seeking to understand the environmental impacts of this alternative. Much of the problem flows from NRC Staff's reliance on the 2006 National Research Council report as a source of insight into this alternative. This report significantly overestimates future demand and underestimates the resources that will (and have already) come on line. Consequently, estimates of the amount of transmission and the amount of power that must flow over it to replace one or both Indian Point units are too large. The environmental impacts of the purchased power alternative are therefore overstated.
14. Furthermore, the NRC staff discussion of the purchased power alternative declines to estimate the environmental impacts from the power plants that will run to provide the

¹⁵ Pennsylvania ranks 16th on ACEEE's 2010 ranking; North Carolina ranks 24th. New York is fourth. (ACEEE 2010 State Energy Efficiency Scorecard, p. 66).

purchased power (FSEIS, p. 8-43, line 9ff). However, such estimates can be made in environmental impact assessments for transmission projects. Indeed, the New York Public Service Commission recently did just such an assessment in certifying the Hudson Transmission Partners project¹⁶. Had NRC staff used actual transmission projects that either exist or are under construction, it could have provided an analysis of the impacts of alternative generation and might well have found that Indian Point could have been replaced with a purchased power alternative that required much less transmission construction than the two projects that were purportedly considered.

15. The FSEIS contains some other specific errors that undermine its usefulness in assessing environmental impacts. For example,

a) p. 8-27, lines 32-34 – “Because of the area’s dependence on local power generation from natural gas and oil fuels, the area has high electricity rates”. Downstate New York’s high rates are a result in substantial part of high utility taxes, labor costs, clean air requirements and the costs of serving a dense urban territory. Today, when natural gas prices are low, New York utility bills remain high, so natural gas prices cannot explain New York City’s high rates. Thus the FSEIS may well overstate the socio-economic impacts of alternatives involving natural gas.

b) p. 8-39, lines 3-5 – “Based on currently scheduled unit retirements and demand growth projections, the NYISO predicted in 2006 that up to 1600 MW(e) from new projects not yet under construction would be needed by 2010 and a total of up to 3300 MW(e) by 2015 (National Research Council 2006).” Having been made in 2006, these estimates are not the best available data for decisions to be made in 2011. Indeed, the projections in the National Research Council’s 2006 Report have been overtaken by dramatically different results and forecasts that are easily available. The New York ISO reiterated in 2010 its 2009 conclusion that “Looking ahead, the NYISO’s latest assessment of the electric system’s reliability needs concludes that New York has sufficient installed generation to reliably serve load through 2018 . . . (W)e can also reasonably predict that no generation gap will appear for years to come.”¹⁷

¹⁶ Case 08-T-0034: Application of Hudson Transmission Partners, LLC for a Certificate of Environmental Compatibility and Public Need for a 345 kV Submarine/Underground Electric Transmission Link Between Manhattan and New Jersey, pp. 47ff.

¹⁷ *Power Trends 2010: New York’s Emerging Energy Crossroads*, NYISO, April 2010, p. 4. This conclusion assumes no “unplanned” retirement of the Indian Point units. The term “unplanned” is not clear in this context. The shutdown of unit 2 at Three Mile Island because of a sudden accident was genuinely unplanned. There is no reason to think the New York would pursue closure of Indian Point without planning for it.

- c) p. 8-40, lines 26 -29 – The FSEIS states “as of November 10, 2010 the New York Regional Interconnection (“NYRI”) is still seeking the approval of the New York State Public Service Commission (“NYPSC”)” to build a major transmission project, when in fact the project was formally withdrawn from development consideration before the New York State Public Service Commission on April 21, 2009. The NYRI environmental impacts considered by the FSEIS would have been substantially higher than those of transmission projects actually approved in New York.¹⁸
- d) p. 8-42, lines 1-7 – The FSEIS uses data from the 2006 ACEEE state energy efficiency rankings. The 2010 edition was published in October 2010. New York’s overall ranking has improved from seventh to fourth in the intervening five years.
- e) p. 8-43, lines 24-26 – “The NRC staff also notes that loss of tax and PILOT revenue paid to municipalities near IP2 and IP3, as well as lost jobs, may result in SMALL to MODERATE socioeconomic impacts, which will not be offset by conservation.” The NRC staff offers no proof that investments in energy conservation do not increase building values and therefore tax revenues by an amount sufficient to offset losses from IP2 and IP3, especially since municipalities with discontinued nuclear plants often continue to receive substantial payments for serving as interim spent fuel storage sites.
- f) p. 8-49, lines 11-13 – “The NRC staff notes that the current IP2 and IP3 are only used to produce electrical power, and do not supply heat to any offsite users. Combined heat and power, then, fulfills a need not currently met by IP2 and IP3 and is not a direct alternative to IP2 and IP3 license renewal.” This statement is wrong in two respects. The electrical portion of CHP is of course a potential replacement for IP power. The heat may also substitute for any heat that is produced electrically or may free up natural gas as an alternative to electricity for other purposes. This erroneous assessment of combined heat and power results in a serious underassessment of the potential impact of this source in any replacement scenario.
- g) pages 8-61, lines 20-21 - Section 8.3.5.1 (Impacts of Combination Alternative 1) cites the New York State Department of Public Service as stating that 1076 MW of new wind generation is anticipated to be available in the years 2011 through 2015 (together with almost 700 MW of other renewables). However, these numbers are inconsistent with the Renewable Energy Assessment portion of the NYS 2009 Energy Plan. The FSEIS then limits the total share of renewable generation to 600 MW in both of the Combination

¹⁸ See footnote 13, *supra* pages 5-6. For example, the FSEIS discussion of purchased electrical power (Section 8.3.2) omits consideration of two significant transmission developments.

Alternatives analyses. By contrast, the April 2010 NYISO report *Powertrends* (p. 17) is just one among several recent documents noting that 7000 MW of new wind power alone has been proposed for New York, in addition to the almost 1300 MW already connected to the NY grid.

16. These errors plus the shortcomings listed previously overstate the need for the relicensing. There are no errors tending to minimize the need for relicensing. Taken together with the admittedly unnecessary discussion of the impacts of the coal-fired alternative,¹⁹ the combined effect has produced an FSEIS likely to mislead decisionmakers as to the environmental impact and feasibility of the alternatives to relicensing one or both of the Indian Point units.

17. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: February 2, 2011

Peru, Vermont



Peter A. Bradford

¹⁹ The FSEIS bafflingly devotes nearly 10 pages to discussion of the environmental impacts of a coal fired alternative that it has “dismissed from individual consideration”. This discussion dwarfs the space devoted to discussion of more environmentally benign alternatives such as DSM and renewables.

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

ATOMIC SAFETY AND LICENSING BOARD

-----X
In re: Docket Nos. 50-247-LR and 50-286-LR.
License Renewal Application Submitted by ASLBP No. 07-858-03-LR-BD01
Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc. February 3, 2011
-----X

CERTIFICATE OF SERVICE

I hereby certify that on February 3, 2011, copies of the (1) State of New York's Motion for Leave to File Timely Amended Bases to Contention 37 including Certification of Consultation by AAG John J. Sipos pursuant to 10 C.F.R. § 2.323 and ASLB Scheduling Order and (2) New York State's Contention 37 (NYS-37) and attachments thereto, including the declarations of David A. Schlissel, dated January 31, 2011, Peter Bradford, dated February 2, 2011, and Peter Lanzalotta, dated February 1, 2011 in support of NYS-37 were served upon the following persons via U.S. Mail and e-mail at the following addresses:

Lawrence G. McDade, Chair
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mailstop 3 F23
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738
Lawrence.McDade@nrc.gov

Richard E. Wardwell
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mailstop 3 F23
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738
Richard.Wardwell@nrc.gov

Kaye D. Lathrop
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
190 Cedar Lane E.
Ridgway, CO 81432
Kaye.Lathrop@nrc.gov

Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mailstop 3 F23
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

Joshua A. Kirstein, Esq., Law Clerk
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mailstop 3 F23
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738
Josh.Kirstein@nrc.gov

Office of Commission Appellate
Adjudication
U.S. Nuclear Regulatory Commission
Mailstop 16 G4
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738
ocaamail@nrc.gov

Office of the Secretary
Attn: Rulemaking and Adjudications Staff
U.S. Nuclear Regulatory Commission
Mailstop 3 F23
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738
hearingdocket@nrc.gov

Sherwin E. Turk, Esq.
David E. Roth, Esq.
Andrea Z. Jones, Esq.
Beth N. Mizuno, Esq.
Brian G. Harris, Esq.
Office of the General Counsel
U.S. Nuclear Regulatory Commission
Mailstop 15 D21
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738
sherwin.turk@nrc.gov
andrea.jones@nrc.gov
david.roth@nrc.gov
beth.mizuno@nrc.gov
brian.harris@nrc.gov

Kathryn M. Sutton, Esq.
Paul M. Bessette, Esq.
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004
ksutton@morganlewis.com
pbessette@morganlewis.com

Martin J. O'Neill, Esq.
Morgan, Lewis & Bockius LLP
Suite 4000
1000 Louisiana Street
Houston, TX 77002
martin.o'neill@morganlewis.com

Elise N. Zoli, Esq.
Goodwin Procter, LLP
Exchange Place
53 State Street
Boston, MA 02109
ezoli@goodwinprocter.com

William C. Dennis, Esq.
Assistant General Counsel
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601
wdennis@entergy.com

Robert D. Snook, Esq.
Assistant Attorney General
Office of the Attorney General
State of Connecticut
55 Elm Street
P.O. Box 120
Hartford, CT 06141-0120
robert.snook@po.state.ct.us

Melissa-Jean Rotini, Esq.
Assistant County Attorney
Office of the Westchester County Attorney
Michaelian Office Building
148 Martine Avenue, 6th Floor
White Plains, NY 10601
MJR1@westchestergov.com

Daniel E. O'Neill, Mayor
James Seirmarco, M.S.
Village of Buchanan
Municipal Building
236 Tate Avenue
Buchanan, NY 10511-1298
vob@bestweb.net

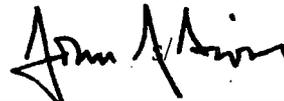
Daniel Riesel, Esq.
Thomas F. Wood, Esq.
Jessica Steinberg, Esq.
Sive, Paget & Riesel, P.C.
460 Park Avenue
New York, NY 10022
driesel@sprlaw.com
jsteinberg@sprlaw.com

Michael J. Delaney, Esq., Director
Energy Regulatory Affairs
NYC Dep't of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373
(718) 595-3982
mdelaney@dep.nyc.gov

Manna Jo Greene, Director
Stephen Filler, Esq.
Hudson River Sloop Clearwater, Inc.
724 Wolcott Avenue
Beacon, NY 12508
Mannajo@clearwater.org
stephenfiller@gmail.com

Ross H. Gould
Member
Hudson River Sloop Clearwater, Inc.
270 Route 308
Rhinebeck, NY 12572
rgouldesq@gmail.com

Phillip Musegaas, Esq.
Deborah Brancato, Esq.
Riverkeeper, Inc.
20 Secor Road
Ossining, NY 10562
phillip@riverkeeper.org
dbrancato@riverkeeper.org



John J. Sipos

Dated at Albany, New York
this 3rd day of February 2011