

UNITED STATES

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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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. December 13, 2011

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PREFILED WRITTEN TESTIMONY OF

DAVID A. SCHLISSEL

REGARDING CONTENTION NYS-37

On behalf of the State of New York ("NYS" or "the State"),
the Office of the Attorney General hereby submits the following
testimony by David A. Schlissel regarding Contention NYS-37.

Q. Please state your full name.

A. My name is David A. Schlissel.

Q. By whom are you employed and what is your position?

A. I am the President of Schlissel Technical Consulting,
Inc. My business address is 45 Horace Road, Belmont, MA 02478.

Q. Please summarize your educational and professional
qualifications.

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1 A. I have served since 1973 as a consultant, expert
2 witness, and attorney on complex management, engineering, and
3 economic issues, primarily in the fields of energy and the
4 environment. I have been retained by regulatory commissions,
5 consumer advocates, publicly-owned utilities, non-utility
6 generators, governmental agencies, and private organizations in
7 more than 35 states to prepare expert analyses on issues related
8 to electric, natural gas, and telephone utilities. I have
9 presented testimony in more than 100 cases before regulatory
10 boards and commissions in 35 states, two federal regulatory
11 agencies, and in state and federal court proceedings.

12 I hold BS and MS degrees in Astronautical Engineering from
13 the Massachusetts Institute of Technology (MIT) and Stanford
14 University, respectively. I also received a Juris Doctor degree
15 from Stanford University School of Law. I also have studied
16 Nuclear Engineering and Project Management at MIT. I am a
17 member of the New York State Bar and the American Nuclear
18 Society. My recent work has involved the evaluation of utility
19 resource planning analyses, the economics of proposed and
20 existing power plants, electric system reliability, and power
21 plant operations and outages. I also have examined the
22 economics of, and the alternatives to, the extension of the

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1 service lives of operating nuclear power plants. A copy of my
2 current CV is attached as Exh. NYS000050.

3 Q. I show you what has been marked as Exhibit NYS000052.
4 Do you recognize that document?

5 A. Yes. It is a copy of my expert report entitled *Report*
6 *on the Availability of Replacement Capacity and Energy for*
7 *Indian Point Units 2 & 3*, dated November 28, 2007 ("2007 Synapse
8 Report")(ML073400205), which was submitted in support of New
9 York State's contention challenging Entergy's Environmental
10 Report (NYS-9, ML073400187). NRC Staff was served a copy of my
11 2007 Synapse Report as attached to NYS-9. The report accurately
12 reflects my analysis and opinions.

13 Q. I show you what has been marked as Exh. NYS000053. Do
14 you recognize that document?

15 A. Yes. It is a copy of my declaration, dated February
16 27, 2009 ("2009 Schlissel Decl.")(ML090690303), in support of
17 New York State's contention, NYS-33 (later consolidated as NYS-
18 9-33) (ML090771328). My declaration commented on and challenged
19 NRC Staff's impact analysis of energy alternatives in the
20 context of the no-action alternative, and provided additional
21 information on New York's energy markets, energy efficiency,
22 energy conservation, renewable energy, facility repowering, and
23 transmission enhancements, relevant to Chapter 8 of the December

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1 22, 2008 Draft Supplemental Environmental Impact Statement
2 ("DSEIS") prepared by NRC in this proceeding. NRC Staff was
3 served a copy of my 2009 Decl. as attached to NYS-33. The
4 declaration accurately reflects my analysis and opinions.

5 Q. I show you what has been marked as Exh. NYS000054. Do
6 you recognize that document?

7 A. Yes. It is a copy of my declaration, dated January
8 31, 2011 ("2011 Schlissel Decl.") (ML110680290), which updated my
9 previous report and declaration with additional information on
10 New York's energy markets, energy efficiency, energy
11 conservation, renewable energy, facility repowering, and
12 transmission enhancements, as relevant to the no-action
13 alternative considered by Staff in Chapter 8 of FSEIS prepared
14 by NRC in this proceeding. I prepared this later assessment
15 with the assistance of staff at Synapse Energy Economics, Inc.,
16 who worked under my direction and supervision. NRC Staff was
17 served a copy of my 2011 Decl. as attached to NYS-37. The
18 declaration accurately reflects my analysis and opinions.

19 Q. What is the purpose of your testimony?

20 A. I have been retained by the New York State Office of
21 the Attorney General to provide expert services to the State of
22 New York concerning the proposed relicensing of the two
23 operating reactors located at the Indian Point Nuclear Power

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1 Station in the Village of Buchanan in Westchester County (Indian
2 Point Unit 2 and Indian Point Unit 3) and NRC's consideration of
3 energy alternatives in the context of the "no-action"
4 alternative (i.e. license denial).

5 The December 3, 2010 Final Supplemental Environmental
6 Impact Statement ("FSEIS") looks at the consequences of the no-
7 action alternative to relicensing by relying, in part, on the
8 findings and conclusions in the discussion of alternatives in
9 the FSEIS at FSEIS § 8.3. See FSEIS § 8.2, p. 8-22. I have
10 also reviewed and analyzed that section of the FSEIS and
11 identified significant deficiencies in its consideration of
12 conservation, renewable energy, purchased electrical power,
13 transmission constraints and the need for power as these relate
14 to the no-action alternative.

15 Q. Have you reviewed materials in preparation for your
16 testimony?

17 A. Yes.

18 Q. What is the source of those materials?

19 A. Many are documents prepared by government agencies,
20 published articles, or documents prepared by Entergy or the
21 utility industry.

22 Q. I show you Exh. NYS000055 through Exh. NYS000096,
23 NYS000111, and NYS000132 through NYS000134. Do you recognize

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1 these documents?

2 A. Yes. These are true and accurate copies of the
3 documents that I referred to used and/or relied upon in
4 preparing my reports, declarations, and this testimony. In some
5 cases, where the document was extremely long and only a small
6 portion is relevant to my testimony, an excerpt of the document
7 is provided. If it is only an excerpt, that is noted on the
8 cover of the Exhibit.

9 Q. How do these documents relate to the work that you do
10 as an expert in forming opinions such as those contained in this
11 testimony?

12 A. These documents represent the type of information that
13 persons within my field of expertise reasonably rely upon in
14 forming opinions of the type offered in this testimony.

15 Q. Please summarize your testimony.

16 A. The FSEIS ignored significant developments that have
17 occurred in New York State's energy markets since the
18 Environmental Report was released in 2007 that make it more
19 likely that New York State can replace Indian Point's generation
20 by 2015 when the units are scheduled to retire, as outlined in
21 my 2007 Synapse Report and subsequent declarations. Instead of
22 confronting this evidence, the FSEIS primarily relied on older
23 studies such as the National Research Council of the National

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1 Academy of the Sciences Committee on Alternatives to the Indian
2 Point Energy Center for Meeting New York Electric Power Needs
3 (June 2006) ("2006 National Research Council"), Exh. NYS000055,
4 and Indian Point Retirement Options, Replacement Generation,
5 Decommissioning/Spent Fuel Issues and Local Economic/Rate
6 Impacts, prepared by Levitan and Associates, Inc. (June 2005)
7 ("2005 Levitan Report"), Exh. NYS000056, both of which pre-dated
8 the 2008 financial crisis, the subsequent prolonged economic
9 recession, fundamental changes in the natural gas sector,
10 significant decreases in wholesale energy prices, and decreased
11 energy demand and load forecasts for New York State. These
12 reduced energy sales and peak loads will delay and defer the
13 need for the energy and capacity from Indian Point Units 2 and 3
14 if their operating licenses were not renewed and will likewise
15 impact the timing and viability of the no-action energy
16 alternative. Cumulatively, these developments create a more
17 favorable environment for retiring Indian Point Units 2 and 3 at
18 the end of their operating licenses in 2013 and 2015
19 respectively, and for replacing their generation capacity with
20 energy efficiency, repowered generation, purchased electrical
21 power, renewable energy, or some combination thereof, at less
22 environmental impact and cost than considered by the FSEIS.
23 Because NRC Staff did not provide an accurate and meaningful

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1 impact analysis for these generation alternatives, and did not
2 accurately account for lowered load forecasts and energy prices,
3 and changes in New York's energy markets since the recession,
4 the FSEIS does not give decisionmakers a real sense of the
5 economic and environmental costs and benefits of the no-action
6 alternative.

7 Q. Please summarize the conclusions of your November 28,
8 2007 Synapse Report *on the Availability of Replacement Capacity*
9 *and Energy for Indian Point Units 2 & 3*, hereafter ("2007
10 Synapse Report").

11 A. My 2007 Synapse Report concluded that the capacity and
12 energy provided by Indian Point Units 2 and 3 can be replaced if
13 the Units are not relicensed. Exh. NYS000052 at pp.10-11. In
14 particular, energy efficiency, renewable resources, the
15 repowering of older generating facilities, transmission
16 upgrades, and new natural gas-fired generating facilities
17 represent viable no-action generation alternatives in the event
18 the units are not relicensed. Substantial reductions in peak
19 demand and energy requirements will be achieved by 2013 under
20 the State's "15x15" Clean Energy Plan. *Id.* at pp. 3-6.
21 Significant amounts of new renewable resources will be available
22 as a result of the state's renewable energy portfolio standard

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1 and other initiatives. *Id.* at pp. 7-12. In addition, thousands
2 of megawatts ("MW") of new generating capacity can be provided
3 by the repowering (i.e. rebuilding) of older generating
4 facilities both along the Hudson River and in the downstate area
5 of the state in New York City and on Long Island. *Id.* at pp.
6 12-14. At the same time, transmission system upgrades also can
7 increase the amounts of power that can be provided to the
8 downstate region of the state. *Id.* at pp. 14-15. Finally, my
9 report concluded there is the potential for the addition of
10 several thousand megawatts of new generating capacity in the
11 Hudson River Valley and in downstate New York. *Id.* at pp. 15-
12 18.

13 Q. Are the conclusions of your 2007 Synapse Report still
14 valid today?

15 A. Yes. Developments in the nearly four years since that
16 Report was submitted have confirmed and further supported these
17 conclusions. Since 2000, New York has added over 7,800 MW of
18 new generation, nearly 1,300 MW of new transmission, and nearly
19 2,400MW of demand response. Eighty percent of the new
20 generation has been added where demand is the greatest in the
21 New York City, Long Island, and Hudson Valley regions. Exh.
22 NYS000057: NYISO 2010 Summer Outlook at pp. 10-11. Substantial
23 transmission capacity has been added, as discussed below, to

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1 bring more power to the downstate region from out of state. The
2 total resource capability in the New York Control Area ("NYCA")
3 for 2010 was 43,000 MW (including demand response) which was
4 greater than the 118% of the 2010 peak load. *Id.* Cumulatively,
5 these developments create a more favorable environment for
6 retiring Indian Point Units 2 and 3 at the end of their
7 operating licenses in 2013 and 2015 respectively, and for
8 replacing their generation capacity with energy efficiency,
9 purchased electrical power, renewable energy, or some
10 combination thereof, at less environmental impact and cost than
11 assumed by the FSEIS.

12 **LOWERED ENERGY AND PEAK DEMAND FORECASTS**

13 Q. In your opinion, does the FSEIS accurately portray New
14 York's energy markets, sources of generation, transmission grid
15 conditions, and alternative sources of generation reasonably
16 available to support a no-action alternative to the relicensing
17 of Indian Point?

18 A. No. As noted earlier, the FSEIS primarily relies on
19 studies such as the National Research Council's 2006 report on
20 the alternatives to Indian Point and Levitan's 2005 report on
21 the retirement of Indian Point and the natural gas sector. Both
22 of these studies pre-dated the 2007 financial crisis, the

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1 subsequent prolonged economic recession, fundamental changes in
2 the natural gas sector, significant decreases in wholesale
3 energy prices, and decreased energy demand and load forecasts.

4 This Board may take judicial notice of the fact that the
5 United States, including New York State, is experiencing a
6 prolonged recession. This recession has led to lower than
7 expected electricity sales and peak loads and reduced
8 projections of future electricity sales and peak loads for an
9 extended period of time and will impact directly the time frame
10 within which the alternatives (e.g., conservation, efficiency,
11 renewables, transmission enhancements, addition of new capacity
12 and the repowering of existing units) would need to be
13 implemented under the no-action alternative. Moreover, New
14 York's projected energy requirements and peak demand have been
15 reduced significantly since my November 2007 Synapse Report was
16 submitted as a result of the ongoing economic recession.

17 As set forth in my 2011 declaration in support of NYS-37,
18 dated January 31, 2011, Exh. NYS000054: 2011 Schlissel Decl. at
19 p.2, the significant developments that have occurred in New York
20 State's energy markets since the publication of those reports,
21 make it more likely that New York State can replace Indian
22 Point's generation by 2015 when the units are scheduled to
23 retire. NRC's Staff's impact analysis furthermore ignores the

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1 fact that New York State experienced a 4.1% drop in power demand
2 due to the recession and weak economic recovery. Exh.

3 NYS000058: NYISO 2010 RNA Report, p.C-3.

4 This trend is forecast to continue over the period of
5 license renewal. The NYISO recently noted that annual peak
6 demand growth is expected to decline from an average annual rate
7 of 0.68% in the past decade, to 0.47% over the years 2010 to
8 2014 and to decline further to 0.27% over the years 2014 through
9 2018. The New York State Energy Plan further projects that
10 increases in conservation programs, coupled with moderated
11 economic growth, will cause lower expected energy use per capita
12 through 2018. Nonetheless, NRC Staff continue to assume the
13 same need for power assumptions that were contained in Entergy's
14 environmental report, and which formed the basis for Staff's
15 impact analysis contained in the Draft Environmental Impact
16 Statement. Compare e.g. DSEIS § 8.3, pp. 8-32, 8-56, 8-65 with
17 FSEIS § 8.3, pp. 8-27, 8-39, 8-59.

18 Q. Are there any other recent developments in New York
19 State's energy markets and infrastructure that are relevant to
20 the timing, choice, and viability of generation alternatives in
21 the no-action alternative, which are not reflected in the FSEIS?

22 A. Yes. The NYISO's 2009 Annual Report, Energizing the

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1 Empire State, Exh. NYS000059 at p.12, summarizes the recent and
2 fundamental changes to New York's energy markets as follows:

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

12 Market prices reached historic lows in 2009 - 50
13 percent lower than in 2008 -- driven by lower
14 electricity use and drops in the prices of natural gas
15 (one of New York's chief generating fuels).

16 Discounting fluctuations in the cost of fuel used to
17 generate electricity, wholesale electricity costs
18 dropped by 18 percent, representing a \$2.2 billion
19 savings on a current annual basis. In the market
20 environment, power producers have invested heavily in
21 new generation and upgrades to existing facilities.
22 Consumers have benefited through prices that are lower
23 than they might have been otherwise.

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1 Environmental quality has been enhanced by the
2 addition of more emission-free, renewable power
3 resources and enhanced power plant efficiencies that
4 have contributed to reduced emission rates. For
5 example, the system-wide heat rate of fossil-fueled
6 power plants improved by 21 percent. Power plant
7 emission rates, measured in tons per year for sulfur
8 dioxide, nitrogen oxides, and carbon dioxide, have
9 dropped by double digits since 2000. NYISO markets
10 continued to evolve in 2009 as innovations made New
11 York the first to integrate wind in economic dispatch
12 and adopt pioneering design to enable new energy
13 storage technologies to provide regulation-only
14 service.

15 Exh. NYS000059:2009 NYISO Energizing Empire State at p.12

16 Although New York's energy markets have changed
17 considerably since the publication of the licensee's
18 Environmental Report, and Draft SEIS, NRC Staff's core
19 assumptions regarding New York State's technical and economic
20 ability to retire the Indian Point units has remained virtually
21 unchanged.

22 Q. How do NRC Staff's assumptions regarding the project

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1 area's demand for power, impact Staff's analysis of the
2 generation alternatives that would be available if the Indian
3 Point units were not relicensed?

4 A. Staff's assumptions regarding the project area's demand
5 for power skews the analysis in favor of relicensing by
6 artificially narrowing generation alternatives considered by
7 Staff. For example, NRC Staff reasons that "given that the
8 demand for electricity is increasing and, in the near term,
9 planned new sources within the NYCA are just keeping pace with
10 retirements, the NRC staff does not consider delays in the
11 retirements of existing plants to be a feasible alternative to
12 compensate for the loss of power from IP2 and IP3." FSEIS
13 §8.3.4.11.

14 In fact, as set forth in my prior declarations, Exh.
15 NYS000053: 2009 Schlissel Decl. at ¶¶ 5,6,7 and Exh. NYS000054:
16 2011 Schlissel Decl. at pp. 2-6, the projected future demands
17 for electricity in New York State, and in the zones specifically
18 supplied by Indian Point (New York Control Area ("NYCA")
19 capacity zones H,I,J and K), have sharply decreased as a result
20 of the economic downturn, the State's energy efficiency
21 programs, and strong growth in demand response programs. For
22 example, significant new demand response programs, providing

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1 incentives for energy conservation during peak periods, were
2 created in New York in recent years and have flourished. They
3 now total over 2,300 megawatts, an amount equal to four medium
4 sized power plants. Exh. NYS000059: NYISO 2009 Annual Report,
5 p. 12. Despite this growth, the FSEIS's impact analysis of
6 conservation does not consider New York's demand response
7 programs.

8 In addition, the short and long-term outlook for supplies
9 and prices of natural gas in electricity generation continue to
10 be favorable, supporting new natural gas capacity in New York
11 State as well as the repowering of existing generating capacity
12 with more efficient natural gas-fired technology. Exh.
13 NYS000054: 2011 Schlissel Decl. pp 15-17. For this reason, new
14 generating units fueled by natural gas as well as the repowering
15 of existing units would be a viable alternative to a portion of
16 the capacity and energy generation provided by the two Indian
17 Point Units. In fact, new natural gas-fired capacity is under-
18 construction or is being proposed to come on-line in New York
19 State in the near to mid-term and repowering projects also are
20 being undertaken that are not reflected in the FSEIS. Thus,
21 Staff's conclusion that the no-action alternative has the
22 smallest effect, but "would necessitate additional actions to

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1 replace generation capacity (whether with newly constructed
2 power plants or purchased power) and/or to institute
3 conservation" FSEIS § 9.2., p. 9-7, is not supported by a
4 critical analysis of how much additional capacity and/or
5 conservation would be necessary in a no-action alternative,
6 given current market conditions.

7 Furthermore, Staff's selection of reasonable examples of
8 combinations [of replacement capacity sources] does not "address
9 comments received, on-going State level programs and resource
10 availability." FSEIS § 8.3. p. 8-28. Contrary to this
11 assertion, the FSEIS ignored my reports and declarations which
12 suggest that the Indian Point units can be retired at the end of
13 their operating licenses at less cost and with less
14 environmental impact, than assumed in the ER and DSEIS.

15 **ENERGY EFFICIENCY**

16 Q. What did the 2007 Synapse Report conclude regarding
17 energy efficiency as a potential replacement for the power
18 supplied by Indian Point, and what was the basis for that
19 conclusion?

20 A. My 2007 Synapse Report found that substantial
21 reductions in peak demand and energy requirements will be
22 achieved both in New York State as a whole and in Downstate New

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1 York by 2013 under the state's "15 by 15" Clean Energy Plan and
2 that these reductions would more than offset the expected annual
3 generation and peak generation output from Indian Point. Exh.
4 NYS000052 at pp.3-6.

5 For example, my 2007 Synapse Report concluded that the "15
6 by 15" plan would reduce statewide energy consumption by
7 approximately 27,000 gigawatt hours ("GWh") by 2015. *Id.* at
8 p.3. This would be approximately 11,600 GWh more than the
9 expected annual generation from both Indian Point Units after
10 2013.

11 The 2007 Synapse Report also calculated that by 2013 the
12 Statewide cumulative summer peak capacity savings from the "15
13 by 15" plan would be 5,950 to 6,311 MW, or approximately triple
14 the cumulative capacity of both Indian Point Units. *Id.* at p.5.
15 The Downstate New York regional summer peak capacity savings
16 would be approximately 2,586 MW in 2013 and 3,321 MW by 2015.
17 *Id.* at p. 6. Consequently, the 15 percent energy reduction (and
18 associated reduction in peak demands) under the "15 by 15" Clean
19 Energy Plan would more than offset both the energy and the
20 capacity from both Indian Point units and would eliminate any
21 need to extend the licenses of the two units in 2013 and 2016.

22 Moreover, the 15 percent reduction in statewide energy
23 consumption anticipated under the "15 by 15" plan would not

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1 represent all of the economical potential energy efficiency that
2 has been identified in New York State. For example, a
3 presentation by Philip Mosenthal of Optimal Energy, Inc has
4 projected that there is 61,506 GWh of economical potential
5 energy efficiency in New York State. Exh. NYS000060: 2007
6 Optimal Slide No. 9.

7 Q. Based on the latest energy efficiency studies for New
8 York State, and in particular, the energy efficiency gains
9 expected in NYCA capacity zones H, I, J and K, and the summer
10 energy peak demand anticipated in those same zones, do you still
11 conclude that a 15% energy reduction in 2015 statewide would
12 more than offset the need to extend the license of the Two
13 Indian Point units in 2013 and 2015?

14 A. Yes. Subsequent to the submittal of my November 2007
15 Synapse Report, Governor Spitzer's goal of a 15 percent decrease
16 in energy demand from forecasted levels by the year 2015 (more
17 than 27,000 GWh) was formalized by the New York PSC's Order
18 Establishing Energy Efficiency Portfolio Standard and Approving
19 Programs, adopted on June 23, 2008. Exh. NYS000061: June 2008
20 NYS PSC Order. The EEPS Order gives funding to specific energy
21 efficiency programs, and energy savings coming directly from
22 those programs are estimated to be approximately 7,639 GWh in
23 2015, Exh. NYS000062: 2009 NYS Energy Efficiency Assessment, p.

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1 29, which is slightly less than half of what is needed to
2 replace the Indian Point generating Units.

3 Moreover, according to a draft energy efficiency potential
4 study done in 2008 by Optimal Energy, which updated an earlier
5 2003 energy efficiency potential study, New York State's
6 achievable energy efficiency potential through 2015 is 26,000
7 GWh. Exh. NYS000063: 2008 Optimal Report, p.6. Of this 26,000
8 GWh of achievable potential, Optimal Energy concludes that 38%
9 (9,824 GWh) of the savings can be realized in New York City, 14%
10 (3,603 GWh) in Long Island, and the remaining 48% (12,573 GWh)
11 in the rest of New York State. *Id.*

12 This 26,000 GWh represents a 14% decrease from the 2015
13 forecast of electricity demand, which is slightly short of the
14 "15 by 15" goal. This estimated efficiency potential only takes
15 into account policies that are currently in effect, however.
16 Optimal Energy also estimates that policies related to improved
17 building codes and appliance standards which have passed but not
18 yet taken effect, or for which implementation is highly likely
19 in the next ten years, can provide additional electricity
20 savings of 11,000 GWh, or an extra 5.7% from forecasted demand.
21 *Id.* at p. 5. If the same percentages apply to the regional
22 savings values stated above, New York City's (Zone J) total
23 potential would increase to just over 14,000 GWh and Long

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1 Island's (Zone K) total potential would increase to more than
2 5,000 GWh. Along with the additional potential in Zones H and I,
3 if achieved, energy efficiency reductions in New York City and
4 Long Island would more than offset the energy generated each
5 year at Indian Point Units 2 and 3. Exh. NYS000054: 2011
6 Schlissel Decl. at p.8.

7 Nevertheless, as quantified by Optimal Energy, there is
8 sufficient energy efficiency potential in the state to meet the
9 state's goal of "15 by 15." New York has a long history of
10 investments in energy savings, first through the implementation
11 of the Systems Benefit Charge program ("SBC"), and now through
12 the EEPS. New York's efforts at energy efficiency to date
13 should indicate that the state can be expected to achieve full
14 implementation of the 2015 goal. Annual energy efficiency
15 savings to date, achieved largely from the SBC program (that was
16 initiated in 1998), already have reached more than 4,000 GWh per
17 year. *Id.* Savings from EEPS funded programs are expected to be
18 an additional 7,639 GWh in 2015. *Id.* It is reasonable to
19 expect that some of these savings have and will occur in areas
20 of New York that are served by the Indian Point Units. Long
21 Island Power Authority ("LIPA") and New York Power
22 Authority("NYPA") can be expected to contribute another 3,000
23 GWh in energy savings by the year 2015 - most, if not all of

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1 which will be achieved in those areas of the state that
2 currently rely on Indian Point. *Id.* Together, all of these
3 energy efficiency savings can offset a significant portion, if
4 not all of, the electric generation that would be generated by
5 Indian Point Units 2 and 3 if the units were denied license
6 renewal.

7 In addition, NYISO Demand Response programs, which enlist
8 electricity customers to conserve power in response to system
9 conditions, are effectively reducing the need for additional
10 capacity. One of the NYISO Demand Response programs, Special
11 Case Resources ("SCR"), has registered 2,084 MW as of 2009. Exh.
12 NYS000064: 2009-2018 NYISO Reliability Summary, pp. 5 - 6.

13 Q. Did the FSEIS provide a critical analysis of your
14 expert report regarding the economic and technical energy
15 efficiency potential identified for zones H, I, J and K as a
16 source of replacement generation for the Indian Point units?

17 A. No, it did not. There is no mention of any of the
18 expert reports or declarations I prepared on generation
19 alternatives to relicensing Indian Point in support of New York
20 State's contentions and comments in this proceeding. The FSEIS
21 provides no critical analysis of my study of the economic and
22 technical energy efficiency potential available in the event the
23 Indian Point Units are not relicensed.

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1 Q. Have you identified any errors in NRC Staff's impact
2 analysis of energy conservation provided in the December 2010
3 Final Environmental Impact Statement ("FSEIS") for Indian Point?

4 A. Yes. The NRC's analysis of energy efficiency as an
5 alternative to relicensing Indian Point is: (a) not site
6 specific; (b) methodologically unclear; (c) incomplete; and (d)
7 fails to provide a factual basis for its conclusions for the
8 following reasons:

9 (a) NRC staff generically adopt the findings of its Shearon
10 Harris assessment(NUREG-1437, Supplement 33 dated August 2008),
11 Exh. NYS000065, which considered utility based conservation as
12 an alternative to license renewal for a 900 MW pressurized water
13 nuclear reactor, located 20 miles outside of Raleigh, North
14 Carolina in a regulated electricity market. The Shearon Harris
15 facility shares little, if any, similarity to the substantially
16 larger, deregulated, Indian Point facilities. The analysis
17 provided in Shearon Harris is based primarily on data from a
18 single 2006 study of North Carolina's energy markets, contains
19 no analysis of New York's energy markets, and provides no
20 analysis of utility based conservation programs in New York;

21 (b) NRC staff also adopt the findings of its Three Mile
22 Island ("TMI") Unit 1 assessment(NUREG-1437, Supplement 37 dated

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1 June 2009), Exh. NYS000066, which considered Pennsylvania's
2 Alternative Energy Portfolio Standard ("AEPS") as an alternative
3 to license renewal for a 800 MW pressured water reactor. This
4 analysis relies on a single study, conducted in 2004 of
5 Pennsylvania's energy efficiency potential (Pletka). The TMI
6 analysis makes no reference to New York State, Indian Point, or
7 the energy efficiency potential relevant or forecasted to be
8 available in the zones currently receiving power from Indian
9 Point.

10 (c) The NRC Indian Point FSEIS is incomplete because it
11 provides no factual support that the analysis contained in
12 NUREG-1437 of North Carolina's regulated program is relevant or
13 substantially similar, to any such program in New York State's
14 deregulated energy market. Likewise, the NRC Indian Point FSEIS
15 analysis of energy conservation/efficiency is incomplete because
16 it provides no factual support that the energy efficiency
17 programs put in place by the State of Pennsylvania in 2004 are
18 relevant or applicable to the energy efficiency programs already
19 in place, or likely to be in place, and available to replace the
20 power generated by Indian Point.

21 (d) NRC Staff's conclusion that its proposed energy
22 conservation/ energy efficiency "alternative" will result in

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1 "SMALL to MODERATE socioeconomic impacts, which will not be
2 offset by conservation", FSEIS § 8.3.3., p. 8-43, lacks factual
3 support and/or further analysis. For example, no attempt is
4 made to assess the potential for job creation and/or economic
5 development presented by NRC's energy efficiency alternative,
6 which may vary substantially depending on the specific nature of
7 the efficiency / conservation programs considered.

8 Because the NRC Indian Point FSEIS does not define what
9 energy efficiency and/or energy conservation programs it
10 anticipates will be available to replace the power generated by
11 Indian Point, it is impossible to determine site specific
12 impacts for, the reasonableness of, or the viability of NRC's
13 energy efficiency/conservation no-action alternative. Here
14 again, NRC's conclusion that license denial would require
15 "additional actions . . . to institute conservation programs,"
16 FSEIS § 9.2. p. 9-7, is unsupported by a critical analysis of
17 the amount of **additional** investment in conservation and/or
18 energy efficiency that would be necessary, given New York
19 State's already substantial progress in this area, should the
20 Indian Point units be retired at the end of their current
21 operating licenses.

22 **RENEWABLE GENERATION**

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1 Q. What did your 2007 Synapse Report conclude with
2 respect to renewable energy sources as a potential source of
3 replacement power for the Indian Point units?

4 A. My 2007 Synapse Report found that significant amounts
5 of new renewable resources will be available as a result of New
6 York State's renewable energy portfolio standard and other
7 initiatives and that these renewable resources can replace a
8 significant amount of the energy and capacity from Indian Point.
9 Exh. NYS000052 at pp. 7-12.

10 Q. Do you think this conclusion is still valid today?

11 A. Yes. My 2009 and 2011 declarations provided
12 additional information that shows that New York State can
13 replace a significant amount of the capacity and energy supplied
14 by Indian Point with renewable generation if the units are not
15 relicensed. Exh. NYS000053 2009 Schlissel Decl. at ¶¶ 4, 8, and
16 Exh. NYS000054 2011 Schlissel Decl. pp. 9-12.

17 For example, in his 2009 State of the State address, former
18 Governor Paterson proposed to increase the state's goal for
19 energy efficiency and renewable resources by announcing New
20 York's "45 by 15" clean energy goal. Exh. NYS000067: 2009
21 Paterson Address. This goal challenged the State to meet 45
22 percent of its electricity needs by 2015 through increased

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1 energy efficiency and renewable energy and was subsequently
2 formally adopted by the New York State PSC in 2010. The State's
3 current energy goal is to reduce electricity end-use by 15
4 percent, primarily through the expansion of energy efficiency
5 activities, while simultaneously meeting 30 percent of the
6 State's electricity supply needs through renewable resources.

7 New York State is already well on its way towards achieving
8 these goals, as shown in Table 1 of my 2011 declaration, Exh.
9 NYS000054: 2011 Schlissel Decl. p.10, which shows the amounts of
10 electricity generated from in-state renewable resources in each
11 year between 2001 and 2009 increasing from 16% to over 23% in
12 that time period. These totals only include in-state resources
13 and do not include imported renewable energy, out-of-state
14 renewable energy attributes (Renewable Energy Certificates
15 ("RECs") acquired through green purchasing in the voluntary
16 market), or customer-sited renewable generation, all of which
17 contribute toward meeting the State's RPS requirements.

18 Furthermore, the 2009 New York State Energy Plan Renewable
19 Energy Assessment presents evidence that the technical/practical
20 potential for renewable resources is forecast at more than
21 141,000 GWh by the year 2018, compared to the approximately
22 15,000 GWh generated by Indian Point. Exh. NYS000068: 2009 NYS

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1 REA, p.7. As set forth in greater detail in my 2011
2 declaration, there is 7,935 MW (rated summer capacity) of
3 renewable capacity awaiting approval for interconnection with
4 the grid between 2010 and 2017. Exh. NYS000054 at p. 12. The
5 majority of the proposed resources are for wind generation with
6 over 2,000 MW of wind requesting to be online in 2011, and
7 another 1,500 MW of wind from the Lake Erie and LIPA/Con Edison
8 offshore wind projects requesting to come online in 2015. *Id.*
9 Additional wind projects totaling more than 500 MW have also
10 requested to be interconnected in 2016 and 2017. *Id.*
11 Historically, a large portion of the requests that enter the
12 Interconnection Queue are not actually constructed. However,
13 even if only 20% of the proposed projects come online, there
14 would still be a 1,587 MW increase in wind generating units by
15 2017, in addition to the substantial amount of wind generation
16 already in place in New York State.

17 Q. Did the FSEIS provide a critical analysis of your
18 expert report regarding the economic and technical potential of
19 renewable generation as a source of no-action replacement
20 generation for the Indian Point units?

21 A. No, it did not. There is no mention of any of the
22 expert reports or declarations I prepared on renewable

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1 generation in support of New York State's contentions and
2 comments in this proceeding. The FSEIS provides no critical
3 analysis of my study of the economic and technical potential of
4 New York State's renewable sector to provide replacement
5 capacity in the event the Indian Point Units are not relicensed.

6 Moreover, Staff's analysis of New York's renewable sector
7 is neither consistent nor thorough. For example, Staff relies
8 on the Department of Energy / Energy Information
9 Administration's (DOE/EIA) "Annual Energy Outlook 2010 with
10 Projections to 2035" Department of Energy (DOE/EIA 2010) report
11 to "help select reasonable alternatives to license renewal,"
12 FSEIS § 8.3. pp. 8-28, l. 37. NRC Staff adopts DOE/EIA's
13 conclusion that coal generation is forecast to decline, but
14 ignores the DOE/EIA's conclusion that renewable generation is
15 forecast to sharply increase over the time period relevant to
16 license renewal.

17 Q. Do you agree with the following statements from the
18 Final Environmental Impact Statement (FSEIS):

19 *Wind power by itself is not suitable for large base-*
20 *load capacity. As discussed in Section 8.3.1 of the*
21 *GEIS [NRC 1996], wind has a high degree of*
22 *intermittency and average annual capacity factors for*

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1 *wind plants are relatively low (less than 30%). Wind*
2 *power in conjunction with energy storage mechanisms,*
3 *might serve as a means of providing base-load power.*
4 *However, current energy storage technologies are too*
5 *expensive for wind power to serve as a large base-load*
6 *generator. FSEIS §8.3.4.1., p. 8-44.*

7 A. No. Many of the tired old concerns and arguments
8 about the possible impacts of large wind generation on the
9 transmission grid have been shown to be exaggerated or unfounded
10 by a growing body of research studies and empirical
11 understanding gained from the installation and operation of
12 large amounts of wind generation in the United States. Instead,
13 it is increasingly accepted that when combined with other energy
14 resources, wind can produce energy in patterns comparable to a
15 baseload generation facility. At the same time, the effects of
16 short term wind variability can be mitigated by a building
17 larger number of wind turbines and by siting the wind turbines
18 in different geographic locations. As a result, there is no
19 evidence that any replacement capacity for Indian Point would
20 need to be a fully dispatchable facility and Staff did not offer
21 any response to my evidence to the contrary.

22 Indeed, Staff's rejection of wind as a replacement for

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1 capacity and energy from Indian Point also is contradicted by
2 the fact that the electricity grid in New York State already has
3 a large number of fully dispatchable facilities. In addition,
4 in its 2009 Annual Report, NYISO states that it has implemented
5 a state-of-the-art wind forecasting system, and "became the
6 first grid operator to integrate wind-generated electricity into
7 economic dispatch." Exh. NYS000059 2009: NYISO Energizing
8 Annual Report, p. 6. It is planning for more wind energy by
9 considering new operating procedures, market rules, storage
10 technologies, and transmission reinforcements that would
11 increase "the amount of wind that could be reliably integrated
12 into the bulk power system and delivered to the load." Exh.
13 NYS000069: 2008 Integration of Wind, p. 5-1. In fact, the most
14 recent NYISO wind study concluded that "the addition of up to
15 8,000 MW of wind generation to the New York power system will
16 have no adverse reliability impact (and) would supply in excess
17 of 10% of the system's energy requirement." Exh. NYS000070:
18 2010 NYISO Report Growing Wind Study, p. iv.

19 Furthermore, the FSEIS fails to acknowledge that energy
20 storage projects also could play a significant role in the
21 development of other renewable resources, as they would provide
22 a way to help manage the intermittency of other types of

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1 resources. One example of this type of resource that has
2 already begun construction is the Beacon Power flywheel energy
3 storage plant in Stephentown, New York. A flywheel energy
4 storage plant works by accelerating a rotor (flywheel) to a very
5 high speed and maintaining the energy in the system as
6 rotational energy. This project has a capacity of 20 MW and is
7 expected to be the first full-scale flywheel system in the US
8 that provides grid regulation services after it is completed in
9 2012. Exh. NYS000059: NYISO 2009 Energizing Annual Report,
10 p.6.

11 Contrary to substantial evidence in the record, the FSEIS
12 erroneously concludes, without any critical analysis and with
13 only bare assertions regarding NRC Staff's beliefs, that there
14 are too many obstacles to implementing sufficient wind power or
15 other renewable energy sources such that these sources could not
16 provide anything more than 600 MW to replace either or both IP
17 units. See FSEIS § 8.3.5. 8-59 to 8-61. This Staff belief is
18 obviously arbitrary since the FSEIS, itself, contradicts it by
19 forecasting a total amount of 1,765MW combined renewable
20 generation to be online and available by 2015. FSEIS § 8.3.5.
21 8-61.

22 In my opinion, NRC Staff's decision to limit the amount of

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1 wind generation considered to a maximum of 600 MW is
2 unsupported, relies on obsolete arguments against wind power,
3 and disregards the conclusions of my 2007 Synapse Report and my
4 2011 Declaration that wind power can reduce the need for the
5 capacity from the Indian Point units and can provide low cost
6 energy to New Yorkers. Furthermore, I note that the FSEIS
7 emphasizes the negative environmental impacts of wind, while
8 discounting its positive environmental benefits.

9 Q. Please identify the deficiencies, if any, in the
10 FSEIS's analysis of solar energy's potential as a source of
11 replacement power for Indian Point Units 2 and 3 in combination
12 with other generation sources if the units were retired in 2015?

13 A. The FSEIS cites the 2006 National Research Council
14 study estimate that solar photovoltaics ("PV") can generate 325
15 MW in the New York City Area ("NYCA") by 2015 if PV costs
16 decline and there is a long-term commitment to expand New York's
17 PV program. FSEIS § 8.3.4.1. However, NRC Staff dismissed
18 solar PV from consideration as an alternative to license
19 renewal, with no analysis of my November 2007 report on the
20 availability of replacement capacity, which suggested continued
21 growth in New York's solar sector.

22 Q. Please identify the deficiencies, if any, in the

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1 FSEIS's analysis of combined heat and power ("CHP")'s potential
2 as a source of replacement power for Indian Point Units 2 and 3
3 in combination with other generation sources if the units were
4 retired in 2015?

5 A. NRC Staff's sole rationale for dismissing CHP from
6 consideration as a source of replacement capacity, is to assert
7 "that the current IP2 and IP3 are only used to produce
8 electrical power, and do not supply heat to any offsite users.
9 Combined heat and power, then, fulfills a need not currently met
10 by IP2 and IP3, and is not a direct alternative to IP2 and IP3
11 license renewal." FSEIS § 8.3, p. 8-49, lines 11-13. This
12 statement is wrong in two respects. First, the electrical
13 portion of CHP is of course a potential replacement for IP
14 power. Secondly, CHP heat may substitute for heat that is
15 produced electrically or may free up natural gas as an
16 alternative to electricity for other purposes.

17 **RENEWABLE ENERGY & ENERGY EFFICIENCY AS A COMBINED ALTERNATIVE**

18 Q. What did the 2007 Synapse Report conclude with respect
19 to the technical and economic potential of energy efficiency and
20 renewable energy as a combined source of no-action replacement
21 power for Indian Point Units 2 and 3?

22 A. My 2007 Synapse Report concluded that energy

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1 efficiency and renewable resources together have sufficient
2 technical and economic potential to replace the approximately
3 2000 MW of capacity from Indian Point Units 2 and 3. Exh.
4 NYS000052 at p. 10.

5 Q. In your opinion, was it reasonable for NRC Staff to
6 dismiss renewable generation and energy efficiency as a combined
7 no-action alternative to replace the power from Indian Point
8 Units 2 and 3 if the units were retired in 2015?

9 A. No, in my opinion, it was not reasonable. NRC Staff's
10 decision to exclude renewable generation and energy efficiency
11 as a combined source of replacement power for Indian Point Units
12 2 and 3 is unsupported by current studies on New York's
13 renewable generation sector, energy efficiency, conservation and
14 demand side management programs, and does not provide a critical
15 analysis of my 2007 Synapse Report and subsequent declarations
16 which concluded that there is sufficient technical potential for
17 renewable energy and energy efficiency in combination to
18 displace the need for Indian Point Units 2 and 3 by 2015. Exh.
19 NYS000052: 2007 Synapse Report at p. 10.

20 **PURCHASED ELECTRICAL POWER & TRANSMISSION ENHANCEMENTS**

21 Q. What did your 2007 Synapse Report conclude with
22 respect to transmission system enhancements and upgrades as a

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1 potential source of replacement power for Indian Point Units 2
2 and 3 if the units were retired in 2015?

3 A. My 2007 Synapse Report found that transmission system
4 enhancements could be part of the portfolio of options for
5 replacing the capacity and energy from Indian Point Units 2 and
6 3. Such enhancements and upgrades could increase the capability
7 to import power into the Hudson River Valley and Downstate New
8 York from New England, Upstate New York, or the PJM system to
9 the south. Exh. NYS000052: 2007 Synapse Report at pp. 14-15.

10 Q. What developments, if any, have occurred in the status
11 of the downstate electricity grid since 2007 that are relevant
12 to the retirement of Indian Point that were not included in the
13 FSEIS's consideration of no-action alternative?

14 A. Since I submitted my November 2007 Synapse Report,
15 developers in New York have been actively licensing and building
16 upgrades and enhancements to the transmission system. One
17 project that was referenced in the November 2007 Synapse Report
18 as being "proposed" has actually come online. The three Linden
19 Variable Frequency Transformers began operating at the Linden,
20 New Jersey cogeneration facility on December 8, 2009 and have
21 the capability to feed up to 315 MW of electricity into New York
22 City from the New Jersey power system. These transformers are

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1 helping to stabilize NYC's power grid, increase reliability, and
2 reduce the need for new capacity inside the city. Exh.
3 NYS000071: 2009 Smart Press Release.

4 A number of other transmission projects also have been
5 approved or proposed since November 2007 that are not reflected
6 in the FSEIS's analysis of the no-action alternative. For
7 example, the Hudson Transmission Partners line ("HTP"),
8 mentioned as "proposed" in the November 2007 Synapse Report, was
9 approved by the NY PSC on September 8, 2010. Exh. NYS000072:
10 2010 NYSPSC Order Press Release. This 345 kV line will connect
11 PJM to midtown Manhattan, running between the Bergen Substation
12 in Ridgefield, New Jersey and terminating at Consolidated Edison
13 substations. It is expected to initially provide 320 MW of firm
14 capacity from PJM to New York City, with the potential to
15 provide 660 MW of firm capacity if necessary investments are
16 made to upgrade PJM facilities. In the Order approving this
17 line, the NY PSC stated that the HTP facility "will assist in
18 maintaining system reliability in the event that one or both of
19 the Indian Point plants close." Exh. NYS000111: Sept. 15, 2010
20 NYS PSC Order at p.44. The FSEIS did not consider the HTP line
21 in its impact analysis of the no-action alternative at all.

22 Other new transmission proposals to import power into the

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1 New York City zone that have been proposed or approved since my
2 November 2007 Synapse Report was completed include the Cross
3 Hudson Cable and the Champlain-Hudson Power Express ("CHPE")
4 line. The Cross Hudson Cable is a 345 kV alternating current
5 line, and will run for 8 miles between the Bergen Switchyard in
6 Ridgefield, New Jersey, owned by PSEG, and the West 49th Street
7 substation in Manhattan, owned by Consolidated Edison. The most
8 recent project updates for the Cross Hudson Cable include a
9 transmission import capability of 700 MW and a projected online
10 date of summer 2013. Exh. NYS000073: 2010 Cavallo Press
11 Release. The CHPE line would connect the US-Canadian
12 border with a converter station that will be built in Yonkers,
13 New York and would supply 1,000 MW of new wind and hydro
14 electricity now being targeted for development in Canada into
15 the New York City zone. Modeling performed by London Economics
16 International, and submitted to the NY PSC, assumes in the
17 Baseline scenario that the CHPE line would operate at a 90%
18 capacity factor and deliver 7,640 GWh of renewable generation
19 into New York annually. The CHPE line is expected to be
20 operational by 2015. Exh. NYS000074: 2010 LEI Study, p.14. The
21 electricity brought into New York from the CHPE line alone would
22 represent almost half of the generation that can be expected
23 from the Indian Point Units in the future.

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1 Combined, these new transmission projects would have the
2 capability to import more than two thousand MW of capacity into
3 the New York City zone. When combined with electric generation
4 imported into downstate New York over other transmission
5 projects, a significant amount, if not all, of the capacity and
6 energy from Indian Point Units 2 and 3 could be replaced if the
7 units were denied license renewal.

8 Q. Did the FSEIS provide a critical analysis of your
9 expert report regarding the potential of imported electrical
10 power and transmission line enhancements to replace the
11 generation capacity of the Indian Point units in the event the
12 units are not relicensed?

13 A. No, it did not. There is no mention of any of the
14 expert reports or declarations I prepared on generation and
15 energy issues in support of New York State's contentions and
16 comments in this proceeding. The FSEIS provides no critical
17 analysis of my assessment of New York State's transmission grid
18 and its current and future ability to support additional
19 purchased electrical power as replacement capacity in the event
20 the Indian Point Units are relicensed.

21 Q. Do you believe that the FSEIS provides an accurate
22 environmental impact analysis of purchased electrical power as a

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1 source of replacement capacity if the Indian Point units are not
2 relicensed?

3 A. No. In fact the FSEIS does not provide an
4 environmental impact analysis for purchased electrical power.
5 The FSEIS only provides a general discussion of the potential
6 environmental impacts of two large-scale "illustrative projects"
7 (New York Regional Interconnect ("NYRI") and CHPE. A rational
8 analysis of the potential for purchased electrical power
9 alternative to license renewal should account for the recently
10 approved HTP line and Linden transmission projects that I
11 identified in my 2007 Synapse Report, Exh. NYS000052: 2007
12 Synapse Report at p. 14, as both of these projects increase
13 transmission capacity into the zones currently supplied by
14 Indian Point.

15 In addition, the NRC's analysis of purchased electrical
16 power in the FSEIS relied on inaccurate information because it
17 states that "as of November 10, 2010 the New York Regional
18 Interconnection is still seeking the approval of the New York
19 State Public Service Commission (NYPSC)" to build a major
20 transmission project. FSEIS § 8.3.2., p. 8-40. In fact, on
21 April 21, 2009 the New York State Public Service Commission
22 recognized and approved NYRI's application to formally withdraw

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1 its petition for a certificate under Article VII of the Public
2 Service Law. The PSC granted NYRI's withdrawal request, with
3 prejudice, and dismissed the application. Exh. NYS000075: April
4 2009 NYS PSC Correspondence. Furthermore, NRC Staff declined to
5 evaluate the impacts of NYRI and CHPEI "in the absence of any
6 specific route information." FSEIS § 8.3.2. p. 8-41. In fact,
7 the proposed route for NYRI was publicly available at the NYSPSC
8 prior to NYRI's withdrawal from consideration, and specific
9 route maps for CHPEI were available on the Department of
10 Energy's website for the project prior to the issuance of the
11 FSEIS and public scoping for the project's EIS was in process
12 throughout 2010. Exh. NYS000076: DOE CHPEI.

13 **NEW OR REPOWERED GENERATING FACILITIES**

14 Q. Do new natural gas-fired generating facilities
15 represent a potential source of replacement power for Indian
16 Point Units 2 and 3 if the units were retired?

17 A. Yes. New natural gas-fired capacity is under-
18 construction or is being proposed to come online in New York
19 State in near to mid-term. For example, the NYISO 2010 RNA
20 includes two new generating plants in Zone J (New York City) in
21 2011 that were not included in previous Reliability Needs
22 Assessments - the 513 MW Bayonne Energy Plant and the 550 MW

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1 Astoria Energy II plant. Exh. NYS000059: NYISO 2010 RNA, pp. i,
2 17. The Astoria Energy II plant, a new 550 MW unit in Queens,
3 began operations in early July 2011. Of the approved or
4 proposed projects that I listed in my November 2007 Synapse
5 Report, the Bowline Unit 3 and Arthur Kill projects have been
6 withdrawn. The Empire Generating Project is listed as an
7 existing generator in the NYISO's 2011 Load and Capacity Report
8 with an in service date of September 2010. The Spagnoli Road
9 Energy Center is listed in the Interconnection Queue with an
10 online date of 2013. *Id.* at p. 4. Because the FSEIS did not
11 provide a critical analysis of the amount of new capacity that
12 is already scheduled to be on line prior to the retirement of
13 the first Indian Point unit in 2013, it may well overestimate
14 the economic and environmental costs of additional replacement
15 capacity in the event the Indian Point units are not relicensed.

16 Q. Does the repowering of older existing generating
17 facilities also represent a potential source of replacement
18 capacity and energy if the Indian Point Units were retired?

19 A. Yes. My 2007 Synapse Report concluded that repowering
20 existing older generating facilities located on the Hudson River
21 between Albany and New York City or on Long Island with new
22 combined cycle technology could add additional generating
23 capacity to replace Indian Point at the same time that it would

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1 provide significant economic and environmental benefits. Exh.
2 NYS000052: 2007 Synapse Report at pp. 12-14.

3 Q. Did the FSEIS provide a critical analysis of your
4 conclusion that repowering existing older generating facilities
5 located on the Hudson River between Albany and New York City or
6 on Long Island with new combined cycle technology could add
7 additional generating capacity to replace Indian Point at the
8 same time that it would provide significant economic and
9 environmental benefits?

10 A. No, it did not.

11 Q. Based on developments in New York's energy markets
12 since 2007, do you still believe that repowering existing power
13 plants with combined cycle technology could add additional
14 generation capacity to replace Indian Point at the same time
15 that it would provided significant economic and environmental
16 benefits?

17 A. Yes. Repowering of existing older, less efficient
18 generating units with new combined cycle technology could add
19 hundreds to thousands of MW of efficient new capacity.
20 For example, the Astoria Repowering Project also is being
21 undertaken in Zone J by Astoria Gas Turbine Power LLC, a
22 subsidiary of NRG Energy Inc. Exh. NYS000077: 2008 Astoria

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1 Scoping. The Astoria facility is currently 600 MW, made up of
2 31 simple-cycle peaking units, and the repowering would covert
3 the peaking facility to more efficient combined-cycle (CC)
4 generating units in two Phases. Phase 1 would replace seven of
5 the peaking turbines with two 260 MW CC units, which are
6 projected to be operational in 2013. Phase 2 would replace the
7 remaining 24 peaking turbines with an additional two CC turbines
8 of 260 MW each. The repowered units will have a combined
9 capacity of 1,040 MW, for a net addition of 440 MW. Id.
10 Upgrading to combined cycle technology would also mean that the
11 repowered units will have the capability to generate
12 significantly more energy (in GWh) than the existing combustion
13 turbines. The NYISO 2010 Reliability Needs Assessment shows a
14 projected online date for these projects of June 2012. Exh.
15 NYS000058: NYISO 2010 RNA at p.4.

16 Q. Is it reasonable to project that there would be ample
17 supplies of reasonably priced natural gas to burn as fuel in
18 these new or repowered generating facilities?

19 A. Yes. The short and long-term outlooks for natural gas
20 use in electricity generation continue to be favorable,
21 supporting new natural gas capacity in New York State as well as
22 the repowering of existing generating capacity with natural gas

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1 turbines. As a result of an existing and expected future supply
2 glut, current and projected prices of natural gas have been
3 significantly reduced. Exh. NYS000078: 2009 Little Gypsy Unit 3
4 Report, pp. 6-8. This has led to what many other utilities,
5 such as the Entergy Corporation, and an increasing number of gas
6 and electric industry sources, consider a structural change in
7 the natural gas market. Id.

8 Until very recently, natural gas prices were expected to
9 increase substantially in future years. The decline in natural
10 gas prices since the summer of 2008 reflects, in part, a
11 reduction in demand resulting from the downturn in the U.S.
12 economy. The Interconnection Queue in New York State includes
13 some 4,500 MW of potential natural gas-fired generation. It is
14 unlikely that all of these units will be built. However, if
15 only 25 percent of the proposed capacity in the Queue actually
16 is built, that would mean the addition of 1,125 MW of new
17 gas-fired capacity in New York State within the next five years.
18 For these reasons, new generating units fueled by natural gas as
19 well as the repowering of existing units would be a viable
20 alternative to a portion of the capacity and energy generation
21 provided by the two Indian Point Units in the event they are
22 denied license renewal.

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1 Q. Please identify errors, if any, in NRC Staff's impact
2 analysis of repowered power plants.

3 A. In Section 8.3.1. (Natural Gas Combined Cycle) of the
4 FSEIS, NRC Staff assumed, with no supporting analysis of
5 specific impacts, that the environmental impacts of a natural
6 gas combined cycle plant "would be essentially the same for a
7 repowered facility as for a facility constructed at Indian
8 Point." FSEIS § 8.3.1, p. 8-29. In fact, as outlined in my
9 2007 Synapse Report, repowered plants have unique and compelling
10 environmental impacts and cost advantages, which were not
11 considered by NRC Staff. For example, the location of the plant
12 is relevant to project cost, transmission congestion,
13 reliability, and socio-economic impacts. Exh. NYS000052: 2007
14 Synapse Report at p.12-13. Thus, the FSEIS may well overstate
15 the environmental and economic costs of replacing Indian Point's
16 capacity with repowered facilities in the event the units are
17 denied license renewal.

18 Q. In your opinion, does the NRC's impact analysis for
19 Indian Point accurately represent current market conditions as
20 relevant to replacement capacity in the no-action alternative?

21 A. No. NRC's impact analysis for Indian Point fails to
22 accurately represent the current availability of alternative

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1 sources of generation available to state energy planners in the
2 event the Indian Point units are not relicensed because it:

3 (1) ignores the impact of the recession on short and long
4 term energy and demand forecasts, and the impacts of reduced
5 energy and load demands on the timing and choice of energy
6 alternatives;

7 (2) bases its analysis of natural gas-fired combined-cycle
8 (NGCC) generation on a single study (Levitan 2005) that predates
9 significant structural changes in the natural gas sector, as
10 outlined above, that directly impact the viability of plant
11 repowering, plant retirement and new gas-fired generation in New
12 York State;

13 (3) continues to rely primarily on economic data and
14 studies that pre-date the recession and the implementation of
15 aggressive state-wide policies and programs to significantly
16 increase energy efficiency, conservation, and renewables
17 throughout the state, in general, and in the zones currently
18 receiving power from Indian Point, in particular;

19 (4) fails to recognize significant new developments since
20 2007 in New York State's transmission grid system that directly
21 impact and increase New York State's capacity to import
22 electrical power and utilize off-site renewable generation as
23 alternatives to the power supplied by Indian Point;

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1 (5) does not account for the impact of the federal
2 stimulus program, American Recovery and Reinvestment Act of
3 2009("ARRA") and state incentives since 2007 that significantly
4 support the expansion of energy efficiency programs and
5 renewable electricity generation in New York State and which
6 increase the viability and effectiveness of those generation
7 alternatives.

8 (6) unreasonably fails to examine the present reasonable
9 viability of energy conservation and renewable generation as a
10 combined alternative to Indian Point given the current forecasts
11 for New York State's renewable sector and energy efficiency /
12 conservation programs.

13 The NRC's impact analysis for Indian Point relies
14 substantially on obsolete information and did not attempt to
15 address the substance of my expert report and declarations,
16 setting forth current market developments that substantially
17 increase New York State's ability to retire the Indian Point
18 units in 2015, and to replace their power with generation
19 sources that have less environmental impact, such as energy
20 efficiency and demand side management, purchased electrical
21 power, renewable generation, or some combination thereof.

22 Because NRC Staff did not provide an accurate and
23 meaningful impact analysis for these alternatives, and did not

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1 accurately account for lowered load forecasts and energy prices,
2 and changes in New York's energy markets since the recession,
3 the FSEIS gives decisionmakers no real sense of the economic and
4 environmental costs and benefits of relicensing the units or
5 retiring the units.

6 Q. Does this conclude your testimony?

7 A. Yes.

8 I have reviewed all the exhibit referenced herein. True
9 and accurate copies are attached.

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1 UNITED STATES

2 NUCLEAR REGULATORY COMMISSION

3 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

4 -----X

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

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

7 Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64

8 Entergy Nuclear Indian Point 3, LLC, and

9 Entergy Nuclear Operations, Inc. December 13, 2011

10 -----X

11

12 DECLARATION OF DAVID A. SCHLISSEL

13

14

15 I, David A. Schlissel, do hereby declare under penalty of

16 perjury that my statements in the foregoing testimony and my

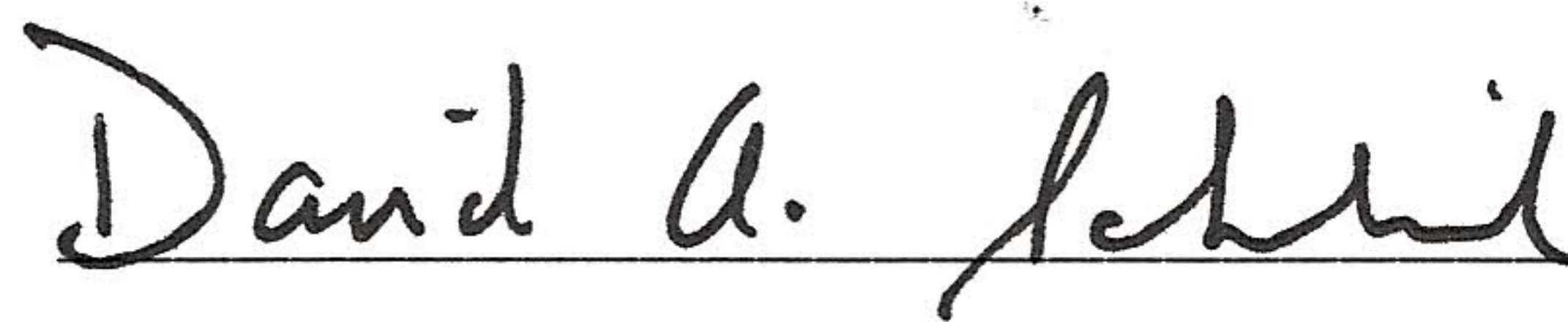
17 statement of professional qualifications are true and correct to

18 the best of my knowledge and belief.

19

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

21

22 

23 David A. Schlissel

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28 December 13, 2011

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