Indian Point Nuclear Generating Unit Nos 2 and 3
License Renewal Application
Environmental Scoping Meeting - September 19, 2007
Written Submittals from Audience - 1:30pm

DOCKETS 50-247
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One Battery Park Plaza New York, NY 10004-1479
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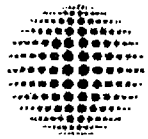
September 17, 2007



Partnership for New York City

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

To Whom it May Concern:

The Partnership for New York City represents the city's business leadership and its largest private sector employers. It is committed to working in partnership with government, labor and the non-profit sector to enhance the economy and create jobs.

I am writing in support of Entergy Corporation's application for relicensing of the Indian Point Energy Center. Indian Point generates 2,000 megawatts of electricity that powers New York City's most essential resources such as homes, businesses, subways, hospitals and public schools. According to recent studies, replacing Indian Point's 2,000 megawatts of electricity would cost over $1 billion a year in electricity costs and could lead to electricity shortages, rolling blackouts and price increases.

The 21st Century businesses that New York City must retain and attract require a resilient, reliable and redundant source of power. The closure of Indian Point would reduce the amount of power for New York State's electrical grid by 11 percent, jeopardizing economic growth and limiting our competitiveness. New York cannot afford to lose any existing generating capacity serving the downstate area.

Indian Point Energy Center provides safe, clean, reliable and cost-effective energy to the downstate region, and we strongly believe that reducing the area's energy supply by closing Indian Point would have a destructive impact on the region's economy.

Therefore, the Partnership of New York City hereby supports and petitions the Nuclear Regulatory Commission for the relicensing of the Indian Point Energy Center.

Sincerely,

Kathryn Wylde
President and CEO

NRC 11:30P/1

CASE NO.
OFF. EXH. NO.: NRC11:30P/1
ID'D/RECD

9/9/07

September 18, 2007

Senior Project Manager Bo Pham
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Dear Mr. Pham:

The Rockland Business Association (RBA) is the county's largest business organization, representing 991 corporate, mid-size and small businesses. We are the advocates for Rockland's business community at the local, state and federal levels and work to enhance economic opportunities in Rockland by addressing a broad range of public affairs and area development, economic and business development issues that affect the growth of business in the county.

Recently, the Business Council of New York State, of which the RBA is a member, surveyed almost 1,100 Council members to identify top priorities for action in 2007. These members ranked **"the cost of doing business"** as their greatest concern in New York – with a special focus on energy costs. Electric rates in New York run 70 percent above the national average, and there is a clear need for more generating capacity to keep costs down, as well as a great demand to direct low-cost power to employers and growth industries throughout the State.

Given this business climate of an ever-increasing demand for affordable, reliable and environmentally sound power generation, the RBA believes the closure of the Indian Point Energy Center would create a dramatically adverse effect on New York State's energy grid and impose undue hardship upon thousands of businesses and millions of residents throughout the State.

Indian Point generates 2,000 megawatts of critical electricity, over $356 million in payroll and local purchases – in addition to the over $50 million paid in local taxes. Overall, Indian Point produces over $700 million in economic activity throughout the five counties surrounding the site, as well as over a $1 billion in economic activity to New York State.

One Blue Hill Plaza / P.O. Box 1567
Pearl River, NY 10965
tel: 845.735.2100 / fax: 845.735.2482
www.rocklandbusiness.org

NRC / 1:30P / 2

As owner and operator of Indian Point, the Entergy Corporation remains a critical, major employer and corporate philanthropist – donating millions of dollars to a myriad of worthy causes, hospitals, educational institutions, regional associations and municipalities

For these reasons, we believe the facility should be re-licensed.

Having stated the above, we feel we would be remiss to not acknowledge there are those in our community who oppose this action. While we sympathize with their concerns, we note that Entergy has an on-going program to address issues of safety and potential terrorist threat. We encourage the company to maintain those efforts in the most aggressive manner.

Sincerely,

Allan A. Samuels
President/CEO

CASE NO.
OFF. EXH. NO. NRC/130P/2
ID'D/RECD
9/19/07

September 14, 2007

Senior Project Manager Bo Pham
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Dear Mr. Pham:

The Business Council of Westchester is the county's largest business organization, representing nearly 1,400 members, ranging in size from multi-national corporations and mid-size businesses to professional firms, not-for-profit organizations and small business owners in every sector of the county's diverse economy. The Business Council advocates for Westchester's business community at the local, state and federal levels and works to enhance economic opportunity in Westchester by addressing a broad range of public affairs and area development, economic and business development issues that effect the growth of business in the county.

With 34,000 businesses in Westchester County – employing over 408,700 workers with a total annual payroll of more than $19 billion – we feel the premature closure of the Indian Point Energy Center will cause irreparable damage to the regional economy due to the large amount of electricity, jobs and taxes the site provides.

From Indian Point's generation of 2,000 megawatts of much-needed electricity to its distribution of $356 million in payroll and local purchases to the over $50 million paid in local taxes (including sales tax, payroll taxes, property taxes and state/local income taxes), the site is a major economic engine that drives business to Westchester County and keeps businesses from running to other counties across the country.

We have seen the economic devastation caused by the dramatic disruption of electricity supply both in recent memory (Blackout of 2003), as well as the continuing hardship faced by thousands of Long Island residents who pay some of the highest utility bills in the United States because of the infamous Shoreham nuclear plant debacle. Shoreham was a clear example of the needs of the few outweighing the on-going needs of the many and the Council does not wish to see Indian Point (or the residents surrounding the facility) suffer the same fate.

In addition, as owner and operator of Indian Point, the Entergy Corporation remains a critical, major employer and corporate philanthropist – donating millions of dollars to a myriad of worthy causes, hospitals, educational institutions, regional associations and municipalities. Without their continuing service to the community and vital investments in non-profit programs and projects, we will see a dramatic decrease in the number of non-government groups and associations serving a wide variety of constituencies – hungry, homeless, elderly, children in need, sick, infirmed, etc.

For the aforementioned reasons, The Business Council of Westchester hereby supports and petitions for the re-licensing of the Indian Point Energy Center. We look forward to hearing from you regarding this matter.

Sincerely,

Paul J. Vitale
Vice President, Government & Community Relations

CASE NO.
OFF. EXH. NO.: NRC/1:30P13
ID'D/RECD

9/19/07

Melvin Burruss, President, African American Men of Westchester
September 19, 2007
U.S. NRC on Indian Point Environmental Scoping Process

It is a historical fact that demand for electricity has always grown and will continue to grow, even as efficiency increases and new technologies are brought online. Right now, 50 percent of our electricity comes from coal, which results in billions of tons of greenhouse gas emissions annually.

Imagine if we changed the 50 percent of our electricity currently generated by coal to a mix of nuclear and renewable energy sources. The environmental benefits would be enormous. It's unfortunate that so many people don't recognize the important role that nuclear facilities like Indian Point already play, and must continue to play, in our energy supply.

Nuclear power is safe:

- There has never been a radiological death in the 50-year history of the U.S. commercial nuclear power generating industry.
- Not only is nuclear power safe, but it is much safer than the coal or natural gas.
- Replacing Indian Point with coal or natural gas would significantly increase airborne pollutants and toxins that are truly harmful today, especially for children and the elderly.
- Replacing Indian Point with coal is estimated to add the following toxins to the air we breathe:
    - 6,284 tons of sulfur oxides per year
    - 1,476 tons of nitrogen oxides per year
    - 1,476 tons of carbon monoxide per year
    - 210 tons of total suspended particulates, and
    - 48 tons of other particulate matter per year

Nuclear power helps reduce our dependence on foreign sources of energy:

- By reducing our need to buy natural gas from abroad at expensive (and fluctuating) market prices, domestic nuclear power helps reduce our dependence on foreign energy sources.
- Major deposits of uranium are located right here in North America, and because you only need a small amount to generate a large amount of energy, (one gram of uranium is equal in energy output to one ton of coal, with almost zero carbon emissions) nuclear energy in the U.S. will be affordable for decades to come.

If we really want to make progress in New York State; real progress improving the air we breathe every day; real progress cleaning up the environment for our children and their children, and making sure that we have affordable electricity into the future, then nuclear power must have a role in our energy future.

We should realize how fortunate we are to have Indian Point's power working for us every day. Because it is safe, clean, and reliable, I fully support the operation and license renewal of the Indian Point power plants.

Thank you,

Melvin Burruss, President, African American Men of Westchester

NRC/1:30P/4

CASE NO.
OFF. EXH. NO.: NRC111:30P14
ID'D/RECD
9/19/07

the energy association of n.y.state

SUITE 601, 111 WASHINGTON AVE, ALBANY NY 12210
TEL: 518.449.3440 FAX: 518.449.3446

Patrick J. Curran
Executive Director

September 18, 2007

Senior Project Manager Bo Pham
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Dear Mr. Pham:

The member companies of the Energy Association of New York State (EA) are the owners and operators of much of the state's electric and natural gas infrastructure, comprised of many hundreds of thousands of individual shareholders including a great many New Yorkers and retirees, employing over 28,000 New Yorkers, serving over 7 million New York customers and their families and businesses, annually paying over $2.5 billion in state and local taxes and contributing tens of millions of dollars annually to community and charitable purposes.

The Energy Association firmly believes that the Indian Point nuclear facility is an essential asset to the State of New York and its millions of residents.

The New York Independent System Operator (NYISO), whose mission is to operate the state's electricity grid and wholesale electric markets, projects that, even assuming the continued operation of the Indian Point facility, the City of New York and the lower Hudson Valley (which encompass the 4 counties of Westchester, Rockland, Orange and Putnam that surround Indian Point) will need 1,250MW to 2,250MW of additional capacity between 2010 and 2015. How that additional capacity will be obtained is an issue currently presenting enormous challenges to the state of New York. It is daunting to contemplate how insurmountable those challenges would become without the continuing presence of the Indian Point facility.

First, Indian Point is a "base-load" power plant capable of providing 2000MW of electricity 24 hours a day, seven days a week, 365 days a year. Because it provides necessary voltage support at a critical juncture in the state's transmission system, it is favorably located to serve the vital down-state "load-pocket" and because the power it produces is relatively low cost, it is generally relied upon proportionally more than even other base-load facilities.

NRC/1:30P/5

Any suggestion that such an enormous and vital component of the state's energy infrastructure (Indian Point supplies 20-40% of the electricity to the New York City metropolitan area, depending on the time of year and other factors) could be replaced with, for example, renewable options such as wind, hydropower and solar, fails to account for the comparatively low capacity factors, high costs, intermittent nature, and distinct environmental impacts of those other options. Even if they could be sized, sited and built to generate 2000MW (in real terms, an extremely unlikely prospect), such alternatives could not provide the overall system capacity and reliability now provided by Indian Point. Replacing Indian Point with non-baseload renewable facilities is simply not a realistic or viable option. Even new fossil-fueled baseload facilities would take years to site and build in the region (if indeed that is feasible at all) and would inevitably have a "carbon footprint" that doesn't now exist at Indian Point. It is critically important to recognize that Indian Point supplies its 2000 megawatts electricity without producing the air emissions inherent to varying degrees in fossil fuel burning generating facilities. This air quality benefit cannot be overlooked in any discourse surrounding the future of the facility.

Another critical benefit of the facility is that it helps provide the state and region with a healthy, diversified fuel mix in the generation of electricity. Because a diverse portfolio of fuel alternatives avoids undue risk in the marketplace and to state and national security, a premium should be placed on a diversified energy mix to fuel our electric generation facilities. This is particularly true today where we are experiencing price volatility and significant increases in the fossil fuel marketplace.

Moreover, as owner and operator of Indian Point, the Entergy Corporation has been exemplary – winning numerous awards for its performance as a nuclear operator and community partner. Indian Point has seen significant improvement under Entergy's ownership and we look forward to seeing them at the helm for many years to come.

In conclusion, the Energy Association of New York State wholeheartedly supports and petitions for the relicensing of the Indian Point facility.

Respectfully Submitted,

PJC / s

Patrick J. Curran
Executive Director

CASE NO.
OFF. EXH. NO.: NRC11:30P/5
ID'D/RECD
9/19/07

Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC Village of Buchanan, New York

Emissions Avoidance Study

Prepared for

Entergy Nuclear Northeast

Prepared by

TRC Environmental Corporation
Lyndhurst, New Jersey

Revised August 2002

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EXECUTIVE SUMMARY

In evaluating the impact of decommissioning Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC, the potential emissions increases associated with replacement electricity generation sources need to be evaluated. TRC evaluated several different scenarios to determine the impact on the air quality in New York State and the local area. Replacement sources examined included existing fossil generating stations located in the entire state of New York, the Hudson Valley and New York City. To provide context for interpreting the projected emissions increases, the increases for each replacement scenario are expressed as percent increases relative to regional and statewide emissions, and the health and welfare effects associated with each pollutant and the groups most susceptible to them have been tabulated.

When evaluating the emission increase from sources located throughout the state, it was necessary to develop a "generation fuel mix." This consisted of the anticipated mix of coal, gas, oil etc. expected for the replacement generation sources during the years 2002 through 2005. Data from the current New York State Energy Plan, dated December 2001, serves as the basis for the existing and projected future generation fuel mix applied in the analysis

Indian Point Units 2 and 3 have an average net maximum capacity of 983.7 and 989 Megawatts (MW), respectively, based on information provided to the Independent System Operator (ISO). Based on a 90% capacity factor, the annual generating capacity of these two units is 15,552,767 Megawatt-hours (MWh), which represents approximately 10% of the state's total generation.

The first set of calculations presented assumes that the demand is met by increased operation of existing New York State fossil stations, so that a generation mix of coal, oil and natural gas in the years 2002 through 2005 replaces the generating capacity of Units 2 and 3. To establish a baseline, emissions estimates for the existing units are based on a combination of data from the US Environmental Protection Agency (EPA) utility Emissions & Generation Resource Integrated Database 2000 (EGRID2000), Version 2.0 and the US EPA Document AP-42 emission factors for stationary sources. When more than one emission factor was available, the lower emission factor was chosen. This approach represents a conservative estimate of the potential increase.

Since it is reasonable to assume that the majority of lost output would be made up by increased generation of units nearest to the New York City / Westchester load pocket, replacement by the four large fossil power stations in the Hudson Valley (Bowline Point, Lovett, Danskammer and Roseton) and the existing units in New York City was also studied. For each of these plants,

baseline emissions and generation were obtained from the EGRID2000 database. Data for the most recent year included in this database (1998) was utilized in this study.

The first task in this set of calculations assumed replacement by the four large plants in the Hudson Valley: Bowline Point, Lovett, Danskammer, and Roseton. These plants utilize boilers that are fired with coal, No. 6 residual oil and natural gas. These plants currently operate at capacity factors ranging from 32% to 58%. These four stations would need to operate at over 90% capacity factor in order to make up the lost generation from Indian Point 2 and 3. It has been determined that these plants are already operating more during the ozone season (May through September) based on the EGRID2000 data; thus the increased demand during the ozone season cannot be met by these four stations alone.

The next situation that was evaluated was the replacement by the 14 existing power plants in the five boroughs of New York City. The replacement demand is approximately 33% of the available generation from the New York City plants. In order to determine the generation and emissions increases, it was assumed that the total fuel and plant mix from these plants would remain constant, except for the plants that could not meet this increase. Since the current generation for all of these facilities combined is roughly equal to that of Indian Point 2 and 3, the emission rates in New York City would nearly double in order to make up the lost generation.

The final scenario of replacement by existing sources that was evaluated was the replacement by a combination of the four Hudson Valley plants and the plants located in New York City. For the purposes of this evaluation, it was assumed that half of the make-up generation would come from the four Hudson Valley Plants and the other half would come from the plants in New York City, with the increase determined by assuming that the total fuel and plant mix from these two sets of plants would remain constant, except for the plants that could not meet this increase.

The increases from each of the above-described scenarios were compared to the current emissions from the power generation industry in New York. The results are presented in the table below:

Replacement Generation Sources	CO_2	SO_2	NO_x	PM-10	CO	VOC
New York State: 2002 Generation Mix	20.20%	23.81%	21.58%	22.69%	17.76%	17.28%
New York State: 2003 Generation Mix	20.12%	23.54%	21.42%	22.51%	17.80%	17.34%
New York State: 2004 Generation Mix	19.41%	21.10%	20.03%	21.11%	9.28%	18.36%
New York State: 2005 Generation Mix	21.05%	20.06%	20.66%	22.14%	11.66%	23.44%
Hudson Valley Power Plants	21.08%	18.77%	20.80%	52.59%	74.31%	56.97%
New York City Power Plants	18.10%	2.52%	15.02%	9.28%	17.24%	16.83%
Hudson Valley and New York City	19.83%	11.32%	18.89%	28.49%	42.02%	34.63%

Note: Total increase is compared to utility source emissions only in New York. Baseline data obtained from USEPA's EGRID2000 database (1998)

In addition to evaluating the increase in emissions, TRC prepared a matrix summarizing the potential effects and health hazards from these pollutants. Currently, Westchester County is classified as a non-attainment area for ozone. Ozone can cause lung irritation, permanent lung damage, aggravated asthma, reduced lung capacity, pneumonia and bronchitis. Persons that are most susceptible to the negative effects of ozone are those with respiratory illnesses, outdoor workers, and children. Ozone also increases the susceptibility of plants to disease, thus reducing crop and forest yields.

The entire state of New York is located in the Ozone Transport Region (OTR), which requires that new sources of NO_x and VOC be subject to Lowest Achievable Emission Rates (LAER) and emissions offsets. In essence, this massive increase in generation by existing sources is comparable to constructing one large new source without subjecting it to these current applicable regulations since the majority of these existing sources were constructed prior to the new source review requirements and were not subject to LAER and offset requirements. The increase in NO_x and VOC, the precursors to ozone, would constitute a significant setback in the area's efforts to meet progress goals toward ozone attainment status in the near future. In order to reach attainment, the area needs to further reduce emissions in the area as opposed to unnecessarily increasing these emission rates.

The attached matrix outlines the effects of all criteria pollutants and the groups that are most greatly impacted by them. As shown with carbon monoxide and ozone, these pollutants affect all people, regardless of age and current health, in addition to the vegetation in the area.

Regulatory Impacts and Effects of Major Air Pollutants

Pollutant	NAAQS Attainment Status for New York State	Basis for NAAQS	Most Susceptible Population Groups	Additional Impacts
SO_2	Attainment	Temporary breathing difficulty Respiratory illness Aggravates existing Heart Disease	Asthmatics, Children, Elderly, Persons with Heart or Lung Disease	Precursor to acid rain formation Visibility impairment from Sulfate Particles (PM-2.5) Aesthetics damage due to accelerated building decay Acidification of lakes due to Atmospheric Deposition Soil degradation due to Atmospheric Deposition
NO_x	Attainment	Damage to lung tissue Respiratory illnesses – Bronchitis Reduction in lung function	Children, Asthmatics, Outdoor Workers	Precursor to ground-level Ozone (Smog) Precursor to acid rain formation Water quality deterioration (Oxygen depletion) Visibility impairment
PM-10	Attainment for all Counties with exception of New York County	Aggravated Asthma Chronic Bronchitis Decreased lung function Premature Death	Persons with Heart Disease or Influenza, Asthmatics, Children, Elderly	Major cause of reduced visibility (Haze) Aesthetics damage due to stains from soot Acidification of lakes due to Atmospheric Deposition Soil degradation due to Atmospheric Deposition
CO	Attainment with exception of Metropolitan New York City (recently redesignated as attainment by USEPA, but New York State redesignation pending)	Cardiovascular effects Vision problems Reduced ability to work and learn Death (extremely high levels)	Persons with Heart or Lung Disease	
Ozone	Attainment for all counties with exceptions of New York State Metropolitan Areas and Long Island, but entire state is located within northeast Ozone Transport Region	Lung irritation (wheezing, coughing) Permanent lung damage Aggravated Asthma Reduced lung capacity Pneumonia and Bronchitis	Persons with respiratory illnesses, Children, Outdoor workers	Increases susceptibility of plants to disease Reduces crop and forest yields Aesthetics damage due to damage to leaves and trees Damages rubber and fabrics Reduced visibility
VOC	Not Applicable	Not Applicable	Not Applicable	Precursor to ground-level Ozone (Smog) Damage to plants
CO_2	Not Applicable	Not Applicable	Not Applicable	Contributes to Global Warming

1.0 INTRODUCTION

TRC Environmental Corporation (TRC) was retained by Entergy Nuclear Operations, Inc. (Entergy Nuclear) to perform an assessment of the potential increase in emissions of criteria pollutants from non-nuclear generating assets within New York State in the event that the Indian Point 2 and 3 are decommissioned. The assessment assumed that additional non-nuclear generation would be required within the State of New York to replace the electric generating output of Indian Point Units 2 and 3 and evaluated increase in annual potential emissions for the period of 2002 through 2005.

The evaluation performed by TRC included the following activities:

- Development of a "generation fuel mix" (i.e., coal, gas, oil, etc.) assumption for use in developing the avoided emissions calculations. TRC utilized data from the current New York State Energy Plan, dated December 2001, as the basis for the existing and projected future generation fuel mix applied in the analysis.

- Estimation of projected criteria pollutant emissions for the non-nuclear generating assets which would be required to replace the electric generating output of Entergy Nuclear's Indian Point Units 2 and 3 in the event that the Indian Point Nuclear Generating Station is decommissioned. The emission calculations are based on a projected 90% capacity factor for Units 2 and 3 through the study period of 2002 to 2005. Indian Point Units 2 and 3 have an average net maximum capacity, as reported to the Independent System Operator, of 983.7 Megawatts (MW) and 989 MW, respectively. The annual generating capacity of these two units is 15,548,036 Megawatt-hours (MWh) per year at a 90% capacity factor, representing approximately 10% of the state's total generation. Calculations of replacement generation emissions were based upon the "generation fuel mix" discussed above, assuming that the lost generation would be made up by a mix of existing in-state fossil (coal/oil/gas) fired units. Emissions estimates for the existing units were based on a combination of data from a US Environmental Protection Agency (EPA) utility emissions database and the US EPA Document AP-42 emission factors for stationary sources. Replacement by the sources located in the Hudson Valley and New York City was also evaluated as an option.

- Preparation of a matrix of regulatory impacts and effects of major air pollutants.

- Evaluation of additional costs for NO_x allowances.

TRC's findings relative to the above activities are summarized on the following pages.

2.0 DEVELOPMENT OF GENERATION FUEL MIX

For the purpose of this study, the future fuel mix information was obtained from the New York State Energy Plan, dated December 2001. This plan provides future estimates of generation by fuel type for the years 2002 through 2020. The fuel types listed include natural gas, oil, coal, nuclear and hydro, as well as "other" and net imports. The projected Gigawatt-hours (GWh) listed in the plan for 2002 through 2005 were used in this study and are summarized below:

Projected Generation – GWh

Generation Fuel	2002	2003	2004	2005
Natural Gas	24,706	25,628	34,115	54,902
Oil	24,774	24,509	19,212	9,384
Coal	29,380	29,295	28,030	17,934
Nuclear	32,563	32,559	32,662	32,558
Hydro	29,109	29,090	29,111	29,011
Other	2,866	3,004	3,150	3,283
Net Imports	18,799	19,463	18,747	19,731
TOTAL	**162,197**	**163,548**	**165,027**	**166,803**

Source: New York State Energy Plan, Table 9 – " Reference Resource Case – Generation by Fuel Type for the New York Electricity System," December 2001

Projected Generation – Percent of Total

Generation Fuel	2002	2003	2004	2005
Natural Gas	15.2%	15.7%	20.7%	33.0%
Oil	15.3%	15.0%	11.6%	5.6%
Coal	18.1%	17.9%	17.0%	10.8%
Nuclear	20.1%	19.9%	19.8%	19.6%
Hydro	17.9%	17.8%	17.6%	17.4%
Other	1.8%	1.8%	1.9%	2.0%
Net Imports	11.6%	11.9%	11.4%	11.6%
TOTAL	**100%**	**100%**	**100%**	**100%**

Source: New York State Energy Plan, Table 9 – " Reference Resource Case – Generation by Fuel Type for the New York Electricity System," December 2001

3.0 EMISSION CALCULATIONS

Using the projected generation mix provided above, criteria emissions were calculated for non-nuclear electricity generation, which would be required in the event that Entergy's Indian Point Nuclear Generating Station is decommissioned. As stated, all calculations for Units 2 & 3 at Indian Point are based on a 90% capacity factor. As provided by Elise N. Zoli, Esq. of Goodwin Procter, LLP, Entergy's Counsel, Units 2 and 3 have an average net maximum capacity of 983.7 MW and 989 MW.

Operating at a 90% capacity factor, Units 2 and 3 are capable of generating 15,548,036 MWh annually. This accounts for approximately 10% of the state's total generation. If Indian Point Nuclear Generating Station were to be decommissioned, there are numerous ways that the lost generation from Units 2 and 3 could be replaced. The first possibility that was examined was the replacement of Units 2 and 3 by the existing generation mix. This case yields the highest increase in emissions since it assumes older fossil fuel fired facilities, approximately 40% of which are coal, are used to replace the generating capacity of Units 2 and 3. The existing sources that are in the generation fuel mix include natural gas, oil, coal, nuclear, hydro and "other". For the purpose of this study, it was assumed that Units 2 and 3 would be replaced by natural gas, oil and coal fired facilities only. This unit mix would likely be used to replace lost generation if Indian Point 2 and 3 were not available during a low- to moderate-demand period (during mild weather). Nuclear, hydro and "other" were not included in the calculations. Hydro was not included because it is not possible to increase the capacity of existing hydropower sources. Emissions were not calculated for "other" sources, which account for less than 2% of the state's total capacity. The type of "other" sources is unknown; therefore it was not possible to develop emission factors for these sources.

Replacement by the four large fossil fuel power stations in the Hudson Valley: Bowline Point, Lovett, Danskammer and Roseton, and replacement by existing units in New York City were also studied. It is likely that the majority of the replacement generation would come from these sources. Three combinations of these plants were examined. The first possible scenario assumed that the Hudson Valley plants were the sole replacement source. The second scenario assumed that the New York City plants would replace all the lost generation. Finally, it was assumed that the Hudson Valley plants would account for half of the required generation and the New York City plants would account for the other half.

4.0 REPLACEMENT BY EXISTING SOURCES

Emission factors were obtained from the U.S. EPA's Emissions & Generation Resource Integrated Database 2000 (EGRID2000), Version 2.0. The most recent year included in this database is 1998; therefore, this data was utilized in this study. Data provided included total net generation, total state electricity usage, net imports, total CO_2, NO_x and SO_2 emissions, and emission factors in pounds of pollutant per MWh separated by fuel type. For the remaining criteria pollutants (CO, VOC, and PM-10), emission factors were obtained from the U.S. EPA's AP-42 document. For coal-fired units, emission factors for dry-bottom pulverized bituminous coal boilers equipped with electrostatic precipitators were used. PM-10 emissions include both filterable and condensable particulates, assuming that the coal has an ash content of 10%. The majority of emission factors for coal were given in pounds of pollutant per ton of coal. Based on an assumed heating value of 12,000 Btu/lb for the coal, these factors were then converted to pound per million Btu, which was then converted to pound per MWh based on the heat rate that was obtained from the data for the other pollutants listed in the EGRID2000 database.

For oil and natural gas, emission factors for external combustion (boilers) and internal combustion (i.c.engines and combustion turbines) were examined, since it is unknown what the breakdown of sources is. The lowest emission factor for each pollutant was chosen to yield a conservative (low) estimate of displaced emissions. It should be noted that the range in emission factors varied mostly with fuel type, as opposed to combustion source type. After evaluating the various emission factors, those for combustion turbines were used to yield a lower increase in annual emissions. These emission factors were given in pounds of pollutant per million Btu. Based on the data provided in EGRID2000, the emission factors were converted to pounds per MWh. A summary of the estimated additional emissions related to the replacement of Indian Point by existing sources applied to the projected future generation mix is presented in the following table:

Additional Annual Emissions with Replacement Power from Generation Fuel Mix

Pollutant	2002	2003	2004	2005
CO_2 (tons)	13,941,742	13,888,209	13,396,046	14,527,670
SO_2 (tons)	75,665	74,794	67,048	63,747
NO_x (tons)	23,140	22,971	21,480	22,152
PM-10 (tons)	1,890	1,875	1,758	1,844
CO (tons)	1,145	1,148	1,201	1,508
VOC (tons)	145	146	155	197

5.0 REPLACEMENT BY EXISTING HUDSON VALLEY AND NEW YORK CITY SOURCES

The next section of the evaluation assumed that the four large plants in the Hudson Valley, and the plants in New York City would replace the generation from Indian Point, as opposed to statewide facility-type replacement. For each of these subgroups, baseline emissions were obtained from EGRID2000. The most recent year included in this database is 1998; therefore, this data was utilized in this study. Data provided included total net generation separated by fuel type, total CO_2, NO_x and SO_2 emissions, and emission factors in pounds of pollutant per MWh separated by fuel type.

The first task assumed replacement by the four large plants in the Hudson Valley: Bowline Point, Lovett, Danskammer, and Roseton. These plants utilize boilers that are fired with No. 6 residual oil and natural gas. Lovett and Danskammer also have the ability to fire coal, and PM-10 emission factors while burning coal were obtained from the facilities' Title V permits. For the remaining criteria pollutants (CO, VOC, and PM-10), emission factors were obtained from the U.S. EPA's AP-42 document for external combustion sources. A combined emission factor for each of the pollutants was developed for each facility based on the source of generation (coal/oil/gas).

Based on the data provided in EGRID2000, it is known that these plants currently operate at capacity factors ranging from 32% to 58%. When evaluating the available generation, it was assumed that each of these plants could operate at a 90% capacity factor. Assuming a 100% capacity factor is not realistic and does not allow for necessary shutdowns required for maintenance to ensure the equipment is functioning properly. Based on the generation from 1998 provided in EGRID2000, and the total generation based on a 90% capacity factor, the combined available generation from these four plants is 15,374,598 MWh. This is only 99% of Indian Point's current generation of 15,552,767. Therefore, more than just these four plants would be required to meet the increased demand that would result from Indian Point Units 2 and 3 being decommissioned. The following tables summarize the total emission increases from increasing the operating capacity to 90% for each of these plants.

Additional Annual Emissions with Replacement Power from Hudson Valley Plants

Plant	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)	Annual Hg (pounds)
Bowline Point	5,266,203	3,919	7,619	1,114	2,699	217	0
Lovett	1,600,331	6,606	3,237	212	292	26	26
Danskammer	1,620,126	7,651	3,536	229	207	22	70
Roseton	6,062,113	41,468	7,913	2,825	1,596	215	0
Total	**14,548,772**	**59,644**	**22,305**	**4,380**	**4,794**	**480**	**96**

Facility Specific Percent Emissions Increase from Replacement Power from Hudson Valley Plants

Plant	Annual CO_2	Annual SO_2	Annual NO_x	Annual PM-10	Annual CO	Annual VOC	Annual Hg
Bowline Point	178%	179%	178%	178%	178%	178%	0%
Lovett	71%	71%	71%	71%	71%	71%	71%
Danskammer	55%	55%	55%	55%	55%	55%	55%
Roseton	168%	168%	168%	168%	168%	168%	0%
Total	**123%**	**119%**	**112%**	**145%**	**147%**	**147%**	**58%**

As shown in the second table, the increase in the NO_x emissions during the ozone season (May – September) is not as great as the annual increase. This shows that these plants are already operating more during this season. In addition to the annual average availability of these plants being only 99% of the Indian Point demand, the increased replacement demand during the ozone season will not be able to be met by these four plants alone.

The next situation that was evaluated was the replacement by the 14 existing power plants in the five boroughs of New York City. It should be noted that the recently installed NYPA peaker turbines have not been included in this analysis, since they were installed after the most recent version of EGRID2000 was updated (1998 emissions data.

Similar to the Hudson Valley plants, emissions data was obtained from EGRID2000 for CO_2, SO_2 and NO_x. Emission factors for PM, CO, and VOC were obtained from U.S. EPA's AP-42. Emission factors for external combustion (boilers) and internal combustion (i.c. engines and combustion turbines) were examined, since facility specific emission rates are not provided by EGRID2000. The lowest emission factor for each pollutant was chosen to yield a conservative (low) estimate of displaced emissions. It should be noted that the range in emission factors varied mostly with fuel type, as opposed to combustion source type. After evaluating the various emission factors, those for combustion turbines were used to yield a lower increase in annual

emissions. These emission factors were given in pounds of pollutant per million Btu. Based on the data provided in EGRID2000, the emission factors were converted to pounds per MWh.

The available generation from the New York City plants was again determined based on a capacity factor of 90%. The replacement demand, 15,552,767 MWh, is approximately 33% of the available generation from these plants. In order to determine how much each plant would need to increase its generation to meet the demand of Units 2 and 3 at Indian Point, it was assumed that the total fuel and plant mix from these plants would remain constant, except for the plants that could not meet this increase. The Bronx Zoo, Brooklyn Navy Yard and the JFK International Airport Cogeneration facilities were increased to their maximum generation at 90% capacity factor while the remainder of the facilities kept the same mix. The following table provides the increased emissions.

Additional Annual Emissions with Replacement Power from New York City Plants

Plant	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	3,833	1	3	0.2	0.4	0.1
Ravenswood	3,290,850	1,204	3,808	195.5	340.2	46.2
Charles Poletti	2,467,169	4,069	3,650	178.1	80.0	10.5
JFK Cogen	173,088	0	114	9.9	22.4	3.0
Far Rockaway	256,091	2	232	14.2	32.3	4.4
Astoria	3,773,229	1,785	4,947	225.8	370.6	51.1
Arthur Kill	1,021,253	7	925	56.9	129.2	17.7
East River	436,741	508	783	29.0	27.1	3.8
Waterside	277,744	3	167	15.0	34.0	5.0
Hudson Ave	1,832	4	10	0.1	0.0	0.0
Brooklyn Navy Yard	437,418	4	34	24.1	54.1	7.1
Warbasse Cogen	69,560	10	45	4.1	8.0	1.1
Gowanus	176,550	344	976	13.3	3.6	0.5
Narrows	108,814	81	412	6.9	9.8	1.4
Total	**12,494,172**	**8,020**	**16,107**	**773**	**1,112**	**142**

Once the increase in emissions was calculated, the percent increase from current generation was also calculated. Since the current generation for all of these facilities combined is 16,887,894 MWh, just slightly over the generation of Indian Point's Units 2 and 3, all of the emission rates are nearly double what they are currently. The results are summarized in the tables below.

Facility Specific Percent Emissions Increase from Replacement Power from New York City Plants

Plant	Annual CO_2	Annual SO_2	Annual NO_x	Annual PM-10	Annual CO	Annual VOC
Bronx Zoo	39%	39%	39%	39%	39%	39%
Ravenswood	106%	106%	106%	106%	106%	106%
Charles Poletti	106%	106%	106%	106%	106%	106%
JFK Cogen	68%	0%	68%	68%	68%	68%
Far Rockaway	106%	159%	106%	106%	106%	106%
Astoria	106%	106%	106%	106%	106%	106%
Arthur Kill	106%	134%	106%	106%	106%	106%
East River	106%	106%	106%	106%	106%	106%
Waterside	106%	96%	106%	106%	106%	106%
Hudson Ave	105%	105%	105%	106%	106%	106%
Brooklyn Navy Yard	47%	64%	46%	47%	47%	47%
Warbasse Cogen	106%	107%	106%	106%	106%	106%
Gowanus	106%	106%	106%	106%	106%	106%
Narrows	106%	106%	106%	106%	106%	106%
Total	**101%**	**106%**	**105%**	**101%**	**99%**	**93%**

The final replacement scenario that was evaluated was the replacement by a combination of the four Hudson Valley plants and the plants located in New York City. For the purposes of this evaluation, it was assumed that half of the make-up generation, 7,776,383 MWh, would come from the four Hudson Valley Plants and the other half would come from the plants in New York City. As in the evaluation of the emission increase from the New York City plants only, the increase of each of the plants was determined by assuming that the total fuel and plant mix from these two sets of plants would remain constant, except for the plants that could not meet this increase. The Bronx Zoo, Brooklyn Navy Yard and Danskammer were increased to their maximum generation at 90% capacity factor while the remainder of the facilities kept the same mix. The following table provides the increased emissions:

Additional Annual Emissions with Replacement Power from Hudson Valley and New York City Plants

Plant	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)	Annual Hg (pounds)
Bowline Point	2,005,749	1,493	2,902	424	1,028	83	0
Lovett	1,532,411	6,326	3,100	203	279	25	25
Danskammer	1,620,126	7,651	3,536	229	207	22	70
Roseton	2,451,486	16,769	3,200	1,142	646	87	0
Bronx Zoo	3,833	1	3	0.2	0.4	0.1	--
Ravenswood	1,526,271	558	1,766	90.7	157.8	21.4	--
Charles Poletti	1,144,254	1,887	1,693	82.6	37.1	49	--
JFK Cogen	125,849	0	83	7.2	16.3	2.2	--
Far Rockaway	118,773	1	108	6.6	15.0	2.1	--
Astoria	1,749,995	828	2,294	104.7	171.9	23.7	--
Arthur Kill	473,649	3	429	26.4	59.9	8.2	--
East River	202,557	235	363	13.5	12.6	1.8	--
Waterside	128,816	1	78	7.0	15.8	2.3	--
Hudson Ave	850	2	5	0.1	0.0	0.0	--
Brooklyn Navy Yard	437,418	4	34	24.1	54.1	7.1	--
Warbasse Cogen	32,262	4	21	1.9	3.7	0.5	--
Gowanus	81,883	160	453	6.2	1.7	0.2	--
Narrows	50,467	38	191	3.2	4.5	0.6	--
Total	**13,686,648**	**35,961**	**20,258**	**2,373**	**2,710**	**292**	**94**

Again, once these emissions were calculated, the percent increase for each of these plants and the combined increase was calculated. The results are presented in the following table.

Facility Specific Percent Emissions Increase from Replacement Power from Hudson Valley and New York City Plants

Plant	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)	Annual Hg (pounds)
Bowline Point	68%	68%	68%	68%	68%	68%	0%
Lovett	68%	68%	68%	68%	68%	68%	68%
Danskammer	55%	55%	55%	55%	55%	55%	55%
Roseton	68%	68%	68%	68%	68%	68%	0%
Bronx Zoo	39%	39%	39%	39%	39%	39%	--
Ravenswood	49%	49%	49%	49%	49%	49%	--
Charles Poletti	49%	49%	49%	49%	49%	49%	--
JFK Cogen	50%	0%	50%	49%	49%	49%	--
Far Rockaway	49%	74%	49%	49%	49%	49%	--
Astoria	49%	49%	49%	49%	49%	49%	--
Arthur Kill	49%	62%	49%	49%	49%	49%	--
East River	49%	49%	49%	49%	49%	49%	--
Waterside	49%	44%	49%	49%	49%	49%	--
Hudson Ave	49%	49%	49%	49%	49%	49%	--
Brooklyn Navy Yard	47%	64%	46%	47%	47%	47%	--
Warbasse Cogen	49%	50%	49%	49%	49%	49%	--
Gowanus	49%	49%	49%	49%	49%	49%	--
Narrows	49%	49%	49%	49%	49%	49%	--
Total	**57%**	**62%**	**57%**	**58%**	**63%**	**62%**	**58%**

6.0 COSTS FOR NO_x ALLOWANCES

Lastly, the increased costs for NO_x allowances associated with additional ozone season (May – September) NO_x emissions were evaluated. The March 2001 New York Independent System Operator report provided estimated costs for one ton of NO_x in the years 2001, 2003 and 2005. Costs for the years 2002 and 2004 were graphically interpolated. Based on the scenarios presented above, the following table shows the additional ozone season emissions and total costs for the NO_x emissions in the next four years.

It should be noted that it is likely that there is not enough generation available from the Hudson Valley plants during the ozone season to meet the lost generation of Indian Point Units 2 and 3. Data obtained from the EGRID database indicates that the ozone season NO_x emissions are nearly half of the annual emissions in some cases. Some of the New York City plants may not be able to meet the demand either. However, a combination of these plants would be available during that time and the ozone season NO_x emissions presented in the table below are based on a fraction of the annual emissions. These ozone season emissions are reasonable estimates provided the required generation was replaced by sources similar to those in the Hudson Valley and New York City.

Projected NO_x Allowance Costs

Replacement Source	NO_x tons	2002 Cost	2003 Cost	2004 Cost	2005 Cost
2002 Fuel Mix	9,725	$21,881,250	--	--	--
2003 Fuel Mix	9,657	--	$28,584,720	--	--
2004 Fuel Mix	9,062	--	--	$28,001,580	--
2005 Fuel Mix	9,411	--	--	--	$29,832,870
Hudson Valley	5,613	$12,629,250	$16,614,480	$17,344,170	$17,793,210
New York City	3,580	$8,055,000	$10,596,800	$11,062,200	$11,348,600
Hudson Valley & NYC	4,846	$10,903,500	$14,344,160	$14,974,140	$15,361,820

7.0 POTENTIAL EFFECTS AND HEALTH HAZARDS FROM STUDIED POLLUTANTS

In addition to evaluating the increase in emissions, TRC prepared a matrix summarizing the potential effects and health hazards from these pollutants. Currently, Westchester County is classified as a non-attainment area for ozone. High levels of ozone can cause lung irritation, permanent lung damage, aggravated asthma, reduced lung capacity, pneumonia and bronchitis. Persons that are most susceptible to the negative effects of ozone are those with respiratory illnesses, outdoor worker, and children. Ozone also increases the susceptibility of plants to disease, thus reducing crop and forest yields.

The entire state of New York is located in the Ozone Transport Region (OTR), which requires that new sources of NO_x and VOC be subject to Lowest Achievable Emission Rates (LAER) and emissions offsets. These regulations are subject to facilities constructed after August 9, 1984. In essence, this massive increase in generation by existing sources is comparable to constructing one large new source without subjecting it to these current applicable regulations. The increase in NO_x and VOC, the precursors to ozone, will likely mean that the area will not reach attainment status in the near future. In order to reach attainment, the area needs to further reduce emissions in the area as opposed to unnecessarily increasing these emission rates.

The matrix outlines the effects of all criteria pollutants and the groups that are most greatly impacted by them. As shown with carbon monoxide and ozone, these pollutants affect all people, regardless of age and current health, in addition to the vegetation in the area.

Regulatory Impacts and Effects of Major Air Pollutants

Pollutant	NAAQS Attainment Status for New York State	Basis for NAAQS	Most Susceptible Population Groups	Additional Impacts
SO_2	Attainment	Temporary breathing difficulty Respiratory illness Aggravates existing Heart Disease	Asthmatics, Children, Elderly, Persons with Heart or Lung Disease	Precursor to acid rain formation Visibility impairment from Sulfate Particles (PM-2.5) Aesthetics damage due to accelerated building decay Acidification of lakes due to Atmospheric Deposition Soil degradation due to Atmospheric Deposition
NO_x	Attainment	Damage to lung tissue Respiratory illnesses – Bronchitis Reduction in lung function	Children, Asthmatics, Outdoor Workers	Precursor to ground-level Ozone (Smog) Precursor to acid rain formation Water quality deterioration (Oxygen depletion) Visibility impairment
PM-10	Attainment for all Counties with exception of New York County	Aggravated Asthma Chronic Bronchitis Decreased lung function Premature Death	Persons with Heart Disease or Influenza, Asthmatics, Children, Elderly	Major cause of reduced visibility (Haze) Aesthetics damage due to stains from soot Acidification of lakes due to Atmospheric Deposition Soil degradation due to Atmospheric Deposition
CO	Attainment with exception of Metropolitan New York City	Cardiovascular effects Vision problems Reduced ability to work and learn Death (extremely high levels)	Persons with Heart or Lung Disease	
Ozone	Attainment for all counties with exceptions of New York State Metropolitan Areas and Long Island	Lung irritation (wheezing, coughing) Permanent lung damage Aggravated Asthma Reduced lung capacity Pneumonia and Bronchitis	Persons with respiratory illnesses, Children, Outdoor workers	Increases susceptibility of plants to disease Reduces crop and forest yields Aesthetics damage due to damage to leaves and trees Damages rubber and fabrics Reduced visibility
VOC	Not Applicable	Not Applicable	Not Applicable	Precursor to ground-level Ozone (Smog) Damage to plants
CO_2	Not Applicable	Not Applicable	Not Applicable	Contributes to Global Warming

APPENDIX A

EMISSION AVOIDANCE CALCULATIONS

Entergy - Indian Point
Emission Avoidance Study

Gneration Fuel Mix Data - from Table 9 from New York State Energy Plan

Generation Fuel	In GWh			
	2002	2003	2004	2005
Natural Gas	24,706	25,628	34,115	54,902
Oil	24,774	24,509	19,212	9,384
Coal	29,380	29,295	28,030	17,934
Nuclear	32,563	32,559	32,662	32,558
Hydro	29,109	29,090	29,111	29,011
Other	2,866	3,004	3,150	3,283
Net Imports	18,799	19,463	18,747	19,731
TOTAL - calc	**162,197**	**163,548**	**165,027**	**166,803**
TOTAL - given	**162,207**	**163,549**	**165,028**	**166,442**

Note: Total provided in source table does not correspond to the arithmetic total of GWh produced for each of the fuels. The calculated total was used in the calculation of the percentages in the following table.

Generation Fuel	In Percent of Total			
	2002	2003	2004	2005
Natural Gas	15.2%	15.7%	20.7%	33.0%
Oil	15.3%	15.0%	11.6%	5.6%
Coal	18.1%	17.9%	17.0%	10.8%
Nuclear	20.1%	19.9%	19.8%	19.6%
Hydro	17.9%	17.8%	17.6%	17.4%
Other	1.8%	1.8%	1.9%	2.0%
Net Imports	11.6%	11.9%	11.4%	11.6%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Above Information Obtained from Table 9 from the New York State Energy Plan

Generation Fuel	In Percent of Total			
	2002	2003	2004	2005
Natural Gas	15.2%	15.7%	20.7%	32.9%
Oil	15.3%	15.0%	11.6%	5.6%
Coal	18.1%	17.9%	17.0%	10.8%
Nuclear	20.1%	19.9%	19.8%	19.5%
Hydro	17.9%	17.8%	17.6%	17.4%
Other	1.8%	1.8%	1.9%	2.0%
Net Imports	11.6%	11.9%	11.4%	11.8%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Above Percentages Calculated from given Generation Fuel Mix

Entergy - Indian Point
Emission Avoidance Study

1998 Data - E-Grid

Capacity	38,519 MW
Heat Input	933,615,646 MMBtu
Generation	144,795,255 (MWh)

Fuel	Fuel Mix %	MWh
Coal	17.0%	24,401,936
Oil	10.4%	14,939,368
Gas	29.7%	42,689,444
Nuclear	21.8%	31,313,708
Other Fossil	0.4%	587,139
Biomass	1.3%	1,803,829
Hydro	19.5%	28,065,751
TOTAL	**100.0%**	**143,801,175**

Indian Point - Units 2 & 3	
MWh	15,552,767
% of Total	10.8%

		FOSSIL		COAL		OIL		GAS	
		output	input	output	input	output	input	output	input
Pollutant	tons	lbs/MWh	lbs/MMBtu	lbs/MWh	lbs/MMBtu	lbs/MWh	lbs/MMBtu	lbs/MWh	lbs/MMBtu
Annual CO_2	69,010,726	1658.57	151.68	2295.74	202.42	1753.03	150.88	1234.69	118.36
Annual SO_2	317,766	7.57	0.69	19.06	1.68	7.94	0.68	0.43	0.04
Annual NO_x	107,232	2.56	0.23	4.87	0.43	2.55	0.22	1.15	0.11
Ozone NO_x	50,339	2.52	0.21	4.88	0.41	2.54	0.21	1.23	0.11
PM-10*				0.48	0.042	0.14	0.012	0.069	0.0066
CO*				0.23	0.020	0.038	0.0033	0.16	0.015
VOC*				0.028	0.0024	0.005	0.00041	0.022	0.0021
Annual Hg	1.156	0.014	0.0012	0.044	0.0039				

* Emissions are based on AP-42 emission Factors. Particulate emissions include condensables and filterables. Output-based factors for PM-10, CO and VOC are calculated based on heat rate for each fuel type derived from the above data. Natural gas and oil factors based on comparing combustion turbine and boiler factors and selecting the lower factor.

Entergy - Indian Point
Emission Avoidance Study

Generation Fuel	In Percent of Total			
	2002	2003	2004	2005
Natural Gas	15.2%	15.7%	20.7%	32.9%
Oil	15.3%	15.0%	11.6%	5.6%
Coal	18.1%	17.9%	17.0%	10.8%
Nuclear	20.1%	19.9%	19.8%	19.5%
Hydro	17.9%	17.8%	17.6%	17.4%
Other	1.8%	1.8%	1.9%	2.0%
Net Imports	11.6%	11.9%	11.4%	11.8%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Above Percentages Calculated from given Generation Fuel Mix

Emission Factors Obtained from E-Grid - 1998 data (and AP-42 for PM-10, CO and VOC)

		COAL		OIL		GAS	
Pollutant	tons	output lbs/MWh	input lbs/MMBtu	output lbs/MWh	input lbs/MMBtu	output lbs/MWh	input lbs/MMBtu
Annual CO_2	69,010,726	2295.74	202.42	1753.03	150.88	1234.69	118.36
Annual SO_2	317,766	19.06	1.68	7.94	0.68	0.43	0.040
Annual NO_x	107,232	4.87	0.43	2.55	0.22	1.15	0.11
Ozone NO_x	50,339	4.88	0.41	2.54	0.21	1.23	0.11
PM-10*	NA	0.48	0.042	0.14	0.012	0.069	0.0066
CO*	NA	0.23	0.020	0.038	0.003	0.16	0.015
VOC*	NA	0.028	0.0024	0.0048	0.00041	0.022	0.0021
Annual Hg	1,156	0.044	0.0039	0	0	0	0

Assume Replacement by existing Natural Gas, Oil and Coal fired sources.

2002 Generation Fuel Mix

	Unit #2	Unit #3	Total
Net Output (MW)	983.7	989	1972.7
Capacity Factor (%)	90%	90%	90%
12-month Net Generation (MWh)	7,755,491	7,797,276	15,552,767
Annual CO_2 (tons)	6,952,142	6,989,599	13,941,742
Annual SO_2 (tons)	37,731	37,934	75,665
Annual NO_x (tons)	11,539	11,601	23,140
Ozone NO_x (tons)	4,849	4,876	9,725
PM-10	942	947	1,890
CO	571	574	1,145
VOC	73	73	145
Annual Hg (tons)	64	64	128

2003 Generation Fuel Mix

	Unit #2	Unit #3	Total
Net Output (MW)	983.7	989	1972.7
Capacity Factor (%)	90%	90%	90%
12-month Net Generation (MWh)	7,755,491	7,797,276	15,552,767
Annual CO_2 (tons)	6,925,448	6,962,761	13,888,209
Annual SO_2 (tons)	37,297	37,497	74,794
Annual NO_x (tons)	11,455	11,516	22,971
Ozone NO_x (tons)	4,815	4,841	9,657
PM-10	935	940	1,875
CO	573	576	1,148
VOC	73	73	146
Annual Hg (tons)	63	63	126

2004 Generation Fuel Mix

	Unit #2	Unit #3	Total
Net Output (MW)	983.7	989	1972.7
Capacity Factor (%)	90%	90%	90%
12-month Net Generation (MWh)	7,755,491	7,797,276	15,552,767
Annual CO_2 (tons)	6,680,028	6,716,018	13,396,046
Annual SO_2 (tons)	33,434	33,614	67,048
Annual NO_x (tons)	10,711	10,769	21,480
Ozone NO_x (tons)	4,519	4,543	9,062
PM-10	877	881	1,758
CO	599	602	1,201
VOC	77	78	155
Annual Hg (tons)	59	59	118

2005 Generation Fuel Mix

	Unit #2	Unit #3	Total
Net Output (MW)	983.7	989	1972.7
Capacity Factor (%)	90%	90%	90%
12-month Net Generation (MWh)	7,755,491	7,797,276	15,552,767
Annual CO_2 (tons)	7,244,319	7,283,350	14,527,670
Annual SO_2 (tons)	31,788	31,959	63,747
Annual NO_x (tons)	11,046	11,106	22,152
Ozone NO_x (tons)	4,693	4,718	9,411
PM-10	919	924	1,844
CO	752	756	1,508
VOC	98	99	197
Annual Hg (tons)	63	63	126

Entergy - Indian Point
Emission Avoidance Study

	Coal Generaton (MWh)	Oil Generation (MWh)	Gas Generation (MWh)	Total Generation (MWh)	Capacity (MW)	Capacity Factor	Heat Rate (Btu/kWh)
Bowline Point	0	1,018,218	2,503,152	3,521,370	1,242	0.324	12,880
Lovett	1,618,392	86	454,188	2,072,666	449.1	0.527	11,745
Danskammer	2,514,449	264	220,461	2,735,174	537.4	0.581	10,891
Roseton	0	3,228,349	429,265	3,657,614	1,242	0.336	12,592

	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)
Bowline Point	2,957,361	2,193	4,273	2,358	0
Lovett	2,259,440	9,324	4,570	2,096	36.2
Danskammer	2,950,904	13,938	6,444	2,811	127.2
Roseton	3,614,561	24,729	4,714	2,181	0

	CO_2 Rate (lbs/MWh)	CO_2 Rate (lbs/MMBtu)	SO_2 Rate (lbs/MWh)	SO_2 Rate (lbs/MMBtu)	Annual NO_x Rate (lbs/MWh)	Annual NO_x Rate (lbs/MMBtu)	Ozone Season NO_x Rate (lbs/MWh)	Ozone Season NO_x Rate (lbs/MMBtu)	Hg Rate (lbs/GWh)	Hg Rate (lbs/Bbtu)
Bowline Point	1,679.66	130.41	1.25	0.10	2.43	0.19	2.48	0.19	0	0
Lovett	2,180.23	185.63	9.00	0.77	4.41	0.38	4.29	0.36	0.0175	0.0015
Danskammer	2,157.74	198.11	10.19	0.94	4.71	0.43	4.57	0.42	0.0465	0.0043
Roseton	1,976.46	156.96	13.52	1.07	2.58	0.20	2.58	0.20	0	0

	PM Rate (lbs/MWh)	PM Rate (lbs/MMBtu)	CO Rate (lbs/MWh)	CO Rate (lbs/MMBtu)	VOC Rate (lbs/MWh)	VOC Rate (lbs/MMBtu)
Bowline Point	0.36	0.028	0.86	0.069	0.069	0.0054
Lovett	0.289	0.025	0.40	0.034	0.036	0.0031
Danskammer	0.31	0.028	0.28	0.025	0.029	0.0027
Roseton	0.92	0.073	0.520	0.0412	0.0700	0.00542

	COAL	**NO. 6 OIL**	**GAS**
	input	**input**	**input**
Pollutant	**lbs/MMBtu**	**lbs/MMBtu**	**lbs/MMBtu**
PM-10*	0.042	0.082	0.0054
CO*	0.020	0.036	0.082
VOC*	0.0024	0.0054	0.0054
Annual Hg	0.0039	--	--

* Emissions are based on AP-42 emission Factors. Particulate emissions include condensables and filterables. Output-based factors for PM-10,

Entergy - Indian Point
Emission Avoidance Study

Indian Point Generating Capacity	
Unit 2 (MW)	983.7
Unit 3 (MW)	989
Total (MW)	1972.7
Capacity Factor	90%
12-month Net Generation (MWh)	15,552,767

Current Emissions

	Current Generation (MWh)	Available Generation (MWh)*	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	3,521,370	6,270,558	2,957,361	2,193	4,273	2,358	0	626	1,516	122
Lovett	2,072,666	1,468,038	2,259,440	9,324	4,570	2,096	36	300	412	37
Danskammer	2,735,174	1,501,688	2,950,904	13,938	6,444	2,811	127	417	377	40
Roseton	3,657,614	6,134,314	3,614,561	24,729	4,714	2,181	0	1,684	952	128
TOTAL	**11,986,824**	**15,374,598**	**11,782,266**	**50,184**	**20,002**	**9,447**	**163**	**3,027**	**3,256**	**327**

*** Assuming a 90% capacity factor for necessary shutdowns.**

Replace Emissions - Scenario 1

	Percent Replaced	Increased Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	40.3%	6,270,558	5,266,203	3,919	7,619	1,960	0	1,114	2,699	217
Lovett	9.4%	1,468,038	1,600,331	6,606	3,237	794	26	212	292	26
Danskammer	9.7%	1,501,688	1,620,126	7,651	3,536	865	70	229	207	22
Roseton	39.4%	6,134,314	6,062,113	41,468	7,913	1,995	0	2,825	1,596	215
TOTAL	**99%**	**15,374,598**	**14,548,772**	**59,644**	**22,305**	**5,613**	**96**	**4,380**	**4,794**	**480**

Increased Emissions - Scenario 1

	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	178%	179%	178%	83%	0%	178%	178%	178%
Lovett	71%	71%	71%	38%	71%	71%	71%	71%
Danskammer	55%	55%	55%	31%	55%	55%	55%	55%
Roseton	168%	168%	168%	91%	0%	168%	168%	168%
TOTAL	**123%**	**119%**	**112%**	**59%**	**58%**	**145%**	**147%**	**147%**

Entergy - Indian Point
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	Oil Generation (MWh)	Gas Generation (MWh)	Total Generation (MWh)	Capacity (MW)	Capacity Factor	Heat Rate (Btu/kWh)
Bronx Zoo	1,957	19,529	21,486	3.80	0.648	7,553
Ravenswood	620,133	3,102,402	3,722,535	2,310	0.184	13,210
Charles Poletti	2,247,830	390,380	2,638,210	883.0	0.341	11,373
JFK Cogen	0	569,591	569,591	121.1	0.537	7,684
Far Rockaway	0	359,190	359,190	100.0	0.410	11,317
Astoria	863,747	3,398,031	4,261,778	1,150.6	0.423	12,991
Arthur Kill	0	1,237,781	1,237,781	928.0	0.152	13,129
East River	259,283	231,769	491,052	356.3	0.157	11,795
Waterside	1,074	507,733	508,807	199.8	0.291	8,427
Hudson Ave	2,547	0	2,547	48.9	0.006	8,590
Brooklyn Navy Yard	12,742	1,788,404	1,801,146	336.6	0.611	8,500
Warbasse Cogen	6,868	60,780	67,648	37.8	0.204	16,064
Gowanus	114,743	0	114,743	688.0	0.019	18,182
Narrows	26,377	65,003	91,380	393.1	0.027	17,404

	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)
Bronx Zoo	9,720	2	8	3	0
Ravenswood	3,104,337	1,140	3,586	2,602	0
Charles Poletti	2,327,340	3,835	3,446	1,695	0.0
JFK Cogen	253,407	0	167	69	0.0
Far Rockaway	241,576	1	220	97	0.0
Astoria	3,559,363	1,676	4,676	2,191	0.0
Arthur Kill	963,372	5	874	829	0.0
East River	411,987	480	738	334	0.0
Waterside	262,004	3	158	62	0.0
Hudson Ave	1,747	3	10	4	0.0
Brooklyn Navy Yard	924,051	7	73	26	0.0
Warbasse Cogen	65,618	9	42	18	0.0
Gowanus	166,544	324	921	384	0.0
Narrows	102,647	77	388	162	0.0

	CO_2 Rate (lbs/MWh)	CO_2 Rate (lbs/MMBtu)	SO_2 Rate (lbs/MWh)	SO_2 Rate (lbs/MMBtu)	Annual NO_x Rate (lbs/MWh)	Annual NO_x Rate (lbs/MMBtu)	Ozone Season NO_x Rate (lbs/MWh)	Ozone Season NO_x Rate (lbs/MMBtu)
Bronx Zoo	904.75	119.79	0.17	0.02	0.76	0.10	0.76	0.10
Ravenswood	1,667.86	126.26	0.61	0.05	1.93	0.15	1.97	0.15
Charles Poletti	1,764.33	155.13	2.91	0.26	2.61	0.23	2.59	0.23
JFK Cogen	898.78	115.80	0.00	0.00	0.59	0.08	0.59	0.08
Far Rockaway	1,345.12	118.86	0.01	0.00	1.22	0.11	1.11	0.10
Astoria	1,670.37	128.58	0.79	0.06	2.19	0.17	2.04	0.16
Arthur Kill	1,556.61	118.56	0.01	0.00	1.41	0.11	1.51	0.11
East River	1,677.98	142.26	1.95	0.17	3.01	0.25	2.29	0.26
Waterside	1,029.87	122.22	0.01	0.00	0.62	0.07	0.61	0.07
Hudson Ave	1,357.06	159.65	2.64	0.31	7.50	0.88	3.75	0.88
Brooklyn Navy Yard	1,026.07	120.71	0.01	0.00	0.08	0.01	0.07	0.01
Warbasse Cogen	1,939.98	120.76	0.27	0.02	1.25	0.08	1.25	0.08
Gowanus	2,902.90	159.65	5.66	0.31	16.05	0.88	8.87	0.88
Narrows	2,246.60	129.08	1.68	0.10	8.50	0.49	4.44	0.49

	PM Rate (lbs/MWh)	PM Rate (lbs/MMBtu)	CO Rate (lbs/MWh)	CO Rate (lbs/MMBtu)	VOC Rate (lbs/MWh)	VOC Rate (lbs/MMBtu)
Bronx Zoo	0.05	0.007	0.11	0.014	0.015	0.0019
Ravenswood	0.10	0.007	0.17	0.013	0.023	0.0018
Charles Poletti	0.13	0.011	0.06	0.005	0.007	0.0007
JFK Cogen	0.05	0.007	0.12	0.015	0.015	0.0021
Far Rockaway	0.07	0.007	0.17	0.015	0.023	0.0021
Astoria	0.10	0.008	0.16	0.013	0.023	0.0018
Arthur Kill	0.09	0.007	0.20	0.015	0.027	0.0021
East River	0.11	0.009	0.10	0.009	0.015	0.0012
Waterside	0.06	0.007	0.13	0.015	0.019	0.0021
Hudson Ave	0.10	0.012	0.03	0.003	0.003	0.0004
Brooklyn Navy Yard	0.06	0.007	0.13	0.015	0.017	0.0021
Warbasse Cogen	0.11	0.007	0.22	0.014	0.030	0.0019
Gowanus	0.22	0.012	0.06	0.003	0.007	0.0004
Narrows	0.14	0.008	0.20	0.012	0.028	0.0016

	NO. 2 OIL	GAS
Pollutant	input lbs/MMBtu	input lbs/MMBtu
PM-10*	0.012	0.0066
CO*	0.0033	0.015
VOC*	0.00041	0.0021

* Emissions are based on AP-42 emission Factors. Particulate emissions include condensables and filterables. Output-based factors for PM-

Entergy - Indian Point
Emission Avoidance Study

Indian Point Generating Capacity	
Unit 2 (MW)	983.7
Unit 3 (MW)	989
Total (MW)	1972.7
Capacity Factor	90%
12-month Net Generation (MWh)	15,552,767

Current Emissions

	Current Generation (MWh)	Available Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	21,486	8,473	9,720	2	8	3	0.6	1.1	0.2
Ravenswood	3,722,535	14,485,563	3,104,337	1,140	3,586	2,602	184.4	320.9	43.5
Charles Poletti	2,638,210	4,323,362	2,327,340	3,835	3,446	1,695	168.0	75.5	9.9
JFK Cogen	569,591	385,161	253,407	0	167	69	14.6	33.2	4.4
Far Rockaway	359,190	429,210	241,576	1	220	97	13.4	30.5	4.2
Astoria	4,261,778	4,809,552	3,559,363	1,676	4,676	2,191	213.0	349.6	48.2
Arthur Kill	1,237,781	6,078,571	963,372	5	874	829	53.6	121.9	16.7
East River	491,052	2,318,017	411,987	480	738	334	27.4	25.5	3.6
Waterside	508,807	1,066,416	262,004	3	158	62	14.2	32.1	4.7
Hudson Ave	2,547	382,981	1,747	3	10	4	0.1	0.0	0.0
Brooklyn Navy Yard	1,801,146	852,608	924,051	7	73	26	50.8	114.2	15.0
Warbasse Cogen	67,648	230,367	65,618	9	42	18	3.9	7.5	1.0
Gowanus	114,743	5,309,449	166,544	324	921	384	12.5	3.4	0.4
Narrows	91,380	3,007,820	102,647	77	388	162	6.5	9.2	1.3
TOTAL	**15,887,894**	**43,687,552**	**12,393,712**	**7,561**	**15,307**	**8,476**	**763**	**1,125**	**153**

Replaced Emissions

	Percent Replaced	Increased Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	0.054%	8,473	3,833	1	3	1	0.2	0.4	0.1
Ravenswood	25.4%	3,946,194	3,290,850	1,204	3,808	980	195.5	340.2	46.2
Charles Poletti	18.0%	2,796,720	2,467,169	4,069	3,650	913	178.1	80.0	10.5
JFK Cogen	2.5%	385,161	173,088	0	114	29	9.9	22.4	3.0
Far Rockaway	2.4%	380,771	256,091	2	232	53	14.2	32.3	4.4
Astoria	29.0%	4,517,836	3,773,229	1,785	4,947	1,162	225.8	370.6	51.1
Arthur Kill	8.4%	1,312,150	1,021,253	7	925	250	56.9	129.2	17.7
East River	3.3%	520,556	436,741	508	783	150	29.0	27.1	3.8
Waterside	3.5%	539,377	277,744	3	167	41	15.0	34.0	5.0
Hudson Ave	0.017%	2,700	1,832	4	10	1	0.1	0.0	0.0
Brooklyn Navy Yard	5.5%	852,608	437,418	4	34	8	24.1	54.1	7.1
Warbasse Cogen	0.46%	71,712	69,560	10	45	11	4.1	8.0	1.1
Gowanus	0.78%	121,637	176,550	344	976	136	13.3	3.6	0.5
Narrows	0.62%	96,870	108,814	81	412	54	6.9	9.8	1.4
TOTAL	**100%**	**15,552,767**	**12,494,172**	**8,020**	**16,107**	**3,580**	**773**	**1,112**	**142**

Increased Emissions

	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	39%	39%	39%	24%	39%	39%	39%
Ravenswood	106%	106%	106%	38%	106%	106%	106%
Charles Poletti	106%	106%	106%	54%	106%	106%	106%
JFK Cogen	68%	0%	68%	41%	68%	68%	68%
Far Rockaway	106%	159%	106%	55%	106%	106%	106%
Astoria	106%	106%	106%	53%	106%	106%	106%
Arthur Kill	106%	134%	106%	30%	106%	106%	106%
East River	106%	106%	106%	45%	106%	106%	106%
Waterside	106%	96%	106%	67%	106%	106%	106%
Hudson Ave	105%	105%	105%	32%	106%	106%	106%
Brooklyn Navy Yard	47%	64%	46%	29%	47%	47%	47%
Warbasse Cogen	106%	107%	106%	64%	106%	106%	106%
Gowanus	106%	106%	106%	35%	106%	106%	106%
Narrows	106%	106%	106%	33%	106%	106%	106%
TOTAL	**101%**	**106%**	**105%**	**42%**	**101%**	**99%**	**93%**

Entergy - Indian Point
Emission Avoidance Study

Indian Point Generating Capacity	
Unit 2 (MW)	983.7
Unit 3 (MW)	989
Total (MW)	1972.7
Capacity Factor	90%
12-month Net Generation (MWh)	15,552,767

Current Emissions

	Current Generation (MWh)	Available Generation (MWh)*	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	3,521,370	6,270,558	2,957,361	2,193	4,273	2,358	0	626	1,516	122
Lovett	2,072,666	1,468,038	2,259,440	9,324	4,570	2,096	36	300	412	37
Danskammer	2,735,174	1,501,688	2,950,904	13,938	6,444	2,811	127	417	377	40
Roseton	3,657,614	6,134,314	3,614,561	24,729	4,714	2,181	0	1,684	952	128
TOTAL	**11,986,824**	**15,374,598**	**11,782,266**	**50,184**	**20,002**	**9,447**	**163**	**3,027**	**3,256**	**327**

	Current Generation (MWh)	Available Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	21,486	8,473	9,720	2	8	3	0.6	1.1	0.2
Ravenswood	3,722,535	14,485,563	3,104,337	1,140	3,586	2,602	184.4	320.9	43.5
Charles Poletti	2,638,210	4,323,362	2,327,340	3,835	3,446	1,695	168.0	75.5	9.9
JFK Cogen	569,591	385,161	253,407	0	167	69	14.6	33.2	4.4
Far Rockaway	359,190	429,210	241,576	1	220	97	13.4	30.5	4.2
Astoria	4,261,778	4,809,552	3,559,363	1,676	4,676	2,191	213.0	349.6	48.2
Arthur Kill	1,237,781	6,078,571	963,372	5	874	829	53.6	121.9	16.7
East River	491,052	2,318,017	411,987	480	738	334	27.4	25.5	3.6
Waterside	508,807	1,066,416	262,004	3	158	62	14.2	32.1	4.7
Hudson Ave	2,547	382,981	1,747	3	10	4	0.1	0.0	0.0
Brooklyn Navy Yard	1,801,146	852,608	924,051	7	73	26	50.8	114.2	15.0
Warbasse Cogen	67,648	230,367	65,618	9	42	18	3.9	7.5	1.0
Gowanus	114,743	5,309,449	166,544	324	921	384	12.5	3.4	0.4
Narrows	91,380	3,007,820	102,647	77	388	162	6.5	9.2	1.3
TOTAL	**15,887,894**	**43,687,552**	**12,393,712**	**7,561**	**15,307**	**8,476**	**763**	**1,125**	**153**

	Current Generation (MWh)	Available Generation (MWh)*	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
TOTAL	**27,874,718**	**59,062,150**	**24,175,978**	**57,745**	**35,309**	**17,922**	**163**	**3,790**	**4,380**	**480**

Replaced Emissions - half replacement by Hudson Valley Plants, half from NYC plants

	Percent Replaced	Increased Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	15.4%	2,388,279	2,005,749	1,493	2,902	746	0	424	1,028	83
Lovett	9.0%	1,405,733	1,532,411	6,326	3,100	760	25	203	279	25
Danskammer	9.7%	1,501,688	1,620,126	7,651	3,536	865	70	229	207	22
Roseton	16.0%	2,480,683	2,451,486	16,769	3,200	807	0	1,142	646	87
TOTAL	**50.0%**	**7,776,383**	**7,609,771**	**32,239**	**12,738**	**3,178**	**94**	**1,999**	**2,159**	**217**

	Percent Replaced	Increased Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bronx Zoo	0.054%	8,473	3,833	1	3	1	0.2	0.4	0.1
Ravenswood	11.8%	1,830,215	1,526,271	558	1,766	454	90.7	157.8	21.4
Charles Poletti	8.3%	1,297,098	1,144,254	1,887	1,693	423	82.6	37.1	4.9
JFK Cogen	1.8%	280,044	125,849	0	83	21	7.2	16.3	2.2
Far Rockaway	1.1%	176,599	118,773	1	108	25	6.6	15.0	2.1
Astoria	13.5%	2,095,338	1,749,995	828	2,294	539	104.7	171.9	23.7
Arthur Kill	3.9%	608,565	473,649	3	429	116	26.4	59.9	8.2
East River	1.6%	241,430	202,557	235	363	70	13.5	12.6	1.8
Waterside	1.6%	250,159	128,816	1	78	19	7.0	15.8	2.3
Hudson Ave	0.008%	1,252	850	2	5	1	0.1	0.0	0.0
Brooklyn Navy Yard	5.5%	852,608	437,418	4	34	8	24.1	54.1	7.1
Warbasse Cogen	0.21%	33,260	32,262	4	21	5	1.9	3.7	0.5
Gowanus	0.36%	56,414	81,883	160	453	63	6.2	1.7	0.2
Narrows	0.29%	44,928	50,467	38	191	25	3.2	4.5	0.6
TOTAL	**50%**	**7,776,383**	**6,076,877**	**3,722**	**7,520**	**1,668**	**374**	**551**	**75**

	Percent Replaced	Increased Generation (MWh)	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
TOTAL	**100%**	**15,552,767**	**13,686,648**	**35,961**	**20,258**	**4,846**	**94**	**2,373**	**2,710**	**292**

Increased Emissions

	Annual CO_2 (tons)	Annual SO_2 (tons)	Annual NO_x (tons)	Ozone Season NO_x (tons)	Annual Hg (lbs)	Annual PM-10 (tons)	Annual CO (tons)	Annual VOC (tons)
Bowline Point	68%	68%	68%	32%	0%	68%	68%	68%
Lovett	68%	68%	68%	36%	68%	68%	68%	68%
Danskammer	55%	55%	55%	31%	55%	55%	55%	55%
Roseton	68%	68%	68%	37%	0%	68%	68%	68%
Bronx Zoo	39%	39%	39%	24%	–	39%	39%	39%
Ravenswood	49%	49%	49%	17%	–	49%	49%	49%
Charles Poletti	49%	49%	49%	25%	–	49%	49%	49%
JFK Cogen	50%	0%	50%	30%	–	49%	49%	49%
Far Rockaway	49%	74%	49%	26%	–	49%	49%	49%
Astoria	49%	49%	49%	25%	–	49%	49%	49%
Arthur Kill	49%	62%	49%	14%	–	49%	49%	49%
East River	49%	49%	49%	21%	–	49%	49%	49%
Waterside	49%	44%	49%	31%	–	49%	49%	49%
Hudson Ave	49%	49%	49%	15%	–	49%	49%	49%
Brooklyn Navy Yard	47%	64%	46%	29%	–	47%	47%	47%
Warbasse Cogen	49%	50%	49%	30%	–	49%	49%	49%
Gowanus	49%	49%	49%	16%	–	49%	49%	49%
Narrows	49%	49%	49%	16%	–	49%	49%	49%
TOTAL	**57%**	**62%**	**57%**	**27%**	**58%**	**58%**	**63%**	**62%**

Entergy - Indian Point
Emission Avoidance Study

Baseline Statewide Emissions and Calculated Increases Under Different Generation Replacement Source Assumptions

Source	CO_2	SO_2	NO_x	PM-10	CO	VOC
NY Statewide - All Sources[a]	248,241,000	688,000	723,000	767,000	3,337,000	753,000
NY Statewide - Utilities Only[b]	69,010,726	317,766	107,232	8,328	6,450	842
2002 Generation Mix	13,941,742	75,665	23,140	1,890	1,145	145
2003 Generation Mix	13,888,209	74,794	22,971	1,875	1,148	146
2004 Generation Mix	13,396,046	67,048	21,480	1,758	599	155
2005 Generation Mix	14,527,670	63,747	22,152	1,844	752	197
Hudson Valley	14,548,772	59,644	22,305	4,380	4,794	480
New York City	12,494,172	8,020	16,107	773	1,112	142
Hudson Valley and New York City	13,686,648	35,961	20,258	2,373	2,710	292

(a) based on USEPA Emission Trends Report (baseline year = 1998)
(b) based on USEPA's E-GRID database (baseline year = 1998)

Percent Increase in NY Statewide Emissions from All Sources

Source	CO_2	SO_2	NO_x	PM-10	CO	VOC
2002 Generation Mix	5.62%	11.00%	3.20%	0.25%	0.03%	0.02%
2003 Generation Mix	5.59%	10.87%	3.18%	0.24%	0.03%	0.02%
2004 Generation Mix	5.40%	9.75%	2.97%	0.23%	0.02%	0.02%
2005 Generation Mix	5.85%	9.27%	3.06%	0.24%	0.02%	0.03%
Hudson Valley	5.86%	8.67%	3.09%	0.57%	0.14%	0.06%
New York City	5.03%	1.17%	2.23%	0.10%	0.03%	0.02%
Hudson Valley and New York City	5.51%	5.23%	2.80%	0.31%	0.08%	0.04%

Percent Increase in NY Statewide Utility Emissions

Source	CO_2	SO_2	NO_x	PM-10	CO	VOC
2002 Generation Mix	20.20%	23.81%	21.58%	22.69%	17.76%	17.28%
2003 Generation Mix	20.12%	23.54%	21.42%	22.51%	17.80%	17.34%
2004 Generation Mix	19.41%	21.10%	20.03%	21.11%	9.28%	18.36%
2005 Generation Mix	21.05%	20.06%	20.66%	22.14%	11.66%	23.44%
Hudson Valley	21.08%	18.77%	20.80%	52.59%	74.31%	56.97%
New York City	18.10%	2.52%	15.02%	9.28%	17.24%	16.83%
Hudson Valley and New York City	19.83%	11.32%	18.89%	28.49%	42.02%	34.63%

Entergy - Indian Point
Emission Avoidance Study

Emission Prices - $/ton

2001	841
2002	***2250***
2003	2960
2004	***3090***
2005	3170

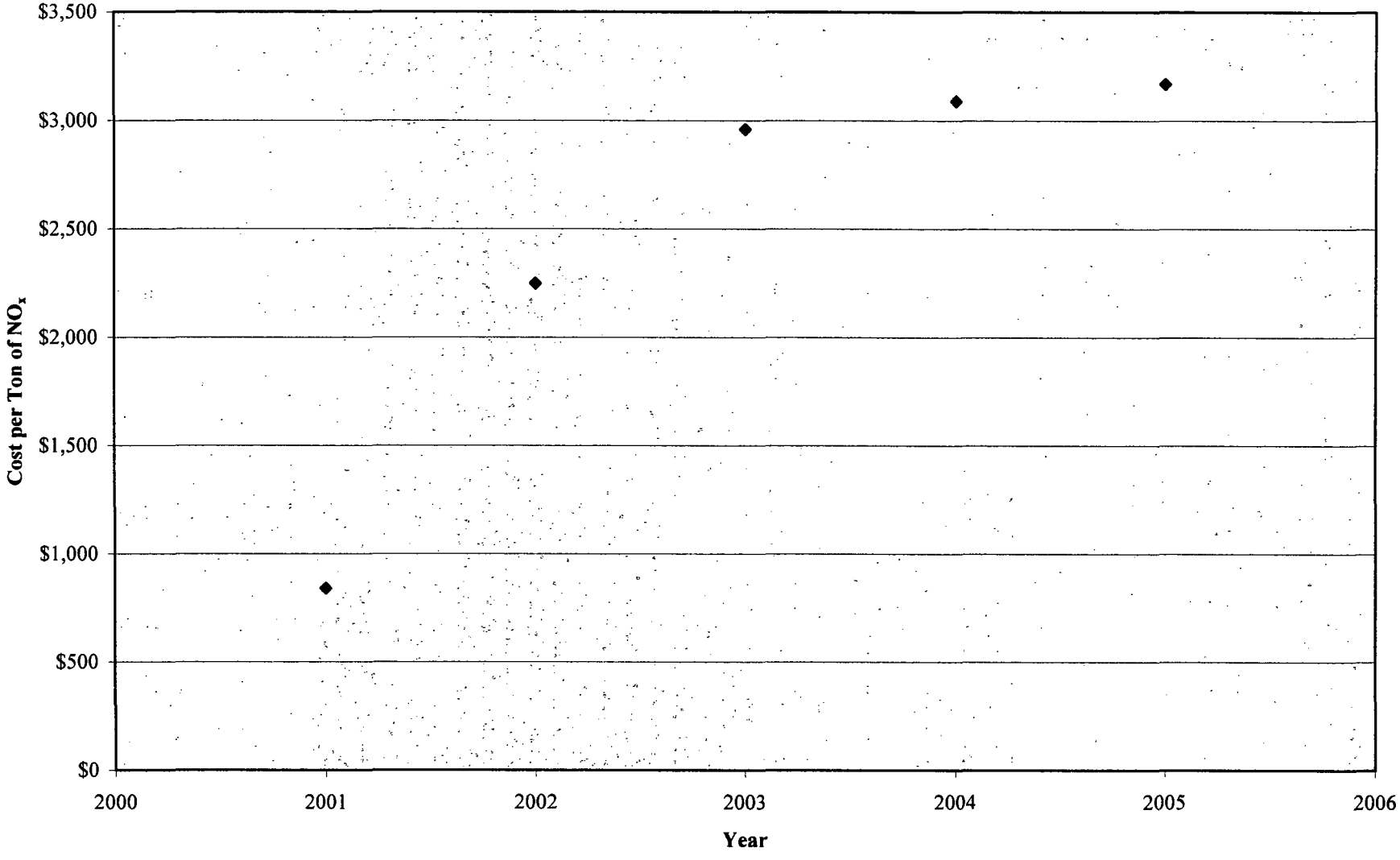
2001, 2003 and 2005 were obtained from NYISO document
Bold and Italic - graphically interpolated

Replacement Source	Ozone NOx (tons)	2002 Cost	2003 Cost	2004 Cost	2005 Cost
2002 Generation Fuel Mix	9,725	$21,881,250	--	--	--
2003 Generation Fuel Mix	9,657	--	$28,584,720	--	--
2004 Generation Fuel Mix	9,062	--	--	$28,001,580	--
2005 Generation Fuel Mix	9,411	--	--	--	$29,832,870
Hudson Valley Plants*	5,613	$12,629,250	$16,614,480	$17,344,170	$17,793,210
New York City Plants*	3,580	$8,055,000	$10,596,800	$11,062,200	$11,348,600
Hudson Valley & NYC Plants*	4,846	$10,903,500	$14,344,160	$14,974,140	$15,361,820

* NOTE: It is unclear whether the necessary generation is available during the ozone season from these sources. These ozone season emissions are based on assuming that the generation is available, and the mix of the plants is the same on an annual basis.

Entergy - Indian Point
Emissions Avoidance Study

NO_x Allowance Cost Estimation



Independent Power Producers of New York, Inc.

Gavin J. Donohue
President & CEO

Testimony of the Independent Power Producers of New York, Inc.

Before the Nuclear Regulatory Commission Regarding the
Environmental Scoping Process for the
Indian Point Nuclear Generating Units Nos. 2 and 3, License Renewal Application
Re: Docket Nos. 50-247 and 50-286

Oral Testimony Provided at:

The Colonial Terrace
119 Oregon Road
Cortlandt Manor, New York

Written Testimony Submitted to:

Senior Project Manager Bo Pham
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

September 19, 2007

19 Dove Street, Suite 302
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Powerfully Competitive

NRC/1:30P/7

Good afternoon. On behalf of the Independent Power Producers of New York, Inc. (IPPNY), I appreciate the opportunity to provide these comments to the U.S. Nuclear Regulatory Commission (NRC), in relation to the environmental scoping for the renewal of Indian Point's license. My name is Radmila P. Miletich, and I am IPPNY's Legislative and Environmental Policy Director.

IPPNY is a trade association representing the competitive power supply industry in New York State, including companies involved in the development of electric generating facilities, the generation, sale, and marketing of electric power, and the development of natural gas facilities. IPPNY's members generate almost 75 percent of New York's electricity using a wide variety of generating technologies and fuels, including hydro, nuclear, wind, coal, oil, natural gas, and biomass. IPPNY's mission is to assist its member companies in becoming the premier providers of electricity in New York State. In furtherance of our mission, IPPNY is committed in advocating fair and efficient competition among wholesale and retail suppliers of electricity and other potentially competitive electric resources, including renewable, fossil-fueled, nuclear, demand response providers and conservation technologies.

IPPNY firmly believes that the Indian Point nuclear facility is a positive asset for the State of New York and for its millions of residents, and we support the continued operation of Indian Point as a critical component of the state's energy supply system. According to the recent report by The Analysis Group, competition in the wholesale power industry has resulted in an eleven percent increase in nuclear plant power output.

Indian Point is a "base-load" power plant that is capable of providing 2,000 megawatts of electricity 24 hours a day, 7 days a week, 365 days of the year. The facility provides 20 to 40 percent of the lower Hudson Valley's and New York City's power. As New York's energy demand continues to grow, so does the importance of Indian Point. Millions of homes, thousands of businesses and hundreds of critical transportation, health and municipal systems rely on Indian Point's reliable, low-cost power.

In providing this vital and necessary source of energy, Indian Point does not contribute to the local air emissions. Continued reliance on non-emitting generating sources, such as nuclear power, is an essential component of a responsible strategy to avoid and reduce emissions that lead to climate change. Indeed, energy modeling that forms the basis for the Regional Greenhouse Gas Initiative assumes that existing non-emitting nuclear facilities, such as Indian Point, will continue to operate. Clearly, nuclear energy from Indian Point is essential to holding current emission levels constant and keeping emissions low in the future. Specifically, the continued operation of Indian Point avoids increased emissions that would result otherwise, such as almost 14 million tons of carbon dioxide, over 75 thousand tons of sulfur dioxide, more than 23 thousand tons of nitrogen oxides, in excess of a thousand tons of carbon monoxide, and 145 tons of volatile organic carbon.

Reliable electricity is critically important to New York's future, and nuclear energy is a reliable, affordable component of our state's diverse fuel mix. Indian Point should continue to play a role in the state's energy plan now and well into the future. We cannot afford to lose any of the vital existing generating capacity that the Indian Point provides to serve New York City and the lower Hudson Valley. Without Indian Point's 2,000 megawatts, energy costs would rise over an estimated $1 billion a year in the New York area. There could be wholesale price spikes as high as 40 percent and impacts to electric system reliability.

In addition to the importance of Indian Point as an energy provider for the people of the State of New York in this increasingly energy starved area, the facility also is significant for its economic impact. Indian Point is a local economic engine that provides over $365 million a year through its payroll and local purchases, which is further augmented by the local and state taxes paid to New York.

IPPNY believes that not relicensing the Indian Point Energy Center is simply unworkable, in the context of the critical electricity outlook facing the City of New York and the lower Hudson Valley over the next several years. Thus, IPPNY hereby wholeheartedly supports and petitions for the relicensing of the Indian Point facility.

Thank you for the opportunity to make this statement.

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Michael Otis
162 Marabac Road
Gardiner, NY 12525
(845) 255-7756

September 19, 2007

Senior Project Manager Bo Pham
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Re: September 19, 2007 Environmental Scoping for Indian Point Nuclear-Powered Electric Generating Station's License Renewal Application

My name is Michael Otis. I am a lecturer at the State University of New York at New Paltz School of Science and Engineering.

I am also active with members of the SUNY New Paltz Foundation, who along with myself and other faculty, have taken a special interest in trying to do as much as we can to bring along the next generation of engineers that this country so desperately needs. Our shared special passion is to develop more diverse engineering students at the college level and help create career paths and hands on experience for these bright young people.

It is in that capacity that I have had the pleasure of working with Entergy and some of its senior managers to help provide pathways for engineering students at SUNY New Paltz, as we try to build our program and pave the way for new students and recruits. Therefore, I know first hand that Entergy, the operators of Indian Point and many other nuclear powered electric plants, is a committed and socially responsible corporate citizen.

I also interface with many business people on our Engineering Advisory Board, who understand the needs and demands of small businesses and entrepreneurs. High energy and electric costs here in New York State are driving small businesses out of the state and stifling innovation and economic activity. I forget who said that "computer chips without electricity are just sand."

With regard to nuclear power and Indian Point, here's what I think--

It's Affordable: Nuclear power consistently remains one of the cheapest sources of power in the world. Its price is predictable and stable, unlike oil or natural gas. Indian Point has saved NYC and Hudson Valley businesses and residents billions of dollars on the price of energy.

NRC/1:30P/8

It's Clean: This is of particular importance to me since my wife and I have recently increased our family size by one; our daughter Katelyn was born almost a year ago. I want Katelyn to have the same opportunities I had growing up and not be affected by changes in quality of life due to global warming. Case in point: Indian Point emits almost zero greenhouse gases. Increased reliance on non-polluting nuclear energy represents our best chance of meeting the region's clean air goals and maintaining our standard of living while improving the environment. The same cannot be said with the world's coal-fired plants, which emit nearly 2 billion tons of CO_2 annually.

It's critical: There is currently no viable energy alternative to replace the more than 2,000MW of power generated by the Indian Point Energy Center. Indian Point provides between 20-40% of the region's power.

It's American Technology that creates American Energy: This is a source of energy that does not depend on international production and is not affected by international pressures or politics. As an educator at an engineering school whose focus is on educating and training more diverse engineering students to help move our state forward, what could be more important than continuing to develop and utilize "home grown" technology rather than just exporting our best engineers for other countries to benefit?

Yeah, but they say...

It shouldn't be here: Actually, from both an environmental and reliability standpoint, Indian Point couldn't be in a better location. Nuclear power in New York avoids 42,000 tons of nitrous oxide [NOx] (equivalent to 2.2 million passenger cars), which would otherwise be polluting the air due to the output from a natural gas or coal facility. It is also a critical base load source of power close to its utility center...the further electricity has to travel, the less reliable it is.

For all my reasons mentioned above, I strongly support the application for renewal of Indian Point's operating license as a benefit to the region and hope to continue to work with Entergy to train and mentor young engineers.

Thank You.

Sincerely,

Michael Otis

CASE NO.
OFF. EXH. NO.: NRC/1:30P/8
ID'D/RECD
9/19/07

Back when Indian Point was originally licensed to operate, certain problems, or as the NRC calls them, commitments were made as a part of the licensing agreement. One of those, was that the IP2 and IP3 reactors would go to a Closed Cooling system. Some 30 plus years later, even after a decisive court defeat, the current licensees are trying to skip out on that commitment. Secondly, 80 acres of the 235 acre Indian Point site were to be changed into a beautiful woodland park complete with walking paths that would be used and enjoyed by the surrounding community. Again, that commitment was not kept.

In every License Renewal that has been granted so far, the NRC and the licensee as a part of the license extension agree to a set of commitments that the licensee will take care of before the term of the license renewal begins. Problem is, most of those commitments made, usually as a part of the EIS are reneged upon, never kept. There is documented proof of this already happening, as early License Renewal Applicants prepare to file letters to be submitted to the NRC seeking relief from the very commitments contained in the license renewal.

This reason, more than any other is why it becomes so important to define what is, or should be within the scope of the EIS. In 10 CFR§ 54.4 Scope, we are told what is, or is not allowed to be IN SCOPE. However, as the Ninth District Court Case showed, there is a difference of opinion in what is or is not within scope, what is or is not to be considered in the NRC Environmental Impact Statement. The tragic events of 9/11, the ruthless attack on our Twin Towers remind each of us that there is a very real chance of a terrorist attack on Indian Point. The Ninth Circuit Court agrees, ruling that the NRC must include as a part and parcel of the EIS the Environmental Costs associated with a successful terrorist attack on the Indian Point facility. Depending on the method of attack, and the components attacked, those Environmental Costs will vary greatly, and each must be evaluated as a part of the EIS.

Further, 10 CFR 54 has a VERY IMPORTANT CAVEAT in deciding what is, or is not to be included within scope in the License Renewal Process, and thus within the EIS. It reads in 10 CFR 54 the following excerpted sections:

(a) Plant systems, structures, and components within the scope of this part are--

NRC/1:30P/9

(1) Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions--

(i) The integrity of the reactor coolant pressure boundary;

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable.

The industry, Entergy, NEI and the NRC want us as a community to believe, that increasing leaks in and around the plant, failing equipment are accepted risks, and that having adequate aging management plans in place is adequate in protecting human health and the environment, in fulfilling the obligations of 10 CFR 54. They, simply stated are lying as section A, part 1, subsection iii shows us. The language is clear...the licensee in their License Renewal Application must show the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures. The basic premise relied upon here is ALARA, or As Low As Reasonably Attainable. Keeping and eye on leaks is not fixing leaks, and thus the licensee fails in this task.

Further, any component that could reasonably be expected to impinge on the ability of the licensee to conduct this task has to be within scope. As one example, I site the water intake system, and the water discharge canal. If either of these fails to perform in a significant manner, the licensees ability to shutdown and maintain safe shutdown are greatly impinged, so the NRC and licensee have erred in omitting said systems/components from Scope in the license review. Further, failures of these systems can lead to a accident that could lead to offsite release of radioactive contaminants, as has occurred in the past at the Indian Point facility, and will occur again if these issues are not adequately addressed in the license review, and more specifically in the EIS.

The first issue to address is the lie contained in Entergy's LRA, Appendix E when they state in their Supplemental EIS that the need to review the

Environmental Costs associated with Refurbishment is unnecessary because there are no anticipated refurbishment issues in the 20 year period of license renewal. Perhaps then, Entergy would like to discuss with the NRC their deliberate omission of the fact they have already ordered, and are planning replacement of the reactor vessel heads for both IP2 and IP3. It is pointed out here, that the NRC takes deliberate omissions and falsehoods in communications with the NRC by their licensees very seriously.

Generally, the EIS should include known significant leak issues and the resultant environmental contamination risk scenarios and costs. This includes all three spent fuel pools, underground piping, the main reactor sealant pump seals, as well as the entire reactor coolant system and turbine piping systems.

Knowing that others here tonight will address some of these more commonly known issues of concern, I am going to be more specific in bringing up issues and systems whose failure or breakage could lead to off site release of radioactive materials, and so must be included in the EIS. I know the NRC will cut me off because the NRC does its best to circumvent citizen involvement in the process by limiting our time to make our complaints known; I have taken the liberty of memorializing my concerns in writing, and am submitting them to be included in their entirety into the official transcript of this public meeting.

1. Boric acid corrosion (BAC) represents a significant aging management issue affecting primary systems at Indian Point that could lead to release of radioactive contaminants into the environment. Indian Points Aging Management plan for this important issue fails to adequately address, as one example, valve packing and valve body-to-bonnet gaskets. The fact that IP2 and IP3 are already working on the engineering difficulties involved in a complicated and dangerous reactor vessel head replacement shows this is a significant issue, and that the results of accidental release into the environment from reactor vessel head failure must be included in the EIS.
2. The reactor vessel internals bolting at Indian Point is susceptible to age-related degradation which could lead to a off site release of radioactive contaminants. The LRA and UFSAR documents fail to lay out and adequate aging management plan for inspection and replacement when necessary of reactor vessel internal baffle bolts.

This creates and accident pathway which could lead to off site release of radioactive contaminants, with the resultant environmental risks ripe for inclusion in the EIS.

3. There are serious environmental and safety concerns related too Indian Points inadequate Aging Management Plans for their Fuel Rod Control System that can include dropped rod events, unplanned plant trips, complete equipment failure, shut-downs, and in the case of employees, highly dangerous at-power-maintenance attempts. Such equipment failure creates off site release scenarios to the environment, and public safety issues that must be addressed in the EIS.
4. Severe Duty Valve failure, further complicated with sourcing issues for many approved valves no longer available create serious potential risks to Indian Points ability to accomplish and maintain a safe shutdown of the facility. These valves could include Feedpump recirculation control valves, Feedwater regulating valves, Atmospheric dump valves, Condenser dump valves, Feedpump discharge check valves, feedpump discharge check valves and Pressurizer spray valves. Failure of these valves, or in inability to find approved replacement valves places into question the safety and reliability of the plant, and further provides accident pathways whose Environmental costs must be analysised in the EIS.
5. The reactor water coolant environment can have dramatic negative effects and increase the fatigue on important pressure water components, and greatly increase pipe leakage which in turn can lead to significant pipe burst events and/or core damage events. The environmental costs of such pipe leaks, bursts and core damage accidents should be included in the EIS.
6. Cable degradation, especially in underground wet circuits is a pathway to massive circuit failures that could lead to lose of employees ability to safely shut down reactor and maintain same. Further, these wet circuits, and generally known fatigue issues surrounding medium voltage Ethylene Propyiene Rubber Cables could create a serious electrical fire as the cables reach a point of electrical breakdown. The NRC has raised concerns on this very issue, and the potential environmental costs of such accident pathways should be included in the EIS.
7. Included in the EIS should be the potential accident pathways and resultant environmental costs associated with Indian Point reactor vessel internals having been, and continuing to be exposed to neutron

irradiation which in turn causes a severe reduction in the fracture toughness and ductility of the PWR internals.

8. Entergy alleges there are no refurbishment issues to be considered in the EIS Scoping process. However, there is a far greater than 50 percent chance that IP2 and IP3 are facing the necessity of replacing feedwater heaters. Lack of industry expertise, fewer vendors and manufacturers coupled with material changes, and you have a potentially serious issue that could negatively impinge on the licensee's ability to maintain safe operation of the reactors.
9. Unaddressed in adequate fashion in the LRA or Appendix E is the issue of Primary Water Stress Corrosion Cracking (PWSCC). Of primary concern would be cracks which appear in heat affected zones of the stub runner/divider plate weld.
10. Under issue of refurbishment, licensee's LRA Appendix E is silent on the issue of shell and heat exchanger replacement.
11. Entergy fails to address adequately the issue of PWSCC (Primary Water Stress Corrosion Cracking) of Alloy 600 and its weld metals. This serious issue impinges on both upper and lower reactor pressure vessel head penetrations. Additionally, this issue potentially manifests itself in reactor coolant system piping, lower head pressurizer penetrations and other components at Indian Point. Only going weld failures, couple with a serious shortfall in technology keeping up with site degradation, weld failures and fatigue makes this a potentially significant pathway for environmental contaminations and or accident pathways.
12. Fatigue of metal components, void swelling of reactor internals as well as serious issues regarding Entergy's inability to visually examine certain difficult if not impossible to reach components and containments create serious potential pathways for significant release accidents that should be included in the EIS Scoping process.
13. Appendix E of Entergy's LRA fails to address any accident analysis for events that are beyond the current design basis for IP2 and IP3. Further, no plant specific analysis have been conducted for these types of events.
14. Entergy in their environmental supplement fails to address the obsolescence concerns as relates to digital upgrade of the rod control logic and power cabinets at Indian Point.
15. Entergy fails to address any of the risks associated with lo-temperature flow-accelerated corrosion (FAC), including unanticipated emergency shutdowns.

16. Entergy fails to address in the EIS the known industry wide problem of securing and having on hand contingency spare parts and making them available in a timely fashion in and emergency event.
17. Related to 16, Entergy fails in the Supplement to the GEIS to address the shortage of seasoned engineers with the knowledge pool too maintain the aging Indian Point Reactors. This severe intellectual shortage becomes crucial in numerous cases where reverse engineering would be necessary to build replacement parts which are no longer available on the open market... further, even if said reverse engineering is possible, the replacement part would no longer be a like-for-like replacement.
18. Entergy fails in their application and Appendix E to adequately address known premature failing of incontainment coatings.
19. Entergy fails to address the industry wide, and site specific problem of ever increasing obsolescence issues with original equipment installed for Indian Point's instrumentation, control and safety system applications.
20. Reactor Pressure Vessel is the critical component for plant life management, due to the unacceptable consequences of its failure and due to the difficulty of its replacement. The RPV is subjected to neutron irradiation in the core region, which results in irradiation-induced embrittlement that may lead to a shift of the ductile-to-brittle transition temperature. Entergy fails to adequately address this issue in their LRA, their UFSAR, and in Appendix E EIS supplemental report. Further, both industry and NRC have admitted to a severe lack of knowledge in this area.
21. Cable are CRITICAL for plant safety and operation at Indian Point, yet they fail in putting forth and adequate aging management program for this critical component for safe plant operation, and shut down. Degradation of these cables could lead to a catastrophic accident at the site resulting in A) electric fire destroying major plant components and infrastructure, including but not limited to key safety components necessary for safe shut down, that would in turn lead to core meltdown.
22. Creep fatigue and fracture.

Respectfully Submitted

Sherwood Martinelli FUSE USA Vice President
351 Dyckman Street, Peekskill, New York 10566

CASE NO.
OFF. EXH. NO.: NRC11:30P/9
ID'D/RECD
9/19/07

African American Environmentalist Association
New York

Written Statement of

Dan Durett
Director
New York Office
African American Environmentalist Association

For the

Environmental Scoping Public Meeting

For

License Renewal

For the

Indian Point Nuclear Power Plant

Presented to the

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

September 19, 2007

505 Wiggins Street, Greenport, New York 11944 (631) 477-6195
www.aaenvironment.com

NRC/1:30P/10

Introduction

My name is Dan Durett and I am the Director of the African American Environmentalist Association New York Office (AAEA-NY). AAEA, founded in 1985, is an organization dedicated to protecting the environment, enhancing human, animal and plant ecologies and promoting the efficient use of natural resources. AAEA includes an African American point of view in environmental policy decision-making and resolves environmental racism and injustice issues through the application of practical environmental solutions. The New York Office was established in 2003.[1]

AAEA New York supports the 20-year License Renewal for the Indian Point nuclear power plant located in Buchanan, New York. AAEA expressed public support for nuclear power for the first time in 2001 after a two-year internal process of studying and debating the issue. AAEA was the first environmental organization to support nuclear power. I am a veteran environmentalist with 32 years experience working on environmental and energy issues.[2] My comments today address the Environmental Report of the License Renewal Application (LRA) and other environmental issues of concern to AAEA-NY regarding this proposed action.

AAEA-NY has members in the New York area. Members of AAEA live and work – and breathe the air in a Clean Air Act Nonattainment Area. Of particular import to AAEA-NY is the promotion of clean air in African American communities. Because nuclear power is emission-free and has a demonstrated safety record, whereas fossil-fuel power contributes to numerous health issues, AAEA-NY seeks to promote the safe use of nuclear power. AAEA-NY specifically supports the Indian Point 2 and 3 nuclear power facilities because these facilities provide significant electrical capacity to the State of New York with

[1] http://groups.msn.com/aaeanewyork
[2] http://groups.msn.com/aaeanewyork/yourwebpage4.msnw

minimal human, animal, air, water, and land impacts. My comments will address specific environmental justice issues and will expand upon the water permit issue included in Entergy's Environment Report (ER).

Environmental Justice

Environmental justice is defined by AAEA-NY as the fair treatment of all people regardless of race or income with respect to environmental issues. AAEA-NY is deeply concerned with any policy or measure that impacts the air quality of the communities where it is based, or that affects the health of its members. Although AAEA-NY is concerned about air quality in all areas, we are particularly concerned with promoting clean air in African American communities because, in many instances, those communities suffer a disproportionate amount of total pollution.

The license renewal of Indian Point is vitally needed because if units two and three are not producing emission free electricity then the air pollution will increase throughout the region. Closure of Indian Point would result in compliance issues for the State with respect to the federal Clean Air Act State Implementation Plan ("SIP"). Additionally, Indian Point provides reliable energy without contributing pollutants that exacerbate asthma.

The New York State Department of Environmental Conservation's (DEC) Environmental Justice policy states that it is the general policy of DEC to promote environmental justice and incorporate measures for achieving environmental justice into its programs, policies, regulations, legislative proposals and activities. This policy is specifically intended to ensure that DEC's environmental permit process promotes environmental justice. (Environmental Justice Policy, Policy Statement CP-29, March 19, 2003).

In order to reduce the levels of impingement and entrainment of Hudson River fish, the Department of Environmental Conservation's ("DEC") Draft SPDES Permit could substantiallly limit the ability of Indian Point 2 and 3 to generate electricity, and may even lead to the closure of the facilities. Any substantial reduction in the amount of electricity generated by Indian Point 2 and 3 will spark demand for replacement electricity from nearby power plants.

Unfortunately, these nearby plants are, for the most part, pollution-emitting fossil fuel plants located in New York's low-income and minority communities. As production at these fossil-fuel plants increases, the air quality in and around these plants will further deteriorate, causing a spike in the incidences of respiratory and cardiovascular diseases in the communities where these plants are based. The Draft SPDES Permit, therefore, effectively places the interests of Hudson River fish eggs and larva over the health of New York's low-income and minority communities.

The following section specifically addresses the implications of the water permit because the ER, at Section 4.1, Water Use Conflicts, goes into great detail about the issue. Regarding this issue the ER states, "the vast majority of existing nuclear stations, including those stations undergoing license renewal, currently are or in the future will be undergoing comprehensive 316(b) review as EPA develops final 316(b) regulations for existing facilities in response to the recent remand of that rule."[3] EPA suspended the Cooling Water Intake Structure Regulations for existing large power plants on July 2, 2007. This suspension is in response to the 2nd Circuit Court of Appeals decision in Riverkeeper, Inc., v. EPA. In the meantime, all permits for Phase II facilities should include conditions under section 316(b) of the Clean Water Act developed on a Best Professional Judgment basis. See 40 C.F .R. § 401 .14.[4]

AAEA Has Full Party Status in Indian Point Water Permit Process

The ER addresses the National Pollution Discharge Elimination System (NPDES) status of Indian Point. This issue is of vital importance because an unacceptable permit could cause Entergy to close the facility, which would exacerbate environmental injustice in the region. We are submitting this

[3] ER Section 4.2.5 Analysis of Environmental Impact, Section 4.2.5.1 Background

[4] http://www.epa.gov/waterscience/316b , Federal Register Notice (July 09, 2007) Implementation Memo (PDF) (1 page, 72K, About PDF; March 20, 2007)

information in the hope that NRC will utilize it for the EIS and will also see the important environmental justice implications of this facility.

AAEA sought and received full party status[5] in order to bring its unique perspective to the Indian Point 2 and 3 permitting process, and to raise the issue of environmental justice in this proceeding. In a report by the Natural Resources Council of America entitled: "*Environmental Stewardship for the 21st Century: Opportunities and Actions for Improving Cultural Diversity in Conservation Organizations and Programs*," it was found that African Americans comprise only 4% of the boards of directors and only 6% of employees at 61 surveyed conservation organizations. From this, it is clear that the African American perspective has heretofore been lacking from the environmental movement.[6]

The need for greater involvement from the African American community in the DEC permitting process has been recognized by the DEC itself. In September 1999, then DEC Commissioner John P. Cahill announced the creation of DEC's Office of Environmental Justice. This Office, which implements the DEC's Environmental Justice Program, seeks to "ensure that local communities are given an opportunity to express their concerns and that those concerns are considered when making decisions which potentially impact the environment and public health."[7] On March 19, 2003, the DEC issued Policy Statement CP-29: Environmental Justice and Permitting. In issuing this policy,

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[5] http://www.dec.ny.gov/hearings/11216.html

[6] *See also* AAEA's Environmental Group Diversity Report Card 2003, available at: http://www.aaenvironment.com/EnviroGroupReportCard.htm.

[7] http://www.dec.state.ny.us/website/ej/ejprogram.html. (Last visited Feb. 10, 2004.)

the DEC stated that the policy was meant to "promote the fair involvement of all people in the DEC environmental permit process," and further stated that:

> It is the general policy of DEC to promote environmental justice and incorporate measures for achieving environmental justice into its programs, policies, regulations, legislative proposals and activities. This policy is specifically intended to ensure that DEC's environmental permit process promotes environmental justice.

Allowing AAEA to participate in the Indian Point 2 and 3 permitting process will achieve the DEC's goal of ensuring that the concerns of local communities, particularly low-income and minority communities be considered when making decisions that impact the environment and public health of these communities.

Fossil-Fuel Power Causes Serious Adverse Health Effects

In 1999, coal-fired power plants in the United States emitted into the environment 11.3 million tons of sulfur dioxide ("SO_2"), a criteria air pollutant that is correlated to asthma and impaired lung functions, 6.5 million tons of nitrogen oxides ("NO_x") which, when combined with other pollutants and sunlight, forms ozone, another lung irritant linked to asthma, and 1.9 billion tons of carbon dioxide ("CO_2"), yet another contributor to increased ozone levels and global climate change.[8] This equates to approximately 60% of all SO_2 emissions, 25% of all NO_x emissions, and 32% of all CO_2 emissions nationwide.[9]

These and other airborne pollutants emitted by fossil-fuel power stations may have a direct and significant effect on human health. In a study by Abt

[8] *See* Rachel H. Cease, ADVERSE HEALTH IMPACTS OF GRANDFATHERED POWER PLANTS AND THE CLEAN AIR ACT: TIME TO TEACH OLD POWER PLANTS NEW TECHNOLOGY, 17 J. Nat. Resources & Envtl. L. 157, 158 (2002-2003); Martha H. Keating, AIR INJUSTICE, at 4 (October 2002) (attached hereto as Exhibit B).
[9] 17 J. Nat. Resources & Envtl. L. at 158.

Associates, one of the largest for-profit government and business research consulting firms in the world, it was found that over 30,000 deaths each year are attributable to air pollution from U.S. power plants.[10] Another study found that air pollution from power plants was a contributing factor to higher infant mortality rates and higher incidences of Sudden Infant Death Syndrome ("SIDS").[11] Research has further shown that pollutants from fossil-fuel power plants form tiny particles (called fine particulate matter) that are linked to diseases of both the respiratory and cardiovascular systems.[12]

Not surprisingly, air pollution has been characterized as one of the largest threats to public health.[13]

The Negative Health Effects of Fossil-Fuel Power Are Borne Disproportionately by African Americans

Sadly, these serious health effects disproportionately fall on the shoulders of low-income and minority communities, including African American communities. For instance, the percentage of African Americans and Hispanics living in areas that do not meet national standards for air quality is considerably higher than that of whites.[14] Correspondingly, respiratory ailments affect African Americans at rates significantly higher than whites. Asthma attacks, for example,

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[10] *Id.* at 159.
[11] *See* Martha H. Keating, AIR INJUSTICE, at 3 (October 2002).
[12] *See id.* at 4. *See also* Air Quality in Queens County: Opportunities for Cleaning Up the Air in Queens County and Neighboring Regions, at S-6, Synapse Energy Economics, Inc. (May 2003) ("Air Quality in Queens County") ("Epidemiological studies tell us that on days when air pollution levels are high, more people get sick or die.") (available at http://www.synapse-energy.com/Downloads/Synapse-report-queens-air-quality-exec-summary-05-29-2003.pdf); Children at Risk: How Pollution from Power Plants Threatens the Health of America's Children, at 2, Clean Air Task Force (May 2002) ("Power plant emissions and their byproducts form particulate matter, ozone smog and air toxics. These pollutants are associated with respiratory hospitalizations, lost school days due to asthma attacks, low birth weight, stunted lung growth and tragically, even infant death.") (available at http://cta.policy.net/fact/children/).
[13] Allison L. Russell, URBAN POLLUTANTS: A REVIEW AND ANNOTATED BIBLIOGRAPHY, at 3, New York City Environmental Justice Alliance 2000 (available at http://www.nyceja.org/pdf/Urban.pdf).
[14] *See id.*

send African Americans to the emergency room at three times the rate of whites (174.3 visits per 10,000 people for African Americans versus 59.4 visits per 10,000 people for whites), and African Americans are hospitalized for asthma at more than three times the rate of whites (35.6 admissions per 10,000 people for African Americans versus 10.6 admissions for every 10,000 people for whites).[15] Similarly, the death rate from asthma for African Americans is almost three times that of whites (38.7 deaths per million versus 14.2 deaths per million).[16]

New York's Minorities Pay the Price for Fossil-Fuel Air Pollution

New York is no exception to this national crisis. In New York City, it is estimated that there are 2,290 deaths, 1,580 hospitalizations, 546 asthma-related emergency room visits, 1,490 cases of chronic bronchitis, and 46,200 asthma attacks yearly attributable to power plant pollution.[17] The New York City area has also been ranked as one of the top five U.S. metropolitan areas for particulate air pollution.[18] And again, these adverse effects disproportionately affect minority communities. In one study, nonwhites in New York City were found to be hospitalized twice as many times as whites on days when ozone levels were high.[19] Another study found that, of the 23 counties in New York State that fail to

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[15] *Id.*
[16] *Id.*
[17] *See* Death, Disease & Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants, at 24, Clean Air Task Force (October 2000) ("Death, Disease & Dirty Power") (Exhibit C) (available at http://cta.policy.net/fact/mortality/mortalitylowres.pdf).
[18] *See* New York's Dirty Power Plants, Clear the Air – the National Campaign Against Dirty Power (available at http://cta.policy.net/relatives/17841.pdf). The Air Quality in Queens County Report states that "New York City ... [is] burdened with significant air quality problems" and "[t]he US EPA has determined that the NY metropolitan area ... is in 'severe nonattainment' for ozone." *Id.* at S-5.
[19] *See* Martha H. Keating, AIR INJUSTICE, at 4 (October 2002).

meet Federal air pollution standards, 37.7% of them are populated by people of color.[20]

That African Americans and other minorities are disproportionately affected by air pollution in New York is not surprising when considering the fact that the majority of air-polluting power plants in the New York metropolitan area are located in African American and other minority communities. Based on figures from the 2000 U.S. Census, only 12.3% of New York State is identified as being African American, and only 29.4% of the total population is classified as a minority. However, in communities that are predominantly minority, such as Queens, the Bronx, and Brooklyn, there are a disproportionate number of fossil-fuel power plants emitting criteria air pollutants. For example, there are approximately 1,563,400 people of color, 217,247 children living in poverty, and 40,248 children who suffer from pediatric asthma within 30 miles of the Lovett facility, a coal-fired power plant bordering the New York City metropolitan area.[21] In the Bronx, which is 35.6% African American and 88% minority, there are two power plants, Harlem River Yards and Hell's Gate. In Brooklyn, which is 36.4% African American and 64.2% minority, there are seven power plants, the 23rd and 3rd Plant, Brooklyn Navy Yard, Gowanus, Hudson Ave., Narrows, the North First St. Plant, and Warbasse Cogen. In Queens, which is 20% African American and 63.2% minority, there are six power plants, Astoria, Poletti, Far Rockaway, JFK Cogeneration, Ravenswood, and the Vernon Blvd. Plant. Queens is also ranked

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[20] *See* Clear the Air: People of Color in Non-Attainment Counties (available at http://cta.policy.net/fact/injustice/injustice_non_attainment.pdf).

[21] *See* Clear the Air: People of Color Living Within 30 Miles of a Specific Coal-Fired Power Plant (available at http://cta.policy.net/relatives/20121.pdf); Clear the Air, Power Plant Pollution Threatens the Health of New York's Children (June 11, 2002) (available at http://cta.policy.net/relatives/20121.pdf).

among the worst 10% of U.S. Counties in terms of its exposure to criteria air pollutants, and is one of two city boroughs that violate federal standards.[22] In the Air Quality in Queens County Report, it is stated that:

> The concentration of generating capacity in Northwest Queens is exceptionally high for such a densely populated area. In addition, this community includes a high percentage of low-income people and persons of color. These demographics suggest that "environmental justice" concepts and policies should be taken into account when considering options for addressing air quality in Queens and in considering the siting of further sources of air pollution. The steam generating units in Queens are responsible for a large percent of the NO_x, SO_2, and CO_2 emitted in Queens.

In total, there are 24 power plants in the New York metropolitan area, only a handful of which are in areas where minorities do not comprise the majority of the population. One of these is the Indian Point power generating facility.[23]

Lost Production From Indian Point Will Be Replaced By In-City and Other Nearby Facilities

If generation at Indian Point 2 and 3 were to be significantly limited or were to cease altogether, the lost electricity would most likely be replaced by nearby facilities, including the above-referenced in-city facilities and the Lovett coal-burning facility. For instance, in a study by Synapse Energy Economics, Inc., dated November 3, 2003 and entitled, *The Impact of converting the Cooling systems at Indian Point Units 2 and 3 on Electrical System Reliability* (attached hereto as Exhibit D), Synapse finds that New York electricity generators, particularly in-city generators, have excess capacity which would supplant capacity losses at Indian Point if Indian Point were brought offline. Similarly, in an August 2002 study by the TRC Environmental Group entitled, *Entergy Nuclear*

[22] *See* Air Quality in Queens County, at S-5.
[23] All population data compiled from the 2000 U.S. Census.

Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC Emissions Avoidance Study (the "TRC Report"), TRC concluded that "it is reasonable to assume that the majority of lost output [(if Indian Point were brought offline)] would be made up by increased generation of units nearest to the New York City/Westchester load pocket."

Increasing Generation at Facilities Near Indian Point Will Increase Air Pollution in the Communities Where These Facilities Are Based

The TRC Report further found that, if Indian Point is brought offline, the air quality in New York would decrease dramatically. For instance, if the gap created by Indian Point's closure were to be filled by the power plants located in New York City, almost all of which are in predominantly minority communities, CO_2 plant emissions would increase by 101% (or 12,494,172 tons), SO_2 plant emissions would increase by 106% (or 8,020 tons), and NO_x plant emissions would increase by 105% (or 16,107 tons). Even if replacement electricity were spread out more broadly, to include all of the Hudson Valley and New York City plants, CO_2 plant emissions would still increase by 57% (to 13,686,648 tons), SO_2 plant emissions would increase by 62% (to 35,961 tons), and NO_x emissions would increase by 57% (to 20,258 tons).

And as the level of air pollution increases, so do the incidences of death and respiratory and cardiovascular ailments. For instance, in the National Morbidity and Mortality Air Pollution Study ("NMMAPS"), a team of investigators from Johns Hopkins University and the Harvard School of Public Health found, among other things, strong evidence linking daily increases in particle pollution to

increases in death in the largest U.S. cities.[24] Links have also been found between fine particle levels and increased hospital admissions for asthma, cardiovascular disease, pneumonia, and chronic obstructive pulmonary disease.[25] Stated bluntly in the Air Quality in Queens County Report, "Epidemiological studies tell us that on days when air pollution levels are high, more people get sick or die

Based on the above data and studies, it is clear that if Indian Point 2 and 3 were to be brought offline, forced to close, or if their production were limited, the void in electricity production would be filled by power plants located in minority communities, with a corresponding increase in the rates of asthma and other respiratory diseases, cardiovascular diseases, and even infant mortality in these communities.

The Benefits of Indian Point 2 and 3

The Indian Point facilities, located in the affluent and predominantly white Westchester County, have a combined generating capacity of approximately 2000 megawatts (MW). The facilities provide approximately 20-30% of the electricity for New York City and its northern suburbs. And, unlike New York's fossil-fuel burning facilities, Indian Point 2 and 3 do not pollute the air.

Draft SPDES Permit Hinders Indian Point's Ability to Produce Non-Air-Polluting Electricity

Several conditions of the DEC's Draft SPDES Permit for Indian Point 2 and 3 significantly limit Indian Point's ability to generate electricity for the State of New York. For example, Special Condition 28 of the Draft Permit requires the

[24] Cited in Death Disease & Dirty Power, at 14.
[25] *Id.*

construction of cooling towers. NYSDEC issued a draft SPDES permit for IP1, IP2, and IP3 in 2003 that, among other conditions, requires the design and, if appropriate, the installation of closed-cycle cooling systems for IP2 and IP3 if the site seeks and receives from NRC license renewals for IP2 and IP3.

AAEA understands that, under conservative estimates, it would take approximately 10 months of Indian Point being offline for a closed-cycle cooling system to be installed. AAEA further understands that the costs of installing cooling towers are sufficiently prohibitive so that Indian Point's owners may elect to shut down the plants rather than invest in the retrofit. Either way, the results will be devastating in terms of the pollution-related health effects when New York's non-clean burning plants scramble to replace the power lost by Indian Point 2 and 3. And since most of these plants are in African American and minority communities, the bulk of the adverse health effects – including asthma and other respiratory diseases, cardiovascular disorders, and even infant mortality – will be borne by these communities. For this reason, AAEA objects to any provision of the Draft SPDES Permit for Indian Point 2 and 3 that imposes any significant limit on the facilities' ability to generate clean-burning electricity, including Special Condition 28.

DEC Did Not Consider Environmental Justice in the Draft Permit

The NRC is required to consider environmental justice in the preparation of an environmental impact statement. Unfortunately, the State of New York did not consider environmental justice in the current permit. Moreover, DEC is imposing a structure that could lead Entergy to close the facility. In the Draft SPDES Permit, the DEC concludes that cooling towers are the "Best Technology Available" ("BTA") to maximize fish protection at Indian Point. However, in making a BTA determination, DEC was required not only to attempt to maximize fish protection, but also to minimize or avoid "other impacts ... to the 'maximum extent practicable' to satisfy SEQR as well as CWA § 316(b)." *See* Final

Environmental Impact Statement ("FEIS"). *See also* 6 NYCRR § 704.5 ("The location, design, construction and capacity of cooling water intake structures, in connection with point source thermal discharges, shall reflect the best technology available for ***minimizing adverse environmental impact***") (emphasis added); ("closed-cycle systems do not come without impacts, and those potential impacts must also be weighed for each site"); ("there are certain expenses associated with installing closed-cycle cooling"). Despite these acknowledgments, the DEC issued the Draft SPDES Permit without addressing the environmental justice impacts, which its decision would entail, particularly the significant adverse impacts that will result from a shift in power production from Indian Point 2 and 3 to existing fossil-fuel facilities. The DEC's failure to consider these "other impacts" violates the SEQRA, 6 NYCRR § 704.5, and rendered the FEIS and the Draft SPDES Permit null and void.

AAEA MET THE LEGAL STANDARD FOR PARTY STATUS

6 NYCRR § 624.5(b) allows a person to obtain party status by timely filing a petition, (i) identifying the proposed party together with the name(s) of the person or persons who will act as representative of the party; (ii) identifying the petitioner's environmental interest in the proceeding[26]; (iii) identifying any interest relating to statutes administered by the department relevant to the project; (iv) identifying whether the petition is for full party or amicus status; and (v) identifying the precise grounds for opposition or support. Additionally, a petitioner must (i) identify an issue for adjudication which meets the criteria of 6

[26] Although the DEC's regulations do not define the term "environmental interest," the DEC has held that this term should be applied broadly. *See In the Matter of the Application of Stissing Valley Farms, Inc.*, 1996 WL 33142551, at *3 (N.Y. Dept. Env. Conserv. Nov. 4, 1996).

NYCRR § 624.4(c) and (ii) present an offer of proof specifying the witness(es), the nature of the evidence the person expects to present and the grounds upon which the assertion is made with respect to that issue. AAEA's Petition for Full Party Status met these criteria. As discussed above, this Petition was brought by AAEA, and the President of AAEA, Norris McDonald, will act as its representative.

Second, AAEA has a strong environmental interest in this proceeding because AAEA is an environmental action group, with a chapter in Long Island, New York, with a stated goal of promoting clean air in low-income and minority communities by, among other things, supporting the safe use of nuclear energy. AAEA also has approximately 1,000 members in the New York area whose air quality may be impacted by the DEC's Permit for Indian Point 2 and 3. Further, AAEA has publicly supported Indian Point 2 and 3, due to its positive impact on New York's air quality, for several years. For instance, in May 2002, AAEA President Norris McDonald presented testimony before the Committee on Environmental Protection in opposition to Chairman James F. Gennaro's Resolution 64, which called for the immediate shutdown of Indian Point. AAEA also presented testimony on February 28, 2003, before the New York City Council's Committee on Environmental Protection, again opposing efforts to shut down Indian Point. And most recently, AAEA participated in the DEC's legislative hearing relating to Indian Point's Draft SPDES Permit.

Third, AAEA has an interest relating to the statutes administered by DEC, namely, AAEA seeks to ensure that those statutes are interpreted consistent with

the DEC's policy goal of promoting environmental justice. AAEA also has an interest in ensuring that, when DEC is required by statute or regulation to weigh adverse environmental impacts, it factor environmental justice into the calculation. In addition, AAEA believes that the reference to adverse environmental impacts in the regulation at issue, 6 NYCRR § 704.5, the best technology assessment, implicates the environmental considerations that AAEA has raised herein.

Fourth, AAEA's Petition made clear that it was seeking full party status.

Finally, AAEA's Petition made clear that it opposes the DEC's Draft SPDES Permit for Indian Point 2 and 3 to the extent the Permit imposes substantial limits on the facilities' ability to generate electricity, as these limitations will translate into increased levels of generation – *and* increased levels of air emissions – at nearby facilities, most of which are fossil-fuel facilities located in or near minority and low-income communities.

AAEA'S ISSUES FOR ADJUDICATION

In order to qualify for party status, AAEA identified substantive and significant issues for adjudication, and presented an offer of proof specifying the witnesses and testimony it expects to present, and the grounds upon which the assertion is made with respect to the issue. Under 6 NYCRR § 624.4(c)(2), an issue is substantive "if there is sufficient doubt about the applicant's ability to meet statutory or regulatory criteria applicable to the project, such that a reasonable person would require further inquiry." An issue is significant "if it has the potential to result in the denial of a permit, a major modification to the

proposed project or the imposition of significant permit conditions in addition to those proposed in the draft permit." 6 NYCRR § 624.4(c)(3).

AAEA submitted the following issues for adjudication:

(1) Whether the DEC fully considered – as required – all adverse environmental impacts in formulating the Draft SPDES Permit for Indian Point 2 and 3, including air impacts on minority communities?

(2) Whether the DEC would have issued a different permit had it adequately considered the negative impacts on air quality in low-income and minority communities that will result from any substantial reduction in generation at Indian Point 2 and 3?

(3) Whether the failure to consider all adverse environmental impacts in formulating the Draft SPDES Permit for Indian Point 2 and 3, including air impacts in minority communities, renders the Permit unsupportable?

AAEA's issues for adjudication are substantive, given that they call into question the legality of the DEC's FEIS and Draft SPDES Permit for Indian Point 2 and 3, raise important public health and environmental justice concerns, and challenge the Draft Permit's compliance with the SEQRA and 6 NYCRR § 704.5 requirement that in issuing a permit, DEC consider *all adverse environmental impacts*. AAEA's issues for adjudication are also significant because they ultimately call for a major modification to the DEC's SPDES Permit for Indian Point 2 and 3, namely, eliminating those provisions of the Permit which would result in significant reductions in generation at Indian Point 2 and 3, including Special Condition 28 (the cooling tower requirement).

Recommendation

AAEA-NY wants the DEC to eliminate the cooling tower provision in a water permit for Indian Point. Such a permit would eliminate the issue of possible closure of the plant and provide a more clear-cut status for NRC in considering the license renewal. Resolution of this situation will also provide a simpler situation for describing the position environmental justice impacts provided by Indian Point in the EIS.

Conclusion

AAEA New York supports the 20-year License Renewal (ESP) for the Indian Point nuclear power plant located in Buchanan, New York. We support this renewal because the facility is a positive structure for mitigating ground level air pollution, global warming and environmental injustice.

CASE NO.
OFF. EXH. NO.: NRC/1:30P/CO
ID'D/RECD
9/19/07