

## **Summary of Intervenor Petition Contentions submitted by Hudson River Sloop Clearwater, Inc. on Entergy's License Renewal Application (LRA) for Indian Point Units 2 & 3**

### **CONTENTION 1: Failure of Environmental Report to Adequately Address the Impacts of Known and Unknown Leaks**

Entergy's license renewal application does not comply with the National Environmental Policy Act (NEPA), because its Environmental Report (ER) fails to adequately assess "new and significant" information concerning environmental impacts of radioactive substances that are leaking from spent fuels pools and contaminating the ground water, the Hudson River and the local ecosystem. Additionally, Entergy's ER does not "contain sufficient information data to aid the Commission in its development of an independent analysis," and does not "to the fullest extent practicable, quantify the various factors considered."

The failure to take adequate account of the risks of the leaks violates NEPA's requirement that environmental decisions must contain an evaluation of those aspects of a proposed action that will affect the quality of the human environment "in a significant manner or to a significant extent not already considered."

Entergy's ER admits that there are leaks from the spent fuel pools. However, many of Entergy's claims in its ER are not accurate including its claim that IP2 is no longer leaking, and its claim that only low concentrations of radionuclides have been detected in groundwater. Moreover, the ER does not include any evaluation of the impacts of the leaks upon groundwater or fish in the Hudson River. The ER stated: "On the basis of current information, Entergy concludes that although the existence of radionuclides in the groundwater during the license renewal period are potentially a new issue, the impacts of those radionuclides would be SMALL and not significant." Entergy fails to provide adequate support for this conclusion. NYS Attorney General Contention-28 and Riverkeeper Contention EC-3 both require that there be a much "harder look" into the existence and the impact of the leaks.

New York State points out that the leaks present a range of potential environmental and public health impacts including:

- Plumes of strontium and tritium have been mapped under the facility.
- Other radioactive constituents, including cesium, cobalt, and nickel, are being released from the IP1 spent fuel pool into groundwater.
- Tritium exposure increases the risk of developing cancer.
- Strontium-90 exposure has been linked to bone cancer, cancer in tissue near contaminated bone, and leukemia.
- Concentrations of tritium from the IP2 spent fuel pool leak were detected in the monitoring wells closest to the IP2 spent fuel pool at levels **as high as 30 times the drinking water standard**.
- Concentrations of strontium-90 from the IP1 spent fuel pool leak have been detected at almost 14 times the drinking water standard at the monitoring well closest to the IP1 spent fuel pool.
- Concentrations of strontium-90 at a monitoring well close to the Hudson River have been detected at approximately **3.4 times the drinking water standard**.
- The presence of these radioactive contaminants beneath and around Indian Point site structures will likely increase the cost and extent of the eventual decommissioning of the reactor facilities.

Recently, on March 2, 2007, Clearwater, the Indian Point Safe Energy Coalition (IPSEC) and Pace Academy for the Environment convened a Technical Briefing and Roundtable on the Indian Point Leaks,

at Pace University in Pleasantville, NY. The event included nationally renowned experts in the fields of hydrogeology, ecology, public health and regulatory issues, as well as members of the public and media, and over 40 elected officials. The evidence presented at the Technical Briefing strongly supports the conclusion that there is great uncertainty about the source, extent and impact of the leaks, and that more investigation is mandated under NEPA.

At the briefing, Barbara Youngberg of the New York State Department of Environmental Conservation (“NYS DEC”) acknowledged that Cesium-137 has been found in Hudson River sediments and Strontium-90 had been detected in offsite test wells and fish, but said the source of this contamination has not yet been established. At the same time at the Technical Briefing, it was separately reported that Strontium-90 had been reported at from 3.4 to 14 times allowable drinking water standards. Other reports include Cobalt-60 and Nickel-63, as well as Tritium at 30 times the EPA drinking water limit. Also at the Technical Briefing, NYS DEC wildlife pathologist Ward Stone said that fish sampling to date has been highly inadequate. He further stated that if more thorough biota sampling had been done, the radionuclides that are leaving or have left Indian Point and are gaining entry into the biota would already be determined. He explained that testing needs to be done on more species and a wider variety of biota. For its part, DEC planned to expand its testing to include studying individual fish over a longer period of time, caging fish, and potentially expanding biota sampling to include shellfish, frogs, turtles and other wildlife.

David Lochbaum from the Union of Concerned Scientists and Phillip Musegaas of Riverkeeper presented information that in spite of requirements that nuclear plants keep track of all contaminant releases, the radioactive materials from the leaks were not being tracked. They also stated that Cesium-137, Tritium, and Strontium 90 found in nearby wells exceed New York State and EPA drinking water limits, and concluded that the EPA and NRC should require monitoring of all releases of contaminated liquids.

Sergio Smiriglio, a hydrologist with Tim Miller and Associates ([www.timmillerassociates.com/staff.html](http://www.timmillerassociates.com/staff.html)), raised some serious questions about the implications of the leaks given Indian Point’s location. Because water moves from high to low points, and the facility sits at a higher point than both the Hudson and the surrounding area, **contaminants will flow into the major groundwater flow**, then into the Hudson River. Moreover, coarser material surrounds the fracture sites, which allows for higher velocity water movement. Fractures could contain contaminated water, thereby acting as a secondary pathway flowing under the Hudson River.

In sum, the leaks into both groundwater and surface water have gone way beyond what the NRC reviewed in the generic EIS in 1996. The extent of the leaks from two spent fuel pools, the variety of radionuclides leaking, the uniqueness of this site and the pathway to the Hudson River, mean that these impacts are significant and render them reviewable under NEPA.

## **CONTENTION 2: Entergy’s Environmental Report Fails to Consider the Higher than Average Cancer Rates and Other Health Impacts in Counties Surrounding Indian Point**

Entergy’s Environmental Report (ER) fails to adequately consider the impact that the proposed license renewal for IP2 and IP3 will have on the health of populations living near the power plants, including localities with relatively high concentrations of minority and low-income groups. Clearwater presents “new and significant” evidence that is indicative of higher-than-average cancer incidence rates among people living near Indian Point. This suggests that there are issues related to Indian Point that are raising cancer levels higher than at other plants. Furthermore, Germany’s Federal Office of Radiation Protection recently released a research report on increased cancer risks for children living near nuclear power plants.

The research, performed at the University of Mainz, reports that the incidence of childhood leukemia for populations located within 3 miles of nuclear plants was double that of the German population in general. For these reasons, Entergy should have considered this evidence in its ER.

Entergy's ER "must contain any new and significant information of which it is aware," such as the information concerning health risks from off-site radiation emissions. Since Entergy presents no evidence of new or significant evidence, or of anything unique about Indian Point concerning local health impact, there is a genuine dispute with regard to the sufficiency of the license application.

There is ample "new and significant" information, however, that shows that there are substantial offsite health risks related to radiation. Specifically in connection with Indian Point, work by Joseph Mangano, the Executive Director of the Radiation and Public Health Project, shows a strong possibility that there are serious off-site impacts related to radioactive emissions from Indian Point. Mangano prepared a report, *Public Health Risks of Extending Licenses of the Indian Point 2 and 3 Nuclear Reactors*. As he explains, continued operation of Indian Point raises the risk of radioactivity exposure in two ways.

**First**, the reactor cores will produce high-level waste to be added to the 1,500 tons already at the site, which would worsen the consequences of a large-scale release.

**Second**, because the reactors routinely release radioactivity, keeping Indian Point in service would mean greater releases and risks to local residents.

The principal findings of the *Public Health Risks* Report with respect to radioactivity levels associated with Indian Point are:

- A large-scale release of radioactivity in a meltdown at Indian Point, from mechanical failure or act of sabotage, would **harm tens of thousands through acute radiation poisoning or cancer** (*Public Health Risks*, p. 7-8).
- Indian Point has released the **5<sup>th</sup> greatest amount of airborne radioactivity out of 72** U.S. nuclear plants. In some periods, releases are up to 100 times greater than normal levels (*Public Health Risks*, p. 10).
- Radioactivity levels in the Hudson River near Indian Point are **over 10 times greater than those in Albany**. Large variations exist, for example, 2006 airborne radioactivity was three times as high in late fall, than in late spring (*Public Health Risks*, p. 10).

Mangano evaluates local public health risks from Indian Point based upon cancer data obtained from the New York State Cancer Registry (cancer registry, 2000-2004) and from the U.S. Centers for Disease Control (cancer mortality, 1979-2004). The local area near Indian Point was defined as the host county, Westchester, plus adjacent counties where the majority of the population lives within 20 miles of Indian Point (Orange, Putnam and Rockland). According to Mangano, the New York State Cancer Registry and Centers for Disease Control data indicate that:

- The four local counties near Indian Point have an elevated cancer incidence rate compared to the state and nation, with an estimated **2,090 to 3,631 more cancer cases** locally from 2000-2004 than would have been the case if the four counties had average national or state cancer incidence rates.

- Levels of Strontium-90 in baby teeth collected from children living in the local 4-county region are **the highest of any area near seven U.S. nuclear plants**. Local children born in the late 1990s have an average **Strontium-90 level 38% greater** than those born a decade earlier. There is a demonstrable statistical link between average levels of Strontium-90 in local baby teeth and local childhood cancer rates (*Public Health Risks*, p. 12-13, 24-25).
- Childhood cancer incidence in the four counties is among the highest in New York and well above the national rate.
- Local incidence rates of childhood cancer and thyroid cancer, both known to be sensitive to radiation exposure, are among the highest in New York State. **Local thyroid cancer incidence is among the highest in New York and about 70% above the U.S. rate**. The level in Rockland is approximately double the U.S. rate (*Public Health Risks*, Table 17, p.19).
- The local breast cancer incidence rate exceeds that of the state and nation, and the excess is growing over time (*Public Health Risks*, Table 19, p.21)
- Incidence of the four most common types of cancer in the six towns within five miles of Indian Point is 20% greater than the rest of Rockland and Westchester Counties (*Public Health Risks*, Table 20, p. 22).
- The general local mortality rate in areas near Indian Point is well below the U.S. for all causes (for each age group) except for cancer, which is slightly higher.

An earlier study by Mangano indicated that after the closure of eight U.S. nuclear plants in 1987, cancer incidence in children younger than 5 years of age in proximate areas fell significantly. **If closing Indian Point leads to the same reduction in cancer mortality as it did near closing the Rancho Seco plant did in California, an estimated 5,000 fewer cancer deaths would probably occur over the next 20 years.** Mangano's research provides strong evidence that the Indian Point emissions are likely causing increased rates of cancer incidence for adjacent populations. While the evidence is not the final word, his analysis raises critical and troubling empirically-based questions about potential negative health impacts caused by the Indian Point facility and demands further study.

The bottom line is that for sub-county regions with similar socio-economic characteristics, when you live close to Indian Point, you have a considerably increased risk of getting cancer. Four of the nine zip code regions closest to Indian Point have either high or intermediate concentrations of minorities and low-income populations, and these adjacent residents are exposed to higher risks of cancer than minority and low-income populations residing in sub-regions of Westchester and Rockland Counties that are further from Indian Point.

**CONTENTION 3: Entergy's Environmental Report Contains a Seriously Flawed Environmental Justice Analysis that does not adequately assess the impact of Indian Point on the Minority, Low-Income and Disabled Populations in the Area Surrounding Indian Point.**

Entergy's ER fails to provide a sufficient analysis of the many potential and disparate environmental impacts of Indian Point on the minority and low-income communities residing in close proximity to Indian Point. There appears to be a disproportionate risk for cancer among these minority communities that may be related to radiation releases from Indian Point. Groups of subsistence fishermen in the Hudson will, for instance, suffer disparate impacts from radiation released from Indian Point that may end up in Hudson

River fish. Also, there is a large minority, low-income and disabled population in special facilities (including hospitals and prisons) within 50 miles who will be severely impacted in the event of an evacuation from the area surrounding Indian Point. Unfortunately, it does not appear that these issues have been considered in prior environmental impact statements prepared in connection with Indian Point.

The National Environmental Policy Act (NEPA) mandates that the Nuclear Regulatory Commission (NRC) consider the environmental impacts of the action Entergy requests. In implementing NEPA, the NRC must take account of environmental justice, which includes the potential for government actions to have disproportionate impacts on low-income or minority communities.

The Environmental Protection Agency defines *environmental justice* as:

“[T]he fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. **It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work**” (available at [www.epa.gov/compliance/environmentaljustice](http://www.epa.gov/compliance/environmentaljustice) ).

Entergy’s license renewal application does not comply with NEPA because its ER fails to adequately assess the environmental justice impacts of Indian Point’s continued operation. The NRC has previously acknowledged that environmental justice issues should be considered when and to the extent required by NEPA. In the *Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions*, the NRC stated that:

- Environmental justice “is a tool, within the normal NEPA context, to identify communities that might otherwise be overlooked and identify impacts due to their uniqueness as part of the NRC’s NEPA review process.”
- The focus of any environmental justice (EJ) review “should be on identifying and weighing disproportionately significant and adverse environmental impacts on minority and low-income populations that may be different from the impacts on the general population.”
- The NRC recognizes that the impacts of its licensing decisions on some populations “may be different from impacts on the general population due to a community’s distinct cultural characteristics or practices.”
- EJ, “as well as other socio-economic issues, are normally considered in site-specific environmental impact reports,” and are performed “in the licensing action for each particular facility.”

The NRC has indicated that, normally, a 50-mile radius should be examined for licensing and regulatory actions involving power reactors. Once the impacted area is identified, the NRC instructs that potentially affected low-income or minority communities should be identified. If the percentage of minority or low-income populations in the impacted area significantly exceeds that of the State or County percentage, then EJ will be considered in greater detail.

In relation, Entergy’s Environmental Report concludes, “no significant off-site environmental impacts will be created by the renewal of the IP2 and IP3 Operating Licenses.” However, this analysis is based upon at least three flawed premises.

### **First, Entergy's EJ and Demographic Methodology is Flawed and Incomplete:**

Entergy does not present their raw data for total minority and low-income populations for each Census Block Group, which would permit the NRC or the public to independently assess and analyze the information. Moreover, Entergy's data are limited to highly aggregated summaries based upon relative percentages of population groups targeted by the NRC review process. It does not present relevant numerators or denominators for target populations in each Census Block Group, which would be necessary for serious data analysis.

Entergy's use of Census Block Groups is also crude. CBGs are too incomplete in how they capture data, as they obscure small neighborhood concentrations of minority populations that would likely emerge if Entergy's analysis focused on the smallest geographic unit utilized by the Bureau of the Census, the Census Block. Since minority groups are often highly concentrated in specific communities, especially in the small towns and cities that characterize the Hudson Valley, a CBG aggregation can obscure the presence of those racial and ethnic communities.

### **Secondly, Entergy's ER Does Not Adequately Acknowledge the Significant EJ Communities within 50 Miles of Indian Point, or Assess Indian Point's Impact on this Community.**

Millions of minority community members are at risk of adverse health, and subject to the consequences of accident or terrorist attack due to their proximity to Indian Point. A significant portion of minority populations in the United States is located within a 50-mile radius of Indian Point. Westchester County, the home of Indian Point, has a proportion of both African-Americans and Hispanics that exceeds that for the United States as a whole. For instance, Westchester's African-American population is 16.4% higher than in the U.S. as a whole and the Hispanic population in this area is 25% higher than the national average ([www.census.gov](http://www.census.gov)). Similarly, this 50-mile radius has relatively high concentrations of low-income residents. Because Entergy concludes that there are no offsite impacts, it makes no effort to analyze the impact that continued operation of the plant may have on these populations- rendering its ER seriously incomplete.

### **Thirdly, Minority and Low-Income Populations May be More Susceptible to Cancer from Indian Point Radionuclide Emissions than other populations**

Cancer rates in the four counties surrounding Indian Point are already higher than for the general population, a fact that Entergy fails to address (see discussion in Contention 2, *Public Health Risks*, Table 15, p. 17). Minority groups in the four-county region are more vulnerable to the adverse impacts of radiological and nuclear plant-induced chemical pollution in the environment than is the case for either the general minority or total population of the U.S. Furthermore, four of the nine zip code regions closest to Indian Point have either high or intermediate concentrations of minorities and low-income populations, and these adjacent residents are exposed to higher cancer risks than those residing in regions further from Indian Point.

### **The Environmental Report Fails to Take Into Account Subsistence Fishing in the Hudson River.**

Because of planned and unplanned emissions from Indian Point, through leaks, air and otherwise, it is likely that those who engage in subsistence fishing will have a significant intake of radionuclides and other toxic substances. As this is an exposure pathway that disproportionately impacts low-income and minority populations, subsistence fishing should be considered in Entergy's ER. However, the ER fails to consider

the lack of fish consumption advisories regarding possible radioactive isotopes, or awareness among the minority and low-income populations about associated risks.

There is a long history of subsistence fishing in the Hudson, especially in the areas surrounding Indian Point. Clearwater interviewed anglers who were fishing on the Hudson River between Hudson Falls and Staten Island about fishing habits and awareness of health advisories. Compared to licensed anglers across the state, the Mid-Hudson River anglers consisted of greater proportions of African-Americans, Hispanics, people with family incomes less than \$30,000, and women. There are many reasons to believe that radionuclides from Indian Point are ending up in the local fish population and unjustly endangering these populations. Radioactive isotopes are known to bioaccumulate in the aquatic food web in a manner similar to that of PCBs, except that radionuclides are harbored in bones more than in fatty tissue. There has been no educational campaign or warning signs at frequented sites to inform recreational or subsistence anglers not to eat the fish (which may contain radioactive isotopes). Fishermen and women are unaware that radioactive strontium has been detected in the flesh and bones of some area fish.

### **Low-Income Populations Will be More Severely and Negatively Impacted by an Evacuation Resulting from a Radiological Event at Indian Point**

Additionally, the ER is deficient because it fails to discuss or analyze the disparate impact a significant accident would have on minority and low-income populations, nor does it address these communities' ability to respond or evacuate in the event of a nuclear accident or terrorist incident. Low-income and minority families are more likely to use public transportation and may not have a personal vehicle, making evacuation more difficult. The recent Hurricane Katrina disaster revealed that low-income and minority populations are particularly vulnerable in emergency situations. One evaluation of the Katrina emergency response, for instance, states that, "people who had resources were served relatively well because planners are familiar with their abilities and needs. People who were poor, disabled or ill were not well served, apparently because decision-makers were unfamiliar with and insensitive to their needs."

### **Residents of Special Facilities will be More Severely and Negatively Impacted by an Evacuation due to a Radiological Event at Indian Point, including disabled patients in hospitals and long term care facilities, and inmates in the many prisons in the area**

There are thousands of prisoners housed in prisons and jails within the 50-mile emergency planning zone, including at least twenty-six federal, state, county and New York City facilities – not including police holding areas, juvenile detention centers, psychiatric facilities, and not including facilities in nearby Connecticut and New Jersey. Sing Sing Correctional Facilities, for instance, is located within the 10-mile zone, approximately 8 miles from Indian Point, and as of November 3, 2007, housed 1760 prisoners. It also bears noting that many prisoners held in New York City and local jail facilities have not been convicted of a crime, but are merely being held pending trial. The vast majority of prisoners are minority and indigent, and therefore any harm to the prison population would have a hugely disproportionate burden of minority and low-income communities.

In 2002, New York Governor George Pataki commissioned former FEMA chairman, James Lee Witt, to prepare a report on emergency preparedness in relation to Indian Point. The Witt Report analyzed evacuation plans for two correctional facilities, Sing Sing and Westchester Department of Corrections. **The initial evacuation plan at these facilities is to shelter-in-place, which may endanger prisoners and staff.** The Witt Report also found that there are hundreds, and possibly thousands, of "Special Facilities [that] Need to Plan for Emergencies at Indian Point" within the 10 and 50-miles emergency planning zones. Special facilities are any that house populations that are either harder to warn, harder to

protect, or more vulnerable to the health effects from exposure. Given the health and mobility issues at these special facilities, evacuation for the disabled population is extremely problematic.

### **Environmental Justice Concerns Relating to Production and Long Term Storage of Indian Point's Fuel, especially upon Native American Populations.**

Entergy's ER completely ignores the potential impacts upon EJ communities from life-cycle impacts on the production, use and storage of radioactive fuel, especially Native American people, who are disproportionately impacted by mining and manufacture of nuclear fuel and targeted to store massive amount of radioactivity.

### **CONTENTION 4: Inadequate Analysis of Severe Accident Mitigation Alternatives**

Entergy's analysis of severe accident mitigation alternatives (SAMAs) in its ER fails to satisfy NEPA because it is incomplete, inaccurate and is not adequately based upon scientific and probabilistic analysis. Specifically in its SAMA analysis, the ER fails to adequately consider the possibility of a terrorist attack on Indian Point. The ER also fails to consider the impacts of a radiological event at Indian Point, or an evacuation in the surrounding area particular in connection with the EJ communities discussed in Clearwater's Contentions 3 and 6.

### **CONTENTION 5: Entergy's Environmental Report Fails to Adequately Consider Renewable Energy and Energy Efficiency Alternatives to the License Renewal of Indian Point**

Entergy's license renewal application does not comply with the NEPA because its ER fails to adequately assess the potential for renewable energy and energy efficiency as an alternative to license renewal of Indian Point. Entergy's ER fails to consider any alternatives to Indian Point except for coal fired generation, nuclear generation, and natural gas generation. Entergy categorically eliminates from consideration the following alternatives: wind, solar, hydropower, geothermal, wood energy, municipal solid waste, other biomass derived fuels, oil, fuel cells, delayed retirement, utility sponsored conservation, purchased/imported power, and combination of alternatives. The ER states that "these sources have been eliminated as reasonable alternatives to the proposed action because the generation of approximately 2,158 gross MW of electricity as a base-load supply using these technologies is not technologically feasible" and it dismisses these alternatives with a superficial analysis of their feasibility and costs and benefits.

The ER fails to consider alternatives that could displace Indian Point's electricity including: 1) repowering existing power plants to increase their efficiency, increase their power output and reduce their pollution, 2) enhancing existing transmission lines; or 3) other alternatives such as energy efficiency and conservation, and expansion of renewable energy production. **There are many ways to replace 2 GW of generation capacity at Indian Point**, and building a new energy generating plant is only one option. As an initial matter, the easiest alternative is to eliminate the need for Indian Point's power through demand side options.

#### **A. Demand Side Options**

A study by the National Academy of Science (NAS) cites the benefits of reducing our electricity use as a preferred option for replacing Indian Point. It states that, "the impacts of current and planned



programs for reducing electricity consumption and peak electrical loads could be among the most cost-effective replacements for the energy provided by the Indian Point Energy Center." Demand side options, as are being done across the country, represent the cleanest and cheapest form of electricity replacement, and reducing peak loads is far more economical than installing additional capacity.

There are many ways to reduce demand that should be considered and discussed in the ER. For example, the concept of "Negawatt", energy not consumed, was introduced in 1989 by energy expert Amory Lovins, Director of the Rocky Mountain Institute (see [www.rmi.org](http://www.rmi.org)). The concept works by utilizing consumption efficiently to increase available market supply rather than by increasing plant generation capacity. For example, energy consumers may reduce energy consumption for a few hours to "generate" negawatts by turning off air conditioners for a few minutes on the hour. Con Ed has already initiated a program for customers in Westchester, which provides a programmable thermostat for air conditioners. The installation is free and the customer receives a stipend. In return they allow Con Ed to turn off their air conditioner for five minutes on the hour a limited number of times daily should electricity supplies run low during peak demand times. In this case the utility is producing and transferring the negawatts, while the basic infrastructure remains unchanged. This is a practical and efficient way to get more work done with less electricity without building additional base load generating capacity to replace Indian Point.

Better price signals to the consumer, such as off peak discounts for electricity usage, could change the load profile and allow a better pairing of demand to capacity. Discounted off peak pricing encourages people to shift the time for energy intensive household chores such as washing and drying laundry. Tax credits for the installation for energy efficient windows and appliances is another example. Locating electric meters indoors allows consumers be more aware of how much electricity is being consumed and motivates action to reduce usage. The California experience validates this point and demonstrates that a 15% reduction in electricity usage can be achieved.

## **B. Supply Side Options**

Creative procurement of energy, and distributing the generation of energy could replace Indian Point's 2 GW. Purchasing power from sources outside the grid is a common and accepted practice. It is also readily available in the Westchester/New York City region. Pennsylvania, New Jersey, and New England grid operators have reported surpluses for the last three years. This includes the Pennsylvania-NJ-Maryland System and the New England Power Pool (NEPP), which has supplied replacement energy when Indian Point is fully or partially closed. These sources provide energy both under planned circumstances, such as refueling, but are also available when the plant closes due to an unexpected malfunction.

New York State's Transitional Energy Plan (NYSTEP) provides incentives for repowering older dirtier facilities with newer and cleaner facilities. The legislation requires that the repowering must result in a reduction of at least 75 percent in the rate of emissions for three key pollutants - nitrogen oxide, sulfur oxide, and particulate matter. Repowering or replacing older plants has been proven to increase generating capacity by up to 90 percent and to result in decreased rate of emissions.

Distributed generation refers to the production of electricity at or near the place of consumption. Examples of distributed generation include backup generators at hospitals, photovoltaic systems on

residential rooftops, and combined heat and power (CHP) systems in industrial plants or on university campuses. The three main characteristics that differentiate most distributed generation from traditional electricity supply are location, capacity and connection to the grid. Distributed generation systems such as photovoltaic residential roof top installations where the output is highest during peak summer demand can reduce peak load and thereby mitigate the need for increased generation and/or transmission resources.

With appropriate policies and incentives, distributed resources are often the most readily available, cost-effective, and underutilized clean energy resources that can potentially reduce or defer the amount of required new electric supply from generation and transmission systems. While it can take many years to plan, design and build electric generation plants, most distributed resources can be deployed within a year. Other distributed generation options includes wind turbines, solar, and geothermal systems, all of which are being used right now with more being planned in both NYC and Westchester.

Geothermal heat pump systems, also known as “geo-exchange,” are the most energy efficient, environmentally clean, and cost-effective space conditioning systems available, according to the EPA. For every 100,000 units of typically sized residential geothermal heat pumps installed, more than 37.5 trillion BTU’s of energy used for space conditioning and water heating can be saved, corresponding to an emissions reduction of about 2.18 million metric tons of carbon equivalents, and cost savings to consumers of about \$750 million over the 20-year-life of the equipment. Geothermal heat pumps strengthen U.S. energy security. **Every 100,000 homes with geothermal heat pump systems reduce foreign oil consumption by 2.15 million barrels annually and reduce electricity consumption by 799 million kilowatt hours annually.** Geothermal heat pumps are highly efficient and their use can lower electricity demand by approximately 1 kW per ton of capacity (see [www.renewableworks.com/ content/GB-003.pdf](http://www.renewableworks.com/content/GB-003.pdf)).

Wind power is growing faster than any other electricity source in the world (see [www.aceny.org/cleantechnologies/wind\\_power.cfm](http://www.aceny.org/cleantechnologies/wind_power.cfm)). The National Academy of Science found that **“technically there is sufficient wind resource in New York State to replace the Indian Point units”**, but resolving site location and permitting issues is key to successfully placing units into service. The greatest challenge for using wind to replace large base load electric generation units is the intermittent nature of the resource. The availability factor for wind is 30 to 40 percent, compared with about 90 percent for nuclear and coal plants, and the resource is available only when the wind is blowing, not when demand is high.

In spite of Entergy’s statements in its ER, renewable sources of energy are coming on line very quickly. According to NYSERDA’s August 2007 *New York State Renewable Portfolio Standard Performance Report for the Program Period ending March 2007 (RPS Performance Report)*, new renewable capacity installed since the onset of the RPS program could exceed 1,206 MW by the end of 2008, of which 1,184 MW would be located in New York State. The 1,206 MW of new installed capacity is expected to produce approximately 3.6 million MWh of electricity per year. For all these reasons, the ER’s consideration of alternative energy and energy efficiency is insufficient.

**CONTENTION 6: Entergy’s Environmental Report Fails to Consider the Potential Harm to the Surrounding Area of Terrorist Attack on the Facility including its Spent Fuel Pools, Control Rooms, the Water Intake Valves, Cooling Pipes and Electricity System.**

The ER presented by Entergy fails to consider the potential for harm that would result from a terrorist or other attack on Indian Point's control rooms, water intake valves and cooling pipes, and the significant and reasonably foreseeable environmental harm that could result from destruction of control and cooling capacities.

The ER also fails to consider that the continued storage of spent fuel in the spent fuel pools at Indian Point, as well as other insufficiently protected features relating to cooling, electricity and control, poses a significant and reasonably foreseeable environmental risk of a severe fire and offsite release of a large amount of radioactivity. Because these features are located outside the containment structures, they make attractive targets to terrorists. An attack could result in radiation releases that could cause significant adverse environmental and health effects and property damage in one of the most densely populated areas of the country.

The failure to take account of these risks violates NEPA's requirement that environmental decisions must contain an evaluation of those aspects of a proposed action that will affect the quality of the human environment. Similarly, Entergy's application fails to satisfy the Atomic Energy Act's fundamental requirement to ensure safe operation of Indian Point during the license renewal term because it does not include adequate design measures to prevent the occurrence of a pool fire, the destruction of cooling and control capacity.

The NRC's regulations specifically require that the applicant include in its ER a consideration of alternatives to mitigate severe accidents. This issue should have been considered as part of Entergy's ER for at least two reasons: 1) **the real potential for a terrorist attack is "significant and new" information given the successful terrorist attack on September 11, 2001**; and 2) the impacts of a terrorist attack should have been considered as part of Entergy's SAMA analysis.

As set forth in the Declaration of Richard T. Lahey, Ph.D., the potential for a terrorist attack on the spent fuel pools at Indian Point are real, and the consequences are severe. The following summarizes Dr. Lahey's expert opinion:

- The three Indian Point spent fuel pools are located outside the containment buildings and contain large quantities of radioactive material.
- Spent nuclear fuel remains extremely radioactive after it is used in nuclear reactors to generate energy.
- Far more radioactivity is present in the spent fuel located in the three spent fuel storage pools at Indian Point than there is in the active core of the two nuclear reactors.
- Spent fuel pools (large "swimming-pool-like structures") were intended to only store fuel temporarily, to allow the fuel to cool sufficiently so that it could then be transferred to a final disposal site in the US.
- A terrorist attack could lead to pool drainage and a propagating zirconium fire, which means that a significant amount of radiation could be released to the environment.