

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:  
Lawrence G. McDade, Chair  
Dr. Richard E. Wardwell  
Dr. Kaye D. Lathrop

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In the Matter of	)	Docket Nos. 50-247-LR
	)	and 50-286 LR
	)	
ENTERGY NUCLEAR OPERATIONS, INC.	)	ASLBP No. 07-858-03-LR-BD01
	)	
(Indian Point Nuclear Generating Units 2 and 3)	)	December 10, 2007
	)	

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**HUDSON RIVER SLOOP CLEARWATER INC'S PETITION TO INTERVENE  
AND REQUEST FOR HEARING**

**1. DESCRIPTION OF PROCEEDING**

Pursuant to 10 C.F.R. § 2.309, 10 C.F.R. § 52.21, and a notice published by the Nuclear Regulatory Commission (“NRC” or “Commission”) at 72 Fed. Reg. 42,134 (August 1, 2007), as amended at 72 Fed. Reg. 60,394, Hudson River Sloop Clearwater, Inc. (“Clearwater”) hereby submits its petition for leave to intervene, request for hearing and contentions regarding Entergy Nuclear Operations, Inc.’s (“Entergy”) License Renewal Application (“LRA”) for an additional 20-year term of the operating licenses for Indian Point Energy Center (“Indian Point”), Units 2 (“IP2”) and 3 (“IP3”) in Buchanan, NY. By subsequent notice published at 72 Fed. Reg. 55,834 (October 1, 2007), the NRC

extended the period for filing requests for a hearing and petitions for leave to intervene until November 30, 2007. By order dated November 27, 2007, the Atomic Safety and Licensing Board (“ASLB”) extended Clearwater’s time to file its request for hearing and petitions for leave to intervene until December 10, 2007.

As demonstrated below, Clearwater’s contentions should be admitted, and Clearwater should be granted a hearing Clearwater has standing and the following contentions satisfy the NRC’s admissibility requirements in 10 CFR. § 2.309:

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

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

**CONTENTION EC-3: Entergy’s Environmental Report Contains a Seriously Flawed Environmental Justice Analysis that does not Adequately Assess the Impacts of Indian Point on the Minority, Low-income and Disabled Populations in the Area Surrounding Indian Point.**

**CONTENTION EC-4: Inadequate Analysis of Severe Accident Mitigation Alternatives**

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

**CONTENTION EC-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.**

## 2. STANDING

### 2.1 Clearwater has Representational Standing and Standing on its Own Behalf.

The general requirements for standing are set forth in 10 CFR 2.309(d)(1): (a) the name, address and telephone number of petitioner; (b) the nature of petitioner's right under the Act to be made a party to the proceeding; (c) the nature and extent of petitioner's property, financial or other interest in the proceeding; and (d) the possible effect of any decision or order that may be issued in the proceeding on petitioner's interest. These will be addressed *seriatim*.

*a. The name, address and telephone number of the petitioner:*

HUDSON RIVER SLOOP CLEARWATER, INCORPORATED  
112 Little Market Street  
Poughkeepsie, NY 12601  
(845) 454-7673

*b. The nature of the petitioner's right under the Act to be made a party:*

Clearwater has the right to intervene in this proceeding because its interests "may be affected by the proceeding." Section 189(a) of the Atomic Energy Act of 1954, as amended (the "AEA"), 42 U.S.C. § 2239(a)(1)(A). Section 189(a) provides in pertinent part:

"In any proceeding under this chapter for the granting, suspending, revoking, or amending of any license ... the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding."

42 U.S.C. § 2239(a)(1)(A).

To qualify for standing a petitioner must allege (1) a concrete and particularized injury, (2) that is traceable to the challenged action, and (3) that will be redressed by a

decision favorable to Clearwater. *See, e.g., Steel Co. v. Citizens for a Better Environment*, 523 U.S. 83, 102-04 (1998). The requisite injury may be either actual or threatened, *e.g., Wilderness Society v. Griles*, 824 F.2d 4, 11 (D.C. Cir. 1987), and must arguably lie within the “zone of interests” protected by the statutes governing the proceeding – here, either the AEA or the National Environmental Policy Act (“NEPA”). *See Yankee Atomic Electric Company* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195-96 (1998); *Quivira Mining Co.* (Ambrosia Lake Facility, Grants, New Mexico), CLI-98-11, 48 NRC 1, 6 (1998).

An organization such as Clearwater may demonstrate standing in its own right, or claim standing through one or more individual members who have standing. *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 115 (1995). Here, Clearwater’s petition shows that the subject relicensing would cause injury both to its organizational interests and to the interests of many of its individual members; therefore, it has both organizational and representational standing. *See e.g., Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-549, 9 NRC 644, 646-47 (1979).

This petition shows that Clearwater and its members, employees and volunteers will suffer actual, concrete, particularized and imminent injuries directly resulting from granting the challenged renewal, and that the injuries are likely to be prevented by a decision favorable to Clearwater. This petition shows, *inter alia*, that relicensing will result in adverse health and safety risks to Clearwater and its employees, volunteers and members from the improper design and management of the equipment; inadequate fire

protection programs, and from emissions of radioactive materials and fission products.

The petition therefore shows that Clearwater and many of its members have a real stake in the outcome of the proceeding.

Commission case law provides that, in making a standing determination, a presiding officer is to “construe the petition in favor of the petitioner,” *Georgia Tech*, CLI-95-12, 42 NRC at 115; *Atlas Corporation* (Moab, Utah Facility), LBP-97-9, 45 NRC 414, 424 (1997). Further, “even minor radiological exposures resulting from a proposed licensee activity can be enough to create the requisite injury in fact.” *General Public Utilities Nuclear Corp.* (Oyster Creek Nuclear Generating Station), LBP-96-23, 44 NRC 143, 158 (1996); *Atlas*, LBP-97-9, 45 NRC at 425.

Clearwater’s standing also derives from its and many of its members’ proximity to the Indian Point facilities. A 50-mile “proximity presumption” applies to relicensing proceedings, *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), 53 NRC 138, 146 (2001) because “the proposed action involves a significant source of radioactivity producing an obvious potential for offsite consequences.” *Georgia Tech*, CLI-95-12, 42 NRC 111 at 115. Under this presumption, Clearwater and its members, employees and volunteers living and working within 50 miles of the facilities are presumed to have “standing to intervene without the need specifically to plead injury, causation, and redressability,” because “the petitioner lives within, or otherwise has frequent contacts with, the zone of possible harm from the nuclear reactor or other source of radioactivity.” *Id.*; *Sequoyah Fuels Corp. & Gen. Atomic* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n. 22 (1994).

Because Clearwater's petition shows that even regular facilities operation, let alone negligent operation or intentional attacks, results in releases of radioactive emissions, and leaks, that may be directly harmful to Clearwater, its employees, volunteers and members, and that these injuries would be redressed by a ruling that disallowed the license renewal application, Clearwater has demonstrated its standing to intervene.

Clearwater's standing to participate in this proceeding is demonstrated by the accompanying declarations, incorporated herein by reference, of the following fact and expert witnesses:

Fact Witnesses (attached here collectively as Exhibit 1):

1. Jannette M. Barth, Clearwater Member, Croton-on-Hudson, NY.
2. Andrew Courtney, Clearwater Member, Croton-on-Hudson, NY.
3. Cynthia Cowden, Clearwater Member, Cold Spring, NY.
4. Phillip Ehrensaft, Clearwater Member, Gardiner, NY
5. Stephen Filler, Clearwater Board Member, Tarrytown, NY.
6. June Finer, Clearwater Member and volunteer, New Paltz, NY.
7. Drs. William and Sandra Flank, Clearwater members, Chappaqua, NY
8. Manna Jo Greene, Clearwater Environmental Director, Cottekill, NY.
9. Gilbert Hawkins, Hudson River Fishermen's Association, Leonia, NJ.
10. Connie Hogarth, Clearwater Member, Beacon, NY.
11. Randolph Horner, Clearwater Member, Woodstock, NY.
12. Jennifer Ippolitti, Clearwater Member, Westbrookville, NY.
13. Art Kamel, Clearwater Member, Beacon, NY.
14. Michelle LeBlanc, Clearwater Member, Putnam Valley, NY.

15. Anne Osborn, Clearwater Board Member and Former Board President, Garrison, NY.
16. Natalie Patasaw, Clearwater Board Member, Wesley Hills, NY.
17. George Potanovic, Jr. Photographer, Clearwater Member and founder of Stony Point Action Committee for the Environment, Stony Point, NY.
18. Jeff Rumpf, Clearwater Executive Director, Hopewell Junction, NY.
19. Peter & Toshi Seeger, Clearwater Founders, Fishkill Township, NY.
20. Jonathan Stanton, New York City and Westbrookville, NY.
21. Kim Sumner-Mayer, Clearwater Member, Warwick, NY.
22. Chris White, Clearwater Member, New Paltz, NY.
23. Susan Zimet, Ulster County Legislator, New Paltz, NY.
24. Alan Zollner, member of Clearwater and River Pool, Newburgh, NY.
25. Eric Marshall, Clearwater Board President, Croton-on-Hudson, NY.

Expert Witness

26. Joseph J. Mangano, MPH MBA, Executive Director, Public Health and Radiation Project (attached hereto as Exhibit 4)

*c. The nature and extent of the petitioner's interest in the proceeding:*

Established in 1966 as a New York not-for-profit corporation, Clearwater has been a leader in defending and restoring the Hudson River for the past 41 years. Its main offices are located within thirty (30) miles of the Indian Point facilities. Clearwater is a membership organization with a total of 4,548 member-households (including both individual and family memberships) as of November 30, 2007. Over the past five years, Clearwater's membership has included approximately 9,990 member households. *See* Exhibit 2 for map showing members within 10 and 50 miles of Indian Point.

Each year, Clearwater accommodates nearly thirteen thousand (13,000) children and adults for educational sails on the Hudson River on its wooden sailing sloop – the *Clearwater* – conducting floating classrooms and laboratories within three (3) miles of the Indian Point facilities, docking at both Verplanck and Peekskill and many other docks within the Emergency Planning Zone. Each year in June, Clearwater holds the Great Hudson River Revival Festival at Croton Point Park seven (7) miles from the Indian Point facilities – featuring arts and environmental education and advocacy events for over fifteen thousand (15,000) people. In addition, Clearwater provides educational programming for thousands more individuals on the history, biology, and environmental science of the Hudson River through on-land classroom visits, field programs and public exhibits in many areas within 10 and 50 miles of Indian Point.

Since 1966, Clearwater has been actively engaged in investigating and researching contamination of the Hudson River; informing, educating and assisting the public in preserving the Hudson River; fostering the historic and cultural heritage of the Hudson River Valley; and protecting the health, safety and well-being of the people living along and near the Hudson River. Clearwater's principal objective is to achieve a Hudson River ecosystem capable of sustaining the reproductive integrity, health and well-being of life at all levels.

Clearwater played a key role in the passage of the federal Clean Water Act in 1972 and has continuously conducted environmental action programs with science-based strategies designed to restore and protect the quality of the Hudson River watershed. Clearwater was actively involved in addressing the environmental problems caused by

Indian Point 1 until the facility's closure in 1970, and has been actively involved in addressing the health, safety, environmental and social issues created by Indian Point 2 and 3 since their inception in 1973 and 1975.

Clearwater has also participated in a wide variety of litigation and administrative proceedings relating to the Hudson River. Reported cases in which Clearwater was a party include:

*In Re Brodsky, Hudson River Sloop Clearwater Inc, Peter and Toshi Aline Seeger et al v. NYS Dept. of Environmental Conservation and Entergy Nuclear Inc. et al*, 1 Misc.3d 690, (2003)(Article 78 proceeding seeking a hearing and review in connection with Indian Point's application for a State Pollution Discharge Elimination System (SPDES) permit).

*Hudson Sloop Clearwater, Inc. v. Cuomo*, 222 A.D.2d 386 (1st Dept 1995)(concerning environmental impact statement for creation of the Hudson River Park Conservancy).

*In Re Industrial Liaison Committee of the Niagara Falls Area Chamber of Commerce v. Williams, Hudson River Sloop Clearwater, et al.*, 72 N.Y.2d 137 (1988)(concerning SPDES permits relating to industrial users and dischargers into Niagara Falls Wastewater Treatment Plant and into the surface waters of New York).

*Hudson River Sloop Clearwater v. Dept. of Navy*, 836 F.2d 760 (2nd Cir. 1988) (seeking preliminary injunction prohibiting dredging and pier construction by the United States Navy with respect to the proposed Staten Island homeport for battleship pending compliance with NEPA).

*Hudson River Sloop Clearwater Inc v. Consolidated Rail Corp.*, 768 F.2d 57 (2nd Cir. 1985)(bringing citizen's suit under Clean Water Act to compel compliance with NPDES/SPDES permit).

*Natural Resources Defense Council, Inc., River Sloop Clearwater v. Marsh*, (1983), 568 F. Supp. 1387 (E.D. N.Y. 1983)(seeking protection of portions of Gateway National Recreation Area in New York Harbor from U.S. Government and military use).

*Environmental Defense Fund, Hudson River Sloop Clearwater, Inc et al v. Johnson*, 476 F. Supp. 126 (S.D.NY 1979) (seeking declaratory and injunctive

relief alleging that the defendants, State Army Corps of Engineers prepared plans for the Hudson River Skimming Project in violation of NEPA and other laws).

*d. The possible effect of any decision or order that may be issued in the proceeding on the petitioner's interest:*

A decision by the Commission allowing the subject relicensing would subject Clearwater, its members, employees and volunteers to the health and safety risks set forth in detail in this petition. This petition shows, *inter alia*, that relicensing will result in adverse health and safety risks to Clearwater and its employees, volunteers and members from improper design and management of the equipment; inadequate fire protection programs, and from emissions of radioactive materials and fission products.

## 2.2 Clearwater's Standing as a Matter of Discretion.

The following addresses the four factors for allowing discretionary intervention set forth in 10 CFR 2.309(e), while incorporating by reference the elements set forth in Section 2.1 above: (a) the extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record; (b) the availability of other means whereby the petitioner's interest will be protected; (c) the extent to which the requestor's/petitioner's interest will be represented by existing parties; and (d) the extent to which the requestor's/petitioner's participation will inappropriately broaden the issues or delay the proceeding. Clearwater requests discretionary standing in the event it is denied standing as of right or in the event none of its contentions are admitted.

*a. The petitioner's participation may reasonably be expected to assist in developing a sound record:*

Clearwater's participation in the proceeding will assist the Commission in developing a sound record because Clearwater will be presenting evidence concerning the local health, safety, environmental and social issues created by Indian Point 2 and 3. It will provide local insight, information and evidence that cannot be provided by the Applicant or other parties.

*b. Other means are not available whereby the petitioner's interest will be protected.*

There are no other means available whereby the interests of Clearwater and its members, employees and volunteers will be protected.

*c. The petitioner's interest will not be represented by existing parties.*

The interests of Clearwater and its members, employees and volunteers are unique and will not be represented by the existing parties.

*d. The petitioner's participation will not inappropriately broaden the issues or delay the proceeding.*

Clearwater is not raising inappropriate issues; therefore, its participation in the proceeding will not inappropriately broaden the issues or delay the proceeding.

### 2.3 Clearwater Meets Prudential Standing Requirements.

In addition, Courts have created a prudential standing requirement that a plaintiff's interests fall within the "zone of interests" protected by the statute on which the claim is based. *Bennett v. Spear*, 520 U.S. 154, 162 (1997). The Atomic Energy Act and NEPA, the statutes at issue here, protect the same interests held by Clearwater's members and further Clearwater's purpose.

### 3. STATUTORY AND REGULATORY FRAMEWORK

This proceeding is governed by the AEA and NEPA. The AEA sets minimum standards for the safe and secure operation of nuclear facilities. NEPA requires NRC to consider and attempt to avoid or mitigate significant adverse environmental impacts of licensing those facilities. Although the statutes have some overlapping concerns, they establish independent requirements. *Limerick Ecology Action v. NRC*, 869 F.2d 719, 729-30 (3rd Cir. 1989). NEPA goes beyond the AEA, requiring the consideration of alternatives to reduce or avoid adverse environmental impacts of NRC licensing actions. *Id.*, citing 10 C.F.R. § 51.71 (d).

#### 3.1 Atomic Energy Act

The AEA prohibits the NRC from issuing a license to operate a nuclear power plant if it would be “inimical to the common defense and security or to the health and safety of the public.” 42 U.S.C. § 2133(d). Public safety is “the first, last, and a permanent consideration” in any decision on the issuance of a construction permit or a license to operate a nuclear facility. *Petition for Emergency and Remedial Action*, 7 NRC at 404, citing *Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402 (1961) (“Power Reactor Development Corp.”). Entergy’s license renewal application may not be granted unless and until the NRC finds that Entergy has satisfied the safety requirements of 10 C.F.R. 54 concerning renewal of nuclear power plant licenses.

### 3.2 National Environmental Policy Act

This proceeding is also governed by the National Environmental Policy Act, 42 U.S.C § 4321, et seq. (“NEPA”). NEPA mandates that federal agencies involved in activities that may have a significant impact on the environment must complete a detailed statement of the environmental impacts and project alternatives. NEPA requires, in pertinent part, that all agencies of the Federal Government, including the NRC take a “hard look” at environmental impacts of proposed actions. Specifically, the NRC must:

“include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on –

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.”

42 U.S.C. § 4332(c).

NEPA “places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action,” and “ensures that the agency will inform the public that it has indeed considered environmental concerns in its decision making process.” *Baltimore Gas & Elec. Co. v. Natural Res. Def. Counsel, Inc.*, 462 U.S. 87, 97 (1983).

“NEPA was created to ensure that agencies will base decisions on detailed information regarding significant environmental impacts and that information will be

available to a wide variety of concerned public and private actors.” *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 575 (9th Cir. 1998) (quoted in *Mississippi River Basin Alliance v. Westphal*, 230 F.3d 170, 175 (5th Cir. 2000)). Thus, the fundamental goal of a NEPA evaluation is to require the responsible government agency to undertake a careful and thorough analysis of the need for the project and its impacts before proceeding. Agencies must consider environmentally significant aspects of a proposed action, let the public know that the agency's decision-making process includes environmental concerns, and decide whether the public benefits of the project outweigh the environmental costs. *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 97, 76 L. Ed. 2d 437, 103 S. Ct. 2246 (1983); *Utahns For Better Transportation v. United States Dept. of Transp.*, 305 F.3d 1152, 1162 (10th Cir. 2002); *Illinois Commerce Com. v. Interstate Commerce Com.*, 848 F.2d 1246, 1259 (D.C. Cir. 1988).

Both Entergy and the NRC must comply with NEPA by evaluating the environmental impacts of license renewal and by weighing the costs and benefits of mitigating or avoiding such impacts. 10 C.F.R. § 51.95(c). The NRC must prepare an environmental impact statement before making its decision on Entergy's renewal application. *See* 10 C.F.R. § 51.95(d). And Entergy is required to provide an Environmental Report (ER) in connection with its application. *See* 10 C.F.R. §51.53(c).

The NRC has created a generic environmental impact statement for license renewal. NUREG -1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS). Environmental impacts are categorized as either “Category 1” or

“Category 2.” See 10 C.F.R. 50, Appendix B to Subpart A, Table B-1. As a general matter, Category 1 impacts may not be challenged in license renewal proceedings. See *Florida Power & Light Co.*, (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 12 (2001). However, Entergy’s ER “must contain any new and significant information of which it is aware,” 10 C.F.R. § 51.53(c)(3)(iv), such as the information concerning leaks, terrorism, health risks from off site radiation, and environmental justice impacts discussed herein. Moreover, NRC regulations require that Category 2 issues be evaluated for “further analysis and possible significant new information. . .” 10 C.F.R. 50, Appendix B to Subpart A, Table B-1.

Category 2 issues include offsite land use (significant changes associated with population and tax revenue changes resulting from license renewal), and the consideration of severe accident mitigation alternatives (SAMA) for all plants that have not considered such alternatives. 10 C.F.R. 50, Appendix B to Subpart A, Table B-1. 10 C.F.R. § 51.53(c)(3)(ii)(I) and (L). Entergy must address SAMAs in its environmental report. *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-06-23, 64 NRC 257, 279, citing 10 C.F.R. § 51.53(c)(3)(ii)(L). Whether or not a SAMA should be implemented depends upon a cost-benefit analysis: “a weighing of the cost to implement the SAMA with the reduction in risks to public health, occupational health, and offsite and onsite property.” *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-17, 56 NRC 1, 8 (2002).

Additionally, environmental justice (EJ) issues are not considered as part of generic EISs, and an environmental justice assessment must be performed in the licensing action for each particular facility and as part of Entergy's ER. *See NRC Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions*, 69 Fed. Reg. 52040 (Aug. 24, 2004). Entergy must also assess in its ER the environmental effects of transportation of fuel and waste in accordance with 10 C.F.R. § 51.52, as well as the generic and cumulative impacts associated with transportation operation in the vicinity of a high-level waste repository site." 10 C.F.R. § 51.53(c)(3)(ii)(M).

#### 4. CONTENTIONS

Clearwater's six contentions should be admitted because they satisfy the requirements of 10 C.F.R. § 2.309(f)(1). This rule ensures that "full adjudicatory hearings are triggered only by those able to proffer at least some minimal factual and legal foundation in support of their contentions." *Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, and 3)*, 49 N.R.C. 328, 334 (1999). Specifically, Clearwater's contentions satisfy 10 C.F.R. § 2.309(f)(1) that requires:

- a) "a specific statement of the issue of law or fact to be raised or controverted."  
Section 2.309(f)(1)(i).
- b) "a brief explanation of the basis for the contention." § 2.309(f)(1)(ii).
- c) "that the issue raised . . . is within the scope of the proceeding." § 2.309(f)(1)(iii).
- d) "that the issue raised . . . is material to the findings NRC must make to support the action . . . in the proceeding." § 2.309(f)(1)(iv).

- e) “a concise statement of the alleged fact or expert opinion which supports” the contention. § 2.309(f)(1)(v).
- f) “sufficient information to show that a genuine dispute exists . . . on a material issue of law or fact.” §2.309(f)(1)(vi).

Clearwater does not have to prove its contention at the admissibility stage. 28 *Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004). Rather, “petitioner must provide some sort of minimal basis indicating the potential validity of the contention.” 54 Fed. Reg. 33,168, 33,170 (Aug. 11, 1989), and why the alleged error or omission is of possible significance to the result of the proceeding. *Portland Cement Ass’n. v. Ruckelshaus*, 486 F.2d 375, 394 (D.C. Cir. 1973), *cert. denied sub nom. Portland Cement Corp. v. Adm’r, E.P.A.*, 417 U.S. 921 (1974). The contention admissibility threshold is less than is required at the summary disposition stage. “[A]t the contention filing stage the factual support necessary to show that a genuine dispute exists need not be in affidavit or formal evidentiary form and need not be of the quality necessary to withstand a summary disposition motion.” 54 Fed. Reg. at 33,171. Moreover, the “Board may appropriately view Petitioners’ support for its contention in a light that is favorable to the Petitioner.” *Palo Verde Nuclear Generating Station*, (Units 1, 2, and 3), CLI-91-12, 34 NRC 149, 155-56 (1991). Petitioner is not required to “make its case at this stage of the proceeding, but rather to indicate what facts or expert opinions, be it one fact or opinion or many, of which it is aware at that point in time which provide the basis for its contention.” ” 54 Fed. Reg. at 33,170.

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

A) Brief Explanation of the Basis for the Contention.

Entergy's license renewal application does not comply with the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. ("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. *See* 10 C.F.R. § 51.53(c)(3)(iv). 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." 10 C.F.R. § 51.45. The ER also fails because it does not sufficiently include information concerning the leaks that is adverse to Entergy's application. *See* 10 C.F.R. § 51.45(e). The failure to take adequately 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 "in a significant manner or to a significant extent not already considered." *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989) ("Marsh").

Pursuant to 10 CFR § 2.309(f)(3), Clearwater hereby adopts Contention 28 of the Attorney General of New York filed November 30, 2007 ("AG Contention-28"), and agrees that the Attorney General shall act as the representative with respect to this contention. Clearwater also shares the concerns raised in "Contention EC-3: Failure to

Adequately Analyze Impacts of Spent Fuel Leaks” of Riverkeeper, Inc. filed November 30, 2007.

B) This is a Valid Contention Pursuant to 10 CFR 2.309

The specific issue of fact and law to be controverted is whether Entergy’s Environmental Report sufficiently assesses the impacts of leaks from spent fuel pools. 10 C.F.R. §2.309(f)(1)(i). Since there are serious factual differences concerning the extent and impact of the leaks, there is a genuine dispute with regard to the sufficiency of the license application. This issue is also within this proceeding’s scope. 10 C.F.R. § 2.309(f)(1)(iii), (f)(2)(for issues under NEPA, petitioner shall file contentions based upon the ER). Entergy was required to, and did, prepare an Environmental Report in connection with its application. NEPA mandates that the NRC consider the environmental impacts of the action Entergy requests, and the NRC rules implement this mandate. 10 C.F.R. Pt. 51. Entergy, in fact, acknowledged that there have been leaks. Therefore, this issue is material to findings that must be made in this proceeding. 10 C.F.R. §2.309(f)(1)(iv).

C) Factual Allegations Supporting the Claim as Required by 10 CFR § 2.309(f)(1)(v).

Entergy’s ER admits that there are leaks from the spent fuel pools. *See* ER, Section 5.1 New and Significant Information: Groundwater Contamination, p. 5-4. 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.” *Id.* at 5-4, 5-6. Entergy fails to provide adequate support for this conclusion.

AG Contention-28 and Riverkeeper Contention EC-3 provide ample factual support for this contention, and require that there be a much “harder look” into the existence and the impact of the leaks.<sup>1</sup>

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<sup>1</sup> In addition to the leaks, Clearwater is extremely concerned about the many and wide ranging radioactive releases – some planned, and some unplanned – that have plagued and will continue to plague Indian Point and the surrounding area if the renewal application is granted. The releases into the air, water, and soil, have not been adequately investigated and their impact upon people living near the plant has not been assessed.

For starters, each reactor routinely emits relatively low-dose amounts of airborne and liquid radioactivity. This radioactivity represents over 100 different isotopes only produced in reactors and atomic bombs, including Strontium-89, Strontium-90, Cesium-137, and Iodine-131. Humans ingest them either by inhalation, or through the food chain (after airborne radioactivity returns to earth). Each of these chemicals has a special biochemical action; iodine seeks out the thyroid gland, strontium clumps to the bone and teeth (like calcium), and cesium is distributed throughout the soft tissues. All are carcinogenic. Each decays at varying rates; for example, iodine-131 has a half-life of eight days, and remains in the body only a few weeks. Strontium-90 has a half-life of 28.7 years, and thus remains in bone and teeth for many years. These chemicals are different from “background” radiation found in nature in cosmic rays and the earth's surface. Background radiation, while still harmful, contains no chemicals that specifically attack the thyroid gland, bones, or other organs. But even chemicals with a short half life, while they may remain in the body for only a relatively short time, produce a high rate of ionizing emissions that may cause more damage than comparable emissions at lower rates from isotopes with longer half-lives. *See, generally,* [http://riverkeeper.org/campaign.php/indianpoint\\_waste/the\\_facts/1257](http://riverkeeper.org/campaign.php/indianpoint_waste/the_facts/1257); Chapter 11, *Ionizing Radiation and Environmental Radioactivity*, in “Environmental Health Science,” Morton Lippmann, Beverly S. Cohen and Richard B. Schlesinger, Oxford University Press, 2003.

Indian Point ranks among the top emitters with respect to radioactive releases over the years it has operated. *Id.* As far back as 1981, Con Ed acknowledged that Indian Point was leaking radioactive material into the Hudson and surrounding groundwater and had been doing so for most of the IPEC’s life. (*New York Times*, 8/16/81). Three well-documented major leaks from Indian Point include: 1990: Over 100,000 gallons leaks into IP2’s containment building; 2000: IP 2’s steam system leak; 2005: Discovery of radioactive leaking from multiple IPEC source. *See* IP Timeline, attached hereto as Exhibit 3.

Specifically, in AG Contention-28, the State points out that the leaks present a range of potential environmental and public health impacts including:

- Plumes of strontium and tritium had been mapped under the facility. AG Contention-28, ¶ 13.
- Other radioactive constituents, including cesium, cobalt, and nickel, are being released from the IP1 spent fuel pool into groundwater. *Id.* ¶ 20.
- Tritium exposure increases the risk of developing cancer. *Id.* ¶ 10.
- Strontium-90 exposure has been linked to bone cancer, cancer in tissue near contaminated bone, and leukemia. *Id.* ¶ 10.
- 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. *Id.* ¶ 16.
- 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. *Id.* ¶ 19.
- 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. *Id.* ¶ 19.
- 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. *Id.* ¶ 21.

Clearwater has prepared a Timeline of Leaks at Indian Point describing the history of leaks and other releases from the plant (attached as Exhibit 3).

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. With approximately 150 people in the attendance, 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 (see generally <http://www.clearwater.org/news/indianpoint2007.html>). 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. *Id.* At the same time as 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. See Luby, Abby, “New Leaks Taint Hudson,” Regional Report, March 2006.

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. *Id.*

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. *Id.* 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 (<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.

(<http://www.clearwater.org/news/indianpoint2007.html>).

As New York State concludes in AG Contention 28:

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 in this proceeding.

*Id.* at ¶ 16.<sup>2</sup>

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<sup>2</sup> The State also argues, and we concur, that Entergy's failure to consider the environmental and health impacts of the leaks because of a separate investigation is "impermissible segmentation under NEPA."

For the foregoing reasons, this Contention should be admitted.

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

A) Brief Explanation of the Basis for the Contention.

Entergy's ER fails to adequately consider the impact that the proposed license renewal for IP 2 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. Even though radiation exposure to the public during the license renewal term is a Category 1 issue, 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. Further, 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 Environmental Report.

B) This is a Valid Contention Pursuant to 10 CFR 2.309

The specific issue of fact and law to be controverted is whether Entergy's Environmental Report sufficiently assesses the health impacts of radionuclide emissions

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from Indian Point. 10 C.F.R. §2.309(f)(1)(i). 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. This issue is also within this proceeding's scope. 10 C.F.R. § 2.309(f)(1)(iii), (f)(2)(for issues under NEPA, petitioner shall file contentions based upon the ER). Entergy was required to, and did, prepare an Environmental Report in connection with its application. NEPA mandates that the NRC consider the environmental impacts of the action Entergy requests, and the NRC rules implement this mandate. 10 C.F.R. Pt. 51. Therefore, this issue is material to findings that must be made in this proceeding. 10 C.F.R. §2.309(f)(1)(iv). Indeed, if the new and significant health impacts are genuine, it's hard to imagine a more material impact.

C) Factual Basis for Contention.

Health impacts are a Category 1 issue. 10 CFR Part 51 Subpart A, Appendix B, Table B-1. As a general matter, Category 1 impacts may not be challenged in license renewal proceedings. *See Florida Power & Light Co*, (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 12 (2001). However, Entergy's ER "must contain any new and significant information of which it is aware," 10 C.F.R. § 51.53(c)(3)(iv), such as the information concerning health risks from off-site radiation emissions.

There is ample "new and significant" information, however, that shows that there are substantial offsite health risks related to radiation. For example, on Saturday, December 8, 2007, Reuters reported that the University of Mainz, on behalf of Germany's

Federal Office for Radiation Protection (BFS), found that young children living near nuclear power plants have a significantly higher risk of developing leukemia and other forms of cancer, Reuters (December 8, 2007)

[http://news.yahoo.com/s/nm/20071208/hl\\_nm/cancer\\_germany\\_dc](http://news.yahoo.com/s/nm/20071208/hl_nm/cancer_germany_dc). The study confirmed a connection between the distance of domicile to the nearest nuclear plant, and the risk of developing cancer before the fifth birthday, finding that children living within 3 miles of a nuclear plant developed leukemia at double the statistical average. Data also showed there was an increased cancer risk for children living within 50 kilometers of a reactor.

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 . Declaration of Joseph Mangano, attached as Exhibit 4 (Mangano Decl.).

Mangano prepared a report, *Public Health Risks of Extending Licenses of the Indian Point 2 and 3 Nuclear Reactors*, (Radiation and Public Health Project, Revised December 7, 2007) (attached as Exhibit 4 as part of Mangano Decl.)(*Public Health Risks*).

As Mangano 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. (*Public Health Risks*, p. 2.)

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. 5-7.)
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- 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. 7-8.)
- Radioactivity levels in the Hudson River near Indian Point are over 10 times greater than those in Albany. Large variations exist in local radioactivity levels; 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 (for cancer incidence, 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, and Westchester). 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. (*Public Health Risks*, Table 15, p. 17; Table 19, p. 21; Table 21, p. 23)
- 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. (*Public Health Risks*, Table 13, p. 14-15; Table 16, p. 18)
- 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. (*Public Health Risks*, Table 22, p. 24)

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. (Mangano, et al. 2002, "*Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States*," Archives of Environmental Health, Vol. 57(1), January/February 2002, pp 23-31) (Exhibit 2.7). Mangano stated that if closing Indian Point leads to the same reduction in cancer mortality as it did near the Rancho Seco plant in California, an estimated 5,000 fewer cancer deaths would probably occur over the next 20 years.

Mangano's research provides strong evidence that 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.

NEPA and plain prudence requires that further comprehensive study be conducted so the public can understand what threat, if any Indian Point presents to local public health. There is sufficient “new and significant” information such that these issues should be addressed in Entergy’s ER.

Finally, there are potentially significant environmental justice issues that Mangano's research has uncovered. (*Public Health Risks*, Section VI, p. 28-31). Mangano first matched each of the 4 counties nearest Indian Point (Westchester, Rockland, Putnam and Orange) to a paired “control” county in New York State that is more distant from Indian Point. For each of the paired comparisons, there is a significantly higher incidence of radiosensitive cancers in the nearer counties. (*Public Health Risks*, Table 28, p. 30) Second, Mangano focused on sub-county regions, defined by zip codes, within the Westchester and Rockland Counties. The zip code regions were then divided into a “nuclear” group of the nine zip code regions closest to the plant, and a “control” group of zip code regions located further from the plant. Each zip code region was also classified into three groups defined as having high, intermediate, and low proportions of minority/poverty populations. (*Public Health Risks*, Table 29, p. 31)

One high minority/poverty zip code in the “nuclear” group was identified: Haverstraw. Actual combined rates of breast, colorectal, lung/bronchus, and prostate cancer for the 1999-2003 period in Haverstraw were 18.2 percent above expected

rates based on New York State averages. The four identified control zip code regions (White Plains, Yonkers, and two in Mt Vernon) had actual rates of 9.1 percent above expected rates.

The three nuclear zip codes with intermediate minority/poverty levels had actual cancer rates that were 21.2 percent above expected levels. The five control zip codes with similar minority/poverty proportions had actual rates of cancer incidence that were 5.3 percent below expected rates. For the four “nuclear” zip code regions with low minority/poverty levels, actual cancer rates were 19.7 percent above expected levels, as opposed to 0.3 percent for the control zip codes.

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.

This contention is also supported by the attached of Declaration of Joseph Mangano, Exhibit 4.

For the foregoing reasons, this Contention should be admitted.

**CONTENTION EC-3: Entergy's Environmental Report Contains a Seriously Flawed Environmental Justice Analysis that does not Adequately Assess the impacts of Indian Point on the Minority, Low-income and Disabled Populations in the Area Surrounding Indian Point.**

A) Brief Explanation of the Basis for the Contention.

Entergy's Environmental Report does not satisfy the NEPA because its methodology is flawed, and its analysis is incomplete and limited to questionable interpretations and presentation of data. It fails to acknowledge or describe potential impacts upon the high minority and low-income populations that surround the plant.

The ER also 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. (Environmental Report, Section 2.6.2, p. 2-40 to 2-46.) First, there appears to be a disparate impact upon minority communities for cancer that may be related to radiation releases from Indian Point. Second, there is a group of subsistence fisherman in the Hudson who will suffer disparate impacts from radiation released from Indian Point that may wind up in the Hudson River fish. Third, 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 if there is an evacuation from the area surrounding Indian Point. It does not appear that these issues have been considered in prior environmental impact statements prepared in connection with Indian Point and should be considered in the ER.

B) This is a Valid Contention Pursuant to 10 CFR 2.309.

The specific issue of fact and law to be controverted is whether Entergy's Environmental Report sufficiently assesses the impacts of continued operation of the plant

on the local environmental justice communities. 10 C.F.R. §2.309(f)(1)(i). Since there are serious factual differences between Entergy's Environmental Report and facts described herein, there is a genuine dispute with regard to the sufficiency of the Environmental Report. This issue is also within this proceeding's scope. 10 C.F.R. § 2.309(f)(1)(iii), (f)(2)(for issues under NEPA, petitioner shall file contentions based upon the ER). Entergy was required to, and did, prepare an Environmental Report in connection with its application.

NEPA mandates that the NRC consider the environmental impacts of the action Entergy requests, and the NRC rules implement this mandate. 10 C.F.R. Pt. 51. Entergy, in fact, acknowledged that there is an environmental justice community in the environs of plant, and did a putative analysis.

In implementing NEPA, the NRC must take account of environmental justice, the potential for government actions to have disproportionate impacts on low-income or minority communities. The EPA 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.<sup>3</sup>

Entergy's license renewal application does not comply with NEPA because its Environmental Report (ER) fails to adequately assess the environmental justice impacts of

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<sup>3</sup> U.S. Environmental Protection Agency, [www.epa.gov/compliance/environmentaljustice](http://www.epa.gov/compliance/environmentaljustice) (visited November 25, 2007).

Indian Point's continued operation. The NRC has acknowledged that EJ issues should be considered when and to the extent required by NEPA. *See Louisiana Energy Services* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77 (1998)(LES). NEPA requires that agencies such as the NRC take a look at the socioeconomic impacts that have a nexus to the environment. *See* 40 CFR 1508.8, 1508.14.

In LES, the NRC held that:

“[d]isparate impact analysis is our principal tool for advancing environmental justice under NEPA. The NRC’s goal is to identify and adequately weigh, or mitigate, effects on low-income and minority communities that become apparent only by considering factors peculiar to those communities.”

*Id.* at 100, cited favorably in *Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions*, 69 Fed. Reg. 52040 (Aug. 24, 2004)(“*EJ Policy Statement*”). In the *EJ Policy Statement*, the NRC stated that “EJ 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.” *EJ Policy Statement*, at 52047. An EJ-related socioeconomic impact analysis is pertinent “when there is a nexus to the human or physical environment or if an evaluation is necessary for an accurate cost-benefit analysis. *Id.* at 52047. The focus of any 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.” *Id.* at 52047.

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.” Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions, 69 Fed. Reg. 52,040 et seq. (August 24, 2004). The NRC has acknowledged that “EJ, as well as other socio-economic issues are normally considered in site-specific EISs,” are not usually considered during the preparation of generic EISs, and are performed “in the licensing action for each particular facility.” *Id.*

The NRC has indicated that normally a 50-mile radius should be examined for licensing and regulatory actions involving power reactors, however this is only a guideline and the “geographic scale should be commensurate with the potential impact area and should include a sample of the surrounding population because the goal is to evaluate the communities, neighborhoods, and areas that may be disproportionately impacted.” *Id.* at 52047-8

The NRC instructs that once the impacted area is identified, potentially affected low-income or minority communities should be identified. The NRC compares the percentage of the minority or low-income population in the impacted area to the percentage in the County and State. If the percentage in the impacted area significantly exceeds that of the State or County percentage for either minority or low-income population, then EJ will be considered in greater detail. *Id.* at 52048.<sup>4</sup>

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<sup>4</sup> “Significantly” is defined by staff guidance to be 20 percentage points. Alternatively, if either the minority or low-income population percentage exceeds 50 percent, EJ matters are considered in greater detail. *Id.* However, this is only guidance and these numbers are flexible: The goal is to identify and assure that communities or transient populations that will bear significant adverse effects will not be overlooked. *Id.*

Therefore, this issue is material to findings that must be made in this proceeding.

10 C.F.R. §2.309(f)(1)(iv).

C) Factual Allegations Supporting the Claim as Required by 10 CFR § 2.309(f)(1)(v).

As the ER discloses, minority and low-income populations exist within a 50-mile radius around the Indian Point site. *See*, ER § 2.6.2. Entergy's conclusion that it need not conduct an EJ analysis because there are no offsite impacts is wrong. Entergy's EJ analysis states:

The consideration of environmental justice is required to assure that federal programs and activities will not have a "disproportionately high and adverse human health and environmental effects . . . on minority populations and low-income populations . . ." Entergy's analysis of the Category 2 issues defined in 10 CFR 51.53(c)(3)(ii) determined that there were no adverse impacts from the renewal of the IP2 and IP3 operating licenses. Thus, no disproportionate impact on minority or low-income populations would occur from the proposed action. Based on the review of these issues, no review for environmental justice is necessary. However, Entergy presents environmental justice demographic information in Section 2.6.2 to assist the NRC in its review.

ER, § 4.22.5, p. 4-79-80. The ER concludes:

4.22.6 Conclusion

As part of its environmental assessment of this proposed action, Entergy has determined that no significant off-site environmental impacts will be created by the renewal of the IP2 and IP3 Operating Licenses. This conclusion is supported by the review performed of the Category 2 issues defined in 10 CFR 51.53(c)(3)(ii) presented in this ER.

As the NRR procedure recognizes, if no significant off-site impacts occur in connection with the proposed action, then no member of the public will be substantially affected. Therefore, there can be no disproportionately high and adverse impacts or effects on members of the public, including minority and low-income populations, resulting from the renewal of the IP2 and IP3 Operating Licenses.

*Id.* at p. 80.

Entergy's analysis is based upon at least three flawed premises: first, an improper methodology, second that it need not look at Category 1 impacts when doing an EJ analysis; and third, that there are no Category 2 impacts.

As discussed above, NRC's policy statement makes clear that impacts on some populations "may be different from impacts on the general population," and that "EJ, as well as other socio-economic issues are normally considered in site-specific EISs," are not in the preparation of generic EIS. EJ Policy Statement. Therefore, Entergy cannot exclude the potential effects of Category 1 impacts on EJ communities.

i. Entergy's EJ and Demographic Methodology is Flawed and Incomplete.

Entergy has performed a partial and questionable descriptive portrait of minority and low-income populations within the NRC-defined impact area.

The data Entergy presents is incomplete. They do not, for example, present their raw data for total minority and low-income populations for each Census Block Group (CBG), 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. We are not presented with relevant numerators or denominators for target populations in each Census Block Group, which would be necessary for serious data analysis. Whether this is intended obfuscation or not, the strategy is very convenient for Entergy: they do not have to deal with the evident fact that millions of non-whites live within the 50-mile zone.<sup>5</sup>

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<sup>5</sup> See FN 7, *infra*.

Further, Entergy's over-aggregation compels intervenor organizations to spend huge sums of time and money to replicate the relevant data in order to perform independent analysis of this necessary information. Entergy should be compelled to provide all relevant raw data in its ER for analysis by the NRC and participants such as Clearwater.

Entergy's use of Census Block Groups is, also, crude. CBGs are too gross in how they capture data, since they obscure small neighborhood concentrations of minority populations that likely would emerge had Entergy's analysis focused on the smallest geographic unit utilized by the Bureau of the Census, the Census Block, rather than aggregations of Census Blocks Groups. Census Blocks provide the finest level of detail in the Census Bureau figures. Since minority groups are often highly concentrated in specific neighborhoods, a CBG aggregation can obscure the presence of those racial and ethnic communities, especially in the small towns and cities that characterize the mid-Hudson Valley. Census Block-level analysis should result in a more accurate identification of minority and low-income population concentrations within the specified impact region.

Moreover, even with the limited data the ER includes, it is notable that there is no analysis of the data. The obvious implications of its findings, including the potential for disproportionate effects of Indian Point on minority populations, are disregarded by Entergy. Probable real-life impacts on Environmental Justice Communities are neither presented nor analyzed.

Because Entergy has used a flawed methodology, they have left unanswered questions that are essential in a rigorous environmental justice analysis, such as: i) What would a proper analysis of the data show?; ii) How are the large minority populations

living very near the plant (*see, e.g.*, ER, Figure 2-22) likely to be impacted?; and iii) How would the huge number of low income and minority people living within 50 miles in the plant – a number in the millions, larger than the total population of many states and most metropolitan regions in the United States – be impacted by a renewal of Entergy’s license?

ii. 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.

As discussed above, NRC guidance instructs that in evaluating minority communities within the impacted area, it is appropriate to determine whether the percentage of EJ population in the impacted area significantly exceeds the population in the local county or state as a whole. *Id.* at 52048. NRC staff guidance defines “Significantly” as a disparity of 20 percentage points, and, alternatively, states that EJ matters should be considered in greater detail, in any event, if either the minority or low-income population percentage exceeds 50 percent. *Id.*

In fact, Table 2-7A in the ER indicates that 45.5 percent of Census Blocks within a 50-mile radius in the four states surrounding Indian Point have “significant” minority populations as defined by NRC guidance (ER, Table 2-7A, p. 2-42).<sup>6</sup> This high number of Census Block groups means that very large numbers of minority community members –

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<sup>6</sup> It should be noted that neither the EJ Policy Statement nor the staff guidance is a regulation, and as such, these numbers are not binding. As the EJ Policy Statement makes clear, the numbers are flexible and are written with the goal of identifying communities or transient populations and assuring that significant adverse effects will not be overlooked. *Id.* In any event, a very large number of Census Blocks meet the NRC criteria of having high proportions of minorities: either a ratio of 50 percent or more of its population belonging to a minority as defined by the NRC, or a minority to total population ratio that is 20 percent or greater than the average for the reference region.

millions in fact – are at risk of adverse health, and the consequences of accident or terrorist attack, due to their proximity to Indian Point. Indeed, compared to any other area of the nation, more minority group member are at greater risk from releases or serious incident at Indian Point than at any nuclear plant in the country. Figures 2-20 and 2-21 from the ER clearly indicate: 1) a geographic concentration of racial minority Census Block in the most densely populated sub-regions within the region defined by a 50-mile radius; and 2) a significant presence of racial minority Census Blocks located within closer proximity to Indian Point (Applicant's Environmental Report, p. 2-115, 116). Moreover, when Hispanic ethnicity is added to minority racial status in Figures 2-22 and 2-23 (Map 2-23 is attached hereto as Exhibit 5), the exceptionally strong presence of minority groups in the NRC-defined impact region is even more striking. (Applicant's Environmental Report, p. 2-117,118). It is notable that the New York Metropolitan Region contained 10.6 percent of the total minority population of the United States ([www.census.gov](http://www.census.gov)).<sup>7</sup>

In fact, a significant fraction of the total minority populations of the United States as a whole 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, which exceeds that for the United States as a whole. African-Americans composed 14.9 percent of Westchester's total population in 2005, compared to 12.8 percent of the national

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<sup>7</sup> Given the considerable overlap between the region defined by a 50-mile radius of Indian Point and the New York Metropolitan Region as defined by the Census, we use the relative weight of minorities in the latter as a proxy for racial proportion of minorities in the NRC-defined impact region. The 2000 Census indicates that 9,246,133 out of 21,199,865 people residing in the New York Metropolitan Region, 43.6 percent, are either classified in non-white racial categories or are Hispanics or Latinos reporting their race as white. This compares with 30.9 percent for the United States as whole, which had a total minority population of 86,869,132 in the year 2000 ((U.S. Bureau of the Census at [www.census.gov](http://www.census.gov))).

population; meaning that the Westchester African American population is 16.4% higher than in the U.S. as whole. The enormity of the African American population in absolute numbers and the high percentage both demand that an impact assessment be made.

Hispanics composed 18.0 percent of Westchester County's population, as opposed to 14.4 percent of the national population.<sup>8</sup> This means that the Hispanic population in Westchester is 25% higher than the national average, a number well above the 20% NRC guidance number. (U.S. Bureau of the Census at [www.census.gov](http://www.census.gov).)<sup>9</sup>

Parallel observations apply to Census Blocks with high proportions of low-income residents. Figures 2-24 and 2-25 in Entergy's submission indicate a substantial presence of low-income Census Blocks as defined by NRC criteria. Using an individual state criterion for classifying Census Blocks, Entergy's data indicates that 10.4 percent of these geographical units have relatively high concentrations of low-income residents. Their alternative methodology of aggregating average poverty levels across four states yields a measurement of 11.8 percent of Census Blocks within the 50-mile radius. One obvious conclusion from this measurement is not stated: counties within the 50-mile impact region defined by NRC had a total population of 19.9 million people. (Applicant's Environmental

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<sup>8</sup> Orange County's rapidly growing Hispanic population reached 14.9 percent of the total population in 2005, a proportion that can be expected to rise if present trends continue. *Id.*

<sup>9</sup> Westchester County also is home to an unusually high proportion of people who were born abroad, and who speak a language other than English at home. Since Asia composes the second most-important source of immigration after Latin America, a high proportion of Westchester's non-Hispanic immigrants belong to environmental justice groups as well. Double the proportion of Westchester's 949,355 residents were born abroad compared to the national average: 22.2 percent- compared to 11.1 percent in the year 2000. With respect to the language spoken at home, 28.4 of Westchester residents speak a language other than English, compared to 17.9 percent nationally. (U.S. Bureau of the Census at [www.census.gov](http://www.census.gov))

Report, p. 2-37) The fact that one out of ten Census Blocks is classified as low-income, most of them in the most densely populated part of the impact region, means that at least several million low-income people are impacted.<sup>10</sup>

Given the enormity of the EJ population in this region, both in percentage and absolute terms, further investigation by independent experts is mandated. There is a particular need to consider the full range of health, accident risk and terrorist risk impacts on minority populations residing immediately adjacent to Indian Point: in Peekskill, Haverstraw and West Haverstraw. Entergy's ER Figures 2-22 and 2-23 show that these are the closest EJ communities to the plant, and therefore the most likely to be impacted.

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 and is seriously incomplete.

- iii. 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 which Entergy fails to address. See discussion under Contention 2, supra: *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 that is the case for the general minority or

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<sup>10</sup> Entergy's submission comments that "most" of the low-income Census Blocks are located within a 29-40 mile radius. (Applicant's Environmental Report, p. 2-45) One possible reading of this comment is an implication that these Census Blocks somehow count less because they are in an intermediate zone of the NRC-defined impact region. That interpretation is far from obvious, and far from NRC application review criteria. It also begs the question of looking into the specific impacts on the low-income Census Blocks that are located in closer proximity to Indian Point.

total population of the United States. As evidenced by Joseph Mangano's preliminary findings of an increase in thyroid cancer and other health impacts in those communities closest to the plant, the current magnitude of the impact on the affected population may be significant and the projected impact on the health of the population during the new license period must be carefully evaluated in ER. *Public Health Risks*, Tables 15-22, p. 17-34.

As discussed in Clearwater's Health Contention 2 above, low-income and minority populations living near the plant are at 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.

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

In its ER, Entergy entirely fails to take into account the high percentage of minority and low-income populations in the lower Hudson Valley region who engage in subsistence fishing. Because of planned and unplanned emissions from Indian Point, through leaks, air and otherwise, it is likely that this population's intake of radionuclides and other toxic substances generated by the reactors will be both significant, and significantly greater, than the population at large. The cumulative effects have been increasing, and will continue to increase if a license renewal is granted. Because subsistence fishing is an exposure pathway that disproportionately impacts low-income and minority populations, subsistence fishing should be considered in Entergy's ER. Entergy's Environmental Report is also

inadequate because it fails to consider the lack of fish consumption advisories regarding possible radioactive isotopes by government agencies, or awareness of associated risks among the minority and low-income populations.

There is a long history of subsistence fishing in the Hudson in the areas surrounding Indian Point. In 1998, the New York State Department of Health and the Agency for Toxic Substances and Disease Registry (ATSDR) of the United States Department of Health and Human Services released a study concerning subsistence fishing in connection with polychlorinated biphenyls (PCBs). *Survey of Hudson River Anglers and an Estimate of Their Exposure to PCBs*, September 30, 1998, prepared by State of New York Department of Health Under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (“Anglers Survey”)([www.atsdr.cdc.gov/hac/pha/hudsonri/hud\\_toc.html](http://www.atsdr.cdc.gov/hac/pha/hudsonri/hud_toc.html)).<sup>11</sup> The Anglers Survey described the very serious community health concerns for children and women of childbearing age who were non-white or low-income. It stated that:

Hudson River Sloop Clearwater . . . interview[ed] anglers who were fishing on the Hudson River between Hudson Falls and Staten Island about their fishing habits and awareness of health advisories. The survey found that

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<sup>11</sup> This study relied on the work of Bridget Barclay, former Environmental Director of Clearwater, who was the principal investigator and author of the original *Hudson River Anglers Survey* to assess Hudson River fish consumption by recreational and subsistence anglers and their families. Barclay, Bridget, *Hudson River Anglers Survey*. Hudson River Sloop Clearwater, Inc. Poughkeepsie, NY. March, 1993. The Clearwater survey included 336 shore-based anglers interviewed at 20 different locations along the Hudson, including three sites in the upper Hudson, during 1991 and 1992 (Barclay, 1993). The anglers were asked how often they fished and ate fish from the Hudson in the previous week and month, and the extent to which they shared their catch with other relatives and friends. (See Hudson River Anglers Survey Questionnaire, attached as Exhibit 6). Clearwater survey results were useful because both licensed and non-licensed anglers were surveyed. It was at that time the only available study specific to the Hudson. This study greatly influenced the US EPA’s decision to reconsider its “No Action” position regarding Hudson River polychlorinated biphenyl (PCB) remediation. A second, Hudson River Angler’s Survey was performed by Edward Horn of the NYS Department of Health, Robert Schmidt of Hudsonia, et al in 1996 and found similar results. The 1996 survey used essentially the same questionnaire used in the Clearwater study.

many Hudson River anglers were not aware of the consumption advisories and others who were aware did not heed the advice (Barclay, 1993). The report highlighted concerns for women of childbearing age and children under the age of 15 who appear to be at particular risk, for non-whites and for low-income anglers. The author concluded that the prohibition of fishing in the Upper Hudson River and the health advisories were "having only limited success in preventing unsafe levels of exposure to PCBs through consumption of Hudson River fish."<sup>12</sup>

Angler Survey ([http://www.atsdr.cdc.gov/hac/pha/hudsonri/hud\\_toc.html](http://www.atsdr.cdc.gov/hac/pha/hudsonri/hud_toc.html))

The results of the study were compelling and have important implications for Indian Point because, like PCBs, Strontium-90, Cesium-137 and other radioactive isotopes bioaccumulate in higher trophic levels in the food chain. In both the 1991 and 1996 surveys, more than half the anglers had annual incomes less than \$30,000.

Moreover both studies found that compared to licensed anglers across the state, the Mid-Hudson River anglers in the studies consisted of:

- a much greater proportion of African-American and Hispanic anglers,
- a much greater proportion of family incomes less than \$30,000 and
- a larger proportion of women.

*Id.* Additionally, low-income respondents were less aware of the health advisories than the others (21-34% compared to 49-68%); two-thirds of anglers fishing between Catskill and the Tappan Zee Bridge (the area closest to Indian Point) reported eating at least some of their fish, and almost half of anglers gave fish away sometimes or frequently; the fish that anglers kept were the most contaminated species in each part of the river; half of the

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<sup>12</sup> The report included thirteen recommendations for improving angler awareness of, and adherence to, the health advisories, including both educational and research efforts. Similar efforts should be required in connection with releases from Indian Point.

anglers who said they ate fish from the Hudson River reported eating two meals in the previous month; and some anglers and others who eat fish from the Hudson River were being exposed to levels of PCBs that are a health concern and are at risk of adverse health effects.

There are many reasons to believe that radionuclides from Indian Point are ending up in the local fish population and being eaten by subsistence anglers, a largely minority and low-income population, in the region. The most likely affected populations are the non-English speaking residents and the residents of Buchanan, Peekskill, Verplanck, Haverstraw, Stony Point and others living within 10 miles of Indian Point. They are unjustly endangered for the following reasons:

- 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. Since Indian Point is leaking strontium-90, the impact on the environment and human health is site-specific.
- The exposure caused by the presence of radionuclides in fish is clearly an environmental injustice, because people who rely on the river for a large portion of their protein are disproportionately impacted by pollution from the plant. The LRA does not set forth mitigation measures which locate, contain, and remediate any and all leaks of strontium, cesium and tritium from Indian Point into the ground, air, groundwater and river.
- The ER fails to consider the unique burdens faced by minority and low-income populations who depend on the Hudson River for food. These populations are

already disproportionately affected, via bioaccumulation, by increases in hazardous and radioactive material from the nuclear reactors at Indian Point. Further, the ER is inadequate because it fails to consider impacts to important fish species targeted by subsistence fishermen. Low-income and minority communities will bear the burden if target species are contaminated with radioactive isotopes or are smaller, less abundant, or less healthy because of the proposed relicensing.

In sum, Entergy's Environmental Report is inadequate because it fails to consider the lack of fish consumption advisories, or awareness of associated risks among the minority and low-income populations. Subsistence anglers who fish in the Hudson River are unaware that the food they are catching for their families may contain strontium-90 and other radioactive isotopes. A high proportion of subsistence anglers are members of minority groups or have low-incomes. Unlike the case for Hudson River PCBs, where signage has been posted and bilingual educational materials have been widely distributed, there has been no educational campaign nor warning signs at frequented sites to inform recreational or subsistence anglers not to eat the fish which may contain radioactive isotopes, nor does the LRA acknowledge the need for such a program during the 20 year new superseding license period. These fishermen and women are unaware that radioactive strontium has been detected in the flesh and bones of some area fish. This is especially dangerous for young children, because strontium acts like calcium in bone formation and has a half-life of 33 years. As Barclay and other have observed, even with posted fish advisories, compliance is low for a variety of reasons, including lack of understanding and denial.

During the proposed 20 year new license renewal period, there is a reasonable probability that subsidence anglers may be adversely affected by Entergy's failure to properly prevent the release of radioactive waste into the environment: the air, the water and the ground.

v. 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. Prior to Hurricane Katrina, the City of New Orleans developed and implemented an emergency plan that was well engineered and publicized.<sup>13</sup> One evaluation of the Katrina emergency response 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."<sup>14</sup>

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<sup>13</sup> The Radiological Emergency Preparedness Plan (REPP) for Indian Point relied on automobiles originally for the a 10-mile evacuation planning zone (EPZ), which has now been reduced to a 2- to 6-mile wedge, but it utterly fails to protect the most vulnerable populations.

<sup>14</sup> Litman, *Lessons from Katrina and Rita: What Major Disasters Can Teach Transportation Planners*, Journal of Transportation Engineering, Vol. 132, January 2006, pp. 11-18. (Exhibit 2.9).

Clearwater supports Contention 29 of the New York State Notice of Intention to Participate and Petition to Intervene, dated November 30, 2007, in connection with this and the following subsection.

vi. Residents of Special Facilities will be More Severely and Negatively Impacted by an Evacuation or Radiological Event at Indian Point, including disabled patients in the dozens of hospitals and long term care facilities, and inmates in the many prisons in the area.

There are many 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 any facilities in Connecticut and New Jersey. Decl of Stephen Filler dated December 6, 2007 (Filler Decl.), ¶¶ 9-10 attached as part of Exhibit 1; *see also* Exhibit A to Filler Decl. New York City alone averaged 13,497 prisoners per day in 2006, most of whom were housed within 50 miles of Indian Point. Filler Decl. ¶ 11; *see* ([http://www.nyc.gov/html/doc/html/stats/doc\\_stats.shtml](http://www.nyc.gov/html/doc/html/stats/doc_stats.shtml); visited November 25, 2007).

Sing Sing Correctional Facility is located within the 10-mile zone, approximately 8 miles from Indian Point, and as of November 3, 2007, housed 1760 prisoners. *Id.* ¶12; Exhibit B to Filler Decl. Although Sing Sing is a maximum-security prison for convicted felons, it 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 on minority and low-income communities. For example, according to New York's Monthly Minority Inmate

Population Report (see Filler Decl. Exhibit B), on November 3, 2007 at Sing Sing, only 212 of 1760 inmates were white (12%) -- 994 were African American (56.4%) and 520 were Hispanic (29%). The statewide numbers are only slightly less disparate: 20.8% white, 51.2% African American, 26% Hispanic. Filler Decl. ¶ 21. Additionally, according to a recent study by the Sentencing Project, the prison population nationwide has grown more than 500% since the 1970's when Indian Point was first licensed, to a current prison population of more than 2.2 million people. "*Uneven Justice: State Rates of Incarceration By Race and Ethnicity*," p. 1 Marc Mauer and Ryan S. King, The Sentencing Project, July 2007 ([http://www.sentencingproject.org/Admin%5CDocuments%5Cpublications%5Crd\\_stateratesofincbyraceandethnicity.pdf](http://www.sentencingproject.org/Admin%5CDocuments%5Cpublications%5Crd_stateratesofincbyraceandethnicity.pdf)). This growth has been accompanied by an increasingly disproportional racial composition; African Americans, for example, now constitute 900,000 of the total 2.2 million incarcerated population. *Id.* The Hispanic prison population, also, had increased dramatically -- by 43% since 1990. *Id.* at p. 2, *citing* Louis W. Jankowsky, *Correctional Populations in the United States*, 1990, Bureau of Justice Statistics, 1992, p. 86; Paige M. Harrison and Allen J. Beck, *Prisoners in 2005*, Bureau of Justice Statistics, 2006, p.8. Nationwide, according to the study, the per capita incarceration rate of African Americans is 5.6 times the rate of whites, and the per capital incarceration rate for Hispanics is nearly double (1.8) times the rate of whites. *Id.*, p. 3.

According to this study, New York is well above the national average. The incarceration rates for African Americans in New York is 9.4 times that of whites (9<sup>th</sup> highest in the country) and for Hispanics 4.5 times that of whites (4<sup>th</sup> in country). *Id.* p. 11,

14. Other states within Indian Point's peak injury zone are also highly disproportionate: New Jersey and Connecticut have the 3<sup>rd</sup> and 4<sup>th</sup> highest rates in the country, respectively, of black-to-white white incarceration (12 or more times higher than whites); and the 6<sup>th</sup> and 1<sup>st</sup> highest rates in the country, respectively, of Hispanic-to-white incarceration (6.6 times higher than whites in Connecticut; and 3.3 higher than whites in NJ). *Id. See, also*, The National Center for State Courts (<http://www.ncsconline.org/wc/CourTopics/FAQs.asp?topic=IndDef>); visited November 25, 2007) (80-90% of people charged with crimes nationwide are entitled to indigent representation); Filler Decl. ¶ 24.

There are also many dozens, perhaps hundreds of other special facilities including hospitals, nursing homes, elder care facilities and psychiatric facilities in the 50 miles zone.<sup>15</sup> These facilities may have higher percentages of minority and low-income populations, and they certainly have a disproportionate number of people with disabilities. *Id.* ¶ 26.

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. “*Review of Emergency Preparedness of Areas Adjacent to Indian Point and Millstone*,” James Lee Witt Associates, 2003 (“Witt Report”).

The Witt Report analyzed evacuation plans for two correctional facilities, Sing Sing, and Westchester Department of Corrections. The Witt Report suggests that the initial

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<sup>15</sup> Office of Real Property Services data for 2006 reflect the presence of one hospital (Hudson Valley Hospital in the Town of Cortlandt Manor) and at least nine retirement residences or nursing homes within 10 miles of the IP facility.

evacuation plan at these facilities is to shelter-in-place, and then to evacuate if deemed appropriate.

The Witt Report found that Sing Sing is a maximum and medium security prison located in Westchester County within the 10 mile EPZ. It suggested that, initially at least, the plan for Sing Sing in the event of a radiological event was to shelter-in-place. The report indicates that the first step in a radiological event would be for a lock-down – meaning that prisoners would be retained in their cells. Sing Sing had no radiation monitors. They had no hazard specific training for its staff, nor was there training about family protection plans. The report indicated that any decision to evacuate would be made by the State Emergency Management Office and would be based upon whether it is riskier to move inmates rather than to stay in place. Witt Report, ¶ 4.5.2.1, p. 71.

The Witt Report also reported upon the Westchester Department of Corrections facility, in Valhalla, NY, located 17 miles from Buchanan. The report indicated that the facility would learn of an event from Westchester County, and then decide upon appropriate protective actions. They can shelter-in-place for one week, after which they would need both food and fuel. There was no hazard specific training for the staff, or for family protection plans. In the event of an incident and a resultant lock down, the staff would not be able to leave. The interviews did not elicit confidence that off duty personnel would report for duty in the event of a significant event. Witt Report, ¶ 4.5.2.2, p. 71.

The Witt Report also found that are hundreds, and possibly thousands, of “Special Facilities [that] Need to Plan for Emergencies at Indian Point” within the 10 and 50-mile emergency planning zones. Special facilities are any facilities that house populations that

are either harder to warn, harder to protect, or more vulnerable to the health effects from exposure. They include day care centers, schools, universities, correctional facilities, nursing homes, hospitals, and assisted care living facilities. Witt Report, ¶ 11.2.2.2, p. 234. Given the health and mobility issues at these special facilities, evacuation for the disabled population is extremely problematic.<sup>16</sup>

In addition to the evidence from the Witt Report, there is every reason to believe that prison evacuation would be an extremely problematic in the event of a radiological emergency and low priority. Historically, and today, convicted criminals are treated as poorly as any class of people in our society, and there is little reason to think our society would make prisoners a priority in the event of radiological event, or evacuation.

The experience following the Katrina Hurricane in New Orleans 2005 provides stark evidence of what might happen in the event of a radiological event, an evacuation, or even a perceived scare, from Indian Point. In *Abandoned & Abused: Orleans Parish Prisoners in the Wake of Hurricane Katrina*, the American Civil Liberties Union's National Prison Project, reported on what happened to prisoners during Katrina. According to the report's Executive Summary:

During the storm, and for several days thereafter, thousands of men, women, and children were abandoned at [Orleans Parish Prison (OPP)]. As floodwaters rose in the OPP buildings, power was lost, and entire buildings were plunged into darkness. Deputies left their posts wholesale, leaving behind prisoners in locked cells, some standing in sewage-tainted water up to their chests. Over the next few days, without food, water, or ventilation, prisoners broke windows in order to get air, and carved holes in the jail's

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<sup>16</sup> Although not traditionally covered by concepts of environmental justice, NEPA (which requires consideration of “socioeconomic” impacts) and other federal law (such as the Americans with Disabilities Act, 42 U.S. C. §12101 et seq.) demand that the impacts upon people with disabilities be considered in Entergy’s Environmental Report.

walls in an effort to get to safety. Some prisoners leapt into the water, while others made signs or set fire to bed sheets and pieces of clothing to signal to rescuers. Once freed from the buildings, prisoners were bused to receiving facilities around the state, where, for some, conditions only got worse. At the Elayn Hunt Correctional Center, thousands of OPP evacuees spent several days on a large outdoor field, where prisoner-on-prisoner violence was rampant and went unchecked by correctional officers. From there, prisoners went to other facilities, where some were subjected to systematic abuse and racially motivated assaults by prison guards.

Id. (<http://www.aclu.org/prison/conditions/26414pub20060809.html>; visited November 23, 2007).

Unfortunately, there is no reason to expect that consequences would be any better for the tens of thousands of minority and low-income people in the dozens of prisons within 50 miles of Indian Point. Many of the immobile people with disabilities in the many special facilities in the region might not fare much better. At the very least, Entergy's Environmental Report should consider the impacts upon these communities.

v. 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 amounts of radioactivity.

Demand for nuclear fuel from the Indian Point plants contributes towards the heavy impact of mining, manufacture and storage of radioactive materials on Native American communities. Clearwater's concerns about the impact of the nuclear fuel cycle on Native American communities are cogently expressed in a talk by Professor Karl Grossman,

presented to the Institute of American Indian Arts, Santa Fe, New Mexico (November 29, 2006)(Republished as, *Native Nations and the Nuclear Cycle*,

<http://www.shundahai.org/NativeNationsandtheNuclearCycle.htm>, and attached as Exhibit 7)

Professor Grossman pointed out the significant impacts of the nuclear fuel cycle on Native American populations:

Native Americans and indigenous people from around the world have been especially hard-hit by uranium mining and other aspects of the so-called nuclear fuel cycle. .... I noted that with U.S. Nuclear Regulatory Commission approval, Sequoyah Fuel Corporation deliberately channels out 8 million gallons annually of its radioactive waste as a liquid fertilizer it calls 'raffinate.' The company sells the fertilizer, and also uses it on 10,000 surrounding acres where cattle graze and where hay and corn are grown for feed." ... I wrote about interviewing Lance Hughes, director of Native Americans for a Clean Environment in Talequah, Oklahoma, and in speaking of "unusual cancers" and birth defects from "genetic mutation" in the area, Hughes said: "It's pretty sad babies born without eyes, with brain cancers." Wildlife is also born deformed. Said Hughes, "We found a nine-legged frog, a two-headed fish and a four-legged chicken." ... As for the last stage of the nuclear fuel cycle somehow safeguarding nuclear waste endlessly as Winona LaDuke, an Ojibwe (who ran for vice president of the U.S. in 1996 and 2000 on the Green Party ticket), who lives and works on the White Earth Nation in Minnesota, has said: "The greatest minds in the nuclear establishment have been searching for an answer to the radioactive waste problem for 50 years and they've finally got one: haul it down a dirt road and dump it on an Indian reservation." . . . Some 60 Indian communities have been "directly targeted by the nuclear power establishment" to be waste dumps, notes the Washington-based Nuclear Information and Resource Service. *Id.*

With regard to the Environmental Justice impact of manufacturing nuclear fuel, Dr. Robert Bullard, professor of sociology at Clark Atlanta University and one of the leading authorities in the nation regarding environmental justice, notes:

Grassroots groups are making sure that government agencies do the right thing. On May 1, 1997, after eight years of litigation, Citizens Against Nuclear Trash or CANT won a favorable court decision from the Nuclear Regulatory Commission Atomic Safety and Licensing Board. The three-

judge panel concluded that “racial bias played a role in the selection process” and denied a permit from Louisiana Energy Services to build a uranium enrichment plant in the middle of Forest Grove and Center Springs, Louisiana---two black communities that date back to the 1860's and 1910, respectively. The decision was upheld on appeal on April 4, 1998.

*(Environmental Justice: Strategies for Creating Healthy and Sustainable Communities*  
<http://www.law.mercer.edu/elaw/rbullard.htm>)

Environmental Justice concerns require that Entergy explain how they will obtain nuclear fuel and dispose of nuclear waster in a manner that is consistent with the health of Native American communities. Entergy has failed to do so in their Environmental Report.

This contention is also supported by the attached Declaration of Stephen Filler and Joseph Mangano.

For all the foregoing reasons, Entergy’s ER fails to adequately address EJ issues and Clearwater’s contention should be admitted.<sup>17</sup>

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<sup>17</sup> Ironically, even though Entergy’s impact on minorities and low-income groups may be very detrimental, Entergy has mounted and is actively funding a misleading campaign claiming that closure of Indian Point will result in increased coal and other fossil fuel combustion, leading to higher asthma rates in low-income, inner city communities (See, e.g., <http://www.tmia.com/industry/entergy-pseudo-ej.html>). According to one news account, the New York Affordable Reliable Electricity Alliance (New York AREA), the leaders of this effort, is “funded at least partly by Entergy Indian Point's owner.” Michael Risinit, "*Relicensing battle brews at Indian Pt.*," The Journal News (Westchester County, NY), March 30, 2005. According to PR Watch, Entergy spokesperson Jim Steets told *PR Watch* that his company “was ‘instrumental in the founding of New York AREA’ but said he didn't know ‘how much of New York AREA's funding comes from Entergy.’ He added, ‘There's no question that there's a strong association’ between Entergy and NY AREA, but as ‘membership has grown, we've become just another dues-paying member.’ NY AREA is comprised of ‘independent-minded people, with interests of their own,’ he stressed.” <http://www.prwatch.org/node/5833>. Perhaps unsurprisingly New York AREA has sought to intervene in this proceeding, but has not submitted any contentions.

**CONTENTION EC-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.

Pursuant to 10 CFR § 2.309(f)(3), Clearwater hereby adopts Contention 12-15 of the Attorney General of New York filed November 30, 2007. Clearwater also shares the concerns raised in Riverkeeper's Contention EC-2.

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 EC-3 and EC-6 which it references and incorporates herein by reference its Contentions EC-3 and EC-6

This contention is also supported by the attached Declaration of Stephen Filler.

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

A) Brief Explanation of the Basis for the Contention.

Entergy's license renewal application does not comply with the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. ("NEPA") because its Environmental Report (ER) fails to adequately assess the potential for renewable energy and energy efficiency as an alternative to license renewal of Indian Point. *See* 10 C.F.R. § 51.53(c)(3)(iv).

Pursuant to 10 CFR § 2.309(f)(3), Clearwater hereby adopts Contention 9, 10 and 11 of the Attorney General of New York filed November 30, 2007 (AG Contentions 9, 10 and 11, respectively) and agrees that the Attorney General shall act as the representative with respect to this contention.

B) This is a Valid Contention Pursuant to 10 CFR 2.309

The specific issue of fact and law to be controverted is whether Entergy's Environmental Report sufficiently assesses the potential for renewable energy and energy efficiency as a substitute for Indian Point's electricity. 10 C.F.R. §2.309(f)(1)(i). Since there are serious factual differences concerning the opportunities for renewable energy and energy efficiency, there is a genuine dispute with regard to the sufficiency of the license application. This issue is also within this proceeding's scope. 10 C.F.R. § 2.309(f)(1)(iii), (f)(2)(for issues under NEPA, petitioner shall file contentions based upon the ER).

Entergy was required to, and did, prepare an Environmental Report in connection with its application. NEPA mandates that the NRC consider the environmental impacts of the action Entergy requests, and the NRC rules implement this mandate. 10 C.F.R. Pt. 51. Entergy, in fact, acknowledged the possibility of renewable energy, but discounted it. Therefore, this issue is material to findings that must be made in this proceeding. 10 C.F.R. §2.309(f)(1)(iv).

C) Factual Allegations Supporting the Claim as Required by 10 CFR § 2.309(f)(1)(v).

Entergy's ER fails to consider any alternatives to Indian Point except for coal fired generation, nuclear generation, and natural gas generation. ER at §7.5. Entergy relies upon NUREG-1437, Vol 1, Section 8 (NRC 1996) which provides that the "NRC has

determined that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources and only electric generation sources that are technically feasible and commercially viable. As a result, 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. ER ¶ 7.5. 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. *Id.* at §§ 8.3.1-8.3.11.

As stated in AG Contention-10, p. 121, the ER misstates the findings of the Generic environmental impact statement and/or relies upon the plant specific supplements issued for plants far distant from New York to justify their cursory dismissal of many renewable energy options. The GEIS specifically rejects the approach used in the ER and requires that all alternatives must be fully evaluated for each license renewal proceeding. GEIS at § 8.1. Additionally, the ER also uses allegations about the need for power to justify rejection of alternatives in violation of 10 C.F.R. § 5.53(c)(2) and the GEIS. See, e.g., ER § 8.3.10. As further noted by AG Contention 10, 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. AG Contention 10, p. 122.

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

In *Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs (NAS Study)*, 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 “[t]he 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.” NAS Study, p. 20, [http://books.nap.edu/openbook.php?record\\_id=11666&page=18](http://books.nap.edu/openbook.php?record_id=11666&page=18)). 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.

The New York State Energy Research and Development Authority (NYSERDA) currently provides three demand side programs:

- Peak Load Reduction Program - expected to conserve 355 to 375MW annually
- Enabling Technology for Price Sensitive Load Management - expected to avoid the need for 308MW
- Keep Cool Program - anticipates a 38 to 45 MW savings

(See [www.nyserda.org](http://www.nyserda.org)) These programs have saved approximately 700 megawatts and illustrate how demand side options can reduce peak demand.

Reducing peak demand means that generating capacity and reserve margins can both be reduced. Thus, according to the NAS Study, investments in reducing peak demand through energy efficiency can be valued at 118 percent of the actual reduction in megawatts because it avoids the addition of new generating capacity with all its attendant costs. Consolidated Edison has established several demand management programs with the goal of reducing peak load growth by 535 MW; these programs use energy efficiency, smart equipment choices, load reductions programs and distributed generation. The New York Power Authority has committed \$100 million a year for energy efficiency projects as detailed in the AG Contention 10.

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* <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. A bill currently pending in the New York State Legislature (Number A8739) would amend the public service law, in relation to providing real time smart metering technology to residential electricity customers to help consumers reduce the peak demand for electricity.

The California experience validates this point and demonstrates that a 15% reduction in electricity usage can be achieved. See, e.g., [www.riverkeeper.org/document.php/39/2002\\_May\\_\\_Koman.pdf](http://www.riverkeeper.org/document.php/39/2002_May__Koman.pdf). Similarly, Vermont has held their energy use constant while expanding their economy.

#### 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 IPSEC is fully or partially closed. These sources provide energy both under planned circumstances, such as refueling, but it is 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. It states:

“In some areas with tight electricity supplies and poor air quality, both can be improved through repowering existing generating facilities. NYSTEP creates an incentive to bring these plants on-line by accelerating the siting process under Article X of the Public Service Law. Specifically, the Siting Board approval time for the repowering of an existing facility, or the phase out of an old facility for a new, cleaner one is cut in half, from one year to six months. 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. This action will encourage and facilitate the replacement of old, dirty, inefficient plants with modern, cleaner, high efficiency plants. 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.”

(NYSTEP, IV. Environmental Protections, A. Clean Energy Generation Incentive)

Repowering was recommended in AG-Contention 10:

Repowering a generation facility means replacing the plant's old, inefficient and polluting equipment with newer, more efficient equipment. Today, virtually all repowering projects replace old equipment with combined-cycle combustion turbines (CCCTs). CCCTs generate electricity in two stages. In the first stage, fuel is burned to operate a gas turbine generator, and in the second stage, excess heat from the gas turbine is used to drive a steam turbine and generate additional electricity. This two-stage process can turn 50 percent or more of the fuel energy into electricity. Repowering has become commonplace in the electric industry since the early 1990s. One repowering project in the Hudson River Valley was PSEG's Bethlehem Energy Center outside Albany. Completed in 2005, this project now consists of 750 MW of combined-cycle generating capacity, which includes a net increase in 350 MW relative to the old Albany Steam Plant that was replaced.

AG Contention 10, ¶ 21.

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 out put 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. A dispersed network of distributed generation units is also less vulnerable to terrorism, whether from direct attack or computer hacking, than a single large power station.

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 Environmental Protection Agency. 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 ((<http://www.renewableworks.com/content/GB-003.pdf>, Geoexchange Heating and Cooling Systems: Fascinating Fact, p. 1).

Wind power is growing faster than any other electricity source in the world. (ACE NY, [http://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. Storage will smooth out the intermittent nature of the resource, but that

technology is not yet readily available” *Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs*, 2006, p. 39.

In spite of Entergy’s statements in its ER, renewables 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. *RPS Performance Report* at 2. 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, and this contention should be admitted.

**Contention EC-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.**

A) Brief Explanation of the Basis for the Contention.

Entergy’s license renewal application does not comply with the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. (“NEPA”) because the Environmental Report (ER) 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. Additionally, the NRC must conduct Severe Accident Mitigation Alternative (SAMA) analysis in connection with this possibility. 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 "in a significant manner or to a significant extent not already considered." *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989) ("Marsh"). Similarly, Entergy's application fails to satisfy the Atomic Energy Act's ("AEA"), 42 U.S.C. § 2233(d), 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 capacity, the destruction of control capacity or to reduce their consequences.

Pursuant to 10 CFR § 2.309(f)(3), Clearwater hereby supports and adopts Contention 27 of the Attorney General of New York filed November 30, 2007 ("AG Contention-27"), and agrees that the Attorney General shall act as the representative with respect to this contention. Clearwater also shares Riverkeeper's concerns in its Contention EC-2.

B. This is a Valid Contention Pursuant to 10 CFR 2.309

The specific issue of fact and law to be controverted is whether Entergy's Environmental Report sufficiently assesses the impacts of a potential terrorist attack. 10 C.F.R. §2.309(f)(1)(i). Entergy's Environmental Report does not consider the potential impact of a terrorist attack on the spent fuel pools, the control rooms, the cooling water intake valves or the cooling pipes -- all of which are vulnerable to terrorist attack -- as part of its SAMA analysis, or otherwise. If such an attack were successful, it could result in a substantial off-site radiological release that could threaten public health and safety, and the environment. Therefore there is a genuine dispute with regard to the sufficiency of the license application.

This issue is also within this proceeding's scope. 10 C.F.R. § 2.309(f)(1)(iii), (f)(2)(for issues under NEPA, petitioner shall file contentions based upon the ER). Entergy was required to, and did, prepare an Environmental Report in connection with its application. NEPA mandates that the NRC consider the environmental impacts of the action Entergy requests, and the NRC rules implement this mandate. 10 C.F.R. Pt. 51. The NRC's regulations specifically require that the applicant include in its Environmental Report a consideration of alternatives to mitigate severe accidents if the NRC staff "has not previously considered severe accident mitigation alternatives for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment." 10 C.F.R. § 51.53(c)(3)(ii)(L). This issue should have been considered as part of Entergy's ER, and is within its scope, for at least two reasons: 1) the real potential for a terrorist attack is "significant and new" information given the successful attack carried out by

terrorists on September 11, 2001; and 2) the impacts of a terrorist attack should have been considered as part of Entergy's SAMA analysis. A terrorist attack on the spent fuel pools, control room, water intake valves and cooling pipes could result in potentially significant off-site radiological releases that could cause significant adverse environmental public health effects and property damage. This issue is thus material to findings that must be made in this proceeding. 10 C.F.R. §2.309(f)(1)(iv). *See San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006), cert. denied, 127 S. Ct. 1124 (2007)(holding that NEPA requires the NRC to study how its actions affect the risk of terrorism).

C. Factual Allegations Supporting the Claim as Required by 10 CFR § 2.309(f)(1)(v).

The events of September 11, 2001, and after, demonstrate the importance of considering the potential impact of a terrorist attack on Indian Point. The two planes that crashed into the World Trade Center Towers flew directly over Indian Point on their way down the Hudson River. *See Nat'l Comm'n on Terrorist Attacks Upon the U.S.* ("9/11 Commission"), *The 9/11 Commission Report* (2004), at p. 32. Since September 11, the federal government has repeatedly acknowledged that there is a credible threat of intentional attacks on nuclear power plants, including the specific threat of an aircraft attack. For instance, in his 2002 State of the Union address, President Bush stated that "diagrams of American nuclear power plants" had been found in Afghanistan, suggesting that Al-Qaeda may have been planning attacks on those facilities. The President's State of the Union Address (Jan. 29, 2002), available at

<http://www.whitehouse.gov/news/releases/2002/01/20020129-11.html>.

Additionally, on September 4, 2003, the United States General Accounting Office (“GAO”) issued a report noting that the nation’s commercial nuclear power plants are possible terrorist targets and criticizing the NRC’s oversight and regulation of nuclear power plant security. *GAO, Nuclear Regulatory Commission: Oversight of Security at Commercial Nuclear Power Plants Needs to Be Strengthened*, GAO-03-752 (2003).

AG Contention 27 details many facts, and expert opinion, supporting this contention, all of which are adopted and incorporated herein by reference. For example, AG Contention 27 cites a 2005 report by the National Research Council entitled “Safety and Security of Commercial Spent Nuclear Fuel Storage” (National Research Council of the National Academies, *Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report*, (copyright 2006) (“NAS Study”) that studied various possible terrorist attack scenarios and concluded that spent fuel pools, such as those at Indian Point, are indeed vulnerable to such attacks. The NAS study judged, based upon information provided by the NRC, that “attacks with civilian aircraft remain a credible threat.” *Id.* at 30. It noted that terrorists might choose to attack spent fuel pools because they are “less well protected structurally than reactor cores” and “typically contain inventories of medium- and long-lived radionuclides that are several times greater than those contained in individual reactor cores.” *Id.* at 36. The report concluded that the storage pools are susceptible to fire and radiological release from a wide range of conditions, including intentional attacks with large civilian aircraft. *Id.* at 49, 57.

Further, as set forth in the Declaration of Richard T. Lahey, Ph.D., as part of AG Contention 27, 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:

1) The three Indian Point spent fuel pools are located outside the containment buildings and contain large quantities of radioactive material. Lahey Declaration, ¶¶ 32, 35.

2) Spent nuclear fuel remains extremely radioactive after it is used in nuclear reactors to generate energy. *Id.* ¶ 32.

3) 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. *Id.* ¶ 34.

4) 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 United States. *Id.* ¶ 32.

5) 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. *Id.* ¶¶ 32, 35.

Unfortunately, the danger to nuclear plants from terrorism including aircraft attack goes well beyond the threat to the spent fuel pools. For example, an NRC report on aircraft crash hazards published in 1982 by researchers at the Argonne National Laboratory, stated:

"The results of an aircraft crash on a nuclear power plant are not limited to the effects of the impact of heavy parts (such as a jet engine) on civil engineering structures. Numerous systems are required in order to provide reactor shutdown and adequate long-term cooling of the core. Although

many of these safety-related systems are well protected within hardened structures (containment system, auxiliary building), some are not.”

Nuclear Regulatory Commission, NUREG/CR-2859, “Evaluation of Aircraft Crash Hazards for Nuclear Power Plants,” June 1982, at p. 50. Moreover, in the event of an impact upon the turbine building and switchyard that damaged the secondary cooling system and resulted in loss of electrical power in a Pressurized Water Reactor (such as Indian Point) – the “core would most probably be headed for serious damage if not total meltdown.” *Id.*, at p. 51-52. Significantly, this “sequence of events does not depend in any way upon a breach of hardened structure at some optimum (i.e. most-damaging) angle.” *Id.* at 52. According to the Union of Concerned Scientists, “[t]his study clearly, categorically, explicitly and undeniably refutes the fanciful notion that nuclear power plants are robust structures and describes numerous scenarios in which an aircraft crash could lead to significant reactor core damage.” *“The NRC’s Revised Security Regulations,”* Union of Concerned Scientists, Issue Brief, February 1, 2007, p. 2.

Similarly, a 1987 NRC study strongly suggests that the violence of an aircraft crashing into a nuclear plant structure can produce shaking that causes electrical relays to change positions, and this outcome alone -- without even considering the effect of fires, explosions or other consequences -- has a high likelihood of causing reactor core damage. *Id.* at p. 4, *citing* Nuclear Regulatory Commission, NUREG/CR-4910, “*Relay Chatter and Operator Response After a Large Earthquake,*” August 1987. Additionally, an NRC Staff paper from 1997 concludes that fires represented a significant risk to the reactor core, and the most commonly identified plant areas with high fire vulnerabilities were the main control room, the electrical switchgear rooms, and the cable spreading rooms – all areas

located outside of the thick reinforced concrete containment walls. *Id.* at p. 5, citing N. Siu, J. T. Chen and E. Chelliah, Nuclear Regulatory Commission, “*Research Needs in Fire Risk Assessment*,” Presentation at 25<sup>th</sup> Water Reactor Safety Information Meeting, Bethesda, Maryland, October 20-22, 1997.

Of particular concern are the potential widespread environmental impacts if a terrorist attack damaged the reactor core, spent fuel pools, the storage casks, or other areas. *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006), cert. denied, 127 S. Ct. 1124 (2007). The NRC has implicitly recognized the gravity of the consequences of a terrorist air attack by requiring applicants for certain new nuclear reactors to consider such attacks. *See, e.g.*, 72 Fed Reg. 56,287 (October 3, 2007). This concern over the damage that could be caused by an aircraft impact is reflected in other NRC documents as well. *See* NRC, *Evaluation of Aircraft Crash Hazards Analyses for Nuclear Power Plants*, NUREG/CR-2859 (1982); NRC, *Relay Chatter & Operator Response After a Large Earthquake*, NUREG/CR-4910 (1987); NRC, *Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants*, NUREG-1738, at § 3.5.2 (2001); NRC, *Nuclear Power Plants Not Protected Against Air Crashes*, *Associated Press* (Mar. 28, 2002). Other studies identify the threat as a significant issue. Ian B. Wall, *Probabilistic Assessment of Aircraft Risk for Nuclear Power Plants*, 15 *Nuclear Safety* 276 (1974); Power Auth. of the State of N.Y. & Consol. Edison Co., *Indian Point Probabilistic Safety Study*, at 7.6-3 to 7.6-6 (1982). In 2005, the National Academy of Sciences released a report from a study it conducted at the request of Congress, with the sponsorship of the NRC and the Department of Homeland Security, of

the security risks posed by the storage of spent fuel at nuclear plant sites. See Nat'l Acad. of Scis., *Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report* (2006). Based upon information provided by the NRC, the National Academy of Sciences judged that "attacks with civilian aircraft remain a credible threat." *Id.* at 30. *See also* Director of National Intelligence, *The Terrorist Threat to the US Homeland*, July 17, 2007 National Intelligence Estimate (unclassified and publicly-released portion) (We judge the US Homeland will face a persistent and evolving terrorist threat over the next three years).

For the foregoing reasons, this Contention should be admitted.

## **5. CONCLUSION**

Pursuant to 10 CFR § 2.309(f)(3), Clearwater hereby adopts all of the contentions of the Attorney General of New York filed November 30, 2007, except for Clearwater's Contentions relating to Environmental Justice, and agrees that the Attorney General shall act as the representative with respect to these contentions. Clearwater also shares the

concerns raised in Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene in the License Renewal Proceeding for the Indian Point Nuclear Plant dated November 30, 2007.

For the foregoing reasons, Clearwater's contentions should be admitted in their entirety.

Respectfully submitted,

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