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November 30, 2007

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Re: Supplemental Comments Regarding Scope of NEPA Analysis
Application for Relicensure by Entergy Nuclear Indian Point LLCs
for Operating Licenses Nos. DPR-26 and DPR-64

Dear Sir or Madam:

The State of New York respectfully submits the attached comments to supplement its October 30, 2007 submission regarding the scope of review under the National Environmental Policy Act.

Respectfully submitted,

John J. Sipos
Assistant Attorney General

cc:

Mr. Bo Pham
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NEW YORK STATE
SUPPLEMENTAL SUBMISSION CONCERNING
NEPA SCOPING ON THE LICENSE RENEWAL OF
INDIAN POINT UNITS 2 AND 3, BUCHANAN, NEW YORK

November 30, 2007

New York State respectfully provides this supplemental submission given certain recent events, to underscore the importance of using accurate costs as part of the SAMA process, and to clarify certain statements included in its October 31, 2007 NEPA scoping comments.

LOW LEVEL RADIOACTIVE WASTE STORAGE AND DISPOSAL

The NRC's NEPA review should also examine the environmental impacts caused by the requested license extension with respect to low level radioactive waste. Currently, Unit 1 provides an area for temporary low level radioactive waste storage. The State understands that Indian Point sends its low level radioactive waste to Barnwell, South Carolina for permanent disposal. However, on Friday, November 2, 2007 newspapers reported that the Barnwell facility would close within the next few months. On the same day, the NRC issued a press release on the "challenges" posed by low level radioactive waste. See NRC Press Release 07-146. According to the NRC:

Those challenges include the anticipated closure to most of the nation in 2008 of the Barnwell, S.C., LLW disposal facility. Barnwell is currently the nation's only commercial disposal option for certain wastes, and its closure could force licensees to store waste on-site until other disposal options become available. In addition, operation of new uranium enrichment facilities, potential nuclear fuel reprocessing facilities and commercial nuclear power plants will create additional demand for LLW disposal capacity.

Id. Barnwell's closure coupled with the increased demand for disposal space triggered by the construction or renewal of facilities that also will generate additional low level radioactive waste, underscore the need to examine the environmental impacts caused by the storage, disposal, or transportation of low level radioactive waste generated by Indian Point during the 20 to 27 year term of a renewed license - as well as the low level radioactive waste already stored at the site from previous and ongoing operations.

This increased presence of low level waste at the Indian Point site coupled with the additional high level waste at the site could exacerbate the adverse impact on the adjacent land values and underscores the substantial benefit that would accrue to the adjacent land owners - at least out to 2 miles where approximately \$4 billion worth of property is located - if renewal were denied and those properties recovered as much as \$500 million in value.

HIGH LEVEL RADIOACTIVE WASTE STORAGE AND DISPOSAL

On October 31, 2007, the same day that New York submitted its written scoping comments, the U.S. Senate Committee on Environment and Public Works held a public hearing concerning the Yucca Mountain high level nuclear waste storage and disposal site. While a transcript of the hearing is not yet available, various November 1 news reports of the hearing indicate that a number of senators oppose plans to dispose radioactive waste at the site. While the NRC has attempted to preclude discussion of the uncertainties surrounding the Yucca Mountain project, the October 31 hearing underscored the increasing lack of confidence by various senators over the plan. Moreover, as New York has noted elsewhere in this proceeding, the present design capacity of the Yucca geologic disposal site cannot handle the additional amount of high level radioactive waste generated by reactors which have received 20-year extensions of their operating terms or which are expected to apply for such extensions.

THE NEPA AND SAMA REVIEW SHOULD INCLUDE AN ACCURATE ASSESSMENT OF THE CLEAN UP AND DECONTAMINATION COSTS ASSOCIATED WITH A RADIOLOGICAL RELEASE FROM INDIAN POINT

The cost formula contained in the MELCOR Accident Consequence Code System (MACCS/MACCS2) computer program underestimates the costs likely to be incurred as a result of a dispersion of radiation.

As an alternative, the NRC should use the analytical framework contained in the 1996 Sandia National Laboratories report concerning site restoration costs. See D. Chanin and W. Murfin, "Site Restoration: Estimation of Attributable Costs from Plutonium-Dispersion Accidents," SAND96-0957, Unlimited Release, UC-502, (May 1996). The *Site Restoration* study analyzed the expected financial costs for cleaning up and decontaminating a mixed-use urban land and Midwest farm and range land. The decontamination costs identified in the report could be extrapolated to apply to the four counties in the 10-mile Emergency Planning Zone as well other cities and towns in the New York City-Connecticut-New Jersey metropolitan area that are within 50-mile Emergency Planning Zone.

The Sandia study, which was commissioned by the U.S. Department of Energy, estimated the activities likely to be involved in the decontamination of an accident involving the dispersal of plutonium. Although SAND96-0957 studied a scenario in which plutonium from a nuclear weapon is dispersed as a result of an accident resulting from a fire or non-nuclear detonation of the weapon's explosive trigger device, the study's methodology and conclusions to estimate decontamination costs are directly useful to the license renewal application. The Sandia study recognized that it is extremely difficult to clean up and decontaminate small radioactive particles (*i.e.*, particles ranging in size from a fraction of a micron to a few microns). See

SAND96-0957, at p. 5-7. Such small-sized particles adhere more readily to objects and become more easily lodged in small cracks, crevices, masonry, fabric, or grass and other vegetation. *Id.*, at 5-7 to 5-10. The study examined the costs for extended remediation for mixed-use urban land (defined as having the national average population density of 1,344 persons/km²), Midwest farmland, arid western rangeland, and forested area, and concluded that accident costs would be highest for urban areas. *Id.*, Executive Summary, at x, xiii. Earlier estimates (such as those incorporated within the MACCS codes) of decontamination are incorrect because they examined fallout from the nuclear explosion of nuclear weapons that produce large particles and high mass loadings (*i.e.*, particles ranging in size from tens to hundreds of microns). *Id.*, 2-9 to 2-10, 5-7. In the words of SAND96-0957, "Data on recovery from nuclear explosions that have been publicly available since the 1960's appear to have been misinterpreted, which has led to long-standing underestimates of the potential economic costs of severe reactor accidents." *Id.*, at 2-10.

For an extended decontamination and remediation operation in an mixed-use urban area with an average national population density, the Sandia study predicted a clean up cost of \$ 311,000,000/km² with on-site waste disposal and \$ 402,000,000/km² with off-site disposal. SAND96-0957, at p. 6-4. For a so-called expedited clean up of a heavily-contaminated urban area, *i.e.*, one that it finished within one year, the cost was predicted to be \$ 398,000,000/km² using off-site disposal and \$ 309,000,000/km² using on-site waste disposal. *Id.*, at 6-5.

The costs could be much higher. For a tourism, educational, transportation, and financial center such as the New York metropolitan area, the economic losses stemming from the stigma effects of the dispersion of radioactive material would likely be staggering. The Sandia study further recognized that:

In comparing the numbers of cancer health effects that could result from a plutonium-dispersal accident to those that could result from a severe accident at a commercial nuclear power plant, it is readily apparent that the health consequences and costs of a severe reactor accident could greatly exceed the consequences of even a "worst-case" plutonium-dispersal accident because the quantities of radioactive material in nuclear weapons are a small fraction of the quantities present in an operating nuclear power plant.

Id., at 2-3 to 2-4. These costs must be taken into account.

¹These Sandia projections are in 1996 dollars for an area of average population density and did "not include downtown business and commercial districts, heavy industrial areas, or high rise apartment buildings. Inclusion of these areas would increase costs." SAND96-0957, at p. 6-2.

In addition, many areas in the Indian Point EPZ have higher population densities and property values than those examined in the Sandia report. Accordingly, as part of its analysis, the NRC should revise the Sandia results for the densely populated and developed New York City area, incorporate the region's property values, and ensure that the resulting financial costs are expressed in present value (in 2008/2009/2010 dollars) and future value (until 2035, the likely term of any renewed operating license). Two recent studies provide additional information concerning the appropriate cost inputs for evacuation, temporary housing, decontamination, replacement, and disposal activities. Beyea, Lyman, von Hippel, *Damages from a Major Release of ¹³⁷Cs into the Atmosphere of the United States*, Science and Global Security, Vol. 12, p. 125-136 (2004) (discussing Indian Point and four other sites); Lyman, *Chernobyl on the Hudson? The Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Power Plant*, Union of Concerned Scientists (September 2004).

These two studies and the economic model found in SAND96-0957 are currently available to NRC.² The results from this readily-available model, as updated and revised for the New York-Connecticut-New Jersey metropolitan area, should be included in the environmental review and incorporated into any SEIS for the consideration of federal decision makers.

CLARIFICATION OF SCOPING COMMENTS

In addition, New York hereby amends its previous comments with the following changes:

seismicity comments

Page 13, 3rd full paragraph should read as follows:

By contrast, intraplate areas are now known to have fairly frequent low magnitude earthquake activity, often concentrated in identifiable zones of weakness. But impacted faults typically show little or no visible evidence of recent activity at the earth's surface. Many large intraplate earthquakes worldwide are known to have very shallow depths. Data gathered subsequent to the initial permitting of Indian Point 2 and 3 clearly shows this type of intraplate earthquake activity (ranging in depths of 2 km to 15 km) in the vicinity of Indian Point. See Seborowski, et al (1982); Thurber and Caruso (1985).

² See http://www.osti.gov/bridge/product.biblio.jsp?osti_id=249283&query_id=2.

emergency planning comments

Page 16, 1st full paragraph should read:

The Witt Report's conclusions are bolstered by a 2003 traffic study by KLD Associates, which concluded that evacuation times for the EPZ around Indian Point had doubled since 1994 and could take up to 9.25 hours in good weather conditions and 12 hours in snow conditions. KLD Associates, Inc., *Indian Point Energy Center Evacuation Time Estimate*, Table 7-1D, at 7-14 (2003) ("KLD Traffic Study"). Since January 2003 and continuing to this year, three out of the four county governments with territory in the ten-mile EPZ for Indian Point – Westchester, Orange, and Rockland – have refused to submit annual verification updates for the Indian Point evacuation plan. See, e.g., January 17, 2003 letter from E. Diana, Orange County Executive, to E. Jacoby, New York State Emergency Management Office (referencing Witt Report conclusions), ML030350231.

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