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Recipients:

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Consideration of Environmental Impacts on Temporary Storage of Spent Fuel After Cessation of Reactor Operation

Comment On: NRC-2012-0246-0361

Waste Confidence - Continued Storage of Spent Nuclear Fuel

Document: NRC-2012-0246-DRAFT-1226

Comment on FR Doc # 2013-21708

Submitter Information

Name: Alyse Peterson

Submitter's Representative: Alyse Peterson

Organization: NYSERDA

Government Agency Type: State

Government Agency: State of New York

General Comment

See attached file(s)

Attachments

NYS comment submission NRC draft Waste Confidence GEIS

December 20, 2013

Secretary, U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Re: Docket ID NRC-2012-0246

Dear Sir or Madam:

The State of New York welcomes the opportunity to provide comments on the NRC's draft Waste Confidence Generic Environmental Impact Statement. The document was published for comment in the September 13, 2013 Federal Register.

The State's comments are attached. If you have any questions, please contact me.

Sincerely,



Alyse Peterson
Senior Project Manager
State Liaison Officer – Designee

New York State Energy Research and Development Authority

Albany
17 Columbia Circle, Albany, NY 12203-6399
(P) 1-866-NYSERDA | (F) 518-862-1091
nyserda.ny.gov | info@nyserda.ny.gov
Richard L. Kauffman, Chairman
John B. Rhodes, President and CEO

Buffalo
726 Exchange Street
Suite 821
Buffalo, NY
14210-1484
(P) 716-842-1522
(F) 716-842-0156

New York City
485 Seventh Avenue
Suite 1006
New York, NY
10018-6815
(P) 212-971-5342
(F) 518-862-1091

**West Valley Site
Management Program**
9030-B Route 219
West Valley, NY
14171-9500
(P) 716-942-9960
(F) 716-942-9964

NRC Draft Report: WASTE CONFIDENCE GENERIC ENVIRONMENTAL IMPACT STATEMENT
NUREG-2157 (Sept. 2013)

RIN-3150-AJ20

State of New York Comments

In response to notices contained in the Federal Register,¹ the State of New York State submits the following comments concerning the proposed rule concerning continued storage of spent nuclear fuel and the proposed draft generic environmental impact statement for storage of spent nuclear fuel at existing reactor sites or storage facilities.

INTRODUCTION

There are six operating nuclear power plants at four sites across New York State. As of December 2012, these four sites are home to over 3,700 metric tons of spent nuclear fuel stored in spent fuel pools and dry casks². That inventory will steadily increase as each successive cycle of plant operations generates additional waste. Spent nuclear fuel is a highly dangerous material that remains dangerous for many years into the future.

It is the responsibility of the federal government to provide a long term management solution for the spent nuclear fuel generated by commercial nuclear power reactors; however, to date no resolution exists. The Nuclear Regulatory Commission (NRC), through the draft generic environmental impact statement (GEIS), purports to examine some of the potential environmental impacts of continued spent nuclear fuel storage at at-reactor and away-from-reactor sites until a national repository is available. This examination focuses on the underlying assumption of the Waste Confidence Rule – that a repository could be secured for the ultimate disposal of spent fuel generated by nuclear reactors, and that spent fuel could be safely stored in the interim.

The current draft Waste Confidence GEIS has been developed to meet the remand of the U.S. Court of Appeals for the D.C. Circuit, who on June 8, 2012 ruled that the 2010 Waste Confidence rulemaking, 75 Fed. Reg. 81032, 81037, did not satisfy federal obligations. *State of New York v. Nuclear Regulatory Comm’n*, 681 F.3d 471 (D.C. Cir. 2012). The Court identified three deficiencies in the NRC’s environmental analysis:

¹ 78 Fed. Reg. 56621 (Sept. 13, 2013) (notice of release of proposed draft waste confidence generic environmental impact statement), 78 Fed. Reg. 56776 (Sept. 13, 2013) (notice of release of proposed regulation concerning waste confidence – continued storage of spent nuclear fuel), 78 Fed. Reg. 66858 (Nov. 2013) (extending time due to federal government shutdown).

² “US State by State Used Fuel and Payments to the Nuclear Waste Fund.” Nuclear Energy Institute (May 2013) (citing information as of December 2012) (*available at* <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/On-Site-Storage-of-Nuclear-Waste/US-State-by-State-Used-Fuel-and-Payments-to-the-Nu>) (last visited 19 Nov. 2013).

1. Related to the Commission's conclusion that permanent disposal will be available "when necessary", the Court held that the Commission needed to evaluate the environmental effects of failing to secure permanent disposal, given the record of missed deadlines and uncertainty about whether a repository would be built and licensed.
2. Related to 60 years of continued storage, the Court concluded that the Commission had not adequately examined the risk of spent fuel pool leaks in a forward-looking fashion.
3. Also related to continued storage, the Court concluded that the Commission had not adequately examined the consequences of potential spent fuel pool fires.³

The NRC issued the draft GEIS to provide regulatory basis for a proposed Rule, 10 C.F.R. 51.23, that attempts to generically address the environmental impacts of continued spent fuel storage at the more than 100 reactors and 60 different sites across the Nation. If NRC Commissioners accept this draft GEIS and the proposed rule is codified in a regulation, NRC will preclude States and other interested parties from raising concerns about the environmental impacts of continued storage of spent nuclear fuel in future reactor and spent fuel storage facility licensing.

DISCUSSION & RECOMMENDATIONS

Fuel Storage Component and Facility Lifetimes

The draft GEIS considers the possibility of three continued storage timeframes for spent nuclear fuel. The first, considered "short-term storage," is no more than 60 years after the end of a reactor's licensed life for operation. The second, deemed "long-term storage," would be no more than 160 years after the end of a reactor's licensed life for operation. The third, described as "indefinite storage," assumes that disposal in a single national repository never becomes available for the spent nuclear fuel that is accumulating at reactor sites or at an away-from-reactor Independent Spent Fuel Storage Installation (or ISFSI).

The NRC assumes a 100-year replacement cycle for the ISFSI facility, spent fuel canisters and casks, and dry transfer system⁴. The NRC provides no background data or material analysis in support of a 100 year replacement cycle. In fact, the NRC refutes its own assumption: "this assumption does not mean that dry cask storage systems and facilities need to be replaced every 100 years to maintain safe storage."⁵ It is clear that the exact lifetime of the spent fuel storage systems is unknown. Furthermore, it should be noted that a Dry Transfer System as envisioned in the draft GEIS has not yet been constructed in this country.

³ Office of Nuclear Material Safety and Safeguards, *Waste Confidence Generic Environmental Impact Statement Draft Report for Comment*. . Nuclear Regulatory Commission (Sept. 2013).

⁴ Dry Transfer System (DTS): would allow for the retrieval of spent fuel for inspection or repackaging without the need to return the spent fuel to the spent fuel pool. A DTS would be built on site in the long-term storage timeframe.

⁵ *Waste Confidence Generic Environmental Impact Statement Draft Report for Comment*. (as n.3 above).

It is not adequate to fabricate a lifetime for critical spent fuel storage systems. Most especially for the long-term storage and indefinite storage timeframes, the safety and security of spent nuclear fuel relies heavily on the storage systems containing this waste on site. The NRC is relying solely on site owners to detect the degradation of spent fuel pools, casks, and ISFSIs. Furthermore, it is irresponsible to wait for the degradation of in-use spent fuel storage systems to determine a replacement cycle. ***The State of New York recommends that before the NRC takes any further action on the proposed rule and the draft GEIS, that the Commissioners perform a transparent study to examine the durability of spent fuel assemblies (including high burnup fuel) and establish the precise lifetime and replacement cycle of ISFSI facilities, spent fuel canisters and casks, and dry transfer system buildings.***

Spent Fuel Movement to Dry Cask Storage

The NRC also assumes that all spent fuel will be removed from fuel pools on site and placed in dry cask storage no later than 60 years after the end of the reactor's licensed life for operation. The assumption that plant owners will do this voluntarily is unrealistic. To begin with, NRC's regulations do not require spent nuclear fuel to be removed from the pools or the site. 10 C.F.R. § 50.82(a)(3) (decommissioning and removal of fuel may be delayed beyond 60 years given "unavailability of waste disposal capacity"). As presently licensed and configured, many of the Independent Spent Fuel Storage Installation facilities at the nuclear plants in New York do not have sufficient capacity to hold all the spent nuclear waste that has been generated and will be generated by those plants during extended operating license terms. That means that, absent a change in policy, at the end of a plant's commercial operation, spent nuclear fuel will remain in the plant's spent fuel pool -- and will remain in a dense storage configuration in those pools. Those ISFSIs have been designed to house the excess spent nuclear fuel that cannot fit into (full and densely-packed) fuel pools on site. Reducing the inventory of spent nuclear fuel in the densely-packed spent fuel pools will require the construction of additional independent spent fuel storage installations along with the purchase of additional dry cask storage.

It is highly improbable that the owner of record will voluntarily spend the money and manpower necessary to move all spent fuel from an on-site spent fuel pool to dry cask storage or increase the current rate of transfer of spent fuel between pool and cask. First, nuclear plants do not generate profits during decommissioning and, similarly, the storage of spent nuclear waste at a nuclear plant is not ordinarily thought of as a profit making activity. Secondly, the current NRC stance is that spent fuel pool and dry cask storage are equally safe and secure: "The NRC believes spent fuel pools and dry casks both provide adequate protection of the public health and safety and the environment. Therefore [according to NRC] there is no pressing safety or security reason to mandate earlier transfer of fuel from pool to cask."⁶ New York State staff understand that nuclear licensees in New York currently plan to keep fuel storage pools at maximum capacity (i.e., dense storage) until a means for federal transport

⁶ "Spent Fuel Storage is Pools and Dry Casks Key Points and Questions & Answers," Nuclear Regulatory Commission (March 2013) (*available at* <http://www.nrc.gov/waste/spent-fuel-storage/faqs>. (last viewed 21 Nov. 2013).

and final disposal is available.⁷ One mitigation alternative not examined in the draft GEIS is the transfer of spent nuclear fuel from spent fuel pools to dry storage casks to reduce the density of spent nuclear fuel in the pools. The transfer of spent fuel from a pool to a cask would reduce the inventory of radionuclides and radiation source term in the pool. It would also reduce the environmental impacts from an off-site release of radiation following a severe accident at a spent fuel pool. ***The State of New York recommends that the NRC require nuclear licensees to remove spent fuel from on-site storage pools to dry cask storage as soon as possible.***

Funding for On-Site Spent Fuel Storage

The draft Waste Confidence GEIS fails to address how long term on-site storage of nuclear waste will be funded. It is important to remember that current decommissioning funding requirements do not include spent fuel management and that use of decommissioning funds for that purpose would leave insufficient funding for other necessary decommissioning activities. The absence of a funding discussion in the draft Waste Confidence GEIS leads to many questions: Who will cover the costs of short term, long term, and indefinite on-site storage? Will the NRC, other federal agencies, or the licensee assume the costs of such storage? Who will pay for the decontamination and site restoration of State groundwater or surface water resources that may be affected by radionuclides contained in spent fuel pool leaks? Who will pay for the decontamination and restoration of a city or town that is adversely affected by the off-site release of radiation from a severe spent fuel pool accident? Who will pay to build new and bigger ISFSIs? Who will pay to replace casks and canisters every 100 years? Who will pay to build a dry transfer system building? Who will pay to staff decommissioned sites with inspection and security personnel? In addition, the NRC does not comment on the uncertainty that the owner of record will even exist 60-100 years after the source of income from plant operation ceases. Without proper funding, the necessary scheduled inspections and maintenance for the buildings and components housing nuclear waste will not occur. The State of New York has no confidence in the safety and security of long-term on-site spent fuel storage without some pre-determined financial plan and the sequestration of actual money into a bankruptcy-proof accounts for each reactor and associated spent fuel pool and dry storage casks.

Currently, the NRC funding criteria for decommissioning does not account for short term, long term, or indefinite on-site storage of nuclear waste. ***The State of New York recommends that the NRC either include a financial plan for long-term spent fuel storage, or perform a revision to the NRC decommissioning certification of financial assurance to include the financial burden of on-site spent fuel storage.***

⁷ See, e.g., State of New York, Riverkeeper, Inc., and Hudson River Sloop Clearwater's Joint Contention NYS-39/RK-EC-9/CW-EC-10 Concerning the On-Site Storage of Nuclear Waste at Indian Point, ¶ 32 (Jul. 8, 2012) ML12190A002 (discussing Entergy statement during May 2012 site visit).

Recognition that Spent Nuclear Fuel Poses Human Health and Environmental Dangers

At high levels, radiation exposure can cause death. At lower doses, radiation can have devastating health effects, including increased cancer risks and serious birth defects such as mental retardation, eye malformations, and small brain or head size. Those health effects persist for very long time spans.⁸ Depending on the amount, the dispersion of radionuclides can render residential areas uninhabitable, make drinking water resources un-potable, and cause agricultural lands to become unsuitable for dairy and agricultural farming. ***The State of New York requests that any final NRC environmental impact statement squarely acknowledge, as an initial matter, the dangers posed by release of radiation into the environment.***

Site-Specific Analysis of Environmental Impacts of Waste Storage at New York Sites

The proposed rule and the proposed draft GEIS purport to examine some environmental impacts associated with the storage of spent nuclear fuel at reactor sites – and to do so on a generic, nation-wide basis. If the NRC proceeds with the proposed rule and draft GEIS as currently worded, NRC will preclude the State of New York as well as its citizens from raising site specific concerns in site specific licensing proceedings for nuclear reactors and storage facilities located in or near the State. ***Instead of relying on a generic analysis, the State requests that NRC conduct a site specific environmental impact statement and examine the environmental impacts that would result from a severe accident at the spent fuel pools or the dry storage cask facilities.***

The four reactor sites located in New York have different characteristics from one another. NRC also must carefully examine the environmental impacts that would occur as a result of an accident with the waste storage facilities at Indian Point. The Indian Point reactors and waste storage pools and casks are located in Westchester County -- 24 miles from the northern border of the City of New York. In 1956, the federal government authorized the construction of a nuclear power reactor at the Indian Point site before there were siting criteria for such facilities – and before there was a federal policy to allow the accumulation of spent nuclear waste at such facilities. During the construction of the second and third reactor at Indian Point, the federal government told New Yorkers that the spent nuclear fuel generated at the Indian Point facilities would be quickly removed from the site and transported to facilities located elsewhere where the waste would be reprocessed. *Indian Point Unit 2 Final EIS* ML072390276 at 257 (Sept. 1972); *Indian Point Unit 3 Final EIS*, ML072390284 at 412 (Feb. 1975).

The Indian Point site has the highest surrounding population of any licensed reactor site in the United States. NRC previously found that more than 15 million people lived within 50 miles of Indian Point as of 1990.⁹ That population will grow in coming years. According to the Environmental Report prepared by Entergy and submitted as part of its application to renew the operating licenses for Indian Point Unit 2

⁸ See generally *Nuclear Energy Inst. v. EPA*, 373 F.3d 1251, 1258 (D.C. Cir. 2004).

⁹ NUREG-1437 Generic Environmental Impact Statement for License Renewal (1996) at Table 2.1 & § 2.2 (pages 2-2 – 2-8).

and Unit 3, by 2035 19.2 million people will live within 50 miles of the Indian Point site and its inventory of spent nuclear fuel.¹⁰ As confirmed by NRC's own data, no reactor site in the country comes close to the population profile of Indian Point:

<p style="text-align: center;">Top Ten U.S. Nuclear Power Plant Sites in Terms of Surrounding Population Based on NRC NUREG-1437 (1996) Table 2-1, Nuclear Power Plant Baseline Information</p>			
Rank	Facility (Reactor & Spent Fuel Pool)	Population w/in 50 miles (in millions of persons)	Reactor Operating Today
1	Indian Point Station 2 & 3 - NY	15.1	Yes
2	Zion Nuclear Plant 1 & 2 - IL	7.4	No
3	Limerick Generating Station 1 & 2 - PA	6.9	Yes
4	Dresden Nuclear Power Station 2 & 3 - IL	6.8	Yes
5	San Onofre Nuclear Gen. Station 1, 2, & 3 - CA	5.4	No
6	Shoreham Nuclear Power Station - NY	5.3	No
7	Enrico Fermi Atomic Power Plant 2 - MI	5.3	Yes
8	Peach Bottom Atomic Power Station 2 & 3- PA	4.6	Yes
9	Braidwood Station 1 & 2 - IL	4.5	Yes
10	Hope Creek Generating Station 1 - NJ	4.8	Yes

Moreover, each day tens of thousands people commute or travel into the 50 mile radius around the plant site. According to Entergy, "An estimated 41 million people visit the New York Metropolitan area each year, or approximately 112,329 people per day."¹¹ Indian Point is in close proximity to the New York City metropolitan area, the financial center of the country, critical transportation links, and unique scientific, medical, educational, and historical resources. Indian Point's spent fuel pools, dry storage casks and reactors are 6 miles from reservoirs that are part of the New York City Watershed – which provides drinking water for 8 million city residents. It is also near drinking water resources for other New York and Connecticut communities. ***Given these unique and specific characteristics, the State requests that NRC conduct an open, credible, and transparent site specific severe accident mitigation (SAMA) alternatives analysis for the continued storage of spent nuclear fuel in the pools and in the casks at the Indian Point site – similar to the SAMA analysis that NRC conducted for each reactor at the Indian Point site.*** 10 C.F.R. § 51.53(c)(3)(ii)(L).

¹⁰ Environmental Report for License Renewal of Indian Point Unit 2 and Unit 3 (2007) at 2-35 ("The total population (including transient populations) within a 50-mile radius of the site is projected to be 19,228,712 in 2035.").

¹¹ Entergy Environmental Report for License Renewal of Indian Point Unit 2 and Unit 3 at 2-62.