

ORAL ARGUMENT SCHEDULED FOR _____

14-1210(L) & 14-1212(CON)
14-1216(CON), 14-1217(CON)

**United States Court of Appeals
for the District of Columbia Circuit**

STATE OF NEW YORK; STATE OF VERMONT; STATE OF CONNECTICUT,
Petitioners,

v.

U.S. NUCLEAR REGULATORY COMMISSION; UNITED STATES OF AMERICA,
Respondents,

COMMONWEALTH OF MASSACHUSETTS,

Intervenor for Petitioner,

ENTERGY NUCLEAR OPERATIONS INC.; NORTHERN STATES POWER, COMPANY;
NUCLEAR ENERGY INSTITUTE, INC.,

Intervenors for Respondent.

(caption for No. 14-1212 listed on inside front cover)

On Petition for Review of Final Action of
the United States Nuclear Regulatory Commission

**PROOF BRIEF FOR STATES OF NEW YORK,
VERMONT, CONNECTICUT, AND MASSACHUSETTS,
AND THE PRAIRIE ISLAND INDIAN COMMUNITY**

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Dated: June 29, 2015

PRAIRIE ISLAND INDIAN COMMUNITY,

Petitioner,

v.

U.S. NUCLEAR REGULATORY COMMISSION; UNITED STATES OF AMERICA,

Respondents.

CERTIFICATE AS TO PARTIES, RULINGS, AND OTHER CASES

Pursuant to D.C. Circuit Rules 27(a)(4) and 28(a)(1)(A), Petitioners New York, Connecticut, Vermont and the Commonwealth of Massachusetts (intervenor) (collectively, “the States”) in Docket No. 14-1210, and the Prairie Island Indian Community (“the Tribe”) in Docket No. 14-1212, hereby submit this certificate as to parties, rulings, and other cases.

A. Parties and Amici

Petitioners

The Petitioners are New York, Vermont, and Connecticut (Docket No. 14-1210); Prairie Island Indian Community (Docket No. 14-1212); Natural Resources Defense Council, Inc. (Docket No. 14-1217); and Beyond Nuclear, Inc.; Blue Ridge Environmental Defense League, Inc.; Missouri Coalition for the Environment, Inc.; New England Coalition, Inc.; Nuclear Information and Resource Service, Inc.; Riverkeeper, Inc.; San Luis Obispo Mothers for Peace, Inc.; Sustainable Energy and Economic Development Coalition, Inc.; and Southern Alliance for Clean Energy, Inc. (Docket No. 14-1216).

Respondents

The Respondents in this matter are the United States Nuclear Regulatory Commission and the United States of America.

Intervenors

The Court has permitted the Commonwealth of Massachusetts to intervene in support of Petitioners, and permitted intervention in support of NRC by Nuclear Energy Institute, Inc., Northern States Power Company, and Entergy Nuclear Operations, Inc.

Amici

The Court has granted the Sierra Club's motion to participate as amicus curiae.

B. Rulings

The rulings under review in this proceeding are the United States Nuclear Regulatory Commission's ("NRC")

- Continued Storage of Spent Nuclear Fuel, Final Rule, 79 Fed. Reg. 56,238 (Sept. 19, 2014) ("Continued Storage Rule"); and
- Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,263 (Sept. 19, 2014) ("GEIS").

C. Related Cases

1. NRC issued the Continued Storage Rule and GEIS in response to this Court's remand order in *State of New York, et al. v. Nuclear Regulatory Commission, et al.*, Docket No. 11-1045 (June 18, 2012).
2. In addition to the States' and Tribe's petitions, the petitions in the following consolidated cases challenge the same final NRC actions:

- a. Docket 14-1216, *Beyond Nuclear, Inc. et al. v. United States Nuclear Regulatory Commission*
 - b. Docket 14-1217, *Natural Resources Defense Council, Inc. v. United States Nuclear Regulatory Commission*
3. On April 23, 2015, Missouri Coalition for the Environment, Inc., one of the Petitioners in Docket No. 14-1216, filed a petition for review (Docket No. 15-1114) of (1) NRC Commission Memorandum and Order CLI-15-11 (Apr. 23, 2015), (2) License Renewal for Callaway Plant, Unit 1, 80 Fed. Reg. 13,636 (Mar. 16, 2015), and (3) NRC Commission Memorandum and Order CLI-15-04 (Feb. 26, 2015). Missouri Coalition for the Environment identified this case as a related case and requested that the Court hold their petition for review in abeyance pending the outcome of this case.

Dated: June 29, 2015

Respectfully submitted,

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GLOSSARY OF ABBREVIATIONS

APA	Administrative Procedure Act
GEIS	Generic Environmental Impact Statement
EPA	Environmental Protection Agency
NEPA	National Environmental Policy Act
NRC	Nuclear Regulatory Commission

CITATIONS IN PAGE-PROOF BRIEF

CI-#:x:	Certified Index - Document #: page #
CI-701:	Comment No. 693 from the State of New York, dated December 20, 2013
CI-733:	Comment No. 725 from the States of New York, Vermont, Connecticut, the Commonwealth of Massachusetts, the Vermont Department of Public Service, and the Prairie Island Indian Community, dated December 20, 2013
CI-926:	Comment No. 918 from the Prairie Island Indian Community, dated January 10, 2014
CI-976:	NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants"
CI-1052:	NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel" Vol. 1

- CI-1053: NUREG-2157, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel” Vol. 2
- CI-1099: Transcript of December 4 Waste Confidence Public Meeting in Minnetonka, MN. Pg. 1-93
- CI-1100: Transcript of Waste Confidence Public Meeting November 4, 2013 Pg. 1-194
- CI-1106: Comment (163) of Phillip Mahowald and Peter M. Glass on Behalf of Northern States Power Company, XCEL Energy Inc. and the Prairie Island Indian Community on the Notice of Intent to Prepare Environmental Impact Statement (77 Fed. Reg. 65,137)
- CI 1107: Comment (172) of Philip R. Mahowald, on Behalf of Prairie Island Indian Community Supporting on Scope of Environmental Impact Statement Supporting the Rulemaking to Update the Waste Confidence Decision & Rule (Docket ID: NRC-2012-0246) (77 Fed. Reg. 65,137)
- CI-1108: Comments of the Prairie Island Community on the Draft Report “Background and Preliminary Assumptions for an Environmental Impact Statement—Longterm Waste Confidence Update”
- Copinger: Copinger, D.A., et al., NRC, Summary of Aging Effects and Their Management in Reactor Spent Fuel Pools, Refueling Cavities, Tori, and Safety-Related Concrete Structures, NUREG/CR-7111, (Jan. 2012) (ML12047A184); cited at CI-1052: E-25
- SECY-01-0100: Nuclear Regulatory Commission, SECY-01-0100, NRC Policy Issue (Notation Vote) Memorandum from William D. Travers, Executive Director for Operations to NRC Commissioners, Policy Issue Related to

Safeguards, Insurance, and Emergency Preparedness
Regulations at Decommissioning Nuclear Power Plants
Storing Fuel in Spent Fuel Pools (WITS 200000126)
(June 4, 2001); cited at CI-701:34, 62

PRELIMINARY STATEMENT

This is a petition for review of the Nuclear Regulatory Commission's latest effort to address the storage of spent nuclear fuel at nuclear power plants. This Court vacated the Commission's prior rulemaking on that subject in 2012. *New York v. NRC*, 681 F.3d 471, 473 (D.C. Cir. 2012) ("*New York I*"). The Commission's latest effort fares no better in fulfilling the statutory mandates identified by the Court.

This brief is filed on behalf of four governmental petitioners—the States of New York, Connecticut, and Vermont, and the Prairie Island Indian Community in the State of Minnesota—and a governmental intervenor, the Commonwealth of Massachusetts. The States and the Tribe are profoundly concerned about the indefinite storage of dangerously radioactive waste material in or near their land, at storage facilities designed for temporary containment.

For decades, the Nuclear Regulatory Commission (NRC or the "Commission") licensed nuclear plants on the assumption that they would *not* be used to store spent fuel indefinitely. But in *New York I*, this Court ruled that that assumption was no longer tenable and directed NRC to evaluate—consistent with the National Environmental

Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*—the environmental consequences of having nuclear plants store spent fuel onsite permanently. *See* 681 F.3d at 473, 479.

NRC has not done so. As explained in *New York I*, NEPA requires NRC to take a “hard look” at the environmental impacts of every grant or renewal of a nuclear plant operating license, including the impacts of indefinite onsite spent-fuel storage. *See* 681 F.3d at 476-77 (quotation marks omitted). On remand, NRC purported to meet these requirements by issuing (i) a generic environmental impact statement (GEIS), and (ii) a rule that makes the GEIS’s generic findings applicable to individual licensing proceedings (the “Continued Storage Rule”). But the GEIS does not comply with NEPA and thus cannot form a valid basis for licensing decisions via the Continued Storage Rule.

The GEIS generically analyzes important environmental impacts that are not the same for all plants, based on inputs—such as data from a rural Virginia plant—that do not represent the full range of circumstances presented. The Indian Point nuclear plant, for example, is just twenty-four miles from New York City; seventeen million people live within fifty miles of it. The impacts of a massive radiation release

due to spent-fuel fires or leaks of spent-fuel coolant at Indian Point would differ significantly from the impacts at most other plants. Likewise, the Prairie Island plant is located on the Tribe's ancestral homeland immediately adjacent to its federally-protected reservation. The consequences of contamination displacing the Tribe from its homeland would be qualitatively different from the consequences of the same contamination elsewhere. The GEIS does not account for such site-specific differences. Moreover, the Continued Storage Rule compounds this error by effectively precluding consideration of site-specific differences in individual plant licensing proceedings.

In addition, the GEIS assumes without justification that spent fuel will be removed from plants' cooling pools—structures designed for temporary storage that present distinct risks of a spent-fuel fire or radioactive coolant leak—no more than sixty years after reactor operations cease. The GEIS also does not discuss measures to reduce the chances of a spent-fuel pool fire or leak, or mitigate the consequences of such an event. Nor does it properly consider alternatives to its proposed action, such as imposing additional conditions on spent-fuel storage as a requirement of licensure.

The GEIS consequently fails to satisfy NEPA, and neither it nor the Continued Storage Rule can validly stand.

JURISDICTIONAL STATEMENT

NRC issued the GEIS under NEPA and promulgated the Continued Storage Rule under the Atomic Energy Act, 42 U.S.C. § 2011 *et seq.* Judicial review of the Rule is available pursuant to 42 U.S.C. § 2239, and 28 U.S.C. § 2342(4) gives this Court jurisdiction to perform that review. Because the Court has jurisdiction to review the Continued Storage Rule, it also has jurisdiction to review the underlying GEIS. *See Env'tl. Def. Fund, Inc. v. EPA*, 485 F.2d 780, 783 (D.C. Cir. 1973) (*per curiam*).

The States and Tribe filed timely petitions for review within sixty days of the issuance of the Continued Storage Rule, *see Continued Storage of Spent Nuclear Fuel*, 79 Fed. Reg. 56,238 (Sept. 19, 2014), as required by 28 U.S.C. § 2344.

ISSUES PRESENTED FOR REVIEW

NRC issued a generic environmental impact statement (GEIS) purporting to address the environmental impacts of indefinite storage of spent nuclear fuel at nuclear power plants across the Nation, and has made the GEIS applicable to individual power plant licensing proceedings through its Continued Storage Rule. The issues presented are:

1. Were NRC's actions unlawful under Administrative Procedure Act (APA) § 706(2) because the GEIS fails to account for important site-specific differences and the Continued Storage Rule precludes consideration of such differences in individual licensing proceedings?

2. Were NRC's actions unlawful under APA § 706(2) because the GEIS makes unwarranted factual assumptions about the storage of spent fuel?

3. Were NRC's actions unlawful under APA § 706(2) because the GEIS does not adequately discuss mitigation measures and alternatives?

STATUTES AND REGULATIONS

All applicable statutes and regulations are contained in the Brief for Petitioner NRDC.

STATEMENT OF THE CASE

A. Statutory and Regulatory Background

Under the Atomic Energy Act, nuclear reactors are required to obtain operating licenses from NRC. 42 U.S.C. §§ 2132-2134. Initial licenses are issued for no more than forty years, *id.* § 2133(c), and may be renewed for periods of no more than twenty years, 10 C.F.R. § 54.31(b). NRC's grant or renewal of an operating license is a "major Federal action[] significantly affecting the quality of the human environment," 42 U.S.C. § 4332(2)(C). *See New York I*, 681 F.3d at 476. Any such grant or renewal therefore requires an environmental impact review that complies with NEPA.

NEPA requires an environmental impact statement to discuss, in detail, the environmental impact of the proposed action, the unavoidable adverse environmental effects of the action, measures available to mitigate those effects, and alternatives to the proposed action. *See* 42 U.S.C. § 4332(2)(C). In lieu of an environmental impact statement, an agency may in certain circumstances issue a "finding of no significant impact" after a less extensive analysis known as an environmental assessment. Whether an agency does an environmental

impact statement or an assessment, it must take a “hard look” at relevant environmental concerns. *New York I*, 681 F.3d at 477, 480 (quotation marks omitted).

Courts have recognized that NRC may analyze certain environmental impacts of nuclear plant operations on a generic basis—rather than plant-by-plant—and then provide by regulation that the generic findings shall apply to individual plant licensing proceedings. *Id.* at 480-81. However, because a generic analysis can address only impacts that are “essentially common to all plants,” the analysis must account for relevant site-specific differences or allow a meaningful opportunity for review of such differences in individual licensing proceedings. *See id.*

B. Hazards of Onsite Storage of Spent Nuclear Fuel

Nuclear reactors are powered by fuel assemblies, which are bundles of zirconium-clad tubes called fuel rods containing pellets of enriched uranium fuel. CI-1052: 2-7, 11-3, 11-10. After four to six years of use, fuel rods no longer efficiently produce energy and are considered “spent nuclear fuel.”

Spent-fuel rods “generate enormous heat and contain highly radioactive uranium, actinides and plutonium.” *Minnesota v. NRC*, 602 F.2d 412, 413 (D.C. Cir. 1979). Spent fuel is exceptionally dangerous: “[a]t massive levels, radiation exposure can cause sudden death.” *Nuclear Energy Inst. v. EPA*, 373 F.3d 1251, 1258 (D.C. Cir. 2004). Even “[a]t lower doses, radiation can have devastating health effects, including increased cancer risks and serious birth defects such a mental retardation, eye malformations, and small brain or head size.” *Id.*

Spent fuel remains radioactive and thus continues to pose these hazards “for time spans seemingly beyond human comprehension.” *Id.*; *see also New York I*, 681 F.3d at 474. It may be stored on the site of a nuclear plant in one of two ways: either in a spent-fuel pool or in dry casks at an independent spent-fuel storage installation. Spent fuel presents extraordinary hazards under either option.

1. Spent-fuel pools

When first removed from a reactor, spent nuclear fuel rods must be transferred to a swimming pool-like structure filled with cooling water known as a spent-fuel pool. Pools are generally located outside of the steel and concrete containment structures that surround the

reactor. *See* CI-1126: 40, 103-109; CI-701: 24-26. The pools are susceptible to radiological release as a result of fires or leaks, and that susceptibility is affected by factors that vary across pools.

Fires. Because spent fuel is hot and radioactive when placed in pools, the water must be continuously cooled to prevent it from boiling off and to buffer the radiation. The zirconium cladding that forms the outer jacket of spent-fuel rods may melt or catch fire if the water boils or drains away, potentially causing a major release of radiation. *See* CI-1052: Appendix F; *see also* CI-1052: 4-74 to 4-81, 4-85 to 4-88. An NRC study called NUREG-1738, relied upon extensively in the GEIS, found that a fire could have consequences comparable to those of a major reactor accident, by generating a radioactive plume causing thousands of deaths from cancer. CI-1052: F-1 to F-5, F-12 to F-14.

A zirconium fire may occur “even many years after final reactor shutdown.” SECY-01-0100: 2, 8; *see also* CI-1052: F-12 (“NRC has not defined an age after which spent fuel is no longer susceptible to ignition.”). Indeed, the chances of a spent-fuel fire increase as the number of densely packed spent-fuel rods increases. CI-701: 34-37. And in recent years, the ever-increasing volume of spent fuel accumulating

in pools has led NRC to authorize dense packing of pools to hold much larger amounts of fuel than initially contemplated. *See New York I*, 681 F.3d at 474; *Minnesota*, 602 F.2d at 414; CI-701: 27-29.

Leaks. Many pools have leaked. *See* CI-1052: E-21 to E-25. In 2005, the Indian Point facility identified leakage from cracks in two pools and subsequently discovered tritium, strontium, and other radionuclides in groundwater underneath the site. CI-701: 37. Indian Point groundwater has had concentrations exceeding national drinking-water standards for tritium and strontium-90, sometimes by as many as five times the standard. CI-701:38; *see also* 6 N.Y.C.R.R. § 701.15.

Radioactive water has also leaked from pools in Georgia, Florida, New Hampshire, Tennessee and Arizona. CI-1052: E-23.

2. Independent spent fuel storage installations

Once spent fuel has cooled in a pool for five years, it may be removed from the pool and transferred to a separate onsite (or offsite) fuel storage installation, usually a dry-cask system. CI-1052: 2-13 to 2-18, 11-7, 11-12, G-1 to G-15. Moving fuel to dry storage, where it is sealed in casks and surrounded by inert gas, offers safety advantages over keeping it in densely packed pools. CI-1052: 2-13 to 2-15. Not every

nuclear plant has such a facility, however, *see* CI-1052: 2-16, and approximately three quarters of the spent fuel in the United States is contained in pools. CI-992: 11, 14.

Moreover, spent fuel remains radioactive once transferred to dry storage. Thus, an accident or event causing damage to a spent fuel storage installation could result in significant releases of radiation. *See* CI-1052: 4-81 to 4-84, 4-88 to 4-90, 4-94 to 4-97.

C. NRC's Historical Assumption that Individual Nuclear Plants Would Not Be Used to Store Spent Fuel Onsite Indefinitely

As of May 2014, NRC had licensed 100 operating reactors at sixty-two sites in thirty States. CI-1052: E-1. When NRC initially licensed most of the reactors currently in operation, it was “anticipated . . . that spent fuel would be stored at the reactor site only long enough to allow the fuel assemblies to cool sufficiently to permit safe shipment off-site for reprocessing (the extraction from the rods of usable uranium and plutonium) or permanent disposal.” *Minnesota*, 602 F.2d at 413-14; *see also* CI-1052: 2-12 (“Reactor designers originally anticipated that spent fuel would be stored for less than 1 year before being shipped to a

reprocessing plant . . .”). Reprocessing was abandoned in the 1970s due to problems with the necessary facilities. *Minnesota*, 602 F.2d at 414.

The federal government then decided to establish a common geologic repository for the disposal of spent fuel and other nuclear waste. *See* 42 U.S.C. § 10134. NRC initially predicted that a repository would be operational by 1985, *NRDC v. NRC*, 582 F.2d 166, 173 (2d Cir. 1978), but revised its prediction twice and has now abandoned any effort to predict when a repository will be established, *New York I*, 681 F.3d at 475. Due to the failure to establish a repository, an ever-increasing volume of spent fuel has been accumulating in pools. *See New York I*, 681 F.3d at 474; *Minnesota*, 602 F.2d at 414; *see also* CI-701: 16-17.

Responding to a 1979 decision by this Court, NRC addressed the safety and environmental impacts of continued onsite storage of spent fuel through a Waste Confidence Decision, initially issued in 1984 and revised through a series of updates between 1990 and 2010. *See New York I*, 681 F.3d at 474-75. The iterations of the Waste Confidence Decision incorporated Waste Confidence Findings that addressed, among other things, the date when NRC expected a geologic repository

to be available and the length of time beyond a plant's license during which spent fuel could be stored onsite without significant environmental impacts. *Id.*

The initial Waste Confidence Findings stated that a repository would be available by 2007-2009 and that spent fuel could be stored in an onsite pool or an onsite or offsite independent spent-fuel installation for thirty years after the expiration of a plant's operating license. *Id.* In 2010, as political and technical difficulties persisted and worsened, NRC determined it could no longer identify *any* date by which it expected a repository to be available and thus declared that a repository would be available "when necessary." *Id.* At the same time, NRC doubled its assessment of the period for which spent fuel could be stored onsite without significant environmental impacts, to sixty years beyond the licensed life of a plant. *See id.* at 475.

The Commission codified its revised findings in a Temporary Storage Rule that made them binding in individual plant-licensing proceedings. *See id.* at 475, 476-77. The Temporary Storage Rule displaced any environmental review of the impacts of post-operation onsite spent-fuel storage. *See id.*

D. This Court's Directive to NRC to Consider the Prospect of Indefinite Onsite Storage of Spent Nuclear Fuel

In *New York I*, this Court vacated NRC's 2010 Waste Confidence Decision and Temporary Storage Rule. *See* 681 F.3d at 473. The Court identified two respects in which NRC had breached its NEPA obligations to consider the environmental impacts of nuclear-plant licensure: (i) the Commission's failure to perform any review of the environmental consequences of licensing plants in the event no permanent spent-fuel repository were ever established, and (ii) its failure "to properly examine future dangers and key consequences" in concluding that spent fuel could be stored onsite for sixty years after the licensed life of a plant without significant environmental impacts. *See id.*

The Court began by observing that NRC's 2010 Waste Confidence Decision constituted a "major Federal action" under NEPA—and thus required either an environmental impact statement or an environmental assessment resulting in a finding of no significant impact. The Court explained that licensing decisions are themselves major federal actions, and that NRC had given its Waste Confidence Findings "preclusive effect in all future licensing decisions" by providing

that they were uncontestable and would apply in every licensing. *Id.* at 476-77. The Court then explained that NRC had not adequately performed the requisite environmental analyses to allow licensing of plants based on the Waste Confidence Findings.

The Court first determined that the establishment of a permanent spent-fuel repository had stalled to a point that NRC could not dismiss as “remote and speculative” the possibility that such a repository would never be built. *Id.* at 478-79. NRC therefore was required, at a minimum, to consider the environmental consequences of a failure to establish such a repository—a situation in which spent fuel “will seemingly be stored on site at nuclear plants on a permanent basis.” *Id.* at 479.

The Court next concluded that NRC had not sufficiently analyzed the risks of onsite spent-fuel storage in the sixty-year period following the end of a plant’s license, and thus could not conclude that such storage would not have any significant environmental impact. The court recognized that NRC could in principle analyze the risks of onsite storage generically, as long as the risks analyzed were “essentially common to all plants,” particularly if the Commission employed “conservative bounding assumptions” that accounted for site-specific

differences and allowed site-specific differences to be raised in individual licensing proceedings. *Id.* at 480-81.

Finally, the Court found that NRC had assumed without justification that because past spent-fuel pool leaks have not had significant environmental impacts, future leaks would not have such impacts either. *Id.* at 481. The Commission also had declined to consider the consequences of a pool fire or establish that the chances of such a fire were effectively zero. *Id.* at 482. The Court found that those analytical shortcomings fatally undermined NRC's determination that spent fuel could be stored onsite for sixty years after the licensed life of a plant without significant environmental impacts. *Id.* at 483.

E. NRC's Resulting Analysis of the Environmental Impacts of Indefinite Onsite Spent-Fuel Storage

In September 2013, in response to this Court's decision in *New York I*, NRC published a draft GEIS and proposed Continued Storage Rule. *See Draft Waste Confidence GEIS*, 78 Fed. Reg. 56,621 (Sept. 13, 2013); *Waste Confidence—Continued Storage of Spent Nuclear Fuel*, 78 Fed. Reg. 56,776 (Sept. 13, 2013) (proposed rule). The States and Tribe submitted comments on both the GEIS and the rule. CI-701; CI-733.

They expressed concern that the GEIS ignored site-specific differences that affect the impacts of fires and leaks at spent-fuel pools, and failed to use data that would account for those site-specific differences. CI-733: 49-53, 80-94, 106-111, 117-120. The Tribe also raised concerns about potential impacts on its ancestral homeland and reservation. *See* CI-1052: xxvii, 3-11, C-2 to C-3; CI-926; CI-1099; CI-1100; CI-1106; CI-1107; CI-1108. In addition, the States and Tribe objected that NRC would not consider site-specific differences in individual licensing proceedings or provide a meaningful opportunity for interested parties to raise them in those proceedings. CI-733: 129-30.

The States and Tribe asked NRC to consider the risks and impacts of continuing to store spent fuel in pools at reactor sites and offsite storage facilities beyond the short-term time frame of sixty years after a reactor ceased operating. CI-733: 71-80. And they asked NRC to consider mitigation measures or licensing alternatives in the GEIS or in individual license proceedings. CI-733: 58-68, 94-95.

In September 2014, NRC issued the final Continued Storage Rule, 79 Fed. Reg. 56,238, and GEIS (NUREG-2157), 79 Fed. Reg. 56,263.

The final rule does not include any of the modifications requested by petitioners.

The Continued Storage Rule, provides, among other things, that the “impact determinations” in the GEIS “shall be deemed incorporated” into other environmental impact statements that are required in NRC’s plant-licensure process. *See* 10 C.F.R. § 10.23(b). The GEIS itself evaluates the post-operation impacts of continued storage of spent fuel in pools at reactor sites and in storage facilities located at or away from reactor sites. CI-1052: 1-12 to 1-13. The analysis of storage in spent-fuel pools is limited to the short-term timeframe based on NRC’s assertion that reactors will be decommissioned during that sixty-year period and that “all fuel will be removed from the spent fuel pool by the end of the 60-year decommissioning period.” CI-1052: lxiv.

STANDARD OF REVIEW AND SUMMARY OF ARGUMENT

NRC's Continued Storage Rule is a final agency action subject to review under the Administrative Procedure Act. It must be overturned if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A), including by not being "founded on a reasoned evaluation of the relevant factors," *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 378 (1989) (quotation marks omitted). See *Theodore Roosevelt Conservation P'ship v. Salazar*, 616 F.3d 497, 507 (D.C. Cir. 2010).

In this case, the Continued Storage Rule must be vacated because it is not supported by a NEPA-compliant analysis of the environmental impacts of indefinite onsite storage of spent nuclear fuel. NRC's generic analysis violates NEPA because the risks of fires and leaks vary from site to site, and the GEIS does not use assumptions that account for those site-specific differences. NRC's generic analysis of fires is based on data from a power plant in rural Virginia. But the consequences of radiation contamination there would differ dramatically from those in the densely populated New York metropolitan area nearby the Indian Point power plant, or areas adjoining unique sites like the Tribe's

federally-protected ancestral homeland. Similarly, NRC's generic analysis of leaks is based on the presumed hydrologic characteristics of a "typical" pool site and does not account for non-typical sites. By providing that the GEIS will be incorporated into the other environmental impact statements required in NRC's plant-licensure process, NRC has effectively foreclosed consideration in individual licensing proceedings of site-specific factors that have the potential to result in significant differences in the environmental impact of a fire or leak.

The GEIS also rests on several unreasonable assumptions. It limits its analysis of the impacts of spent-fuel pools to a time-frame ending sixty years after a reactor ceases operation, on the assumption that all fuel will be removed after sixty years. That assumption is baseless; NRC's decommissioning procedure allows for fuel to remain in pools for a longer period. Likewise baseless are the GEIS's assumptions that dry casks containing spent fuel will be replaced every 100 years and that short-term, high volume leaks from pools would have no significant offsite impacts. These assumptions exclude from consideration significant environmental effects that are not remote and speculative.

The GEIS further violates NEPA by failing to consider (i) measures to mitigate the impacts of fires and leaks, and (ii) alternatives to the NRC's continuing to license plants against the backdrop of current requirements for spent fuel storage. The GEIS mistakenly claims that mitigation measures do not have to be analyzed when the likelihood of an impact is low, and relies on unidentified and unquantified existing mitigation measures. Instead of discussing the environmental impacts of alternative ways to store spent fuel, it discusses the impacts of administrative alternatives to the Continued Storage Rule, such as issuing a policy statement. Finally, the GEIS mistakenly claims that licensing alternatives may be considered in separate proceedings, whereas NEPA requires those alternatives to be compared in the GEIS.

STANDING

The interests of the States and Tribe here are the same as in *New York I*, 681 F.3d at 473. The Continued Storage Rule and GEIS allow NRC to license and relicense nuclear reactors and onsite waste storage facilities—without any further analysis of the environmental impacts of indefinite continued storage—at sites within and nearby the petitioner

States, and ancestral homeland and federally protected reservation of the Tribe.

New York and Connecticut face the threat of catastrophic harm in the event of a fire or leak at the spent-fuel pools serving the two Indian Point reactors, which are located on the Hudson River twenty-four miles north of New York City. New York and Connecticut thus have a concrete interest in full and accurate review of the risks of indefinite onsite storage of spent fuel at Indian Point. Entergy Nuclear Operations, Inc. has applied to renew Indian Point's operating licenses—one of which expired in 2013 but was extended pending a decision on the relicensing application, and the other of which will expire this year. The GEIS and Continued Storage Rule will preclude the license renewal proceedings from considering the environmental impacts of the spent-fuel pools, and alternatives and other measures to mitigate those impacts. *See* CI-733: 1-2, 4; CI-701: 1-22; CI-1052: 1-5 to 1-6.

Vermont and Massachusetts face a similar threat of catastrophic harm from any spent-fuel accident at the Vermont Yankee plant. Massachusetts would also be severely affected by an accident at the Pilgrim plant, which is located forty miles from Boston. CI-733: 2-3.

When Vermont Yankee's reactors were licensed in 1972, the Atomic Energy Commission stated that spent fuel would be promptly transported to an out-of-state reprocessing facility. *See, e.g.*, CI-733: 2 (citing U.S. Atomic Energy Comm'n, Vermont Yankee Nuclear Power Station Final EIS, ML061880207: 93-94 (July 1972)). Although Vermont Yankee ceased operation in December 2014, none of the spent fuel produced by the plant in its 42 years of active life has been removed from the facility and much of it remains in a spent-fuel pool. CI-733: 2-3. Pilgrim, which remains in operation, daily generates spent fuel waste that is stored onsite under a 2012 renewed NRC license, which extended its authority to operate for another twenty years. CI-733: 3.

Finally, the Tribe would be gravely harmed by an accident at the Prairie Island plant's spent-fuel pool or its spent fuel storage facility. The plant is located on the Tribe's ancestral homeland and immediately adjacent to its reservation, which is held in trust by the United States for the benefit of the Tribe. The Prairie Island Plant's spent-fuel storage facility is approximately 600 yards from tribal member residences. The plant and its storage facility are near hundreds of burial sites, ancient village sites, and sites of cultural significance to the Tribe. Radiation

contamination could have a catastrophic impact on the Tribe's homeland and its members' livelihood and way of life.

The States and Tribe thus face actual or imminent injuries, fairly traceable to NRC's improper actions. See also *supra* 7-11. Furthermore, the risk of harm to the States and Tribe from an accident would be reduced if NRC properly considered (i) the environmental impact of indefinitely storing spent fuel, particularly at plants with higher-than-average risk profiles, (ii) alternatives to its present licensing requirements regarding spent-fuel storage, and (iii) ways to mitigate the impacts of a pool fire or leak. The States and Tribe therefore have standing. See *Nuclear Energy Inst.*, 373 F.3d at 1265-66; see also *Massachusetts v. EPA*, 549 U.S. 497, 520-26 (2007) (Article III redressability prong is satisfied where claimed "risk would be reduced to some extent if petitioners received the relief they seek."); *Matter of N. States Power Co. (Prairie Island Nuclear Generating Plants, Units 1 and 2)*, 68 N.R.C. 905, 912-13 (2008).

ARGUMENT

POINT I

THE COMMISSION'S GENERIC ANALYSIS DOES NOT ADEQUATELY ACCOUNT FOR SITE-SPECIFIC RISKS OF INDEFINITELY STORING SPENT NUCLEAR FUEL

New York I set forth the conditions that would allow NRC to rely on a “comprehensive general analysis” of the risks of indefinite storage of spent nuclear fuel at plant sites around the Nation. 681 F.3d at 480. Such an analysis will be appropriate where the risks analyzed are “essentially common to all plants,” particularly if NRC (i) uses “conservative bounding assumptions” to account for any site-specific differences that would enhance risks at specific plants and (ii) provides an “opportunity for concerned parties to raise site-specific differences at the time of a specific site’s licensing.” *Id.*

NRC has failed to meet any of these criteria. Instead, it has generically analyzed risks that are not common to all sites using assumptions that underestimate the risks of spent fuel pool fires and leaks. Moreover, it has used the Continued Storage Rule to bar consideration of site-specific differences in licensing proceedings.

A. Important Risks Posed by the Indefinite Storage of Spent Nuclear Fuel Are Not Essentially Common to All Storage Sites.

1. The Commission acknowledges that the risk of pool fires depends on site-specific characteristics.

Risk is a function of two components: the probability that the harm will occur and the severity of the consequences if it does. *See, e.g., New York I*, 681 F.3d at 481-82; *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 738 (3d Cir. 1989); CI-1052: 11-18. Here, both components depend on factors that are not essentially common to all sites.

The *probability* of a pool fire depends in substantial part on the geography of the location, including the likelihood of earthquakes, as the GEIS recognizes. *See* CI-1052: F-10. That likelihood varies considerably among plant sites. CI-1052: F-10; CI-976: 3-7 (site-specific probability of an earthquake could be ten times higher or lower than average). The characteristics of the spent fuel also matter substantially—for example, its age, the amount and type of it in the pool, and its configuration in the pool. CI-1052: F-13; CI-733: 34, 97-99; *see also* CI-1053: D-360.

The *consequences* of a fire similarly depend on characteristics of the surrounding area, including the density of the population, the economic value of the real estate, and any other particularized features—a point the GEIS also acknowledges. *See* CI-1052: F-7 to F-9. As an example, Indian Point's fifty-mile radius is densely populated and contains some of the most expensive real estate in the country, along with landmarks, parks, arenas, universities, and transportation facilities. CI-701: attachment 1. Moreover, its two spent-fuel pools are close to many drinking water reservoirs that serve the New York City metropolitan area. CI-701: 3-4. As a further example, the Prairie Island site's spent-fuel pool and storage installation are located on the Tribe's ancestral homeland and immediately adjacent to its current reservation, less than a mile from member residences, the Tribe's government facilities and gaming enterprise, traditional burial sites, ancient village sites, and culturally significant areas. If radiation contamination required the Tribe to leave its ancestral homeland, the consequences would be qualitatively different from those of moving other groups of people.

This case is thus similar to *Limerick*, in which the Third Circuit invalidated NRC's generic decision not to consider design alternatives that could mitigate severe reactor accidents. The court noted that the consequences of such accidents were not suited to generic analysis because they would "largely be the product of the location of the plant," and risks would "vary tremendously across all plants." 869 F.2d at 738; *see also id.* at 739 n.23 (likelihood of severe accident varies from location to location). As the court observed, "the same probability of the same accident in a plant such as Limerick will produce a higher risk than that produced by the same accident at a plant not located within twenty-five miles of a major metropolitan area." *Id.* at 738.

The Third Circuit's reasoning applies equally to the consequences of a fire at a spent-fuel pool. Indeed, NRC has found that "the extent of contamination from a spent fuel pool fire could exceed that of a reactor accident at a given site . . . [because of] the amount of spent fuel in a pool compared to a reactor and the location of most spent fuel pools outside of a containment structure." CI-1053: D-418.

2. The Commission further acknowledges that the risk of pool leaks depends on site-specific characteristics.

The GEIS recognizes that the impacts of a leak on groundwater, surface water, and soils will depend on many factors, including: the volume and rate of water released from the pool; the radionuclide content and concentration and water chemistry of the pool water; the direction and rate of groundwater flow; the distance to an offsite groundwater receptor, surface water, or soil; the velocity or transport rates of radionuclides through the subsurface; and radioactive decay rates. CI-1052: 4-20, 4-22, 4-26, E-15, E-20. Similarly, the impacts of a leak on an aquifer will depend on the “site-specific properties of the aquifer.” CI-1052: 3-18; *see also* CI-1052: E-12.

Due to these site-specific factors, the impacts of a leak may not be the same for all plants. Indeed, the GEIS acknowledges that “a nuclear plant could be sited in a location in which the hydrological conditions would not preclude the offsite migration of contaminated groundwater in the event of a leak.” CI-1052: E-16. In such a situation, “contamination of a groundwater source above a regulatory limit (e.g. a Maximum

Contaminant Level for one or more radionuclide) could occur” and could “noticeably alter” a groundwater resource. CI-1052: E-16.

B. The Commission Did Not Employ Assumptions that Would Enable Its Generic Analysis to Account for Sites with Elevated Risk Profiles.

One way to account for site-specific factors in a generic analysis would be to adopt conservative assumptions—i.e., assumptions that incorporate the most substantial risks likely to be encountered at the sites covered by the analysis, *see New York I*, 681 F.3d at 480; *see also* CI-1053: D-101 to D-102. The GEIS did no such thing, however. Consequently, even if generic analysis of the risks of fire and leaks might otherwise be appropriate, NRC’s generic analysis here does not have “enough breadth to support the Commission’s conclusions.” *New York I*, 681 F.3d at 483.

1. The Commission underestimated the impacts of pool fires.

NRC’s analysis of the consequences of pool fires relies mainly on its NUREG-1738 study, which evaluates this concern primarily through data from a plant in Surry, Virginia, where the population density is 300 people per square mile. CI-1052: F-2 to F-3, F-8, F-10. The study

also partly relies on data from the Zion plant on Lake Michigan, where the population density is 860 people per square mile. CI-1052: F-2, F-8, F-10. By contrast, the area around Indian Point has a population density of 2,138 people per square mile. CI-1052: 2-4 to 2-5.

Reliance on NUREG-1738 thus does not capture the range of risks likely to be encountered across the country. As the GEIS acknowledges, “the use of the Surry site means that the accident consequences could be greater at higher population sites.” CI-1052: F-8. The GEIS attempts to justify use of the Surry data on the ground that “the risk to the average individual” would not be greater at a site with a higher population density. CI-1052: F-8. But that overlooks the common-sense point that a fire affecting a hyper-urbanized area with 2,000 people per square mile plainly will have greater public health and other consequences than a fire affecting a rural area with only 300 or 800 people per square mile.

To compound the problem, the remaining studies on which the GEIS relies to analyze the health and economic costs of a fire are based on a computer code called MACCS2, which also uses input data from the Surry site. CI-1053: D-317; CI-701: 72-73. NRC recognizes that

“these studies were generic in nature, and not intended for application to specific sites,” CI-1053: D-317, but the GEIS nonetheless uses the Surry data to calculate risks for specific sites where the consequences of a fire would be very different.

2. The Commission likewise underestimated the impacts of pool leaks.

NRC’s leak analysis assumes that a plant will have “hydrologic characteristics associated with typical nuclear power plant settings.” CI-1052: 4-26; *see also id.* at E-16 to E-20. Its bare acknowledgment that there could be adverse impacts at atypical plants (CI-1053: D-131) does not satisfy its obligation to identify—let alone examine—those impacts. NRC fails to provide the “thorough and comprehensive” analysis this Court has held is required, *see New York I*, 681 F.3d at 481. And because the GEIS does not discuss the types of atypical hydrological characteristics that might create adverse impacts, it denies interested parties basic information on which to seek site-specific review in individual licensing proceedings.

C. The Commission Has Precluded Individualized Review of Site-Specific Risks, Even for Sites with Elevated Risk Profiles.

In addition to applying a generic analysis to risks that are not the same across plants, and failing to use assumptions that account for site-specific differences, NRC has effectively foreclosed future consideration of site-specific differences by making the GEIS's determinations applicable to licensing decisions for individual sites. NRC attempts to justify this decision by stating that “concerned parties who meet the waiver criteria in 10 C.F.R. § 2.335 will be able to raise site-specific issues related to continued storage at the time of a specific license application.” 79 Fed. Reg. at 56,242. There are two problems with that position.

First, NEPA deliberately places the burden of compliance on NRC, rather than interested parties. *See, e.g., Calvert Cliffs Coordinating Committee, Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1119 (D.C. Cir. 1971); *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 765 (2004). NEPA does this to “insure[] the integrity of the agency process by forcing [NRC] to face those stubborn, difficult-to-answer objections without ignoring them or sweeping them under the rug.” *Sierra Club v. U.S. Army Corps of Eng’rs*, 772 F.2d 1043, 1049 (2d Cir. 1985).

In addition to informing agency decisionmaking, NEPA serves as an “environmental full disclosure law so that the public can weigh a project’s benefits against its environmental costs.” *Id.* Unlike NRC, interested parties do not have access to the information necessary to identify all relevant environmental risks. For example, they do not have full access to nuclear reactor sites, nor do they have NRC’s ability to request data from plant operators.

Second, a petition to waive the application of the Continued Storage Rule in a licensing proceeding is not an adequate opportunity for affected parties to raise site-specific impacts. To obtain a waiver, a petitioner must show that “the application of the rule . . . *would not serve the purposes for which the rule or regulation was adopted.*” 10 C.F.R. § 2.335(b) (emphasis added). A petition to waive the Continued Storage Rule in individual plant licensing proceedings would likely fail under that standard because the stated purpose of NRC’s rule is to ensure that participants in licensing proceedings may *not* raise site-specific impacts. *See* CI-1052: 1-6 (proposed action’s purpose is “to preserve the efficiency of the NRC’s licensing processes with respect to the environmental impacts of continued storage”).

Indeed, NRC has effectively recognized that site-specific differences would not justify a waiver. In response to comments on the GEIS, it stated that “the NRC is not aware of, and the comments have not raised, any information that would cause the NRC to conclude that any of the generic impact determinations would be invalid at any particular site.” CI-1053: D-35. Further, the States and Tribe are unaware of any instance in which NRC has *ever* granted a petition for a waiver of any rule or regulation—suggesting that any additional opportunity to raise site-specific differences under 10 C.F.R. § 2.335’s waiver provision is illusory.

POINT II

THE COMMISSION USED UNREASONABLE ASSUMPTIONS TO EXCLUDE CONSIDERATION OF FORESEEABLE ENVIRONMENTAL IMPACTS

NEPA requires agencies to consider reasonably foreseeable environmental impacts before taking a proposed action, including such impacts that “are later in time or farther removed in distance.” *New York I*, 681 F.3d at 476 (quotation marks omitted); *see also* 40 C.F.R. §§ 1502.16, 1508.8; *Dubois v. U.S. Dep’t of Agric.*, 102 F.3d 1273, 1286

(1st Cir. 1996). Agencies may not ignore impacts they consider improbable unless the likelihood of the occurrence is so “remote and speculative” that its effective probability is zero. *New York I*, 681 F.3d at 482.

NRC violated these precepts in the GEIS by making unwarranted factual assumptions about onsite spent-fuel storage that, in turn, excluded consideration of substantial foreseeable impacts that NRC was required to analyze. NRC thus failed to perform a “reasoned evaluation of the relevant factors.” *Marsh*, 490 U.S. at 378 (quotation marks omitted).

A. The Commission Unreasonably Assumed that Spent Nuclear Fuel Would Be Removed from Pools No Later than Sixty Years After the Cessation of Reactor Operations.

The GEIS analyzes the impacts of storing spent fuel in pools only during the “short-term timeframe,” i.e., the period ending sixty years after reactor operations cease. CI-1052: lxiv, E-1. According to NRC, reactors will be decommissioned during that period and “all fuel will be removed from the spent fuel pool by the end of the 60-year decommissioning period.” CI-1052: lxiv.

Yet the prospect that use of spent-fuel pools will continue beyond the short-term timeframe is not remote and speculative. As this Court

observed in *New York I*, spent-fuel pools have already “been used for decades longer than originally anticipated” as a result of the failure to establish a permanent geologic repository. 681 F.3d at 474. In addition, the Commission’s regulations do not establish a hard and fast deadline for transfer to dry storage, and expressly provide that the decommissioning process may take longer than sixty years. *See* 10 C.F.R. §§ 50.82(a)(3), 52.110(c); *see also Petition for Rulemaking*, 76 Fed. Reg. 76,322, 76,325-26 (Dec. 7, 2011) (“NRC disagrees that a formal commitment was made that a reactor facility would be required to complete decommissioning within 60 years”).

Moreover, longer-term impacts could vary greatly from anticipated impacts during the short-term timeframe. For example, a study cited in the GEIS found that as nuclear plants age, spent fuel pool degradation occurs at an increasing rate, primarily due to environment-related factors. Copinger: 85. Using a short-term timeframe as a reference also does not sufficiently account for the effects of climate change, such as sea-level rise. *See* CI-1052: 4-80.

B. The Commission Further Unreasonably Assumed that Dry-Storage Casks Would Be Replaced Every 100 Years.

The GEIS assumes that fuel stored onsite after the short-term timeframe will be kept in dry casks that will be replaced every 100 years. CI-1052: 1-15. But NRC identifies no regulations requiring such replacement and thus fails to provide “substantial evidence” that it will occur. *Nat’l Audubon Soc’y v. Hoffman*, 132 F.3d 7, 17 (2d Cir. 1997). Further, NRC identifies no permanent funding source—or any funding source at all—to finance the costly process of transferring and retransferring fuel to new casks for centuries on end. *See* CI-733: 79-80. NRC must address the potential environmental effects of the deterioration of casks that are not replaced.

C. The Commission Also Unreasonably Assumed that Short-Term, High-Volume Leaks Would Have No Environmental Consequences.

NRC fails to examine the impacts of short-term, high-volume spent-fuel pool leaks because it assumes that “licensees would likely identify and mitigate, if necessary, the impacts from any significant short-term water loss before noticeable offsite environmental impacts would occur.” CI-1052: E-10.

NRC does not find that the likelihood of pool leaks is so remote and speculative that their effective probability is zero. Indeed, the GEIS notes that such leaks have occurred. CI-1052: E-10. The GEIS finds that these prior leaks “resulted in no noticeable offsite environmental impacts.” CI-1052: E-10. Yet, it fails “to rule out the possibility that those leaks were only harmless because of site-specific factors or even sheer luck,” *New York I*, 681 F.3d at 481. The consequences of those past leaks, in themselves, say little about the potential effects of future leaks. *Id.*

POINT III

THE COMMISSION DID NOT ADEQUATELY ANALYZE MITIGATION MEASURES OR ALTERNATIVES TO ITS CURRENT LICENSING REQUIREMENTS

A. The Commission Failed to Analyze Measures to Mitigate the Impacts of Indefinite Onsite Spent-Fuel Storage.

NEPA requires a detailed discussion of measures that may mitigate the adverse environmental impacts of a proposed major federal action. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.14(f); 1502.16(h), 1508.25(b)(3). NRC’s regulations also require it to take “all practicable measures within its jurisdiction to avoid or minimize environmental harm from the

alternative selected.” 10 C.F.R. § 51.103(a)(4). NRC has not met these requirements. To the contrary, its GEIS includes only superficial discussion of mitigation measures with respect to pool fires and leaks.

1. The Commission did not meaningfully analyze measures to mitigate the environmental impacts of spent-fuel fires.

The GEIS finds that fires at spent-fuel pools would have adverse impacts but does not discuss measures that would mitigate those impacts. CI-1053: lxiv, D-418, D-497 to D-498. Commenters on the draft GEIS proposed various mitigation measures—such as requiring reduction of the amount of fuel in pools, using “checkerboard” arrangements that maximize the space between spent fuel assemblies, placing the newest (and hottest) fuel assemblies nearest to the pool walls, and installing water-spray systems to serve as a backup in the event of pool drainage. CI-701: 69-70. Commenters also proposed requiring site-specific analyses of mitigation alternatives for severe spent-fuel pool accidents, similar to the practice NRC already employs with respect to severe reactor accidents. CI-701: 70-71.

NRC declined to consider mitigation measures, asserting that the probability of an adverse impact was too low to require consideration of

such measures. But low probability does not allow NRC to avoid analyzing an event that would have “significant and destabilizing” consequences if it occurred (CI-1052: F-4). *See Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (“*Cuddy Mountain*”) (NEPA requires agency to analyze measures for mitigating impacts it has identified); *Nat’l Parks & Conservation Ass’n v. Babbitt*, 241 F.3d 722, 734 (9th Cir. 2001) (mitigation analysis addresses “negative impacts that *may* result from the authorized activity” (quotation marks omitted, emphasis added)), *abrogated on other grounds by Monsanto Co. v. Geerston Seed Farms*, 561 U.S. 139 (2010).

Further, NRC declined to require site-specific analyses of mitigation alternatives on the grounds that its existing regulations mandate such analyses for reactor accidents only, not spent-fuel accidents. CI-1053: D-316. That response is not a substantive justification for treating spent-fuel pool accidents differently from reactor accidents, particularly because the GEIS finds that a pool fire would have consequences comparable to those of a major reactor accident. CI-1052: F-13; CI-1053: D-418.

The GEIS also states that “the mitigation measures already in place at spent fuel pools are sufficient,” CI-1053: D-361, including measures imposed in response to the terrorist attacks of September 11, 2001 and the March 2011 severe accident at Japan’s Fukushima site, CI-1052: F-15 to F-16. But existing measures cannot absolve NRC of its responsibility to consider mitigation, unless those measures render the potential impacts non-adverse. *Cf. Audubon Soc’y of Cent. Ark. v. Dailey*, 977 F.2d 428, 435-36 (8th Cir. 1992) (“*Audobon Soc’y*”) (result of the mitigating measures must “render[s] the net effect of the modified project on the quality of the environment less than ‘significant’” (citation omitted)). The GEIS does not make that finding.

Moreover, the GEIS fails to identify specific existing measures or quantify the reduction in risk that has been achieved. Indeed, it appears that NRC does not require all plants to implement even those existing measures that it relies upon in its generic analysis. *See* CI-1053: D-361.

Under NEPA, “mitigating measures must be more than mere vague statements of good intentions.” *Audubon Soc’y*, 977 F.2d at 435-36 (quotation marks omitted). An agency’s “perfunctory description of

mitigating measures is inconsistent with the ‘hard look’ it is required to render under NEPA.” *Cuddy Mountain*, 137 F.3d at 1380.

2. The Commission did not meaningfully analyze measures to mitigate the environmental impacts of spent-fuel pool leaks.

The GEIS lists certain actions that could be taken in response to spent fuel pool leaks but does not analyze how those measures would lessen the impacts of leaks. For example, the GEIS states that mitigation actions for dealing with short-term, high-volume leaks “could include taking steps to hydraulically contain the contamination, groundwater treatment, or monitored natural attenuation.” CI-1053: D-471; *see also* CI-1052: E-17. This “mere listing of mitigation measures, without supporting analytical data,” does not satisfy NEPA’s requirements. *League of Wilderness Defenders/Blue Mountains Biodiversity Project v. Forsgren*, 309 F.3d 1181, 1192 (9th Cir. 2002) (quotation marks omitted).

NRC also posits that existing monitoring measures are sufficient to detect leaks. *See* CI-1052: 3-19, E-5, E-10. But merely adverting to existing compliance measures does not suffice. *New York I*, 681 F.3d at 481. And in any event, no such monitoring is actually required. *See* CI-

1053: D-465; CI-1052: E-6. NRC cannot claim that licensees are “on duty,” *New York I*, 681 F.3d at 481 (quotation marks omitted), when there is no requirement that they conduct groundwater monitoring.

B. The Commission Did Not Sufficiently Analyze Alternatives to Its Current Licensing Requirements.

Finally, NRC failed to meet its NEPA obligation to discuss in detail “alternatives to the proposed action.” 42 U.S.C. § 4332(2)(C)(iii); *see also* 40 C.F.R. § 1502.14(a). Consideration of alternatives is “the heart of the environmental impact statement,” mandating that an agency “present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.” *Id.* § 1502.14. The scope of alternatives requiring consideration is informed by the agency’s statement of “the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.” 40 C.F.R. § 1502.13.

In this case, NRC did not reasonably describe its underlying purposes or needs. The GEIS analyzes the impacts of continued storage for the purpose of plant licensing; and its environmental impact

findings are given preclusive effect in future licensing proceedings. Thus, licensing plants against the backdrop of current requirements for spent fuel storage is the proposed action at issue, and NRC was required to consider alternatives to that action. *Id.*

NRC failed to comply with this NEPA obligation because it wrongly treated the Continued Storage Rule as its proposed agency action. CI-1052: 1-6. As a result, the GEIS's discussion of alternatives is limited to an analysis of other regulatory mechanisms (such as a policy statement) that, like the Continued Storage Rule, would allow the continued licensure of nuclear plants without imposing additional substantive requirements on the way spent fuel is stored.

The GEIS's comparison of different possible *administrative actions* does not meet NRC's obligation to consider alternatives that would directly and meaningfully affect the *environmental impacts* of indefinite onsite spent-fuel storage. For instance, the GEIS could have considered a mandate that licensees expedite the transfer of spent fuel out of a pool. CI-733: 63, 68; *see* CI-1052: 1-10. It also could have considered requiring that licensees allow spent fuel to cool further before it is moved to pools, configure spent fuel in ways designed to reduce the

likelihood or consequences of a pool fire, provide additional protection for pools, or take other measures suggested by commenters. CI-701: 61-71; CI-733: 45. The GEIS addresses none of these alternatives, however. CI-1052: 1-10.

To be sure, the GEIS notes that NRC is addressing several alternatives, including expedited transfer to dry storage, in separate proceedings. CI-1052: 1-10. But NRC may not meet its NEPA obligation by considering alternatives in proceedings that are unrelated to its NEPA analysis and do not compare the impacts of those alternatives to the impacts of continued storage found in the GEIS. “A non-NEPA document . . . cannot satisfy a federal agency’s obligation under NEPA.” *S. Fork Band Council of W. Shoshone of Nev. v. U.S. Dep’t of Interior*, 588 F.3d 718, 726 (9th Cir. 2009) (per curiam).

CONCLUSION

For all of these reasons, the GEIS and Continued Storage Rule should be vacated.

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CERTIFICATE OF COMPLIANCE

Anisha S. Dasgupta, an attorney in the Office of the Attorney General of the State of New York, hereby certifies that according to the word count feature of the word processing program used to prepare this brief, the brief contains 8,470 words and complies with this Court's May 22, 2015 Order.

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