No. 11-1045 (consolidated with Nos. 11-1051, 11-1056, 11-1057)

ORAL ARGUMENT HAS NOT BEEN SCHEDULED

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

STATE OF NEW YORK, *et al.*,
Petitioners,
v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and
THE UNITED STATES OF AMERICA,
Respondents,

STATE OF NEW JERSEY, *et al.*
Intervenors.

On Petition for Review of Orders by the
United States Nuclear Regulatory Commission

BRIEF FOR RESPONDENTS

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CERTIFICATE AS TO PARTIES, RULINGS AND RELATED CASES

In accordance with Circuit Rule 28(a)(1), respondents United States Nuclear Regulatory Commission and the United States of America ("Respondents") submit this Certificate as to parties, rulings and related cases.

(A) Parties, Intervenors and *Amici* in No. 11-1045 and related cases

The petitioners in No. 11-1045 are the State of New York, the State of Connecticut, and the State of Vermont. The petitioners in the consolidated cases are Natural Resources Defense Council, Inc. (NRDC) in No. 11-1051; Blue Ridge Environmental Defense League (BREDL), Riverkeeper, Inc., and Southern Alliance for Clean Energy, Inc. (SACE) in No. 11-1056; and the Prairie Island Indian Community in No. 11-1057.

The respondents in all cases are the United States Nuclear Regulatory Commission and the United States of America.

Intervenor on behalf of petitioners is the State of New Jersey. Intervenors on behalf of respondents are Entergy Nuclear Operations, Inc. and Nuclear Energy Institute, Inc. There are no *amici.*

(B) Rulings Under Review

The State of New York and others have petitioned for review of two rulemaking orders of the United States Nuclear Regulatory Commission: Update

and Final Revision of Waste Confidence Decision, 75 Fed. Reg. 81037 (Dec. 23, 2010) and Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 75 Fed. Reg. 81032 (Dec. 23, 2010).

(C) Related Cases

This proceeding consists of four consolidated cases. The lead case is *The State of New York, et al. v. United States Nuclear Regulatory Commission, et al.*, No. 11-1045. Three cases following the lead case were consolidated: *Natural Resources Defense Council v. United States Nuclear Regulatory Commission, et al.*, No. 11-1051; *Blue Ridge Environmental Defense League, Inc., et al. v. United States Nuclear Regulatory Commission, et al.*, No. 11-1056; and *Prairie Island Indian Community v. United States Nuclear Regulatory Commission, et. al.*, No. 11-1057.

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Asterisk denotes authorities principally relied upon.

JURISDICTIONAL STATEMENT

Various governmental and private entities[1] filed petitions for review (now consolidated) of rulemaking orders of the Nuclear Regulatory Commission (NRC) that update its Waste Confidence decision[2] and revise a related environmental rule at 10 C.F.R. § 51.23(a).[3]

Both rules are subject to judicial review under the Hobbs Act, 28 U.S.C. § 2341 *et seq.*, because final orders in a rulemaking proceeding trigger Hobbs Act jurisdiction under Section 189 of the Atomic Energy Act (AEA), 42 U.S.C. § 2239. All petitions for review were timely filed within sixty days of the rules' publication in the Federal Register. *See* 28 U.S.C. § 2344.

STATEMENT OF ISSUES PRESENTED FOR REVIEW

1. Whether NRC reasonably found that spent nuclear fuel can be safely stored at or away from nuclear power reactors for at least 60 years

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[1] Following petitioners' briefing alignment, we shall refer to petitioners New York, Vermont, Connecticut, New Jersey and the Prairie Island Indian Community as "the States" and to the non-governmental petitioners by their lead group, Natural Resources Defense Council, Inc. (NRDC).

[2] *See* Update and Final Revision of Waste Confidence Decision, 75 Fed. Reg. 81037 (Dec. 23, 2010)("Waste Confidence decision")(J.A.__).

[3] *See* Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 75 Fed. Reg. 81032 (Dec. 23, 2010)(J.A.__)

after expiration of a reactor's operating license, pending disposal in a permanent repository, without significant environmental impacts.

2. Whether NRC reasonably found that a suitable permanent repository for radioactive high-level waste, including spent fuel generated by NRC-licensed nuclear power reactors, will be available when necessary.

3. Whether an environmental impact statement was required to support the Waste Confidence decision and related environmental rule where NRC determined that associated impacts are not significant.

STATEMENT OF THE CASE

More than thirty years ago, in *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979), this Court reviewed NRC decisions authorizing spent fuel pool expansion at two nuclear power plants and remanded for NRC to consider "whether there is reasonable assurance that an off-site storage solution will be available by . . . the expiration of the plants' operating licenses, and if not, whether there is reasonable assurance that the fuel can be stored safely at the sites beyond those dates."[4] This remand led to what NRC has termed its Waste Confidence decisions, a series of periodically-updated findings where NRC assesses, first, whether reasonable assurance exists that radioactive

[4] 602 F.2d at 418.

"high-level waste" (HLW)[5] produced by reactors "can be safely disposed of" and "when such disposal or off-site storage will be available," and second, "whether radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available."[6]

The original post-*Minnesota* Waste Confidence decision was published in 1984 after formal notice and rulemaking. It included five Waste Confidence "findings," along with a regulation that generically assessed "the environmental and safety implications" of post-operational storage.[7] The decision and regulation were updated in 1990,[8] and revisited in 1999, when NRC concluded that "experience and developments since 1990" had confirmed the findings and made a "comprehensive reevaluation" of the findings unnecessary.[9]

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[5] The Nuclear Waste Policy Act (NWPA), 42 U.S.C. § 10101, defines HLW and spent nuclear fuel separately. NRC defines HLW in 10 C.F.R. § 63.2 to include spent (irradiated) fuel. We shall refer to HLW throughout to include spent fuel.

[6] *See* Notice of Proposed Rulemaking: Storage and Disposal of Nuclear Waste, 44 Fed. Reg. 61372, 61373 (Oct. 25, 1979).

[7] *See* Final Waste Confidence Decision 49 Fed. Reg. 34658 (Aug. 31, 1984).

[8] *See* Review and Final Revision of Waste Confidence Decision, 55 Fed. Reg. 38474 (Sept. 18, 1990).

[9] *See* Status Report on the Review of the Waste Confidence Decision, 64 Fed. Reg. 68005 (Dec. 6, 1999).

In recent years NRC found it "prudent to take a fresh look at the NRC's Waste Confidence Findings."[10] Accordingly, in 2008, after years of study, NRC proposed revisions to its Waste Confidence decision and related environmental rule in parallel rulemaking.[11] In 2010, after two years to study public comments, NRC revised two Waste Confidence findings (Findings 2 and 4), reaffirmed the remaining three findings, and adjusted the related environmental rule at 10 C.F.R. § 51.23(a) to reflect the two revised findings.

NRC's Finding 2, as it existed prior to the most recent Waste Confidence rulemaking, found reasonable assurance that a permanent geologic repository would be available in the first quarter of the 21st century.[12] Revised Finding 2 predicts no schedule for availability and instead "finds reasonable assurance that sufficient mined geologic repository

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[10] 75 FR at 81039, 81062-63 (J.A.__).

[11] *See* Waste Confidence Decision Update: Proposed Revision, 73 Fed. Reg. 59551 (Oct. 9, 2008); Consideration of Environmental Impacts of Temporary Storage of Spent Fuel: Proposed Rule, 73 Fed. Reg. 59547 (Oct. 9, 2008).

[12] 75 FR at 81039 (J.A.__).

capacity will be available to dispose of the commercial high-level radioactive waste and spent fuel generated in any reactor *when necessary*."[13]

NRC's Finding 4, as it existed prior to the most recent rulemaking, found that spent fuel could be stored, safely and without significant environmental impacts, for at least 30 years after a reactor ceases operation.[14] Revised Finding 4 extends that period 30 years and "finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely without significant environmental impacts for *at least 60 years* beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and either onsite or offsite independent spent fuel storage installations [ISFSIs]."[15] Waste Confidence Findings 2 and 4 support NRC's parallel revision of 10 C.F.R. § 51.23(a), which now incorporates the new "repository-available-when-necessary" and "at least 60-years-storage" findings.

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[13] *Id.* at 81038 (J.A.__)(emphasis added).

[14] 75 FR at 81039 (J.A.__).

[15] *Id.* at 81038 (J.A.__)(emphasis added). A reactor license may be renewed for up to 20 years and issued for that 20 year period plus the time remaining in the original license, not to exceed 40 years. *See* 10 C.F.R. § 54.31(b).

NRC's revised Waste Confidence decision and environmental rule, like earlier versions, are not themselves licensing decisions. The decision authorizes neither construction of a geologic repository for HLW nor post-operational storage of spent fuel at or away from reactor sites. The decision also does not authorize issuance of licenses for newly-constructed reactors or license renewals for operating reactors.

Rather, the two-fold purpose of the Waste Confidence decision and environmental rule is, first, to enable reactor licensing by generically resolving the question raised in *Minnesota* – whether, prior to licensing (or relicensing) nuclear reactors, NRC has "reasonable assurance" that disposal of HLW will be available when needed and suitable storage is available before then, and second, to determine generically whether any significant environmental impact will result from the post-licensed storage of spent fuel.

STATEMENT OF THE FACTS

I. History of NRC's Waste Confidence rulemaking.

A. The *Minnesota* case and NRDC petition for rulemaking resulted in NRC's original Waste Confidence findings.

The rulemaking challenged by petitioners here rests on over thirty years of NRC experience and analysis. NRC initiated a rulemaking in 1979 known as the Waste Confidence proceeding to assess the agency's assurance that HLW produced by nuclear power plants "can be safely disposed of, to determine when such disposal or offsite storage will be available, and to determine whether radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available."[16]

This rulemaking responded to this Court's remand in *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979). In that case, this Court questioned whether an offsite storage or disposal solution would be available for the spent nuclear fuel produced at two nuclear power plants whose licenses were to expire in 2007-2009, and if not, whether the spent fuel could be safely stored at those reactor sites until an offsite solution became available.[17]

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[16] 44 FR at 61373.

[17] *See generally* 75 FR at 81038, 81045 (J.A.__).

Petitioners there did "not take issue with [NRC's] conclusion that all that is required is a reasonable probability that a solution will be available when needed," but claimed NRC's "determination of reasonable probability" was based on inadequate evidence.[18] Noting that "Congress has chosen to rely on the NRC's . . . assurances of confidence that a solution will be reached," and that HLW disposal "is characterized by continuing evolution of the state of pertinent knowledge," this Court remanded "for further consideration by the Commission with such procedure as it may deem appropriate."[19]

The Waste Confidence rulemaking also had roots in a 1977 NRC statement, denying a petition for rulemaking by NRDC, that NRC would periodically reassess its finding of reasonable assurance that methods of safe permanent disposal of HLW would be available when needed. NRC further stated that it would license new nuclear power plants only "so long as the Commission can be reasonably confident that permanent disposal (as distinguished from continued storage under surveillance) can be accomplished safely when it is likely to become necessary."[20]

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[18] 602 F.2d at 416.

[19] *Id.* at 419.

[20] Denial of Petition for Rulemaking, 42 Fed. Reg. 34391 (July 5, 1977).

The Second Circuit affirmed NRC's denial of NRDC's rulemaking petition in *NRDC, Inc. v. NRC*, 582 F.2d 166 (2d Cir. 1978). NRDC had asserted that the AEA required NRC to find, before issuing a reactor operating license, that permanent disposal of HLW generated by that reactor can be accomplished safely. NRC determined, however, that the AEA permitted this safety finding to be made when licensing a geologic disposal facility for HLW and was not required at the time of reactor licensing.[21] The Second Circuit agreed, holding that Congress "expressly recognized and impliedly approved NRC's regulatory scheme" for dealing with HLW.[22] The Court therefore did not interfere with NRC's conclusion that reactor licensing could proceed "so long as the Commission can be reasonably confident that permanent disposal (as distinguished from continued storage under surveillance) can be accomplished safely when it is likely to become necessary."[23]

To conform to the *Minnesota* and *NRDC* decisions and otherwise discharge its statutory responsibilities, NRC thus initiated a Waste

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[21] *NRDC*, 582 F.2d at 168-69.

[22] *Id.* at 174.

[23] *Id.* at 169; *see id.* at 175 (NRC not required to withhold action on reactor operating licenses until it determines that HLW "can be permanently disposed of safely.")

Confidence proceeding,[24] which resulted in the 1984 Waste Confidence decision with five formal findings:

> (1) The Commission finds reasonable assurance that safe disposal of high level waste and spent fuel in a mined geologic repository is technically feasible;
>
> (2) The Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level waste and spent fuel will be available by the years 2007-2009 and that sufficient repository capacity will be available within 30 years beyond the expiration of any reactor operating license to dispose of existing commercial high level waste and spent fuel originating in such reactor and generated up to that time;
>
> (3) The Commission finds reasonable assurance that high-level waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level waste and spent fuel;
>
> (4) The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of that reactor's operating license at that reactor's spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations (ISFSIs);
>
> (5) The Commission finds reasonable assurance that safe independent onsite or offsite spent fuel storage will be made available if such storage capacity is needed.[25]

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[24] In 1979, NRC noticed its proposed rulemaking to address the *Minnesota* case. *See* note 6, *supra*. The Commission relied on the rulemaking record to make its ultimate generic decision. *See Rulemaking on the Storage and Disposal of Nuclear Waste* (Waste Confidence Rulemaking), CLI-84-15, 20 NRC 288 (1984).

NRC issued a rule, 10 C.F.R. § 51.23(a)(1984), reflecting the generic Waste Confidence findings.[26]

NRC reviewed its 1984 Waste Confidence decision and environmental rule in 1989-1990, and at that time revised Findings 2 and 4 to reflect updated expectations for when the first HLW repository would be available, and to clarify that the expiration of a reactor's operating license referred to the full 40-year term of the initial license as well as any additional term of a renewed license.[27] The Commission amended its generic determination in 10 C.F.R. § 51.23(a) to match this update.[28]

In 1999, likewise after notice and rulemaking, NRC again reviewed its Waste Confidence Findings and concluded that experience and developments since 1990 had confirmed the five findings' continuing validity, making a comprehensive reevaluation unnecessary.[29] After that, NRC did not find

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[25] Requirements for Licensee Actions Regarding the Disposition of Spent Fuel; Final Rule, 49 Fed. Reg. 34688, 34694 (Aug. 31, 1984).

[26] *Id.*

[27] *See* 75 FR at 81039.

[28] 55 FR at 38474. This generic determination applies in licensing proceedings under 10 C.F.R. Parts 50, 52, 54 and 72. *See* 10 C.F.R. § 51.23(b).

[29] *See* note 9, *supra.*

cause to reevaluate its findings. But in 2008, NRC decided that it would be "prudent" to review its Waste Confidence findings anew because NRC was "preparing to conduct a significant number of proceedings on combined license (COL) applications for new reactors."[30]

B. NRC updates its Waste Confidence findings.

In 2010, NRC adopted a revised Waste Confidence decision that reaffirmed Findings 1, 3 and 5, and revised Findings 2 and 4:

> (2) The Commission finds reasonable assurance that sufficient mined geologic repository capacity will be available to dispose of the commercial high-level radioactive waste and spent nuclear fuel generated by any reactor when necessary.
>
> (4) The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and either onsite or offsite ISFSIs.[31]

New Finding 2 removed a prediction that a repository would be available in the first quarter of the 21st century, and now states that a repository will be available "when necessary." New Finding 4 states that

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[30] 75 FR at 81039. *See also* 73 FR at 59551(Waste Confidence update would "enhance the efficiency" of anticipated COL proceedings). Combined licenses are explained in 10 C.F.R. Part 52, Subpart C.

[31] 75 FR at 81040 (J.A.__).

spent fuel can be safely stored without significant environmental impacts for at least 60 years (rather than for at least 30 years in the earlier version) after a reactor ceases operation. NRC concurrently revised 10 C.F.R. § 51.23(a) to conform to the revised decision. Section 51.23(a) now reads:

> The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that sufficient mined geologic repository capacity will be available to dispose of the commercial high-level radioactive waste and spent fuel generated in any reactor when necessary.[32]

Before adopting these updates, NRC had opened up the proposed decision and environmental rule to public comment.[33] The NRC duly considered and, as appropriate, responded to 158 substantive comments in adopting the revised Waste Confidence decision and revised 10 C.F.R. § 51.23(a).

Among the substantive issues that NRC addressed in its rulemaking decision were the risk of groundwater contamination due to spent fuel pool

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[32] 75 FR at 81037 (J.A.__).

[33] *See* note 11, *supra*.

leakage and the risk of spent fuel pool fires. As for spent fuel pool leakage, NRC found that prior leakage had resulted in only insignificant environmental impacts that will be even further mitigated by recent NRC regulatory activity, explained below.[34] On the pool-fire risk, NRC found that a series of NRC-sponsored studies have consistently shown the risk to be low due to the very low probability of occurrence.[35]

C. NRC will prepare an EIS to evaluate the environmental impacts of spent fuel storage beyond 60 years after licensed life.

Recognizing the strong public interest in this topic, NRC has exercised discretion under 10 C.F.R. § 51.20(a)(2) to develop a plan for a longer-term rulemaking and a full environmental impact statement (EIS) to assess the safety and environmental impacts of HLW storage beyond 120 years (*i.e.*, beyond the 40 years of initial operating life, 20 years renewal and 60 years post-licensed life storage).[36] Thus, this more expansive analysis will extend well beyond the time frame of the current Waste Confidence decision.

Without pre-determining that any environmental impacts of spent fuel storage might be significant, NRC expressed its belief that "this

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[34] 75 FR at 81070-71 (J.A.__).

[35] *Id.* at 81069-70 (J.A.__).

[36] *Id.* at 81040 (J.A.__).

unprecedented long-term review should be accompanied by an EIS."[37] But NRC also pointed out that its current Waste Confidence decision and rule (those at issue in this case) "rely on the best information currently available to the Commission and therefore are separate from this long-term initiative." [38] NRC stated that their validity is "not dependent upon the staff completing any action outside the scope" of those updates.[39]

II. Passage of the NWPA and the history of DOE's application to construct and operate the Yucca Mountain repository.

With passage of the Nuclear Waste Policy Act (NWPA)[40] in 1983, Congress gave the Department of Energy (DOE) statutory responsibility to develop a repository for the permanent disposal of the nation's HLW. Aware that the federal government's earlier efforts "to devise a permanent solution to the problems of civilian radioactive waste disposal [had] not been adequate,"[41] Congress enacted the NWPA "to establish a schedule for the

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[37] *Id.*, *citing* 10 C.F.R. § 51.20(a)(2).

[38] *Id.* at 81040 (J.A.__).

[39] *Id.*

[40] Pub. L. No. 97-425, 96 Stat. 2202 (1983) (codified as amended at 42 U.S.C. §§ 10101-270).

[41] 42 U.S.C. § 10131(a)(3).

siting, construction, and operation of repositories" for disposal of HLW.[42] But in 1987, Congress interrupted the site- selection process by amending the NWPA to designate Yucca Mountain as the sole repository site to be studied.[43]

In 2002, the Secretary of Energy formally recommended the Yucca Mountain site for the development of a repository to the President.[44] This triggered the approval process in NWPA Sections 114 and 115.[45] The President recommended the site to Congress and Congress passed a joint resolution approving the development of a repository at Yucca Mountain,[46] which the President signed the same year. In 2008, DOE submitted to NRC the Yucca Mountain license application,[47] which NRC found sufficient for

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[42] 42 U.S.C. § 10131(b)(1).

[43] *See* 42 U.S.C. § 10172(a)(1). *See generally* 75 FR at 81058.

[44] *See* Yucca Mountain Site Recommendation to the President, 67 Fed. Reg. 9048 (Feb. 27, 2002).

[45] *See* 75 FR at 81039, 81062 (J.A.__), *citing* 42 U.S.C. §§10134(a)(1) and (a)(2), 10135(b) and 10136(b)(2).

[46] *See* 75 FR at 81039, 81062, *citing* Pub. L. No. 107-200, 116 Stat. 735 (codified at 42 U.S.C. § 10135 note).

[47] *See* 75 FR at 81039 (J.A.__).

docketing.[48] NRC issued a notice of hearing and opportunity for leave to intervene.[49]

On January 29, 2010, however, President Obama directed the Secretary of Energy to create a "Blue Ribbon Commission on America's Nuclear Future" to evaluate options for HLW disposal.[50] Shortly thereafter, DOE moved to withdraw its license application with prejudice. On June 29, 2010, the Atomic Safety and Licensing Board (NRC's hearing tribunal) denied DOE's motion to withdraw as beyond its authority under the NWPA.[51] On September 9, 2011, NRC stated that the Commission was evenly split on whether to take affirmative action to uphold or overturn that decision.[52] The Board subsequently suspended further proceedings.[53] There has been

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[48] *Id.*

[49] *Id.* NRC admitted for hearing nearly 300 contentions – most of the 317 initially submitted – in the *Yucca Mountain* licensing proceeding. *See U.S. Department of Energy* (High Level Waste Repository), CLI-09-14, 69 NRC 580 (2009).

[50] *See* 75 FR at 81039 (J.A__).

[51] *Id.* at 81040.

[52] *High-Level Waste Repository*, "Memorandum and Order," CLI-11-07, 2011 WL 4027743 (Sept. 9, 2011).

[53] *High Level Waste Repository,* "Memorandum and Order (Suspending Adjudicatory Proceeding)," LBP-11-24, 71 NRC ___ (Sept. 30, 2011).

litigation in this Court on DOE's attempted withdrawal of its application and NRC's review of the application.[54]

STANDARD OF REVIEW

The standard of review for agency rulemaking is governed by Section 10(e) of the Administrative Procedure Act, 5 U.S.C. § 706(2)(A), which provides that an agency decision may be set aside only if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." This particular case involves a rulemaking in which NRC employed its special expertise in predicting that current technology and engineering capability will enable a geologic repository for disposal of HLW to be available when necessary, and that spent fuel can be safely stored in the interim with no significant environmental impacts.

> [A] reviewing court must remember that the Commission is making predictions, within its area of special expertise, at the frontiers of science. When examining this kind of scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential.

Baltimore Gas & Elec. Co. v. NRDC, Inc., 462 U.S. 87, 103 (1983).[55] In NRC cases, courts are "particularly reluctant to second-guess agency choices

[54] *In re Aiken County*, 645 F.3d 428 (D.C. Cir. 2011); *see also In re Aiken County*, No. 11-1271 (D.C. Cir.)(pending).

involving scientific disputes that are in the agency's province of expertise." *New Jersey Envtl. Fed. v. NRC,* 645 F.3d 220, 230 (3rd Cir. 2011), *quoting New York v. NRC,* 589 F.3d 551, 555 (2d Cir.2009).

Given the agency's expertise, a reviewing court "is not to substitute its judgment for that of the agency." *FCC v. Fox Television Stations, Inc.*, 129 S. Ct. 1800, 1810 (2009), *quoting Motor Vehicle Mfrs. Ass'n of United States, Inc. v. State Farm Mut. Automobile Ins. Co.,* 463 U.S. 29, 43 (1983); *Baltimore Gas & Elec.*, 462 U.S. at 105. Rather, the court must "defer to the wisdom of the agency, provided its decision is reasoned and rational, and even uphold a decision of less than ideal clarity if the agency's path may reasonably be discerned." *Dillmon v. NTSB*, 588 F.3d 1085, 1089 (D.C. Cir. 2009), *quoting Bowman Transp., Inc. v. Arkansas-Best Freight Sys., Inc.*, 419 U.S. 281, 286 (1974)(internal quotation marks and citation omitted).

This "most deferential" standard of review involving an exercise of agency expertise must be layered on top of the already "narrow" standard of review applicable to customary agency rulemaking, which requires the court to uphold an agency decision so long as the agency has "examine[d] the relevant data and articulate[d] a satisfactory explanation for its action." *Fox*

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[55] *See also Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1276 (D.C. Cir. 2004); *City of Los Angeles v. DOT,* 165 F.3d 972, 977 (D.C. Cir.1999); *Morris v. NRC*, 598 F.3d 677, 684-685 (10th Cir. 2010).

Television, 129 S. Ct. at 1810. *See also Transcontinental Gas Pipe Line Corp. v. FERC*, 518 F.3d 916, 919 (D.C. Cir. 2008).

SUMMARY OF THE ARGUMENT

The Waste Confidence decision and related environmental rule in 10 C.F.R. § 51.23(a), like those that preceded it since 1984, faithfully adhere to the instructions in this Court's remand in *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979), and also fulfill NRC's important responsibilities under the AEA and the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.* Based on a full record, NRC reasonably found that safe disposal of HLW in a geologic repository will be available when necessary, and that spent nuclear fuel can be stored safely and without significant environmental impacts until ultimate disposal.

Contrary to petitioners' views, the Waste Confidence decision on its face is *not* a licensing decision. Rather, the Waste Confidence decision supports NRC reactor licensing decisions with generic findings that can be utilized to determine environmental impacts associated with spent fuel generated by licensed reactors. Hence, the Waste Confidence decision carries out this Court's directive in *Minnesota*, which created the framework for the Waste Confidence rulemaking.

The arguments of the States challenging NRC's Waste Confidence Finding 4 on interim storage amount to concerns over the potential for spent fuel pool leakage and fires. Each of these concerns has been analyzed exhaustively by NRC in the Waste Confidence rulemaking and in earlier generic studies, which determined that leakage has not and will not threaten groundwater supplies, and that a spent pool fire is highly improbable and thus a low risk. Moreover, NRC has recently created layers of additional regulatory protection, discussed below, to reduce even further any risk associated with potential leakage or fire. The record amply supports NRC's conclusions on these issues.

Similarly, the Waste Confidence rulemaking record supports NRC's determination in Finding 2 that that sufficient mined geologic repository capacity will be available when necessary. Petitioners point to past institutional difficulties in siting a repository, but NRC has reasonably found that there is no technical barrier to building a safe repository. And the NWPA *requires* DOE to establish a site, obtain an NRC license and build a repository. It is sensible for NRC to rely on Congress and the President to live up to their duty to comply with the law. While seeking to withdraw its

Yucca Mountain application, DOE (with Congressional funding[56]) has established a Blue Ribbon Commission to inquire into the HLW disposal solutions. In the meantime, while awaiting a national repository, NRC has found that long-term storage is safe and without significant environmental impacts. NRC's approach is well within what this Court contemplated in its *Minnesota* remand directive.

NRDC's claim that the Waste Confidence decision requires a full EIS is without merit. The Waste Confidence decision constitutes the Environmental Assessment (EA) for the revision of 10 C.F.R. § 51.23(a). An EA suffices under NEPA because NRC determined that reasonable assurance exists that there are no significant environmental impacts associated with the rulemaking. NEPA requires an EIS only for a "major federal action that *significantly* affects the quality of the human environment," such as the licensing of a nuclear power plant or a mined geologic repository for HLW – licensing actions that the Waste Confidence decision does not authorize. That decision merely complies with the

[56] *See* Energy and Water Development and Related Agencies Appropriations Act, 2010, Pub. L. No. 111-85, 123 Stat. 2845, 2864-65 (2009).

Minnesota remand and otherwise fulfills NRC's obligations under the AEA and NEPA.[57]

Finally, NRDC's concerns about the role of an NRC environmental rule (termed Table S-3)[58] in NRC's Waste Confidence decision are misplaced. Waste Confidence in no way relies or is dependent upon any assumptions or values embodied by Table S-3. Table S-3 is employed in the licensing of individual reactors to establish generically the environmental impacts of the uranium fuel cycle, including HLW disposal, a subject completely beyond the scope of the Waste Confidence decision.

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[57] Although not relevant to Waste Confidence, an EIS for the HLW repository will be prepared by DOE, and reviewed and/or supplemented or adopted by NRC, when an application to license that facility is submitted.

[58] Table S-3 is found at 10 C.F.R. § 51.51(b).

ARGUMENT

I. NRC reasonably determined that spent nuclear fuel can be stored safely for at least 60 years after licensed life with no <u>significant environmental impacts.</u>

A. NRC has thoroughly evaluated the risk of groundwater contamination from spent fuel pool leaks and found that <u>there are no significant environmental impacts.</u>

The States assert that NRC's finding of "no significant impacts" in updating 10 C.F.R. § 51.23(a) is contradicted by acknowledged incidents of potential groundwater contamination originating from spent fuel pool leaks (States Br. 21, 27-28, 36-38). But, as we demonstrate below, NRC has found specifically that such leakage constitutes no threat to public health and safety. Moreover, NRC has taken corrective actions to further assure that leakage does not adversely affect public health and safety as well as the environment.

The Waste Confidence rulemaking record explains the leakage issue in detail. The record shows that, in 1990, NRC acknowledged that radioactive water had leaked from two spent fuel pools, one of which resulted in contamination outside the licensee-controlled area.[59] NRC addressed these incidents with "inspection and enforcement actions to

[59] 75 FR at 81070 (J.A.__).

reduce the potential for such operational occurrences in the future."[60] The rulemaking record also shows that, in early 2006, NRC created the Liquid Radioactive Release Lessons Learned Task Force in response to incidents at several plants involving unplanned, unmonitored releases of radioactive liquids from spent fuel pools into the environment.[61] These plants included Indian Point Units 1 and 2 (*see* States Br. 22, citing "public concern") and Seabrook.

The Task Force reviewed historical data and concluded that, "[b]ased on bounding dose calculations and/or actual measurements, the near-term public health impacts" of those leaks "have been negligible."[62] Follow-up inspections confirmed the "negligible" impacts of the leaks:

> . . . [P]ublic health and safety has not been, nor is likely to be, adversely affected, and the dose consequence to the public that can be attributed to current onsite conditions associated with groundwater contamination is negligible.[63]

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[60] *Id.*

[61] *Id.* at 81070-71 (J.A.__).

[62] *Id.* at 81071 (J.A.__).

[63] *Id.* at 81071 n.36 (J.A. __). As a DOE research facility, Brookhaven (States Br. 11) is outside NRC's regulatory sphere of "commercial high-level radioactive waste and spent fuel." *See* Waste Confidence Finding 2.

The Task Force nonetheless recommended 26 specific measures for improving prevention of unplanned or unmonitored spent fuel pool releases of radioactive liquids.[64] Thus, NRC said in its Waste Confidence decision that its staff "has addressed, or is in the process of addressing, the Task Force recommendations."[65] These recommendations include: (1) significant upgrades to NRC regulatory guidance;[66] (2) new regulatory guidance to minimize facility contamination) (3) improvement of NRC inspection procedures; and (4) enhancement of "tell-tale drain" performance.[67] While the Waste Confidence decision's FONSI does not rely principally on these mitigation measures, they do reinforce the determination that a full EIS is not required. *Spiller v. White,* 352 F.2d 235, 241 (5th Cir. 2003).

In short, NRC's ongoing regulatory oversight "ensures [that] any issues are identified and addressed through the current regulatory process before they could advance to a state where there is a significant

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[64] *Id.* at 81071 (J.A.__).

[64] *Id.* at 81052 (J.A.__).

[66] Regulatory Guides 4.1 and 1.21 (2009) (*see* 75 FR at 81071) *are* final (States Br.37). *See* http://nrr10.nrc.gov/rop-digital-city/newsletter/july-2009.pdf at 10.

[67] *See* 75 FR at 81071 (upgrades to detect, prevent and mitigate spent fuel pool leakage include NRC's routine inspections, review of license amendment applications, industry forums and initiatives)(J.A.__).

environmental impact."[68] The record convincingly demonstrates that past leakage has had no significant environmental impacts and, due to an enhanced regulatory program, future leaks, if any, likewise will not be significant. The States have offered no record evidence to second-guess NRC's judgment on this technical issue.

Finally, the States cite NRC's recent proposal to revise license renewal procedures so that potential environmental impacts of plant leakage would no longer be generically assessed, but instead considered in a site-specific EIS (States Br. 14, 28).[69] This argument was not presented to NRC in the rulemaking and therefore, under standard principles of judicial review of agency action, the argument cannot be raised for the first time in this Court. *E.g., West Virginia v. EPA*, 362 F.3d 861, 872 (D.C. Cir. 2004); *National Wildlife Federation v. EPA*, 286 F.3d 554, 562 (D.C. Cir. 2002).[70]

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[68] *Id.*

[69] Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 74 Fed. Reg. 38117, 38133 (July 31, 2009). NRC has not acted on the proposed revision.

[70] NRC accepted New York's Waste Confidence rulemaking comments dated February 16, 2010, more than six months after publication of the proposed rule on license renewal procedures. Thus, the States could have raised the argument.

Even so, the States' argument lacks merit. NRC's proposed site-specific consideration of leakage potential during *licensed* operation does not relate to the same *post-licensed* period covered by the Waste Confidence environmental rule. Moreover, the proposal relates to the *entire* plant, which includes greater potential for leakage.[71] Indeed, the proposed change in the license renewal rule would affirm that "NRC did not identify any instances where the health of the public was impacted" by inadvertent leakage.[72] Accordingly, the proposed rule cited by petitioners, even if adopted without change, is perfectly consistent with NRC's Waste Confidence finding of reasonable assurance that post-licensing spent fuel pool storage impacts, including potential pool leakage, are not significant.

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[71] *See* proposed § 51.53(c)(ii)(Q) in 74 FR at 38133. In addition to spent fuel pools, leakage has resulted, *e.g.*, from buried piping or from liquid storage tanks. *Id.* at 38129(J.A.__).

"Another factor in adding this new Category 2 issue is the level of public concern associated with such inadvertent releases of radionuclides into groundwater." *Id.* at 38123. While important, public concern is not an environmental impact.

[72] 74 FR at 38123. Notably, proposed Table B-1 of 10 C.F.R. Part 51, which adds a new Category 2 for "Radionuclides released to groundwater," notes: "Groundwater protection programs have been established at all operating nuclear power plants." *Id.* at 38134.

B. NRC has thoroughly evaluated the risk of spent fuel pool fires.

The States assert that the NRC should have prepared a full EIS, rather than an EA, to consider the risk of a serious fire in the spent fuel pool during the 60-year period of post-licensed storage for which NRC prepared an EA (that is, the Waste Confidence decision itself)[73] in support of 10 C.F.R. § 51.23(a). Pointedly, though, the States ignore NRC's exhaustive consideration of this very risk in the Waste Confidence decision, whose sufficiency they do not challenge (States Br. 38-39).

The States also fail to acknowledge the import of *New York v. NRC,* 589 F.3d 551 (2d Cir.2009), where the Second Circuit rejected pool-fire claims very similar to the ones raised here. The Second Circuit found that NRC had reasonably relied on "relevant studies" – the same studies NRC relied upon in the Waste Confidence rulemaking[74] – for the agency's "conclusion that the overall risk is low."[75]

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[73] As the Waste Confidence decision stated, it constitutes the EA supporting revision of 10 C.F.R. § 51.23(a). *See* 75 FR at 81033 (EA is the Waste Confidence decision, "which supports [NRC's FONSI] and 1070 an EIS")(J.A.__).

[74] 75 FR at 81051, 81070.

[75] 589 F.3d at 555.

The States' claim appears to be simply this: a full EIS rather than an EA should have been prepared because (1) the fire risk, though generically determined by NRC to be "very low,"[76] would vary from plant to plant, and (2) NRC did not altogether reject consideration of fire risk as "remote and speculative" (States Br. 8-9, 27-28, 38-39). Both contentions are without merit and fall far short of proving arbitrary action by NRC. NRC's Waste Confidence decision – that is, its EA for §51.23(a) – is solidly grounded in expert analysis and complies fully with NEPA.

1. NRC reasonably relied upon scientific studies and regulatory experience to find a very low risk of spent fuel pool fires.

As the rulemaking record recounts, NRC has for decades carefully analyzed the risk of spent fuel pool fires due to pool-water loss.[77] These studies found a very low probability that such a fire would actually occur, which supported NRC's early Waste Confidence Finding 4 that the expected environmental impacts of storing fuel for at least 30 years post-licensed life are not significant.[78]

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[76] 75 FR at 81051.

[77] *See* 75 FR at 81051, 81070.

[78] 55 Fed. Reg. at 38481, 38511 (studies of potential loss of spent fuel pool water resulting in a dry-pool fuel fire).

NRC's current Waste Confidence analysis starts with the proposition that spent fuel pools are stable and predictable:

> [P]ool storage is a benign environment that does not lead to significant degradation of spent fuel integrity; that the pools in which the assemblies are stored will remain safe for extended periods; and that degradation mechanisms are well understood and allow time for appropriate remedial action.[79]

Next, NRC points out that in 1996, it created a Generic Environmental Impact Statement (GEIS) for power reactor license renewal applications to define which NEPA-related issues during operations under a renewed license (not post-operational) could be addressed generically.[80] The GEIS found the risk of spent fuel pool fires to be low, due to their low likelihood of occurrence, even "lower than that for severe reactor accidents."[81] When NRC prepared the GEIS in 1996, it characterized as "Category 1" those actions that could be assessed generically without plant-specific evaluation, and it characterized non-generic impacts as "Category 2."[82] Under this

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[79] 75 FR at 81035 (J.A.__). Nothing has occurred "to call into question the Commission's confidence" in the performance of spent fuel pools. *Id. See also id.* at 81069-70 (J.A.___).

[80] *See* 75 FR at 81041.

[81] *See* Denial of Massachusetts and California Petitions for Rulemaking, 73 Fed Reg. 46204, 46207 (Aug. 8, 2008).

[82] *See* Final Rule: Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28467, 28474 (June 5, 1996); *see*

scheme, NRC has classified on-site storage of spent fuel in pools as a Category 1 (generically determined) environmental impact.[83]

As the Waste Confidence decision indicates, further studies occurred. Spent fuel pool risks were assessed again in conjunction with a 1997 decommissioning study that provided a bounding analysis for the most severe accidents involving loss of spent fuel pool cooling during plant operations.[84] A later 2001 study designated "NUREG-1738" demonstrated that, even with "conservative and bounding assumptions," the predicted risk at decommissioning plants was below that for reactor accidents and "well below" NRC's safety goal.[85] Like earlier studies, NUREG-1738 found the overall pool fire risk at such plants to be "low because of the very low likelihood of a zirconium fire even though the consequences from a zirconium fire could be serious."[86]

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also 10 C.F.R. Part 51, App. B to Subpart A (Table B-1); *Massachusetts v. United States*, 522 F.3d 115, 119-120 (1st Cir. 2008).

[83] *See* 10 C.F.R. Part 51, App. B to Subpart A (Table B-1).

[84] 75 FR at 81070 (J.A.__).

[85] *Id.*

[86] NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" at ix (2001)(J.A.__). An NRC licensing adjudication likewise found a low very low likelihood of a reactor accident that causes a pool fire. *Carolina Power & Light Co. (Shearon*

NRC's current Waste Confidence decision further explains how, responding to the terrorist attacks of September 11, 2001, NRC again examined spent fuel pool safety and security issues. This included significantly improved modeling of how spent fuel assemblies would perform under emergency conditions assuming spent fuel had been exposed to air due to loss of pool water.[87] This effort "both confirmed the conservatism of past analyses"[88] and led to development of spent fuel safety improvements.[89] As the Waste Confidence decision also discusses, NRC has built upon site-specific post-9/11 orders to individual licensees, and now requires all plants to "to develop specific guidance and

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Harris Nuclear Power Plant), CLI-01-11, 53 NRC 370, 386-89 (2001), *aff'd*, *Orange County v. NRC*, 47 Fed. Appx. 1 (D.C. Cir. 2002).

[87] Exposure of fuel to air is a prerequisite to a pool fire. *See, e.g.*, NAS Report at 39 (J.A.__) (spent fuel "oxidation" (*i.e*, fire) "will not occur when the spent fuel is under water because heat removal prevents such high temperatures from being reached."). Under normal pool conditions, fuel is typically covered by about 25 feet of water. 75 FR at 81073 (J.A.__). Therefore, massive, unmitigated water loss must occur before a spent fuel pool fire could ignite.

[88] 75 FR at 81070 (J.A.__).

[89] Additionally, after 9/11, NRC increased the physical protection for licensed reactors, including spent fuel pools. *See* 75 FR at 81073; Final Rule: Design Basis Threat, 72 Fed. Reg. 12705, 12705-06, 12721 (Item 19) (Mar. 19, 2007); *Public Citizen v. NRC*, 573 F.3d 916 (9th Cir. 2009). Further security enhancements followed in 2009. *See* 75 FR at 81073 (J.A.).

strategies to maintain or restore spent fuel pool cooling capabilities . . . that can be effectively implemented under the circumstances associated with the loss of large areas of the plant due to large fires and explosions"[90]

In *New York v. NRC,* the Second Circuit recently held that studies underlying this regulatory mitigation program provide "substantial evidence" for the program's effectiveness in the event of a spent fuel pool fire.[91] The NRC approach is also consistent with recommendations of the National Academy of Sciences (NAS).[92]

The rulemaking record discusses yet other studies directed specifically at spent fuel pool safety, including a 2004 NAS Report as well as a series of NRC-sponsored studies by Sandia National Laboratories (a DOE laboratory) that confirmed the conservatism of previous NRC studies that had found low pool-fire risk.[93] As a result of post- 9/11 improvements in spent fuel pool safety and security, and the inherent safety and robustness of spent fuel pool

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[90] 75 Fed. Reg. at 81073 (J.A.__); 10 C.F.R. § 50.54(hh)(2).

[91] *New York v. NRC*, 589 F.3d at 555.

[92] *See* NAS Report at 55 (J.A.__) (recommending, *inter alia*, spray systems "designed to function even if the spent fuel pool or building were severely damaged").

[93] *See* 75 FR at 81070 (J.A.__). While the full array of these Sandia studies is not available to the public for security reasons, a 2006 redacted summary report is available. *Id.* at 81043 (J.A.__).

designs, the NRC advised Congress that the risk associated with security events at spent fuel pools is "acceptably low."[94] In 2009, NRC amended all operating licenses to implement ongoing post-9/11 security improvements, which, *inter alia,* provided an added layer of protection for spent fuel pools.[95] As discussed at page 24, *supra*, these mitigation measures reinforce the reasonableness of NRC's FONSI.

Finally, as already mentioned, in 2009 the Second Circuit rejected a challenge to NRC's decision not to modify its spent fuel pool GEIS.[96] In that case, NRC had found that its repeated findings of low environmental impacts from spent fuel pool storage "remain valid" and that that the fire-risk studies cited by petitioners were not "new and significant" information.[97] The Second Circuit had no difficulty upholding NRC's determination.[98] NRC's current Waste Confidence proceeding reviewed and

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[94] *Id.*

[95] *See* 10 C.F.R. § 50.54(hh)(2).

[96] *See New York v. NRC, supra* (denying review from NRC's denial of petitions for rulemaking).

[97] 73 FR at 46205, 46212.

[98] 589 F.3d at 553. The "small environmental impact" finding in the GEIS is effectively the same as a "without significant environmental impacts" finding in 10 C.F.R. § 51.23(a). *Compare* 10 C.F.R. Part 51, App. B (Table B-1 n.3)("small" means that "environmental effects are not detectable or are

thoroughly considered the abundant evidence discussed above, much of it the same evidence before the Second Circuit.[99]

In short, NRC and NRC-sponsored studies have confirmed, as NRC specifically found in its Waste Confidence decision, that the risk of a spent fuel pool fire, whether initiated by an accidental or intentional event, is "very low."[100] The record on this point is overwhelming. Nonetheless, the States have, in their rulemaking comments as well as their brief here, largely recycled many of the same arguments previously rejected by NRC and the Second Circuit. In rejecting these claims once more, NRC reviewed the earlier data and, based on an ample record, found no reason to depart from its earlier conclusions.

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so minor that they will neither destabilize nor noticeably alter any important attribute of the resource").

[99] *See* 75 FR at 81069-71.

[100] 75 FR at 81051. NRC has assessed both accident and intentional attack risk in this Waste Confidence update. *See id.* at 81051, 81073 (J.A.__). NEPA does not require, however, consideration of intentional attacks on NRC-licensed facilities because a licensing facility does not "proximately cause" someone to attack it. *New Jersey Dep't of Envt'l Protection v. NRC*, 561 F.3d 132 (3rd Cir. 2009). *Contra, San Luis Obispo Mothers for Peace v. NRC,* 449 F.3d 1016 (9th Cir. 2006). In any event, this Court need not reach this question, first, because, as shown, NRC's Waste Confidence rulemaking nonetheless considered the risk of deliberate threats resulting in a spent fuel pool fire, which suffices under NEPA. *New York v. NRC,* 589 F.3d at 554 n.1. Second, the States have not raised this issue in their brief.

2. Site-specific plant characteristics do not preclude NRC's generic conclusion that spent fuel storage impacts are insignificant because fire risk is low.

The States contend that NEPA requires an EIS to evaluate potential environmental impacts from a potential post-operational spent fuel pool fire because different reactor designs and siting produce different risks of a potential fire (States Br. 2, 8, 20, 27-28). This argument, however, is unsupported by the rulemaking record because none of the design or siting differences posited by the States significantly affects NRC's fire risk conclusions. Because the analyzed risk remains low regardless of plant design or siting, some variation from plant to plant does not, in and of itself, undermine a generic "no significant impacts" finding regarding spent fuel pool fire risk.

In fact, the NRC studies evaluating pool-fire risk, including one the States themselves rely upon, have accounted for such variations, but have still found that risk enveloped within the bounds of a generic "low risk" finding. The States, by failing even to address the methodologies of these studies, have not meaningfully challenged the NRC's generic environmental impact finding.

For example, the States assert, based on NUREG-1738, that "fires are affected by site-specific factors," and then suggest that this fact precludes

generic analysis of fire risk (States Br. 9). But NUREG-1738 was *itself* a generic study of pool fire risks that reached generic conclusions.[101] As NRC's rulemaking explained, NUREG-1738's "conservative and bounding assumptions" enveloped a variety of fire ignition and propagation scenarios.[102] Hence, differences in coolability of exposed fuel associated with fuel assembly geometry, rack configuration, access to air cooling, and prior burn-up of the fuel (States Br. 9) might yield plant-specific fire risks that are *lower* than what NUREG-1738 calculated, but not higher, given the conservative and bounding design of its analysis.[103] Put differently, the study's exclusion of the factors cited by the States produced an *overestimate* of risk.

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[101] *See* NUREG-1738 at 5-3 (J.A.__)("In summary, the study finds that . . . [t]he risk at decommissioning plants is low and well within the Commission's safety goals. The risk is low because of the very low likelihood of a zirconium fire even though the consequences from a zirconium fire could be serious.").

[102] 75 FR at 81070 (J.A.__); *see also* 73 FR at 46207 (J.A.__) (even assuming occurrence of "all events leading to" a pool fire, the risk of a fire is "low and well within" NRC safety goals).

[103] 73 FR at 46207. *See also* NUREG-1738 at 3-1(J.A.__) (explaining that its risk assessment calculations represented an intentional "simplification" that permitted bounding risk calculations irrespective of the fuel-related factors cited by the States); *see also* Sandia Report at 1 (J.A. __)(noting NUREG-1738's conservatism).

Similarly, NRC's pool-fire studies have accounted for differences in pool location – another "site-specific" factor the States have cited (States Br. 9) – by separately analyzing pools at boiling water reactors (BWRs) and pressurized water reactors (PWRs) because BWR pools tend to be located at higher within-plant elevations than PWR pools.[104] Hence, assessing both designs accounts for different pool locations. The Sandia studies, which themselves analyzed BWR and PWR pools separately, also assessed how their conclusions regarding particular "reference" BWR and PWR pools may be extended to other sites.[105]

Finally, the States inaccurately, and without explanation, represent that the NAS Report's identification of plant-specific vulnerabilities and differences equals a conclusion that generic, bounding risk assessments are

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[104] For example, NUREG-1353, "Regulatory Analysis for the Resolution of Generic Issue 82, 'Beyond Design Basis Accidents in Spent Fuel Pools'" at ES-3 (J.A.__), states: "The structural capacity of the elevated BWR pool is lower than that for the PWR pool located at the ground level, however the lower conditional probability of a Zircaloy [the zirconium alloy] fire for the BWR fuel assembly design offsets the higher seismic failure frequency." NUREG-1353 was one of the pool-fire studies relied upon by the 1990 Waste Confidence decision (*see* 55 FR at 38481), which was the starting point for pool-fire risk analysis in the most recent Waste Confidence decision. 75 FR at 81051 (J.A.__).

[105] Sandia Report at 41(discussing "reference" BWR and PWR)(J.A.__).

impossible.[106] Yet, NRC's studies and regulations account for site-specific differences, and NAS nowhere deems this an impossible task.

The States also observe that earthquake, hurricane, and tsunami threats are not the same at all plants (States Br. 9 n.3, citing NUREG-1738's earthquake analysis), but, once again, they fail to explain how that discussion undermines the study's reliance on "conservative and bounding assumptions" to reach generic findings.[107]

Even if site-specific issues were shown to be relevant to a specific licensing decision, the exception would not disprove the Waste Confidence conclusion that the pool-fire risk is generically low. Certainly, the States have not proved on the record here that any plant-specific factor would elevate risk so significantly as to undermine the Waste Confidence decision. But the States are free to develop such proof in particular licensing proceedings and, under NRC regulations, seek site-specific consideration. As the Waste Confidence decision notes, litigants in NRC adjudications may

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[106] *See* States Br. 9 (*citing* NAS Report at 8, 54).

[107] 75 FR at 81070 (J.A.__). 75 FR at 81070 (J.A.__). The 1980 DOE EIS cited by the States (States Br. 9) is inapposite. That EIS addressed different issues (potential new DOE projects, not existing at-reactor pool storage methods) and, moreover, significantly predates the pool-fire risk analyses upon which NRC relied.

seek "special-circumstances" waivers under 10 C.F.R. § 2.335, and this would include the generic rule of 10 C.F.R. § 51.23(a).[108]

The States challenge the efficacy of NRC's "special circumstances" waivers in 10 C.F.R. § 2.335 as a means to litigate in license renewal hearings whether the generic determination of 10 C.F.R. § 51.23(a) should apply (States Br. 31-32). Yet, the States describe no instances in which a waiver was sought, much less unreasonably denied. Moreover, appropriate relief for an abuse of discretion, if any, is judicial review, *e.g., New Jersey Environmental Fed. v. NRC,* 645 F.3d 220 (3d Cir. 2011)(review of NRC hearing rulings in license renewal proceeding), not overturning a valid generic rule.

Further, NRC procedures require a license renewal applicant to identify any "new and significant information" regarding its applications that would render a generic NEPA finding inappropriate, and NRC staff correspondingly searches for such site-specific information during its application review.[109] These procedures adequately address the potential influence of site-specific circumstances that should be considered. The mere "potential that one or more sites might not fall under the generic

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[108] 75 FR at 81057 (J.A.__).

[109] *Id.*

determination in the Waste Confidence Decision and rule is not sufficient reason for the Commission to require a site-specific analysis for all sites."[110]

In sum, NRC's generic studies of spent fuel pool fire risk over recent decades have conservatively bounded site-specific plant differences. The States have not identified any contributor to fire risk that would place any plant beyond this generic envelope. They merely argue that the contributors vary from plant to plant. But NRC has never contended that impacts are identical for each plant, just that risk of a fire is generically "very low"[111] or "acceptably low,"[112] such that any environmental impacts are not significant.

3. NRC's analysis of the potential for a spent fuel fire did not dismiss that risk as "remote and speculative," but rather found the risk not <u>significant.</u>

As the States concede, NRC's Waste Confidence decision – again, that decision constitutes the EA supporting the revised 10 C.F.R. § 51.23(a) – found the impacts of storing spent fuel for at least 60 years beyond licensed life not significant, partially based on its finding that the risk of a spent fuel pool fire is "very low" (States Br. 39). The States nonetheless

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[110] *Id.*

[111] *Id.* at 81051 (J.A.__).

[112] *Id.* at 81070 (J.A.__).

claim that NRC must prepare a full EIS unless it declares a fire "remote and speculative" (States Br. 38-39). This *non sequitur* ignores the function of an EA, which is to determine whether an EIS is required and, if not, to identify and describe those impacts the agency has determined to be insignificant and therefore not warranting preparation of an EIS.[113]

The cases cited by the States actually validate NRC's approach here. NRC did not dismiss the consequences of a spent fuel pool fire out of hand, as it might have done had it viewed pool-fire risk as "remote and speculative," but rather determined that the likelihood of a fire is very low, such that the overall risk is likewise very low. This was precisely the legal basis for upholding NRC's environmental analysis in *Carolina Envtl. Study Group v. United States,* 510 F.2d 796 (D.C. Cir. 1975), upon which the States rely:

> Because each statement on the environmental impact of a proposed action involves educated predictions rather than certainties, it is entirely proper, and necessary, to consider the probabilities as well as the consequences of certain occurrences

[113] An EA is a concise public document that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impacts (FONSI). *Theodore Roosevelt Conservation Partnership v. Salazar*, 616 F.3d 497, 503 (D.C. Cir. 2010); *South Carolina ex rel. Campbell v. O'Leary,* 64 F.3d 892, 896 (4th Cir. 1995). An agency's decision to rely on an EA instead of preparing an EIS is discretionary and entitled to judicial deference. *O'Leary,* 64 F.3d at 896; *Sierra Club v. DOT,* 753 F.2d 120, 126 (D.C. Cir. 1985).

> in ascertaining their environmental impact. There is a point at which the probability of an occurrence may be so low as to render it almost totally unworthy of consideration.[114]

Similarly, in *City of New York v. DOT*, 715 F.2d 732 (2d Cir.1983), the Court left it to the agency to decide "whether or not the gravity of the 'worst case' accident or other less serious accidents, discounted by their improbability, presents an overall risk of sufficient significance to warrant an EIS." [115]

Here, NRC did not dismiss pool-fire risk as so "remote and speculative" as to justify excluding that risk from its EA altogether. To the contrary, NRC has given the potential for zirconium cladding fires in spent fuel pools exhaustive consideration in its Waste Confidence decision.[116] Nor is this a case of a "close call" on whether a "significant impact" will occur, as the States suggest (States Br. 38). Significant impacts could result *only* if a fire occurred, but, as NRC reasonably determined, a fire is very

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[114] 510 F.2d at 799.

[115] 715 F.2d at 752 n.20.

[116] Thus, unlike the EA's consideration of spent fuel fires here, the EIS in *Limerick Ecology Action, Inc. v. NRC,* 869 F.2d 719 (3d Cir.1989), did not consider the risk of severe accidents at all. Rather, an earlier Policy Statement altogether excluded severe accidents from the EIS. The Court left the NRC free to evaluate severe accident risk as it wished, but simply said it had not done so. *Id.* at 739.

improbable and even less likely in view of NRC-mandated water-loss mitigation measures in 10 C.F.R. § 50.54(hh)(2).

C. The States did not specify any non-health impacts not addressed by the Waste Confidence decision.

The States point out that the Prairie Island nuclear plant and onsite dry storage facility are located adjacent to the Tribe's reservation (States Br. 18, 20, 24). But, in the rulemaking, the Tribe pointed to no environmental impact it wished NRC to consider.[117] Likewise, the States' brief alludes to spent fuel pools near a densely populated area in New York, and asserts the pools "may impact property values" without explaining how (States Br. 22, 29).[118]

The States also assert "other-than-health" impacts – "historic, cultural, ecological, and economic impacts" (States Br. 40). But they point to no comments that asked NRC to explore these issues, and we have found none,

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[117] Like their brief, the Tribe's comments merely stated that the Prairie Island nuclear plant and onsite ISFSI are located "600 yards away from our homes, community center and business." Prairie Island Comments at 6 (J.A.__).

[118] The States' rulemaking comments claimed that "off-site land impacts" resulting from "the indefinite storage" of HLW would "adversely impact land values" (States' Comments at 36; J.A.__). The expert cited by the States, however, discussed land values in the context of Indian Point license renewal and offered no opinion on impacts attributable to *post-licensed* spent fuel storage. Moreover, NRC "decided not to endorse the concept of indefinite storage." 75 FR at 81043 (J.A.__).

except the property-value issue already discussed. Where, as here, petitioners fail to make their NEPA objection to the agency, the objection is "forfeited." *DOT v. Public Citizen*, 541 U.S. 752, 764 (2004); *see also Vermont Yankee Nuclear Power Corp. v. NRDC, Inc.*, 435 U.S. 519, 554 (1978)(insufficiency of "cryptic and obscure reference to matters that 'ought to be' considered").

II. NRC reasonably found that sufficient mined geologic repository capacity will be available when needed.

A. NRC has candidly acknowledged, but is not responsible for resolving, the institutional barriers to licensing a repository.

1. NRC has not belittled the political and social barriers to be resolved before a repository would be available.

As a premise for its contention that an EIS was required, NRDC claims that NRC has conceded that institutional barriers "may delay the opening of a repository, but dismisses their significance" (NRDC Br. 25). Actually, quite the opposite is true. From the outset in its first Waste Confidence decision in 1984, NRC has candidly acknowledged "institutional uncertainties that needed to be resolved," including "a firm schedule."[119] When Congress amended the NWPA in 1987 to confine site characterization

[119] 75 FR 81061(J.A. __), *citing* 49 FR at 34675-34679.

to the Yucca Mountain site (*i.e.*, no "back-up" sites if the Yucca Mountain site were not licensed), NRC recognized that yet another potential institutional barrier had been created,[120] and frankly stated "institutional uncertainties," such as legislative changes, "were perhaps more difficult to calculate.[121]

In the current rulemaking, NRC has forthrightly recognized that, while confidence remains in the nation's capability to site and build a suitable repository, the institutional barriers to licensing a repository, coupled with the need "to bring about the broad social and political acceptance," preclude a target date.[122] Hence, contrary to NRDC's claim, NRC has not dismissed institutional barriers as insignificant.

2. Congress has not assigned to NRC responsibility for resolving institutional barriers to siting the repository.

NRDC fundamentally errs in asserting that NRC, to reach its Waste Confidence findings, must "address" and then "solve . . . the social, political and institutional barriers" to siting and licensing a repository (NRDC Br. 27). These are legislative responsibilities that Congress simply has not

[120] 75 FR at 81061(J.A.__), *citing* 55 FR 38495.

[121] *Id.* at 81061 (J.A.__).

[122] *Id.* at 81064 (J.A. __).

assigned to NRC. No statute or court decision has ever given to NRC the role of cutting the Gordian knot of repository site selection.

Indeed, the Second Circuit rebuffed any such suggestion over 30 years ago when it considered NRDC's position at that time, essentially identical to its position today, that "serious political and social resistance to the development of a geologic repository is mounting throughout the country."[123] The Second Circuit rejected NRDC's position and held that "resolving the problem of such 'resistance' *must come from the legislative branch of government.*"[124]

The legal landscape governing permanent disposal of HLW has changed since that decision – principally, Congress's enactment of the NWPA to establish a federal scheme for repository siting and licensing – but no provision of the NWPA or any other law has made it NRC's responsibility, as NRDC erroneously suggests, to remove institutional barriers to the availability of the repository (or to withhold agency action until such barriers disappear).

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[123] *NRDC v. NRC*, 582 F.2d at 175.

[124] *Id.* (emphasis added). Given congressional responsibility, the Court found that "any doubt over the intent of Congress" in approving "NRC's regulatory scheme and practice" authorizing interim storage of spent fuel pending completion of a HLW repository was "laid to rest by enactment of the Energy Reorganization Act of 1974." *Id.* at 174.

B. Institutional obstacles in the political process for funding Yucca Mountain do not preclude NRC confidence that a suitable repository will be designated and agreed upon.

Despite DOE's withdrawal of the application for Yucca Mountain, the legislative history of commercial nuclear power and recent actions by Congress and the President support NRC's latest Waste Confidence decision that the agency continues to have reasonable assurance that institutional barriers to siting the repository will be addressed and resolved.[125]

First, Congress has never wavered on its fundamental commitment under the AEA that the peaceful use of atomic energy be harnessed and exploited through construction and operation of the nation's nuclear power reactors.[126] NRC's job is to see to it that atomic energy is harnessed safely.

Second, when Congress passed the NWPA in 1983, it expressly acknowledged that "the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such

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[125] As regards schedule delay in licensing a repository, NRC assumed in its earlier Waste Confidence rulemaking as well as the current rulemaking that the Yucca Mountain repository "would not be built." 75 FR at 81040, 81063, 81067 (J.A. __).

[126] In enacting the AEA, Congress declared that "development, use, and control of atomic energy" shall be directed to make the "maximum contribution to the general welfare." 42 U.S.C. § 2011(a). Toward that end, Congress entrusted the Atomic Energy Commission, later the NRC, with broad responsibilities for the licensing of nuclear materials and utilization facilities, including power reactors. 42 U.S.C. §§ 2132 and 2133.

spent nuclear fuel as may be disposed of in order to protect the public health and safety and the environment."[127] As NRC aptly concluded in its Waste Confidence decision: "The NWPA still mandates by law a national repository program, and . . . [f]ederal responsibility for siting and building a repository remains controlling national policy."[128] This Court quite recently considered the NWPA in *Aiken County*, and specifically recognized the "congressionally-mandated" NWPA provisions binding the federal government.[129]

Third, although DOE has sought to withdraw the Yucca Mountain application,[130] President Obama directed the Secretary of Energy to create a "Blue Ribbon Commission on America's Nuclear Future" to evaluate "all alternatives for the storage, processing, and disposal of civilian and defense

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[127] 42 U.S.C. § 10131(a)(4). The Act likewise served "to establish the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel." 42 U.S.C. § 10131(b)(2).

[128] 75 FR at 81049 (J.A.__).

[129] 645 F.3d at 431-32. NWPA's Nuclear Waste Fund has a balance of $25 billion as of July 2010, ample capacity "to ensure timely development of a repository consistent with Congressional funding direction." 75 Fed. Reg. at 81066 (J.A.__).

[130] Even while moving to withdraw its Yucca Mountain application (*see* 75 FR at 81039-40), DOE reaffirmed "its obligation to take possession and dispose of the nation's spent nuclear fuel and high-level nuclear waste." *Aiken County,* 645 F.3d at 432.

used nuclear fuel and nuclear waste."[131] In this directive, President Obama stated that "expanding our Nation's capacity to generate clean nuclear energy is crucial to our ability to combat climate change, to enhance energy security, and increase economic prosperity."[132] He also observed, as NRC reiterated in the Waste Confidence decision, that "over the past two decades scientists and engineers in our country and abroad have learned a great deal about effective strategies for managing nuclear material." [133] The President added: "My Administration is committed to using this advanced knowledge *to meet the Government's obligation to dispose of our Nation's used nuclear material.*"[134]

This legislative framework and the President's statements in establishing the Blue Ribbon Commission amply support NRC's predictive finding that a political consensus will be eventually reached to designate a

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[131] *See* "Presidential Memorandum – Blue Ribbon Commission on America's Nuclear Future," 75 Fed. Reg. 5485 (Jan. 29, 2010). NRC considered this and other recent developments in its rulemaking (*see* 75 FR at 81039; J.A.__), which it considered "pertinent" to its conclusions regarding availability of a HLW repository. *Id.* at 81040 (J.A.__).

[132] 75 FR at 5485.

[133] *Id.*

[134] *Id.* (emphasis added).

repository site, such that HLW permanent disposal capacity will be available when necessary. As NRC observed in the rulemaking, the NWPA "still mandates a national repository program," and "disposal in a repository remains the controlling policy."[135]

For these reasons, the absence of a political consensus on Yucca Mountain has not "diminished the Commission's confidence that a repository is technologically feasible," but, as the Commission remarked, has only "diminished its confidence in the target date approach."[136] Because, as this Court stated in *Minnesota,* "the ultimate determination [of permanent disposal availability] can never rise above a prediction,"[137] predicting that a repository will be available "when necessary" suffices as well as a targeted time frame. NRDC cites no legal authority to the contrary.

C. NRC's predictive finding that a repository will be available when needed embodies its technical judgment and is entitled to judicial deference.

NRDC asserts that, after 50 years of searching for a repository, "the United States is no further along in finding [a] permanent disposal solution for nuclear waste than it was in the 1970s" (NRDC Br. 9). But the

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[135] 75 FR at 81063 (J.A.__).

[136] *Id.* at 81064 (J.A.__).

[137] 602 F.2d at 417.

legislative framework and recent pronouncements of the President as well as the institutional knowledge and experience of NRC and other agencies refute this assertion. As NRC explained, its Waste Confidence decision is not only consistent with federal law, but also amply supported by "decades of scientific studies"[138] that have made use of a geologic repository the primary choice for HLW disposal.

The "ongoing activities of the Blue-Ribbon Commission" and the "Federal Government's statutory obligation to develop a HLW repository"[139] – coupled with the technical capability to construct a repository within 25-35 years of site selection[140] – have given NRC confidence that a repository will be available "when necessary," that is, "well before any safety or environmental concerns arise from the extended storage of spent nuclear fuel and high-level waste."[141]

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[138] 75 FR at 81049, 81063 (J.A.__).

[139] *Id.* at 81063 (J.A.__).

[140] NRC indicated that, while certain political parameters are hard to predict, the process of licensing a different facility could be shortened by knowledge and experience gained from the Yucca Mountain repository program, such as performance assessment modeling, operational and manufacturing techniques, and development of regulatory standards. *Id.* at 81064 (J.A.__). NRDC tries to disparage this technical knowledge (NRDC Br. 26-27), but confuses schedule with technology.

[141] 75 FR at 81063 (J.A.__).

NRC observed that this level of confidence was also supported by experience in other countries. Twenty-four countries are considering deep geologic repositories for spent or reprocessed nuclear fuel disposal, ten with target dates, but "little urgency" exists "because of the perceived high degree of safety provided by interim storage" at reactors or independent storage facilities.[142] NRC evaluated several foreign repository programs to support its conclusion that political bottlenecks can and will be resolved, despite heated, lengthy controversy.[143]

Years ago, in *Baltimore Gas & Electric*, the Supreme Court considered NRC's predictive judgment at that time that "the Nation *is likely to develop* methods to store the [high-level] wastes with no leakage to the environment." [144] The Court upheld that prediction as a valid exercise of agency expertise, warranting strong judicial deference.[145] This Court has similarly acknowledged "the substantial deference we owe [an agency's]

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[142] *Id.*

[143] *Id.* at 81065-66 (J.A.__).

[144] 462 U.S. at 98.

[145] *Id.* at 103.

42 U.S.C. § 4332. Cooperation of agencies; reports; availability of information; recommendations; international and national coordination of efforts

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall--

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

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

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal,

predictive judgments." *Nuvio Corp. v. FCC,* 473 F.3d 302, 306 (D.C. Cir.2006). [146]

III. The Waste Confidence decision does not require an EIS because an EA suffices where no significant environmental impacts will occur.

NRDC argues that an EIS is required for Waste Confidence Finding 2, which predicts that a repository will be available "when necessary," for two reasons.

First, NRDC asserts that Finding 2 should be deemed "a generic licensing decision" because, absent reasonable assurance that a HLW repository will be available when needed, "NRC would not issue reactor licenses," as NRC has stated to the courts and in rulemaking (NRDC Br. 15). Thus, according to NRDC, NRC must prepare an EIS that addresses not only the environmental impacts of operating the repository, but also "the effects of the societal and political opposition to repositories on the environmental impacts of SNF disposal" (NRDC Br. 16).

Second, NRDC points out that NRC routinely prepares an EIS to support reactor licensing decisions, and that the environmental impacts of the uranium fuel cycle, including spent fuel disposal, are generically

[146] *See also Cablevision Systems Corp. v. FCC*, 2011 WL 2277217, *18 (D.C. Cir. 2011); *BNSF Ry. Co. v. Surface Transp. Bd.*, 526 F.3d 770, 781 (D.C. Cir. 2008).

codified as Table S-3 in 10 C.F.R. § 51.51(b) (NRDC Br. 5).[147] From this, NRDC appears to argue that NRC has implicitly utilized Table S-3 as an environmental analysis to support Finding 2 (NRDC Br. 13-14). NRDC then asserts that because – in its view – Table S-3 is fatally flawed, and no other environmental analysis exists to support Finding 2, a new, separate EIS must be prepared (NRDC Br. 15-16). As explained below, each of these arguments is in error.

A. The analytical conclusion in NRC's Finding 2 is not a "major Federal action significantly affecting the quality of the human environment" requiring an EIS.

All agree that, to trigger NEPA's requirement for an EIS, an agency must propose a "major Federal action[] significantly affecting the quality of the human environment" (NRDC Br. 4, 19).[148] Certainly, the licensing of a nuclear power reactor constitutes such a "major federal action." But every reactor licensed by NRC has had its own EIS, including a complete analysis

[147] *See* 10 C.F.R. § 51.51. NRDC erroneously fails to distinguish between licensed and post-licensed spent fuel storage (NRDC Br. 5). Licensed (operational) storage of spent fuel is considered in the EIS prepared for the facility's operating license and, for license renewal, considered generically in 10 C.F.R. Part 51, App. B (Table B-1). As discussed, post-licensed spent fuel storage is generically evaluated in10 C.F.R. § 51.23(a).

[148] 42 U.S.C. § 4332(2)(C).

of "uranium fuel cycle" environmental impacts, which are described in Table S-3.[149]

Contrary to NRDC's claim that the Waste Confidence decision is a "generic licensing decision" (NRDC Br. 15), that decision does *not* authorize licensing or relicensing of a reactor, or licensing an independent spent fuel storage installation, or any other facility. NRC emphasized this point in its Waste Confidence decision:

> The revised generic determination is *not* a generic licensing decision—it generically deals with one aspect of licensing decisions *that have yet to be made.* It does *not* authorize the operation of a NPP [nuclear power plant], the renewal of a license of a NPP, or the production of spent fuel by a NPP. NPPs and renewals of operating licenses are licensed in individual licensing proceedings. The NRC must prepare a site-specific EIS in connection with any type of application to construct and operate a NPP.[150]

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[149] Table S-3 is "a numerical compilation of the estimated resources used and effluents released by fuel cycle activities supporting a year's operation of a typical light-water reactor" and is incorporated by each reactor license applicant in its Environmental Report and by NRC in its corresponding EIS. *Baltimore Gas & Elec.,* 462 U.S. at 91, 100 n.12. Simply put, Table S-3 quantifies the environmental impacts of using uranium as fuel in nuclear power plants from mining uranium ore to disposal of spent fuel.

[150] *Id.* at 81041 (J.A.__)(emphasis added). Likewise, as to plant license renewals, a supplemental EIS must be prepared for any site-specific issues not discussed in the generic EIS license renewal or for any "new and significant information" regarding issues that are discussed in the GEIS. *Id.*

NRC's regulations require that the DOE EIS accompany its license application for a permanent repository.[151] NRC will review the DOE EIS to determine whether it is practicable to adopt the DOE EIS or if NRC supplementation is required.[152] In NRC's *Yucca Mountain* proceeding, DOE's EIS has been challenged in approximately 70 of the nearly 300 admitted contentions.[153] NRC hearing procedures under 10 C.F.R. Part 2, Subpart J, and 10 C.F.R. § 51.109 will afford NRDC and others a full opportunity to challenge the EIS prepared for whatever repository DOE proposes.

The Waste Confidence decision, on the other hand, responds to this Court's remand in *Minnesota* and fulfills NRC's commitment not to license nuclear facilities in the absence of reasonable assurance that disposal of HLW will be available when needed and that spent fuel can be safely stored in the interim.[154] The Waste Confidence decision also constitutes the EA

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[151] *See* 10 C.F.R. §§ 63.21(a).

[152] *See* 42 U.S.C. §10134(f)(4); 10 C.F.R. § 51.109.

[153] *See United States Dep't of Energy* (High-Level Waste Repository), LBP-09-6, 69 NRC 367, *aff'd in part,* CLI-09-14, 69 NRC 580 (2009).

[154] Indeed, even NRDC accepted this formulation: "all that is required is a reasonable probability that a solution will be available when needed." *Minnesota,* 602 F.2d at 416. In any event, NRDC is off target in urging NRC to "quantify . . . the probability" that a suitable HLW repository can be

supporting the revision of Section 51.23(a).[155] Inasmuch as NRC determined that there are no significant environmental impacts, an EA suffices.[156]

In contending that NRC must now consider the environmental impacts of permanent HLW disposal as part of Waste Confidence (NRDC Br. 15), rather than as part of NRC's review of a specific repository application, NRDC ignores the Supreme Court's admonition in *Baltimore Gas & Electric* that "Congress did not enact NEPA . . . so that an agency would contemplate the environmental impact of an action *as an abstract exercise*. Rather, Congress intended that the 'hard look' be incorporated as part of the agency's process of deciding *whether to pursue a particular federal action*."[157] Here, Table S-3 already considers uranium fuel cycle impacts of power reactor operation when NRC licenses each facility. Impacts attributable to construction and operation of the repository itself will be

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located and licensed (NRDC Br. 23). That is precisely the purpose of Finding 2, a safety finding, though the safety standard is "reasonable assurance." *See* 10 C.F.R. § 50.57(a)(3); *Minnesota,* 602 F.2d at 415 n.2, 418.

[155] 75 FR at 81033, 81034 (J.A.__).

[156] *See* note 112, *supra.*

[157] *Baltimore Gas & Elec.,* 462 U.S. at 100 (emphasis added).

evaluated by DOE in its EIS and reviewed by NRC, as discussed. An NRC EIS on a hypothetical site, however, would be a useless "abstract exercise."

NRDC cleverly segues from the statutory prerequisite for an EIS – major federal action significantly affecting the human environment – to an entirely different formulation: that an EIS is required for an agency's analytical conclusion that serves as "a predicate to and part of" or a "pre-condition" to reactor licensing (NRDC Br. 20). Yet, this is not what NEPA states and NRDC cites but one precedent to support its novel interpretation. NRDC relies on *Citizens Awareness Network, Inc. v. NRC,* 59 F.3d 284 (1st Cir. 1995), but that case involved physical decommissioning of a previously operating plant without NEPA review, not review of a hypothetical facility.

In any event, NRDC misses the point. Arguing that Waste Confidence findings serve as predicate for "reactor licensing decisions" (NRDC Br. 21), NRDC overlooks Table S-3, which in reactor licensing *does* consider environmental effects of the uranium fuel cycle,[158] quite apart from the Waste Confidence decision. Moreover, in supplying the requisite safety findings for licensing under the AEA and the *Minnesota* remand, the Waste Confidence findings are no more a "predicate to" or "a part of" licensing –

[158] In Part III.B below, we discuss how NRC's Table S-3 considers these impacts.

and has no more "binding 'substantive' effects" (NRDC Br. 21) – than the myriad of other safety findings made by NRC in licensing or relicensing power reactors.[159] It is illogical to posit the Waste Confidence decision as a separate trigger for NEPA, considering the other safety findings NRC must make to license a reactor, none of which is claimed to trigger preparation of an EIS on a finding-by-finding basis.

NRDC also claims that other-than-bedded-salt repositories pose potential non-compliance with standards for permissible levels of radioactive releases from the repository (NRDC Br. 22). That claim again confuses evaluating environmental impacts in licensing a DOE repository with NRC's responsibility under Waste Confidence to find that a repository will be available when needed. As discussed above, NRC does not dispute the need for an EIS to analyze these impacts, but both DOE and NRC will do so only when a specific repository is proposed. For now, NRC need not prejudge compliance with repository release standards "to have confidence in the technical feasibility of disposal in a mined geologic repository."[160]

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[159] *See* 10 C.F.R. §§ 50.57(a)(1)-(6). These findings include numerous sub-findings to determine compliance with a host of engineering and technical criteria, *e.g.*, 10 C.F.R. §§ 50.34-49, 50.55a and 50.150 (these very lengthy, illustrative provisions are omitted from our Addendum). The same is true for combined licenses in10 C.F.R. § 52.97 and renewed licenses in § 54.29.

[160] *See* 75 FR at 81044.

NRDC also quarrels with NRC's finding that repository capacity will be available "when necessary," claiming that NRC has not set a time limit and that extreme delay may blur the lines between impacts for long-term storage and disposal (NRDC Br. 26). Although in prior iterations of Waste Confidence NRC has predicted repository availability in terms of years, nothing in the AEA or NEPA requires a schedule. Indeed, NRC first used the "when necessary" formulation in denying NRDC's 1977 rulemaking petition, a phrase the Second Circuit invoked when affirming the denial.[161] NRDC's unproductive "what if" speculation beyond the years NRC has actually analyzed in its rulemaking offers no basis for overturning NRC's findings.[162]

Finally, no merit exists in NRDC's claim that NRC's schedule for revisiting its Waste Confidence findings is impermissibly "attenuated" under the AEA (NRDC Br. 28) or otherwise violates NEPA. NRC has categorically stated, for over 20 years, that it will review its Waste Confidence findings "if significant and pertinent unexpected events occurred

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[161] *See* note 23 and accompanying text, *supra.*

[162] NRDC cites the 100-year reliance on institutional control for land disposal of radioactive waste *other than HLW* (NRDC Br. 26, 28). *See* 10 C.F.R. § 61.1(a)(1). Institutional controls under the HLW disposal program, however, are without time limit. *See* 10 C.F.R. §§ 60.121 and 63.121.

that raise substantial doubt about [their] continuing validity."[163] The current updated decision honors that commitment.

B. NRDC wrongly assumes that the Waste Confidence decision relies upon Table S-3.

NRDC argues that the "only existing environmental analysis of SNF [spent nuclear fuel] impacts on which NRC could conceivably rely for the WCD [Waste Confidence decision]" is Table S-3 in10 C.F.R. § 51.51(b) (NRDC Br. 23). But, here again, NRDC incorrectly assumes that the Waste Confidence decision has or must examine the impacts of a hypothetical disposal facility. As we showed above, the Waste Confidence decision does not assume construction of any specific repository, but simply predicts that sufficient capacity will be available when necessary. Accordingly, no environment analysis of HLW disposal, whether derived from Table S-3 or elsewhere, is required for the Waste Confidence decision.

NRDC's argument is really just a straw man. Table S-3 was adopted in 1979 and, as described by the Supreme Court in *Baltimore Gas & Electric*, "decid[ed] generically that the uncertainty [in whether radioactivity from buried waste might be released to the environment] was insufficient to

[163] 75 FR at 81039.

affect any individual licensing decision."[164] As such, Table S-3 has only been used as a generic input to the EIS in licensing individual reactors.[165] Therefore, NRDC is correct that NRC has not relied upon Table S-3 for its Waste Confidence decision (NRDC Br. 24). Yet, for no apparent reason, NRDC then goes on to belabor alleged deficiencies of Table S-3 to discredit a source NRC has stated to be irrelevant to Waste Confidence.[166]

Table S-3 was *not* created for repository site selection.[167] Indeed, in 1990, NRC explicitly distinguished the Table S-3 rulemaking from its Waste Confidence proceeding. NRC observed that Table S-3 generically addresses the NEPA requirement to assess environmental impacts of uranium fuel cycle activities for the purpose of licensing new reactors. NRC cautioned

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[164] *Baltimore Gas & Elec.*, 462 U.S. at 101. *See* 75 FR at 81043 (J.A.__).

[165] *Baltimore Gas & Elec.*, 462 at 99 n.12.

[166] 75 FR at 81043.

[167] Table S-3's so-called "zero-risk assumption – and, indeed, all of the Table S-3 rule – was made for a limited purpose," which was to bound environmental impacts conservatively, "based on the best available information and analysis." *Baltimore Gas & Elec.*, 462 U.S. at 101-02, *quoting* 44 Fed. Reg. 45362, 45363 (1979). NRC "emphasized that the purpose of the rule was *not* to evaluate or select the most effective long-term waste disposal technology or *develop site selection criteria.*" *Id.* at 102 (emphasis added).

that its Waste Confidence proceeding, by contrast, was *not* intended to make judgments about fuel cycle environmental effects.[168]

NRDC thus errs in claiming that NRC's confidence in a timely geologic repository rests on Table S-3 and its consideration of a possible bedded-salt repository site with zero releases (NRDC Br. 11, 13, 24). Rather, as regards site selection, NRC has premised its Waste Confidence prediction on DOE's expansive site exploration, which was "providing information on site characteristics at a sufficiently large number and variety of sites and geologic media to support the expectation that one or more technically acceptable sites will be identified."[169] Indeed, even Table S-3 itself does not depend on assuming a salt-bedded repository. Rather, the 1979 Table S-3 rulemaking recited the expectation that "a suitable bedded-salt repository site *or its equivalent* will be found."[170]

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[168] *See* 75 FR at 81044 (J.A.__).

[169] 75 FR at 81043 (J.A.__), *quoting* 49 Fed. Reg. 34662, 34668 (Aug. 31, 1984); *see also id.* at 75 FR at 81049 (J.A.__)(Waste Confidence findings "are not tied to any particular site").

[170] *Id.* at 81043 (J.A.__), *citing* 44 FR at 45368 (emphasis added). If NRDC believes that Table S-3 values or assumptions are invalid, it may petition for a rulemaking change. *See* 10 C.F.R. § 2.802; New England Coalition on Nuclear Pollution; Denial of Petition for Rulemaking, 73 Fed. Reg. 14946 (March 20, 2008). It is too late, however, to challenge Table S-3, either directly or collaterally in this proceeding (*see* NRDC Br. 24 n.5). *See, e.g., NRDC, Inc. v. EPA*, 638 F.3d 1183, 1190 (9th Cir. 2011).

NRDC misconstrues NRC's statement in 1990 that it would be unnecessary for NRC to review Table S-3 unless, as a result future Waste Confidence updates, "[it] finds that it no longer has confidence in the technical feasibility of disposal in a mined geologic repository."[171] In offering this explanation, NRC has not conflated its duties under the AEA with those under NEPA (NRDC Br. 25). Rather, NRC has simply recognized that if it were to find that *no* geologic repository is technically feasible, NRC would have to revisit Table S-3 because Table S-3 assumes that *some* repository will be available. This has not happened, however, because NRC "continues to have confidence in the technical feasibility of disposal in a mined geologic repository"[172] – a science-based finding that NRDC does not seriously question.

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[171] 75 FR at 81043-44, *quoting* 55 FR at 38491.

[172] 75 FR at 81044 (J.A.__)(directing reader to NRC Response to Comment 8 and Discussion of Finding 1). Waste Confidence aside, NRC will nevertheless "continue to evaluate, as part of its annual review of potential rulemaking activity, the need to amend Table S-3." 73 FR at 14949.

CERTIFICATIONS

Pursuant to the Federal Rules of Appellate Procedure and the Local Rules of this Court, the undersigned counsel certifies:

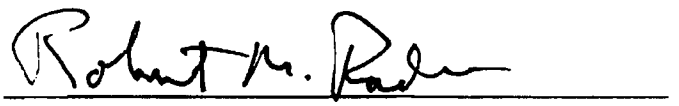
1. I am a member in good standing of the bar of this Court.

2. The foregoing brief of Federal Respondents complies with Fed. R. App. P. 32(a)(7)(B) because this Brief contains 13,961 words, excluding parts exempted by Fed. R. App. P. 32(a)(7)(B)(iii), according to the Microsoft Office Word 2003 software program with which the Brief was prepared.

3. The foregoing Brief complies with Fed. R. App. P 32(a)(5) and Fed. R. App. P. 32(a)(6) because it was prepared in proportionally spaced typeface in 14 point Times Roman font using Microsoft Office Word 2003.

4. The text of the electronically filed brief and hard copies served upon this Court and counsel are the same, as required by Local Rule 31.1.

5. The foregoing Brief was scanned for virus by Symantec Anti-Virus 10.1.6.6010, and no viruses were detected.



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CONCLUSION

For the foregoing reasons, the petitions for review should be denied.

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I hereby certify that I have on this 14th day of November 2011 served, by electronic transmission through the Electronic Filing System, and by U.S. Mail, First-Class, postage prepaid, two copies of Brief for Respondents upon the following:

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ADDENDUM

STATUTES CITED

5 U.S.C. § 706. Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall--

(1) compel agency action unlawfully withheld or unreasonably delayed; and

(2) hold unlawful and set aside agency action, findings, and conclusions found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;

(D) without observance of procedure required by law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute; or

(F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

42 U.S.C. § 2011. Congressional declaration of policy

Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that--

(a) the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and

(b) the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

42 U.S.C. § 2132. Utilization and production facilities for industrial or commercial purposes

(a) Issuance of licenses
Except as provided in subsections (b) and (c) of this section, or otherwise specifically authorized by law, any license hereafter issued for a utilization or production facility for industrial or commercial purposes shall be issued pursuant to section 2133 of this title.

(b) Facilities constructed or operated under section 2134(b)
Any license hereafter issued for a utilization or production facility for industrial or commercial purposes, the construction or operation of which was licensed pursuant to section 2134(b) of this title prior to enactment into law of this subsection, shall be issued under section 2134(b) of this title.

(c) Cooperative Power Reactor Demonstration facilities
Any license for a utilization or production facility for industrial or commercial purposes constructed or operated under an arrangement with the Commission entered into under the Cooperative Power Reactor Demonstration Program shall, except as otherwise specifically required by applicable law, be issued under section 2134(b) of this title.

42 U.S.C. § 2133. Commercial licenses

(a) Conditions

The Commission is authorized to issue licenses to persons applying therefor to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 2153 of this title, utilization or production facilities for industrial or commercial purposes. Such licenses shall be issued in accordance with the provisions of subchapter XV of this division and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this chapter.

(b) Nonexclusive basis
The Commission shall issue such licenses on a nonexclusive basis to persons applying therefor (1) whose proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized; (2) who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the Commission may by rule establish; and (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect the health and safety of the public. All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.

(c) License period
Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years from the authorization to commence operations, and may be renewed upon the expiration of such period.

(d) Limitations
No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 2153 of this title, or except under the provisions of section 2139 of this title. No license may be issued to an alien or any any [FN1] corporation or other entity if the Commission knows or has reason to believe it is

owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

42 U.S.C. § 10131. Findings and purposes

(a) The Congress finds that--

(1) radioactive waste creates potential risks and requires safe and environmentally acceptable methods of disposal;

(2) a national problem has been created by the accumulation of (A) spent nuclear fuel from nuclear reactors; and (B) radioactive waste from (i) reprocessing of spent nuclear fuel; (ii) activities related to medical research, diagnosis, and treatment; and (iii) other sources;

(3) Federal efforts during the past 30 years to devise a permanent solution to the problems of civilian radioactive waste disposal have not been adequate;

(4) while the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such spent nuclear fuel as may be disposed of in order to protect the public health and safety and the environment, the costs of such disposal should be the responsibility of the generators and owners of such waste and spent fuel;

(5) the generators and owners of high-level radioactive waste and spent nuclear fuel have the primary responsibility to provide for, and the responsibility to pay the costs of, the interim storage of such waste and spent fuel until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this chapter;

(6) State and public participation in the planning and development of repositories is essential in order to promote public confidence in the safety of disposal of such waste and spent fuel; and

(7) high-level radioactive waste and spent nuclear fuel have become major subjects of public concern, and appropriate precautions must be taken to ensure that such waste and spent fuel do not adversely affect the public health and safety and the environment for this or future generations.

(b) The purposes of this part are--

(1) to establish a schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public and the environment will be

adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository;

(2) to establish the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel;

(3) to define the relationship between the Federal Government and the State governments with respect to the disposal of such waste and spent fuel; and

(4) to establish a Nuclear Waste Fund, composed of payments made by the generators and owners of such waste and spent fuel, that will ensure that the costs of carrying out activities relating to the disposal of such waste and spent fuel will be borne by the persons responsible for generating such waste and spent fuel.

42 U.S.C. § 10134. Site approval and construction authorization

(a) Hearings and Presidential recommendation
(1) The Secretary shall hold public hearings in the vicinity of the Yucca Mountain site, for the purposes of informing the residents of the area of such consideration and receiving their comments regarding the possible recommendation of such site. If, upon completion of such hearings and completion of site characterization activities at the Yucca Mountain site, under section 10133 of this title, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State of Nevada, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 10133 of this title and this section, including the information described in subparagraph (A) through subparagraph (G). Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

(A) a description of the proposed repository, including preliminary engineering specifications for the facility;

(B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;

(C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;

(D) a final environmental impact statement prepared for the Yucca Mountain site pursuant to subsection (f) of this section and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that the Secretary shall not be required in any such environmental impact statement to consider the need for a repository, the alternatives to geological disposal, or alternative sites to the Yucca Mountain site;

(E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository;

(F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

(G) such other information as the Secretary considers appropriate; and

(H) any impact report submitted under section 10136(c)(2)(B) of this title by the State of Nevada.

(2)(A) If, after recommendation by the Secretary, the President considers the Yucca Mountain site qualified for application for a construction authorization for a repository, the President shall submit a recommendation of such site to Congress.

(B) The President shall submit with such recommendation a copy of the statement for such site prepared by the Secretary under paragraph (1).

(3)(A) The President may not recommend the approval of the Yucca Mountain site unless the Secretary has recommended to the President under paragraph (1) approval of such site and has submitted to the President a statement for such site as required under such paragraph.

(B) No recommendation of a site by the President under this subsection shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to [FN1] require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act [42 U.S.C.A. § 4332(2)(E) or (F)].

. . . .

(f) Environmental impact statement
(1) Any recommendation made by the Secretary under this section shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). A final environmental impact statement prepared by the

Secretary under such Act shall accompany any recommendation to the President to approve a site for a repository.

(2) With respect to the requirements imposed by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), compliance with the procedures and requirements of this chapter shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to the isolation of high-level radioactive waste and spent nuclear fuel in a repository.

(3) For purposes of complying with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and this section, the Secretary need not consider alternate sites to the Yucca Mountain site for the repository to be developed under this part.

(4) Any environmental impact statement prepared in connection with a repository proposed to be constructed by the Secretary under this part shall, to the extent practicable, be adopted by the Commission in connection with the issuance by the Commission of a construction authorization and license for such repository. To the extent such statement is adopted by the Commission, such adoption shall be deemed to also satisfy the responsibilities of the Commission under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and no further consideration shall be required, except that nothing in this subsection shall affect any independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

(5) Nothing in this chapter shall be construed to amend or otherwise detract from the licensing requirements of the Nuclear Regulatory Commission established in title II of the Energy Reorganization Act of 1974 (42 U.S.C. 5841 et seq.).

(6) In any such statement prepared with respect to the repository to be constructed under this part, the Nuclear Regulatory Commission need not consider the need for a repository, the time of initial availability of a repository, alternate sites to the Yucca Mountain site, or nongeologic alternatives to such site.

42 U.S.C. § 10135. Review of repository site selection

. . . .

(b) State or Indian tribe petitions
The designation of a site as suitable for application for a construction authorization for a repository shall be effective at the end of the 60-day period beginning on the date that the President recommends such site to the Congress under section 10134 of this title, unless the Governor and legislature of the State in which such site is located, or the governing body of an Indian tribe on whose reservation such site is located, as the case may be, has submitted to the Congress a notice of disapproval under section 10136 or 10138 of this title. If any such notice of disapproval has been submitted, the designation of such site shall not be effective except as provided under subsection (c) of this section.

. . . .

42 U.S.C. § 10136. Participation of States

(a) Notification of States and affected tribes
The Secretary shall identify the States with one or more potentially acceptable sites for a repository within 90 days after January 7, 1983. Within 90 days of such identification, the Secretary shall notify the Governor, the State legislature, and the tribal council of any affected Indian tribe in any State of the potentially acceptable sites within such State. For the purposes of this subchapter, the term "potentially acceptable site" means any site at which, after geologic studies and field mapping but before detailed geologic data gathering, the Department undertakes preliminary drilling and geophysical testing for the definition of site location.

(b) State participation in repository siting decisions
(1) Unless otherwise provided by State law, the Governor or legislature of each State shall have authority to submit a notice of disapproval to the Congress under paragraph (2). In any case in which State law provides for submission of any such notice of disapproval by any other person or entity, any reference in this part to the Governor or legislature of such State shall be considered to refer instead to such other person or entity.

(2) Upon the submission by the President to the Congress of a recommendation of a site for a repository, the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval. Such Governor or legislature may submit such a notice of disapproval to the Congress not later than the 60 days after the date that the President recommends such site to the Congress under section 10134 of this title. A notice of disapproval shall be considered to be submitted to the Congress on the date of the transmittal of such notice of disapproval to the Speaker of the House and the President pro tempore of the Senate. Such notice of disapproval shall be accompanied by a statement of reasons explaining why such Governor or legislature disapproved the recommended repository site involved.

(3) The authority of the Governor or legislature of each State under this subsection shall not be applicable with respect to any site located on a reservation.

State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of Title 5, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this chapter; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction. [FN1]

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

[FN1] So in original. The period probably should be a semicolon.

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by subchapter II of this chapter.

42 U.S.C.A. § 10101. Definitions

For purposes of this chapter:

. . . .

(12) The term "high-level radioactive waste" means--

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

. . . .

(23) The term "spent nuclear fuel" means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

42 U.S.C.A. § 10134. Site approval and construction authorization

(a) Hearings and Presidential recommendation
(1) The Secretary shall hold public hearings in the vicinity of the Yucca Mountain site, for the purposes of informing the residents of the area of such consideration and receiving their comments regarding the possible recommendation of such site. If, upon completion of such hearings and completion of site characterization activities at the Yucca Mountain site, under section 10133 of this title, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State of Nevada, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 10133 of this title and this section, including the information described in subparagraph (A) through subparagraph (G). Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

(A) a description of the proposed repository, including preliminary engineering specifications for the facility;

(B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;

(C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;

(D) a final environmental impact statement prepared for the Yucca Mountain site pursuant to subsection (f) of this section and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that the Secretary shall not be required in any such environmental impact statement to consider the need for a repository, the alternatives to geological disposal, or alternative sites to the Yucca Mountain site;

(E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository;

(F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

(G) such other information as the Secretary considers appropriate; and

(H) any impact report submitted under section 10136(c)(2)(B) of this title by the State of Nevada.

(2)(A) If, after recommendation by the Secretary, the President considers the Yucca Mountain site qualified for application for a construction authorization for a repository, the President shall submit a recommendation of such site to Congress.

(B) The President shall submit with such recommendation a copy of the statement for such site prepared by the Secretary under paragraph (1).

(3)(A) The President may not recommend the approval of the Yucca Mountain site unless the Secretary has recommended to the President under paragraph (1) approval of such site and has submitted to the President a statement for such site as required under such paragraph.

(B) No recommendation of a site by the President under this subsection shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to [FN1] require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act [42 U.S.C.A. § 4332(2)(E) or (F)].

(b) Submission of application
If the President recommends to the Congress the Yucca Mountain site under subsection (a) of this section and the site designation is permitted to take effect under section 10135 of this title, the Secretary shall submit to the Commission an application for a construction authorization for a repository at such site not later than 90 days after the date on which the recommendation of the site designation is effective under such section and shall provide to the Governor and legislature of the State of Nevada a copy of such application.

(c) Status report on application
Not later than 1 year after the date on which an application for a construction authorization is submitted under subsection (b) of this section, and annually thereafter until the date on which such authorization is granted, the Commission shall submit a report to the Congress describing the proceedings undertaken through the date of such report with regard to such application, including a description of--

(1) any major unresolved safety issues, and the explanation of the Secretary with respect to design and operation plans for resolving such issues;

(2) any matters of contention regarding such application; and

(3) any Commission actions regarding the granting or denial of such authorization.

(d) Commission action
The Commission shall consider an application for a construction authorization for all or part of a repository in accordance with the laws applicable to such applications, except that the Commission shall issue a final decision approving or disapproving the issuance of a construction authorization not later than the expiration of 3 years after the date of the submission of such application, except that the Commission may extend such deadline by not more than 12 months if, not less than 30 days before such deadline, the Commission complies with the reporting requirements established in subsection (e)(2) of this section. The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to part C of this subchapter, shall be located, or is planned to be located, within 50 miles of the first repository, then the Commission decision approving the first such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository is in operation.

(e) Project decision schedule
(1) The Secretary shall prepare and update, as appropriate, in cooperation with all affected Federal agencies, a project decision schedule that portrays the optimum way to attain the operation of the repository, within the time periods specified in this part. Such schedule shall include a description of objectives and a sequence of deadlines for all Federal agencies required to take action, including an identification of the activities in which a delay in the start, or completion, of such activities will cause a delay in beginning repository operation.

(2) Any Federal agency that determines that it cannot comply with any deadline in the project decision schedule, or fails to so comply, shall submit to the Secretary and to the Congress a written report explaining the reason for its failure or expected failure to meet such deadline, the reason why such agency could not reach an agreement with the Secretary, the estimated time for completion of the activity or activities involved, the associated effect on its other deadlines in the project decision schedule, and any recommendations it may have or actions it intends to take regarding any improvements in its operation or organization, or changes to its statutory directives or authority, so that it will be able to mitigate the delay involved. The Secretary, within 30 days after receiving any such report, shall file with the Congress his response to such report, including the reasons why the Secretary could not amend the project decision schedule to accommodate the Federal agency involved.

(f) Environmental impact statement
(1) Any recommendation made by the Secretary under this section shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). A final environmental impact statement prepared by the Secretary under such Act shall accompany any recommendation to the President to approve a site for a repository.

(2) With respect to the requirements imposed by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), compliance with the procedures and requirements of this chapter shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to the isolation of high-level radioactive waste and spent nuclear fuel in a repository.

(3) For purposes of complying with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and this section, the

Secretary need not consider alternate sites to the Yucca Mountain site for the repository to be developed under this part.

(4) Any environmental impact statement prepared in connection with a repository proposed to be constructed by the Secretary under this part shall, to the extent practicable, be adopted by the Commission in connection with the issuance by the Commission of a construction authorization and license for such repository. To the extent such statement is adopted by the Commission, such adoption shall be deemed to also satisfy the responsibilities of the Commission under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and no further consideration shall be required, except that nothing in this subsection shall affect any independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

(5) Nothing in this chapter shall be construed to amend or otherwise detract from the licensing requirements of the Nuclear Regulatory Commission established in title II of the Energy Reorganization Act of 1974 (42 U.S.C. 5841 et seq.).

(6) In any such statement prepared with respect to the repository to be constructed under this part, the Nuclear Regulatory Commission need not consider the need for a repository, the time of initial availability of a repository, alternate sites to the Yucca Mountain site, or nongeologic alternatives to such site.

42 U.S.C. § 10172. Selection of Yucca Mountain site

(a) In general
(1) The Secretary shall provide for an orderly phase-out of site specific activities at all candidate sites other than the Yucca Mountain site.

(2) The Secretary shall terminate all site specific activities (other than reclamation activities) at all candidate sites, other than the Yucca Mountain site, within 90 days after December 22, 1987.

(b) Eligibility to enter into benefits agreement
Effective on December 22, 1987, the State of Nevada shall be eligible to enter into a benefits agreement with the Secretary under section 10173 of this title.

42 U.S.C. § 10172a. Siting a second repository

(a) Congressional action required
The Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities.

(b) Report
The Secretary shall report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository.

(c) Termination of granite research
Not later than 6 months after December 22, 1987, the Secretary shall phase out in an orderly manner funding for all research programs in existence on December 22, 1987, designed to evaluate the suitability of crystalline rock as a potential repository host medium.

(d) Additional siting criteria
In the event that the Secretary at any time after December 22, 1987, considers any sites in crystalline rock for characterization or selection as a repository, the Secretary shall consider (as a supplement to the siting guidelines under section 10132 of this title) such potentially disqualifying factors as--

(1) seasonal increases in population;

(2) proximity to public drinking water supplies, including those of metropolitan areas; and

(3) the impact that characterization or siting decisions would have on lands owned or placed in trust by the United States for Indian tribes.

REGULATIONS CITED

10 C.F.R. § 2.335. Consideration of Commission rules and regulations in adjudicatory proceedings.

(a) Except as provided in paragraphs (b), (c), and (d) of this section, no rule or regulation of the Commission, or any provision thereof, concerning the licensing of production and utilization facilities, source material, special nuclear material, or byproduct material, is subject to attack by way of discovery, proof, argument, or other means in any adjudicatory proceeding subject to this part.

(b) A party to an adjudicatory proceeding subject to this part may petition that the application of a specified Commission rule or regulation or any provision thereof, of the type described in paragraph (a) of this section, be waived or an exception made for the particular proceeding. The sole ground for petition of waiver or exception is that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted. The petition must be accompanied by an affidavit that identifies the specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted. The affidavit must state with particularity the special circumstances alleged to justify the waiver or exception requested. Any other party may file a response by counter affidavit or otherwise.

(c) If, on the basis of the petition, affidavit and any response permitted under paragraph (b) of this section, the presiding officer determines that the petitioning party has not made a *prima facie* showing that the application of the specific Commission rule or regulation (or provision thereof) to a particular aspect or aspects of the subject matter of the proceeding would not serve the purposes for which the rule or regulation was adopted and that application of the rule or regulation should be waived or an exception granted, no evidence may be received on that matter and no discovery, cross-examination or argument directed to the matter will be permitted, and the presiding officer may not further consider the matter.

(d) If, on the basis of the petition, affidavit and any response provided for in paragraph (b) of this section, the presiding officer determines that the *prima facie* showing required by paragraph (b) of this section has been made, the presiding

10 C.F.R. § 2.802 Petition for rulemaking.

(a) Any interested person may petition the Commission to issue, amend or rescind any regulation. The petition should be addressed to the Secretary, Attention: Rulemakings and Adjudications Staff, and sent either by mail addressed to the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; by facsimile; by hand delivery to the NRC's offices at 11555 Rockville Pike, Rockville, Maryland; or, where practicable, by electronic submission, for example, via Electronic Information Exchange, e-mail, or CD-ROM. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's Web site at *http://www.nrc.gov/site-help/e-submittals.html*; by e-mail to *MSHD.Resource@nrc.gov*; or by writing the Office of Information Services, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The guidance discusses, among other topics, the formats the NRC can accept, the use of electronic signatures, and the treatment of nonpublic information.
(b) A prospective petitioner may consult with the NRC before filing a petition for rulemaking by writing to the Chief, Rulemaking, Directives, and Editing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. A prospective petitioner also may telephone the Rulemaking, Directives, and Editing Branch on (301) 415-7163, or toll free on (800) 368-5642, or send e-mail to *NRCREP@nrc.gov*.
(1) In any consultation prior to the filing of a petition for rulemaking, the assistance that may be provided by the NRC staff is limited to --
(i) Describing the procedure and process for filing and responding to a petition for rulemaking;
(ii) Clarifying an existing NRC regulation and the basis for the regulation; and
(iii) Assisting the prospective petitioner to clarify a potential petition so that the Commission is able to understand the nature of the issues of concern to the petitioner.
(2) In any consultation prior to the filing of a petition for rulemaking, in providing the assistance permitted in paragraph (b)(1) of this section, the NRC staff will not draft or develop text or alternative approaches to address matters in the prospective petition for rulemaking.
(c) Each petition filed under this section shall:
(1) Set forth a general solution to the problem or the substance or text of any proposed regulation or amendment, or specify the regulation which is to be revoked or amended;

(2) State clearly and concisely the petitioner's grounds for and interest in the action requested;
(3) Include a statement in support of the petition which shall set forth the specific issues involved, the petitioner's views or arguments with respect to those issues, relevant technical, scientific or other data involved which is reasonably available to the petitioner, and such other pertinent information as the petitioner deems necessary to support the action sought. In support of its petition, petitioner should note any specific cases of which petitioner is aware where the current rule is unduly burdensome, deficient, or needs to be strengthened.
(d) The petitioner may request the Commission to suspend all or any part of any licensing proceeding to which the petitioner is a party pending disposition of the petition for rulemaking.
(e) If it is determined that the petition includes the information required by paragraph (c) of this section and is complete, the Director, Division of Administrative Services, Office of Administration, or designee, will assign a docket number to the petition, will cause the petition to be formally docketed, and will make a copy of the docketed petition available at the NRC Web site, *http://www.nrc.gov.* Public comment may be requested by publication of a notice of the docketing of the petition in the Federal Register, or, in appropriate cases, may be invited for the first time upon publication in the Federal Register of a proposed rule developed in response to the petition. Publication will be limited by the requirements of Section 181 of the Atomic Energy Act of 1954, as amended, and may be limited by order of the Commission.
(f) If it is determined by the Executive Director for Operations that the petition does not include the information required by paragraph (c) of this section and is incomplete, the petitioner will be notified of that determination and the respects in which the petition is deficient and will be accorded an opportunity to submit additional data. Ordinarily this determination will be made within 30 days from the date of receipt of the petition by the Office of the Secretary of the Commission. If the petitioner does not submit additional data to correct the deficiency within 90 days from the date of notification to the petitioner that the petition is incomplete, the petition may be returned to the petitioner without prejudice to the right of the petitioner to file a new petition.

10 C.F.R. Part 2, Subpart J--Procedures Applicable to Proceedings for the Issuance of Licenses for the Receipt of High-Level Radioactive Waste at a Geologic Repository

§ 2.1000 Scope of subpart J.

The rules in this subpart, together with the rules in subparts C and G of this part, govern the procedure for an application for authorization to construct a high-level radioactive waste repository at a geologic repository operations area noticed under §§ 2.101(f)(8) or 2.105(a)(5), and for an application for a license to receive and possess high level radioactive waste at a geologic repository operations area. The procedures in this subpart take precedence over those in 10 CFR part 2, subpart C, except for the following provisions: §§ 2.301; 2.303; 2.307; 2.309; 2.312; 2.313; 2.314; 2.315; 2.316; 2.317(a); 2.318; 2.319; 2.320; 2.321; 2.322; 2.323; 2.324; 2.325; 2.326; 2.327; 2.328; 2.330; 2.331; 2.333; 2.335; 2.338; 2.339; 2.342; 2.343; 2.344; 2.345; 2.346; 2.348; and 2.390. The procedures in this subpart take precedence over those in 10 CFR part 2, subpart G, except for the following provisions: §§ 2.701, 2.702; 2.703; 2.708; 2.709; 2.710; 2.711; 2.712.

. . . .

officer shall, before ruling on the petition, certify the matter directly to the Commission (the matter will be certified to the Commission notwithstanding other provisions on certification in this part) for a determination in the matter of whether the application of the Commission rule or regulation or provision thereof to a particular aspect or aspects of the subject matter of the proceeding, in the context of this section, should be waived or an exception made. The Commission may, among other things, on the basis of the petition, affidavits, and any response, determine whether the application of the specified rule or regulation (or provision thereof) should be waived or an exception be made. The Commission may direct further proceedings as it considers appropriate to aid its determination.

(e) Whether or not the procedure in paragraph (b) of this section is available, a party to an initial or renewal licensing proceeding may file a petition for rulemaking under § 2.802.

10 C.F.R. § 50.54 Conditions of licenses.

The following paragraphs with the exception of paragraphs (r) and (gg) of this section are conditions in every nuclear power reactor operating license issued under this part. The following paragraphs with the exception of paragraph (r), (s), and (u) of this section are conditions in every combined license issued under part 52 of this chapter, provided, however, that paragraphs (i), (i–1), (j), (k), (l), (m), (n), (w), (x), (y), and (z) of this section are only applicable after the Commission makes the finding under § 52.103(g) of this chapter.

. . . .

(hh) (1) Each licensee shall develop, implement and maintain procedures that describe how the licensee will address the following areas if the licensee is notified of a potential aircraft threat:

(i) Verification of the authenticity of threat notifications;

(ii) Maintenance of continuous communication with threat notification sources;

(iii) Contacting all onsite personnel and applicable offsite response organizations;

(iv) Onsite actions necessary to enhance the capability of the facility to mitigate the consequences of an aircraft impact;

(v) Measures to reduce visual discrimination of the site relative to its surroundings or individual buildings within the protected area;

(vi) Dispersal of equipment and personnel, as well as rapid entry into site protected areas for essential onsite personnel and offsite responders who are necessary to mitigate the event; and

(vii) Recall of site personnel.

(2) Each licensee shall develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire, to include strategies in the following areas:

(i) Fire fighting;

(ii) Operations to mitigate fuel damage; and

(iii) Actions to minimize radiological release.

(3) This section does not apply to a nuclear power plant for which the certifications required under § 50.82(a) or § 52.110(a)(1) of this chapter have been submitted.

10 C.F.R. § 50.57 Issuance of operating license.[1]

(a) Pursuant to § 50.56, an operating license may be issued by the Commission, up to the full term authorized by § 50.51, upon finding that:

(1) Construction of the facility has been substantially completed, in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(2) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(3) There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter; and

(4) The applicant is technically and financially qualified to engage in the activities authorized by the operating license in accordance with the regulations in this chapter. However, no finding of financial qualification is necessary for an electric utility applicant for an operating license for a utilization facility of the type described in § 50.21(b) or § 50.22.

(5) The applicable provisions of Part 140 of this chapter have been satisfied; and

(6) The issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

(b) Each operating license will include appropriate provisions with respect to any uncompleted items of construction and such limitations or conditions as are required to assure that operation during the period of the completion of such items will not endanger public health and safety.

(c) An applicant may, in a case where a hearing is held in connection with a pending proceeding under this section make a motion in writing, under this paragraph (c), for an operating license authorizing low-power testing (operation at not more than 1 percent of full power for the purpose of testing the facility), and further operations short of full power operation. Action on such a motion by the presiding officer shall be taken with due regard to the rights of the parties to the proceedings, including the right of any party to be heard to the extent that his contentions are relevant to the activity to be authorized. Before taking any action

on such a motion that any party opposes, the presiding officer shall make findings on the matters specified in paragraph (a) of this section as to which there is a controversy, in the form of an initial decision with respect to the contested activity sought to be authorized. The Director of Nuclear Reactor Regulation will make findings on all other matters specified in paragraph (a) of this section. If no party opposes the motion, the presiding officer will issue an order in accordance with § 2.319(p) authorizing the Director of Nuclear Reactor Regulation to make appropriate findings on the matters specified in paragraph (a) of this section and to issue a license for the requested operation.

[1] The Commission may issue a provisional operating license pursuant to the regulations in this part in effect on March 30, 1970, for any facility for which a notice of hearing on an application for a provisional operating license or a notice of proposed issuance of a provisional operating license has been published on or before that date.

10 C.F.R. § 51.20 Criteria for and identification of licensing and regulatory actions requiring environmental impact statements.

(a) Licensing and regulatory actions requiring an environmental impact statement shall meet at least one of the following criteria:

(1) The proposed action is a major Federal action significantly affecting the quality of the human environment.

(2) The proposed action involves a matter which the Commission, in the exercise of its discretion, has determined should be covered by an environmental impact statement.

10 C.F.R. § 51.23 Temporary storage of spent fuel after cessation of reactor operation—generic determination of no significant environmental impact (2009).

(a) The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that sufficient mined geologic repository capacity will be available to dispose of the commercial high-level radioactive waste and spent fuel generated in any reactor when necessary.

(b) Accordingly, as provided in §§ 51.30(b), 51.53, 51.61, 51.80(b), 51.95, and 51.97(a), and within the scope of the generic determination in paragraph (a) of this section, no discussion of any environmental impact of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations (ISFSI) for the period following the term of the reactor operating license or amendment, reactor combined license or amendment, or initial ISFSI license or amendment for which application is made, is required in any environmental report, environmental impact statement, environmental assessment, or other analysis prepared in connection with the issuance or amendment of an operating license for a nuclear power reactor under parts 50 and 54 of this chapter, or issuance or amendment of a combined license for a nuclear power reactor under parts 52 and 54 of this chapter, or the issuance of an initial license for storage of spent fuel at an ISFSI, or any amendment thereto.

(c) This section does not alter any requirements to consider the environmental impacts of spent fuel storage during the term of a reactor operating license or combined license, or a license for an ISFSI in a licensing proceeding.

10 C.F.R. § 51.51 Uranium fuel cycle environmental data—Table S–3

(a) Under § 51.50, every environmental report prepared for the construction permit stage or early site permit stage or combined license stage of a light-water-cooled nuclear power reactor, and submitted on or after September 4, 1979, shall take Table S–3, Table of Uranium Fuel Cycle Environmental Data, as the basis for evaluating the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low-level wastes and high-level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor. Table S–3 shall be included in the environmental report and may be supplemented by a discussion of the environmental significance of the data set forth in the table as weighed in the analysis for the proposed facility.

Table S–3—Table of Uranium Fuel Cycle Environmental Data[1]
[Normalized to model LWR annual fuel requirement [WASH-1248] or reference reactor year [NUREG-0116]]
[See Footnotes at end of this table]

Environmental Considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
Natural Resource Use		
Land (acres)		
Temporarily committed[2]	100	

Undisturbed area	79	
Disturbed area	22	Equivalent to a 110 MWe coal-fired power plant.
Permanently committed	13	
Overburden moved (millions of MT)	2.8	Equivalent to 95 MWe coal-fired power plant.
Water (millions of gallons)		
Discharged to air	160	=2 percent of model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,090	
Discharged to ground	127	
Total	11,377	<4 percent of model 1,000 MWe LWR with once through cooling.
Fossil Fuel:		
Electrical energy (thousands of MW-hour)	323	<5 percent of model 1,000 MWe ouput
Equivalent coal (thousands of MT)	118	Equivalent to the consumption of a 45 MWe coal-fired power plant.
Natural gas (millions of scf)	135	<0.4 percent of model 1,000 MWe energy output.
Effluents-Chemical (MT)		
Gases (including entrainment):[3]		
SO_x	4,400	

NO_x[4]	1,190	Equivalent to emissions from 45 MWe coal-fired plant for a year.
Hydrocarbons	14	
CO	29.6	
Particulates	1,154	
Other gases		
F	.67	Principally from UF_6, production, enrichment, and reprocessing. Concentration within range of state standards—below level that has effects on human health.
HCl	.014	
Liquids:		
SO_4	9.9	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible
NO_3	25.8	
Fluoride	12.9	
CA^{++}	5.4	
Cl^-	8.5	
Na^+	12.1	
NH_3	10.0	

		standards. The constituents that require dilution and the flow of dilution water are: NH_3—600cfs., NO_3—20cfs., Fluoride—70cfs.
Fe	.4	
Tailings Solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies)		
Gases (including entrainment):		
Rn–222		Presently under reconsideration by the Commission.
Ra–226	.02	
Th–230	.02	
Uranium	.034	
Tritium (thousands)	18.1	
C–14	24	
Kr–85(thousands)	400	
Ru–106	.14	Principally from fuel reprocessing plants.
I–129	1.3	
I–131	.83	

Tc–99		Presently under consideration by the Commission
Fission products and transuranics	.203	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included tailings liquor and returned to ground--no effluents; therefore, no effect on the environment.
Ra–226	.0034	From UF_6 production.
Th–230	.0015	
Th–234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Fission and activation products	5.9×10^{6}	
Solids (buried on site):		
Other than high level (shallow)	11,300	9,100 Ci comes from low level reactor wastes and 1,5000 Ci comes from reactor decontamination and decommissioning

		—buried at land burial facilities. 600 Ci comes from mills—included in tailing returned to ground. Approximately 60 Ci comes from conversion and spent fuel storage. No significant effluent to the environment.
TRU and HLW (deep)	1.1×10^7	Buried at Federal Repository
Effluents-- thermal (billions of British thermal units)	4,063	<5 percent of model 1,000 MWe LWR.
Transportation (person-rem):		
Exposure of workers and general public	2.5	
Occupational exposure	22.6	From reprocessing and waste management.

[49 FR 9381, Mar. 12, 1984; 49 FR 10922, Mar. 23, 1984, as amended at 67 FR 77652, Dec. 19, 2002; 72 FR 49512, Aug. 28, 2007]

[1] In some cases where no entry appears it is clear from the background documents that the matter was addressed and that, in effect, the Table, should be read as if a specific zero entry had been made. However there are other areas that are not addressed at all in the Table. Table S–3 does not include health effects from the effluents described in the Table, or estimates of releases of Radon-222 from the uranium fuel cycle or estimates of Technetium-99 released from waste management or reprocessing activities. These issues may be the subject of litigation in the individual licensing proceedings.

Data supporting this table are given in the Environmental Survey of the Uranium Fuel Cycle," WASH–1248, April 1974; the "Environmental Survey of

Reprocessing and Waste Management Portion of the LWR Fuel Cycle," NUREG–0116 (Supp. 1 to WASH–1248); the "Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle," NUREG–0216 (Supp.2 to WASH–1248): and in the record of final rulemaking pertaining to Uranium Fuel Cycle Impacts from Spent Fuel Reprocessing and Radioactive Waste Management, Docket RM–50–3. The contributions from reprocessing, waste management and transportation of wastes are maximized for either of the two fuel cycles (uranium only and fuel recycle). The contribution from transportation excludes transportation of cold fuel to a reactor and of irradiated fuel and radioactive wastes from a reactor which are considered in Table S–4 of § 51.20(g). The contributions from the other steps of the fuel cycle are given in columns A–E of Table S–3A of WASH–1248.

[2] The contributions to temporarily committed land from reprocessing are not prorated over 30 years, since the complete temporary impact accrues regardless of whether the plant services one reactor for one year or 57 reactors for 30 years.

[3] Estimated effluents based upon combustion of equivalent coal for power generation.

[4] 1.2 percent from natural gas use and process.

10 C.F.R. § 51.109. Public hearings in proceedings for issuance of materials license with respect to a geologic repository.

(a)(1) In a proceeding for issuance of a construction authorization for a high-level radioactive waste repository at a geologic repository operations area under parts 60 and 63 of this chapter, and in a proceeding for issuance of a license to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area under parts 60 and 63 of this chapter, the NRC staff shall, upon the publication of the notice of hearing in the Federal Register, present its position on whether it is practicable to adopt, without further supplementation, the environmental impact statement (including any supplement thereto) prepared by the Secretary of Energy. If the position of the staff is that supplementation of the environmental impact statement by NRC is required, it shall file its final supplemental environmental impact statement with the Environmental Protection Agency, furnish that statement to commenting agencies, and make it available to the public, before presenting its position, or as soon thereafter as may be practicable. In discharging its responsibilities under this paragraph, the staff shall be guided by the principles set forth in paragraphs (c) and (d) of this section.

(2) Any other party to the proceeding who contends that it is not practicable to adopt the DOE environmental impact statement, as it may have been supplemented, shall file a contention to that effect within thirty (30) days after the publication of the notice of hearing in the Federal Register. Such contention must be accompanied by one or more affidavits which set forth factual and/or technical bases for the claim that, under the principles set forth in paragraphs (c) and (d) of this section, it is not practicable to adopt the DOE environmental impact statement, as it may have been supplemented. The presiding officer shall resolve disputes concerning adoption of the DOE environmental impact statement by using, to the extent possible, the criteria and procedures that are followed in ruling on motions to reopen under § 2.326 of this chapter.

(b) In any such proceeding, the presiding officer will determine those matters in controversy among the parties within the scope of NEPA and this subpart, specifically including whether, and to what extent, it is practicable to adopt the environmental impact statement prepared by the Secretary of Energy in connection with the issuance of a construction authorization and license for such repository.

(c) The presiding officer will find that it is practicable to adopt any environmental impact statement prepared by the Secretary of Energy in connection with a geologic repository proposed to be constructed under Title I of the Nuclear Waste Policy Act of 1982, as amended, unless:

(1)(i) The action proposed to be taken by the Commission differs from the action proposed in the license application submitted by the Secretary of Energy; and

(ii) The difference may significantly affect the quality of the human environment; or

(2) Significant and substantial new information or new considerations render such environmental impact statement inadequate.

(d) To the extent that the presiding officer determines it to be practicable, in accordance with paragraph (c) of this section, to adopt the environmental impact statement prepared by the Secretary of Energy, such adoption shall be deemed to satisfy all responsibilities of the Commission under NEPA and no further consideration under NEPA or this subpart shall be required.

(e) To the extent that it is not practicable, in accordance with paragraph (c) of this section, to adopt the environmental impact statement prepared by the Secretary of Energy, the presiding officer will:

(1) Determine whether the requirements of section 102(2) (A), (C), and (E) of NEPA and the regulations in this subpart have been met;

(2) Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken;

(3) Determine, after weighing the environmental, economic, technical and other benefits against environmental and other costs, whether the construction authorization or license should be issued, denied, or appropriately conditioned to protect environmental values;

(4) Determine, in an uncontested proceeding, whether the NEPA review conducted by the NRC staff has been adequate; and

(5) Determine, in a contested proceeding, whether in accordance with the regulations in this subpart, the construction authorization or license should be issued as proposed.

(f) In making the determinations described in paragraph (e), the environmental impact statement will be deemed modified to the extent that findings and conclusions differ from those in the final statement prepared by the Secretary of Energy, as it may have been supplemented. The initial decision will be distributed to any persons not otherwise entitled to receive it who responded to the request in the notice of docketing, as described in § 51.26(c). If the Commission or the Atomic Safety and Licensing Appeal Board reaches conclusions different from those of the presiding officer with respect to such matters, the final environmental impact statement will be deemed modified to that extent and the decision will be similarly distributed.

(g) The provisions of this section shall be followed, in place of those set out in § 51.104, in any proceedings for the issuance of a license to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area.

10 C.F.R. Subpart A, Appendix B – Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

The Commission has assessed the environmental impacts associated with granting a renewed operating license for a nuclear power plant to a licensee who holds either an operating license or construction permit as of June 30, 1995. Table B-1 summarizes the Commission's findings on the scope and magnitude of environmental impacts of renewing the operating license for a nuclear power plant as required by section 102(2) of the National Environmental Policy Act of 1969, as amended. Table B-1, subject to an evaluation of those issues identified in Category 2 as requiring further analysis and possible significant new information, represents the analysis of the environmental impacts associated with renewal of any operating license and is to be used in accordance with § 51.95(c). On a 10-year cycle, the Commission intends to review the material in this appendix and update it if necessary. A scoping notice must be published in the *Federal Register* indicating the results of the NRC's review and inviting public comments and proposals for other areas that should be updated.

Table B-1.--Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants[1]

Issue	Category[2]	Findings[3]
Surface Water Quality, Hydrology, and Use (for all plants)		
Impacts of refurbishment on surface water quality	1	SMALL. Impacts are expected to be negligible during refurbishment because best management practices are expected to be employed to control soil erosion and spills.
Impacts of refurbishment on surface water use	1	SMALL. Water use during refurbishment will not increase appreciably or will be reduced during plant outage.

Altered current patterns at intake and discharge structures.	1	SMALL. Altered current patterns have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Altered salinity gradients	1	SMALL. Salinity gradients have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Altered thermal stratification of lakes	1	SMALL. Generally, lake stratification has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.
Temperature effects on sediment transport capacity	1	SMALL. These effects have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Scouring caused by discharged cooling water	1	SMALL. Scouring has not been found to be a problem at most operating nuclear power plants and has caused only localized effects at a few plants. It is not expected to be a problem during the license renewal term.
Eutrophication	1	SMALL. Eutrophication has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.
Discharge of chlorine or other biocides	1	SMALL. Effects are not a concern among regulatory and resource agencies, and are not expected to be a problem during the license renewal term.
Discharge of sanitary wastes and minor chemical spills	1	SMALL. Effects are readily controlled through NPDES permit and periodic modifications, if needed, and are not expected to be a problem during the license renewal term

Discharge of other metals in waste water	1	SMALL. These discharges have not been found to be a problem at operating nuclear power plants with cooling-tower-based heat dissipation systems and have been satisfactorily mitigated at other plants. They are not expected to be a problem during the license renewal term.
Water use conflicts (plants with once-through cooling systems)	1	SMALL. These conflicts have not been found to be a problem at operating nuclear power plants with once-through heat dissipation systems.
Water use conflicts (plants with cooling ponds or cooling towers using make-up water from a small river with low flow)	2	SMALL OR MODERATE. The issue has been a concern at nuclear power plants with cooling ponds and at plants with cooling towers. Impacts on instream and riparian communities near these plants could be of moderate significance in some situations. See § 51.53
Aquatic Ecology (for all plants)		
Refurbishment	1	SMALL. During plant shutdown and refurbishment there will be negligible effects on aquatic biota because of a reduction of entrainment and impingement of organisms or a reduced release of chemicals.
Accumulation of contaminants in sediments or biota	1	SMALL. Accumulation of contaminants has been a concern at a few nuclear power plants but has been satisfactorily mitigated by replacing copper alloy condenser tubes with those of another metal. It is not expected to be a problem during the license renewal term.
Entrainment of phytoplankton and zooplankton	1	SMALL. Entrainment of phytoplankton and zooplankton has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.

Cold shock	1	SMALL. Cold shock has been satisfactorily mitigated at operating nuclear plants with once-through cooling systems, has not endangered fish populations or been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds, and is not expected to be a problem during the license renewal term.
Thermal plume barrier to migrating fish	1	SMALL. Thermal plumes have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Distribution of aquatic organisms	1	SMALL. Thermal discharge may have localized effects but is not expected to affect the larger geographical distribution of aquatic organisms.
Premature emergence of aquatic insects	1	SMALL. Premature emergence has been found to be a localized effect at some operating nuclear power plants but has not been a problem and is not expected to be a problem during the license renewal term.
Gas supersaturation (gas bubble disease)	1	SMALL. Gas supersaturation was a concern at a small number of operating nuclear power plants with once-through cooling systems but has been satisfactorily mitigated. It has not been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds and is not expected to be a problem during the license renewal term.
Low dissolved oxygen in the discharge	1	SMALL. Low dissolved oxygen has been a concern at one nuclear power plant with a once-through cooling system but has been effectively mitigated. It has not been found to be a problem at operating nuclear power plants with cooling towers or

		cooling ponds and is not expected to be a problem during the license renewal term.
Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses	1	SMALL. These types of losses have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Stimulation of nuisance organisms (e.g., shipworms)	1	SMALL. Stimulation of nuisance organisms has been satisfactorily mitigated at the single nuclear power plant with a once-through cooling system where previously it was a problem. It has not been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds and is not expected to be a problem during the license renewal term.
Aquatic Ecology (for plants with once-through and cooling pond heat dissipation systems)		
Entrainment of fish and shellfish in early life stages	2	SMALL, MODERATE, OR LARGE. The impacts of entrainment are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems. Further, ongoing efforts in the vicinity of these plants to restore fish populations may increase the numbers of fish susceptible to intake effects during the license renewal period, such that entrainment studies conducted in support of the original license may no longer be valid. See § 51.53(c)(3)(ii)(B).
Impingement of fish and shellfish	2	SMALL, MODERATE, OR LARGE. The impacts of impingement are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems. See §

		51.53(c)(3)(ii)(B).
Heat shock	2	SMALL, MODERATE, OR LARGE. Because of continuing concerns about heat shock and the possible need to modify thermal discharges in response to changing environmental conditions, the impacts may be of moderate or large significance at some plants. See § 51.53(c)(3)(ii)(B).
Aquatic Ecology (for plants with cooling-tower-based heat dissipation systems)		
Entrainment of fish and shellfish in early life stages	1	SMALL. Entrainment of fish has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.
Impingement of fish and shellfish	1	SMALL. The impingement has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.
Heat shock	1	SMALL. Heat shock has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.
Ground-water Use and Quality		
Impacts of refurbishment on ground-water use and quality	1	SMALL. Extensive dewatering during the original construction on some sites will not be repeated during refurbishment on any sites. Any plant wastes produced during refurbishment will be handled in the same manner as in current operating practices and are not expected to be a problem during the license renewal term.
Ground-water use conflicts	1	SMALL. Plants using less than 100 gpm

(potable and service water; plants that use <100 gpm)		are not expected to cause any ground-water use conflicts.
Ground-water use conflicts (potable and service water, and dewatering; plants that use >100 gpm)	2	SMALL, MODERATE, OR LARGE. Plants that use more than 100 gpm may cause ground-water use conflicts with nearby ground-water users. See § 51.53(c)(3)(ii)(C).
Ground-water use conflicts (plants using cooling towers withdrawing make-up water from a small river)	2	SMALL, MODERATE, OR LARGE. Water use conflicts may result from surface water withdrawals from small water bodies during low flow conditions which may affect aquifer recharge, especially if other ground-water or upstream surface water users come on line before the time of license renewal. See § 51.53(c)(3)(ii)(A).
Ground-water use conflicts (Ranney wells)	2	SMALL, MODERATE, OR LARGE. Ranney wells can result in potential ground-water depression beyond the site boundary. Impacts of large ground-water withdrawal for cooling tower makeup at nuclear power plants using Ranney wells must be evaluated at the time of application for license renewal. See § 51.53(c)(3)(ii)(C).
Ground-water quality degradation (Ranney wells)	1	SMALL. Ground-water quality at river sites may be degraded by induced infiltration of poor-quality river water into an aquifer that supplies large quantities of reactor cooling water. However, the lower quality infiltrating water would not preclude the current uses of ground water and is not expected to be a problem during the license renewal term.
Ground-water quality degradation (saltwater intrusion)	1	SMALL. Nuclear power plants do not contribute significantly to saltwater intrusion) intrusion.

Ground-water quality degradation (cooling ponds in salt marshes)	1	SMALL. Sites with closed-cycle cooling ponds may degrade ground-water quality. Because water in salt marshes is brackish, this is not a concern for plants located in salt marshes.
Ground-water quality degradation (cooling ponds at inland sites)	2	SMALL, MODERATE, OR LARGE. Sites with closed-cycle cooling ponds may degrade ground-water quality. For plants located inland, the quality of the ground water in the vicinity of the ponds must be shown to be adequate to allow continuation of current uses.
Terrestrial Resources		
Refurbishment impacts	2	SMALL, MODERATE, OR LARGE. Refurbishment impacts are insignificant if no loss of important plant and animal habitat occurs. However, it cannot be known whether important plant and animal communities may be affected until the specific proposal is presented with the license renewal application
Cooling tower impacts on crops and ornamental vegetation	1	SMALL. Impacts from salt drift, icing, fogging, or increased humidity associated with cooling tower operation have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Cooling tower impacts on native plants	1	SMALL. Impacts from salt drift, icing, fogging, or increased humidity associated with cooling tower operation have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Bird collisions with cooling towers	1	SMALL. These collisions have not been found to be a problem at operating nuclear

		power plants and are not expected to be a problem during the license renewal term.
Cooling pond impacts on terrestrial resources	1	SMALL. Impacts of cooling ponds on terrestrial ecological resources are considered to be of small significance at all sites.
Power line right-of-way management (cutting and herbicide application)	1	SMALL. The impacts of right-of-way maintenance on wildlife are expected to be of small significance at all sites.
Bird collision with power lines	1	SMALL. Impacts are expected to be of small significance at all sites.
Impacts of electromagnetic fields on flora and fauna (plants, agricultural crops, honeybees, wildlife, livestock)	1	SMALL. No significant impacts of electromagnetic fields on terrestrial flora and fauna have been identified. Such effects are not expected to be a problem during the license renewal term.
Floodplains and wetland on power line right of way		SMALL. Periodic vegetation control is necessary in forested wetlands underneath power lines and can be achieved with minimal damage to the wetland. No significant impact is expected at any nuclear power plant during the license renewal term.
Threatened or Endangered Species (for all plants)		
Threatened or endangered species	2	SMALL, MODERATE, OR LARGE. Generally, plant refurbishment and continued operation are not expected to adversely affect threatened or endangered species. However, consultation with appropriate agencies would be needed at the time of license renewal to determine whether threatened or endangered species are present and whether they would be adversely affected.
Air Quality		
Air quality during	2	SMALL, MODERATE, OR LARGE. Air

refurbishment (nonattainment and maintenance areas)		quality impacts from plant refurbishment associated with license renewal are expected to be small. However, vehicle exhaust emissions could be cause for concern at locations in or near nonattainment or maintenance areas. The significance of the potential impact cannot be determined without considering the compliance status of each site and the numbers of workers expected to be employed during the outage. See § 51.53
Air quality effects of transmission lines	1	SMALL. Production of ozone and oxides of nitrogen is insignificant and does not contribute measurably to ambient levels of these gases.
Land Use		
Onsite land use	1	SMALL. Projected onsite land use changes required during refurbishment and the renewal period would be a small fraction of any nuclear power plant site and would involve land that is controlled by the applicant.
Power line right of way	1	SMALL. Ongoing use of power line right of ways would continue with no change in restrictions. The effects of these restrictions are of small significance.
Human Health		
Radiation exposures to the public during refurbishment	1	SMALL. During refurbishment, the gaseous effluents would result in doses that are similar to those from current operation. Applicable regulatory dose limits to the public are not expected to be exceeded.
Occupational radiation exposures during refurbishment	1	SMALL. Occupational doses from refurbishment are expected to be within the range of annual average collective doses experienced for pressurized-water

		reactors and boiling-water reactors. Occupational mortality risk from all causes including radiation is in the mid-range for industrial settings.
Microbiological organisms (occupational health)	1	SMALL. Occupational health impacts are expected to be controlled by continued application of accepted industrial hygiene practices to minimize worker exposures.
Microbiological organisms (public health) (plants using lakes or canals, or cooling towers or cooling ponds that discharge to a small river)	2	SMALL, MODERATE, OR LARGE. These organisms are not expected to be a problem at most operating plants except possibly at plants using cooling ponds, lakes, or canals that discharge to small rivers. Without site-specific data, it is not possible to predict the effects generically. See § 51.53
Noise	1	SMALL. Noise has not been found to be a problem at operating plants and is not expected to be a problem at any plant during the license renewal term.
Electromagnetic fields, acute effects (electric shock)	2	SMALL, MODERATE, OR LARGE. Electrical shock resulting from direct access to energized conductors or from induced charges in metallic structures have not been found to be a problem at most operating plants and generally are not expected to be a problem during the license renewal term. However, site-specific review is required to determine the significance of the electric shock potential at the site.
Electromagnetic fields, chronic effects[5]	[4]NA	UNCERTAIN. Biological and physical studies of 60 - Hz electromagnetic fields have not found consistent evidence linking harmful effects with field exposures. However, because the state of the science is currently inadequate, no

		generic conclusion on human health impacts is possible.[5]
Radiation exposures to public (license renewal term)	1	SMALL. Radiation doses to the public will continue at current levels associated with normal operations.
Occupational radiation exposures (license renewal term)	1	SMALL. Projected maximum occupational doses during the license renewal term are within the range of doses experienced during normal operations and normal maintenance outages, and would be well below regulatory limits.
Socioeconomics		
Housing impacts	2	SMALL, MODERATE, OR LARGE. Housing impacts are expected to be of small significance at plants located in a medium or high population area and not in an area where growth control measures that limit housing development are in effect. Moderate or large housing impacts of the workforce associated with refurbishment may be associated with plants located in sparsely populated areas or in areas with growth control measures that limit housing development.
Public services: public safety, social services, and tourism and recreation	1	SMALL. Impacts to public safety, social services, and tourism and recreation are expected to be of small significance at all sites.
Public services: public utilities	2	SMALL OR MODERATE. An increased problem with water shortages at some sites may lead to impacts of moderate significance on public water supply availability.
Public services, education (refurbishment)	2	SMALL, MODERATE, OR LARGE. Most sites would experience impacts of small significance but larger impacts are possible depending on site- and project-

		specific factors.
Public services, education (license renewal term)	1	SMALL. Only impacts of small significance are expected.
Offsite land use (refurbishment)	2	SMALL OR MODERATE. Impacts may be of moderate significance at plants in low population areas
Offsite land use (license renewal term)	2	SMALL, MODERATE, OR LARGE. Significant changes in land use may be associated with population and tax revenue changes resulting from license renewal
Public services, Transportation	2	SMALL, MODERATE, OR LARGE. Transportation impacts are generally expected to be of small significance. However, the increase in traffic associated with the additional workers and the local road and traffic control conditions may lead to impacts of moderate or large significance at some sites.
Historic and archaeological resources	2	SMALL, MODERATE, OR LARGE. Generally, plant refurbishment and continued operation are expected to have no more than small adverse impacts on historic and archaeological resources. However, the National Historic Preservation Act requires the Federal agency to consult with the State Historic Preservation Officer to determine whether there are properties present that require protection
Aesthetic impacts (refurbishment)	1	SMALL. No significant impacts are expected during refurbishment.
Aesthetic impacts (license renewal term)	1	SMALL. No significant impacts are expected during the license renewal term.
Aesthetic impacts of transmission lines (license	1	SMALL. No significant impacts are expected during the license renewal term.

renewal term)		
Postulated Accidents		
Design basis accidents	1	SMALL. The NRC staff has concluded that the environmental impacts of design basis accidents are of small significance for all plants.
Severe accidents	2	SMALL. The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.
Uranium Fuel Cycle and Waste Management		
Offsite radiological impacts (individual effects from other than the disposal of spent fuel and high level waste	1	SMALL. Off-site impacts of the uranium fuel cycle have been considered by the Commission in Table S - 3 of this part. Based on information in the GEIS, impacts on individuals from radioactive gaseous and liquid releases including radon-222 and technetium-99 are small.
Offsite radiological impacts (collective effects)	1	The 100 year environmental dose commitment to the U.S. population from the fuel cycle, high level waste and spent fuel disposal excepted, is calculated to be about 14,800 person rem, or 12 cancer fatalities, for each additional 20-year power reactor operating term. Much of this, especially the contribution of radon releases from mines and tailing piles, consists of tiny doses summed over large populations. This same dose calculation can theoretically be extended to include many tiny doses over additional thousands of years as well as doses outside the U. S.

		The result of such a calculation would be thousands of cancer fatalities from the fuel cycle, but this result assumes that even tiny doses have some statistical adverse health effect which will not ever be mitigated (for example no cancer cure in the next thousand years), and that these doses projected over thousands of ears are meaningful. However, these assumptions are questionable. In particular, science cannot rule out the possibility that there will be no cancer fatalities from these tiny doses. For perspective, the doses are very small fractions of regulatory limits, and even smaller fractions of natural background exposure to the same populations. Nevertheless, despite all the uncertainty, some judgement as to the regulatory NEPA implications of these matters should be made and it makes no sense to repeat the same judgement in every case. Even taking the uncertainties into account, the Commission concludes that these impacts are acceptable in that these impacts would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 should be eliminated. Accordingly, while the commission has not assigned a single level of significance for the collective effects of the fuel cycle, this issue is considered Category 1.
Offsite radiological impacts (spent fuel and high level waste disposal)	1	For the high level waste and spent fuel disposal component of the fuel cycle, there are no current regulatory limits for offsite releases of radionuclides for the

		current candidate repository site. However, if we assume that limits are developed along the lines of the 1995 National Academy of Sciences (NAS) report, "Technical Bases for Yucca Mountain Standards," and that in accordance with the Commission's Waste Confidence Decision, 10 CFR 51.23, a repository can and likely will be developed at some site which will comply with such limits, peak doses to virtually all individuals will be 100 millirem per year or less. However, while the Commission has reasonable confidence that these assumptions will prove correct, there is considerable uncertainty since the limits are yet to be developed, no repository application has been completed or reviewed, and uncertainty is inherent in the models used to evaluate possible pathways to the human environment. The NAS report indicated that 100 millirem per year should be considered as a starting point for limits for individual doses, but notes that some measure of consensus exists among national and international bodies that the limits should be a fraction of the 100 millirem per year. The lifetime individual risk from 100 millirem annual dose limit is about 3×10^{-3}. Estimating cumulative doses to populations over thousands of years is more problematic. The likelihood an consequences of events that could seriously compromise the integrity of a deep geologic repository were evaluated by the Department of Energy in the "Final Environmental Impact Statement:

		Management of Commercially Generated Radioactive Waste," October 1980. The evaluation estimated the 70-year whole-body dose commitment to the maximum individual and to the regional population resulting from several modes of breaching a reference repository in the year of closure, after 1,000 years, after 100,000 years and after 100,000,000 years. Subsequently, the NRC and other federal agencies have expended considerable effort to develop models for the design and for the licensing of a high level waste repository, especially for the candidate repository at Yucca Mountain. More meaningful estimates of doses to population may be possible in the future as more is understood about the performance of the proposed Yucca Mountain repository. Such estimates would involve very great uncertainty, especially with respect to cumulative population doses over thousands of years. The standard proposed by the NAS is a limit on maximum individual dose. The relationship of potential new regulatory requirements, based on the NAS report, and cumulative population impacts has not been determined, although the report articulates the view that protection of individuals will adequately protect the population for a repository at Yucca Mountain. However, EPA's generic repository standards in 40 CFR part 191 generally provide an indication of the order of magnitude of cumulative risk to population that could result from the licensing of a Yucca Mountain repository, assuming the ultimate standards will be

		within the range of standards now under consideration. The standards in 40 CFR part 191 protect the population by imposingamount of radioactive material released over 10,000 years. The cumulative release limits are based on EPA's population impact goal of 1,000 premature cancer deaths worldwide for a 100,000 metric tonne (MTHM) repository. Nevertheless, despite all the uncertainty, some judgement as to the regulatory NEPA implications of these matters should be made and it makes no sense to repeat the same judgement in every case. Even taking the uncertainties into account, the Commission concludes that these impacts are acceptable in that these impacts would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR part 54 should be eliminated. Accordingly, while the Commission has not assigned a single level of significance for the impacts pf spent fuel and high level waste disposal, this issue is considered in Category 1.
Non-radiological impacts of the uranium fuel cycle	1	SMALL. The nonradiological impacts of the uranium fuel cycle resulting from the renewal of an operating license for any plant are found to be small.
Low-level waste storage and disposal	1	SMALL. The comprehensive regulatory controls that are in place and the low public doses being achieved at reactors ensure that the radiological impacts to the environment will remain small during the term of a renewed license. The maximum additional on-site land that may be required for low-level waste storage

		during the term of a renewed license and associated impacts will be small. Nonradiological impacts on air and water will be negligible. The radiological and nonradiological environmental impacts of long-term disposal of low-level waste from any individual plant at licensed sites are small. In addition, the Commission concludes that there is reasonable assurance that sufficient low-level waste disposal capacity will be made available when needed for facilities to be decommissioned consistent with NRC decommissioning requirements.
Mixed waste storage and disposal	1	SMALL. The comprehensive regulatory controls and the facilities and procedures that are in place ensure proper handling and storage, as well as negligible doses and exposure to toxic materials for the public and the environment at all plants. License renewal will not increase the small, continuing risk to human health and the environment posed by mixed waste at all plants. The radiological and nonradiological environmental impacts of long-term disposal of mixed waste from any individual plant at licensed sites are small. In addition, the Commission concludes that there is reasonable assurance that sufficient mixed waste disposal capacity will be made available when needed for facilities to be decommissioned consistent with NRC decommissioning requirements.
On-site spent fuel	1	SMALL. The expected increase in the volume of spent fuel from an additional 20 years of operation can be safely accommodated on site with small

		environmental effects through dry or pool storage at all plants if a permanent repository or monitored retrievable storage is not available.
Nonradiological waste	1	SMALL. No changes to generating systems are anticipated for license renewal. Facilities and procedures are in place to ensure continued proper handling and disposal at all plants.
Transportation	1	SMALL. The impacts of transporting spent fuel enriched up to 5 percent uranium-235 with average burnup for the peak rod to current levels approved by NRC up to 62,000 MWd/MTU and the cumulative impacts of transporting high-level waste to a single repository, such as Yucca Mountain, Nevada are found to be consistent with the impact values contained in 10 CFR 51.52(c), Summary Table S–4—Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water- Cooled Nuclear Power Reactor. If fuel enrichment or burnup conditions are not met, the applicant must submit an assessment of the implications for the environmental impact values reported in § 51.52.
Decommissioning		
Radiation doses	1	SMALL. Doses to the public will be well below applicable regulatory standards regardless of which decommissioning method is used. Occupational doses would increase no more than 1 man-rem caused by buildup of long-lived radionuclides during the license renewal term.
Waste management	1	SMALL. Decommissioning at the end of a 20-year license renewal period would

		generate no more solid wastes than at the end of the current license term. No increase in the quantities of Class C or greater than Class C wastes would be expected.
Air quality	1	SMALL. Air quality impacts of decommissioning are expected to be negligible either at the end of the current operating term or at the end of the license renewal term.
Water quality	1	SMALL. The potential for significant water quality impacts from erosion or spills is no greater whether decommissioning occurs after a 20-year license renewal period or after the original 40-year operation period, and measures are readily available to avoid such impacts.
Ecological resources	1	SMALL. Decommissioning after either the initial operating period or after a 20-year license renewal period is not expected to have any direct ecological impacts.
Socioeconomic impacts	1	SMALL. Decommissioning would have some short-term socioeconomic impacts. The impacts would not be increased by delaying decommissioning until the end of a 20-year relicense period, but they might be decreased by population and economic growth.
Environmental Justice		
Environmental justice	[4]NA	NONE. The need for and the content of an analysis of environmental justice will be addressed in plant-specific reviews.[6]

[61 FR 66546, Dec. 18, 1996, as amended at 62 FR 59276, Nov. 3, 1997; 64 FR 48507, Sept. 3, 1999; 66 FR 39278, July 30, 2001]

1. Data supporting this table are contained in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (May 1996) and NUREG-1437, Vol. 1, Addendum 1, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report Section 6.3--'Transportation,' Table 9.1 'Summary of findings on NEPA issues for license renewal of nuclear power plants,' Final Report" (August 1999).

2. The numerical entries in this column are based on the following category definitions:

Category 1: For the issue, the analysis reported in the Generic Environmental Impact Statement has shown:

(1) The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristic;

(2) A single significance level (i.e., small, moderate, or large) has been assigned to the impacts (except for collective off site radiological impacts from the fuel cycle and from high level waste and spent fuel disposal); and

(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.

The generic analysis of the issue may be adopted in each plant-specific review.

Category 2: For the issue, the analysis reported in the Generic Environmental Impact Statement has shown that one or more of the criteria of Category 1 cannot be met, and therefore additional plant-specific review is required.

3. The impact findings in this column are based on the definitions of three significance levels. Unless the significance level is identified as beneficial, the impact is adverse, or in the case of "small," may be negligible. The definitions of significance follow:

SMALL--For the issue, environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are considered small as the term is used in this table.

MODERATE--For the issue, environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE--For the issue, environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For issues where probability is a key consideration (i.e. accident consequences), probability was a factor in determining significance.

4. NA (not applicable). The categorization and impact finding definitions do not apply to these issues.

5. If, in the future, the Commission finds that, contrary to current indications, a consensus has been reached by appropriate Federal health agencies that there are adverse health effects from electromagnetic fields, the commission will require applicants to submit plant-specific reviews of these health effects as part of their license renewal applications. Until such time, applicants for license renewal are not required to submit information on this issue.

6. Environmental Justice was not addressed in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," because guidance for implementing Executive Order 12898 issued on February 11, 1994, was not available prior to completion of NUREG-1437. This issue will be addressed in individual license renewal reviews.

10 C.F.R. § 52.97 Issuance of combined licenses.

(a)(1) After conducting a hearing in accordance with § 52.85 and receiving the report submitted by the ACRS, the Commission may issue a combined license if the Commission finds that:

(i) The applicable standards and requirements of the Act and the Commission's regulations have been met;

(ii) Any required notifications to other agencies or bodies have been duly made;

(iii) There is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of the Act, and the Commission's regulations.

(iv) The applicant is technically and financially qualified to engage in the activities authorized; and

(v) Issuance of the license will not be inimical to the common defense and security or to the health and safety of the public; and

(vi) The findings required by subpart A of part 51 of this chapter have been made.

(2) The Commission may also find, at the time it issues the combined license, that certain acceptance criteria in one or more of the inspections, tests, analyses, and acceptance criteria (ITAAC) in a referenced early site permit or standard design certification have been met. This finding will finally resolve that those acceptance criteria have been met, those acceptance criteria will be deemed to be excluded from the combined license, and findings under § 52.103(g) with respect to those acceptance criteria are unnecessary.

(b) The Commission shall identify within the combined license the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and

will be operated in conformity with the license, the provisions of the Act, and the Commission's rules and regulations.

(c) A combined license shall contain the terms and conditions, including technical specifications, as the Commission deems necessary and appropriate.

10 C.F.R § 54.29 Standards for issuance of a renewed license.

A renewed license may be issued by the Commission up to the full term authorized by § 54.31 if the Commission finds that:

(a) Actions have been identified and have been or will be taken with respect to the matters identified in Paragraphs (a)(1) and (a)(2) of this section, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the plant's CLB in order to comply with this paragraph are in accord with the Act and the Commission's regulations. These matters are:

(1) managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under § 54.21(a)(1); and

(2) time-limited aging analyses that have been identified to require review under § 54.21(c).

(b) Any applicable requirements of Subpart A of 10 CFR Part 51 have been satisfied.

(c) Any matters raised under § 2.335 have been addressed.

10 C.F.R. § 54.31 Issuance of a renewed license.

(a) A renewed license will be of the class for which the operating license or combined license currently in effect was
issued.

(b) A renewed license will be issued for a fixed period of time, which is the sum of the additional amount of time
beyond the expiration of the operating license or combined license (not to exceed 20 years) that is requested in a
renewal application plus the remaining number of years on the operating license or combined license currently in effect. The term of any renewed license may not exceed 40 years.

(c) A renewed license will become effective immediately upon its issuance, thereby superseding the operating license or combined license previously in effect. If a renewed license is subsequently set aside upon further administrative or judicial appeal, the operating license or combined license previously in effect will be reinstated unless its term has expired and the renewal application was not filed in a timely manner.

(d) A renewed license may be subsequently renewed in accordance with all applicable requirements.

10 C.F.R. § 60.121 Requirements for ownership and control of interests in land.

(a) *Ownership of land.* (1) Both the geologic repository operations area and the postclosure controlled area shall be located in and on lands that are either acquired lands under the jurisdiction and control of DOE, or lands permanently withdrawn and reserved for its use.

(2) These lands shall be held free and clear of all encumbrances, if significant, such as: (i) Rights arising under the general mining laws; (ii) easements for right-of-way; and (iii) all other rights arising under lease, rights of entry, deed, patent, mortgage, appropriation, prescription, or otherwise.

(b) *Additional controls.* Appropriate controls shall be established outside of the postclosure controlled area. DOE shall exercise any jurisdiction and control over surface and subsurface estates necessary to prevent adverse human actions that could significantly reduce the geologic repository's ability to achieve isolation. The rights of DOE may take the form of appropriate possessory interests, servitudes, or withdrawals from location or patent under the general mining laws.

(c) *Water rights.* (1) DOE shall also have obtained such water rights as may be needed to accomplish the purpose of the geologic repository operations area.

(2) Water rights are included in the additional controls to be established under paragraph (b) of this section.

10 C.F.R. § 61.1 Purpose and scope.

(a) The regulations in this part establish, for land disposal of radioactive waste, the procedures, criteria, and terms and conditions upon which the Commission issues licenses for the disposal of radioactive wastes containing byproduct, source and special nuclear material received from other persons. Disposal of waste by an individual licensee is set forth in part 20 of this chapter. Applicability of the requirements in this part to Commission licenses for waste disposal facilities in effect on the effective date of this rule will be determined on a case-by-case basis and implemented through terms and conditions of the license or by orders issued by the Commission.

(b) Except as provided in part 150 of this chapter, which addresses assumption of certain regulatory authority by Agreement States, and § 61.6 "Exemptions," the regulations in this part apply to all persons in the United States. The regulations in this part do not apply to--

(1) Disposal of high-level waste as provided for in part 60 or 63 of this chapter;

(2) Disposal of uranium or thorium tailings or wastes (byproduct material as defined in § 40.4 (a-1) as provided for in part 40 of this chapter in quantities greater than 10,000 kilograms and containing more than 5 millicuries of radium-226; or

(3) Disposal of licensed material as provided for in part 20 of this chapter.

(c) This part also gives notice to all persons who knowingly provide to any licensee, applicant, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee's or applicant's activities subject to this part, that they may be individually subject to NRC enforcement action for violation of § 61.9b.

10 C.F.R. § 63.2 Definitions

As used in this part:

. . . .

High-level radioactive waste or *HLW means*:

(1) The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations;

(2) Irradiated reactor fuel; and

(3) Other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

10 C.F.R. § 63.121 Requirements for ownership and control of interests in land.

(a) *Ownership of land.*

(1) The geologic repository operations area must be located in and on lands that are either acquired lands under the jurisdiction and control of DOE, or lands permanently withdrawn and reserved for its use.

(2) These lands must be held free and clear of all encumbrances, if significant, such as:

(i) Rights arising under the general mining laws;

(ii) Easements for right-of-way; and

(iii) All other rights arising under lease, rights of entry, deed, patent, mortgage, appropriation, prescription, or otherwise.

(b) *Additional controls for permanent closure.* Appropriate controls must be established outside of the geologic repository operations area. DOE shall exercise any jurisdiction and control over surface and subsurface estates necessary to prevent adverse human actions that could significantly reduce the geologic repository's ability to achieve isolation. The rights of DOE may take the form of appropriate possessory interests, servitudes, or withdrawals from location or patent under the general mining laws.

(c) *Additional controls through permanent closure.* Appropriate controls must be established outside the geologic repository operations area. DOE shall exercise any jurisdiction or control of activities necessary to ensure the requirements at § 63.111(a) and (b) are met. Control includes the authority to exclude members of the public, if necessary.

(d) *Water rights.*

(1) DOE shall also have obtained such water rights as may be needed to accomplish the purpose of the geologic repository operations area.

(2) Water rights are included in the additional controls to be established under paragraph (b) of this section.