NOTE

Environmental Justice Considerations in Siting Spent Nuclear Fuel Disposal

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ABSTRACT

There are 80,000 metric tons of uranium stranded at nuclear power plant sites throughout the United States with no clear path to permanent disposal. Although there is a consensus on using a consent-based siting process for the disposal of spent nuclear fuel, no statutory authority exists to execute such a consent-based approach. This Note analyzes how a consent-based approach for siting a nuclear waste repository can incorporate environmental justice principles and recommends that the Department of Energy and the Nuclear Regulatory Commission issue a joint policy statement to incorporate these principles in the siting process. This Note proposes defining the scope and criteria of the environmental justice assessment in the joint policy statement and suggests applying the governing criteria early in the siting process.

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INTRODUCTION

Environmental justice concerns are a significant factor in the siting of nuclear waste facilities.[1] As the number of nuclear power plants permanently shut down increases, strategies for siting such facilities have become increasingly important because these power plants cannot be fully decommissioned until their spent nuclear fuel is shipped to a nuclear waste facility offsite.[2] The federal government has recently launched an effort to better understand how to address environmental justice in the consent-based siting of an intermediary storage facility for nuclear waste.[3] This heightened federal government awareness of environmental justice in the nuclear energy sector is present in both licensing actions for nuclear power plant operations and consideration of spent nuclear fuel management facilities.[4]

This Note focuses on disposal of spent nuclear fuel. While spent nuclear fuel is not necessarily nuclear waste, the authority to manage commercial spent nuclear fuel falls under federal nuclear waste policy.[5] The Nuclear Waste Policy Act ("NWPA") describes disposal, in part, as the emplacement of spent nuclear fuel in a repository "with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste."[6]

Spent nuclear fuel management presents both environmental and financial obligations. Current and former nuclear power plant sites throughout the United States host more than 80,000 metric tons of

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1 *See Consent-Based Siting*, U.S. DEP'T OF ENERGY, https://www.energy.gov/ne/consent-based-siting [https://perma.cc/7TPR-6CPQ] [hereinafter *Consent-Based Siting Website*].

2 *See* MARK HOLT, CONG. RSCH. SERV., RL33461, CIVILIAN NUCLEAR WASTE DISPOSAL 44 (2021) [hereinafter CRS REPORT RL33461].

3 *Consent-Based Siting Website*, *supra* note 1.

4 *See* Systematic Assessment for How the NRC Addresses Environmental Justice in Its Programs, Policies, and Activities, 86 Fed. Reg. 36307 (July 9, 2021) (requesting comments on how the Nuclear Regulatory Commission addresses environmental justice in its programs, policies, and activities); Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68244 (Dec. 1, 2021) [hereinafter 2021 RFI on Consent-Based Siting] (requesting comments on how to incorporate environmental justice in the Department of Energy's siting of interim storage facilities for nuclear waste).

5 *5 Fast Facts About Spent Nuclear Fuel*, U.S. DEP'T OF ENERGY (Oct. 3, 2022). https://www.energy.gov/ne/articles/5-fast-facts-about-spent-nuclear-fuel [https://perma.cc/VVK9-ZNYR]. While focusing on spent nuclear fuel disposal, this Note may also use the broader term "nuclear waste" in discussing federal policy and strategies that include spent nuclear fuel management. *See Consent-Based Siting Website*, *supra* note 1 ("The Department of Energy is ultimately responsible for the management of the nation's nuclear waste. This includes finding sites to store and dispose of the spent nuclear fuel.").

6 42 U.S.C. § 10101(9).

uranium from commercial spent nuclear fuel.[7] Although nuclear power utilities can store this spent nuclear fuel safely onsite through spent fuel pools and dry storage, these utilities have contracts with the Department of Energy ("Department") under which the federal government is responsible for disposing of such used fuel.[8] As a result of the federal government's inaction on commercial nuclear waste disposal, the federal government, as of September 30, 2022, has paid more than $10 billion in settlements and judgments to contract holders.[9] To date, the federal government has no clear path for spent nuclear fuel disposal.[10] Thus, its financial liability under its spent nuclear fuel contracts is expected to continue to grow absent implementation of a nuclear waste disposal strategy.

The consensus for a national spent nuclear fuel disposal strategy is to adopt a "consent-based"[11] approach to siting nuclear waste management facilities.[12] In 2017, the Department issued its draft version of a consent-based siting process for spent nuclear fuel and high-level radioactive waste disposal.[13] The draft process included multiple steps of public engagement and site assessments and considered environmental justice implications at various points.[14] The draft process, how-

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7 U.S. GOV'T ACCOUNTABILITY OFF., GAO-21-603, COMMERCIAL SPENT FUEL: CONGRESSIONAL ACTION NEEDED TO BREAK IMPASSE AND DEVELOP A PERMANENT DISPOSAL SOLUTION 1 (2021) [hereinafter GAO-21-603].

8 CRS REPORT RL33461, *supra* note 2, at 9. In the Code of Federal Regulations, the Department of Energy sets out "contractual terms and conditions" by which "nuclear waste disposal services" are available. Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, 10 C.F.R. § 961 (2022).

9 U.S. DEP'T OF ENERGY, DOE/CF-0180, AGENCY FINANCIAL REPORT FISCAL YEAR 2022 1, 120 (2022), https://www.energy.gov/sites/default/files/2022-11/fy-2022-doe-agency-financial-report.pdf [https://perma.cc/JF7Y-T6KA].

10 *See* GAO-21-603, *supra* note 7, at 3.

11 The Blue Ribbon Commission on America's Nuclear Future defined consent-based siting as "the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control." BLUE RIBBON COMM'N ON AMERICA'S NUCLEAR FUTURE, REPORT TO THE SECRETARY OF ENERGY 47 (2012) [hereinafter BRC REPORT]; *see also infra* Section I.E. The Department of Energy defines consent-based siting as "an approach to siting facilities that focuses on the needs and concerns of people and communities." *Consent-Based Siting Website*, *supra* note 1; *see also infra* Section I.F.

12 BRC REPORT, *supra* note 11, at vii; *see also* BIPARTISAN POLICY CTR., MOVING FORWARD WITH CONSENT-BASED SITING FOR NUCLEAR WASTE FACILITIES: RECOMMENDATIONS OF THE BPC NUCLEAR WASTE COUNCIL 11 (2016) [hereinafter RECOMMENDATIONS OF THE BPC NUCLEAR WASTE COUNCIL].

13 U.S. DEP'T OF ENERGY, DRAFT CONSENT-BASED SITING PROCESS FOR CONSOLIDATED STORAGE AND DISPOSAL FACILITIES FOR SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE (Jan. 12, 2017) [hereinafter DRAFT CONSENT-BASED SITING PROCESS].

14 *See id.* at 7–14.

ever, did not specify the scope of the Department's consideration of environmental justice in consent-based siting.

In 2021, the Department resumed its consent-based siting efforts by seeking public comment on how to site federal facilities for interim spent nuclear fuel storage, including how to build environmental justice considerations in the siting process.[15] In the second half of 2022, the Department published a summary of the responses and offered funding opportunities for entities interested in learning about consent-based siting.[16]

There is bipartisan agreement that a consent-based approach should account for environmental justice principles.[17] Since Congress enacted the original federal authority governing nuclear waste disposal—the NWPA[18]—in 1982, the Executive Branch directed federal agencies to make environmental justice part of their missions.[19] Although the Nuclear Regulatory Commission ("Commission") considers environmental justice in licensing nuclear material facilities,[20] the Commission does so retroactively as part of environmental impact statements accompanying a licensing review.[21] Thus, the current regulatory approach does not treat environmental justice as a proactive criterion governing site selection but rather as a retrospective factor for review through the licensing process. So far, this retrospective approach has resulted in the Commission's rejection of only one nuclear

15 *See* 2021 RFI on Consent-Based Siting, *supra* note 4, at 68, 245. The comment submission period concluded on March 4, 2022. The author submitted preliminary conclusions from this Note to the Department of Energy, as requested, on March 4, 2022. This recent consent-based effort by the Department is specific to an interim storage facility, not a permanent disposal site. This effort, however, may provide an experimental approach on how to implement a consent-based process that incorporates environmental justice principles, which can inform the siting of a permanent repository facility.

16 U.S. DEP'T OF ENERGY, CONSENT BASED SITING: REQUEST FOR INFORMATION COMMENT SUMMARY AND ANALYSIS SUMMARY REPORT 1 (2022) [hereinafter 2022 RFI SUMMARY REPORT], https://www.energy.gov/sites/default/files/2022-09/Consent-Based%20Siting%20RFI%20Summary%20Report%200915.pdf [https://perma.cc/L3QV-4ALR]; Notice of Funding Opportunity for Consent-Based Siting Program, 87 Fed. Reg. 65,048–65,049 (Oct. 27, 2022) [hereinafter Notice of Funding Opportunity].

17 RECOMMENDATIONS OF THE BPC NUCLEAR WASTE COUNCIL, *supra* note 12, at 11, 27; *see also* BRC REPORT, *supra* note 11, at 68 (identifying concerns on environmental and socioeconomic impacts of a waste management facility in a hosting community).

18 42 U.S.C. § 10101–10270.

19 Exec. Order No. 12,898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629 (1994) [hereinafter EO 12,898].

20 *See* U.S. NUCLEAR REGUL. COMM'N, NUREG-1748, ENVIRONMENTAL REVIEW GUIDANCE FOR LICENSING ACTIONS ASSOCIATED WITH NMSS PROGRAMS (2003) [hereinafter NUREG-1748].

21 *See id.* at 5–22.

material facility licensing application due to environmental justice concerns.[22] This single license denial, in 1997, was for an extreme case of racial and income discrimination in site selection: the Louisiana Energy Services license application for an enrichment plant in Claiborne Parish, Louisiana.[23]

This Note analyzes how a consent-based approach for siting a spent nuclear fuel disposal facility can incorporate environmental justice principles and illustrates the mechanisms available to facilitate this goal. Part I of this Note discusses fundamental concepts surrounding spent nuclear fuel, existing policy on nuclear waste disposal, relevant licensing actions, and recent efforts related to the consent-based siting of interim storage for spent nuclear fuel. Part II examines environmental justice principles, recent federal case law, and federal agency implementation of environmental justice guidance to identify environmental justice factors to consider in the consent-based siting process. In Part III, the Note assesses three approaches to incorporate environmental justice criteria in the consent-based siting of a disposal facility: (1) a joint policy statement by the Department and the Commission, (2) federal legislation, and (3) rulemaking by the Commission. This Note proposes adopting a joint policy statement between the Department and the Commission outlining the environmental justice criteria for the consent-based siting and licensing of a spent nuclear fuel repository. This Note recommends that the Department implement environmental justice criteria in the initial evaluation of award grants to communities interested in hosting a disposal facility.

I. Background

A. Spent Nuclear Fuel

Nuclear power constitutes nineteen percent of the electricity generated in the United States.[24] Nuclear power plants have been in operation in the United States since 1958.[25] As of October 2021, there were ninety-three nuclear power plants in operation in the United States.[26]

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22 *See* Eric Jantz, *Environmental Racism with a Faint of Green Glow*, 58 Nat. Res. J. 247, 257–59 (2017).

23 *See id.*

24 *What Is U.S. Electricity Generation by Energy Source?*, U.S. Energy Info. Admin. (Nov. 8, 2022), https://www.eia.gov/tools/faqs/faq.php?id=427&t=3 [https://perma.cc/ALE3-TZD6].

25 *#47 Shippingport Nuclear Power Station*, Am. Soc'y of Mech. Eng'rs, https://www.asme.org/about-asme/engineering-history/landmarks/47-shippingport-nuclear-power-station [https://perma.cc/VW5P-JYEM].

26 U.S. Nuclear Regul. Comm'n, Information Digest, at xii (2021).

Nuclear power reactors use uranium as fuel to produce electricity.[27] The uranium is processed, stacked into rods, and combined into a nuclear fuel assembly.[28] Hundreds of these assemblies are housed in the reactor core and immersed in water along with control rods.[29] In the water, a process called fission takes place,[30] whereby uranium atoms split and release energy.[31] Nuclear reactors harness this released energy to heat water and create steam, which is used to spin a turbine and generate electricity.[32] After use, the assemblies are removed from the reactor core, commonly referred to as "spent fuel assemblies."[33] Nuclear power plants house spent fuel assemblies in either wet storage—in spent fuel pools—or dry storage, in casks.[34] There are currently more than 80,000 metric tons of uranium[35] from spent nuclear fuel stored in either wet or dry storage in the United States, and the nuclear power industry continues to increase this inventory at a rate of 2,000 metric tons of uranium per year.[36]

B. The Nuclear Waste Policy Act of 1982 and 1987 Amendment

The NWPA governs disposal of commercial nuclear waste, but its statutory authority is limited to a specific capacity of heavy metal to be stored in a disposal site.[37] Congress passed the NWPA in 1982 to define the domestic strategy for permanent disposal of nuclear waste, including spent nuclear fuel.[38] The NWPA directs the Secretary of the Department of Energy to issue general guidelines for the recommendation of spent nuclear fuel and high-level waste repository sites.[39] The guidelines recommend specifying population factors that would disqualify a site if the facility was located in a highly populated area or

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27 *NUCLEAR 101: How Does a Nuclear Reactor Work?*, U.S. DEP'T OF ENERGY (Mar. 29, 2021), https://www.energy.gov/ne/articles/nuclear-101-how-does-nuclear-reactor-work [https://perma.cc/5DNS-8MPM].

28 *Id.*

29 *Id.*

30 *See id.*

31 *Id.*

32 *Id.*

33 *See* INT'L ATOMIC ENERGY AGENCY, GETTING TO THE CORE OF THE NUCLEAR FUEL CYCLE 6 (2019).

34 *Storage of Spent Nuclear Fuel*, U.S. NUCLEAR REGUL. COMM'N (Jan. 9, 2023), https://www.nrc.gov/waste/spent-fuel-storage.html [https://perma.cc/8SZZ-FZSV].

35 A metric ton of uranium equals 1,000 kg of uranium.

36 *See* CRS REPORT RL33461, *supra* note 2, at 30.

37 42 U.S.C. § 10131.

38 *Id.*

39 § 10132.

having a population of more than 1,000 individuals per square mile.[40] The NWPA also establishes a capacity limit of 70,000 metric tons of heavy metal for the first repository application.[41] A limit of 70,000 metric tons of heavy metal makes the NWPA insufficient to address current waste disposal needs because there are over 80,000 metric tons of uranium throughout the United States. An amendment to the NWPA, therefore, would be necessary to either increase the capacity of a single waste repository site or authorize multiple sites.

The NWPA identifies the site selection recommendations as major federal actions "significantly affecting the quality of the human environment" under the National Environmental Policy Act of 1969 ("National Environmental Policy Act" or "NEPA").[42] As such, the NWPA requires the Secretary to submit an environmental impact statement under the National Environmental Policy Act, along with the site recommendations.[43] The NWPA directs the Environmental Protection Agency ("EPA") and the Commission to develop rules for radioactive material release standards and technical requirements, respectively, applicable to repository sites.[44] The NWPA also affords the Commission the authority to approve the construction, material possession license, and application for the closure and decommissioning of such repositories.[45] The NWPA allows the Commission to adopt the environmental impact statement prepared for the recommendation of a repository site in the authorization for construction and licensing of such repositories to satisfy the Commission's responsibilities under NEPA.[46]

Although the NWPA grants the Department the authority to develop radioactive materials release rules and technical requirements for a repository site, Congress later amended the NWPA to limit its authority to developing such rules and requirements for a specific facility: Yucca Mountain.[47] After delays in the site selection process, in 1987, Congress amended the NWPA to designate Yucca Mountain, located about 100 miles northwest of Las Vegas, Nevada,[48] as the sole

40 *Id.*

41 § 10134.

42 *Id.*; §§ 4321–4370.

43 § 10134.

44 *See* § 10141.

45 *See id.*

46 § 10134.

47 § 10172.

48 *Location of Yucca Mountain*, U.S. NUCLEAR REGUL. COMM'N (Aug. 8, 2017), https://www.nrc.gov/waste/hlw-disposal/yucca-lic-app/photo-loc.html [https://perma.cc/Q58S-42BA] (identifying the location of Yucca Mountain).

nuclear waste repository site to be recommended to the President.[49] As such, the NWPA, as amended, preempts its use as basis for rulemaking to define a consent-based siting process for an alternative spent nuclear fuel disposal facility.[50] The 1987 NWPA amendment also deferred the efforts to identify a second repository site until Congress "authorized and appropriated funds for such activities"[51] and directed the Secretary to issue a report on the need for a second repository on or after January 1, 2007.[52]

C. Agency Guidelines and Executive Order 12,898

On February 11, 1994, the Clinton Administration enacted Executive Order ("EO") 12,898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," which directed federal agencies to make achieving environmental justice part of their mission.[53] EO 12,898 was the first executive action focused on addressing environmental effects on minority and low-income populations.[54] Under this EO, federal agencies generally should consider whether any of their actions would result in a disproportionate environmental impact on these communities.[55] The EPA has developed best practices for environmental justice assessments in NEPA

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49 *See* § 10172; *see also* BRC REPORT, *supra* note 11, at iv (identifying delays in the site selection process).

50 *See* BRC REPORT, *supra* note 11, at viii.

51 § 10172a.

52 *Id.*

53 EO 12,898, *supra* note 19, at 7629. (The relevant portion of implementation section reads: "[t]o the greatest extent practicable and permitted by law . . . each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing . . . disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations . . .").

54 *Id.*

55 On January 27, 2021, the Biden administration issued a subsequent executive order, EO 14,008, reaffirming the commitment to securing environmental justice in federal government action. EO No. 14,008, Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7622 (2021). The 2021 EO also incorporated a mandate to spur economic development in disadvantaged communities. Particularly, the EO established a Justice 40 initiative directing that forty percent of the overall benefits from certain federal investments flow to disadvantaged communities. Spent nuclear fuel disposal facilities, however, were not included in the list of federal investments sought to benefit disadvantaged communities. Therefore, the principle of spurring economic development through the siting of nuclear disposal facilities is not considered in this Note as the 2021 EO implementation guidance did not incorporate spent nuclear fuel disposal sites. *See* Memorandum from Off. Mgmt. and Budget on Interim Implementation Guidance for the Justice40 Initiative to the Heads of Dep'ts and Agencies (July 20, 2021), https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf [https://perma.cc/ANW9-ELRM]; Rachel Frazin, *White House Environmental Justice Advisers Express Opposition to Nuclear, Carbon Capture Projects*, THE HILL (May 17, 2021), https://thehill.com/policy/energy-envi-

reviews, focused on informing federal agencies how to account for environmental justice in federal actions.[56] Similarly, federal agencies have issued policy statements on how to consider environmental justice in their own proceedings—typically doing so as part of their environmental impact statement analyses.[57]

D. Yucca Mountain Licensing

After years of site research and testing, the Department of Energy applied to the Commission to authorize the construction of Yucca Mountain on June 3, 2008.[58] The licensing process for the application included both a technical review by the Commission staff and hearings with the Commission's Atomic Safety and Licensing Board ("Board").[59] The Commission initiated review of whether the facility would meet regulatory requirements, but the Department later sought to stop the review and associated Board hearings.[60] On March 3, 2010, the Department requested that the Board withdraw its application.[61] Around the same time, the Obama Administration halted the funding for Yucca Mountain licensing for Fiscal Year 2011, to cement its policy against opening a repository at Yucca Mountain.[62] There is general agreement that the efforts to license a nuclear waste repository at Yucca Mountain stalled due to political pressure, particularly from Democratic Senator Harry Reid of Nevada, and local opposition within the state of Nevada.[63]

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ronment/553927-white-house-environmental-justice-advisors-expresses-opposition-to [https://perma.cc/NLA9-48CQ].

56 *See* U.S. ENV'T PROT. AGENCY, PROMISING PRACTICES FOR EJ METHODOLOGIES IN NEPA REVIEWS (2016).

57 *See, e.g.*, U.S. DEP'T OF ENERGY, ENVIRONMENTAL JUSTICE STRATEGY (2017); Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions, 69 Fed. Reg. 52,040 (Aug. 24, 2004) [hereinafter Commission's Policy on Environmental Justice]. Although the Commission's policy statement indicates that EO 12,898 does not apply to the Commission as an independent regulatory entity, the Commission nonetheless adopts environmental justice considerations as part of its environmental impact statement analysis. *See infra* Section II.D.

58 U.S. NUCLEAR REGUL. COMM'N, OFF. OF PUB. AFFS., BACKGROUNDER: LICENSING YUCCA MOUNTAIN (2018) [hereinafter BACKGROUNDER: LICENSING YUCCA MOUNTAIN].

59 *Id.*

60 *Id.*

61 *Id.*

62 CRS REPORT RL33461, *supra* note 2, at 5.

63 *See* Geoffrey Brumfiel, *America's Nuclear Dumpsters*, SLATE (Jan. 30, 2013, 1:27 PM), https://slate.com/technology/2013/01/nuclear-waste-storage-why-did-yucca-mountain-fail-and-what-next.html [https://perma.cc/W2RN-WXF5]; Jeff Terry, *From Flint to Yucca Mountain, Politicized Regulators Are Doing Harm*, BULL. OF THE ATOMIC SCIENTISTS (June 8, 2016), https://thebulletin.org/2016/06/from-flint-to-yucca-mountain-politicized-regulators-are-doing-harm/

The Commission completed a Safety Evaluation Report and a supplement to the Department's environmental impact statement after the D.C. Circuit Court of Appeals ordered it to resume review in 2013.[64] The Commission, however, did not complete the corresponding licensing board adjudicatory hearings, as those remain suspended.[65] The site, therefore, is not licensed for construction or operation, even though the Commission completed its licensing review.[66]

E. Blue Ribbon Commission on America's Nuclear Future

Although the licensing of Yucca Mountain came to a halt and was never fully approved by the Commission, the Obama Administration established the Blue Ribbon Commission for America's Nuclear Future (the "Blue Ribbon Commission") to recommend a strategy to manage nuclear waste.[67] The Blue Ribbon Commission issued a report to the Secretary of Energy with its recommendations on January 26, 2012.[68] One of the key elements of the Blue Ribbon Commission's recommendations was to establish "[a] new, consent-based approach to siting future nuclear waste management facilities."[69]

The Blue Ribbon Commission describes "consent-based" as "the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control."[70] The Blue Ribbon Commission recognizes, however, that the definition of "consent" has to be answered by the community

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[https://perma.cc/YUN7-S6CC]; Allison Macfarlane, *The Yucca Mountain Nuclear Waste Site Has Always Been a Political Football. Trump Is the Latest President to Fumble*, BULL. OF THE ATOMIC SCIENTISTS (Feb. 21, 2020), https://thebulletin.org/2020/02/the-yucca-mountain-nuclear-waste-site-has-always-been-a-political-football-trump-is-the-latest-president-to-fumble/ [https://perma.cc/997B-7J7J]. Senator Harry Reid advocated to confirm Gregory Jaczko, his former aide who opposed the approval of Yucca Mountain, as a Commissioner in the Commission. John Bresnahan, *Reid Gets New Five-year Term for 'His Guy' on the Nuclear Regulatory Commission*, POLITICO (Mar. 14, 2008, 11:48 AM), https://www.politico.com/blogs/politico-now/2008/03/reid-gets-new-five-year-term-for-his-guy-on-the-nuclear-regulatory-commission-007026?tab=most-read [https://perma.cc/WW5M-WCEN]; Humberto Sanchez, *Reid Went to Mat to Get Jaczko on NRC*, ROLL CALL (Dec. 19, 2011, 6:30 PM), https://rollcall.com/2011/12/19/reid-went-to-mat-to-get-jaczko-on-nrc/ [https://perma.cc/QWT7-SNFF].

64 *See* In re Aiken County, 725 F.3d 255, 266–67 (D.C. Cir. 2013); BACKGROUNDER: LICENSING YUCCA MOUNTAIN, *supra* note 58, at 1.

65 BACKGROUNDER: LICENSING YUCCA MOUNTAIN, *supra* note 58, at 1, 3.

66 *Id.* at 2–3.

67 CRS REPORT RL33461, *supra* note 2, at 7.

68 *See* BRC REPORT, *supra* note 11, at iv.

69 *Id.* at vii.

70 *Id.* at 47.

hosting the facility.[71] According to the Blue Ribbon Commission, consent could be measured by the willingness of the affected community to enter into agreements with the facility operator with confidence that the facility operator "can protect the interests of their citizens."[72] The government of the hosting community—at the state, tribe and local community levels—would provide consent for the community.[73]

The consent-based process would include negotiations and binding agreements between the federal government and the hosting jurisdiction.[74] According to the Blue Ribbon Commission, performing a consent-based siting approach that involves negotiations and agreement with the hosting state and community obviates the need for a state-level veto of the site selection, which would enable the hosting state to override a federal siting decision.[75] In its report, the Blue Ribbon Commission supported an adaptive, staged approach to the siting process, giving interested communities the option to be removed from consideration until up to a certain point in the siting process.[76] The Blue Ribbon Commission, however, declined to define precisely when the right to opt-out without cause would expire, although its report suggested that such an expiration should happen no later than the submission of the licensing application for the facility.[77]

The Blue Ribbon Commission also recognized that implementation of its recommendations would require "changes to the Nuclear Waste Policy Act or other legislation."[78] Its report lists proposed legislative changes,[79] including an amendment to the NWPA to authorize the consent-based process for selecting and evaluating disposal sites and establishing a new independent organization to perform the site selection process.[80] The Blue Ribbon Commission's report also recommended the development of generic disposal standards and regulatory requirements by the EPA and the Commission early in the siting process, to ensure that no unsuitable sites are explored during the siting efforts.[81]

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71 *Id.* at ix.

72 *Id.*

73 *See id.*

74 *See id.* at 56.

75 *Id.* at 57.

76 *Id.* at 52.

77 *Id.* at 56.

78 *Id.* at viii.

79 *Id.*; *see also id.* at 93–95.

80 *Id*. at viii.

81 *Id.* at ix.

In its report, the Blue Ribbon Commission also addressed the need to identify the benefits of a nuclear disposal facility for potential host communities.[82] The NWPA defines a benefit schedule for a hosting state under which the state receives $10 million dollars annually from the execution of the benefits agreement until the initial receipt of spent nuclear fuel; $20 million dollars upon initial receipt of spent nuclear fuel; and $20 million dollars annually until the facility's closure.[83] The Blue Ribbon Commission argued that the benefits schedule in the NWPA should be revised to authorize a new federal entity to negotiate the amount of benefit payments and ways to promote economic development in the hosting community.[84] Additionally, the Blue Ribbon Commission suggested that benefits should go beyond financial incentives, including local preference in the procurement of services and goods, infrastructure investments, and generating employment through research and demonstration projects.[85] While recurrent payments for hosting a nuclear waste disposal facility can serve as an appealing financial incentive to any community, investment in local infrastructure and employment generation may be areas for negotiation based on the hosting community's needs and expectations.

F. Department of Energy's Draft Consent-Based Approach

In January 2013, the Department issued a report titled *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste*.[86] This strategy report served as the Obama Administration's policy statement on the disposal of spent nuclear fuel in response to the Blue Ribbon Commission's report.[87] The report also endorsed the use of a consent-based approach and recognized potential hosting jurisdictions as partners in the siting process.[88] The emphasis on hosting community involvement in both the Blue Ribbon Commission's report and the Department's 2013 strategy report signals that early support from the hosting community is essential for a consent-based siting process.

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82 *Id.* at 58.

83 42 U.S.C. § 10173a.

84 BRC Report, *supra* note 11, at 59.

85 *Id.*

86 CRS Report RL33461, *supra* note 2, at 7.

87 *See* U.S. Dep't of Energy, Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste 1 (2013).

88 *See id.* at 9.

As part of the Departments effort to outline a consent-based siting process, the Department sought public comments.[89] The public comments on the consent-based approach included concerns about environmental justice considerations in the siting of a repository.[90] These comments highlighted that a fair consent-based siting process should be "voluntary, inclusive, participatory, competitive, transparent, and guided by 'clear' technical standards and criteria"—all attributes demonstrating public involvement and objective siting guidelines.[91]

The Department considered the public comments and incorporated them in its development of a consent-based siting process.[92] On January 12, 2017, the Department issued its *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste* report.[93] This draft consent-based siting process identified general design principles, including environmental justice.[94] The draft process consisted of five phases: (1) award of grants to interested communities, (2) preliminary and (3) detailed site assessments, (4) agreement to pursue a facility, and (5) licensing of the facility.[95] The Department identified that efforts to identify and address environmental justice concerns should be included as part of evaluating grant applications and the detailed site assessment.[96] In other words, the Department would consider environmental justice in the first and third phases of the siting process.

The draft process, however, does not identify how the Department would consider environmental justice in either step.[97] To date, there is a gap in what assessments, criteria, and resources the Depart-

89 Request for Public Comment on Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Wastes, 82 Fed. Reg. 4333, 4333 (Jan. 13, 2017).

90 *See* U.S. DEP'T OF ENERGY, DESIGNING A CONSENT-BASED SITING PROCESS: SUMMARY OF PUBLIC INPUT 23–25 (2016).

91 *Id.* at 24.

92 *See id.* at 7; Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities, 80 Fed. Reg. 79872 (Dec. 23, 2015).

93 *See* DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13.

94 *Id.* at 6. The general design principles for the consent-based process also included prioritization of safety, environmental responsibility, regulatory requirements, trust relationship with tribes, informed participation, equal treatment and full consideration of impacts, community wellbeing, voluntariness/right to withdraw, transparency, and stepwise and collaborative decision-making that is objective and science-based. *Id.*

95 *Id.* at 9–13.

96 *Id.* at 9, 11.

97 DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13, at 6.

ment would use to account for environmental justice factors in the siting process. Thus, it is unclear how the Department will ensure that its consent-based siting process is an environmentally just solution for spent nuclear fuel disposal.

The Department resumed its efforts to design a consent-based siting process in 2021. The Department's updated definition of consent-based siting is "an approach to siting facilities that focuses on the needs and concerns of people and communities."[98] The Department recognizes consent-based siting as a multistep process that can adapt in response to community concerns.[99] The Department's updated definition is in alignment with the Blue Ribbon Commission's approach to consent-based siting.[100] Both entities favor a siting process that is adaptive, staged, provides a right to opt-out, and focuses on the community's involvement in decision-making.[101]

To date, however, the Department is still determining how to account for environmental justice principles in its siting process. On December 1, 2021, the Department issued a Request for Information seeking public input on the use of a consent-based siting process for federal interim storage facilities.[102] The request explicitly asked how the Department should consider environmental justice in a consent-based siting process.[103] The Department issued this request under a limited authority in the Consolidated Appropriations Act of 2021[104], in which Congress funded interim storage activities.[105] In September 2022, the Department published a summary and analysis of the public comments.[106] The major themes in the responses included distrust of the federal government's nuclear waste management efforts, concerns over fairness of the siting process and its outcome, and the need for updated Congressional authority on nuclear waste management.[107] On October 27, 2022, the Department published a funding opportunity announcement to engage with communities and entities interested in

98 *Consent-Based Siting Website*, *supra* note 1.

99 *See id.*

100 *See* DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13, at 7; BRC REPORT, *supra* note 11, at 48.

101 *See* DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13, at 7; BRC REPORT, *supra* note 11, at 48, 52.

102 2021 RFI on Consent-Based Siting, *supra* note 4, at 68, 245.

103 *Id.*

104 Pub. L. No. 116-260, 134 Stat. 1182.

105 *Id.*

106 2022 RFI SUMMARY REPORT, *supra* note 16.

107 *Id.* at 3–4.

learning more about consent-based siting.[108] In its announcement, the Department did not solicit volunteer sites to host an interim storage facility.[109]

Interim storage facilities are one step removed from spent nuclear fuel disposal. These facilities would temporarily host spent nuclear fuel until it is disposed of at a permanent nuclear waste disposal site. Although this request is specific to an interim storage facility and not a repository site for ultimate waste disposal, this effort to seek public input on the use of a consent-based siting process can inform how to incorporate environmental justice principles in a consent-based process for a permanent repository facility.

II. Analysis

As of its 1987 amendment, the NWPA only has the authority to evaluate and license a single nuclear waste repository: Yucca Mountain, Nevada.[110] As the Blue Ribbon Commission noted in 2013, a revision to the NWPA or additional legislation is necessary to pursue a consent-based siting process.[111] Since 2013, Congress has proposed and dismissed various pieces of legislation either amending the NWPA or creating a separate statutory authority for nuclear waste disposal.[112] Given the lack of effective congressional action on nuclear waste disposal, this Note considers alternative mechanisms for incorporating environmental justice principles in the consent-based siting of a spent nuclear fuel repository. This Note argues that the most appropriate mechanism is through a joint policy statement between the Department and the Commission.

A. Environmental Justice

The EPA defines "environmental justice" as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and

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108 Notice of Funding Opportunity, *supra* note 16.

109 *Id.*

110 BRC Report, *supra* note 11, at viii.

111 *Id.*

112 CRS Report RL33461, *supra* note 2, at 18–27. Specifically, the report includes bills S.2917 and S.1234 from the 116th Congress, which propose amending the NWPA to increase the statutory capacity limit of 70,000 metric tons of waste for Yucca Mountain and the creation of a Nuclear Waste Administration authorized to perform a consent-based siting process for nuclear waste disposal, respectively. *See infra* Section III.C.

policies."[113] Environmental justice can be approached through procedural and distributive mechanisms.[114] A procedural approach focuses on providing impacted communities with opportunities for engagement in a decision-making process.[115] A distributive approach focuses on how the hazards and benefits of a particular action are allocated through the affected communities.[116]

As proposed, the Department's draft consent-based process provides for a multistep process supportive of environmental justice because it provides for engagement of the communities interested in and affected by the siting process during the decision-making process.[117] The draft process was designed to be adaptive, involve affected stakeholders, and allow communities to opt out of consideration for siting.[118] Furthermore, the Department's recent efforts to seek public comments on its consent-based process and how to incorporate environmental justice considerations into the process represents an opportunity for engagement with the potentially affected communities early in the decision-making.[119] These communication and drafting methods support environmental justice under a procedural approach.

Although the draft process mentions that it will incorporate environmental justice considerations at two different steps of the process, it does not specify any criteria for the environmental justice considerations.[120] The draft process's consideration of distributive environmental justice factors, for example, is undefined or lacking at best. Sections B through F of this Note examine environmental justice best practices, federal agency guidance and licensing actions, and case law to identify factors for consideration in a distributive environmental justice analysis.

B. Louisiana Energy Services

Since the 1980s, studies have found a discriminatory pattern—based on income, class, race, or ethnicity—in determining the location

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113 *Environmental Justice*, U.S. ENV'T PROT. AGENCY (Feb. 17, 2022), https://www.epa.gov/environmentaljustice [https://perma.cc/3MG6-BRZH].

114 Matthew Cotton, *Environmental Justice as Scalar Parity: Lessons From Nuclear Waste Management*, 31 SOC. JUST. RSCH. 238, 241–42 (2018).

115 *See id.* at 241.

116 *See id.*

117 *See supra* Section I.F.

118 *See supra* Section I.F.

119 *See supra* notes 101–03.

120 *See* DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13, at 6, 9, 11, 15.

of commercial hazardous waste facilities.[121] Since then, the federal government has recognized environmental justice as the need to address and mitigate any adverse and disproportionate environmental impacts from government actions on low income and minority communities.[122] To date, the application of environmental justice principles in the licensing of nuclear material facilities has been performed in a retrospective manner as part of the environmental impact statements accompanying a licensing review.[123] In using this approach, the Commission has denied only one nuclear material facility licensing application because of environmental justice concerns: the Louisiana Energy Services ("LES") enrichment plant in Claiborne Parish, Louisiana.[124]

The LES siting process represents an extreme case of racial discrimination. A local citizens' group argued there was racial bias in the siting of the LES facility because the applicant narrowed the location of the facility from seventy-eight potential sites with an average African American population of twenty-eight percent, to a single site with an average African American population of ninety-seven percent.[125] The Commission's licensing board found that the Commission's technical staff had failed to perform an independent review of racial bias and concluded that additional review of racial discrimination in site selection process, the impact of road relocation associated with the facility, and the economic impact on property values was needed.[126]

Although the LES application covered a nuclear materials facility, it was a different facility than a spent nuclear fuel disposal site. The LES application was for an enrichment plant, which is used to increase the concentration of uranium in the material used in nuclear fuel assemblies.[127] Nevertheless, the LES case provides significant in-

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121 *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFF., GAO/RCED 83-168, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES 1–3 (1983); Steven M. Hoffman, *Negotiating Eternity: Energy Policy, Environmental Justice, and the Politics of Nuclear Waste*, 21 BULL. OF SCI., TECH. & SOC'Y 456, 459 (2001) (discussing the *Toxic Waste and Race in the United States* report from 1987). *But see id.* at 460 (identifying University of Massachusetts researchers who argue that there is no significant pattern of racial discrimination in siting commercial hazardous waste facilities).

122 Hoffman, *supra* note 121, at 459–60; EO 12,898, *supra* note 19, at 7629.

123 *See* NUREG-1748, *supra* note 20, at 5–22.

124 *See* Jantz, *supra* note 22, at 257–59.

125 *See* La. Energy Servs., L.P. (Claiborne Enrichment Center), CLI 98-3, 45 N.R.C. 367, 386 (1997). In 1997, the NRC's Atomic Safety Licensing Board denied a license to the Claiborne Enrichment Center in Louisiana due to environmental justice concerns in siting. *Id.*

126 *Id.* at 390–412; Jantz, *supra* note 22, at 257–59.

127 *See Stages of the Nuclear Fuel Cycle*, U.S. NUCLEAR REGUL. COMM'N (Dec. 2, 2020),

sights for the development of environmental justice factors in the siting of a spent nuclear fuel disposal facility.

First, based on the LES decision, environmental justice criteria should be at the forefront of any licensing action for a nuclear materials facility during the site selection process. Retroactively considering environmental justice through the licensing review of a materials facility is ineffective, because at the time of the licensing review, the facility has already been sited. Thus, the licensing review does not guide the decision-making for the site selection, it influences only how the applicant describes and justifies the site selection in its license application.

Second, the LES decision also implicitly suggests that an assessment of environmental justice considerations should include not only an assessment of the racial and income characteristics of the communities surrounding the nuclear materials facility, but also those more indirectly connected to, and affected by, the facility. For example, the environmental justice analysis should include environmental impacts on the communities located along the route to transport spent fuel to the disposal facility and the impact to the property values along this route. Both a proactive approach and consideration of indirect effects are principles that should be included in a joint statement by the Department and the Commission regarding their environmental justice considerations in the consent-based siting of a spent nuclear fuel disposal facility.

C. Federal Environmental Justice Implementation Guidance

According to the EPA, environmental justice concerns may result when there is a "lack of opportunities for minority populations, low-income populations, tribes, and indigenous peoples to meaningfully participate in the development of the regulatory action."[128] The EPA notes that to achieve meaningful involvement requires more than notice-and-comment.[129] Such involvement requires engagement with minority and low-income populations early in a rulemaking process. Accordingly, the Department's consent-based process must apply en-

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https://www.nrc.gov/materials/fuel-cycle-fac/stages-fuel-cycle.html [https://perma.cc/39C2-QG9M].

128 GUIDANCE ON CONSIDERING ENVIRONMENTAL JUSTICE DURING THE DEVELOPMENT OF REGULATORY ACTIONS, U.S. ENV'T PROT. AGENCY 10 (2015) [hereinafter EPA ENVIRONMENTAL JUSTICE GUIDANCE]; *see also* 5 U.S.C. § 553(b).

129 EPA ENVIRONMENTAL JUSTICE GUIDANCE, *supra* note 128, at 10.

vironmental justice considerations at the earliest siting stages to achieve meaningful involvement with the affected communities.

The D.C. Circuit is a semi-specialized court on administrative law and has jurisdiction to review actions of many administrative agencies, including the Federal Energy Regulatory Commission and the EPA.[130] The D.C. Circuit, however, has scarce case law discussing "meaningful involvement."[131] One case with some relevance to the interpretation of "meaningful involvement" is *Ohio v. EPA*.[132] In *Ohio v. EPA*, the circuit court rejected the state's claim that the EPA did not provide "substantial and meaningful involvement" of a state in remedial actions undertaken in that state under the Comprehensive Environmental Response, Compensation, and Liability Act.[133] The court found that the EPA had provided the states with a reasonable opportunity to review and comment on documents during its decision-making process because the plan guiding the decision-making process provided for document review by states and support agencies.[134] Moreover, the court found that the plan provided timeframes for these reviews and a mechanism to negotiate a longer period of time for more complex reviews.[135] Although *Ohio v. EPA* discusses "meaningful involvement," it does not consider its meaning in the environmental justice context, nor does it provide a reference for its meaning beyond a "reasonable" consideration. *Ohio v. EPA*, nonetheless, provides a relevant takeaway for the consent-based siting process in that "meaningful involvement" would suggest the Department must provide affected communities with an opportunity to review documentation of the Department's assessment at each step of the siting process.

D. Application of Environmental Justice in Licensing Nuclear Material Facilities

The Commission issued a policy statement on environmental justice in 2004.[136] In the statement, the Commission observed that, as an independent agency, it is not required to abide by the mandate of EO

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130 David M. Cooper, *The Role of the D.C. Circuit in Administrative Law*, AM. BAR ASS'N (Mar. 14, 2018), https://www.americanbar.org/groups/litigation/committees/appellate-practice/articles/2013/winter2013-0313-role-dc-circuit-administrative-law/ [https://perma.cc/M6EP-EPDT].

131 A Westlaw search for cases addressing the term "meaningful involvement" only yielded three cases in the D.C. Circuit.

132 997 F.2d 1520 (D.C. Cir. 1993).

133 42 U.S.C. § 9601 *et seq.*; *see Ohio v. EPA*, 997 F.2d at 1548.

134 *Ohio. EPA*, 997 F.2d at 1548.

135 *Id.*

136 Commission's Policy on Environmental Justice, *supra* note 57, at 52,040–041.

12,898 to make environmental justice part of its mission.[137] Nonetheless, the Commission discusses that it is required to consider environmental justice as part of the human and environmental impacts assessed under NEPA.[138]

As the entity in charge of licensing a nuclear waste repository, the Commission's guidance on environmental justice assessments for nuclear materials facilities can provide insights on language to incorporate into proposed legislation. The Commission issued NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," in 2003; the guidance serves as the basis for the agency's environmental review process in licensing nuclear material facilities.[139] This document provides guidelines for the preparation of environmental impact statements, including environmental justice evaluations.[140] The environmental justice review uses census block groups to collect demographic data for communities in and near to the site area.[141] For facilities beyond city limits, the guidance suggests implementing a radius of four miles from the site, but it recognizes that the "geographic scale" of the environmental justice review could be revised to one "commensurate with the potential impact area."[142]

Then, the evaluation suggests comparing the percentages of minority and low-income populations[143] in the census block groups to the corresponding state percentages.[144] The guidance establishes a threshold of fifty percent minority or low-income population, or a twenty percent increase from the state's percentage, to consider environmental justice in greater detail.[145] The detailed analysis requires determining whether there is a disproportionately high and adverse impact to the minority or low-income community, either to human health or the

137 *See id.*

138 *See id.*

139 *See* NUREG-1748, *supra* note 20, at iii.

140 *See id.* at 1, app. C at C-3.

141 *Id.* app. C at C-4.

142 *Id.* The guidance also recognizes that a larger fifty-mile radius is used for reactor facilities, which is consistent with the emergency planning zones for nuclear power reactor sites. 10 CFR § 50.47 (2022); *see also Emergency Planning Zones*, U.S. NUCLEAR REGUL. COMM'N (Nov. 13, 2020), https://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/planning-zones.html [https://perma.cc/6CCK-2DH2].

143 The guidance defines "minority" as individuals in the following population groups: "American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; African American (not of Hispanic or Latino origin); some other race; and Hispanic or Latino (of any race)." NUREG-1748, *supra* note 20, app. C at C-4. The guidance defines "low-income communities" as those "being below the poverty level as defined by the U.S. Census Bureau." *Id.*

144 *Id.* at C-5.

145 *Id.*

environment, and assessing the extent of any such impact.[146] If there is a high and adverse impact to the low-income or minority community, the review should discuss measures to mitigate the impact.[147]

The Commission's guidance on environmental justice assessments for the licensing of nuclear material facilities can serve as a starting point for the Department and the Commission in drafting the joint policy statement. The Commission's guidance provides specific criteria for the geographic extent of the area of consideration for the environmental justice assessment and a population percentage threshold for a detailed assessment of any disproportionate impact to environmental justice communities.[148] Based on the guidance, the proposed joint policy statement for the consent-based siting process should include identification of any minority or low-income communities—at a census block group level—within at least a four-mile radius of the facility, as the environmental justice area of consideration.[149]

Similarly, the guidance suggests that the proposed joint policy statement should provide for the Department to perform a detailed assessment of the human health and environmental impacts in the area of consideration if the percentage of the minority or low-income population exceeds fifty percent or is twenty percent greater than the state's average.[150] Incorporating the Commission's guidelines on geographic extent of the environmental justice assessment and the percentages of low-income and minority populations that would trigger a more detailed review can provide an acceptable baseline for the joint policy statement because the Commission has implemented them satisfactorily for almost two decades.[151] The agencies, however, can opt to pursue criteria more conservative than those outlined by the Commission upon review during their drafting of the joint policy statement.

E. Yucca Mountain's Environmental Impact Statement

The Department authored an environmental impact statement for the licensing of a repository site for spent nuclear fuel and high-level waste at Yucca Mountain, although the licensing process was sus-

146 *Id.* at C-6.

147 *Id.* at C-6.

148 *See id.* at C-4, C-5.

149 *Id.* at C-4.

150 *Id.* at C-5.

151 The Commission issued the guidelines in 2003 and has used them in its licensing actions for nuclear material facilities, and such licensing actions have not been subsequently challenged in court due to environmental justice concerns. *Id.*

pended and never finalized.[152] The Commission subsequently reviewed and adopted the Department's environmental impact statement.[153] The Department assessed environmental impacts in the construction, operation, and closure of the nuclear waste repository by identifying effects to land use, air quality, hydrology, biological and cultural resources, socioeconomics, public safety, and other areas.[154] In certain analyses, the Department defined the area within fifty miles of the site as an affected environment, while broadening the "region of influence" to 230 square miles for other categories.[155] After analyzing the environmental effects, the Department assessed environmental justice following interim guidance from the Commission issued in 1995.[156] To determine whether there would be any disproportionate impact in low-income or minority communities, the Department identified counties within fifty miles of the facility and gathered data regarding income and minority percentage in the populations.[157] Similarly, the Department analyzed the affected environment in communities along potential rail corridors for transportation of spent nuclear fuel to the disposal facility.[158] In its environmental analysis, the Department used a threshold of ten percent, or greater, of minority or low-income population, in comparison to the State average.[159] As a result of its analysis, the Department concluded the impacts of their proposed action would be "small on the population as a whole" and that there was no population group, including minority and low-income communities, that would suffer disproportionately high and adverse impacts from the proposed action.[160]

The environmental impact statement for Yucca Mountain implemented different geographic extent and population percentage thresholds for the environmental justice analysis than those suggested in the

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152 U.S. DEP'T OF ENERGY, OFF. OF CIVILIAN RADIOACTIVE WASTE MGMT., DOE/EIS-0250, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR A GEOLOGIC REPOSITORY FOR THE DISPOSAL OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE AT YUCCA MOUNTAIN, NYE COUNTY, NEVADA I (2002) [hereinafter DOE/EIS-0250]; *see also* BACKGROUNDER: LICENSING YUCCA MOUNTAIN, *supra* note 58.

153 *See Review of DOE's Environmental Impact Statement for Yucca Mountain*, U.S. NUCLEAR REGUL. COMM'N, (June 8, 2020) https://www.nrc.gov/waste/hlw-disposal/historical-information/reg-initiatives/review-envir-impact.html [https://perma.cc/BD33-622Y].

154 *See* DOE/EIS-0250, *supra* note 152, at 3-1–3-194.

155 *Id.* at 3-3, 3-114.

156 *Id.* at 3-113; *See* U.S. NUCLEAR REGUL. COMM'N, DIRS 103426-NRC 1995, NRR PROC. FOR ENV'T JUST. REVS. (1995).

157 *See* DOE/EIS-0250, *supra* note 152, at 3-112, 3-160.

158 *Id.* at 3-3, 3-122.

159 *Id.* at 3-2, 3-3, 3-113, 4-86.

160 *Id.* at 4-88.

Commission's 2003 guidance, NUREG-1748.[161] The Department used a ten-percent differential from the state average of low-income and minority populations, which is more conservative than the twenty percent suggested by the Commission's guidance.[162] The Department, however, identified lower-income and minority communities under a more conservative fifty-mile radius.[163] Importantly, the Department used prior interim guidance from the Commission, focused on nuclear power reactor facilities, which are typically subject to a larger affected area in comparison to a facility that would host only nuclear materials and not a nuclear power reactor.[164] While a fifty-mile radius is more conservative than the four-mile radius in the Commission's guidance, it is likely neither appropriate nor commensurate to the risk of a more passive nuclear materials facility.[165] This Note, therefore, suggests that the combination of a ten-percent low-income and minority population threshold in comparison with the state's averages and a four-mile radius for the extent of the environmental justice assessment are a better baseline for a joint policy statement between the Department and the Commission.

Nuclear material facilities are subject to strict regulatory requirements.[166] Although environmental impact assessments analyze environmental effects through multiple lenses, these assessments are done retroactively as part of the licensing process for a facility-at an already-selected site. This retroactive approach makes it impossible to have a disproportionate impact on a low-income or minority community because it leads to the conclusion that the impacts of the proposed action are "small on the population as a whole," as concluded in

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161 *See id.* at 3-112, 3-113, 3-160; NUREG-1748, *supra* note 20, at C-4, C-5.

162 *See* DOE/EIS-0250, *supra* note 152, at 3-113; NUREG-1748, *supra* note 20, at C-5. Using a ten-percent difference threshold is more conservative than a twenty-percent threshold because the ten-percent threshold would also include communities with low-income and minority population percentages that are between ten and twenty percent higher than the state average.

163 *See* DOE/EIS-0250, *supra* note 152, at 3-112, 4-114, 3-160; *see also* U.S. ENV'T PROT. AGENCY, EPA QA/G-5S, GUIDANCE ON CHOOSING A SAMPLING DESIGN FOR ENVIRONMENTAL DATA COLLECTION 35 (2002) (observing that a larger sample size in an environmental analysis is more conservative). The Commission uses a smaller four-mile radius. NUREG-1748, *supra* note 20, at C-4.

164 *See, e.g.*, Emergency plans, 10 CFR § 50.47 (2021); *Emergency Planning Zones*, *supra* note 142 (emergency planning zones for nuclear power reactor sites extend to a fifty-mile radius from the site).

165 *See* ALLAN HEDIN, TECHNICAL REPORT 97-13, SPENT NUCLEAR FUEL—HOW DANGEROUS IS IT? vi-viii (1997) (spent nuclear fuel stored in a canister has a lower heat output than in a reactor).

166 *See, e.g.*, 10 CFR § 20 (2021); 10 CFR § 40 (2021); 10 CFR § 70 (2021).

the Yucca Mountain environmental justice analysis.[167] Since these facilities have to meet strict environmental regulatory requirements, they would satisfy an environmental justice analysis by default because there is no disproportionate impact to any sector of the population. Any environmental effects stemming from the proposed action must be within given regulatory limits and no sector of the population—whether low-income, minority, or not—would experience environmental effects more severe than what would be limited under the pertinent regulations.

The environmental impact statement for Yucca Mountain also suggests that environmental justice ought to be considered at the forefront of any siting decision and not as a "box to be checked" in the licensing of an already-sited facility.[168] Although environmental justice considerations during the licensing of a nuclear waste disposal facility serve as a check-and-balance to prevent disproportionate environmental impacts on minority or low-income communities, it does not ensure that the affected communities are meaningfully involved in the siting process.[169] Any environmental justice criteria should be considered at the forefront of the consent-based siting process, and not only at the end as part of the environmental impact statement, because at that point the consideration is likely ineffective. Based on the 2017 draft consent-based siting process by the Department, it would be most appropriate to consider the criteria of extent of radius and population percentages at the first step of the consent-based siting process, where the Department awards grants to communities interested in hosting the facility.[170] This approach would also promote fiscal efficiency because it would ensure that the grants are awarded to communities that would not be disqualified later after a subsequent environmental justice review.[171]

Like the Commission's decision on the Louisiana Energy Services license,[172] the environmental justice review for Yucca Mountain also

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167 DOE/EIS-0250, *supra* note 152, at 4-87.

168 *See* Friends of Buckingham v. State Air Pollution Control Bd., 947 F.3d 68, 92 (4th Cir. 2020).

169 *See* BRC Report, *supra* note 11, at 62, 68 (observing that straightforward participation by interested parties and responsiveness to stakeholders' concerns are key attributes of a siting process).

170 *See* Draft Consent-Based Siting Process, *supra* note 13, at 9–13 (delineating a multi-step consent-based siting process over five phases).

171 *See* BRC Report, *supra* note 11, at ix (identifying that the Commission and the EPA should develop regulatory requirements early in the siting process to ensure that time is not wasted reviewing unsuitable sites).

172 *See supra* Section II.B (discussing the 1997 Louisiana Energy Services enrichment facil-

considered indirect effects of the operation of a spent nuclear fuel disposal facility.[173] Although the environmental impact statement considered communities within a fixed radius of the facility, it also identified potential rail corridors to transport spent nuclear fuel to the facility and assessed affected communities along such corridors at the county-level.[174] At a minimum, the environmental justice analysis should consider the effects on communities along potential corridors to transport spent nuclear fuel to the disposal facility—within the state where the facility is to be sited—as indirect effects of the siting action. Overall, the Yucca Mountain environmental impact statement development and review highlight that both the Department and the Commission will review and adopt the same statement, that it incorporates population and geographic thresholds for the environmental justice analysis, that environmental justice criteria should be considered early in the siting process, and that it considers indirect effects of the siting action.

F. Applicable Case Law

In mandating that federal agencies make environmental justice part of their mission, EO 12,898 did not create a right of judicial review.[175] A plaintiff, however, can challenge an environmental justice assessment under NEPA and the Administrative Procedure Act ("APA") as an arbitrary and capricious agency decision, which are typically reviewed by the D.C. Circuit.[176] Given that the executive mandate to consider environmental justice in federal actions was only ordered in the 1990s, however, case law from the D.C. Circuit on envi-

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ity license denial due to environmental justice concerns and identifying that the analysis should have considered impact of road relocation associated with the facility, and the economic impact on property values).

173 *See* DOE/EIS-0250, *supra* note 152, at 3-3, 3-122.

174 *Id.*

175 Section 6-609 of EO 12,898, titled "Judicial Review" states:

> This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. *This order shall not be construed to create any right to judicial review* involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order.

EO 12,898, *supra* note 19, at 7632–33 (emphasis added).

176 Vecinos para el Bienestar de la Comunidad Costera v. Fed. Energy Regul. Comm'n, 6 F.4th 1321, 1330 (D.C. Cir. 2021); *see also supra* Section II.C (discussing how the D.C. Circuit is semi-specialized on administrative law proceedings).

ronmental justice is scarce.[177] Although the APA and NEPA may provide grounds for a legal challenge to a federal government action, such approach is reactive and would not guide the decision-making for site selection. Relevant case law, however, can inform the scope of an environmental justice analysis during the government's decision-making, so that it is well reasoned and can withstand legal challenges under NEPA and the APA.

1. Vecinos para el Bienestar de la Comunidad Costera

The recent case of *Vecinos para el Bienestar de la Comunidad Costera v. Federal Energy Regulatory Commission*[178] illustrates that the D.C. Circuit uses a broad reasonableness standard to assess the scope of environmental justice assessments. In *Vecinos*, Texas residents petitioned for review of an authorization to construct and operate natural gas terminals and pipelines, alleging a violation, in part, under the NEPA and the APA.[179] In licensing the project, the Federal Energy Regulatory Commission performed an environmental justice assessment as part of its environmental impact statement.[180] In its assessment, the agency examined potential impacts to census block groups within a two-mile radius of the project site and concluded that the terminal and pipeline system would not have disproportionate adverse effects on minority and low-income residents in the area.[181] The petitioners contended that the decision to limit the impact analysis to two miles was arbitrary, noting that the agency used a thirty-one mile distance for its air quality analysis in the environmental impact statement and that it did not explain why it limited its environmental justice assessment to a two-mile radius.[182] The D.C. Circuit held that the agency's decision to select a two-mile radius was arbitrary because the Federal Energy Regulatory Commission did not offer a "rational connection between the facts found and the decision made."[183]

Vecinos is an example of the scope of environmental justice assessments and how agencies can avoid successful challenges under NEPA and the APA.[184] First, under the rationale outlined by the D.C.

177 A search for "environmental justice" on Westlaw yielded only seventeen cases in the D.C. Circuit. The cases encompass a time frame from 2003 to 2022.

178 6 F.4th 1321, 1330 (D.C. Cir. 2021).

179 *Id.* at 1325.

180 *Id.*

181 *Id.*

182 *Id.*

183 *See id.* at 1330.

184 *Id*.

Circuit, an agency must provide an explanation for the radius used to determine the area to be considered for its environmental justice assessment.[185] This is an important takeaway for a joint policy statement for environmental justice in the consent-based siting process because it suggests that the agencies should define and justify a minimum radius for the scope of the environmental justice assessment. For example, through the joint policy statement, the Department can agree to adopt the Commission's minimum radius of four miles—from the potential spent nuclear fuel site—for the assessment of environmental impacts on low-income and minority communities in proximity of nuclear material facilities.[186]

In the alternative, both agencies could also agree on a more conservative, larger radius for the environmental justice assessment, using the four-mile radius as a starting point in their determination of the geographic extent of the environmental justice assessment. A benchmark for a minimum radius can provide a presumption of sufficiency for the extent of the geographic consideration in the environmental justice assessment. Whether they decide to use the four-mile radius or a different one, the agencies must provide a reasonable explanation for their radius selection to withstand any APA challenges in the D.C. Circuit.[187]

Second, there must be a "rational connection" between the facts and the radius selected.[188] In order to meet a minimum standard and ensure the sufficiency of the geographic consideration for the environmental justice assessment, the agencies should set a minimum radius appropriate for spent nuclear fuel disposal facilities. For example, a site hosting spent fuel poses less risk of radioactivity exposure than an operating nuclear power plant.[189] As such, the radius selected for the environmental justice assessment should be commensurate with a nuclear materials facility and smaller than an operating nuclear power plant, which possesses a higher environmental risk.[190] The Department could show a "rational connection" in selecting a four-mile radius because that is the current minimum guideline that the Commission uses

185 *Id.*

186 NUREG-1748, *supra* note 20, at C-4. A more detailed discussion of the Commission's environmental justice assessments for nuclear material facilities can be found *supra* Section II.D.

187 *See Vecinos*, 6 F.4th at 1330.

188 *Id.*

189 *See* HEDIN, *supra* note 165, at vi–viii. The spent nuclear fuel has a lower heat output and is stored in canisters in arrays that prevent them from causing a nuclear reaction.

190 *See id.*

for its environmental justice assessments.[191] The agencies, however, should use the four-mile radius as a minimum guideline and determine whether a larger radius would be more appropriate as they draft the joint policy statement.

2. Sierra Club

Another recent D.C. Circuit case on gas pipeline permitting, *Sierra Club v. Federal Energy Regulatory Commission*,[192] illustrates that a court can invalidate an environmental justice assessment if it fails to consider the reasonably foreseeable indirect effects of the licensed action.[193] In *Sierra Club*, the Federal Energy Regulatory Commission permitted the construction and operation of a natural gas pipeline, but its environmental justice assessment failed to consider greenhouse gas emissions resulting from burning the gas carried by the pipeline.[194] The D.C. Circuit remanded the case, directing the Federal Energy Regulatory Commission to revise its environmental impact statement and explain how it considered emissions associated with the pipeline.[195] In its opinion, the D.C. Circuit stressed that environmental impact statements must include both direct and indirect effects of the project under review.[196] The court defined "indirect effects" as those caused by the project at a later time or further distance but which are reasonably foreseeable.[197]

Taken together, the *Sierra Club* opinion and the Commission's 1997 decision on the Louisiana Energy Services license inform the scope of the environmental justice assessment of a spent nuclear fuel disposal facility. One points to the review of indirect effects and the other identifies potential examples of those indirect effects. In Louisiana Energy Services, the staff failed to give proper weight to the impacts of road relocation associated with the enrichment facility and the economic impact on property values due to the siting of an enrichment facility.[198] In the joint policy statement, the Department and the Commission can identify indirect effects including, but not limited to, whether any roadways need to be altered to deliver spent nuclear fuel

191 *See* NUREG-1748, *supra* note 20, at C-4.

192 867 F.3d 1357 (D.C. Cir. 2017).

193 *Sierra Club*, 867 F.3d at 1371.

194 *Id.* at 1363.

195 *Id.* at 1375.

196 *Id.* at 1371, 1373.

197 *Id.* at 1371.

198 *See* La. Energy Servs., L.P. (Claiborne Enrichment Center), CLI 98-3, 45 N.R.C. 367, 403–11 (1997); *see also* Jantz, *supra* note 22, at 257–59.

to the site and the potential impact to the value of properties in the vicinity of the facility. Furthermore, the agencies can also consider whether there are any disproportionate environmental impacts on low-income or minority communities located along the main ways of transportation of spent nuclear fuel to the site.

III. Implementation

This Note considers three avenues to incorporate environmental justice principles in the consent-based siting of a spent nuclear fuel repository: (1) the issuance of a joint policy statement by the Department and the Commission, (2) legislation, and (3) rulemaking by the Commission. Part III assesses the adequacy of these mechanisms to incorporate environmental justice criteria in the consent-based siting process and concludes that the most appropriate mechanism to implement environmental justice considerations is a joint policy statement from the implicated agencies.

A. Joint Policy Statement

This Note proposes issuing a joint policy statement between the Department and the Commission on how to incorporate environmental justice principles in the consent-based siting of a nuclear repository. A joint policy statement would promote efficiency and alignment between the two agencies. As both agencies did for the Yucca Mountain application, the Department and the Commission have the obligation to complete an environmental impact statement associated with the siting and licensing of a spent nuclear fuel disposal facility.[199] Given that both agencies include an environmental justice assessment as part of their environmental impact statement analysis, it would be most efficient for both agencies to use the same scope and criteria in their environmental justice assessments during siting and licensing of a nuclear disposal facility.

The Commission's adoption of the Department's environmental impact statement—including its environmental justice assessment—during the licensing of Yucca Mountain also supports issuing a joint policy statement in which both agencies agree on the scope and criteria of the environmental justice assessment. To adopt the Department's environmental impact statement, the Commission issued a report concluding that it was practicable to adopt the impact state-

199 *See supra* Section I.B (discussing environmental impact statements for nuclear waste disposal facilities).

ment because the action by the Department in its licensing application was substantially the same as the action to be taken by the Commission in its licensing review.[200] Since both agencies must consider environmental justice as part of their environmental impact analyses—and may ultimately adopt the same environmental impact statement—both entities should strive to define the scope of analysis together.

Both agencies already have independent policy statements and strategic plans on environmental justice broadly. A joint policy statement specific to environmental justice principles in the consent-based siting of a spent nuclear fuel repository would benefit both agencies because it could guide the Department's siting process while also guiding the Commission's subsequent environmental impact statement review during licensing. Furthermore, the policy statement would aid the Commission in revising its existing guidance for performing environmental justice assessments.

A joint statement is not entirely foreign to either agency. Both agencies have previously collaborated with other agencies to develop joint policy statements and memoranda of understanding.[201] For example, the Department and the Commission issued a memorandum of understanding on how to oversee operations of an enrichment facility partially operated by the government and a private entity.[202] Thus, both agencies have experience with joint policy statements and memoranda, and such approach would be easier to implement and more appropriate than through legislation and rulemaking, as discussed below in Sections III.B and III.C.

A joint policy statement is also sound policy that can withstand legal challenges under the NEPA or the APA, when contrasted with the decision in *Vecinos*.[203] In *Vecinos*, there were two main challenges

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200 U.S. Nuclear Regul. Comm'n, U.S. Nuclear Regulatory Commission Staff's Adoption Determination Report for the U.S. Department of Energy's Environmental Impact Statements for the Proposed Geologic Repository at Yucca Mountain (2008); *see also supra* Sections I.B, II.E (discussing the Commission's adoption of the Department's environmental impact statement).

201 *See, e.g.*, U.S. Dep't of Energy & U.S. Env't Prot. Agency, Joint DOE/EPA Interim Policy Statement on Leasing Under the "Hall Amendment" (1998); U.S. Nuclear Regul. Comm'n, U.S. Env't Prot. Agency, Joint NRC-EPA Guidance on a Conceptual Design Approach for Commercial Mixed Low-Level Radioactive and Hazardous Waste Disposal Facilities (1987).

202 Memorandum of Understanding Between the Department of Energy and the Nuclear Regulatory Commission: Cooperation Regarding The Gas Centrifuge Lead Cascade Facilities at the Portsmouth Gaseous Diffusion Plant Site, U.S. Nuclear Regul. Comm'n (2004).

203 *See supra* Section II.F.1 (discussing the legal challenges in *Vecinos* under alleged violation of the NEPA and APA).

under the NEPA and the APA: (1) whether the agency offered a reasoned explanation for the criteria used in the environmental justice analysis, and (2) whether there was a rational connection between the facts and the analysis performed.[204] Both agencies can overcome a similar legal challenge to the siting and licensing of a nuclear waste disposal facility by ensuring that the agencies provide a logical rationale to their selection of environmental justice criteria in drafting the joint policy statement. The reasoned explanation for the environmental justice criteria and the connection with the environmental impact analysis to be performed is supported by multiple factors. These factors include existing Commission guidance on environmental justice analyses for nuclear material facilities, Yucca Mountain's environmental impact statement, the Commission's Louisiana Energy Services decision, and public comments from the Department's request for information on environmental justice considerations for interim storage facilities, as discussed in Part II.

The joint policy statement can also lay out a checks and balances system for environmental justice considerations in the siting of a spent nuclear fuel disposal facility. Initially, the Department would apply the agreed upon criteria in its siting efforts, and subsequently the Commission would verify that the Department applied such criteria in the siting of the nuclear disposal facility. If the Commission determines that the Department's consent-based process did not account for the agreed upon criteria, then the Commission may not issue the license for the facility.

1. Multistep Process with a Right to Opt Out

A multistep siting process with a right for potential hosting facilities to opt out are cornerstones of the consent-based process. As both the Blue Ribbon Commission and the Department's draft consent-based process identified, the siting process should be staged in multiple steps and include an option for the communities interested in hosting the facility to remove themselves from consideration.[205] Neither the Blue Ribbon Commission nor the Department identified a specific expiration point for the right to opt out.[206] Based on the five-step draft

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204 Vecinos para el Bienestar de la Comunidad Costera v. Fed. Energy Regul. Comm'n, 6 F.4th 1321, 1325 (D.C. Cir. 2021).

205 *See supra* Section I.E (discussing the Blue Ribbon Commission's recommendations); Section I.F (discussing the Department's draft consent-based process as a response to the Blue Ribbon Commission's recommendations).

206 *See generally* BRC REPORT, *supra* note 11; DRAFT CONSENT-BASED SITING PROCESS, *supra* note 13.

consent-based process laid out by the Department, this Note proposes that the right to opt out could expire during the fourth step (i.e., agreement to pursue a facility). At the fourth step, the Department and affected communities will have already performed detailed assessments of the facility; thus, the affected community should be adequately informed to commit or reject the facility. Additionally, the communities and the Department would enter into agreements to pursue the facility in the fourth step. As such, it would be counterproductive to extend a right to opt out of the siting process once a community agrees to host the disposal facility. Furthermore, ensuring full commitment from the hosting community is fundamental for the last of the five steps—i.e., the licensing of the facility. Alignment between the hosting community, state, and the Department would have to be reflected in the licensing application and will ultimately be necessary to complete the license review and obtain a license for the facility.

2. Early Application of Environmental Justice Criteria in the Siting Process

The bulk of the environmental justice criteria should be considered at the initial step of the siting process in which the Department awards grants to communities interested in hosting a nuclear waste facility. The environmental impact statement for Yucca Mountain also supports that environmental justice ought to be considered at the beginning of any siting decision-making process.[207] Because the hosting facility would be subject to very strict regulatory requirements for environmental impacts to be licensed, it would be difficult for the facility to affect a low-income or minority community in an adverse manner that exceeds these regulatory limits. As such, it is unlikely that the environmental impact statement would identify any significant disproportionate impact to these communities if the facility meets its licensing requirements. Therefore, any environmental justice criteria should be implemented at the forefront of the siting process to ensure that it is effective.

3. Meaningful Involvement of the Hosting Community

The EPA suggests that environmental justice requires meaningful involvement of the hosting community.[208] As seen in *Ohio v. EPA*,

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207 *See supra* Section II.E (discussing the environmental impact statement).

208 *See supra* Section II.C (discussing meaningful involvement as part of environmental justice guidance).

meaningful involvement would require the Department to reasonably consider the affected communities during the siting process.[209] Such consideration should involve an opportunity for the affected community to independently review the Department's decision-making and technical assessment documentation during each step of the siting process. Furthermore, the Department could provide grants to the interested communities so they could contract their own experts to review the Department's technical assessments of the site.

4. Criteria for the Geographic Extent and Population Thresholds in the Analysis

The D.C. Circuit's decision in *Vecinos* highlights the need to establish well-reasoned criteria in environmental justice assessments.[210] In drafting the joint policy statement, the Commission and the Department should define minimum criteria governing the scope of an environmental justice analysis. The joint policy could incorporate thresholds from the Commission's guidance on environmental justice assessment and the Yucca Mountain environmental impact statement as baselines in defining the scope of the environmental justice analysis.[211] Additionally, the Department and the Commission should seek public comments to inform the joint policy statement's definition of environmental justice assessment criteria.

The criteria should include a minimum radius for the geographic extent of the environmental justice assessment and thresholds for percentage increases of low-income and minority populations in comparison to a state's average that trigger additional analysis. The environmental justice criteria should use a minimum baseline of a four-mile radius as an affected area, as recommended in the Commission's guidance.[212] Additionally, the joint policy statement should follow the population criteria used in the Yucca Mountain environmental impact statement and mandate a more detailed analysis if the affected communities have a population of fifty percent minority or low-income population, or ten percent higher than the state's average.[213] The Department and the Commission, however, may reassess such minimum baselines for geographic extent and population thresholds and

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209 *See id.*; *see generally Vecinos*, 6 F.4th at 1321.

210 *See Vecinos*, 6 F.4th at 1330.

211 *See supra* Sections II.D–.E (discussing environmental justice criteria in the Commission's guide, NUREG-1748, and Yucca Mountain's environmental justice assessment).

212 *See supra* Section II.D (discussing environmental justice criteria in Commission's guide, NUREG 1748).

213 *See supra* Section II.E (discussing Yucca Mountain's environmental justice assessment).

establish more conservative parameters when drafting the joint policy statement after considering public comments.

5. Indirect Effects of Siting the Facility

The siting process should also consider the indirect effects of siting and operating a disposal facility. The Commission's 1997 decision on the Louisiana Energy Services enrichment facility, the Yucca Mountain environmental impact statement, and the *Sierra Club* case highlight the importance of accounting for indirect effects of the spent nuclear fuel disposal siting.[214] The Department should consider indirect effects of the proposed action to include, but not be limited to, whether any roadways need to be altered to deliver spent nuclear fuel to the site, the impact to the value of properties in the vicinity of the facility, and potential environmental impact during transportation of spent fuel to the facility. The environmental justice assessment should include not only the communities surrounding the disposal facility, but also those located along the proposed routes for transportation of spent nuclear fuel to the facility within the hosting state.

6. Benefits to the Hosting Community

The NWPA identified a benefit schedule, specifically on payments to hosting communities after agreeing to host the facility and up to when the facility is completely loaded with spent nuclear fuel.[215] The Blue Ribbon Commission suggested that the NWPA schedule should be amended to revise the payment amounts and identify ways to promote economic development in the hosting community.[216] This Note agrees that it is necessary to identify other ways to provide economic benefits in the community including, but not limited to, generation of temporary and permanent jobs, development of public service facilities, infrastructure improvements, and other investments in the local economy.

With regards to the benefit schedule, the schedule laid out in the NWPA should serve as a starting point for potential hosting communities to negotiate with the Department. Such negotiations may happen at any point over the first three steps of the draft consent-based pro-

214 *See supra* Sections II.B, II.E–.F.2 (discussing indirect effects in the Louisiana Energy Services decision, in the Yucca Mountain environmental impact statement, and in *Sierra Club v. Fed. Energy Regul. Comm'n*, 867 F.3d 1357, 1371 (D.C. Cir. 2017)).

215 *See* 42 U.S.C. § 10173a.

216 *See supra* Section I.E (discussing benefits to the hosting community and the NWPA's benefit schedule).

cess but must culminate prior to establishing any agreements between the state and the Department during the fourth step of the siting process. The agreement between the state and the Department should reflect both the negotiated benefit schedules and other ways in which the siting of the spent nuclear fuel disposal facility would benefit the hosting community.

B. Potential Legislation

Given that Congress amended the NWPA to select Yucca Mountain as the nation's sole nuclear repository, legislation is necessary to define the siting of a new repository facility.[217] Prior legislation introduced to address nuclear waste disposal is insufficient to address environmental justice in a consent-based siting process because the proposed bills have failed to either authorize a consent-based siting process or include environmental justice considerations for the siting process. Since 2013, when the Blue Ribbon Commission recommended the pursuit of a consent-based siting process, Congress has introduced, but not passed, various pieces of legislation either amending the NWPA or creating a separate statutory authority over nuclear waste disposal.[218] The Nuclear Waste Policy Amendments Act of 2019[219] intended to amend the NWPA, but the bill focused on expanding Yucca Mountain's capacity to store a larger amount of nuclear material and emphasized Yucca Mountain as the sole nuclear repository.[220] While proposing to amend the NWPA, S.2917 did not authorize a consent-based siting process for another nuclear repository site.[221] The bill is thus ineffective to integrate environmental justice criteria in a consent-based siting process because it does not incorporate a consent-based siting process at all. The same Congress introduced, but did not pass, the Nuclear Waste Administration Act of 2019, S.1234, which intended to establish a nuclear waste administration that would have the authority to perform a consent-based siting for a spent nuclear fuel repository.[222] The language in the bill, how-

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217 *See supra* Section I.B (discussing the NWPA history).

218 CRS REPORT RL33461, *supra* note 5, at 18–27. The report identifies bills S.2917 and S.1234 from the 116th Congress, proposing a Nuclear Waste Policy Act amendment and the establishment of a Nuclear Waste Administration, respectively.

219 S. 2917, 116th Cong. (2019).

220 *See id.*

221 *See generally id.*

222 *See* Nuclear Waste Administration Act of 2019, S. 1234, 116th Cong. (2019).

ever, did not specify environmental justice considerations for the consent-based siting process.[223]

Separate legislation authorizing a new nuclear waste administration, like S.1234, would be a more suitable avenue to incorporate environmental justice in the consent-based siting process than an NWPA amendment that does not authorize a consent-based siting process. Both the S.2917 and S.1234 bills, however, illustrate that legislation is not the preferred avenue to incorporate environmental justice principles in the consent-based siting process because neither piece of legislation passed.[224] From these examples, and from the political history over nuclear waste disposal, it can be inferred that it would be very unlikely to obtain sufficient agreement to pass legislation that specifically addresses environmental justice in a consent-based siting process. Hence, a joint policy statement is preferred because it does not require political agreement from Congress and could be implemented at the federal agency level.[225]

C. Agency Rulemaking

Although the EPA and the Commission could consider incorporating environmental justice criteria through rulemaking, the statutory authority of the NWPA is limited to Yucca Mountain and would not govern rulemaking associated with a consent-based siting process.[226] The Blue Ribbon Commission recommended that the EPA and the Commission develop "regulatory requirements early in the [consent-based] siting process."[227] The Blue Ribbon Commission, however, also recognized that implementation of a consent-based siting process would require "changes to the Nuclear Waste Policy Act or other legislation."[228] Even if there was clear statutory authority governing the rulemaking, it is not preferred for other reasons. First, it is contrary to the Commission's current approach on environmental justice assessment, which is implemented under staff guidance and not under a more formal codified rule. Second, the Commission is the entity in charge of licensing the spent nuclear fuel repository, not the entity in charge of its siting. Relegating the development of environmental justice criteria to the Commission is ineffective because at the time the

223 *See generally id.*

224 *See* CRS Report RL33461, *supra* note 2, at 20–21.

225 *See id.* at 5.

226 *See generally* Nuclear Waste Policy Amendments Act of 2019, S.2917, 116th Cong. (2019).

227 BRC Report, *supra* note 11, at ix; *see also id.* at 93–95.

228 *Id.* at viii.

Commission is to apply said environmental justice criteria in its assessment of a site that has already been selected. A joint policy statement is preferred because it could guide the Department's siting process, while still guiding the Commission in its subsequent assessment of the facility.

Conclusion

While there is consensus in using a consent-based process to site a spent nuclear fuel disposal facility, there is no statutory authority defining how environmental justice would be considered in siting. This Note proposes issuing a joint policy statement by the Department of Energy and the Nuclear Regulatory Commission outlining the environmental justice criteria for the consent-based siting and licensing of a spent nuclear fuel repository. This Note recommends implementing environmental justice criteria early in the consent-based siting process and defining baseline parameters for the scope of the environmental justice assessment. This Note favors a joint policy statement over legislation or agency rulemaking because the governing agencies could develop the policy statement even with the existing lack of political agreement or statutory authority over nuclear repository siting.