UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS

Dale E. Klein, Chairman
Gregory B. Jaczko
Peter B. Lyons

DOCKETED 11/20/07

SERVED 11/20/07

In the Matter of	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008-ESP
(Early Site Permit for North Anna ESP Site)	)	

CLI-07-27

MEMORANDUM AND ORDER

Today, we approve issuance of an early site permit (ESP) for the North Anna ESP site in Louisa County, Virginia.

* * * * * *

On June 29, 2007, a split Atomic Safety and Licensing Board issued its Initial Decision[1] in the "mandatory hearing" portion of this adjudication addressing Dominion Nuclear North Anna, LLC's (Dominion) 2003 application seeking an ESP for a parcel of land located within the boundaries of the North Anna Power Station. The majority of the Board approved issuance of the North Anna ESP, while the dissenting judge would have denied the ESP due to insufficiencies in the NRC Staff's and Dominion's examinations of alternative sites and alternative design features related to water conservation.

In today's Memorandum and Order, we examine the differing views of the majority and dissent on those two issues. Although we find flaws in the Staff's explanation of its alternative

[1] LBP-07-9, 65 NRC 539 (2007).

site review, we nonetheless conclude that the majority has the better of the argument. We also address three issues that the Board recommended that we consider:

> (i) Did the Staff's environmental justice analysis in the FEIS [Final Environmental Impact Statement[2]] follow the "greater detail" guidance set forth in the Commission's Environmental Justice Policy Statement?[3]
>
> (ii) How do the NRC's multiple radiation protection standards (and the ALARA concept) apply to new reactors that are proposed to be added at a site with pre-existing nuclear reactors and radiological effluents?
>
> (iii) How should the Commission apply its statement prohibiting partial ESPs and ESPs where adequate information is not available to a situation where significant elements of the plant parameter envelope for the ESP are missing and numerous siting issues are unresolved due to lack of information? [4]

In addition to these issues, we also briefly address issues regarding hydrology and tritium.[5]

Under our regulations and jurisprudence, we "must review and approve the Licensing Board's Initial Decision authorizing [the] issuance" of an ESP before it can become effective. [6] Based on our analysis of the questions set forth above and also of the issue on which the majority and dissent differed, we approve the Board's Initial Decision. We base all of today's determinations on our review of the Initial Decision, the Staff's and Dominion's briefs addressing these same matters, and the underlying administrative record.

I. BACKGROUND

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[2] NUREG-1811, "Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site -- Final Report" (Dec. 2006) (FEIS).

[3] Final "Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions," 69 Fed. Reg. 52,040, 52,048 (Aug. 24, 2004) (Policy Statement).

[4] CLI-07-23, 66 NRC ___, ___, slip op. at 1-2 (Aug. 2, 2007).

[5] *See* LBP-07-9, 65 NRC at 569-79 (hydrology), 579-83 (tritium).

[6] *System Energy Resources, Inc.* (Early Site Permit for Grand Gulf ESP Site), CLI-07-7, 65 NRC 122 (2007); 10 C.F.R. § 2.340(f).

Dominion filed its application for an ESP for the North Anna site in 2003. The requested site is adjacent to, and generally west of, the two existing North Anna reactors (Units 1 and 2). A group of intervenors challenged the ESP application. Their issues were resolved and the contested portion of this proceeding concluded in October 2006.[7] At that point, this proceeding became uncontested, but was still subject to the mandatory hearing requirement of the Atomic Energy Act of 1954, as amended (AEA).[8] In this mandatory ESP hearing, the NRC must address six issues:

> **Safety Issue 1**: whether the issuance of an ESP will be inimical to the common defense and security or to the health and safety of the public.[9]
>
> **Safety Issue 2**: whether, taking into consideration the site criteria contained in 10 C.F.R. Part 100, a reactor, or reactors, having the characteristics that fall within the parameters for the site, can be constructed and operated without undue risk to the health and safety of the public.[10]
>
> **Overriding NEPA Issue**: whether the review conducted by the Commission pursuant to National Environmental Policy Act (NEPA)[11] has been adequate.[12]
>
> **NEPA Baseline Issue 1**: whether the requirements of section 102(2)(A), (C), and (E) of NEPA[13] and the regulations in [10 C.F.R. Part 51, Subpart A] have been complied with in this proceeding.[14]

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[7] *See* LBP-06-24, 64 NRC 360 (2006).

[8] AEA § 189a, 42 U.S.C. § 2239(a).

[9] "Dominion Nuclear North Anna, LLC; Notice of Hearing and Opportunity to Petition for Leave to Intervene; Early Site Permit for the North Anna ESP Site," 68 Fed. Reg. 67,489 (Dec. 2, 2003) (Notice of Hearing). *See also* 10 C.F.R. § 2.104(b)(1)(iv); *Exelon Generation Co.* (Clinton Early Site Permit), CLI-05-17, 62 NRC 5, 33 n.32 (2005) (*Clinton I*).

[10] Notice of Hearing, 68 Fed. Reg. at 67,489. *See also* 10 C.F.R. § 2.104(b)(1)(i)(*d*)(2); *Clinton I*, CLI-05-17, 62 NRC at 33 n.32.

[11] 42 U.S.C. §§ 4321-4347.

[12] 10 C.F.R. § 51.105(a)(4). *See* Notice of Hearing, 68 Fed. Reg. at 67,489.

[13] 42 U.S.C. § 4332(2) (A), (C), (E).

> **NEPA Baseline Issue 2**: independently consider the final balance among the conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken.[15]
>
> **NEPA Baseline Issue 3**: determine, after considering reasonable alternatives, whether the construction permit . . . should be issued, denied, or appropriately conditioned to protect environmental values.[16]

The Board conducted an evidentiary hearing on these six required safety and environmental issues and issued its Initial Decision on the uncontested portion of this proceeding. We invited briefs on the Board's three questions, the issues of alternative site review and alternative design features, and the Board's remarks suggesting deficiencies in Dominion's and the Staff's evidence and arguments. The Staff and Dominion filed the requested briefs.[17] We turn now to those issues.

II. DISCUSSION AND ANALYSIS

A. Alternative Sites

1. Legal Standards and Commission Guidance

NEPA Baseline Issue 1 requires that the NRC determine, among other things, whether it has complied with NEPA section 102(2)(C)(iii), which in turn requires the NRC to provide a "detailed statement" on "alternatives to the proposed action."[18] Our regulations require an ESP

(. . .continued)

[14] 10 C.F.R. § 51.105(a)(1). *See* Notice of Hearing, 68 Fed. Reg. at 67,489.

[15] 10 C.F.R. § 51.105(a)(2). *See* Notice of Hearing, 68 Fed. Reg. at 67,489.

[16] 10 C.F.R. § 51.105(a)(3). *See* Notice of Hearing, 68 Fed. Reg. at 67,489.

[17] Dominion's Brief in Response to CLI-07-23 (Aug. 23, 2007) (Dominion's Response Brief); NRC Staff's Response to Commission's August 2, 2007, Order (Aug. 23, 2007) (Staff's Response Brief). Both parties declined to file reply briefs.

[18] 42 U.S.C. § 4332(2)(C)(iii).

applicant to submit as part of its application an Environmental Report (ER) that addresses, among other things, "[a]lternatives to the proposed" site "sufficiently complete to aid the Commission in developing and exploring, pursuant to [NEPA] section 102(2)(E), ". . . appropriate alternatives to recommended courses of action."[19] The ER must identify "all reasonable alternatives"[20] and "must . . . evaluat[e] . . . the alternative sites and determine whether there is any obviously superior alternative to the site proposed."[21]

The Staff, after analyzing the ER and performing its own independent review, must publish for public comment a Draft Environmental Impact Statement (DEIS)[22] analyzing the comparative environmental effects of locating the new reactor on the proposed and alternative sites.[23] After reviewing public comments on the DEIS, the Staff must issue an FEIS "stat[ing]

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[19] 10 C.F.R. § 51.45(b)(3) (internal quotation marks omitted). *See* Dominion Nuclear North Anna's Environmental Report at pp. 3-9-1 to 3-9-8 (Rev. 9, Sept. 2006) (ER), ADAMS Accession No. ML062580114.

[20] 10 C.F.R. Part 51, App. A, § 5. *See also Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 104 (1998) (*LES*).

[21] 10 C.F.R. § 52.17(a)(2). The Council on Environmental Quality [CEQ] advises that these "reasonable alternatives . . . must be rigorously explored and objectively evaluated." 40 C.F.R. § 1502.14(a); CEQ, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 Fed. Reg. 18,026 (March 23, 1981) (Forty Most Asked Questions). Although the CEQ's guidance does not bind us, we give such guidance substantial deference. *Cf. Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348 n.22 (2002) (*PFS*), citing and quoting *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-91-2, 33 NRC 61, 72 n.[3] (1991). *See generally Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 334, 355-56 (1989) (CEQ regulations are entitled to "substantial deference").

[22] Here, the DEIS is "Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site," Draft Report for Comment (Nov. 2004).

[23] 10 C.F.R. § 51.71(d).

how the alternatives considered . . . will or will not achieve the requirements of sections 101 and 102(1) of NEPA."[24]

Section 9.3 of the Environmental Standard Review Plan (ESRP) provides guidance for application of these regulatory requirements. Section 9.3 provides, in relevant part, that the Staff's review should "be directed to identification of sites suitable for the size and type of nuclear power plant proposed by the applicant"[25] within the "region of interest" (the geographic area considered in searching for possible sites[26]). The Staff should analyze the candidate sites (the top four or more sites within the region of interest[27]) "in the detail needed to make an eventual evaluation that no site within the appropriate study area can be judged . . . to be obviously superior to the applicant's proposed site."[28]

ESRP Section 9.3 recognizes that some applicants (such as Dominion here) will propose sites based "on the location of an existing nuclear power plant previously found

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[24] 10 C.F.R. § 51.91(c). The two cited sections of NEPA set out the statute's general policy goals and instruct federal agencies to interpret and administer their policies, regulations and governing statutes in accordance with those policy goals.

[25] NUREG-1555, "Environmental Standard Review Plan: Standard Review Plans for Environmental Reviews for Nuclear Power Plants (Main Report)," Vol. 1, at p. 9.3-2 (March 2000), ADAMS Accession No. ML003701937 (in today's order, all subsequent citations to NUREG-1555 are to Vol. 1 unless otherwise indicated). *See also* Draft Revised NUREG-1555, "Environmental Standard Review Plan, Section 9.3 Site Selection Process" at p. 9.3-2 (July 2007) (Draft Revised Section 9.3), ADAMS Accession No. ML071800223. This revision post-dates the Staff's North Anna ESP review.

[26] NUREG-1555 at p. 9.3-1. *See also* Draft Revised Section 9.3 at pp. 9.3-1, 9.3-7. Applicants generally select regions of interest based on either geographic boundaries or the proposed plant's expected service area. Draft Revised Section 9.3 at p. 9.3-7.

[27] NUREG-1555 at p. 9.3-1. *See also* Draft Revised Section 9.3 at p. 9.3-2.

[28] NUREG-1555 at p. 9.3-6. *See also* Draft Revised Section 9.3 at pp. 9.3-5 to 9.3-6.

acceptable on the basis of a NEPA review."[29] For such proposed sites, Section 9.3 provides that "all nuclear power plant sites within the identified region of interest having an operating nuclear power plant or construction permit issued by the NRC should be compared with the applicant's proposed site."[30]

But regardless of whether the applicant is proposing a new or pre-existing plant site, the Staff's "evaluation . . . of the applicant's site-selection process should include consideration of both the process (i.e., methodology) used by the applicant and the reasonableness of the product (e.g., potential sites) identified by that process."[31] The purposes are to determine whether the "candidate areas[[32]] identified by the applicant represent a reasonably complete list of such areas within the identified [region of interest]" and, more particularly, to determine if the applicant has employed "an adequate, well documented process for screening candidate sites"[33] such that "there is reasonable assurance that no potential alternative sites . . . have been omitted."[34] The criteria for selecting candidate areas and candidate sites are essentially the

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[29] NUREG-1555 at p. 9.3-7. *See also* Draft Revised Section 9.3 at pp. 9.3-11 to 9.3-12.

[30] NUREG-1555 at p. 9.3-7. The Staff omitted this instruction from Draft Revised Section 9.3.

[31] NUREG-1555 at p. 9.3-8. *See also* Draft Revised Section 9.3 at p. 9.3-6.

[32] A "candidate area" is a reasonably homogeneous area of several square miles, large enough to contain several sites, and located within the region of interest. Regulatory Guide 4.2 (Rev. 2), "Preparation of Environmental Reports for Nuclear Power Stations" at p. 9-1 & n.2 (July 1976) (Reg. Guide 4.2).

[33] NUREG-1555 at p. 9.3-9. *See also id.* at p. 9.3-11 (referring to the need for the Staff to determine whether "the applicant . . . employed a practicable site-selection process"); Draft Revised Section 9.3 at p. 9.3-8 ("the staff needs to determine whether the applicant used a logical process that would reasonably be expected to produce a list of the best possible sites in the candidate area(s)").

[34] NUREG-1555 at p. 9.3-10.

same.[35] The ESRP then states that, as a general matter, "the identification of . . . three to five alternative sites in addition to the proposed site could be viewed as adequate."[36]

2. The Parties' Environmental Documents

a. Dominion's Environmental Report

Dominion defined its region of interest as "the Eastern quadrants of the United States,"[37] which includes an irregular area from New York to South Carolina, then west to Texas, and finally north to Minnesota.[38] Next, Dominion identified the candidate sites within that region of interest. Dominion did not provide a list of all such sites, instead describing them generally -- as federal facilities, existing nuclear plant sites, and a "generic greenfield site."[39] Dominion then addressed more specifically the generic greenfield site[40] and two specific federal sites – the Department of Energy's (DOE) site at Portsmouth, Ohio, and DOE's Savannah River site in South Carolina (SRS). Dominion ruled out the greenfield site because the anticipated environmental impacts of constructing a plant there would exceed the impacts of constructing a

[35] Reg. Guide 4.2 at p. 9-3.

[36] NUREG-1555 at p. 9.3-10. *See also* Draft Revised Section 9.3 at p. 9.3-10 (same).

[37] ER at p. 3-9-2.

[38] ER at p. 3-9-12, Figure 9.3-1. According to the Staff, the irregularity of the region of interest was a function of transmission system areas. Transcript of Evidentiary Hearing at 561-EH (Andrew J. Kugler, Staff witness) (April 25, 2007) (Tr.), ADAMS Accession No. ML071370547.

[39] ER at pp. 3-9-2 to 3-9-3.

[40] A "'greenfield' site is assumed to be an undisturbed, pristine site." NUREG-1437 (Supp. 3), "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding the Arkansas Nuclear One, Unit 1" at p. 8-3 (April 2001), ADAMS Accession No. ML011170034.

plant at an existing nuclear site.[41] By contrast, Dominion found numerous advantages to locating a new nuclear unit at DOE's sites[42] or on an existing nuclear plant site.[43]

Dominion then narrowed the group of existing nuclear plant sites by giving preference to existing sites that were "designed for more generation than actually constructed" and/or to which Dominion could "more readily obtain access and control."[44] Dominion's exercise of this preference eliminated all but three nuclear plant sites – North Anna Power Station, Surry Power Station in Virginia, and Millstone Power Station in Connecticut.[45]

Next, Dominion excluded Millstone from consideration, explaining that the site had not been licensed for construction of additional units, had potential fogging and/or icing problems, was near a special recreation facility, and was the subject of an ongoing feasibility study evaluating once-through cooling system impacts.[46]

This left only two federal and two nuclear plant sites as candidates -- North Anna, Surry, SRS, and Portsmouth.[47] Dominion next applied 45 economic, engineering, environmental and sociological criteria to each potential site and concluded that the North Anna site outscored the

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[41] ER at p. 9-3-4 and 3-9-9, Table 9.3-1.

[42] *Id.* at pp. 3-9-3 to 3-9-4.

[43] *Id.* at pp. 3-9-4 to 3-9-5.

[44] *Id.* at p. 3-9-5.

[45] *Id.* at pp. 3-9-5 to 3-9-6.

[46] *Id.* at p. 3-9-6.

[47] *Id*.

other three by a small margin.[48] From this, Dominion reached the final conclusion that there were no obviously superior sites to North Anna.[49]

b. The Staff's FEIS

The Staff in its FEIS stated that it was following the review process specified in ESRP Section 9.3 for selecting alternative sites.[50] The FEIS discussed Dominion's region of interest and alternative site selection process, the Staff's own evaluation of alternative sites, and the subject of greenfield and brownfield alternative sites.[51] For each of these topics, the Staff described Dominion's analysis in some detail and concluded that the analysis was acceptable.

The Staff then compared the proposed North Anna site to Surry, SRS, and Portsmouth (Dominion's three proposed alternative sites) and concluded, as had Dominion, that none of the three alternative sites was "obviously superior" to the proposed North Anna site.[52] In so concluding, the Staff examined generic issues such as the impacts on air quality and biota, the impacts on radiological and non-radiological health, the effects of electromagnetic fields, the impacts of both radiation doses and health impacts on the public, and occupational doses to workers.[53] The Staff also evaluated each of the three alternative sites individually, examining impacts on land use, water use, water quality, terrestrial and aquatic resources (including endangered species), socioeconomics, and historical and cultural resources.[54]

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[48] *Id.* at pp. 3-9-7 to 3-9-8 & p. 3-9-11, Table 9.3-3.

[49] *Id.* at p. 3-9-7.

[50] FEIS at p. 8-1.

[51] *Id.* at pp. 8-7 to 8-10.

[52] *Id.* at pp. 8-11 to 8-81, 9-6 to 9-9.

[53] *Id.* at pp. 8-10 to 8-17.

[54] *Id.* at pp. 8-17 to 8-79.

3. Initial Decision LBP-07-9

Applying the legal standards and Commission guidance set forth in subsection II.A.1 above to the facts described in subsection II.A.2, the majority of the Board concluded that the Staff's analysis of alternative sites had been adequate. In a lengthy dissent, Judge Karlin disagreed, concluding that the Staff's analysis had been inconsistent with both the letter and spirit of NEPA's requirement that the agency consider reasonable alternatives to the site proposed by the applicant.

a. Majority Decision

The majority approved the Staff's review of a small number of alternative sites and, in support, relied largely on federal case law holding that the kind of alternatives requiring consideration depends upon the project's underlying goal *as determined by the applicant*. The majority did acknowledge court rulings that an applicant should not be allowed to purposely narrow the goal so as to predetermine the outcome of the agency's environmental review.[55] But the majority concluded that Dominion had justified its narrow scope of alternatives and that the Staff had adequately reviewed Dominion's alternative site selection process.

The majority relied in particular on a recent Seventh Circuit decision affirming an NRC decision regarding the Clinton ESP, where we had approved a narrower project goal, and consequently a narrower collection of alternatives, "because the applicant was 'in no position to implement' the additional alternatives."[56] The majority also leaned heavily upon federal and Commission jurisprudence favoring deference to the applicant's list of alternative sites, and

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[55] LBP-07-9, 65 NRC at 607-08 & n.96, citing *City of New York v. Department of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983), and *City of Carmel-by-the-Sea v. Department of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997).

[56] LBP-07-9, 65 NRC at 608, quoting *Environmental Law and Policy Ctr. v. NRC*, 470 F.3d 676, 683 (7th Cir. 2006).

repeatedly observed that the Staff is not required to conduct an independent feasibility study of alternative sites.[57]

b. Dissenting Opinion

Judge Karlin, on the other hand, concluded that flaws in the majority's analysis of NEPA Baseline Issue 1 (whether NEPA's and the Commission's environmental requirements have been satisfied) prevented the Board from conducting the required independent balancing (required for NEPA Baseline Issue 2) of the conflicting environmental factors contained in the record.[58] He likewise questioned how, given these flaws, the majority could properly conclude (as required under NEPA Baseline Issue 3) that the ESP should be issued, and further conclude (as required under the Overriding NEPA Issue) that the Staff's review had been adequate.[59] In short, he concluded that Dominion had unduly narrowed the site options in order to predetermine the outcome of the alternative site review.[60]

Although Judge Karlin found fault with Dominion's alternative site review, he directed most of his criticism to the quality and depth of the *Staff's* own alternative site review, because the Overriding NEPA Issue is couched in terms of the adequacy of the *agency's* review.[61] He initially observed that the Staff had never questioned whether Dominion's small selection of alternative sites was, to use the words of NUREG-1555, "the best that can reasonably be found for the siting of a nuclear power plant," or even whether Dominion had omitted any potential

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[57] *Id.* at 608-09, 611.

[58] *See* the majority's discussion of this issue, *id*. at 602-14.

[59] *See* the majority's discussion of this issue, *id*. at 615-16.

[60] *Id.* at 631. *See also id.* at 637 (opining that the acceptance of Dominion's position would render the NEPA alternative analysis a "foreordained formality"), quoting *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir.), *cert. denied*, 502 U.S. 994 (1991).

[61] *Id.*, 65 NRC at 632-38.

sites.[62] He highlighted the Staff's own acknowledgement that it had "simply 'used the slate of sites that the applicant had identified' and [had] 'determined whether *the process* that [Dominion] used to identify the sites was reasonable.'"[63]

He also argued that the Staff had "failed to comply with its own guidance requiring that the proposed site be compared against *all* nuclear power plant sites within the identifiable region of interest."[64] He observed that the Staff's analysis had included none of the dozens of plants that lie within the ESP's specified region of interest and that were not owned by Dominion's parent corporation, Dominion Resources, Inc.[65] Judge Karlin then questioned the Staff witness's justification for the Staff's decision not to follow the guidance in the ESRP – i.e., that the Commission's 1977 decision in *Seabrook*[66] absolved the Staff of the duty to consider other companies' sites. Judge Karlin also opined that the Staff's *per se* rejection had ignored the use of joint ventures, common in the nuclear industry.[67] He also criticized the Staff for having considered no federal sites other than Portsmouth and SRS.[68]

Judge Karlin ultimately concluded that, even were the Staff's *per se* approach valid, the Staff would *still* have failed to meet the standard set forth in the ESRP -- i.e., to "determine if the

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[62] *Id.*, 65 NRC at 632, quoting NUREG-1555 at p. 9.3-1.

[63] *Id.*, 65 NRC at 633, quoting Tr. at 572 (emphasis added).

[64] *Id.* (emphasis omitted), quoting NUREG-1555 at p. 9.3-7 (emphasis added).

[65] *Id*.

[66] *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-5, 5 NRC 503, 536 (1977).

[67] He offered as an example the fact that the North Anna site itself currently falls within this category, with the two existing units held as a joint venture between VEPCO and Old Dominion Electric Cooperative. LBP-07-9, 65 NRC at 634.

[68] *Id*.

selection *process* used [by the applicant] to identify candidate sites was adequate" – because the Staff's witness had offered no details as to how the Staff conducted its review.[69] Judge Karlin concluded from the testimony, the FEIS, and the parties' supplemental filings that the Staff had simply accepted Dominion's alternative site selection process at face value, "without raising a single question."[70]

4. Our Analysis

The issue here, when distilled to its essence, is whether the level of detail in the Staff's alternative site analysis was so narrow as to render the results "foreordained" or, instead, whether the level of detail was reasonable under NEPA's "rule of reason"[71] and "hard look"[72] tests.

We agree with the dissent that the FEIS does not show that the Staff's alternative site review *at the candidate site level* was sufficiently detailed. Indeed, the Staff witness conceded as much at the Evidentiary Hearing, stating, "I've got to admit, the way we state it in the EIS, we don't clearly state that we have done an evaluation of the candidate sites,"[73] and "we did not

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[69] *Id.*, 65 NRC at 636 (emphasis in dissenting opinion but not in the ESRP).

[70] *Id*.

[71] *See*, *e.g.*, *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 834 (D.C. Cir. 1982) (referring to the "rule of reason"), and *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519, 551 (1978) (referring to the "notion of feasibility") – both of which decisions address agencies' duty under NEPA to consider alternatives to an applicant's proposed action. More generally, the CEQ has described the "rule of reason" as "a judicial device to ensure that common sense and reason are not lost in the rubric of regulation." CEQ, Final Rule, "National Environmental Policy Act Regulations; Incomplete or Unavailable Information," 51 Fed. Reg. 15,618, 15,621 (April 25, 1986).

[72] *Robertson*, 490 U.S. at 333 ("the EIS requirement and NEPA's other 'action-forcing' procedures implement that statute's sweeping policy goals by ensuring that agencies will take a 'hard look' at environmental consequences").

[73] Tr. at 573-EH (Kugler).

clearly state it in terms of us looking at [Dominion's region of interest] for candidate sites."[74] As close as the Staff came to explaining this omission is to assert that, *if* the Staff had performed a candidate site study, it *would* have been "probably similar"[75] to the 2002 study by Dominion and Bechtel which, Staff asserted, contained a discussion of candidate sites.[76]

This omission creates the unfortunate – and, we believe, inaccurate -- appearance that the Staff avoided its obligation to take a "hard look" at the alternative sites issue and instead merely accepted Dominion's analysis at face value. And this appearance is exacerbated by the fact that the Staff actually reviewed in depth *only* Dominion's four proposed sites[77] -- facts

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[74] *Id.* at 574-EH (Kugler). *See also id.* at 564-EH:

> Judge Karlin: But isn't that required by NUREG-1555, that you go from region of interest to a group of candidate sites within that region, down to the alternative sites?
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> Mr. Kugler: Yes, Your Honor. And we did that. I'm not sure if the words in the document [FEIS] are fully reflective of it.

[75] *Id.* at 603-EH (Kugler).

[76] *Id.* at 600-EH to 601-EH (Kugler), referring to "Study of Potential Sites for the Deployment of New Nuclear Plants in the United States, U.S. Department of Energy Cooperative Agreement No. DE-FC07-02ID14313, Prepared by Dominion Energy, Inc. and Bechtel Power Corporation" (Sept. 27, 2002), http://np2010.ne.doe.gov/ESP_Study/ESP_Study_Dominion.pdf.

[77] *Id.* at 578-EH (Mr. Kugler agreed that the Staff compared the North Anna site to only the three alternative sites presented by Dominion), 580-EH to 581-EH (Mr. Kugler agreed that the Staff did not "look at other powerplant sites owned by Dominion or its other associated companies" or "other powerplant sites owned by other companies"), 582-EH (Mr. Kugler acknowledged that the Staff did not look at federally-owned sites other than Portsmouth and SRS). The Staff also concluded that Millstone was not a good candidate due to its location and size. *Id.* at 579-EH (Kugler). This conclusion follows Dominion's earlier decision to reject Millstone as an alternative site. Declaration of Marvin L. Smith at 2 (May 7, 2007) (Smith Declaration), attached to Dominion's Supplement to the Record on Alternative Sites (May 7, 2007).

reminiscent of those in another adjudication thirty years ago, where the adequacy of the Staff's alternative site review was similarly called into question.[78]

But *our own* examination of the entire administrative record leads us to conclude that the Staff's underlying review *was* sufficiently detailed to qualify as "reasonable" and a "hard look" under NEPA – even if the Staff's description of that review in the FEIS was not. Our explanation below provides an additional detailed discussion as part of the record on the alternative site review.[79] We direct the Staff to include a similar level of detail in future FEIS analyses of alternative sites.

a. "Greenfield" Sites

We consider reasonable Dominion's decision not to consider "greenfield" sites (i.e., sites containing no nuclear plants, non-nuclear power plants or non-power nuclear facilities such as enrichment plants[80]). The siting of a nuclear plant on such a site would be expected to have

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[78] The Licensing Board in the *Phipps Bend* case chastised the Staff for "what appears to have been a totally uncritical . . . reliance on only those alternative site possibilities suggested to it through the medium of the Applicant's Environmental Report." *Tennessee Valley Authority* (Phipps Bend Nuclear Plant, Units 1 and 2), LBP-77-60, 6 NRC 647, 658 (1977), *aff'd*, ALAB-506, 8 NRC 533 (1978). Although the Licensing Board in *Phipps Bend* ultimately approved the Staff's alternative site review, the Board described the review as only "minimally acceptable in the circumstances of this case." *Id.*, LBP-77-60, 6 NRC at 659.

[79] *See* 10 C.F.R. § 51.109(f) ("If the Commission . . . reaches conclusions different from those of the presiding officer with respect to . . . matters [involving the adequacy of the FEIS], the final [FEIS] will be deemed modified to that extent. . . ."); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), CLI-78-1, 7 NRC 1, 29 n.43 (1978) (FEIS may be "modified by subsequent decisions of our adjudicatory tribunals"); *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-819, 22 NRC 681, 705 (1985) ("Amendment of the FE[I]S by the adjudicatory hearing record and subsequent Licensing Board decision is entirely proper under NRC regulations and court precedent"), *review denied*, CLI-86-5, 23 NRC 125 (1986), *aff'd in part and denied in part on other grounds*, *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719 (3rd Cir. 1989). *Cf. New England Coalition on Nuclear Pollution v. NRC*, 582 F.2d 87, 94 (1st Cir. 1978) (same, regarding a Licensing Board decision amending an FEIS).

[80] The word "greenfield" is often used to refer more generally to "undeveloped" or "stand-alone" sites. *See* note 40, *supra*.

significant detrimental impacts on land use, ecology and aesthetics -- particularly when compared with the equivalent impacts at sites with existing nuclear power plants.[81] For example, Dominion would have to clear undisturbed land and construct transmission systems, transportation systems, cooling water systems, and other infrastructure.[82]

b. Brownfield Sites (Nuclear and Otherwise) Owned by Other Power Producers

We accept as reasonable Dominion's explanation that building its reactor(s) on a site owned by a non-affiliated competitor would permit some of the benefits of the new units (e.g., lease payments, reduced costs for shared services) to flow to that competitor – a result that would contravene Dominion's business goal of "maximiz[ing] the competitiveness of its generating costs and rates."[83] As Dominion points out, "[p]roviding a benefit to a competitor is inconsistent with Dominion's purposes and goals."[84] And even were Dominion willing to build on a competitor's site, it seems highly doubtful that the competitor would permit it. The competitor would hardly wish Dominion to be in a position to encroach on the competitor's customer base. These difficulties are examples of the "institutional . . . obstacles with construction at an

[81] Affidavit of Andrew J. Kugler in Response to "Dominion's Supplement to the Record on Alternative Sites" and to Supplement the Record in This Proceeding with Respect to Alternative Sites at 3 (May 11, 2007), attached to NRC Staff Response to "Dominion's Supplement to the Record on Alternative Sites" and Staff Supplement to the Record (May 11, 2007).

[82] Tr. at 598-EH (Kugler).

[83] Dominion Exh. 3 at 68-69, appended to Dominion's Response to the Licensing Board's February 7, 2007 Order (Issuing Environment-Related Questions) (March 1, 2007), ADAMS Accession No. ML070670202; Dominion's Response to the Licensing Board's February 7, 2007 Order (Issuing Environment-Related Questions) at 20 (March 1, 2007).

[84] Dominion Exh. 3 at 69.

alternative site" that we held in *Seabrook* were valid considerations under the rule of reason.[85] Both Dominion's own statements[86] and common sense support these conclusions.

Dominion's decision to exclude brownfield sites with *non*-nuclear (i.e., gas- and coal-fired) power facilities, was reasonable for additional reasons. Power producers typically locate gas-fired plants on small sites that would generally lack the land required for a nuclear plant's exclusion area.[87] And though power producers may locate coal-fired plants on larger sites, much of the land is used for either coal storage or ash disposal. Consequently, to locate a nuclear power plant on a coal-fired plant's site, Dominion would likely need to obtain rights to an adjacent greenfield property. As explained above, the siting of a nuclear power plant on a greenfield property (adjacent or otherwise) would be expected to trigger significant environmental and other impacts and may not be a viable alternative for locating a plant on the site of an existing nuclear power plant.[88]

Moreover, according to Dominion, non-nuclear power plants generally lack excess transmission capacity beyond the amount required to operate the existing units. By contrast, the North Anna site's transmission capacity was originally designed for additional nuclear units.[89] Further, non-nuclear units are not subject to the same stringent siting requirements as

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[85] CLI-77-8, 5 NRC at 540 (also offering as two examples "the lack of franchise privileges and current eminent domain powers").

[86] *See, e.g.*, Dominion Exh. 3 at 68 ("there is no reasonable prospect that . . . utilities would allow a substantial competitor like Dominion to build a large generating unit at their sites").

[87] *See* Smith Declaration at 1.

[88] *See id.* at 2.

[89] *See id.* at 1, 3.

nuclear power plants,[90] and consequently can be located closer to urban areas than can nuclear power reactors.[91] Also, as Dominion points out, nuclear sites have two other advantages over non-nuclear sites: a greater knowledge of environmental conditions at the site and an existing nuclear infrastructure at the site.[92]

Finally, Dominion has examined the characteristics of its affiliates' non-nuclear plant sites and that the only one large enough to offer a sufficient exclusion area would have insufficient water resources to support even one nuclear power unit (much less the two that it may seek to construct at North Anna). [93]

c. Brownfield Nuclear Facility Sites Not Housing Competitors' Power Plants

Two of Dominion's alternative sites – Portsmouth and SRS – fall into this category.[94] They share many of the advantages of existing nuclear power plant sites in that they already possess nuclear infrastructure, have already been subject to safety and environmental reviews, and are sufficiently large to house a nuclear plant and its large perimeter area.[95] They have two additional advantages in that they are not Dominion's current or potential competitors and they

[90] *See*, *e.g.*, 10 C.F.R. § 100.21(h) ("Reactor sites should be located away from very densely populated centers. Areas of low population density are, generally, preferred."); Regulatory Guide 4.7 (Rev. 2), "General Site Suitability Criteria for Nuclear Power Stations" at p. 4.7-5 (April 1998).

[91] *See* Smith Declaration at 3.

[92] *See id.* at 1.

[93] *See id.* at 3.

[94] Dominion also gave preliminary consideration to a third such site – DOE's facility at Idaho Falls – but rejected it. *See* FEIS at p. 8-11. The Idaho Falls facility was far outside Dominion's region of interest.

[95] *See* Smith Declaration at 2; Tr. 569-EH (Kugler).

are "interested in obtaining new missions."[96] In our view, Dominion's decision to include them as alternative sites was reasonable.

d. Dominion's Own Nuclear Plant Sites.

We find no fault with either Dominion's or the Staff's inclusion of the Surry site on the list of alternative sites. Conversely, we agree that Millstone was appropriately excluded from that list, due to its location and size.[97]

e. Conclusion

The Staff in its FEIS failed to include a sufficiently detailed description of the Staff's alternative site review at the candidate site level. But our own examination of the entire administrative record leads us to conclude that the Staff's underlying review *was* sufficiently detailed to qualify as "reasonable" and a "hard look" under NEPA. Our discussion of this issue today adds necessary additional details and constitutes a supplement to the FEIS's alternative site review. As noted above, we also direct the Staff to include a similar level of detail when addressing candidate sites (or in its review of candidate sites) in future FEIS analyses of alternative sites.

B. Alternative Design Criteria

The majority of the Board briefly addressed the Staff's consideration of "system design alternatives."[98] The majority agreed with the Staff that it need not have considered a system design alternative that would impose water conservation measures on the pre-existing Units 1 and 2. The majority reasoned that those units "already use once-through cooling, which results

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[96] Tr. at 581-EH (Kugler).

[97] The Staff considered Millstone at the candidate site stage. *See* note 77, *supra*; Tr. at 579-EH (Kugler).

[98] LBP-07-9, 65 NRC at 592-93, 612-13.

in approximately the same amount of water being returned to the lake as is withdrawn, albeit at a higher temperature."[99]

By contrast, Judge Karlin questioned why the Staff had not imposed a permit condition that the system design of North Anna's two existing reactor units be modified to provide for water saving measures, "as a form of offset to the impacts of the proposed new reactors" (the cooling of proposed reactor Unit 3 would result in evaporation of 8707 gallons per minute).[100]

We agree with the majority. Modifications to the system design of the two existing units fall outside the scope of this proceeding as defined by our Notice of Hearing. The Notice provides that the scope is Dominion's request for approval of the North Anna site as the location for two or more *new* reactor units (if authorized for construction and operation in a separate licensing proceeding).[101] While we recognize that the Notice authorizes the Board to "determine, after considering reasonable alternatives, whether the ESP should be issued, denied, or *appropriately conditioned to protect environmental values*,"[102] we do not construe the final clause as permission to attach conditions to operating licenses for separate, existing reactor units.[103]

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[99] *Id.* at 612-13.

[100] *Id.* at 631, 638-39.

[101] Notice of Hearing, 68 Fed. Reg. at 67,489.

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

[103] Furthermore, such a result would run afoul of our Backfit Rule, which permits the Staff to impose new conditions on existing licenses only under very limited circumstances, none of which the dissent suggests apply here. 10 C.F.R. § 50.109(a)(3).

C. The Amount of Information Needed for Issuance of an ESP

1. The Board's Discussion

We stated in 1989 that we would not issue either "[ESPs without] operational parameters" or "partial ESPs."[104] We indicated that, under such circumstances, the applicant should instead pursue an "Early Partial Decision on Site Suitability."[105] These statements led the Board to suggest that we address the question of how to apply our statement prohibiting the issuance of either full or partial ESPs where significant elements of the plant parameter envelope (PPE) for the ESP are missing and "where numerous siting issues are unresolved due to lack of information."[106] The Board directed our attention to numerous gaps and unresolved issues in the ESP application.[107] For example, the application lacked information in the following areas:

- design for water treatment systems,[108]
- information to estimate liquid and gaseous radioactive effluents for gas-cooled reactor designs,[109]

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[104] LBP-07-9, 65 NRC at 626, citing Final Rule, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Reactors," 54 Fed. Reg. 15,372, 15,377-78 (April 18, 1989).

[105] LBP-07-9, 65 NRC at 626, citing 10 C.F.R. Part 2, Subpart F and Part 50, Appendix Q.

[106] *Id.*, 65 NRC at 617.

[107] *Id.*, 65 NRC at 562 n.37 (referring both to the application's failure to include "a number of . . . PPE . . . values" and to the Staff's enumeration of 35 unresolved environmental questions), 605 (observing that "the FEIS did not address . . . groundwater contamination (and resulting lake impacts) . . . from proposed Units 3 and 4"), 616 (describing as not "resolved" numerous "findings, permit conditions, COL action items, or items listed as requiring further action or follow-up"), 626 n.116 (citing Board Safety Questions 111 & 116, and Board Environmental Questions 1A, 1B, 1C, 1D, 3, 5A, 5B, 26, 36, 51, 107, 108, & 125), 628 (referring to more than 35 instances where the FEIS described matters as "unresolved").

[108] *Id.*, 65 NRC at 627, citing FEIS at p. at 3-7.

[109] *Id.*, citing FEIS at p. 3-13.

- information on severe accidents for certain reactor designs,[110]
- uranium fuel cycle impacts for gas-cooled reactor designs,[111] and
- transportation-related "risk[s] to the public from radiation exposure for gas-cooled reactor designs.[112]

Although the Board recognized that there is no regulatory bar to granting an ESP despite unresolved issues, the Board was still concerned that such a result might contravene Commission policy. The Board ended its discussion of this issue by posing two questions for the Commission's consideration: "How many holes or 'unresolved issues' can there be in a PPE before it runs afoul of the Commission's policy?" and "When should the Staff decline to issue an ESP and advise the applicant to instead consider an Early Partial Decision on Site Suitability?"[113]

2. Our Analysis

The question of the appropriate treatment of "unresolved issues" turns largely on the facts in and surrounding the particular ESP application at issue. We therefore consider that question here in the context of this ESP proceeding. We conclude that the unresolved environmental issues here were not sufficient to prevent the Staff from completing its review of the ESP application.

We observe initially that incomplete information is not necessarily a fatal flaw, or even a flaw at all, in an ESP proceeding. As one court observed, "[c]ourts have permitted agencies to defer certain issues in an EIS for a multistage project when detailed useful information on a

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[110] *Id.*, citing FEIS at p. 5-89.

[111] *Id.*, 65 NRC at 628, citing FEIS at p. 6-1.

[112] *Id.*, citing FEIS at p. 6-26 (emphasis in original).

[113] *Id*.

given topic is not 'meaningfully possible' to obtain, and the unavailable information is not essential to determination at the earlier stage."[114] The CEQ has likewise recognized that information may be unavoidably incomplete or unavailable, and that under those circumstances, an FEIS can overcome this deficiency if it states that fact, explains how the missing information is relevant, sets forth the existing information, and evaluates the environmental impacts to the best of the agency's ability.[115]

We took much the same tack in the recent *Grand Gulf* ESP proceeding as we do here. In *Grand Gulf*, we concluded that, because certain environmental effects simply could not "be meaningfully assessed at the ESP stage," the Staff's decision to defer consideration of those effects until "a time when they can be accurately assessed [was] consistent with NEPA's requirements."[116]

With respect to the environmental review for an ESP, 10 C.F.R. § 52.17(a)(2) requires that an ESP applicant submit a complete ER focusing on construction and operation of one or more new reactors. Section 52.17(a)(2) further requires that the ER include "an evaluation of alternative sites to determine whether there is any obviously superior site to the site proposed." Where, as here, one or more particular environmental impacts cannot be meaningfully assessed

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[114] *Environmental Law & Policy Center*, 470 F.3d at 684, quoting *County of Suffolk v. Secretary of the Interior*, 562 F.2d 1368, 1372 (2d Cir. 1977).

[115] 40 C.F.R. § 1502.22(b). As noted above, although CEQ regulations do not bind the Commission, we do look to them for guidance. *PFS*, CLI-02-25, 56 NRC at 348 n.22; *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 44 n.17 (1989), *vacated in part on other grounds*, CLI-90-4, 31 NRC 333 (1990).

[116] *System Energy Resources, Inc.* (Early Site Permit for Grand Gulf ESP Site), CLI-07-14, 65 NRC 216, 218-19 (2007). This general principle of deferral likewise applies to the Staff's treatment of safety issues. *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-07-12, 65 NRC 203, 209 (2007) (*Clinton II*).

at the ESP stage, those matters may be designated as "unresolved,"[117] provided they do not interfere with the Staff's ability to determine whether there is any obviously superior alternative to the proposed site.[118]

Most of the unresolved issues enumerated by the Board concerned the design or environmental impacts of gas-cooled reactors – issues similar to, or the same as, ones we left unresolved in the *Clinton* ESP proceeding.[119] Those issues are impossible to address now from a technical standpoint, simply because the gas-cooled reactor designs have not yet been finalized. Moreover, an ESP applicant need not submit detailed design information.[120] Similarly, the unresolved water quality issue[121] defies current resolution because a design for a water treatment system has not yet been selected.[122]

These issues relate to design rather than siting and are therefore appropriately left for consideration at the COL or CP stage. This conclusion is consistent with our view that the scope of environmental review at the ESP stage is sufficient when it addresses all issues needed for us to perform an evaluation of the alternative sites.[123] Finally, the remaining issues –

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[117] *E.g.*, FEIS at Table J-3.

[118] *See* 10 C.F.R. § 52.18.

[119] *See* Dominion's Response Brief at 15 & n.9.

[120] *See* Review Standard (RS)-002, "Processing Applications for Early Site Permits" (May 3, 2004) (RS-002), Att. 3 at 2, available at ADAMS Accession No. ML040700772 ("detailed design information pertaining to structures, systems and components called for in the [ESRP] need not be submitted by an applicant in an ESP application employing the PPE approach").

[121] LBP-07-9, 65 NRC at 628.

[122] Nor can we currently address issues regarding the possible impacts of electromagnetic fields; current scientific knowledge on that subject is inconclusive. *See* FEIS, Vol. 2, at p. 3-200; Dominion's Response Brief at 18-19.

[123] *See* Final Rule, "Licenses, Certifications, and Approvals for Nuclear Power Plants," 72 Fed. Reg. 49,352, 49,430 ("The purpose of this change is to clearly delineate that the scope of the (continued. . .)

need for power, [124] alternative energy sources,[125] and severe accident mitigation alternatives[126] – similarly do not affect the alternative site analysis in this ESP proceeding. These issues may be appropriately deferred until the COL or CP stage, and therefore their lack of resolution would not prevent issuance of an ESP in this case.

D. The Adequacy of the Staff's "Environmental Justice" Review

1. Background

In Executive Order 12,898,[127] President Clinton directed federal agencies to include "environmental justice" in their mission "by identifying and addressing, as appropriate, disproportionately high and adverse health or environmental effects of [their] programs, policies, and activities on minority populations and low-income populations."[128] Although the NRC, as an

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(. . .continued)
environmental review at the early site permit stage is, at a minimum, to address all issues needed for the NRC to perform its evaluation of the alternative sites"), 49,433 (same) (Aug. 28, 2007). Although the "new" Part 52 rules (cited immediately above) do not apply in this proceeding, the quoted statement provides evidence of our view on this matter. *See also Department of Transportation v. Public Citizen*, 541 U.S. 752, 767 (2004) ("Where the preparation of an EIS would serve 'no purpose' in light of NEPA's regulatory scheme as a whole, no rule of reason worthy of that title would require an agency to prepare an EIS").

[124] 10 C.F.R. § 52.17(a)(2) ("the environmental report need not include an assessment of the benefits (for example, need for power) of the proposed action").

[125] *Clinton I*, 62 NRC at 48 ("boards must merely weigh and compare alternative sites, not other types of alternatives (such as alternative energy sources)").

[126] Letter to Dr. Ronald L. Simard, Nuclear Energy Institute, from James E. Lyons, Director, New Reactor Licensing Project Office, Office of Nuclear Reactor Regulation (Feb. 12, 2003), ADAMS Accession No. ML030280518 ("If detailed design information is not available in the ESP application, then the staff review and findings on severe accident mitigation alternatives will be deferred to the COL stage"); Letter to Dr. Ronald L. Simard, Nuclear Energy Institute, from James E. Lyons, Director, New Reactor Licensing Project Office, Office of Nuclear Reactor Regulation (June 25, 2003), ADAMS Accession No. ML031430282 (same).

[127] "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," Executive Order 12,898, 3 C.F.R. 859 (1995), 59 Fed. Reg. 7629 (Feb. 16, 1994).

[128] *Id.* at 7629.

independent agency, was not bound by the Executive Order, then-Chairman Selin nonetheless committed to undertake environmental justice reviews.[129]

As part of that commitment, the Commission issued a Policy Statement in 2004, setting out its position on the treatment of environmental justice issues in the agency's licensing and regulatory activities. The Policy Statement restated and expanded upon the "environmental justice" doctrines then emerging from a handful of the NRC's adjudicatory decisions[130] and also from two Staff guidance documents.[131] Although the Policy Statement charged the Staff with diligently investigating potential adverse environmental impacts on minorities and low-income populations, it directed the Staff to conduct an even more detailed examination in situations where the Staff finds that "the percentage in the impacted area exceeds that of the State or the County percentage for either the minority or low-income population."[132] Under those circumstances, the Commission charged the Staff to consider environmental justice "in greater detail."[133] As explained below, the Board has suggested that we clarify the meaning of the

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[129] Policy Statement, 69 Fed. Reg. at 52,041 ("Background"); *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), LBP-97-8, 45 NRC 367, 375 (1997), *rev'd on other grounds*, CLI-98-3, 47 NRC at 100-110; Letter from NRC Chairman Ivan Selin to the President, dated March 31, 1994, available at ADAMS Accession No. ML033210526.

[130] *See*, particularly, *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-20, 56 NRC 147 (2002); *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 64-71 (2001); *LES*, CLI-98-3, 47 NRC at 100-10.

[131] LIC-203, "Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues," (Rev. 1, May 24, 2004), ADAMS Accession No. ML033550003; NUREG-1748, Final Report, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs" (Aug. 2003), ADAMS Accession No. ML03254081. The Policy Statement clarifies but does not rescind these NRR and NMSS guidance documents. 69 Fed. Reg. at 52,042 ("Summary of Public Comments and Responses to Comments") (emphasis added).

[132] Policy Statement, 69 Fed. Reg. at 52,048.

[133] *Id.* In the context of the NRC's environmental justice reviews, the phrase "in greater detail" originated in NMSS's Guidance, NUREG-1748, App. C, at C-5.

quoted phrase and determine whether the Staff's FEIS satisfied our "greater detail" standard in this proceeding.

2. The Board's Discussion

The Board expressed considerable skepticism as to "whether the Staff's environmental justice analysis in the FEIS met the 'greater detail' standard in the NRC Environmental Justice Policy" Statement.[134] The Board found that the Staff's purported documentation of a "greater detail" consideration was comprised of portions of only three partial pages, none of which contained meaningful analysis.[135] The Board further found that the closest the Staff came to a meaningful discussion was its citation of a "Site Audit Trip Report" – a document which the Board described as containing "very few references" to either environmental justice or low-income or minority populations.[136]

The Board was particularly troubled by the revelation that the site audit trip did not involve "any attempt to contact and discuss [environmental justice] issues with any officials or representatives from the two jurisdictions with the largest areas of low-income and minority populations . . . within the 50-mile impact area," but rather focused on the three closest counties and two nearby communities.[137] From this, the Board concluded that the Report "does not provide meaningful support for the Staff's subsequent statement that it 'found no unusual resource dependencies or practices' . . . and 'did not identify any health-related or location-

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[134] LBP-07-9, 65 NRC at 617-21.

[135] *Id.*, 65 NRC at 619.

[136] *Id.*, 65 NRC at 620-21, referring to John A. Jaksch and Michael J. Scott, "North Anna ESP Site Audit Trip Report – Socioeconomics" (Aug. 11, 2005) (Trip Report), available at ADAMS Accession No. ML062130542.

[137] LBP-07-9, 65 NRC at 620-21.

dependent disproportionately high and adverse impacts affecting these minority and low-income populations.'"[138] The Board further observed that

> [t]he paucity of [environmental justice] analysis, investigation, and information in the FEIS raises doubts as to whether the Staff has complied with the NRC [environmental justice] policy that requires [the Staff to] provide an [environmental justice] analysis in greater detail when the low-income of minority population thresholds are met. The analysis that the Staff carried out may have been excellent, but the Board cannot assess it when information supporting the conclusion is neither included in the FEIS nor provided by reference. . . . Therefore, although the Staff's conclusions are plausible given the nature of the application being considered, the Board has doubts as to whether the Staff's [environmental justice] analysis satisfies the NRC [environmental justice] Policy requirement for an analysis "in greater detail."[139]

Based on the reasoning and observations described above, the Board recommended "that the Commission consider addressing the somewhat novel question as to what it expects the Staff to do when, under the NRC [Environmental Justice] Policy, an . . . analysis 'in greater detail' is required,"[140] "[a]nd more specifically, . . . whether an [environmental justice] analysis, where the Staff does not discuss [environmental justice] issues with representatives or officials from the jurisdictions with the main and largest minority and low-income populations in the area of interest, satisfies the 'in greater detail' requirements of the NRC [Environmental Justice] Policy."[141]

3. Our Analysis

At the outset, it bears noting that the Commission issued the Policy Statement to advise the public of the manner in which the Commission intended to prospectively exercise its

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[138] *Id.*, 65 NRC at 621, quoting FEIS at p. 4-36.

[139] LBP-07-9, 65 NRC at 621.

[140] *Id*.

[141] *Id.,* 65 NRC at 621-22 (footnote omitted).

voluntary commitment to consider environmental justice. In issuing the Policy Statement, we stated:

> The purpose of this policy statement is to present a comprehensive statement of the Commission's policy on the treatment of environmental justice matters in NRC regulatory and licensing actions.[142]

However, the Policy Statement is neither a rule nor an order, and therefore does not establish requirements that bind either the agency or the public. As stated in *Pacific Gas & Electric Co. v. Federal Power Commission*:

> A general statement of policy . . . does not establish a "binding norm." It is not finally determinative of the issues or rights to which it is addressed. The agency cannot apply or rely upon a general statement of policy as law because a general statement of policy only announces what the agency seeks to establish as policy.[143]

For the Board to suggest that the strictures of the Policy Statement may be enforced as law, or that it in some way creates a substantive mandate, accords too much weight to the Policy Statement.[144] In this context, we turn to the Board's concerns.

In LBP-07-9, the Board essentially posed the following questions:

(1) What did we mean when we directed the Staff, under certain circumstances, to "*consider*" environmental justice impacts "in greater detail?"[145]

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[142] Policy Statement, 69 Fed. Reg. at 52,041 ("Background").

[143] 506 F.2d 33 (D.C. Cir. 1974). *See also Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 733-36 (3d Cir. 1989) (in which the court declined to accord an NRC final policy statement, that had been subject to notice and comment, the stature of a rule).

[144] Indeed, as we have frequently stated, "It is the Commission's position that [E.O. 12,898] itself does not establish new substantive or procedural requirements applicable to NRC regulatory or licensing activities." Policy Statement, 69 Fed. Reg. at 52,043 ("Summary of Public Comments and Responses to Comments").

[145] *Id.*, 69 Fed. Reg. at 52,048 (emphasis added).

(2) How much of that "consider[ation]" must make its way as *explanation* into the FEIS itself?

(3) Did the FEIS's "environmental justice" discussion *in this proceeding* contain sufficient explanation (i.e., analysis, investigation, and information)?

Turning to the first two questions, we initially approve the distinction that the Board has drawn between the Staff's analysis of environmental justice issues and the Staff's explanation of that analysis in the FEIS. An FEIS is necessarily more concise than the underlying pre-FEIS analysis, as the explanation is intended to summarize the analysis in a manner both concise and understandable to the public.[146] In *LES*, we explained that an FEIS's discussion need not be "elaborate or lengthy,"[147] but found a "conclusory statement on 'some negative impact' on property values, without explanation or analysis," to be plainly deficient.[148] Guidance from the Office of Nuclear Reactor Regulation (NRR)[149] offers the following explanation of the specificity expected in an FEIS:

> The staff should clearly state the conclusion regarding whether or not the proposed action will have disproportionately high and adverse environmental impacts on minority or low-income populations. This statement should be supported by sufficient information to allow the public to understand the rationale for the conclusion. The underlying information should be presented as concisely

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[146] *See generally* Forty Most Asked Questions, 46 Fed. Reg. at 18,033 ("The body of the EIS should be a succinct statement of all the information on the environmental impacts and alternatives that the decisionmaker and the public need, in order to make the decision and to ascertain that every significant factor has been examined . . . [while] [l]engthy technical discussions . . . are best reserved for the appendix" to the FEIS).

[147] *LES*, CLI-98-3, 47 NRC at 109 n.27.

[148] *Id.*, 47 NRC at 109.

[149] At the time the Staff commenced its review of the North Anna ESP, we had not yet established the Office of New Reactors, which currently has responsibility for reviewing ESP applications.

> as possible, using language that is understandable to the public and that minimizes the use of acronyms or jargon.[150]

NRR's explanation is consistent with our own more general statement that "[t]he NRC's NEPA process for preparation of an environmental impact statement mandates *openness and clarity.*"[151]

The similar guidance from our Office of Nuclear Material Safety and Safeguards (NMSS) regarding environmental reviews (NUREG-1748, *supra*), while not directly germane to this reactor-related proceeding, is nonetheless instructive. The NMSS Guidance repeatedly instructs the Staff to *document* its conclusions regarding environmental justice,[152] and states "the facts should be presented so that the ultimate decision maker can weigh all aspects in making the agency decision."[153]

However, each environmental justice review is necessarily case-specific.[154] As we stated in *Hydro Resources*:

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[150] LIC-203, Appendix D, "Environmental Guidance and Flow Chart" at D-11. *See also* CEQ Guidance at 10 (the "analyses of environmental justice concerns [should be] clear, concise and comprehensible"). *Accord* CEQ Guidance at 14-15; 40 C.F.R. § 1501.2(a) (an FEIS should be "analytic rather than encyclopedic").

[151] Policy Statement, 69 Fed. Reg. at 52,043 ("Summary of Public Comments and Responses to Comments").

[152] NUREG-1748 at pp. C-5 ("If no minorities or low-income populations are identified in the potentially affected area or environmental impact area, then document the conclusion"), C-6 (twice stating that "[t]he reviewer should document the conclusion in the environmental justice section"), C-7 ("The results of an environmental justice evaluation should be documented in the EIS" and "an EIS . . . should document the conclusion of the findings on environmental justice").

[153] NUREG-1748 at p. C-7.

[154] *See* Policy Statement, 69 Fed. Reg. at 52,047 ("due to the site-specific nature of an [environmental justice] analysis, [environmental justice] issues are usually not considered during the preparation of a generic or programmatic EIS"); CEQ, "Environmental Justice: Guidance Under the National Environmental Policy Act" at 8 ("the question of whether agency action raises environmental justice issues is highly sensitive to the history or circumstances of a particular community or population, the particular type of environmental or human health impact, (continued. . .)

> One can always flyspeck an FEIS's discussion to come up with more specifics and more areas of discussion that conceivably could have been included. There is no "standard" formula for how environmental justice issues should be identified or addressed."[155]

We leave our discussion of the first two questions with the following observation on the Staff's discretion in the conduct of its environmental justice reviews. Given the fact-specific nature of environmental justice issues and inquiries, we believe that the methods and form of Staff review – including any decision whether to hold discussions with knowledgeable community and governmental representatives – is best left to the informed discretion of the Staff. We note that the NRR Guidance provides that "[t]he staff should develop effective public participation strategies[, . . .] strive for meaningful community representation in the [FEIS] process[, and . . .] endeavor to have complete representation of the community as a whole."[156]

With these general principles in mind, we turn to the adequacy of the Staff's environmental justice review here. If the Staff finds that "the percentage in the impacted area . .

(. . .continued)
and the nature of the proposed action itself"), 10 ("appropriate consideration of environmental justice issues is highly dependent upon the particular facts and circumstances of the proposed action, the affected environment, and the affected populations") (Dec. 10, 1997) (CEQ Guidance), available at http://www.epa.gov/Compliance/resources/policies/ej/ej_guidance_nepa_ceq1297.pdf.

[155] CLI-01-4, 53 NRC at 71, quoting CEQ Guidance at 8 ("There is not a standard formula for how environmental justice issues should be identified or addressed"). *See also* CEQ Guidance at 10 ("Neither the Executive Order [12,898] nor this guidance prescribes any specific format for examining environmental justice").

[156] LIC-203 at D-2. *See also* LIC-203 at D-3 (instructing the Staff to "develop a strategy for effective public involvement in the NRC's scoping process"). In a similar vein, a recent revision to the ESRP recommends that "[a]s part of scoping, . . . specific efforts be made to interview representatives of minority communities . . . having specific knowledge about the locations, resource dependencies, customs and practices, and pre-existing health and socioeconomic conditions of minority and low-income populations in the region." Draft Revision 1 to Section 2.5.4 (Environmental Justice) of NUREG-1555 at pp. 2.5.4-2 to 2.5.4-3 (July 2007), available at ADAMS Accession No. ML071550104. *See generally* CEQ Guidance at 9-13; 40 C.F.R. § 1500.2(d).

. exceeds [by more than 20 percent] that of the State or the County percentage for either the minority or low-income population," or if the Staff finds that "the minority or low-income population percentage in the impacted area exceeds 50 percent," then our Policy Statement states the Staff is to consider environmental justice "in greater detail" than it otherwise would.[157] The Staff found that the first of these conditions was present within a 50-mile radius of the proposed site,[158] and states that it therefore considered environmental justice in greater detail in its analysis.[159]

The Staff states that it conducted its review using the NRR Guidance.[160] As noted above, the Staff identified minority and low-income populations, and documented all of the environmental impacts of construction and operation in the FEIS.[161] The Staff concluded that all environmental impacts would be small or moderate. The Staff further stated that it had identified the pathways through which the environmental impacts could occur and examined the potentially disproportionate impacts on minority and low-income populations. More particularly, the Staff found that the offsite impacts of construction and operation to minority and low-income populations would be "small."[162] The NRR Guidance provides that, following a finding (as here) of "no potentially significant environmental impacts," the Staff should document the results and

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[157] 69 Fed. Reg. at 52,048. *See also* LIC-203 at D-8 to D-9.

[158] FEIS at pp. 2-77 to 2-79 (including Figures 2-6 and 2-7), 4-36. NRR generally uses a 50-mile radius when conducting an environmental justice analysis. LIC-203 at D-8.

[159] Staff's Response Brief at 4.

[160] *Id.* at 4.

[161] *Id.* at 5.

[162] FEIS at pp. 4-36, 4-50, 5-52, 5-94.

end the environmental justice review.[163] But the Staff went on to determine that "no disproportionately high and adverse impacts on minority or low-income groups were identified."[164] We now examine the Staff's analysis to determine whether it supports the Staff's conclusion that it complied with the "greater detail" standard in this instance.

As a first step, the Staff used census data to identify minority and low-income groups within the identified 50-mile radius. This action was needed, *regardless* of whether the Staff conducted a "greater detail" review. Of necessity, the Staff had to identify these groups *before* it could determine that "the percentage in the impacted area significantly exceeds that of the State of the County percentages for either the minority or low-income population"[165] – the finding that triggers a "greater detail" review in this proceeding.

The Staff went on to document all environmental impacts as "small" or "moderate," which goes to the heart of a "greater detail" review: are there potentially significant environmental impacts to minority or low-income populations? The problem here lies in the paucity of the Staff's discussion. The portions of the FEIS that purport to document the environmental justice review "in greater detail" are, as discussed below, a set of brief and conclusory passages,[166] ultimately finding that "cumulative impacts of environmental justice would be SMALL."[167] As noted, the Staff, in its Response Brief, points to its documentation of all of the environmental impacts of construction and operation in the FEIS, referring to tables of these findings outside

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[163] LIC-203 at D-10. We understand the Staff's determination of "small" impacts to fall under this rubric.

[164] FEIS at pp. 4-36, 5-52.

[165] Policy Statement, 69 Fed. Reg. at 52,048.

[166] *See* FEIS at p. 4-50, Table 4-1, p. 4-36, p. 5-52, and p. 5-94, Table 5-22.

[167] *Id.* at p. 7-7. The remaining statements in these three sections of the FEIS address issues other than environmental impacts.

the environmental justice discussion, that were not mentioned by the Board.[168] Thus, the Staff appears to rely heavily on its descriptions and findings regarding impacts in other parts of the FEIS, outside the environmental justice discussion. While these findings reasonably inform the environmental justice review as part of an integrated NEPA review, the Staff's discussion of environmental justice in the FEIS did not clearly explain or detail how these findings were taken into account.

For example, the Staff, in its Response Brief, states that it identified the pathways through which environmental impacts could affect the identified minority or low-income populations,[169] citing two maps (FEIS Figures 2-6 and 2-7) in support.[170] While the two cited maps provide information regarding the locations of such populations, the maps, by their very nature, do not explain the identification of any pathways.[171] The maps do, however, show the relative locations of the relevant populations and the proposed units and demonstrate that the relevant populations are not located in the immediate vicinity of the site, as the Staff indicates in its Response Brief.[172] The Staff also points, in its Response Brief, to the NRR Guidance, which provides that typically, the severity of environmental impacts varies inversely with the distance from the facility, and therefore, the review should be focused on areas closer to the site.[173]

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[168] Staff's Response Brief at 5, citing FEIS at pp. 4-48 to 4-51 (construction) and 5-92 to 5-94 (operation).

[169] Staff's Response Brief at 5, 6.

[170] FEIS at pp. 2-78 and 2-79.

[171] *Id.* at p. 4-36 ("The staff identified the pathways through which the environmental impacts associated with the construction of Units 3 and 4 at the [North Anna] site could affect human populations"), 5-52 (same regarding operational impacts).

[172] Staff's Response Brief at 5-6.

[173] *Id.* at 6.

Further, the Staff states that it examined the potentially disproportionate impacts on the relevant minority and low-income populations.[174] The Staff describes in general terms the methodology and results of its examination.

> The staff then evaluated whether minority and low-income populations could be disproportionately affected by these impacts. In its December 2003 onsite review, the staff interviewed local government officials and the staff of social welfare agencies concerning potentially disproportionate impacts on low income and minority populations (Jaksch and Scott 2005). The staff found no unusual resource dependencies or practices, such as subsistence agriculture, hunting, or fishing through which the population could be disproportionately impacted by construction of Units 3 and 4 at the [North Anna] site that would result in those populations being adversely affected. In addition, the staff did not identify any health-related or location-dependent disproportionately high and adverse impacts affecting these minority and low-income populations.[175]

While such negative findings may limit the extent of the expected analysis, these statements do not provide details of a supporting analysis.

This assessment is supported by the Staff's reference to the underlying "Trip Report" by Jaksch and Scott.[176] As the NRR Guidance states, "[e]ach [F]EIS shall contain a section titled, 'Environmental Justice,' which will either contain the complete environmental justice review or *a reference to another document containing the review*."[177] The Board pointed out, however, that the Trip Report "does not provide meaningful support for the Staff's subsequent statements that it 'found no unusual resource dependencies of practice' . . . and 'did not identify any health-

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[174] *Id.* at 5, citing FEIS at pp. 4-36 and 5-52.

[175] FEIS at pp. 4-36 and 5-52. The Staff also observes that the negative findings are consistent with the fact that the Staff discovered no such impacts during the scoping process, or from comments on the DEIS or the Supplemental DEIS (SDEIS), or from the Staff's other public outreach activities.

[176] *See supra* note 136.

[177] LIC-203 at D-11 (emphasis added). *Cf.* NUREG-1748, App. C at C-7 ("If a site has already received an environmental justice evaluation, it is acceptable to reference the previous evaluation and provide a summary of the findings and then add any new information that results from the proposed action").

related or location-dependent disproportionately high and adverse impacts affecting . . . minority or low-income populations.'"[178] While the report reflects some discussion of low-income and minority populations, and broader discussion of issues of potential relevance to consideration of impacts, the report is essentially a description of a series of conversations with local citizens and officials.

When the Staff review identifies minority or low-income populations in a potentially significant environmental impact area, NRR Guidance directs the Staff to determine "disproportionately high and adverse effects" by considering the following six questions:

- Are the radiological or other health effects significant or above generally accepted norms? Is the risk or rate of hazard significant and appreciably in excess of the general population? Do the radiological or other health effects occur in groups affected by cumulative or multiple adverse exposures from environmental hazards?

- Is there an impact on the natural or physical environment that significantly and adversely affects a particular group? Are there any significant adverse impacts on a group that appreciably exceed or [are] likely to appreciably exceed those on the general population? Do the environmental effects occur or would they occur in groups affected by cumulative or multiple adverse exposure from environmental hazard?[179]

Neither the FEIS nor the Staff's Response Brief explains the role of these questions in the Staff's determination. Rather, the Staff focused, in its Response Brief, as noted above, on the portion of the guidance that states: "If there are no minority or low-income populations within the impact area(s) or if there are no potentially significant environmental impacts, then these results should be documented and the environmental justice review is complete."[180]

We recognize that the NRR Guidance is not binding on the Staff. However, we believe that, in this instance, the Staff has placed undue reliance upon NRR's direction to present the

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[178] LBP-07-9, 65 NRC at 621, quoting FEIS at p. 4-36.

[179] LIC-203 at D-10. *See also* NUREG-1748, App. C at C-6.

[180] Staff's Response Brief at 5, citing FEIS at pp. 4-36 and 5-52. Dominion presents a similar argument. Dominion's Response Brief at 10.

"underlying information . . . as concisely as possible."[181] As a result, the Staff's explanation of how it reached its conclusions regarding environmental justice is rather cursory for a licensing action of this magnitude. However, in this instance, we do not direct the Staff to supplement its environmental justice review, as we otherwise might, because, as discussed below, we believe that the review was sufficient and that such a supplement would constitute a purely academic exercise with little or no practical benefit.

The Board did not take issue with the Staff's identification of relevant minority and low-income populations. The record in this case shows that no petitioner raised a proposed contention with respect to environmental justice issues. As noted above, the Staff found a majority of the *general* environmental impacts set forth in this FEIS to be "small" or, in a very few cases, "moderate." Further, a review of public comments on the DEIS and SDEIS indicates that no commenter identified, or even suggested, an environmental justice issue associated with this ESP site, such as the presence of subsistence fishing in Lake Anna, or other practices of minority and/or low-income populations that could lead to a disproportionately high and adverse impact linked to the construction and operation of one or more new units at the North Anna ESP site.[182] Moreover, the Staff contacted officials and representatives of the three closest counties and two nearby communities, in addition to the scoping process and public outreach associated with preparation of the DEIS, SDEIS, and FEIS.

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[181] *See* LIC-203 at D-11.

[182] *See* FEIS, Vol. 2, at pp. 3-3, 3-193 to 3-196. More than one commenter, however, requested that the EIS include more extensive information related to environmental justice. The Staff's responses to these comments specifically discussed its various public outreach efforts. In addition, none of the comments gathered during the scoping process, prior to preparation of the DEIS, related to environmental justice issues. *See generally* DEIS, Appendix D, "Scoping Meeting Comments and Responses."

We did not identify, in the record presented, any concrete environmental justice issues associated with this proposed action. We do not believe it is necessary to require the Staff to supplement the FEIS, as there is no suggestion in the record of unaddressed environmental justice considerations.

For these reasons, although the Staff's discussion of its environmental justice analysis set forth in the FEIS is quite thin, we do not require further review. We believe that the Staff's documentation does reflect consideration of environmental justice in greater detail, though the discussion of that consideration is terse. Were we to be presented with a situation similar to that in the *LES* case, in which either the Staff or a public stakeholder identified (at *any* point during the Staff's review) a concrete, site-specific environmental justice issue,[183] we would expect the Staff to reflect in its environmental documents a significantly more detailed environmental justice discussion than it presented in this FEIS.

In conclusion, the Staff's review did not clearly comport with the letter of the Commission's environmental justice Policy Statement, or with its internal Staff guidance. However, it appears to us that the Staff's review satisfied the statutory and regulatory requirements of NEPA, in that it did take a "hard look" at the environmental impacts of the

[183] In *LES*, the Commission addressed two concrete issues of disparate impact on two nearby, impoverished, and overwhelmingly African-American communities. Specifically, the applicant proposed relocating a particular road, but the FEIS, in considering the impacts of re-locating the road, failed to take into account the impact of that relocation on pedestrians. The Board determined that many residents used the road as a vital link between the communities, and the extra distance that would be added to the pedestrian commute would have a significant impact on elderly or infirm residents. In addition, the Board found that the FEIS gave only cursory attention to the change in property values resulting from the construction of the uranium enrichment facility in question. Because the two communities were adjacent to the proposed site, presumably the predicted negative impact on property values would fall most heavily on those communities. The Commission ultimately affirmed the Board's direction to the Staff to revise the FEIS to consider actions to mitigate the impacts of (1) relocating the road, and (2) the project on property values. *See generally LES*, CLI-98-3, 47 NRC at 106-10.

construction and operation of new units on the North Anna ESP site. On a practical level, its review was sufficient to identify significant environmental impacts that would fall heavily on a particular minority or low-income community.[184]

We observe, however, that the Commission's Policy Statement and internal guidance on conducting environmental justice reviews are in place to clearly explain to the public how the agency will conduct its environmental justice reviews in licensing matters such as this. We expect conformance with the Policy Statement, and relevant associated guidance, in future licensing actions of this magnitude.

E. Applicability of Multiple Radiation Protection Standards

1. The Board's Discussion

During the evidentiary hearing, the Board expressed some confusion as to how to apply the agency's various standards for radiation releases and doses from normal operations. The Board heard presentations from, and posed a number of questions to, the parties' experts in this area.[185] In particular, the Board was interested in how the NRC's multiple radiation protection standards apply to new reactors added at a site with pre-existing nuclear reactors and radiological effluents.[186] The Board posed questions as to how the "as low as reasonably achievable" (ALARA) concept applies when a company proposes to place multiple additional

[184] We also recognize that the North Anna site already contains existing nuclear units, and we would therefore expect that the actual impacts on low-income and minority populations would have already been identified. This ESP is for a site that has had two operating nuclear power plants for over 20 years. The existing plants (through the NRC's regulatory oversight, participation in emergency preparedness activities, and routine community outreach activities) provide the NRC with substantial information about the effects of a nuclear power plant on surrounding communities and populations.

[185] LBP-07-9, 65 NRC at 585.

[186] *Id*.

nuclear reactors on a site where such facilities are already located.[187] Although the Board ultimately determined, in making its findings on Safety Issue 1, that "issuance of the ESP will not result in the exceeding of any of NRC's existing numeric radiological standards for the siting of nuclear power plants,"[188] it requested Commission guidance in this area.[189]

According to the Board, much of the confusion surrounding this general issue arises from the fact that some of the Commission's dose limits and standards apply on a per-reactor basis, others apply on a per-license or per-licensee basis, still others apply on a per-site basis, and yet another applies to "uranium fuel cycle operations."[190] Further, the Board pointed out that in most cases, the per-site limit (25 mrem) would moot the per-licensee limit (100 mrem).[191]

With these considerations in mind, the Board suggested that the Commission untangle the following issues:

(1) How do the per-reactor, per-licensee, and per-site radiological limits apply when there are multiple reactors and multiple licensees being added to a site? Are they additive, increasing the amount of dose and exposure to the public? If not, how should they be applied?

(2) How is ALARA satisfied under these circumstances?

(3) How can the gas-cooled reactor designs in the ESP application be deemed to meet the NRC safety regulations, when there are no specific standards for them and most of the standards apply only to light-water-cooled reactors?

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[187] *Id.,* 65 NRC at 585-86.

[188] *Id.*, 65 NRC at 599.

[189] *Id.*, 65 NRC at 616-17.

[190] *Id.,* 65 NRC at 623 & n.111.

[191] *Id.,* 65 NRC at 623-24.

(4) How should the 25 mrem dose limit imposed by 10 C.F.R. § 20.1301(e) and 40 C.F.R. § 190.10 be allocated as between pre-existing reactor effluents and new reactor licensees on the same site?[192]

2. Our Analysis

At the outset, these questions need not be resolved before the ESP can be granted. Criteria in 10 C.F.R. § 52.17 and 10 C.F.R. Part 100 require only that the ESP applicant describe the maximum levels of radiological effluents each facility will produce, and demonstrate that radiological effluent release limits *can be met* (with appropriate design), given the atmospheric dispersion characteristics of the site.[193] The evidence presented at hearing satisfied the Board that these requirements had been met.[194] A determination of whether doses are ALARA would be considered during the review of any subsequent CP or COL application referencing the ESP. A CP or COL applicant referencing this ESP, however, may be required to address issues unique to a multi-reactor, multiple-licensee site. Therefore, we offer the following observations on the Board's questions.

a. Board Question 1: How do the Per-reactor, Per-licensee, and Per-site Radiological Limits Apply When There are Multiple Reactors and Multiple Licensees Being Added to a Site?

The Board expressed concern that it is unclear how the various standards in 10 C.F.R. Parts 20 and 50 interact at multi-reactor sites, given that the standards are expressed in terms of different entities. Part 20, Subpart D, for example, applies generally to "licensees"[195] and limits radiation dose limits to "individual members of the public."[196] Part 50 standards, in

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[192] *Id.*, 65 NRC at 625-26.

[193] *See* 10 C.F.R. §§ 52.17(a)(1); 100.21(c)(1).

[194] LBP-07-9, 65 NRC at 599.

[195] 10 C.F.R. § 20.1301(a) applies to "each licensee."

[196] *See, e.g.*, 10 C.F.R. § 20.1301(a)(1).

contrast, apply on a per-reactor basis, requiring that all nuclear reactors be designed so that releases of radioactivity are ALARA.[197]

Two provisions of 10 C.F.R. Part 20 are of interest here. Section 20.1301(a) provides, in pertinent part, that *all licensees* shall conduct operations so that the total effective dose equivalent (TEDE) to individual members of the public from the licensed operation will not exceed 0.1 rem (100 mrem) in a year. It is a *per-licensee* standard. Section 20.1301(e) incorporates by reference the U.S. Environmental Protection Agency's (EPA) environmental radiation protection standard found at 40 C.F.R. § 190.10, which imposes a stricter limit of .025 rem (25 mrem) to any member of the public resulting from planned releases of radioactive effluents.[198] It applies to all sources within the uranium fuel cycle at a given site; that is, it is a *per-site* restriction.

For light-water-cooled reactors (LWRs), § 20.1301(e) would be the limiting standard, because a licensee within the uranium fuel cycle could not release the 100 mrem limit permitted by § 20.1301(a) without necessarily violating the 25 mrem limit of § 20.1301(e) that applies to the entire site. This would be true whether the applicant seeking to construct and operate a new LWR is the licensee for the existing reactor at the site, or a different licensee (as could be the case for the North Anna site). In this

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[197] *See* 10 C.F.R. § 50.34a, "Design objectives for equipment to control releases of radioactive effluents -- nuclear power reactors." Similarly, 10 C.F.R. § 50.36a(a) requires "each licensee of a nuclear power reactor" to include technical specifications that, among other things, require compliance with 10 C.F.R. § 20.1301(a), in order to keep releases of radioactive materials during normal conditions ALARA.

[198] 40 C.F.R. § 190.10.

circumstance, the 100 mrem limit imposed by 10 C.F.R. § 20.1301 would be of no regulatory consequence.[199]

It is true that the limits in 40 C.F.R. § 190.10 – and hence 10 C.F.R. § 20.1301(e) – do not apply to non-LWRs. EPA's radiation protection standard applies to operations within the "uranium fuel cycle," which it defines as the processes in production of uranium fuel, "generation of electricity by a light-water cooled nuclear power plant using uranium fuel," and reprocessing spent uranium fuel.[200] This definition excludes gas-cooled nuclear power reactors, regardless of fuel composition. Therefore, under the current regulatory scheme, gas-cooled nuclear power reactors would not be subject to the stricter 25 mrem per-site limit of 40 C.F.R. § 190.10 and 10 C.F.R. § 20.1301(e). In addition, 10 C.F.R. Part 50, Appendix I provides "numerical guidance on design objectives for [LWRs] to meet the requirements that radioactive material in effluents released to unrestricted areas be kept [ALARA]."[201] No similar design objectives currently exist for non-LWRs.

Currently, every operating nuclear power reactor in this country is a light-water-cooled reactor, and therefore subject to the limits of § 20.1301(e). But Dominion included two gas-cooled reactor designs in its list of designs considered when developing the PPE for the North Anna ESP application. This potentially gives rise to the anomalous situation in which a new licensee with a gas-cooled (or other non-LWR) design could, in theory, be permitted radiological emissions resulting in up to 100 mrem

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[199] In its Initial Decision, the Board interpreted a Staff legal pleading to say that § 20.1301(a) does not apply to nuclear reactors. LBP-07-9, 65 NRC at 624. But the Staff's Response Brief (at 9) clarifies the Staff's intent to convey that § 20.1301(a) also applies to "other" licensees *in addition to* nuclear power reactor licensees.

[200] 40 C.F.R. § 190.02(b).

[201] 10 C.F.R. § 50.34a(a).

TEDE to a member of the public, at a site where one or more existing LWR licensees must limit their own emissions to a total of 25 mrem or less. Neither the NRC Staff nor the applicant thought this a practical concern, however, because *any* new reactor would be subject to the existing Part 50 ALARA requirements.[202]

We expect that the ALARA requirements will ensure that radioactive effluent releases from new LWRs on a given site are likely to remain well below applicable regulatory limits. With respect to LWRs, the numerical design objectives of Part 50, Appendix I to Part 50 are a fraction of the § 20.1301(e) (40 C.F.R. § 190.10) limits.[203] The existing units at North Anna, for example, control the releases of radioactive effluents so that the maximally exposed individual receives a calculated dose of only .32 mrem per year.[204] According to the Final Safety Evaluation Report (FSER), the calculated whole body dose from the new units is expected to be, at most, 6.4 mrem per year.[205] Given that the postulated source terms were calculated to be conservative, the Staff reasonably determined that applicable radiation standards could be met. Compliance with ALARA requirements will, of course, be considered in conjunction with a subsequent CP or COL application.

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[202] *See* Staff's Response Brief at 15-16, Dominion's Response Brief at 13-14; 10 C.F.R. §§ 50.34a, 50.36a, 20.1101.

[203] In promulgating 40 C.F.R. Part 190 standards, EPA recognized that Appendix I design objectives would assure the Part 190 standards were met for sites with up to five reactors. Except in "highly unusual circumstances," a multi-reactor site could have up to five units conforming to the Appendix I design objectives without violating the limits of §190.10. *See* Final Rule, "Part 190 – Environmental Radiation Protection Standards for Nuclear Power Operations," 42 Fed. Reg. 2857, 2858 (Jan. 13, 1977).

[204] *See* ER, Rev. 9, at p. 3-5-147 (Sept. 2006). *See also* Tr. at 470-EH.

[205] NUREG-1835, "Safety Evaluation Report for an Early Site Permit (ESP) at the North Anna ESP Site," Supp. 1, at p.11-4 (Nov. 2006) (FSER Supplement 1).

As noted above, specific numerical guidelines for maintaining effluent releases ALARA for non-LWRs have not been developed. Unless and until such guidelines are implemented, whether a particular non-LWR design complies with ALARA requirements will be determined on a case-by-case basis in the context of a future COL or CP application referencing the ESP.

b. Board Question 2: How is ALARA Satisfied at Multi-reactor, Multi-licensee Sites?

Here, the Board voiced a concern that, even when each reactor is held to an ALARA standard with respect to radiological emissions, total emissions necessarily increase when additional reactors are added to a site.[206] While additional reactors on a site might raise the TEDE to members of the public, 10 C.F.R. Part 20 caps total exposures to the public. Where the site contains "uranium fuel cycle" facilities (for example, light-water-cooled reactors) § 20.1301(e) limits the TEDE to 25 mrem per year. Should one or more new reactors be non-LWRs, the per-site limit applicable to them under Part 20 is 100 mrem, but a CP or COL application for such reactors would not be approved unless the applicant seeking to build them demonstrated that their emissions would be ALARA.

It is not necessary to address compliance with the ALARA requirements in an ESP proceeding because, as noted above, Part 100 provides that an ESP applicant need only show that "[r]adiological effluent release limits associated with normal operation from the type of facility proposed to be located at the site *can be met* for any

[206] LBP-07-9, 65 NRC at 622.

individual located offsite."[207] The Board found that the record was sufficient to meet the relevant Part 100 requirements.[208]

Notwithstanding this finding, the Board expressed concern during the evidentiary hearing that the estimated releases from the proposed new reactors were 20 times the calculated doses from the two existing reactors.[209] It questioned whether brand-new reactors could be said to be ALARA if they are expected to emit significantly higher radiation levels than the existing reactors on the site.

To respond to this concern, the scope of the Staff's ESP review bears repeating here. In making its determination on the postulated source terms, the Staff did not, and need not, authorize the proposed reactors to release radioactivity in the amounts used in connection with the dose estimates. Rather, the Staff used conservative estimates to conclude that two new units bounded by the postulated source terms *could* comply with applicable radiation standards found in 10 C.F.R. Part 20. However, *actual compliance* with applicable radiation standards is deferred at the ESP stage, and can only be determined in a COL or CP proceeding, when the applicant must proffer necessary design information and proposed operational programs.

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[207] 10 C.F.R. § 100.21(c)(1) (emphasis added); *see* 10 C.F.R. § 52.17(a)(1).

[208] LBP-07-9, 65 NRC at 601.

[209] *See* Tr. at 470-76-EH, (discussing estimates in the ER, Rev. 9 at p. 3-5-147, and at FSER Supplement 1, at p.11-4). *See also* LBP-07-9, 65 NRC at 585, 622.

c. Board Question 3: How Can the Gas-Cooled Reactor Designs in the ESP Application be Deemed to Meet the NRC Safety Regulations, When There are No Specific Standards for Them and Most of the Standards Apply Only to Light-Water-Cooled Reactors?

The Board asked how the Commission can determine that a gas-cooled design meets NRC requirements when specific standards have not yet been set for non-LWRs. We observe that, if a COL or CP applicant chooses to pursue a new reactor design before the Commission has set specific standards applicable to that type of reactor, then the applicant will be subject to the existing requirement of 10 C.F.R. § 20.1301(a)(1), and will further be required to demonstrate that its emissions will be ALARA pursuant to 10 C.F.R. §§ 50.34a, 50.36a, and 20.1101. While the design objectives found in Appendix I could potentially serve as guidance to the Staff in performing its review in this area, they would not bind such a CP or COL applicant.

d. Board Question 4: How Should the 25 Mrem Dose Limit Imposed by 10 C.F.R. § 20.1301(e) and 40 C.F.R. § 190.10 be Allocated as Between Pre-existing Reactor and New Reactor Licensees on the Same Site?

The Board questioned how, as a practical matter, the NRC can administer a "per-site" standard where there are multiple reactors and multiple licensees. The Board posed the question, by way of example, whether there would be a violation if the existing licensee at the North Anna site emitted 3 mrem and the new reactors emitted 24 mrem.[210] If a regulatory violation occurred, who would be responsible?

Because this operational issue is appropriately addressed in the context of a CP or COL application, we decline to determine today whether, or how, the Staff should "allocate" dose limits between new and existing reactors on a single site. However, we offer the following observations.

[210] LBP-07-9, 65 NRC at 625.

The Staff has stated that it does not allocate doses considered under Part 190 among multiple reactors on the same site for any reason; rather, the dose is considered to be a cumulative dose for all operations at a given site.[211] The Staff further indicates that, in the past, compliance with C.F.R. Part 190 at sites with 4 or fewer units has been ensured through compliance with the Appendix I dose objectives.[212]

As indicated in the Staff's Response Brief, and as discussed in its earlier response to Board Safety Question 80, the technical specifications for each LWR currently require a demonstration of compliance with 40 C.F.R. Part 190 when Appendix I reporting levels, also in the technical specifications, are exceeded.[213] The Staff has also stated that, under current practice, if *a reactor* were to exceed the dose limits of Part 190 or any other Part 20 requirement, it would perform an inspection to identify the cause of the exceedance, and determine whether proper response and corrective action has been taken by the licensee.[214] Although we decline today to direct the Staff in the conduct of its regulatory responsibilities in this area, we note that its current approach has proven to be effective thus far, and does not seem unreasonable, as a general matter, as guidance for future practices in the context of new reactor licensing.

F. Other Matters

In CLI-07-23, we invited the Staff and Dominion to address "the suggestions in LBP-07-9 regarding perceived deficiencies in the NRC Staff's and Dominion's evidence and arguments . .

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[211] *See* Staff's Response Brief at 19, citing the "NRC Staff Legal Brief in Response to Licensing Board's Safety-Related Questions," at 8-9 (Feb. 8, 2007).

[212] *Id.*

[213] Staff's Response Brief at 19-20.

[214] Staff Response to Board Question 80, Staff Exh. 6, Attachment A, at 72-73.

."[215] In this vein, the Staff addressed two issues that merit brief mention.

1. *Tritium*

In LBP-07-9, the Board specifically requested that both Dominion and the Staff provide expert testimony and respond to questions on the "sources, release mechanisms, approximate contributions, pathways, and concentrations of tritium associated with nuclear power reactors[,]" including the existing North Anna Power Station and the proposed ESP site.[216] The Board noted that Dominion ultimately proposed a PPE for this proposed ESP that included a tritium liquid effluent release rate of 850 ci/yr.[217] The Board criticized the Staff for having "made no effort" to determine whether 850 ci/yr is a reasonable value for operation of an Advanced CANDU Reactor (ACR) 700, one of the reactor designs contemplated by Dominion.[218]

In this regard, we note that the Staff did not err in performing its review. The ESP application at issue here employed a PPE, a set of design parameters, as opposed to design characteristics associated with a particular reactor design. As such, the Staff considered whether a plant with design characteristics bounded by the design parameters in the PPE *can be* constructed and operated on a site possessing the characteristics of the proposed North Anna ESP site. With respect to the relevant design parameter for tritium, the Staff determined that at least *some designs* would have tritium release rates bounded by the 850 ci/yr value, and therefore concluded that the design parameter itself was not unreasonable for evaluating whether radioactive effluents could meet applicable regulatory requirements at the North Anna

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[215] 66 NRC at __, slip op. at 2 (footnote omitted).

[216] LBP-07-9, 65 NRC at 579.

[217] *Id.*, 65 NRC at 581.

[218] *Id.*, 65 NRC at 581-82.

ESP site.[219] Approval of an ESP does not – and is not intended to – approve the construction or operation of reactor(s) of any specific design at the proposed ESP site. As such, the Staff's review of the PPE value for tritium liquid effluent release rate was not in error.

2. *Hydrology*

Regarding PPE values related to hydrology, the Board expressed concern about the Staff's review of the composition of radioactive waste effluents and related radionuclide transport. The Board therefore instructed the Staff to produce one or more experts to respond to questions concerning the following proposed permit condition, designated proposed Permit Condition 4:[220]

> [a]n applicant for a CP or COL referencing this ESP shall ensure that any new unit's radioactive waste management systems, structures, and components, as defined in Regulatory Guide 1.143, for a future reactor include features to preclude accidental releases of radionuclides into potential liquid pathways.[221]

During the evidentiary hearing, the Board spent considerable time clarifying its understanding as to the scope and intent of the permit condition.[222] The Staff's evidence notwithstanding, the Board, in LBP-07-9, appeared to be disinclined to follow Commission

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[219] Staff's Response Brief at 42, citing Tr. at 332-EH; Staff Exh. 2 at pp. 11-3 to 11-5.

[220] In the FSER, this proposed condition stated:

> The NRC staff proposes to include a condition in any ESP that might be issued in connection with this application requiring that an applicant referencing such an ESP design any new unit's radwaste systems with features to preclude any and all accidental releases of radionuclides into any potential liquid pathway.

FSER at p. A-3; FEIS at p. J-9. Subsequently, the Staff conformed the wording of this proposed condition to that approved by the Commission for identical conditions in the *Grand Gulf* and *Clinton* ESP proceedings. LBP-07-9, 65 NRC at 576, citing the "NRC Staff's Written Statement of Position," at 12 n.21 (April 10, 2007).

[221] This permit condition is numbered 3.E.3 in the draft permit proffered as Staff Exhibit 17.

[222] LBP-07-9, 65 NRC at 576-79.

precedent regarding Permit Condition 4. However, as the Board acknowledged, in prior ESP proceedings, we have squarely addressed this issue and approved the permit condition as one way to enable the Staff to make the requisite finding of 10 C.F.R. § 100.20(c)(3).[223] Specific matters associated with the implementation of Permit Condition 4 are appropriately deferred and addressed in conjunction with any CP or COL application that may be submitted referencing this ESP. We see no reason to revisit the issue here.

3. *Board Findings on NEPA Baseline Issue 3*

Finally, we invited the Staff and Dominion to address any other issues in LBP-07-9 that, in their view, warranted comment.[224] The Staff noted that, in addressing its findings on NEPA Baseline Issue 3, the Board stated:

> It is our determination that the ESP should be issued and should include the proposed permit conditions contained in Staff Exhibit 17, and the permit conditions, COL action items, site characteristics, plant parameter envelope values, *representations, assumptions, and unresolved issues* specified in Appendices I and J to the FEIS.[225]

The Staff takes the position that the "representations, assumptions, and unresolved issues" set forth in FEIS Appendix J should not be incorporated into the permit. For the reasons set forth below, we agree.

NEPA Baseline Issue 3 requires the Board to determine "whether the construction permit . . . should be issued, denied, or appropriately conditioned to protect environmental values."[226] Should the Commission approve issuance of this ESP, the regulations in 10 C.F.R. Part 52

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[223] *Id.*, 65 NRC at 600-01. *See Clinton II*, CLI-07-12, 65 NRC at 206-07; *Grand Gulf*, CLI-07-14, 65 NRC at 217-18.

[224] CLI-07-23, 66 NRC at __, slip op. at 2.

[225] LBP-07-9, 65 NRC at 616 (emphasis added).

[226] 10 C.F.R. § 51.105(a)(3).

specifically contemplate inclusion of: site characteristics and plant parameters (including plant parameter envelope values),[227] and permit conditions.[228]

In addition, we agree that COL Action Items should be included in the permit. As stated in the FSER Supplement:

> The [COL action items] identify certain matters that shall be addressed in the final safety analysis report (FSAR) by an applicant who submits an application referencing the North Anna ESP. These items constitute information requirements . . . . An applicant may depart from or omit these items, provided that the departure or omission is identified and justified in the FSAR. . . . The staff identified the [COL action items] with respect to individual site characteristics *in order to ensure that particular significant issues are tracked and considered during the review of a later application referencing any ESP that might be issued for the North Anna ESP site.*[229]

Like permit conditions, site characteristics, and plant parameter values, the COL action items identify significant information requirements that do not affect the Staff's ability to make the requisite safety findings for issuance of an ESP, but nevertheless merit tracking and resolution during the safety review performed for a subsequent CP or COL application referencing the ESP.

By contrast, the "representations, assumptions, and unresolved issues" discussed in the FEIS serve a different purpose. The Staff explains that, in assessing the environmental impacts

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[227] 10 C.F.R. § 52.39 (referring to "'site parameters' included in the permit); 10 C.F.R. § 52.79 (referring to "the parameters specified in the early site permit"). By way of explanation, we clarified these terms in the recently-revised Part 52, correctly referencing (among other things) "site characteristics" and "design parameters". *See* 72 Fed. Reg. at 49,370-71, 49,518 (definitions to be codified at 10 C.F.R. § 52.1). The new rule adds definitions of and explains use of the terms. The term "site characteristics" is defined as "the actual physical, environmental, and demographic features of a site. Site characteristics are specified in an [ESP] . . . ." The term "design parameters" is defined as "the postulated features of a reactor or reactors that could be built at a proposed site. Design parameters are specified in an [ESP]."

[228] 10 C.F.R. § 52.24.

[229] FSER Supplement 1, at p. A-4 (emphasis added).

associated with construction and operation of two new units on the North Anna ESP site, it relied on a number of representations made by Dominion in its application, and developed certain assumptions of its own.[230] The FEIS goes on to state:

> Should a CP or COL applicant reference the ESP, and the staff ultimately determine that a representation or assumption has not been satisfied at the CP/COL stage, that information would be considered new, and potentially significant, and the affected impact area could be subject to re-examination.[231]

In short, these "representations and assumptions," as well as any other key assumptions that are captured within the text of the FEIS, help to form the basis for the staff's "finality" determinations in the environmental arena during any subsequent CP or COL proceeding. However, they neither place limitations on the ESP or the ESP holder, nor bind a CP or COL applicant in the preparation of future applications referencing the ESP.

Further, Appendix J of the FEIS lists seven key "unresolved" issues; for example, the FEIS did not consider need for power, energy alternatives, or decommissioning.[232] Here again, it is clear that this list of significant unresolved issues was not intended to condition the ESP, but rather to provide a reference for future potential CP or COL applicants and the Staff. As such, it is primarily for ease of reference that these categories of items are set forth in Appendix J of the FEIS:

> Table J-1 references Dominion's *representations* and the staff's *assumptions* about design ([FEIS] Appendix I, the plant parameter envelope), permits and authorizations ([FEIS] Appendix L), mitigation (Section 4.10 and 5.11 of the [F]EIS), and the site redress plan ([FEIS] section 4.11). Table J-2 contains references to *representations and assumptions* organized by technical area . . . Table J-3 is a list of *unresolved issues*. . . .

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[230] FEIS at p. J-1.

[231] *Id.* *See* 10 C.F.R. § 52.39(a)(2).

[232] FEIS at p. J-8.

> The . . . tables are meant to aid the staff and the applicant in the event this [F]EIS is referenced in a CP or COL application. The tables are not meant to replace the analysis in the [F]EIS.[233]

We therefore agree with the Staff that, in the environmental context, the contents of the FEIS bounds the reach of both issue preclusion and Staff inquiry into new and significant information in a future CP or COL proceeding referencing an ESP granted for the North Anna ESP site.[234]

III. CONCLUSION

For the foregoing reasons, we authorize the Staff to issue the ESP.

IT IS SO ORDERED.

For the Commission

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 20th day of November, 2007.

[233] *Id.* at p. J-1 (emphasis added).

[234] *See* 10 C.F.R. §§ 52.79(a)(1), 52.89.

Commissioner Jaczko respectfully dissenting, in part

I concur with my colleagues on most of this decision, but dissent, in part, on the environmental justice portion of the Memorandum and Order. Environmental justice is a critical component of the agency's NEPA review. It seeks to ensure that environmental, social, economic and health issues are all appropriately considered in the context of minority and low-income populations where the impacts of actions may be remarkably different from the impacts on the majority. Although the staff obtained underlying data on minority and low-income populations and provided its conclusions on the potential environmental impacts on those populations in the Environmental Impact Statement (EIS), I do not believe that the Staff sufficiently explained how it reached its conclusions regarding environmental justice. Without such an explanation, I believe it is difficult for the Commission, or the public, to determine whether the Staff has examined environmental justice issues "in greater detail" - as we, in our Environmental Justice Policy Statement, directed the Staff to do. I fully support my colleagues' efforts in this Memorandum and Order to ensure that future environmental justice reviews are supported by a level of detail that would transparently describe the basis for the Staff's conclusions. I diverge from my colleagues on this issue in one respect: I would have also directed the Staff to prepare a Supplemental EIS that provides a supporting analysis for its conclusions prior to the issuance of this Early Site Permit.

I recognize that requiring additional work in the environmental justice area would then impact the finality of this Early Site Permit. I also recognize that this could cause the applicant to adjust its future plans, even though it is the agency's, not the applicant's, responsibility to consider environmental justice issues. But as I have previously stated, this agency exists to serve the public. I have consistently demanded that applicants present thorough and high quality applications to this agency and it would be inconsistent for me not to demand the same

in the Staff's review of those applications. Both are necessary for the NRC to be able to transparently demonstrate how we meet our mission. In this instance, I believe we could have provided a supplemental environmental justice analysis at the cost of a bit more time, but with the benefit of being certain that the agency had a thorough analysis supporting issuance of this Early Site Permit.