**CUMULATIVE IMPACTS OF THE PROJECT AT ALTERNATIVE SITES**

REVIEW RESPONSIBILITIES

Primary—Organization responsible for the management of environmental review

Secondary—None

I. AREAS OF REVIEW

This guidance directs the staff's the cumulative impacts analysis associated with the proposed project and other past, present, and reasonably foreseeable future actions. The scope of the section covered by this plan includes guidance on identifying the time frame of the analysis, the geographic area of interest, the baseline for the analysis and other actions that could contribute to the cumulative impact at alternative sites. The guidance in this section is applicable to all the resource areas. If the guidance is applicable to only one resource area it will be so identified. The methodology for performing cumulative analysis at alternative sites is generally the same as performing the analysis at the proposed site. The difference is the proposed site has the baseline analyzed in chapter 2, the construction impacts analyzed in Chapter 4, and the operations impacts analyzed in chapter 5, and for alternative sites the complete site analysis is done in Chapter 9 of the environmental impact statement (EIS). The same resource areas are evaluated for alternative site as the proposed site with the exception of nuclear fuel cycle and decommissioning). The impacts described in Chapter 6 of this EIS (e.g., nuclear fuel cycle; decommissioning) would not vary significantly from one site to another given the following assumptions:

- Alternative sites and the proposed site are in low-population areas,
- The same reactor design (therefore, the same fuel cycle technology, transportation methods, and decommissioning methods) is used for all of the sites.

As such, these impacts would not differ between the sites and would not be useful in the determination of whether an alternative site is environmentally preferable to the proposed site. For this reason, these impacts are not discussed in the evaluation of the alternative sites.

The alternatives sites are evaluated using reconnaissance-level information.

Reconnaissance-level information is information that is available from the applicant, governmental, Tribal, commercial, and/or public sources, when reviewing alternative sites.[a] Reconnaissance-level information does not normally require the collection of new data or field studies. Reconnaissance-level information does not normally require the collection of new data or field studies.

The NRC's regulation, implementing the National Environmental Policy Act (NEPA), requires that the applicant submit an environmental report (10 CFR 51.45). Specifically, 10 CFR 51.45(b)(3) requires the ER to include a discussion of alternatives sufficiently complete to aid

[a] ESRP section 9.3 specifies the sources of information.

the Commission in developing and exploring, pursuant to Section 102(2)(E) of NEPA appropriate alternatives to recommended course of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.

The NRC has determined that reconnaissance-level information as described in Regulatory Guide (RG) 4.2, Preparation of Environmental Reports for Nuclear Power Stations and NUREG-1555 is adequate for analyzing alternative sites. Reconnaissance-level information is not the same level of detail that is required for the proposed site. The reason for the different level of information needed for alternative sites is that for the alternative sites, the staff needs only the level of information relevant to reasonably foreseeable significant impacts essential to a reasoned choice among alternatives. The "reasoned choice" is whether or not an alternative site is environmentally preferable or obviously superior to the proposed site.

The amount of reconnaissance-level information available will vary on each project and by resource area within each project. The amount and detail of reconnaissance-level information increases at each stage of the site selection process from identifying candidate areas, to candidate sites, to alternative sites. In all cases the amount of information must be sufficient based on the expert judgment of the reviewer to make the required determination for each step.

Among the alternative sites there will be varying amounts of information available. The reviewer does not need all sites to have the same level of information. Rather, the reviewer needs the alternative sites to have sufficient information to determine if an alternative site is environmentally preferable to the proposed site.

From the guidance in RG 4.2, quoted below it is clear that reconnaissance-level information is not the same level of detail that is required for the proposed site.

RG 4.2 states:

> The applicant is not expected to conduct detailed environmental studies at alternative sites; only preliminary reconnaissance-type investigations need be conducted. Neither is it expected that detailed engineering design studies will be made for all alternative plants or that detailed transmission route studies will be made for all alternatives[b].

The reviewer should determine that environmental descriptions for the alternative sites are adequate to assess environmental impacts of plant construction and operation, and that the basic sources of information described in Section 9.3 of the ESRP have been used to provide these data. The reviewer should determine if all sources of information reasonably available to the reviewer and providing useful environmental description data

[b] While detailed engineering studies are not required for alternative sites, sufficient information is needed about the site layout for the staff to make a reasoned choice among the alternatives. For example, a general plant layout on the site in relation to any wetlands and showing the location of cooling water intake and discharges.

were used. The reviewer should determine whether the reconnaissance-level information used throughout the site-selection process was complete enough and of sufficient depth commensurate with the level of screening to support the decisions that were made. If the information needed is not available then the reviewer should develop a request for additional information (RAI).

Cooperating Agencies may have a need for a greater level of detail for alternative sites, especially in the area for which they have regulatory responsibility. The project manager should coordinate with a cooperating agency and the applicant to ensure that a sufficient level of detail is provided to serve the needs of both agencies.

Data and Information Needs

The data sources and information needs will be similar to the proposed site, only using reconnaissance level information.

## II. ACCEPTANCE CRITERIA

Acceptance criteria for the summary of cumulative impacts associated with the proposed activities are the following:

- 10 CFR 51.10(a) with respect to NRC policy to voluntarily take account, subject to certain conditions, of the regulations of CEQ implementing NEPA. The CEQ regulations specify that an environmental impact statement (EIS) discuss cumulative impacts [40 CFR 1508.25(c)(3)].
- 10 CFR 51.45 with respect to the need to discuss cumulative impacts in an environmental report.
- 10 CFR 51.75 with respect to the need to discuss cumulative impacts in an EIS.
- 40 CFR 1508.25 and 10 CFR 51.14(b) with respect to the scope of an EIS and consideration of the cumulative impacts of connected, cumulative, and similar actions.

Regulatory positions and specific criteria to meet the regulations identified above are as follows:

Regulatory Guide 4.2, Rev. 2, *Preparation of Environmental Reports for Nuclear Power Stations* (NRC 1976) with respect to the inclusion in an application of an assessment of (1) cumulative and projected long-term effects from the point of view that each generation is trustee of the environment for each succeeding generation, and (2) any cumulative buildup of radionuclides in the environment.

Technical Rationale

The technical rationale for evaluating cumulative impacts associated with the applicant's proposed activities is discussed in the following paragraph:

Evaluation of the proposed action includes identification and evaluation of potential cumulative impacts associated with plant construction and operation. This review results in a summary of the potential cumulative impacts and the staff's characterization of the impacts using the NRC's SMALL, MODERATE, LARGE terminology for each resource

## III. REVIEW PROCEDURES

The introductory paragraph below describes the process used to perform the cumulative analysis for the proposed project at the alternative site and can serve as general introductory paragraph for the EIS.

> On [XXX Date] [the staff or the review team as appropriate] visited the [insert number of alternative sites] alternative sites and collected and analyzed reconnaissance-level information for each of the alternative sites (NRC XXX) [insert reference to site visit report]. The [the staff or the review team as appropriate] then used the information provided in the environmental report, RAI responses, and information from other Federal and State agencies, and information gathered during the site visits to each alternative site to evaluate the cumulative impacts of building and operating a new nuclear power plant at those sites. The analysis therefore includes the impacts of NRC-authorized construction and operation as well as potential impacts associated with other actions affecting the same resources. Cumulative impacts occur when the effects of an action are added to or interact with other effects in a particular place and within a particular time; as a result, the cumulative impact assessment entails a more extensive and broader review of possible effects of the action beyond the site boundary.
>
> The cumulative analysis for the impacts at the alternative sites was performed in the same manner as discussed in Chapter 7 of the EIS for the proposed site except, as specified in ESRP 9.3 (NRC 2000), the analysis was conducted at the reconnaissance level for the alternative sites. To inform the cumulative analysis, the [the staff or the review team as appropriate] researched EPA databases for recent EISs within the State; used an EPA database for permits for water discharges in the geographic area to identify water-use projects; and used [insert any government databases used to identify future projects e.g.,www.recovery.gov to identify projects in the geographic area funded by the American Recovery and Reinvestment Act of 2009]. The [the staff or the review team as appropriate] developed tables of the major projects near each alternative site that were considered relevant in the cumulative analysis. The [staff or the review team as appropriate] used the information to perform an independent evaluation of the direct and cumulative impacts of the proposed action at the

alternative sites to determine if one or more of the alternative sites were environmentally preferable to the proposed site.

Included are past, present, and reasonably foreseeable Federal, non-Federal, and private actions that could have meaningful cumulative impacts with the proposed action. For the purposes of this analysis, the past is defined as the time period prior to receipt of the COL application. The present is defined as the time period from the receipt of the COL application until the beginning of activities associated with the building the proposed Unit[s 2 and 3]. The future is defined as the beginning of building activities associated with Unit[s 2 and 3], through operation and eventual decommissioning.

The specific resources and components that could be affected by the incremental effects of the proposed action and other actions in the same geographical area were identified. The affected environment that serves as the baseline for the cumulative impacts analysis is described for each alternative site, and includes a qualitative discussion of the general effects of past actions. The geographical area over which past, present and future actions could reasonably contribute to cumulative impacts is defined and is described in later sections for each resource area. The analysis for each resource area at each alternative site concludes with a cumulative impact finding (SMALL, MODERATE, or LARGE). For those cases in which the impact level to a resource was greater than SMALL, the [the staff or the review team as appropriate] also discussed whether building and operating the nuclear units would be a significant contributor to the cumulative impact. In the context of this evaluation, “significant” is defined as a contribution that is important in reaching that impact level determination.

The cumulative impacts are summarized for each resource area in the sections that follow. The level of detail is commensurate with the significance of the impact for each resource area. The findings for each resource area at the [insert name of proposed site] and each alternative site are then compared in Table 9-[x]. The results of this comparison are used to determine if any of the alternative sites are environmentally preferable to the proposed site. If any alternative site is determined to be environmentally preferable, then the [staff or the review team as appropriate] would evaluate whether that alternative site was obviously superior.

The impacts described in Chapter 6 of the EIS (e.g., nuclear fuel cycle; decommissioning) would not vary significantly from one site to another. This is true because all of the alternative sites and the proposed site are in low-population areas and because [the staff or the review team as appropriate] assumes the same reactor design (therefore, the same fuel cycle technology, transportation methods, and decommissioning methods) is used for all of the sites. As such, these impacts would not differ between the sites and would not

be useful in the determination of whether an alternative site is environmentally preferable to the proposed site. For this reason, these impacts are not discussed in the evaluation of the alternative sites.

Steps to perform the resource specific analysis

1. Describe the site to set the baseline for the impact analysis. Provide a map showing the site and the region within a 50-mile radius.

2. For each alternative site, develop a table identifying the past, present and reasonably foreseeable projects and other actions using the same methodology that was used to develop the table for the proposed site.

3. Each resource area expert will analyze the impacts (from both building and operating) the propose project at the alternative site. Building impacts include both construction and preconstruction impacts.

4. The first section or paragraph in the resource area will describe the site and the project in relation to the resource being evaluated.

5. The next section will describe the building and operational impacts of the project on the resource. A SMALL, MODERATE or LARGE impact will not be determined for building or operation impacts, because the building and operational impacts will be added to the impacts from other past, present and reasonably foreseeable future actions to determine the cumulative impact for which a SMALL, MODERATE or LARGE impact will be determined.

6. The third section will determine the cumulative impacts by combining the impacts from the project with the actions identified in the table.

7. The fourth section, the summary section, will provide a short basis for the impact level and will for impacts other than SMALL state whether the project would or would not be a significant contributor to the MODERATE or LARGE impact.

## IV. EVALUATION FINDINGS

Provide a short basis for the impact level. If the cumulative impact level is SMALL state:

Based on the information provided by the applicant and [the staff's or the review team's as appropriate] independent analysis, [the staff or the review team as appropriate] concludes that the cumulative [insert name of resource area] impacts from building and operating the [insert number and type of units] and other existing and planned projects and actions in the geographic area of interest around the [insert name of alternative site] would be SMALL.

For MODERATE or LARGE impact levels, provide short basis for impact level. Then state:

Based on the information provided by the applicant and [the staff's or the review team's as appropriate] independent analysis, the [staff or the review team as appropriate] concludes that the cumulative [insert name of resource area] impacts from building and operating the [insert number and type of units] and other existing and planned projects and actions in the geographic area of interest around the [insert name of alternative site] would be [MODERATE or LARGE]. Building and operating the proposed project at the [insert name of site] [would or would not] make a significant incremental contribution to the impact level.

Provide the impact level to summary table at the end of chapter 9.

## V. IMPLEMENTATION

The method described in this guidance should be used by the staff in evaluating conformance with NRC requirements, except in those cases in which the applicant proposes an acceptable alternative for complying with specified portions of the requirements.

## VI. REFERENCES

10 CFR 51.45, "Environmental report."

10 CFR 51.75, "Draft environmental impact statement-construction permit, early site permit, or combined license.

40 CFR 1508, "Terminology and Index."

U.S. Nuclear Regulatory Commission (NRC). 1976. *Preparation of Environmental Reports for Nuclear Power Stations*. Regulatory Guide 4.2, Rev. 2, Washington, D.C.

Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects under the National Environmental Policy Act*.

Environmental Protection Agency (EPA) 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. EPA Publication 315-R-99-002

Environmental Protection Agency (EPA). 2008. §309 Reviewers Guidance for New Nuclear Power Plant Environmental Impact Statements. EPA Publication 315-X-08-001