UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 13, 1980

MEMORANDUM FOR: Joseph M. Felton, Director
Division of Rule and Records
Office of Administration

FROM: Karl R. Goller, Director
Division of Siting, Health and Safeguards Standards
Office of Standards Development

SUBJECT: NOTICE OF INTENT TO PREPARE ENVIRONMENTAL IMPACT STATEMENT FOR SITING RULE

On July 29, 1980, an "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" (45 FR 50350) (ANR) was published in the Federal Register. An environmental impact statement will be prepared for this rulemaking. In accordance with the procedures in proposed Part 51, a notice of intent to prepare an environmental impact statement has been prepared for publication in the Federal Register. I request that you have the attached FRN published as soon as possible.

Also enclosed are signed copies of letters to appropriate Congressional committees. Please arrange for dispatch of these letters by the Office of Congressional Affairs.

Karl R. Goller

Karl R. Goller, Director
Division of Siting, Health and
Safeguards Standards
Office of Standards Development

Enclosures:
As stated

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NUCLEAR REGULATORY COMMISSION

[10 CFR Parts 50, 51 and 100]

Environmental Impact Statement for Reactor Siting Criteria

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Notice of Intent to Prepare an Environmental Impact Statement for Revision of the Regulations Governing the Siting of Nuclear Power Plants.

SUMMARY: On July 29, 1980, the Nuclear Regulatory Commission published for comment "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" (ANR) in the Federal Register (45 FR 50350). As part of this rulemaking, the NRC intends to prepare an Environmental Impact Statement (EIS). This Notice of Intent requests comment on (1) the range of alternatives which should be evaluated for each of the items identified in the ANR as suitable to be addressed in the regulations, and (2) the issues which should be evaluated in the EIS.

DATES: Comment period expires (45 days after publication)

Note: ~~DATES:~~ Comments received after ~~January 9, 1981~~ the expiration date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before ~~this~~ that date.

ADDRESSES: Written comments should be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

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Single copies of the "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" and the "Report of the Siting Policy Task Force," NUREG-0625, may be obtained without charge by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

IAEA Safety Guide 50-SG-S4, "Site Selection and Evaluation for Nuclear Power Plants with Respect to Population Distribution," (International Atomic Energy Agency, Vienna, 1980) may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, DC, or at local public document rooms in the vicinity of nuclear power plant sites or copies may be purchased from UNIPUB, 345 Park Avenue South, New York, NY 10010.

FOR FURTHER INFORMATION: Contact Dr. William R. Ott, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301) 443-5966.

SUPPLEMENTARY INFORMATION: This Notice of Intent is part of the scoping process for the EIS which the NRC is planning to prepare in connection with the proposed revision of its regulations governing the siting of nuclear power plants. The purpose of this scoping process is to define both the alternatives (for specifying criteria for identified topics) which will be examined in detail and the issues that will be addressed in comparing the alternatives in the environmental impact statement.

Scope of the Rulemaking and the Environmental Impact Statement

The items under consideration for rulemaking were identified in "Advance Notice of Rulemaking; Revision of Reactor Siting Criteria" (45 FR 50350) (ANR) and are listed in Table 1. This set of items together with the restrictions established in the ANR establishes the presently intended scope of the rulemaking. Additional items identified by commenters will be considered if the NRC staff judges that they are sufficiently important to the overall success of this rulemaking that they require immediate resolution. Specific alternatives for establishing criteria with respect to some of these items were listed in the ANR. In addition, for the purposes of the scoping process for the EIS, the NRC staff will consider alternatives for criteria that may be identified during the comment period on this Notice of Intent.

Although the NRC staff considered a wide range of information in arriving at the recommendations[1] which formed the main thrust of the ANR, additional technical studies will be required to fully document the impacts of the proposed criteria and reasonable alternatives to those criteria. The NRC staff has developed a tentative outline for the EIS to aid in identifying areas in which additional studies will be needed. Appendix A presents this tentative outline with notations after appropriate sections indicating whether the ANR or the NRC FY 1980 Authorization Act is the primary basis for the section. Appendix B presents a more detailed discussion of the technical approach for assessing issues that the NRC staff believes may be important in making informed choices among the alternatives.

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[1]"Report of the Siting Policy Task Force," NUREG-0625, August 1979.

TABLE 1

ITEMS UNDER CONSIDERATION FOR RULEMAKING

Demographic criteria

- Fixed exclusion distance
- Fixed protective action distance
- Population density
- Population distribution

Minimum standoff distance from external hazards

- Airports
- LNG and LPG terminals and pipelines
- Large quantities of explosive or toxic materials
- Major dams
- Navigable waterways which are transportation routes for hazardous materials
- Other nuclear power plants

Interdiction of contaminated groundwater

Consideration of post-licensing changes in off-site activities

Prohibition of sites requiring unique or unusual design to compensate for site inadequacies

Site approval at earliest decision point; criteria for reopening

NRC review termination upon State agency disapproval

Relative to the issues identified in the appendices, comments will be most useful which:

1. Suggest other realistic alternatives to those presented in Appendix A, Chapter III (e.g., a specific approach or combination of approaches for establishing demographic criteria together with

a technical justification of the approach[2]). Indicate why any identified alternatives are not worthy of further consideration.

2. Address the relevancy of the issues identified in Appendix B and the staff's planned approach to analysis of these issues.

3. Identify and justify any other issues which should be considered in this rulemaking.

Scoping Process for the EIS

The scoping process for the EIS will consist of publication of the ANR and this Notice of Intent and consideration of the comments on each in preparation of the Scoping Summary Report. No public scoping meeting is planned; participation in the scoping process will be limited to written responses to this Notice of Intent. A special mailing of this Notice will be made to persons, organizations and agencies who have indicated an interest in this subject area. Federal agencies identified by the Council on Environmental Quality as having special expertise in this area will be included in this mailing. Other agencies which have jurisdiction by law or special expertise with respect to any environmental impact involved, or which are authorized to develop and enforce

[2]To help the public provide informed comment on the range of alternatives for setting demographic criteria which may be appropriate for consideration in the EIS, copies of IAEA Safety Guide 50-SG-S4 "Site Selection and Evaluation for Nuclear Power Plants with Respect to Population Distribution" are available for examination at the Commission's Public Document Room at 1717 H Street NW., and at all local Public Document Rooms. This guide presents a survey of procedures used by regulatory authorities in IAEA member nations for considering population in reactor reviews. There is no special significance given to any of these approaches by the NRC staff but this summary does present most of the alternatives which may be reasonable to consider in establishing demographic criteria.

relevant standards are invited to participate in this scoping effort. Affected State and local agencies or any affected Indian tribes that wish to participate by commenting are invited to do so. At the conclusion of the comment period for this Notice of Intent, the NRC staff will assess the comments on both this Notice and the ANR; and will define the alternative criteria which will be considered in detail in the EIS. Since there will likely be considerable overlap and redundancy amongst various suggested alternative criteria, the staff will utilize its judgment and experience to establish a reasonable number of alternatives (which may differ from those tentatively listed in Appendix A) that have significant differences but have a good chance of equitably establishing appropriate siting restrictions for future nuclear power plants. The issues to be examined for each of the criteria will also be defined (see Appendix B).

The scoping process will be completed by the preparation and publication of a Scoping Summary Report. This report will include a final statement of the items that will be covered in this rulemaking, the reasons for deleting any of the items included in the ANR and a revised and more detailed outline for the EIS. A brief description of the reasons for including alternative criteria not presently identified, eliminating alternatives presently under consideration or combining similar alternatives will be presented. The report will also identify any issues with respect to these alternatives which have been included for detailed examination or have been dismissed from further consideration as peripheral, insignificant or adequately covered elsewhere. The report will also provide information on (1) the schedule for completion of the rulemaking, (2) related environmental studies, and (3) arrangements for others to prepare background information for the EIS. Copies of this report will

be distributed to those who participated in the scoping process by commenting on the ANR or Notice of Intent.

APPENDIX A

Tentative Table of Contents for Siting EIS

I. Summary

I.1 Introduction

I.2 Description of Proposed Action

I.3 Description of Alternatives

I.4 Summary of Major Issues (Including Unresolved Issues)

I.5 Identification of Preferred Alternatives

II. Purpose and Need for the Action

II.1 Purpose of Promulgation of Reactor Siting Criteria

II.2 Need for Reactor Siting Criteria; Discussion of No Action Alternatives

III. Identification of Alternatives

III.1 Introduction

III.1.a Discussion of ANR and EIS Scoping Process as determinants of Scope of Rulemaking and Analyses of Alternatives

III.1.b Long Term Goals for Revision of Siting Criteria; Rationale for Selection of Criteria (ANR, Item A)

III.1.b.1 Separation of siting from design (LWR specific?)

III.1.b.2 Desired degree of remoteness; regionalization

III.1.b.3 Consideration of accidents beyond the design basis

III.1.b.4 Attainable risk for nuclear compared to risks from other power generation sources (Individual vs. Societal Risk)

III.2 Demographic Criteria (ANR, Item B; NRC FY 80 Authorization Act)

III.2.a. Exclusion distance (ANR, Item B)

III.2.b. Specification of population density limit (ANR, Item B)

III.2.b.1 Siting Policy Task Force recommendation (ANR, Item B, Alternative A)

III.2.b.2 Three tier approach (ANR, Item B, Alternative B)

III.2.b.3 Single limit (ANR, Item B, Question 2)

III.2.b.4 Incorporation of meteorological and topographical constraints (ANR, Item B, ACRS comments)

III.2.c. Specification of population distribution limit (ANR, Item B)

III.2.c.1 Siting Policy Task Force recommendation (ANR, Item B, Alternative A)

III.2.c.2 Three tier approach (ANR, Item B, Alternative B)

III.2.c.3 Single value, uniform limit (ANR, Item B, Question 2)

III.2.c.4 Incorporation of meteorological and topographical constraints (ANR, Item B, ACRS comments)

III.3 Restrictions on Proximity to External Hazards (ANR, Item C)

III.3.a. Practicality of proximity limitation (i.e. standoff distance) for each type of hazard (ANR, Item C, Alternative A)

III.3.b. Feasibility of design performance requirements (ANR, Item C, ACRS comments with regard to other nuclear plants)

III.3.c. Three tier approach (ANR, Item C, Alternative B)

III.3.d. Defer generic resolution; continue case-by-case determinations

III.4 Capability to Interdict Contaminated Groundwater (ANR, Item D)

III.4.a. Unacceptable site characteristics plus performance requirements

III.4.b. Performance requirements

III.4.c. Case-by-case review for compliance with performance requirements

III.5 Post-Licensing Changes in Offsite Activities (ANR, Item E)

III.5.a. Passive controls (ANR, Items F1, F2)

III.5.a.1 Private sector; notification requirements

III.5.a.2 Local authorities; information requirements

III.5.a.3 Other Federal agencies; notification requirements

III.5.b. Generic responses restricting plant operation; criteria for action (ANR, Item F4, Questions 2 and 3)

III.5.c. Legislation to acquire direct control (ANR, Item F, Question 1)

III.6 No site characteristics requiring unique or unproven compensating design features. (Alternative is case-by-case design review.) (ANR, Item G)

III.7 Site approval at earliest decision point. (Alternative is no action.) (ANR, Item H)

III.8 Termination of Review Upon Disapproval by State Agency Whose Approval is Necessary (ANR, Item I)

III.8.a. Letter from governor (ANR, Item I, Question 2)

III.8.b. State designated overall approval authority (ANR, Item I, Question 2)

III.8.c. Any State Agency (ANR, Item I, Question 2)

III.8.d. No Response to State Agency Disapprovals (ANR, Item I, Question 2)

IV. Issues Important to the Specification of Reactor Siting Criteria

IV.1 Radiological Source Terms (Releases) and the Consequences of a Full Range of Accidents (ANR, Item B; NRC FY 80 Authorization Act)

IV.2 Feasibility of Protective Actions (ANR, Item B, ACRS comments; NRC FY 80 Authorization Act)

IV.2.a. Population effects

IV.2.b. Transportation constraints

IV.2.c. External hazard initiators

IV.3 Site Availability (NRC FY 80 Authorization Act)

IV.3.a. Population density and distribution criteria effects (Meteorology, topography, and regionalization) (ANR, Item B)

IV.3.b. Effects of Physiographic constraints (NRC FY 80 Authorization Act)

IV.3.c. Land use/external hazards considerations (ANR, Item C)

IV.3.d. Impacts of criteria with respect to alternative fuels (ANR, Item A)

IV.3.e. Groundwater interdiction requirements effects (ANR, Item D)

IV.3.f. Use of Existing sites or Federal lands (ANR, Item F)

IV.3.g. Effect of prohibition on sites requiring unusual or unproven design to compensate for site deficiencies (ANR, Item G)

IV.4 Socioeconomic Impacts

IV.5 Severity of External Hazards (ANR, Item C)

IV.6 Effects of Post-Licensing Land Use Control (ANR, Item 5)

IV.7 Implications of Site Approval at Earliest Decision Point (ANR, Item H)

IV.8 Implications of Deferral to State Agency Disapprovals (ANR, Item I)

V. Comparison of Alternatives; Selection of Proposed Criteria

V.1 Introduction; Discussion of Comparative Analyses Consistent with Siting Goals

V.1.a. Separation of siting from design

V.1.b. Degree of remoteness; regionalization

V.1.c. Accidents beyond the design basis

V.1.d. Attainable risk with respect to other power generation sources

V.2 Demographic Criteria

V.2.a. Exclusion distance

V.2.b. Population density limits

V.2.c. Population distribution limits

V.3 Proximity Restrictions for External Hazards

V.4 Groundwater Interdictive Capability

V.5 Post-Licensing Changes in Offsite Activities

V.6 Unique or Unusual Design Prohibition

V.7 Early Site Approval

V.8 Deferral to State Agency Disapproval

VI. List of Preparers

VII. Appendices

APPENDIX B

Technical Approach to Detailed Analyses

I. Issue: Radiological consequences of accidents

Proposed Analytical Approach: (EIS Section IV.1)

Proposed criteria will be compared with realistic alternatives on the basis of impacts on public health and safety. For demographic criteria this means that variation in doses to the maximally exposed individual and the population from a full range of accident releases must be examined for alternative ways of specifying constraints on population density and distribution. The consequences will be evaluated with an updated version of the Reactor Safety Study Consequences Model (CRAC) computer code. Existing sites and a hypothetical site will be evaluated. Consequences considered will include early fatalities, injuries, latent fatalities, and property damage. Both individual and societal risk will be evaluated but may differ in relative importance for establishing different criteria. (Comment on the role of societal versus individual risk as determinants of exclusion distance and population density and distribution limits would be useful.)

II. Issue: Feasbility of Protective Actions

Proposed Analytical Approach: (EIS Section IV.2)

The topics under consideration for rulemaking with respect to demographic criteria and external hazards will be examined to determine

whether the capability to take protective action in the vicinity of a site under accident conditions might be impaired or enhanced by various choices of alternative criteria.

III. Issue: Definition of region

Proposed Analytical Approach: (EIS Section IV.3.a)

Alternative schemes of regionalization will be examined to determine a proper basis for establishing regional criteria. Socioeconomic and physiographic units will be examined to establish potential regional breakdowns. Effects of uniformity of population distribution, water resource restrictions and any other appropriate regional concerns will be considered when deciding on the proper regionalization scheme. (Comment would be useful with regard to appropriate determinants of region.)

IV. Issue: Site availability

Proposed Analytical Approach: (EIS Sections IV.3.a and IV.3.b)

Consistent with the intent of the NRC FY80 Authorization Act, the new demographic criteria should not preclude further siting of nuclear power plants in any region of the United States. An assessment will be made for each region that identifies the variation in availability of sites for nuclear power plants as a function of the structure of the criteria and the variation in numerical values as well as realistic constraints on siting such as water availability and violation of safety criteria. The benefits of regionally based criteria versus nationwide criteria will be examined. Basic information will be developed from existing siting studies which, taken together, cover large portions of the country.

V. Issue: Socioeconomic Impacts

Proposed Analytical Approach: (EIS Section IV.4)

The socioeconomic impacts of varying degrees of remoteness will be investigated. Economic impacts of increased transmission distances, impacts on land use and other factors will be addressed along with sociological penalties and inequities in distribution of cost and benefits of such siting.

VI. Issue: Severity of External Hazards

Proposed Analytical Approach: (EIS Sections IV.3.c and IV.5)

A literature review will be performed to establish the potential level of hazard associated with the external hazards listed in the ANR and any other appropriate topics. Staff practice for dealing with these hazards will be assessed. Available models for characterizing the effect of a hazardous external event will be evaluated. The feasibility of establishing a meaningful protective distance will be examined. The availability of sites associated with the demographic criteria proposed by the staff will be reexamined to determine whether the standoff criteria will significantly alter site availability.

VII. Issue: Engineering Alternatives to Standoff Distances

Proposed Analytical Approach: (EIS Sections III.3 and IV.5)

The feasibility of design performance requirements as opposed to specific standoff distances will be evaluated.

VIII. Issue: Precluding Siting of Nuclear Reactors in any Region of the United States.

Proposed Analytical Approach: (EIS Section IV.3.d)

Energy generation from any source has its associated risk and risks from some energy sources may be greater than that of the nuclear option. Therefore, it has been suggested that the siting criteria should not be so stringent as to preclude the use of nuclear power from any region of the United States. The implications of not precluding nuclear power from any region of the United States will be examined.

IX. Issue: Effect of Groundwater Intediction Criteria on Site Availability.

Proposed Analytical Approach: (EIS Section IV.3.e)

The effect on site availability of alternative siting criteria that assure the capability for groundwater interdiction would be examined.

X. Issue: Post-Licensing Land Use Control

Proposed Analytical Approach: (EIS Section IV.6)

The feasibility of passive and active controls on post-licensing land use in the vicinity of a nuclear plant would be explored. Alternative controls on population risk (given that criteria are exceeded) such as changes in operating procedures or authorized power level or additional risk reducing engineering systems would be addressed.

XI. Issue: Use of Existing Sites

Proposed Analytical Approach: (EIS Section IV.3.f)

The existing sites would be examined for various levels of criteria to determine which sites were acceptable under each proposal. The feasibility of adding additional units to each of these sites would then be examined and an estimate made by region of remaining siting capacity. Using the characteristics of the selected site, an estimate would be prepared of the availability of multi-unit sites as a modification of the availability information for the various demographic criteria and standoff distances.

XII. Issue: Use of Federal Lands

Proposed Analytical Approach: (EIS Section IV.3.f)

Federal land would be surveyed to establish suitability for location of single unit plants up through many-unit energy centers. The historical availability of Federal land would be explored for uses such as public power supply systems (Bonneville Power Authority, Tennessee Valley Authority, etc.), oil shale lease program, forestry timber management, water supply projects. The possible benefits would be examined regionally from well planned use of Federal lands to supplement areas already available to utilities and implement a multi-unit existing site approach. The degree of improvement in criteria that is possible if the availability associated with the recommended criteria is held constant after Federal lands are added would be assessed.

XIII. Issue: Use of Unusual or Unproven Engineering Design to Compensate for Site Deficiencies

Proposed Analytical Approach: (EIS Section IV.3.q)

An estimate would be made of the effect on site availability of instituting such a requirement, particularly where large areas might have a common deficiency which might preclude siting from a large region.

XIV. Issue: Termination of Review After State Disapproval

Proposed Analytical Approach: (EIS Section IV.8)

The implications of establishing automatic review termination with respect to various levels of State disapproval will be examined.

Dated at Bethesda, Maryland, this _____ day of November 1980.

For the Nuclear Regulatory Commission

Ray G. Smith, Acting Director
Office of Standards Development
U.S. Nuclear Regulatory Commission