



NUCLEAR ENERGY INSTITUTE

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Dear Sir:

We appreciate the opportunity to provide enclosed comments on the environmental scope of the GEIS update project noticed in 68 FR 33209. These comments address the following areas:

- SAMAs
- Transmission
- Generation alternatives
- Socioeconomic workforce issues
- Historical and archeological resources
- EMF
- Thermophilic organisms

Please contact me at 202-739-8080 (am@nei.org) or Fred Emerson at 202-739-8086 (fae@nei.org) with any questions about this material.

Sincerely yours,

Alex Marion

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Enclosure

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Add = B. Zakerman (B17)

Industry Comments, GEIS Update

1. SAMAs

Comment on GEIS

The NRC has gained enough information through License Renewal Applications to date to make a determination, on a generic basis that SAMAs should be classified as Category 1 through this rulemaking process. No age-related cost-effective SAMAs have been identified.

In the Federal Register notice outlining the denial of NEI's petition for rulemaking (66 FR 10834; February 20, 2001, at 10838), the NRC stated that "if new information becomes available that indicates it is feasible to reclassify SAMAs to Category I, the staff will notify the Commission and provide a recommendation as to a course of action." To date, 30 units have submitted applications that represent all reactor vendors for renewal of their licenses. Out of those, the NRC has not identified any age-related SAMAs that are cost beneficial. We believe that, through the use of the IPE/IPEEE evaluations and modifications, along with the track record of license renewal applications to date, there exists enough information to reclassify severe accidents as a Category I issue.

In addition, draft NUREG DG-1122 is being considered to guide plants in maintaining PRAs up-to-date. Since many of the SAMA questions query the current status of PRA, these questions will no longer be necessary when final regulatory guidance provides for maintaining PRAs current.

Current GEIS Text

The conclusion stated in Section 5.3.3.1 of the GEIS states that "...each licensee is performing an individual plant examination to look for plant vulnerabilities to internally and externally initiated events and considering potential improvements to reduce the frequency or consequences of such events." At the time the final rule for license renewal was promulgated in 1996, the NRC discussed the ongoing regulatory programs focused on individual plant vulnerabilities to severe accidents and cost-beneficial improvements for reducing severe accident frequency or consequences. For each plant, an individual plant examination (IPE) to look for plant vulnerabilities to internally initiated events and a separate IPE for externally initiated events (IPEEE) was performed (61 FR 28467; June 5, 1996). At the time, the NRC believed that it would be premature to reach a generic conclusion regarding severe accident mitigation alternatives before completing these programs (61 FR 28467; June 5, 1996). The NRC went on to state . . . "that upon completion of its IPE/IPEEE program, it may review the issue of severe accident mitigation for license renewal and consider, by separate rulemaking, reclassifying severe accidents as a Category I issue." (61 FR 28481; June 5, 1996). This examination for internal and external events as well as the consideration of potential improvements was initiated as part

of Generic Letter 88-20 and its corresponding supplements. Licensees have transmitted the results of their individual examinations and have implemented improvements to reduce the frequency and consequences of these events.

GEIS 5.4.1.5 Conclusions states, "Although NRC has gained considerable experience regarding severe accident mitigation improvements, the ongoing regulatory programs related to severe accident mitigation (i.e., individual plant examination/individual plant examination of external events and Accident Management) have not been completed for all plants. Since these programs have identified plant programmatic and procedural improvements (and in a few cases, minor plant modification) as cost effective in reducing severe accident consequence and risk, it would be premature to generically conclude that a consideration of severe accident mitigation is not required for license renewal.

However, based on the experiences discussed above, the NRC expects that a site-specific consideration of severe accident mitigation for license renewal will only identify procedural and programmatic improvements (and perhaps minor hardware changes) as being cost-beneficial in reducing severe accident risk or consequence. Therefore, a site-specific consideration of alternatives to mitigate severe accidents shall be performed for license renewal unless such a consideration has already been included in a previous EIS or related supplement. Staff evaluations of alternatives to mitigate severe accidents have already been completed and included in an EIS or supplement for Limerick, Comanche Peak, and Watts Bar; therefore, severe accident mitigation need not be reassessed for these plants for license renewal."

GEIS 5.5.2.5 SAMDAs states, "The staff concluded that the generic analysis summarized above applies to all plants and that the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts of severe accidents are of small significance for all plants. However, not all plants have performed a site-specific analysis of measures that could mitigate severe accidents. Consequently, severe accidents are a Category 2 issue for plants that have not performed a site-specific consideration of severe accident mitigation and submitted that analysis for Commission review. "

GEIS Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant, for severe accidents, are classified as Category 2 and states, "SMALL. The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives."

Proposed GEIS Text

Leave unchanged Section 5.3.3.1.

Section 5.4.1.5 Conclusions, "Although NRC has gained considerable experience regarding severe accident mitigation improvements, the ongoing regulatory programs related to severe accident mitigation (i.e., individual plant examination/individual plant examination of external events and Accident Management) have not been completed for all plants. A

review of the SAMA portion of the License Renewal applications of 30 Units has found no age related cost effective SAMA changes. As a result there is sufficient evidence to conclude this should be classified as Category 1. In addition, Staff evaluations of alternatives to mitigate severe accidents have already been completed and included in an EIS or supplement for Limerick, Comanche Peak, and Watts Bar; therefore, severe accident mitigation need not be reassessed for these plants for license renewal.”

GEIS 5.5.2.5 SAMDAs, “The staff concluded that the generic analysis summarized above applies to all plants and that the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts of severe accidents are of small significance for all plants. However, the applications of 30 units have been review and no age related cost effective SAMAs have been identified. Consequently, severe accidents are a Category 1 issue.”

Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant, for severe accidents, are classified as Category 2 and states, “SMALL. The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. An evaluation of 30 Unit’s application for renewal has identified no age related cost effective SAMAs. This is the basis for reclassifying this as Category 1.”

Current Rule

Currently, 10 CFR 51.53(c)(3)(ii)(L) states, “If the staff has not previously considered severe accident mitigation alternatives for the applicant’s plant in an environmental impact statement or related supplement or in an environmental assessment, a consideration of alternatives to mitigate severe accidents must be provided.” This is a codification of the analysis and conclusions in Section 5 of the GEIS where the Staff’s assessment of impacts of postulated accidents during the license renewal period is presented. In this section, methodologies were developed to evaluate each of the dose pathways by which a severe accident may result in adverse environmental impacts and to estimate off-site costs of severe accidents. Part of the analysis involved reviewing the existing impact assessments.

Proposed Rule

Change 10 CFR 51.53(c)(3)(ii)(L) to read, “Severe accident mitigation alternatives for the applicant’s plant in an environmental impact statement or related supplement or in an environmental assessment, a consideration of alternatives to mitigate severe accidents are considered to be Category 1 as a review of a large percentage of units has identified no cost beneficial age related Severe Accident Management Alternatives.”

2. TRANSMISSION

Transmission Lines in Scope of Part 51

Comment on GEIS

The GEIS and Part 51 currently require that transmission lines that were considered in the original environmental impact statement for the plant must be reviewed as part of the Environmental Review under Part 51. For these lines, the environmental review must look at two issues: the impact of electrical shock and impact on threatened and endangered species. Also, of consideration for transmission lines is the issue of chronic effects of EMF, a topic that has not yet been categorized as Category 1 or 2. Chronic effects of EMF will be discussed separately in this letter.

When nuclear plants were constructed, they were often connected to the high voltage electrical grid by new transmission lines, substations, and switchyards that were constructed solely to connect the nuclear plants to the grid. This review as part of the original environmental impact statement was appropriate. However, with time and changes to the high voltage grid system, the industry believes that this treatment of transmission lines is no longer appropriate, and the GEIS and Part 51 should be revised to reflect these changes. As the grid has changed, many of the transmission lines that were originally installed to connect the nuclear plant to the grid are now an integral part of the high voltage grid system.

The industry believes that transmission lines, substations, and switchyards that were reviewed in the original EIS that are now part of the grid should not have to be included in the environmental review. If the nuclear plant would not have its license renewed and the plant were no longer operating, these transmission lines, substations, and switchyards would remain in service as part of the high voltage grid system. Any impacts that these lines have on electrical shock and T&ES would not change when the nuclear plant would be removed from operation. This results in no change to the impacts caused by the transmission lines. Therefore, since there are no changes in the impacts, whether the plant continues to operate or is removed from operation, there is no impact of the proposed major licensing activity. There is thus no reason to have to review these two issues for environmental impacts from continued operation of the nuclear plant.

Transmission lines, substations, and switchyards that would remain in service only to connect the nuclear plant to the grid would be subject to review for impacts on the two issues listed above.

Current GEIS Text

3.9 Threatened and Endangered Species

Potential impacts of refurbishment on federal- or state-listed threatened and endangered species, and species proposed to be listed as threatened or endangered, cannot be assessed generically because the status of many species is being reviewed and it is impossible to know what species that are threatened with extinction may be identified that could be affected by refurbishment activities. In accordance with the Endangered Species Act of

1973 (Pub. L. 93-205), the appropriate federal agency (either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service) must be consulted about the presence of threatened or endangered species. At that time, it will be determined whether such species could be affected by refurbishment activities and whether formal consultation will be required to address the impacts. Each state should be consulted about its own procedures for considering impacts to state-listed species. Because compliance with the Endangered Species Act cannot be assessed without site-specific consideration of potential effects on threatened and endangered species, it is not possible to determine generically the significance of potential impacts to threatened and endangered species. This is a Category 2 issue.

4.5 Transmission Lines

Impacts of transmission lines result from their maintenance, electromagnetic fields, corona, and rights-of-way (ROW). Their impacts on air quality (Section 4.5.2), land use (Section 4.5.3), human health (Section 4.5.4), surface water quality and aquatic ecology (Section 4.5.5), terrestrial ecology (Section 4.5.6), floodplains and wetlands (Section 4.5.7), and historic and aesthetic resources (Section 4.5.8) are assessed in this section. As at the construction permit stage, the transmission corridor of concern is that which was constructed between the plant switchyard to its connection with the existing transmission system. No new transmission line construction is planned in existing or new corridors. The types of impacts of transmission lines during the license renewal period will be the same as those during the first 40 years of operation.

4.5.1 Introduction

Transmission lines use voltages of about 115 or 138 kV and higher. In contrast, local or area distribution lines use voltages below 115 or 138 kV. Only transmission lines are discussed in this document. Extra-high-voltage transmission lines operate at 345 to 800 kV, whereas ultra-high-voltage (UHV) lines operate at 1000 kV and above. Lines up to 765 kV, a voltage occurring primarily in the eastern United States, are in commercial operation, whereas UHV lines are still in the testing stage of development. The principal advantage of higher-voltage lines is that they can transmit proportionately more power than can lower-voltage lines.

Detailed descriptions of transmission lines and basic electrical concepts are provided by ORNL-6165, DOE/BP-945, and BNWL-1774. Typical transmission line structures, shown in **Figure 4.1** <<http://www.nrc.gov/NRC/NUREGS/SR1437/V1/fig005.html>>, range in height from about 20 to 52 m (65 to 170 ft) and provide average spans (the distance between structures) of about 106 to 350 m (350 to 1150 ft). The structures support a three-phase system of conductors and two ground wires above the conductors. The ground wires intercept lightning strikes to prevent the strikes from hitting the conductors and adversely affecting power system operation. The most common structure types are the H-frame and lattice; single-pole and guyed-Y types are less common. The H-frame is usually made of wood and is used for lower-voltage lines. The metal lattice structure is capable of bearing more weight than the H-frame, allowing greater span length, higher-voltage lines, and more circuits for a given width of ROW.

Transmission lines must be inspected periodically to detect any deterioration of or damage to line components. This inspection can be done from the ground but is often done from a

helicopter. Maintenance or repairs of power lines may require that vehicles gain access to the lines.

Operating transmission lines produce electric and magnetic fields, collectively referred to as electromagnetic field or EMF. EMF strength at ground level varies greatly under these lines, generally being stronger for higher-voltage lines, a flat configuration of conductors (as opposed to, for example, the delta configuration), relatively flat terrain, terrain with no shielding obstructions (e.g., trees or shrubs), and a closer approach of the lines to the ground. At locations where field strength is maximum, measured values under 500-kV lines often average about 4 kV/m, but sometimes exceed 6 kV/m. Maximum electric field strengths at ground level are 9 kV/m for 500-kV lines and 12 kV/m for 765-kV lines (DOE/BP-945).

Measured magnetic field strengths at the location of maximum values beneath 500-kV lines often average about 70 mG (milligauss). During peak electricity use, when line current is high, the field strength may peak at 140 mG (about 1 percent or less of the time) (DOE/BP-945).

The term "corona" generally refers to the electrical discharges occurring in air subjected to the strong electric fields adjacent to phase conductors. Corona generally is not a problem at voltages below 345 kV. Corona results in audible noise, radio and TV interference, energy losses, and the production of ozone and oxides of nitrogen.

An ROW must be acquired by the utility to prevent certain land uses and vegetation growth from interfering with transmission line operation. To ensure power system reliability, the growth of tall vegetation under the lines must be prevented (by cutting or herbicides) to avoid physical interference with lines or the potential for short-circuiting from the line to the vegetation. At the edge of ROW, trees that could topple onto the lines must be removed.

Figure 4.1 Examples of typical transmission line towers.

<<http://www.nrc.gov/NRC/NUREGS/SR1437/V1/fig005.html>> Source: DOE/BP-945.

ROW maintenance is described in greater detail by FWS/OBS-79/22, ORNL-6165, BNWL-1774, and Byrnes and Holt (1987).

4.5.4.1 Acute Effects (Shock Hazard)

Primary shock currents are produced mainly through direct contact with conductors and have effects ranging from a mild tingling sensation to death by electrocution. Tower designs preclude direct public access to the conductors. Secondary shock currents are produced when humans make contact with (1) capacitively charged bodies such as a vehicle parked near a transmission line or (2) magnetically linked metallic structures such as fences near transmission lines. A person who contacts such an object could receive a shock and experience a painful sensation at the point of contact. The intensity of the shock depends on the EMF strength, the size of the object, and how well the object and the person are insulated from ground.

Design criteria that limit hazards from steady state currents are based on the NESC (1981), adherence to which requires that utility companies design transmission lines so that the short-circuit current to ground, produced from the largest anticipated vehicle or object, is limited to less than 5 mA. In practice, this limits the electric field near roadways to about

7-8 kV/m. No similar code exists for the limitation of the magnetic fields of transmission lines; however, because of concerns about the safety of magnetic fields, several states have created their own regulations. See Nair et al. (1989) for a review of these regulations.)

With respect to shock safety issues and license renewal, three points must be made. First, in the licensing process for the earlier licensed nuclear plants, the issue of electrical shock safety was not addressed. Second, some plants that received operating licenses with a stated transmission line voltage may have chosen to upgrade the line voltage for reasons of efficiency, possibly without reanalysis of induction effects. Third, since the initial NEPA review for those utilities that evaluated potential shock situations under the provision of the NESC, land use may have changed, resulting in the need for a reevaluation of this issue.

The electrical shock issue, which is generic to all types of electrical generating stations, including nuclear plants, is of small significance for transmission lines that are operated in adherence with the NESC. Without review of each nuclear plant transmission line conformance with NESC criteria, it is not possible to determine the significance of the electrical shock potential. This is a Category 2 issue.

Proposed GEIS Text

3.9 Threatened and Endangered Species

No changes are recommended for this section.

4.5 Transmission Lines

Impacts of transmission lines result from their maintenance, electromagnetic fields, corona, and rights-of-way (ROW). Their impacts on air quality (Section 4.5.2), land use (Section 4.5.3), human health (Section 4.5.4), surface water quality and aquatic ecology (Section 4.5.5), terrestrial ecology (Section 4.5.6), floodplains and wetlands (Section 4.5.7), and historic and aesthetic resources (Section 4.5.8) are assessed in this section. At the construction permit stage, the transmission corridor of concern was that which was constructed between the plant switchyard to its connection with the existing transmission system. Since the construction of the nuclear power plants, there have been changes to the high voltage electrical grid. New transmission lines have been installed. New substations have been constructed in existing transmission lines as load demand has developed. New generating stations have been built and connected to the high voltage transmission system. Because the transmission system has changed since the nuclear power plants and transmission lines were constructed, sections of the grid and associated substations may remain in service even if the nuclear power plant is removed from service. Also, the nuclear power plant substation or switchyard may also remain in service. Because of these changes, only the sections of the transmission lines, and the substations and switchyards, which would be removed from service after the nuclear plant is removed from service, must be evaluated. Transmission lines, substations, and switchyards that would remain in service after the nuclear power plant is removed from service do not need to be evaluated.

4.5.1 Introduction

No changes are recommended to this section.

4.5.4.1 Acute Effects (Shock Hazard)

No changes are recommended to this section.

Current Rule Text

Currently, 10 C.F.R. 51.53(c)(3)(ii)(H) states, "If the applicant's transmission lines that were constructed for the specific purpose of connecting the plant to the transmission system do not meet the recommendations of the National Electric Safety Code for preventing electric shock from induced currents, an assessment of the impact of the proposed action on the potential shock hazard from the transmission lines must be provided."

10 C.F.R. 51.53(c)(3)(ii)(E) states, "All license renewal applicants shall assess the impact of refurbishment and other license-renewal-related construction activities on important plant and animal habitats. Additionally, the applicant shall assess the impact of the proposed action on threatened or endangered species in accordance with the Endangered Species Act."

Proposed Rule Text

10 C.F.R. 51.53(c)(3)(ii)(H) should be amended to read as follows: If the transmission lines that were constructed for the specific purpose of connecting the plant to the transmission system, and would remain in service only as a result of the proposed action, do not meet the recommendations of the National Electric Safety Code for preventing electric shock from induced currents, an assessment of the impact of the proposed action on the potential shock hazard from the transmission lines must be provided."

Although no changes to Section 51.53(c)(3)(ii)(E) are required, the scope of review of transmission lines for the Category 2 issue concerning threatened or endangered species should be identical to the scope of review for electric shock, described above.

3. GENERATION ALTERNATIVES

Comment on GEIS

Section 8.1 of the GEIS states that the NRC will conduct a full analysis of alternatives during individual license renewal reviews. To support the NRC review, utilities provide analyses of replacement energy alternatives. Based on previously approved applications, alternatives for replacement power are generally the same from plant to plant. Applications to date have indicated that the environmental impacts of license renewal are small and less than the environmental impacts of alternatives for replacement power.

It is recommended that the NRC perform a bounding analysis of license renewal environmental impacts relative to environmental impacts of alternative energy sources. Based on the bounding analysis, individual licensee analysis of the environmental impacts of alternative energy sources would not be required. The industry believes that the results of these analyses will conclude that the environmental impact of alternate generation is larger than the impact of renewing the license.

Current GEIS Text

The Nuclear Regulatory Commission's (NRC's) environmental review regulations implementing the National Environmental Policy Act (NEPA) (10 CFR Part 51) require that the NRC consider all reasonable alternatives to a proposed action before acting on a proposal, including consideration of the no-action alternative. The intent of such a consideration is to enable the agency to consider the relative environmental consequences of an action given the environmental consequences of other activities that also meet the purpose of the action, as well as the environmental consequences of taking no action at all. The information in this chapter does not constitute NRC's final consideration of alternatives to license renewal. Therefore, the rule accompanying this Generic Environmental Impact Statement (GEIS) does not contain any conclusions regarding the environmental impact or acceptability of alternatives to license renewal. Accordingly, the NRC will conduct a full analysis of alternatives at individual license renewal reviews. NRC expects that information contained in this chapter will be used in the analysis of alternatives for the supplemental environmental impact statements prepared for individual license renewals.

Proposed GEIS Text

The Nuclear Regulatory Commission's (NRC's) environmental review regulations implementing the National Environmental Policy Act (NEPA) (10 CFR Part 51) require that the NRC consider all reasonable alternatives to a proposed action before acting on a proposal, including consideration of the no-action alternative. The intent of such a consideration is to enable the agency to consider the relative environmental consequences of an action given the environmental consequences of other activities that also meet the purpose of the action, as well as the environmental consequences of taking no action at all. The information in this chapter does not constitute NRC's final consideration of alternatives to license renewal. Therefore, the rule accompanying this Generic Environmental Impact Statement (GEIS) does not contain any conclusions regarding the environmental impact or acceptability of alternatives to license renewal. Accordingly, the NRC will conduct a full analysis of alternatives at individual license renewal reviews. *However, the NRC has evaluated the environmental impacts of various alternatives generically and has concluded that the impacts of license renewal are small and less than the environmental impacts of alternatives for replacement power.* NRC expects

that information contained in this chapter will be used in the analysis of alternatives for the supplemental environmental impact statements prepared for individual license renewals.

Current Rule Text

51.45(b)(3): Alternatives to the proposed action. The discussion of alternatives shall be sufficiently complete to aid the Commission in developing and exploring, pursuant to section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent practicable, the environmental impacts and the alternatives should be presented in comparative form.

Proposed Rule Text

Unchanged, except for insertion of tables similar to the current tables S-3 and S-4 of 10 CFR 51.52.

4. SOCIOECONOMIC WORKFORCE ISSUES

Comment on GEIS

The NRC should consider revising the scoping of the current Category 2 socioeconomic issues associated with augmented workforce due to license renewal. Industry experience to date indicates that many of the activities associated with license renewal are bounded by current programs and activities, and, in most cases, do not require any staff augmentation.

As stated in the GEIS (section 4.7), "Estimates...of additional work force required during license-renewal-term operations indicate that only one additional worker will be required on a continuous basis for maintenance and inspection activities." The GEIS then goes on to contemplate an additional 60 workers "to account for workers (contractors or rotating utility employees) who are not associated with refueling but may be on-site intermittently."

Industry experience to date indicates that the number of workforce additions required to support operation during the period of extended operation, if any, are much lower than the 60 additional staff per site contemplated to be necessary intermittently in the original GEIS. The industry has not identified any activities that would require such staff augmentation above and beyond that which already occurs during routine refueling outages (which is already analyzed in the GEIS). Even considering 60 additional intermittent staff, as the GEIS asserts, industry

evaluations to date indicate the impact is insignificant and, consequently, all Category 2 issues associated with workforce augmentation should be transferred to Category 1.

Current GEIS Text

The Executive Summary currently states, in part:

- “The staff examined socioeconomic effects of nuclear power plant operations during a license renewal period. Five of these would be of small significance at all sites: education, public safety, social services, recreation and tourism, and aesthetics. Because mitigation measures beyond those implemented during the current license term are costly and would offer little benefit, no additional mitigation measures are warranted. These are Category 1 issues. Four of the socioeconomic effects were found to have moderate or large significance at some sites: housing, transportation, public utilities (especially water supply), and off-site land use. These are Category 2 issues. In addition, the statute (National Historic Preservation Act) requires consultation; thus historic and archaeological resources are Category 2 issues.”

Section 4.7, third paragraph:

“The size of the work force required during the license renewal term is an important determinant of population growth. The permanent license renewal term work force is expected to include those personnel who were on-site during the initial license term, up to 60 additional permanent operations workers per unit, and temporary refueling and maintenance workers during periodic plant outages. Estimates in Chapter 2 and Appendix B of additional work force required during license-renewal-term operations indicate that only one additional worker will be required on a continuous basis for maintenance and inspection activities. The more conservative figure (60 persons per unit) is used in the analysis to account for workers (contractors or rotating utility employees) who are not associated with refueling but may be on-site intermittently. The 60 persons per unit analysis represents an upper bound of the possible socioeconomic impacts.”

Section 4.7.1.3 Conclusions (Housing)

“No demand-related impacts are expected during regular operations, and only small impacts to housing value and marketability are projected. During continuing periodic refueling/maintenance outages, housing demand impacts during refueling/maintenance may range from small to large at various sites. The observed relationship between demographic characteristics and projected housing impacts at the case study sites suggests that large impacts are possible when a work force

exceeding 600 persons is required at a site located in a low-population area or in an area that has or recently has had growth control measures that limit housing development. This is a Category 2 issue.”

Section 4.7.3.2 Transportation, second paragraph

“Based on past and projected impacts at the case study sites, transportation impacts would continue to be of small significance at all sites during operations and would be of small or moderate significance during scheduled refueling and maintenance outages. Because impacts are determined primarily by road conditions existing at the time of the project and cannot be easily forecast, a site specific review will be necessary to determine whether impacts are likely to be small or moderate and whether mitigation measures may be warranted. This is a Category 2 issue.”

Section 4.7.3.5 Public Utilities

“Overall, there have been minimal impacts to public utilities as a result of plant operations. The existing capacity of public utilities was sufficient to accommodate the small influx of plant staff, and some locales experienced a noticeable decrease in the level of demand for services with the completion of original plant construction. Although impacts to public utilities during license renewal would be very similar to those that occurred during past operations, an increased problem with water availability may occur in conjunction with plant demand and plant-related population growth as a result of current water shortages in some areas. These shortages may result in moderate impacts to public water supplies at sites with limited water availability. This is a Category 2 issue.”

Section 4.7.4.2 Conclusion (Off-site Land Use)

“Based on predictions for the case study plants, it is projected that all new population-driven land-use changes during the license renewal term at all nuclear plants will be small because population growth caused by license renewal will represent a much smaller percentage of the local area's total population than has operations-related growth. Also, any conflicts between offsite land use and nuclear plant operations are expected to be small. In contrast, it is projected that new *tax-driven* land-use changes may be moderate at a number of sites and large at some others. Because land use changes may be perceived by some community members as adverse and by others as beneficial, the staff is unable to assess generically the potential significance of site-specific off-site land use impacts. This is a Category 2 issue.”

Proposed GEIS Text

Executive Summary:

- **“The staff examined socioeconomic effects of nuclear power plant operations during a license renewal period, including: education, public safety, social services, recreation and tourism, aesthetics, housing, transportation, public utilities (especially water supply), and off-site land use. These would all be of small significance at all sites. Because mitigation measures beyond those implemented during the current license term are costly and would offer little benefit, no additional mitigation measures are warranted. These are Category 1 issues.”**

Section 4.7, third paragraph:

“The size of the work force required during the license renewal term is an important determinant of population growth. The permanent license renewal term work force is expected to include those personnel who were on-site during the initial license term, up to 10 additional permanent operations workers per unit, and temporary refueling and maintenance workers during periodic plant outages. Estimates in Chapter 2 and Appendix B of additional work force required during license-renewal-term operations indicate that only one additional worker will be required on a continuous basis for maintenance and inspection activities. The more conservative figure (10 persons per unit) is used in the analysis to account for workers (contractors or rotating utility employees) who are not associated with refueling but may be on-site intermittently. The 10 persons per unit analysis represents an upper bound of the possible socioeconomic impacts.”

Note: In the additional sections containing discussion associated with the 60 workers, the 60 should be changed to 10.

Section 4.7.1.3 Conclusions (Housing)

“No demand-related impacts are expected during regular operations, and only small impacts to housing value and marketability are projected. During continuing periodic refueling/maintenance outages, housing demand impacts during refueling/maintenance may range from small to large at various sites. The observed relationship between demographic characteristics and projected housing impacts at the case study sites suggests that large impacts are possible when a work force exceeding 600 persons is required at a site located in a low-population area or in an area that has or recently has had growth control measures that limit housing development. However, because such impacts are not associated with augmented staff due to license renewal itself, this is a Category 1 issue.”

Section 4.7.3.2 Transportation, second paragraph

“Based on past and projected impacts at the case study sites, transportation impacts would continue to be of small significance at all sites during operations and would be of small or moderate significance during scheduled refueling and maintenance outages. Because impacts of up to 10 additional personnel are expected to be insignificant, this is a Category 1 issue.”

Section 4.7.3.5 Public Utilities

“Overall, there have been minimal impacts to public utilities as a result of plant operations. The existing capacity of public utilities was sufficient to accommodate the small influx of plant staff, and some locales experienced a noticeable decrease in the level of demand for services with the completion of original plant construction. Because of the small numbers associated with staff augmentation, this is a Category 1 issue.”

Section 4.7.4.2 Conclusion (Off-site Land Use)

“Based on predictions for the case study plants, it is projected that all new population-driven land-use changes during the license renewal term at all nuclear plants will be insignificant because population growth caused by license renewal will represent a much smaller percentage of the local area's total population than has operations-related growth. Also, any conflicts between offsite land use and nuclear plant operations are expected to be small. Because of the small numbers associated with staff augmentation, this is a Category 1 issue.”

Current Rule Text

Part 51.53(c), Postconstruction environmental reports, Operating license renewal stage

“(ii) The environmental report must contain analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term, for those issues identified as Category 2 issues in appendix B to subpart A of this part. The required analyses are as follows:...”

“(I) An assessment of the impact of the proposed action on housing availability, land-use, and public schools (impacts from refurbishment activities only) within the vicinity of the plant must be provided. Additionally, the applicant shall provide an assessment of the impact of population increases attributable to the proposed project on the public water supply.

“(J) All applicants shall assess the impact of highway traffic generated by the proposed project on the level of service of local highways during periods of license renewal refurbishment activities and during the term of the renewed license.”

Appendix B to Subpart A of Part 51 Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B-1_Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants \1\

Issue	Category	Findings [SU]3/[SU]
Socioeconomics		
Housing impacts	2	SMALL, MODERATE, OR LARGE. Housing impacts are expected to be of small significance at plants located in a medium or high population area and not in an area where growth control measures that limit housing development are in effect. Moderate or large housing impacts of the workforce associated with refurbishment may be associated with plants located in sparsely populated areas or in areas with growth control measures that limit housing development. See § 51.53(c)(3)(ii)(I)
Public services: public utilities	2	SMALL OR MODERATE. An increased problem with water shortages at some sites may lead to impacts of moderate significance on public water supply availability. See § 51.53(c)(3)(ii)(I).
Offsite land use (license renewal term)	2	SMALL, MODERATE, OR LARGE. Significant changes in land use may be associated with population and tax revenue changes resulting from license renewal. See §51.53(c)(3)(ii)(I).
Public services, Transportation (level of service) of highway traffic generated	2	SMALL, MODERATE, OR LARGE. Transportation impacts during plant refurbishment and during the term of the renewed license are generally expected to be of small significance. However, the increase in traffic associated with additional workers and the local road and traffic control conditions may lead to impacts of moderate or large significance at some sites. See § 51.53(c)(3)(ii)(J)

Proposed Rule Text

Part 51.53(c), Postconstruction environmental reports, Operating license renewal stage:

Strike (ii)I and (ii)J

Appendix B to Subpart A of Part 51 Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B-1_Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants \1\

Issue	Category	Findings [SU]3/[SU]
Socioeconomics		
Housing impacts	1	SMALL. Housing impacts are expected to be of small significance at all plants, due to the small amount of staff augmentation required for license renewal.
Public services: public utilities	1	SMALL. Impacts on public water supply availability are expected to be of small significance at all plants, due to the small amount of staff augmentation required for license renewal.
Offsite land use (license renewal term)	1	SMALL. Impacts on land use are expected to be of small significance at all plants, due to the small amount of staff augmentation required for license renewal.
Public services, Transportation (level of service) of highway traffic generated	1	SMALL. Transportation impacts during plant refurbishment and during the term of the renewed license are expected to be of small significance at all plants, due to the small amount of staff augmentation required for license renewal.

5. HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Scoping Comment on the GEIS

The NRC Staff has taken the position that the area of potential effect (APE) for a license renewal action is the area at the power plant site and its immediate environs that may be impacted by post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action. The APE may extend beyond the immediate environs in those instances where post-license renewal land disturbing operations or

projected refurbishment activities, specifically related to license renewal, potentially have an effect on known or proposed historic sites. This determination is made irrespective of ownership or control of the lands of interest (e.g., ADAMS Accession No. ML031830303, from Pao-Tsin Kuo, Program Director, License Renewal and Environmental Impacts to Maynard Crossland, Director, Illinois Historic Preservation Agency).

Current GEIS Text

3.7.7 Historic and Archaeological Resources

For this discussion and that in Section 4.7.7, historic resources are considered to be any prehistoric or historic archaeological site or historic property, district, site, or landscape in or eligible for inclusion in the *National Register of Historic Places* or having great local importance.

Sites are considered to have small impacts to historic and archaeological resources if (1) the State Historic Preservation Office (SHPO) identifies no significant resources on or near the site; or (2) the SHPO identifies (or has previously identified) significant historic resources but determines they would not be affected by plant refurbishment, transmission lines, and license-renewal-term operations and there are no complaints from the affected public about altered historic character; and (3) if the conditions associated with moderate impacts do not occur. Moderate impacts may result if historic resources, determined by the SHPO not to be eligible for the *National Register*, nonetheless are thought by the SHPO or local historians to have local historic value and to contribute substantially to an area's sense of historic character. Sites are considered to have large impacts to historic resources if resources determined by the SHPO to have significant historic or archaeological value would be disturbed or otherwise have their historic character altered through refurbishment activity, installation of new transmission lines, or any other construction (e.g., for a waste storage facility). Determinations of significance of impacts are made through consultation with the SHPO.

Any new construction activity, including building new waste storage facilities, new parking areas, new access roads to existing transmission lines, or new transmission lines, is particularly important to an analysis of impacts to historic and archaeological resources. Therefore, a refurbishment plan detailing areas of land disturbance is necessary to assess the potential impacts. Historic and archaeological resources vary widely from site to site; there is no generic way of determining their existence or significance. Also, additional resources (e.g., an archaeological site) may be identified before refurbishment begins or their historic significance may be newly established (e.g., a historic building). For these reasons, it is not possible to conclude that only small impacts would occur at the case study sites.

In addition, conclusions with respect to potential impacts to historic resources at the case study sites can be drawn only through consultation with the SHPO. The National Historic Preservation Act of 1966, especially Section 106, requires consultation with the SHPO and possibly the Advisory Council on Historic Preservation to determine whether historic and archaeological resources (either in or eligible for inclusion in the *National Register of*

Historic Places) are located in the area and whether they will be affected by the proposed action.

Table 3.7 Past construction-related and projected refurbishment-related employment effects at seven case study nuclear plants

Nuclear plant	Construction			Refurbishment	
	Plant-related employment ^a	Percentage of total study area employment	Magnitude of impact	Percentage of total study area employment in peak refurbishment year	Magnitude of impact
Arkansas Nuclear One	964	6.4	Moderate	5.8	Moderate
D. C. Cook Bridgman-Lake Township Berrien County	140 2569	8.8 6.5	Moderate Small	7.5 3.3	Moderate Small
Diablo Canyon	3153	3.6	Moderate	1.8	Small
Indian Point Westchester County	966	0.3	Small	0.2	Small
Oconee	706	3.3	Small	1.9	Small
Three Mile Island	259	2.1	Small	6.0	Small
Wolf Creek	1361	25.6	Large	6.8	Small

^aIncludes both direct and indirect employment and income for study area residents.

Source: The staff.

It is unlikely that moderate or large impacts to historic resources occur at any site unless new facilities or service roads are constructed or new transmission lines are established. However, the identification of historic resources and determination of possible impact to them must be done on a site-specific basis through consultation with the SHPO. The site-specific nature of historic resources and the mandatory National Historic Preservation Act consultation process mean that the significance of impacts to historic resources and the appropriate mitigation measures to address those impacts cannot be determined generically. This is a Category 2 issue.

4.7.7 Historic and Archaeological Resources

This section evaluates potential impacts of license renewal term operations to historic and archaeological resources.

4.7.7.1 Definition of Significance Levels

Sites are considered to have small impacts of historic and archaeological resources (1) if the State Historic Preservation Office (SHPO) identifies no significant resources on or near the site, or (2) if the SHPO identifies (or has previously identified) significant historic resources but determines they will not be affected by plant refurbishment, transmission lines, and license-renewal-term operations and there are no complaints from the affected public about altered historic character, and (3) if the conditions associated with moderate impacts do not occur. Moderate impacts may result if historic resources, determined by the SHPO not to be eligible for the National Register, nonetheless are thought by the SHPO or local historians to have local historic value and to contribute substantially to an area's sense of historic character. Sites are considered to have large impacts to historic resources if resources determined by the SHPO to have significant historic or archaeological value would be disturbed or otherwise have their historic character altered through refurbishment activity, installation of new transmission lines, or any other construction (e.g., for waste storage facility). Determinations of significance of impacts are made through consultation with the state historic preservation officer.

4.7.7.2 Analysis

Impacts to historic and archaeological resources during the license-renewal term would be largely the same as those occurring during the current operations period. At the case-study sites, only small impacts are known to occur. However, any construction activity during the license renewal term, such as building a new waste storage facility or a new access road to a transmission corridor, could induce new impacts. Also, it is possible that previously unknown historic and archaeological resources will be identified or their historic significance will be established in the future. As discussed at length in Section 3.7.7, a determination of impact to historic and archaeological resources must be made through consultation with the SHPO as mandated by the National Historic Preservation Act.

4.7.7.3 Conclusions

Although it is unlikely that historic or archaeological impacts of moderate or large significance would occur during the license-renewal term, determinations of impacts to historic and archaeological resources are site-specific in nature and must be made through consultation with the SHPO. Any mitigation measures must likewise be determined on a case-by-case basis. Because site-specific and activity-specific information is needed to assess the significance of impacts to historic and archaeological resources, this is a Category 2 issue.

Proposed GEIS Text

3.7.7 Historic and Archaeological Resources

For this discussion and that in Section 4.7.7, historic resources are considered to be any prehistoric or historic archaeological site or historic property, district, site, or landscape in or eligible for inclusion in the *National Register of Historic Places* or having great local importance.

Sites are considered to have small impacts to historic and archaeological resources if (1) the State Historic Preservation Office (SHPO) identifies no significant resources on or near the site within the area of potential effect; or (2) the SHPO identifies (or has previously identified) significant historic resources but determines they would not be affected by plant refurbishment, transmission lines, and license-renewal-term operations within the area of potential effect and there are no complaints from the affected public about altered historic character; and (3) if the conditions associated with moderate impacts do not occur. The area of potential effect for a license renewal action is the area at the power plant site and its immediate environs that may be impacted by post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action. Moderate impacts may result if historic resources, determined by the SHPO not to be eligible for the *National Register*, nonetheless are thought by the SHPO or local historians to have local historic value and to contribute substantially to an area's sense of historic character. Sites are considered to have large impacts to historic resources if resources determined by the SHPO to have significant historic or archaeological value would be disturbed or otherwise have their historic character altered through refurbishment activity, installation of new transmission lines, or any other construction (e.g., for a waste storage facility). post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action at the power plant site and its immediate environs. Determinations of significance of impacts are made through consultation with the SHPO.

Any new construction activity associated with refurbishment, including building new waste storage facilities, new parking areas, new access roads to existing transmission lines, or new transmission lines, is particularly important to an analysis of impacts to historic and archaeological resources. Therefore, a refurbishment plan detailing areas of land disturbance is necessary to assess the potential impacts. Historic and archaeological resources vary widely from site to site; there is no generic way of determining their existence or significance. Also, additional resources (e.g., an archaeological site) may be identified before refurbishment begins or their historic significance may be newly established (e.g., a historic building). For these reasons, it is not possible to conclude that only small impacts would occur at the case study sites.

In addition, conclusions with respect to potential impacts to historic resources at the case study sites can be drawn only through consultation with the SHPO. The National Historic Preservation Act of 1966, especially Section 106, requires consultation with the SHPO and possibly the Advisory Council on Historic Preservation to determine whether historic and archaeological resources (either in or eligible for inclusion in the *National Register of Historic Places*) are located in the area within the area of potential effect and whether they will be affected by the proposed action.

Table 3.7 Past construction-related and projected refurbishment-related employment effects at seven case study nuclear plants

Nuclear plant	Construction			Refurbishment	
	Plant-related employment ^a	Percentage of total study area employment	Magnitude of impact	Percentage of total study area employment in peak refurbishment year	Magnitude of impact
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D. C. Cook Bridgman-Lake Township Berrien County	140 2569	8.8 6.5	Moderate Small	7.5 3.3	Moderate Small
Diablo Canyon	3153	3.6	Moderate	1.8	Small
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Oconee	706	3.3	Small	1.9	Small
Three Mile Island	259	2.1	Small	6.0	Small
Wolf Creek	1361	25.6	Large	6.8	Small

^aIncludes both direct and indirect employment and income for study area residents.

Source: The staff.

It is unlikely that moderate or large impacts to historic resources occur at any site within the area of potential effect unless new facilities or service roads are constructed or new transmission lines are established through refurbishment. However, the identification of historic resources and determination of possible impact to them must be done on a site-specific basis through consultation with the SHPO. The site-specific nature of historic resources and the mandatory National Historic Preservation Act consultation process mean that the significance of impacts to historic resources and the appropriate mitigation measures to address those impacts cannot be determined generically. This is a Category 2 issue.

4.7.7 Historic and Archaeological Resources

This section evaluates potential impacts of license renewal term operations to historic and archaeological resources.

4.7.7.1 Definition of Significance Levels

Sites are considered to have small impacts of historic and archaeological resources (1) if the State Historic Preservation Office (SHPO) identifies no significant resources on or near the site within the area of potential effect, or (2) if the SHPO identifies (or has previously identified) significant historic resources but determines they will not be affected by plant refurbishment, transmission lines, and license-renewal-term operations within the area of potential effect and there are no complaints from the affected public about altered historic character, and (3) if the conditions associated with moderate impacts do not occur. The area of potential effect for a license renewal action is the area at the power plant site and its immediate environs that may be impacted by post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action. Moderate impacts may result if historic resources, determined by the SHPO not to be eligible for the National Register, nonetheless are thought by the SHPO or local historians to have local historic value and to contribute substantially to an area's sense of historic character. Sites are considered to have large impacts to historic resources if resources determined by the SHPO to have significant historic or archaeological value would be disturbed or otherwise have their historic character altered through post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action at the power plant site and its immediate environs. refurbishment activity, installation of new transmission lines, or any other construction (e.g., for waste storage facility). Determinations of significance of impacts are made through consultation with the state historic preservation officer.

4.7.7.2 Analysis

Impacts to historic and archaeological resources during the license-renewal term would be largely the same as those occurring during the current operations period. At the case-study sites, only small impacts are known to occur. However, any construction activity during the license renewal term within the area of potential effect, such as building a new waste storage facility or a new access road to a transmission corridor, could induce new impacts. Also, it is possible that previously unknown historic and archaeological resources will be identified or their historic significance will be established in the future. As discussed at length in Section 3.7.7, a determination of impact to historic and archaeological resources must be made through consultation with the SHPO as mandated by the National Historic Preservation Act.

4.7.7.3 Conclusions

Although it is unlikely that historic or archaeological impacts of moderate or large significance would occur during the license-renewal term, determinations of impacts to historic and archaeological resources are site-specific in nature and must be made through consultation with the SHPO. Any mitigation measures must likewise be determined on a case-by-case basis. Because site-specific and activity-specific information is needed to assess the significance of impacts to historic and archaeological resources, this is a Category 2 issue.

Current Rule Text

All applicants shall assess whether any historic or archaeological properties will be affected by the proposed project (10 CFR 51.53(c)(3)(ii)(K))

Proposed Rule Text

All applicants shall assess whether any historic or archaeological resources within the area of potential effect (APE) will be affected by the proposed project. The APE shall consist of the power plant site and its immediate environs which may be impacted by post-license renewal land disturbing operations or projected refurbishment activities, specifically related to license renewal, which could potentially have an effect on sites listed or proposed for listing on the National Register of Historic Places.

6. EMF

Comment

NRC should update the analysis of chronic effects from exposure to electric and magnetic fields and categorize it appropriately.

Two major U.S. reports have concluded that limited evidence exists for an association between EMF exposure and increased leukemia risk, but that when all the scientific evidence is considered, the link between EMF exposure and cancer is weak. The World Health Organization in 1997 reached a similar conclusion.

The two reports were the U.S. National Academy of Sciences (NAS) report issued in 1997 (Ref 1) and, in 1999, the National Institute of Environmental Health Sciences (NIEHS) report to the U.S. Congress at the end of the U.S. EMF Research and Public Information Dissemination Program (RAPID) (Ref. 2).

A National Research Council committee of the NAS made the following conclusion in a report documenting its evaluation of research on potential associations between EMF exposure and cancer, reproduction, development, learning, and behavior:

Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects.

Based on the results of the EMF RAPID program, the NIEHS believes that the probability that ELF-EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal, scientific support that exposure to this agent is causing any degree of harm.

Current GEIS Text and Proposed Revisions

In Section 4.5.4 of the GEIS, NRC summarizes the results of studies reported through the early 1990s and recognizes the responsibilities of the NIEHS was to direct the EMF biological research funded through the Department of Energy. As noted above, the NIEHS EMF RAPID program has been completed indicating the health hazard is small. These results, as well as, similar conclusions published by other health organizations support a Category 1 finding. Therefore, NRC should revise and expand the discussion in Sections 4.5.4.1 and 4.5.4.2 to capture the NIEHS results and 10 additional years of studies. In addition, NRC should modify Section 4.5.4.3 to categorize the issue as a Category 1 issue.

Current Rule Text

10 CFR 51, Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B - 1. -- Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants (excerpt)

Electromagnetic fields, chronic effects ⁵	⁴ NA	UNCERTAIN. Biological and physical studies of 60 - Hz electromagnetic fields have not found consistent evidence linking harmful effects with field exposures. However, because the state of the science is currently inadequate, no generic conclusion on human health impacts is possible. ⁵
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- 4. NA (not applicable). The categorization and impact finding definitions do not apply to these issues.
- 5. If, in the future, the Commission finds that, contrary to current indications, a consensus has been reached by appropriate Federal health agencies that there are adverse health effects from electromagnetic fields, the commission will require applicants to submit plant-specific reviews of these health effects as part of their license renewal applications. Until such time, applicants for license renewal are not required to submit information on this issue.

Proposed Rule Text

10 CFR 51, Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B - 1. -- Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants (excerpt)

Electromagnetic fields, chronic effects	1	SMALL. Biological and physical studies of 60 - Hz electromagnetic fields indicate that there is no significant link between cancer and power line fields.
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Ref. 1 *Possible Health Effects of Exposure to Residential Electric and Magnetic Fields.* Committee on the Possible Effects of Electromagnetic Fields on Biological Systems, Board on Radiation Effects Research, National Academy of Science. National Academy Press, Washington, DC, 1997.

Ref. 2 *Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields.* National Institute of Environmental Health Sciences, National Institutes of Health. 1999.

8. THERMOPHILIC ORGANISMS

Comment

NRC should clarify the language that defines the applicability of the issue addressing the impacts of thermophilic organisms in the affected water [10CFR51.53(c)(3)(ii)(G)]. The GEIS specifically limits the concern to 25 plants. Current language in the GEIS and the rule, as well as, treatment in GEIS supplements issued to date is inconsistent.

Current GEIS Text

“Potential adverse health effects on the public from thermally enhanced microorganisms is an issue for nuclear plants that use cooling ponds, lake, or canals and that discharge to small rivers. These plants are all combined in the category of small rivers [average flow less than 2830 m³/s (100,000 ft³/s)] in Tables 5.18 and 5.19.]”

[GEIS Section 4.3.6, page 4-48, column 2]

“Public health questions require additional consideration for the 25 plants using cooling ponds, lakes, canals, or small rivers (all under the small river category in

Tables 5.18 and 5.19) because the operation of these plants may significantly enhance the presence of thermophilic organisms.”

[GEIS Section 4.3.6, page 4-49, column 2]

Proposed GEIS Text

“Potential adverse health effects on the public from thermally enhanced microorganisms is an issue for nuclear plants that use cooling ponds, lake, or canals and that discharge to small rivers. These plants are all combined in the category of small rivers [average flow less than 2830 m³/s (100,000 ft³/s)] in Tables 5.18 and 5.19.]”

[GEIS Section 4.3.6, page 4-48, column 2]

“Public health questions require additional consideration for the 25 plants using cooling ponds, lakes, or canals, or and that discharge to small rivers (all under the small river category in Tables 5.18 and 5.19) because the operation of these plants may significantly enhance the presence of thermophilic organisms.”

[GEIS Section 4.3.6, page 4-49, column 2]

Current Rule Text

“If the applicant’s plant uses a cooling pond, lake, or canal or discharges into a small river having an annual average flow rate of less than 3.15 x 10¹² ft³/year (9 x 10¹⁰ m³/year), an assessment of the impact of the proposed action on public health from thermophilic organisms in the affected water must be provided.”

[10CFR51.53(c)(3)(ii)(G)].

10 CFR 51, Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B - 1. -- Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants (excerpt)

Microbiological organisms (public health) (plants using lakes or canals, or cooling towers or cooling ponds that discharge to a small river)	2 SMALL, MODERATE, OR LARGE. These organisms are not expected to be a problem at most operating plants except possibly at plants using cooling ponds, lakes, or canals that discharge to small rivers. Without site-specific data, it is not possible to predict
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Proposed Rule Text

“If the applicant’s plant uses a cooling pond, lake, or canal and that discharges into a small river having an annual average flow rate of less than 3.15 x 10¹² ft³/year (9 x 10¹⁰ m³/year), an assessment of the impact of the proposed action on public health from thermophilic organisms in the affected water must be provided.”

10 CFR 51, Appendix B to Subpart A -- Environmental Effect of Renewing the Operating License of a Nuclear Power Plant

Table B - 1. -- Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants (excerpt)

<p>Microbiological organisms (public health) (plants using <u>cooling ponds</u>, lakes, or canals, or cooling towers or cooling ponds and that discharge to a small river)</p>	<p>2</p>	<p>SMALL, MODERATE, OR LARGE. These organisms are not expected to be a problem at most operating plants except possibly at plants using cooling ponds, lakes, or canals that discharge to small rivers. Without site-specific data, it is not possible to predict</p>
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