



U.S. NUCLEAR REGULATORY COMMISSION

ENVIRONMENTAL STANDARD REVIEW PLAN

5.6.1 TERRESTRIAL ECOSYSTEMS

REVIEW RESPONSIBILITIES

Primary—Organization responsible for the review of ecological information

Secondary—None

I. AREAS OF REVIEW

This environmental standard review plan (ESRP) directs the staff's identification and evaluation of impacts on the terrestrial ecosystem induced by the operation and maintenance of transmission systems. Specifically, the scope of this review should consider the following categories of impacts: general effects of rights-of-way maintenance (cutting and herbicide application), the special case of rights-of-way maintenance impacts on floodplains and wetlands, bird collisions with power lines, invasive species, and the effects of electromagnetic fields (EMFs) on flora and fauna (plants, agricultural crops, honeybees, wildlife, and livestock). The scope of this review should also include such effects on "important" terrestrial species and habitats (defined in Table 2.4.1-1). Note that impacts associated with the clearing of rights-of-way and the construction and emplacement of transmission towers and wires are analyzed in ESRP 4.3.1. The review for this ESRP should predict and evaluate the significance of impacts to terrestrial resources for each of the impact categories specified above. These impacts were evaluated previously in NUREG-1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) (NRC 1996). Therefore, the GEIS should be used for this ESRP, in conjunction with any new and significant information in these impact subject areas. Where necessary, the reviewer should evaluate alternative practices or procedures to mitigate potential impacts. Both aerial and underground transmission systems should be considered in this review.

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USNRC ENVIRONMENTAL STANDARD REVIEW PLAN

This Environmental Standard Review Plan has been prepared to establish guidance for the U.S. Nuclear Regulatory Commission staff responsible for environmental reviews for nuclear power plants. The Environmental Standard Review Plan is not a substitute for the NRC's regulations, and compliance with it is not required.

These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-1555 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of New Reactors, Washington, D.C. 20555-0001.

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Review Interfaces

The reviewer for this ESRP should obtain inputs from and provide input to reviewers for the following ESRPs, as indicated:

- ESRP 2.2.2. Obtain information about the transmission corridors and offsite areas in sufficient detail to determine where impacts to the terrestrial resources from transmission system operation and maintenance could occur.
- ESRP 2.4.1. Obtain information about the terrestrial environment in the vicinity of the transmission corridors in sufficient detail to determine what species and, habitats, including “important” species and habitats, could be affected by transmission system operation and maintenance.
- ESRP 3.7. Obtain information on the physical characteristics of the power transmission system and right-of-way maintenance procedures in sufficient detail to determine impacts to terrestrial biota.
- ESRP 4.3.1. Obtain information on impacts of transmission system construction to terrestrial biota from the reviewer of ESRP 4.3.1, as the same biota may be impacted by transmission system operation and maintenance.
- ESRP 4.7. Provide a determination of the magnitude of transmission system operation and maintenance impacts (i.e., SMALL, MEDIUM, or LARGE) to the terrestrial ecosystem so that a description of cumulative impacts to the terrestrial ecosystem may be completed.
- ESRP 5.10. Provide a list of those measures and controls to limit adverse transmission system operation and maintenance impacts (e.g., special right-of-way maintenance practices to protect biologically unique or sensitive areas crossed by corridors) and applicant commitments to implement the measures and controls.
- ESRP 6.5.1. Provide information on impacts to terrestrial ecology from the operation and maintenance of transmission systems in sufficient detail to permit evaluation of the applicant’s proposed terrestrial ecology monitoring program.
- ESRPs 9.3 and 9.4. Provide a list of adverse impacts from transmission system maintenance that could be avoided or mitigated through alternative maintenance procedures, and assist in determining appropriate alternatives.
- ESRP 10.1. Provide a summary of the unavoidable impacts that are predicted to occur as a result of transmission system operation and maintenance. The summary should be limited to the more significant impacts, such as modification of habitat for “important” species.

Data and Information Needs

The type of data and information needed is guided by the subject matter of the impact categories specified above in AREAS OF REVIEW. The degree of detail should be modified according to the anticipated magnitude of the potential impacts. The following data or information should be obtained:

- right-of-way maintenance practices, such as chemical and mechanical vegetation control methods, that are anticipated to affect terrestrial biota (from the transmission system owner and operator and the environmental report [ER])
- special right-of-way maintenance practices used to minimize adverse effects in “important” habitats (e.g., floodplains, wetlands, natural areas), including those that result in beneficial effects on terrestrial biota (from the transmission system owner and operator and the ER)
- the occurrences of “important” species and habitats, including Federally listed threatened or endangered species and/or designated critical habitat along the transmission corridors (from consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service, the appropriate State agency, and from the ER)
- the occurrences of invasive species, as defined in Executive Order 13112, along the transmission corridors (from consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service, the appropriate State agency, and from the ER)
- wildlife-management practices implemented within rights-of-way (e.g., forage plots) (from the ER and the State wildlife agency)
- new and significant information since the publication of the GEIS in 1996 on the general effects of rights-of-way maintenance (cutting and herbicide application), the special case of rights-of-way maintenance impacts on floodplains and wetlands, bird collisions with power lines, and the effects of EMFs on flora and fauna (plants, agricultural crops, honeybees, wildlife, and livestock) (from the literature, the ER, and consultation with Federal, State, regional, local, and affected Native American tribal agencies)
- additional information requested in ESRPs 2.4.1 and 3.7 for reviewing impacts on terrestrial resources from transmission system operation and maintenance.

II. ACCEPTANCE CRITERIA

The reviewer should become familiar with the provisions of standards, guides, and agreements that are pertinent to the operation and maintenance of transmission systems. Acceptance criteria for the review of impacts on terrestrial ecology as a result of transmission system operation and maintenance are relevant requirements of the following:

- Bald and Golden Eagle Protection Act with respect to the prohibition of taking, possessing, selling, transporting, importing, or exporting a bald or golden eagle, dead or alive, without a permit
- Coastal Zone Management Act of 1972 with respect to natural resources and land or water uses of the coastal zone
- Endangered Species Act of 1973 with respect to identifying Federally threatened and endangered species and/or designated critical habitat and initiating formal or informal consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service
- Fish and Wildlife Coordination Act with respect to consideration of wildlife resources in the planning and development of projects
- Migratory Bird Treaty Act with respect to declaring that it is unlawful to take, import, export, possess, buy, sell, purchase, or barter any migratory bird. Feathers and other parts, such as nests or eggs, and products made from migratory birds are also covered by the Act. “Take” is defined as pursuing, hunting, shooting, poisoning, wounding, killing, capturing, trapping, or collecting
- Executive Order 13112 with respect to invasive species.

Regulatory positions and specific criteria necessary to meet the regulations and other statutory requirements identified above are as follows:

- The “Second Memorandum of Understanding and Policy Statement Regarding Implementation of Certain NRC and EPA Responsibilities,” serves as the legal basis for NRC decision making concerning licensing matters covered by NEPA and Section 511 of the Federal Water Pollution Control Act (FWPCA), commonly referred to as the Clean Water Act (CWA).
- The “Memorandum of Understanding between the Corps of Engineers, U.S. Army, and the NRC for the Regulation of Nuclear Power Plants,” 40 FR 60115, provides guidance with respect to the NRC exercising the primary responsibility in conducting environmental reviews and in preparing EISs for nuclear power stations. The Corps of Engineers should be consulted regarding (1) coastal erosion and other shoreline modifications, (2) siltation and sedimentation processes, (3) dredging activities and disposal of dredged materials, and (4) location of structures affecting navigable waters.
- Regulatory Guide 4.11, Rev. 1, *Terrestrial Environmental Studies for Nuclear Power Stations* (NRC 1977), contains technical information for the design and execution of terrestrial environmental studies, the results of which should be included in the applicant’s ER and the EIS.

Technical Rationale

The technical rationale for evaluating the applicant's potential impacts to the terrestrial ecosystem from transmission system **operation and maintenance** is discussed in the following paragraph:

The EIS needs to include an analysis of the effects of transmission system **operation and maintenance** on terrestrial ecology and the alternatives for reducing or avoiding adverse effects, as well as any environmental benefits that may result. Following the acceptance criteria listed above will help ensure that the environmental impacts of transmission system **operation and maintenance** on the terrestrial environment will be considered with respect to matters covered by such standards and requirements.

III. REVIEW PROCEDURES

When evaluating the data and information acquired under "Data and Information Needs," which is necessary to determine the impacts on terrestrial ecology from transmission system operation and maintenance, the reviewer should take the following steps:

- (1) Review the following categories of impacts: general effects of rights-of-way maintenance (cutting and herbicide application), the special case of rights-of-way maintenance impacts on floodplains and wetlands, bird collisions with power lines, and the effects of EMFs on flora and fauna (plants, agricultural crops, honeybees, wildlife, and livestock)
 - Consider the conclusions presented in the GEIS (NRC 1996) for all the above impact categories. The conclusions in the GEIS for all the above categories of impacts are that they are generic and SMALL. These conclusions are based on the similarity and insignificance of the known effects (or lack thereof) of transmission system operation and maintenance at operating nuclear power plants at the time the GEIS was issued in 1996. The reviewer should determine whether this magnitude of impact is valid for the above impact categories at the proposed reactor(s) under review by assessing whether conditions there are substantially different from those at operating reactors, and/or whether there has been new and significant information published on the subject since issuance of the GEIS in 1996. In so doing, the review should include, but not be limited to the following:
 - Become familiar with the provisions of standards and guides pertinent to **transmission corridor right-of-way maintenance**.
 - Determine whether the proposed **right-of-way** maintenance procedures are those generally recognized as environmentally responsible. Following are examples of such procedures:
 - maintaining ground cover in rights-of-way to avoid runoff and siltation

- avoiding the use of herbicides and defoliant near waterways and using only licensed herbicide and/or pesticide applicators
- avoiding unnecessary removal of vegetation that shades streams.
- Identify any impacts which should be mitigated or avoided and appropriate measures for doing so (e.g., in clearing vegetation from stream banks, make certain it is limited to that necessary for placement of structures).
- Review any new and significant information on the impact categories of general effects of rights-of-way maintenance (cutting and herbicide application), the special case of rights-of-way maintenance impacts on floodplains and wetlands, bird collisions with power lines, and the effects of EMFs on flora and fauna (plants, agricultural crops, honeybees, wildlife, and livestock) in light of the conclusion presented for them in the GEIS (i.e., SMALL impact). Based on the above review, determine whether the conclusion presented in the GEIS should be applied to the proposed reactor(s) under review. If not, estimate the appropriate impact level for these subject areas.

(2) Review impacts to Federally listed threatened or endangered species and/or designated critical habitat by doing the following:

- Note that the conclusion presented in the GEIS (NRC 1996) for Federally listed threatened or endangered species and/or designated critical habitat is that the magnitude of impact is site-specific and thus may vary. Therefore, the GEIS is not useful for reviewing the effects of transmission system operation and maintenance on Federally protected species and habitats.
- Utilize a map and superimpose transmission corridors over occurrences of “important” terrestrial species and habitats, including any Federally listed threatened or endangered species and/or designated critical habitat (from consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service, the appropriate State agency, and the ER).
- Determine the magnitude of potential impact (i.e., SMALL, MEDIUM, LARGE) to Federally listed threatened or endangered species and/or designated critical habitat from transmission line right-of-way maintenance (e.g., soil erosion, destruction of habitat, and animal mortality due to chemical and mechanical vegetation control), bird collisions with power lines, etc.

(3) Review the potential for the introduction of invasive species by the creation of new transmission corridors or the maintenance practices on such corridors.

IV. EVALUATION FINDINGS

Input to the EIS should include (1) the adverse impacts of transmission system operation and maintenance to terrestrial ecosystems, (2) the impacts for which there are measures or controls to limit adverse effects and the associated measures and controls, (3) the applicant's commitments to limit these impacts, and (4) the staff's evaluation of the adequacy of the applicant's measures and controls to limit adverse impacts. This information should be summarized for the reviewer of ESRP 5.10.

The depth and extent of the input to the EIS should be governed by the attributes of the terrestrial ecological resources that could be affected by transmission system operation and maintenance, and by the nature and magnitude of the expected impacts to those resources. Specifically, the following impact categories should be addressed in the EIS: general effects of rights-of-way maintenance (cutting and herbicide application); the special case of rights-of-way maintenance impacts on floodplains and wetlands; bird collisions with power lines; the effects of EMFs on flora and fauna (plants, agricultural crops, honeybees, wildlife, and livestock); and any effects from these sources on Federally listed threatened or endangered species and/or designated critical habitat.

Any transmission system maintenance activity that should receive mitigative action should be described by the staff. Where mitigation is an option, the reviewer should evaluate appropriate measures. The reviewer should also evaluate alternatives for any proposed maintenance activity that is predicted to result in an adverse impact that cannot be satisfactorily mitigated.

If the reviewer verifies that sufficient information has been provided in accordance with the requirements of this ESRP section, then the evaluation supports the following type of concluding statement to be included in the EIS:

The staff reviewed the available information relative to impacts to general terrestrial ecology and Federally protected species and habitats from transmission system operation and maintenance. The staff concludes that the description of impacts is adequate to comply with 10 CFR 51 and 52.

V. IMPLEMENTATION

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

VI. REFERENCES

64 FR 6183. "Executive Order 13112 Invasive Species. *Federal Register*, February 8, 1999.

Bald and Golden Eagle Protection Act of 1940, as amended, 16 USC 668 et. seq.

Coastal Zone Management Act, as amended, 16 USC 1451 et seq.

Endangered Species Act, as amended, 16 USC 1531 et seq.

“Memorandum of Understanding between the Corps of Engineers, U.S. Army, and the U.S. Nuclear Regulatory Commission for the Regulation of Nuclear Power Plants.” 40 *Federal Register* 37110, August 25, 1975.

“Second Memorandum of Understanding and Policy Statement Regarding Implementation of Certain NRC and EPA Responsibilities,” 40 *Federal Register* 60115, December 31, 1975.
Migratory Bird Treaty Act, as amended, 16 USC 703 et seq.

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

U.S. Nuclear Regulatory Commission (NRC). 1977. *Terrestrial Environmental Studies for Nuclear Power Stations*. Regulatory Guide 4.11, Rev. 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Volumes 1 and 2, Washington, D.C.

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Environmental Standard Review Plan are covered by the requirements of 10 CFR Part 51, and were approved by the Office of Management and Budget, approval number 3150-0021.

PUBLIC PROTECTION NOTIFICATION

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