

The Environmental Aspects of Renewable Energy Projects

Linda M. Bullen
Lionel Sawyer & Collins
300 South Fourth Street
1500 Bank of America Plaza
Las Vegas, NV 89101
702-383-8970
lbullen@lionelsawyer.com

INTRODUCTION

Renewable energy comes in many forms, including wind, solar, hydropower, geothermal heat and biomass. The primary environmental advantage of the use of renewables is that they replace fossil fuels, and thereby result in a reduction of the amount of greenhouse gas emitted during the energy production process.

Despite the clear advantage with regard to reduction in greenhouse gas emissions, renewable energy projects are not entirely without adverse environmental impacts, primarily resulting from the manufacturing and construction of the energy production facility. It is estimated, for example, that it takes nearly seven months of energy production for a wind turbine to offset the emission of greenhouse gases associated with the manufacturing and installation of the turbine itself.

A major obstacle to the rapid development of renewable energy sources in the U.S. has been the cost and delays associated with compliance with environmental laws. Primary among these laws in the National Environmental Policy Act (“NEPA”) which applies to all projects with a federal nexus.

I. OVERVIEW AND HIGHLIGHTS OF NEPA

A. The NEPA Statute 42 U.S.C. § 4321 et. seq.

1. Title I: Congressional Declaration of National Environmental Policy

Recognizing the “profound impact of man’s activity on the interrelationships of all components of the natural environment,” Congress set forth in Section 101 of NEPA the goals underlying the NEPA statute. Section 101 declares:

. . . that it is the continuing policy of the Federal government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner

calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

The aspects of that overarching policy are set forth in Section 101(b) of the NEPA statute states that:

[i]n order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the nation may

- a. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- b. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- c. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- d. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
- e. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- f. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In addition, NEPA recognizes that “each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.” *See* 40 U.S.C. § 4332(c). Implicit in this declaration is the concept that economic and environmental quality are, or should be, compatible. This premise is embodied in Section 101(a) of NEPA which states that the purpose of NEPA is “to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.” *See* 40 U.S.C. § 4331(a).

In conformance with this overarching policy, Section 102 of NEPA provides the means for carrying out the policy established in Section 101 by requiring that, to the fullest extent possible, the “policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act . . .”, and further sets forth the general approach to be taken by agencies of the Federal Government to ensure conformance with NEPA policy. *See* 42 U.S.C. § 4332. These “action forcing” provisions ensure that Federal agencies act in accordance with the spirit and the letter of NEPA.

Section 102 also establishes the requirement for the key document in the NEPA process – the Environmental Impact Statement (“EIS”) – which must be created whenever there is a “major Federal action significantly affecting the quality of the human environment.” Section 102 requires that each EIS contain a detailed statement on the environmental impact of the proposed action, any adverse environmental effects which cannot be avoided, the relationship between short term uses and long term productivity and any irreversible and irretrievable commitment of resources resulting from implementation of the proposed action. *See* 42 U.S.C. § 4332(2)(c). Section 102(c) further requires consultation by the responsible Federal official with any Federal agency with jurisdiction or special expertise with respect to any environmental impact involved.

Title I of the NEPA statute concludes with the requirement that Federal agencies review their statutory and regulatory authority and policy to ensure compliance with the policies set forth in NEPA (Section 103), articulates specifically that nothing in NEPA is intended to affect any other obligations of any Federal agency (Section 104), and establishes that the goals and policies in NEPA are supplemental to the existing authorizations of the Federal agencies (Section 105).

2. Title II: Council on Environmental Quality

Title II of the NEPA statute creates the Council on Environmental Quality which resides within the Executive Branch of the Federal government. It is composed of three members, appointed by the President, to serve at his pleasure, by and with the advise and consent of the Senate. The President designates one of the members of the Council to serve as Chairman. *See* 42 U.S.C. § 4342. The Council is integral to NEPA by overseeing the activities of federal agencies in matters impacting the environment and natural resources and by assisting the President in policy formulation.

The specific duties and functions of the Council are to:

- assist and advise the President in the preparation of the annual Environmental Quality Report required by Section 201 of NEPA;
- gather timely and authoritative information concerning conditions and trends in the quality of the environment;
- review and appraise the various programs and activities of the Federal Government in light of the policies set forth in Title I of NEPA;
- to develop and recommend to the President national policies to foster and promote the improvement of environmental quality;
- to conduct investigations, studies, surveys, research and analyses relating to environmental quality and ecological systems;
- document and define changes in the natural environment;
- report at least once each year to the President on the state and condition of the environment; and
- make and furnish such studies and reports as the President may request.

See 42 U.S.C. § 4345.

**B. The NEPA Regulations
40 CFR Part 1500**

When NEPA became effective in 1970, Federal agencies, the courts, and the public had nothing but the general language of NEPA itself and its ambiguous legislative history upon which to rely in their interpretation of NEPA. In 1977, President Carter directed the Council to convert its 1973 EIS guidelines into formal regulations for implementing NEPA. The NEPA regulations were published in November 1978. The stated purpose of the regulations was to reduce excessive paperwork associated with NEPA, to better integrate NEPA with other planning and environmental review procedures, to encourage more effective public involvement, and to reduce unnecessary delays in completing the NEPA process. NEPA regulations place a renewed focus on NEPA's dual purpose of focusing on environmental quality and acting on what is learned.

Section 1500.1(c) states the general policy behind the regulations:

Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA

process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

Section 1500.3 makes it clear that the NEPA regulations are binding on all Federal agencies. Section 1500.4 requires that all Federal agencies reduce excessive paperwork and establishes a number of mechanisms for achieving such reduction. Section 1500.5 establishes the means by which Federal agencies shall reduce delay in the NEPA process, and Section 1500.6 requires that each agency interpret NEPA as a supplement to the agency's existing authority.

The NEPA regulations attempt to simplify key statutory and regulatory terms and concepts, to minimize legal fictions and to use common meanings. Among other provisions, these regulations:

- require Federal agencies to issue or revise their own procedures, consistent with Council regulations, to achieve the purposes of NEPA;
- establish a "scoping process" for making an early determination of the scope of significant issues to be addressed in EISs;
- establish a default standard format and page limits for EISs;
- provide instructions for the EIS comment process;
- establish criteria and procedures for referring federal interagency disagreements on proposed actions to the Council; and
- set forth agency responsibilities for compliance with NEPA and establish limitations on agency actions during the NEPA process.

Part 1501, entitled "NEPA and Agency Planning," requires that NEPA be applied early in the process. *See* §1501.2. During the scoping phase of the NEPA process, the lead agency must determine the precise nature and extent of the proposed action, the range of alternatives, the specific impacts to be evaluated and the methods to be used in the evaluation of the impacts. Section 1501.3 requires that an Environmental Assessment ("EA") be conducted when required by the regulations of the individual agency, but is not required when the agency prepares EIS.

a. Environmental Assessments

An EA is a concise public document prepared by a Federal agency when a proposed action is neither covered by a categorical exclusion nor otherwise exempt from NEPA. Federal agencies use the EA to determine whether the proposed action has the potential to cause significant environmental impact. *See* 40 CFR § 1508.9(a).

Section 1508.9(a) mandates that the purposes of an EA are to:

- provide evidence and analysis sufficient to determine whether an EIS is required;
- aid an agency's compliance with NEPA when no EIS is necessary; and
- to facilitate in the preparation of an EIS when one is necessary.

The EA is the primary tool for determining whether an EIS is necessary. Federal agencies must prepare an EA for every proposed action not covered by a categorical exclusion, as determined by that agency's individual NEPA regulations.

The NEPA regulations do not contain a detailed discussion regarding the format and content of an EA. The regulations require that an EA must briefly discuss:

- the need for the proposed action;
- the proposed action and alternatives;
- the probable environmental impacts of the proposed action and alternatives; and
- the agencies and persons consulted during the preparation of the EA.

See 40 CFR § 1508.9(b).

The regulations do not contain page limits for the EA, however, the Council has advised federal agencies to keep the length of the EA between 10 and 15 pages. EAs should use references to incorporate background data to support the discussion of the proposal and relevant environmental issues.

Because EAs are public documents, the federal agency must provide the public notice of their availability. Public notices must be consistent with the lead agency's regulations.

b. Finding of No Significant Impact ("FONSI")

A FONSI is a document which briefly describes why a proposed action would not have a significant effect on the human environment and, therefore does not require the preparation of an EIS. A federal agency preparing an EA must prepare a FONSI if it determines that an EIS is not necessary for a given action. The FONSI constitutes a legal finding that justifies the decision not to prepare an EIS. *See* 40 CFR §§ 1501.4(e) and 1508.13.

The EA provides the factual support for the conclusions in the FONSI. Therefore, the EA must contain data, analysis and explanations that demonstrate that the lead agency has taken a hard look at the potential environmental impacts. If the conclusions in a FONSI are not supported by

information in the EA, they may be considered arbitrary and capricious and vulnerable to legal challenges. All FONSI's must be made available for public review.

C. Environmental Impact Statement

1. The EIS Generally

If the lead agency determines that the proposed action has the potential to significantly affect the quality of the human environment and that the action cannot be modified such that these impacts can be avoided, an EIS must be prepared. NEPA requires that an EIS disclose:

- the environmental impact of the proposed action;
- any unavoidable adverse environmental impacts if the proposed action is implemented;
- alternatives to proposal;
- the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- any irreversible and irretrievable commitment of resources resulting from implementation of the proposed action.

See 42 U.S.C. § 4332(2)(i) and 40 CFR § 1508.11.

An EIS must contain the following contents:

- cover sheet
- summary
- table of contents
- alternatives, including the proposed action
- the affected environment
- environmental consequences, including mitigation measures
- list of preparers
- list of agencies and organizations consulted
- list of all federal permits

- appendices
- index

While neither the NEPA statute nor regulations set specific page limits, the regulations require that EISs “be concise, clear, and to the point, supported by evidence that the agency has made the necessary environmental analyses.” *See* 40 CFR § 1502.1.

2. Alternatives in the EIS

The draft EIS must present the environmental impacts of each alternative in comparative form, defining the issues and providing a clear basis for the choice of the selected alternatives.

Section 1502.14 requires that the alternatives section of the draft EIS:

- rigorously explore and objectively evaluate all reasonable alternatives;
- include reasonable alternatives not within the lead agency’ s jurisdiction or congressional mandate, if applicable;
- include the no-action alternative;
- devote substantial treatment to each alternative;
- identify the preferred alternative of the lead agency;
- include appropriate mitigation measures; and
- present the alternatives that were eliminated and discuss the reason for elimination.

3. Selection of an Alternative

Sections 1502.4 and 1508.25 proscribe three types of actions, three types of alternatives, and three types of impacts (the “3 by 3” rule), which was intended to guide the organization, preparation, and review of the adequacy of environmental documents.

a. Action

The NEPA regulations identify three types of actions: connected, cumulative, and similar actions. *See* 40 CFR §§ 1502.4 and 1508.25(a). The regulations articulate specific criteria for

determining when proposed Federal actions are related to one another closely enough to be, in effect, a single course of action that requires evaluation in the same environmental document (connected actions), in contrast to actions with similarities which, as a matter of public policy, an agency may wish to evaluate together (similar actions). Connected actions are proposals or parts of proposals that are so closely related that they are essentially a single course of action which must be included in the same NEPA document. The regulations also refer to cumulative actions, which require an analysis of the aggregate of past, present and reasonably foreseeable future actions, to determine whether the cumulative effect warrants considering the actions as a single “cumulative action.”

b. Alternatives

The NEPA regulations recognize that the analysis and comparison of alternatives is the “heart” of the EIS process. The point of analyzing impacts is to stimulate decision makers to find environmentally superior ways to conduct their business and to achieve their objectives. The regulations require that the decision maker choose only from among the range of alternatives in the environmental document, not limit the choice of reasonable alternatives before a decision is made, and judge the alternatives against the substantive environmental policies set forth in NEPA and other laws. *See* 40 CFR § 1502.1, 1502.2(d)-(g), and 1502.14.

The NEPA regulations identify three types of alternatives: the no-action alternative, other reasonable courses of action, and mitigation measures. The no-action alternative is always required to be evaluated to ensure a baseline for comparing environmental quality. The regulations also give agencies latitude to define a no-action alternative that makes sense in the context of the decision. Sometimes the no-action alternative reflects a continuation of existing conditions, if, for example, the future course of events cannot be reliably evaluated. At other times, the no-action alternative may reflect degradation or less well-managed development.

c. Impacts

The three types of impacts are direct, indirect, and cumulative. “Effect” and “impact” are defined synonymously to mean “a consequence”. A “direct impact” is an immediate, on-site effect, while “indirect impacts” are effects that bear consideration, yet are not remote or speculative. Cumulative effects are the total effect, including both the direct and indirect effects, on a given resource, human community, or ecosystem of all actions taken by federal or nonfederal agencies or the private sector. *See* 40 CFR §§ 1502.2 and 1503.16. Cumulative impacts must consider all current as well as all reasonably foreseeable future conditions.

d. Mitigation Measures

The EIS must also consider mitigation measures, which are variations on a course of action that avoid or otherwise reduce adverse environmental impacts and are usually required as conditions

of a governmental approval.

e. Purpose and Need

The NEPA regulations require, within the EIS, a brief statement of the underlying purpose and need to which the agency is responding. *See* 40 CFR § 1502.13. This statement allows a reviewer to consider and suggest whether there might be other reasonable courses of action to accomplish this purpose and need.

4. Record of Decision

After preparing and adopting the EIS, the federal agency decides whether to move forward with the proposed action. It is at this juncture that the Record of Decision (“ROD”) must be prepared. The ROD is a written, public record documenting why the agency has taken a particular cause of action. *See* 40 CFR § 1502.2.

A ROD must include:

- an explanation of the decision regarding the proposed action;
- the factors the agency considered in making its decision;
- the alternatives considered and what was the environmentally preferred alternative;
- the adoption or rejection of mitigation measures; and
- a monitoring and enforcement program for any mitigation measures that were adopted.

See 40 CFR § 1505.2.

Because it is a public document, the ROD must be made available to the public through the appropriate public notice requirement. The ROD represents the agency’s final decision and is, therefore, a judicially enforceable document.

5. Common EIS Definitions

a. Alternatives Screening

The process by which the lead Federal agency(ies) identify and impartially assess a range of alternatives and identify those alternatives that are reasonable and feasible and that satisfy the purpose and need.

b. Draft EIS

Documents the purpose and need, alternatives screening process, and methods and results of the environmental analysis. Distributed for review and comments by the public; Federal, state and local government agencies; and Native American tribes.

c. Environmental Analysis

A document required by the Federal government under NEPA for certain Federal actions, which documents the environmental impacts of the Project and all reasonable and feasible alternatives. The purpose of the EIS is to provide information to Federal decisionmakers and the public about a Project.

d. Environmentally Preferred Alternative

The “environmentally preferred alternative” is the alternative which will cause the least damage to the biological and physical environment and which best protects, preserves, and enhances historic, cultural, and natural resources, while also satisfying the purpose and need for the Project.

e. Final EIS

The Draft EIS is revised, as appropriate, based on comments made by the public, Federal, state and local government agencies, and Native American tribes during the public comment period. The Final EIS contains all comments and provides response to those comments and documents the Federal agencies’ preferred alternative.

f. Mitigation Action Plan

A document prepared by the Federal Agency that describes the plan for implementing commitments made in an environmental impact statement and its associated record of decision, or, when appropriate, an EA or FONSI, to mitigate adverse environmental impacts associated with an action.

g. Notice of Availability (NOI)

For the Draft or Final EIS or Record of Decision (ROD), the Notice of Availability (NOI) is an official public notice that states the document is available to the public for review for at least

a 30-day period. The NOI is published in the Federal Register.

h. Notice of Intent (NOI)

The Notice of Intent (NOI) initiates the NEPA process and is published in the Federal Register. It is followed immediately by the scoping process.

i. Proposed Action

The action as proposed by the Project Sponsor.

j. Public Comment Period/Hearing

A period of a minimum of 30 days following the publication of the NOI or the Draft EIS which provides opportunities for the public, Federal, state, and local government agencies, and Native American tribes to provide oral or written comments on the scope of the Project or the Draft EIS.

k. Purpose and Need

A section in the EIS which identifies the reason for the project or identifies the problem to be solved.

l. Record of Decision

The Record of Decision (ROD) documents the Federal agency's decision on the Proposed Action, how the decisions were made, alternatives considered including the Proposed Action, and the environmentally preferred alternative, and discusses what mitigation measures are being imposed to lessen significant environmental impacts.

m. Scoping

Period during which the public and public agencies are invited to participate in an early and open process that will determine the issues and alternatives addressed in the EIS.

II. KEY ENVIRONMENTAL CONSIDERATIONS IN RENEWABLE ENERGY PROJECTS

A. Water Resources

The EIS must discuss and evaluate surface water hydrology and groundwater resources. The EIS should disclose which waterbodies may be impacted by the project, the nature of the potential impacts, and the specific pollutants likely to impact those waters. The EIS should provide information on Clean Water Act (CWA) Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise Total Maximum Daily Loads (TMDLs). The EIS should state appropriate Best Management Practices (BMPs) that would be used to minimize the impacts.

The project applicant must coordinate with the U.S. Army Corps of Engineers to determine if the proposed project requires a Section 404 permit under the CWA. The EIS should describe all waters of the United States that could be affected by the project alternatives.

The EIS identify:

- source water protection areas within the project area;
- activities that could potentially affect source water areas;
- potential contaminants that may result from the proposed project; and
- measures that would be taken to protect the source water protection areas.

B. Biological Resources

The EIS should describe the current quality and capacity of habitat and its use by wildlife in the proposed project area. The EIS should describe the critical habitat for the species; identify any impacts the proposed project will have on the species and their critical habitats; and how the proposed project will meet all requirements under the Endangered Species Act, including consultation with the U.S. Fish and Wildlife Service, National Oceanographic Atmospheric Administration, and State Department of Wildlife.

The EIS should identify all petitioned and listed threatened and endangered species that might occur within the project area. The EIS should identify and quantify which species might be directly or indirectly affected by each alternative.

C. Air Quality

The EIS should provide a detail discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the project (including cumulative and indirect impacts) for each fully evaluated alternative.

D. Climate Change

The EIS must present a general, qualitative discussion of the anticipated effects of climate change on the project, including potential effects at a regional level. Also, the EIS should quantify

and disclose greenhouse gas emissions associated with project construction/operation and discuss mitigation measures to reduce emissions.

E. Noise

The EIS should include an assessment of noise levels from the project. Decibel levels should be evaluated as should the effects of noise levels on a variety of species, as well as effects on property values, residences, and recreational use.

F. Visual Resources

Visual resources review involves the examination of the modification in the basic elements (form, line, color or texture) of visual resources by the presence of facilities and equipment. For wind energy projects in particular, the primary concern is the impact of these projects on visual resources. Our primary visual impacts of solar plants are the vast land area covered by solar panels and the glare associated with the panels. Steps should be taken to minimize visual impacts of the project and compliance with applicable visual resource management plans must be achieved.

G. Indirect and Cumulative Impacts

EPA has issued guidance on how the agency is to provide comments on the assessment of cumulative impacts. The guidance states that five key areas should be considered. EPA tries to assess whether the cumulative effects' analysis:

- identifies resources, if any, that are being cumulatively impacted;
- determines the appropriate geographic (within natural ecological boundaries) areas and the time period over which the effects have occurred and will occur;
- looks at all past, present, and reasonably foreseeable future actions that have affect, are affecting, or would affect resources of concern;
- describes a benchmark or baseline; and
- includes scientifically defensible threshold levels.

The EIS document should clearly identify the resources that may be cumulatively impacted, the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed project.

H. Cultural Resources Including Coordination with Tribal Governments

The EIS should discuss whether or not the proposed project may affect historical or traditional cultural places of importance, including the impact to Native American communities.

I. Environmental Justice and Public Participation

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process.

J. Coordination with Land Use Planning Activities

The EIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project area.

K. Transportation and Circulation

Examination of the impact of the project during construction and operation on transportation and roadways.

L. Paleontological Resources

Paleontological resources consider the value such resources as a legacy for present and future generations, for their scientific significance, education and interpretation; and for recreational opportunities and aesthetic qualities. Of particular significance is whether fossils will be lost, destroyed or otherwise damaged by construction or operation of the project.

M. Socioeconomics

Examination of such issues as impacts on taxes, employment, population/housing and government facilities and services.

N. Public Services and Utilities

Whether there will be an increase in the demand for emergency services, solid waste or landfill services as the result of the facility.

O. Hazardous Materials

The potential damage to or loss of soil, vegetation, wildlife and potential danger to humans from the use on possible spillage or disposal of hazardous substances is examined.

CONCLUSION

Even though renewable energy facilities are much cleaner to operate than many traditionally powered electric-generating facilities, there are still significant environmental issues associated with

renewable energy projects, in particular with the manufacturing and construction of such projects. Because of the size of renewable projects, they are often sited on federal lands, particularly in the western United States. The NEPA process insures a comprehensive review and analysis of the environmental issues associated with all projects with a significant federal nexus before these projects are given the federal permits necessary to proceed.