THE ENVIRONMENTAL ASPECTS OF RENEWABLE ENERGY PROJECTS

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Scientific and political leaders and policy makers around the globe have now nearly universally embraced the concept that carbon dioxide emissions resulting from human activities contribute to global warming. Included in this recognition is the role that traditional fossil fuel (primarily coal) electric-generating facilities play in greenhouse gas production. As a result, there has been a worldwide interest in the development of alternative, renewable energy production facilities to replace fossil fuel power facilities.

Renewable energy is energy which is, by definition, naturally replenished. The most common forms of renewable energy are sunlight, wind, geothermal and biofuel. While generally environmentally preferable to fossil fuel counterparts, renewable energy facilities are not totally environmentally benign, in large part because renewable energy facilities (wind and solar in particular) are less concentrated than their fossil fuel counterparts and therefore require a significantly larger geographic footprint. The utilization of greater amounts of land has a greater impact on biological, cultural and visual resources. In addition, the manufacturing and construction of renewable facilities has a clear environmental impact. For example, it is estimated that it takes seven to nine months of energy production to offset the greenhouse gases associated with

manufacturing and installation of one wind turbine. The focus of this article, however, is the environmental impact associated with the construction and operation of renewable energy facilities.

In general, the environmental implications of renewable energy facilities are evaluated in the context of the environmental permitting process. The combination of the significant geographic footprint required for wind and solar facilities and the fact that tracts of land of sufficient size for such facilities in the desert southwest are predominantly owned by the federal government, results in most renewable energy projects in Nevada being subject to review under the National Environmental Policy Act (NEPA) 42 U.S.C. §§ 4321 et seq. NEPA requires examination, evaluation and mitigation of all environmental impacts resulting from all projects with a significant federal nexus, including renewable energy projects sited on federal land.

NEPA Overview

NEPA was passed by Congress in 1969 and became effective on January 1, 1970. It was a response to the prevailing national sentiment at that time that federal agencies should take the lead in providing greater protection of the environment. As such, NEPA contains a number of "action-forcing" procedures to ensure that federal agency decision makers take environmental factors into account.

The document most associated with NEPA is the environmental impact statement (EIS). The EIS is a detailed statement that describes the environmental impacts of a proposed action and its alternatives. NEPA requires that every EIS describe the environmental impacts of a proposed action and its alternatives. It also requires descriptions of the environmental impacts that cannot be avoided, alternatives to the proposed action, the relationship between short-term uses and long-term productivity and any irreversible and irretrievable commitment of resources.

Preparation of an EIS requires the evaluation of the impacts of the proposed project on a wide variety of environmental issues, including the following:

Water Resources:

A primary environmental concern in the desert southwest is the impact of the project on water resources during the construction and operational life of the facility. Consequently, the EIS for a renewable energy project must discuss and evaluate both surface water hydrology and groundwater resources. Primary among these considerations is the volume of water that the project will use during construction and operations. In addition, the EIS must disclose which water bodies may be impacted by the project, the nature of the potential impacts and the specific pollutants likely to impact those waters. It must also provide information on Clean Water Act (CWA) § 303(d) impaired waters in the project area, if any, and efforts to develop and revise total maximum daily loads. The EIS must also include a discussion of the appropriate best management practices that will be used to minimize the impacts of the project.

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 must describe all waters of the United States that could be affected by the project alternatives and must 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.

Biological Resources:

An EIS must describe the current quality and capacity of habitat and its use by wildlife in the proposed project areas. The EIS must 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. For most projects this will include consultation with the U.S. Fish and Wildlife Service (U.S. FWS), the National Oceanographic Atmospheric Administration and the Nevada Department of Wildlife. The EIS must also identify all petitioned and listed threatened and endangered species that might occur within the project area and identify and quantify which species might be directly or indirectly affected by each alternative. If a threatened or endangered species is determined to be present in the project area, and it is determined that the project will result in jeopardy to the species or its habitat, the consultation process with the U.S. FWS is initiated, resulting in a biological opinion that identifies the projected impact to the threatened or endangered species and required mitigation to minimize or eliminate impact.

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Air Quality:
Despite the overall positive effect of renewable energy facilities on air quality through the displacement of fossil fuel-generated electricity, such facilities do have an impact on air quality, particularly during construction. Consequently, every EIS must also include a detailed 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.

Climate Change:
Likewise, even though renewable energy projects have an overall positive impact on climate change, it is nevertheless an issue that must be considered in an EIS. The EIS must present a general, qualitative discussion of the anticipated effects of the 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.

Environmental review and permitting requirements are detailed and time-consuming and are a key component in the development of renewable energy projects.

Noise:
The EIS must include an assessment of noise levels from the project. Decibel levels must be evaluated as must the effects of noise levels on a variety of species, as well as effects on property values, residences and recreational use. Noise issues are more closely associated with wind projects, but must be considered in the context of all EISs. No federal standards have been established for noise; however, local ordinances establishing maximum decibel levels exist in many municipalities. Compliance with local ordinances is required as part of the NEPA process.

Cultural Resources:
The effect of a proposed project on historical or traditional cultural places of importance, including the impact to Native American communities, must be evaluated in the NEPA process. This examination involves an examination of the entire project area and a determination by the Nevada State Historic Preservation Office (SHIPO) of the impact of the project on items of historical or cultural importance and the need for mitigation associated with any impacts so identified.

Environmental Justice:
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.

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. In particular, evaluation as to whether uses such as agriculture, hunting and recreational activities are compatible with the proposed project.

Transportation:
The impact of a renewable energy project particularly during construction must be evaluated in order to determine the project's impact during construction and operation on transportation and roadways. Typically, renewable energy facilities employ only a small number of employees during their operational life, however impacts on roadways are likely to be substantial during construction.

Paleontological Resources:
Archeological and paleontological resources must be evaluated to determine the value of 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.

Socio-economics:
EISs are required to contain an evaluation of the impacts of a proposed project on taxes, employment, population/housing and government facilities and services. Closely associated with the examination of socio-economics is an evaluation of "environmental justice" issues; that is, an evaluation of project impacts to ensure that the project does not have a disproportionately negative impact on economically disadvantaged citizens of the community in which the project is located.

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 must be evaluated in the course of the NEPA process.

Hazardous Materials:

The potential damage to or loss of soil, vegetation and wildlife and potential danger to humans from the use of possible spillage or disposal of hazardous substances must be examined and discussed in the EIS.

Tourism:

Concerns regarding reduction in tourism resulting from the proposed project must be analyzed and mitigated, if determined to be present.

State and Local Environmental Review:

In addition to federal environmental review of projects, renewable energy projects are also subject to applicable state, county and local environmental review and permitting requirements. Included are such permits as state fire marshal, storm water permits, department of transportation encroachment permits, wildlife and botanical take permits, water rights and historic preservation compliance. In Nevada, the Public Utilities Commission requires a Utilities Environmental Protection Act (UEPA) permit for all renewable energy facilities with a nameplate capacity of 70 megawatts or greater.

In sum, environmental review and permitting requirements are detailed and time-consuming and are a key component in the development of renewable energy projects. ■

LINDA BULLEN, a shareholder at Lionel Sawyer & Collins, advises the firm's clients on complex state and federal environmental matters specializing in hazardous waste, water, air, renewable energy, federal land use, permitting and NEPA issues. Her practice encompasses regulatory counseling, permitting, and litigation. Bullen holds the distinction of being the first Nevada attorney to be invited to join the American College of Environmental Lawyers (ACOEL). She has also been invited by U.S. Senator Harry Reid to participate on a Blue Ribbon Panel that will focus on the steps necessary to move Nevada toward a clean energy future and realize its potential as a net exporter of renewable energy.