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ENVIRONMENTAL IMPACT ASSESSMENT: PROCESS AND IMPLEMENTATION*

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ABSTRACT

In this paper, the procedures and issues regarding the preparation of an environmental impact assessment in accordance with the National Environmental Policy Act (NEPA) as promulgated by the U.S. Congress in 1969 are discussed. NEPA procedures and requirements are covered in general, while particular attention is given to the preparation of the environmental impact assessment. Also included is a discussion of the social impact assessment. The aim of the social impact assessment is to address the social issues involved in enhancing public understanding of the hazardous risks, thereby mitigating any conflicts that may arise in the NEPA process.

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INTRODUCTION

In 1969, the United States Congress passed the National Environmental Policy Act (NEPA) whose charter is to protect the environment of the nation by establishing policy, setting goals, and providing means for carrying out the policy. In essence, the act stipulates requirements for federal agencies for ensuring the availability of environmental information both to public officials and private citizens before any decisions or actions can take place. The purpose of the NEPA process is to help public officials make decisions that are based on an understanding of environmental consequences, and take actions to "protect, restore, and enhance the environment."

Compliance with NEPA is regulated by the Council on Environmental Quality (CEQ) which reports directly to the President of the United States. Among other things, the CEQ establishes regulations for the implementation of NEPA (40 CFR Parts 1500-1508)¹ and supervises overall NEPA compliance.

Several federal environmental regulations are associated with NEPA requirements and may affect the particular actions to be taken. These environmental regulations include the Clean Air Act; Clean Water Act; Solid Waste Disposal Act; Comprehensive Environmental Response, Compensation, and Liability Act; and other relevant federal regulations. Enforcement of these federal regulations is under the jurisdiction of appropriate federal regulatory agencies such as the Environmental Protection Agency and Nuclear Regulatory Commission.

In this paper, the NEPA procedures that are generally required for any federal actions that may significantly affect the quality of the human environment are

discussed. Such federal actions may include the enacting of major regulations or the construction of major facilities. Approaches toward the implementation of these procedures are also discussed.

NEPA PROCESS

The process that the CEQ has stipulated for demonstrating NEPA compliance is illustrated in a simple flow diagram in Figure 1. Based on the proposed action, the lead federal agency may initiate an environmental assessment to determine the significance of the impact. If the impact is determined to be insignificant, a "finding of no significant impact (FONSI)" can be issued and implementation of the decision may proceed. Otherwise, the lead federal agency must initiate the preparation of an environmental impact statement (EIS). In general, the EIS process begins with the Notice of Intent (NOI) issued by the proposing agency. Formal public notice is to be published in the Federal Register to provide the public with pertinent information regarding the agency's proposed intent to initiate an action or activity. The NOI contains the following essential elements:

- A description of the proposed action and alternatives;
- The agency's proposed scoping process regarding whether, when, and where a scoping meeting is to be held;
- The name and address of persons in the agency who can answer questions; and
- Background information describing justification for action, an alternative(s) to the proposed action, and other relevant environmental issues.

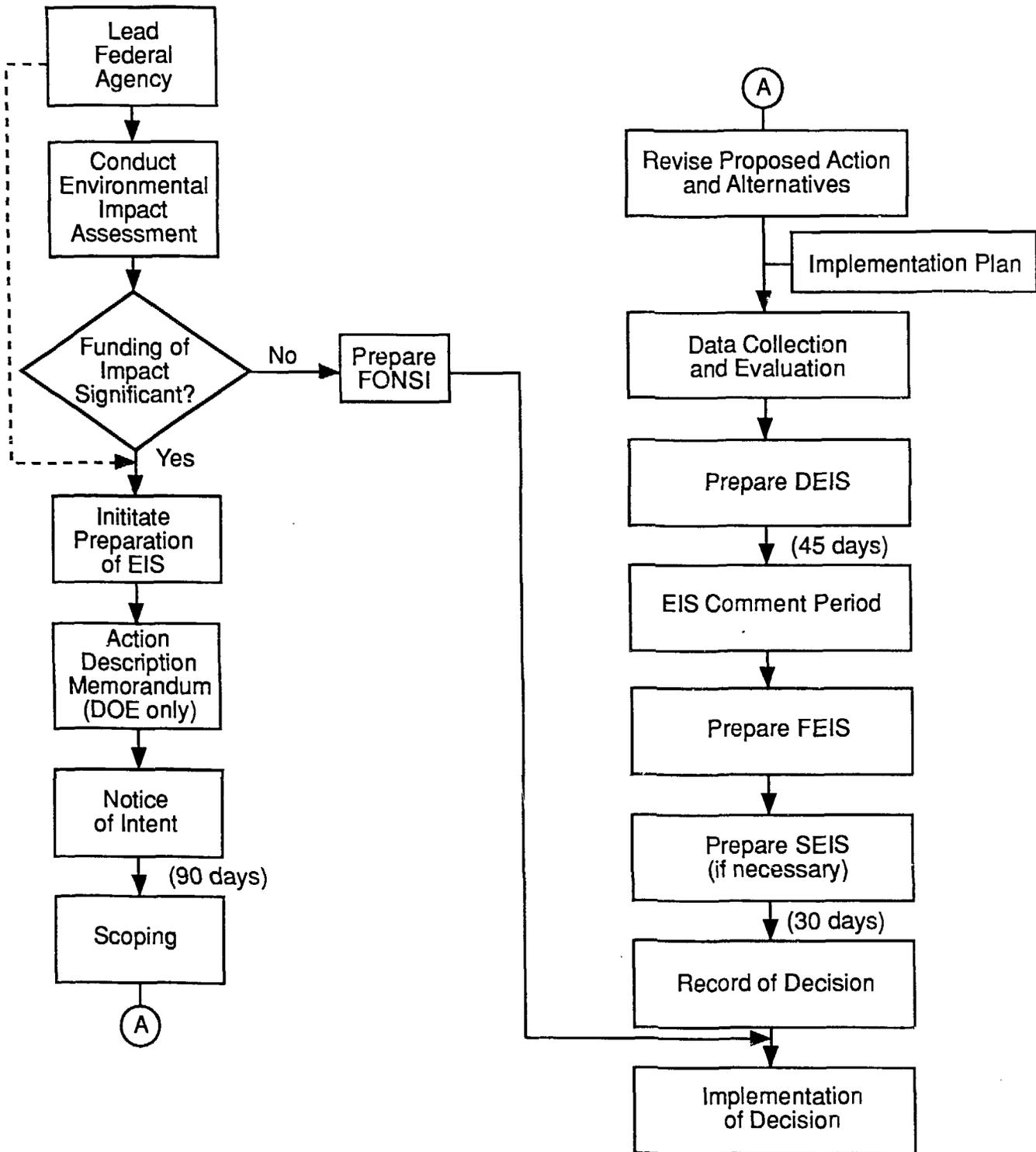


Figure 1. Flow Diagram of NEPA Process

"No action" is always an alternative to the proposed action. For the U.S. Department of Energy (DOE), in particular, an additional document is usually issued prior to the issuance of the NOI. The Action Description Memorandum is used in the DOE/NEPA process to facilitate a determination of the appropriate level of NEPA documentation for a proposed action. This document also contains the proposed action, the location of the action, and the potential issues.

The scoping process can then be initiated following at least 90 days after the publication of the NOI. The purpose of scoping is to determine the range of issues to be addressed and to identify significant issues related to the proposed action. To accomplish this, the lead agency is required to invite the participation of affected federal, state, and local agencies, and other interested private citizens. In the process, the lead agency must also set the page limit on the environmental document and the time limit for the preparation of the environmental assessment, and hold an early scoping meeting. The scoping meeting is especially appropriate when the effects of a particular action are confined to specific sites.

Following the scoping process, the lead agency will revise the proposed action or alternative if substantial changes are made, or if significant new circumstances or information arises. Then the implementation plan can be drafted to serve as a guide in preparing the EIS.

The data collection and evaluation process follows the scoping process. Site-specific data and field surveys are gathered and evaluated. When the data-gathering activities have been completed, preparation of the Draft Environmental Impact Statement (DEIS) begins.

A comment period of at least 45 days follows the completion of the DEIS. During the comment period, the lead agency is required to obtain comments from any federal agency that has jurisdiction by law, or expertise with respect to the environmental impact. Comments are also to be requested from appropriate state and local agencies, any particular group of people that may be affected such as Indian tribes, and any agency that has requested to receive the statements. Comments are also to be solicited from the public, that is, individuals or organizations who may be interested or affected. The lead agency is required to respond to the comments and make appropriate revisions as necessary; the Final Environmental Impact Statement (FEIS) will then be prepared. If major changes or issues arise following the issuance of the FEIS, a Supplemental Environmental Impact Statement (SEIS) may be prepared. Upon completion, the FEIS is forwarded to the relevant federal agencies for evaluation; it takes at least 30 days before the record of decision is made. Following the public record of the decision, the lead agency can then begin implementation of the decision, thereby completing the NEPA process. A typical time period for the entire NEPA process is approximately 2 years.

CONTENTS OF AN ENVIRONMENTAL IMPACT STATEMENT

The contents of an EIS as prescribed by the CEQ are outlined in Table 1. The EIS document is designed to:

- Ensure that NEPA policies and goals are incorporated into DOE programs;
- Inform decision makers and the public of
 - Significant environmental impacts of proposed federal government programs, and actions,

TABLE 1. CONTENTS OF AN ENVIRONMENTAL IMPACT STATEMENT

GENERIC OUTLINE

- Cover Sheet
- Summary
- Table of Contents
- Purpose and Need for Action
- Alternatives, Including the Proposed Action
- Affected Environment
 - Land Use
 - Socioeconomics
 - Geology
 - Water, Floodplains, and Wetlands
 - Air Quality and Meteorology
 - Biotic Resources
 - Radiological and Public Health and Safety
- Environmental Consequences and Mitigation
 - Land Use and Visual, Historic, Recreational, and Cultural Resources
 - Socioeconomics
 - Geology and Soils
 - Water, Floodplains, and Wetlands
 - Air Quality
 - Biotic Resources
 - Radiological and Public Health and Safety
- References Cited
- List of Preparers
- List of Agencies, Organizations, and Persons to Receive the Statement
- Appendix

- Reasonable alternatives that would result in the avoidance or minimization of impacts; and
- Be used by federal officials in planning actions and decision making.

In essence, the EIS is designed to be "analytical rather than encyclopedic," and the impacts are to be discussed "in proportion to their significance." In addition, the EIS should state how the alternatives considered in it and decisions based on it fulfill federal requirements. Most important, the EIS is to serve as the means of assessing the effect of proposed agency actions, not as the justification for decisions already made. As such, the agencies are prohibited from committing resources that may prejudice selection of alternatives considered by the ultimate agency decision maker.

The most important portions of the EIS are the sections describing the alternatives, affected environment, and environmental consequences and mitigation. The section on alternatives is the heart of the EIS. It includes the environmental impacts of the alternatives and the proposed action(s), and the "no action" alternative. The alternatives section provides sharply defined issues and a clear basis for choosing among options. Examples of proposed actions are the construction of a low-level radioactive burial facility, a nuclear power plant, or a high-level radioactive storage facility. Specific issues relevant to the facility are to be discussed thoroughly in the alternatives section.

In the section on the affected environment, the environment of the areas to be affected by the alternatives under consideration are described. Data and analyses provided in the statement are to be commensurate with the importance of the impact. The section on the environmental consequences and mitigation constitutes the scientific

and analytic basis of the statement. The discussion includes the environmental impacts of the alternatives, including the proposed action, and any adverse environmental impact that cannot be avoided. In addition, the relationship between the short-term use of man's environment and the long-term effects, and any irreversible or irretrievable commitment of resources resulting from the proposed alternatives are addressed.

Because of the wide range of issues involved in putting together an EIS, the preparation usually requires a team of technical experts representing various scientific and engineering disciplines in areas such as hydrology, geology, air quality, meteorology, biology, socioeconomics, archaeology, industrial health and safety, radiological engineering, and other relevant disciplines. For each technical discipline, standard methods have been developed for the data collection and analytical approaches used in the EIS analysis. These methods are constantly updated by the regulatory agencies.

SOCIAL IMPACT AND MITIGATION

The current NEPA process requires public input during the scoping of issues. The inclusion of public input into the NEPA process is done with the intention of reaching more informed judgments, opinions, and concerns, and, therefore, better decisions. However, because of the diversity of issues and public opinion, adverse reactions to the proposed actions are often encountered during the scoping and commenting processes. These reactions sometimes contribute to the complexity and delay of the NEPA process. Thus, it is often advantageous to identify and address the social impacts of a proposed action(s) during the NEPA process.

The field of social impact assessment (SIA) was formed approximately 15 years ago and has been expanded and developed to address important societal needs and some publicly controversial topics. The SIA approach is now being used for assessing the

potential impacts of hazardous waste facilities at specific locations. One of the most recent publications in the field specifically addresses the assessment of social and economic issues related to nuclear wastes.²

In addition to social and economic issues, the SIA also addresses the concept of risk management in a perceptual sense. Past work on hazards studies have concluded that the most important factor in shaping the human response to hazards is the public perception of risk. In a paper published by Mileti and Williams,³ emphasis has been placed on (1) the basic processes whereby community perception of risk is formed; (2) the factors that indicate why perceived risk is often not reflective of objective risk; and (3) suggested ways to help the public obtain a more accurate perception of the risks of hazards.

Based on the conclusion of the SIA, issues regarding social and economic concerns can be fully identified and evaluated. Better methods of presentation and the presentation of more accurate data are more likely to result in better cooperation from the public. The recent development and implementation of community outreach programs in several EIS efforts has met with considerable success and indicates promising potentials for the SIA approach in enhancing the entire NEPA process.

CONCLUSION

The National Environmental Policy Act is a landmark law that was enacted in the United States to protect the environment of the nation. The NEPA process requires that federal agencies meet an array of environmental regulations and procedures prior to initiating any major actions that may affect the environment as well as public health and safety. In the process, a large number of data are collected and evaluated, and the effects of actions are thoroughly analyzed and documented. More important, public

opinions and comments are actively sought and included as input into the EIS and, consequently, the decision-making process. Because public opinion is highly valued in the NEPA process, the recent development of the SIA substantially contributes to the understanding of many important social and economic issues, and the formation of the public's perception of risks. Such an understanding helps the federal agency to design strategies that mitigate social risks in the NEPA process.

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