

92-04

OFFICE OF ENERGY RESEARCH  
GUIDANCE ON THE PREPARATION, SCOPE, AND CONTENT OF  
ENVIRONMENTAL ASSESSMENTS

I. PURPOSE AND SCOPE OF THIS GUIDANCE DOCUMENT

This document provides guidance on the scope and content of Environmental Assessments (EAs) prepared for the Office of Energy Research (ER). This guidance is designed to assist ER, ER-lead Field elements, and their contractors in preparing EAs that support better decisionmaking. To reach this goal, this document focuses on providing guidance that will enable the development of EAs that are procedurally correct in terms of format and content, technically accurate, and presentable in terms of being easy to read and understand (from the view point of a member of the public). This guidance is based, in part, on the lessons learned from Energy Research EAs that have gone through the preparation, review and approval process.

This EA guidance addresses: the purpose of an EA; EA content, format, and length; and suggestions for preparing a quality EA based on lessons learned.

Specifically, the purpose of this EA guidance is to:

1. Assist ER in preparing documents that support better decisionmaking;
2. Ensure consistency among Energy Research Field and Program Offices in EA development;
3. Ensure that EAs meet both Council on Environmental Quality (CEQ) and DOE requirements for content and adequacy;
4. Identify common problems found in Energy Research EAs and provide tips on how to avoid these

problems; and

5. Assist the authors of EAs in preparing quality documents of sufficient detail to meet requirements for DOE concurrence and approval.

Guidance on preparing EAs, and on their scope and content, is contained in several DOE documents such as: (1) the DOE "NEPA Compliance Guide"; (2) the "Interim Procedural Guidance for Implementation of SEN-15-90" of March 2, 1990; (3) ER's February 4, 1991 memo entitled "Guidance and Procedures for Office of Energy Research Implementation of SEN-15-90 Regarding the National Environmental Policy Act (NEPA)"; and (4) DOE's "National Environmental Policy Act Implementing Procedures" (10 CFR 1021). This current ER EA guidance incorporates aspects of the EA guidance offered in the four documents above and expands the guidance in certain other areas. Additionally, a paper entitled "DOE NEPA Review: Lessons Learned/Common Errors" is attached for information. It was prepared by EH-25 and presented at the EH NEPA Compliance Officers Meeting of July 16-18, 1991.

## II. PURPOSE OF AN ENVIRONMENTAL ASSESSMENT

As outlined in the CEQ regulations (40 CFR 1508.9), an Environmental Assessment has basically three functions:

1. To briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact;
2. To aid an agency's compliance with NEPA when no environmental impact statement (EIS) is necessary (i.e., it helps to identify alternatives and mitigation measures); and
3. To facilitate preparation of an EIS when one is necessary.

The CEQ regulations state that an EA can be used in order to

assist agency planning and decisionmaking [40 CFR 1501.3 (b)]. Further, the CEQ regulations state that, based on the EA, an agency should make its determination whether to prepare an environmental impact statement [1501.3(c)]. An EA, therefore, focuses on a specific agency proposal or action in order to assess its potential environmental consequences. If significant impacts are not found, a Finding of No Significant Impact is prepared. If potentially significant impacts are found, an agency must prepare an EIS to further examine the proposal and reasonable alternatives. Under some circumstances, a mitigated FONSI might be issued that references a Mitigation Action Plan for commitments to mitigate adverse environmental impacts associated with an action, as per 10 CFR 1021.322(b)(2) and 10 CFR 1021.331(b).

### III. SCOPE AND CONTENT OF ENVIRONMENTAL ASSESSMENTS

The CEQ regulations (at Section 1508.9) state that an EA is a concise public document that shall include brief discussions of the following:

1. The need for the proposal;
2. Alternatives as required by Section 102(2)(E) of NEPA;
3. The environmental impacts of the proposed action and alternatives; and
4. A listing of agencies and persons consulted.

The CEQ regulations do not prescribe a format for an EA. The contents of an EA are determined on a case-by-case basis and depend on the nature of the proposed action. In implementing the CEQ regulations, DOE has traditionally included the following information, as appropriate, in its EAs:

1. A clear and concise description of the proposed action, including drawings, maps, and charts, if directly pertinent to analyzing the environmental consequences of the proposed action;

2. A description of the existing environment affected by the proposed action, in sufficient detail to permit a meaningful evaluation of the potential environmental consequences of the proposed action;
3. An assessment of the probable impacts of the proposed action, including direct and indirect effects and those adverse impacts which cannot be avoided should the proposal be implemented;
4. An evaluation of the probable cumulative and long-term environmental effects, including any beneficial impacts;
5. An assessment of the risk of credible accidents, if applicable; and
6. A discussion of the relationship of the proposed action to any applicable Federal, state, regional, or local land use plans and policies likely to be affected.

GENERIC TABLE OF CONTENTS. As noted above, there is no prescribed format for EAs. However, a generic table of contents is included here to provide an example of the types of information that may be included in an EA. This generic table of contents is not all inclusive, since each EA may have unique features that will require additional sections.

#### GENERIC EA TABLE OF CONTENTS

- Executive Summary
- 1.0 Introduction
- 2.0 Purpose, Need, and Description of the Proposed Action
- 3.0 Alternatives
- 4.0 Description of the Affected Environment
- 5.0 Environmental Consequences of the Proposed Action and Alternatives
- 6.0 Relationship of the Proposed Action to Other Actions and Actions Being Considered Under Other NEPA Reviews

- 7.0 Relationship of the Proposed Action to any Applicable Federal, State, Regional or Local Land Use Plans and Policies Likely to be Affected
- 8.0 Listing of Agencies and Persons Consulted
- 9.0 References
- 10.0 Appendices

An Executive Summary is a useful addition to an EA on a complex project, and especially if the EA is somewhat lengthy. The Introduction should be brief, consisting of only one to two paragraphs. Section 2 should include a discussion of the purpose and need for the proposed action. The proposed action also should be described, including the location, design and operation (including routine maintenance), as well as waste minimization and pollution prevention, and decontamination and decommissioning, as appropriate.<sup>1</sup> Section 3 on alternatives should describe the alternatives to the proposed action. This should include the no action alternative, as well as other appropriate alternatives. Section 4 should provide a description of the affected environment and include, as applicable, such factors as topography, geography, and seismicity; climate and air quality; hydrology; biotic resources, vegetation and wildlife; archaeological, cultural and

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<sup>1</sup>On August 20, 1992, the Secretary of DOE issued the Department's Policy on Waste Minimization and Pollution Prevention. The avoidance or reduction in the generation of hazardous substances, pollutants, wastes, and contaminants at the source, as well as the recycling or reuse of these materials, are key elements of waste minimization. The policy states that DOE is "committed to the inclusion of cost-effective Waste Minimization and Pollution Prevention in all of its activities, including consideration of these concepts and approaches in the Department's program planning and major assessment process, where appropriate, such as NEPA, multi-year planning, and Complex Reconfiguration studies..." ER's "Waste Minimization Strategy and Policy Statement", issued September 4, 1992, reiterates DOE policy by stating that "waste minimization and pollution prevention will be considered in research planning and design activities."

historical resources; sensitive environmental areas; threatened and endangered species; and population and land use. Not all of these factors will need to be addressed for each EA, nor will they always need to be discussed in great detail. The EA should, however, focus on describing the environment commensurate with the expected impacts to that environment.

Section 5 should discuss the environmental consequences of construction and operation of both the proposed action and the alternatives. The following are examples of impacts that may be discussed in this section, as applicable: soil disturbance; water quality; air quality and noise; radiation exposure to workers and the public; accident risk; waste (domestic, biological, hazardous, and radioactive); cultural, historical and archaeological resources; socioeconomic; infrastructure (transportation utilities); and health of workers and the public. Cumulative and/or long-term effects, however, should be addressed in all EAs.

To ensure that proposed projects are not segmented, the relationship of the proposed action to other actions and actions being considered under other NEPA reviews should be addressed in Section 6, as applicable. Section 7 should briefly identify and discuss the relationship of the proposed action to applicable Federal, State, Regional, or local land use plans and policies likely to be affected. A list of agencies and persons consulted should be provided in Section 8. This list should include Federal (e.g., U.S. Fish and Wildlife Service), State (e.g., Historic Preservation Officer), and local agencies and/or individuals that were consulted in preparation of the EA. A list of documents that have been referenced in the EA should be provided in Section 9. Appendices to the EA, Section 10, should consist of copies of all documents and materials that the preparers identify as necessary to include in the EA, as opposed to referencing. All appendices, such as technical data, glossaries, acronyms and abbreviations, and list of preparers, should be referenced or identified in the text of the EA.

COVER SHEET. To properly identify the EA, all ER EAs should include a cover sheet. At a minimum, the cover sheet should include the title of the EA, the DOE EA number (for drafts that

have not yet been assigned a DOE number, a place holder for the number should be included), the name of the site and/or facility, the Budget and Reporting ((B&R) Category, and the current date. The cover should indicate clearly that the EA is a U.S. Department of Energy document.

USE OF BUDGET & REPORTING NUMBERS. All ER EAs should include the proper B&R organization code for the proposed action, preferably on the cover sheet (or cite the category in the transmittal memo). This will enable ER Headquarters to identify the appropriate ER Program Office and sponsoring organization.

ALTERNATIVES IN EAs. An evaluation of reasonable alternatives is only required for an action that involves unresolved conflicts concerning alternative uses of available resources (Section 102(2)(E) of NEPA). In practice, a brief analysis of reasonable alternatives, including the "no action" alternative, is normally included in DOE EAs. Reasonable alternatives to the proposed action should be compared with the proposed action in terms of environmental consequences. Alternatives (e.g., alternative sites and alternative technologies or technological features) deemed to be unreasonable should be mentioned briefly, along with the reasons why they are unreasonable and why they were dismissed from further detailed and comparative analysis. If alternatives other than the "no action" are not considered, an explanatory paragraph should be included.

LENGTH RECOMMENDATIONS FOR ROUTINE EAs. The CEQ regulations do not contain page limits for EAs. CEQ advises, in its Federal Register notice (55 FR 18026, March 23, 1981) on answers to the 40 most asked questions on the CEQ Regulations, that EAs be kept to not more than 10-15 pages in length. In the answer to the question "How long and detailed must an EA be?" (question number 36a), CEQ reiterates that EAs should be concise documents and should not contain long descriptions or detailed data which an agency may have gathered that are not relevant to the issues and impacts being assessed. Energy Research EAs should be concise and within the suggested 10-15 page document length wherever possible.

To keep EAs to a manageable length, background data may be

incorporated by reference (i.e., the reference is cited and its contents briefly described in the EA). The reference should support the concise discussion of the proposal and relevant issues. Information incorporated by reference should be carefully reviewed for relevant information to avoid the length characteristic of EIS material with detail beyond the needs of an EA. Documents referenced should be included in a bibliography or reference section at the end of the EA and must be available for public use, if requested. Caution should be taken, however, not to reference documents that are still in a draft form. Generally, only final documents should be referenced in an EA. However, if it is necessary to reference material that is in draft form (e.g., draft EISs and preliminary safety analysis documents), only draft documents that have been made available to the public for comment should be referenced in the EA.

LENGTH OF EAs ON TECHNICALLY COMPLEX PROPOSALS. The complex nature of DOE's engineering and program proposals and DOE's impact assessment process has led to some of the Department's EAs becoming long and detailed, and often resembling mini EISs. Excessive length of an EA may give the appearance that an EIS might have been needed, even if a Finding of No Significant Impact (FONSI) was reached. Removal of the nuclear reactor-related work from ER, and the relatively non-hazardous nature of some of ER's field and laboratory research, probably enable many of these activities to be assessed via EAs that can meet the CEQ recommendation of 10-15 pages.

EAs for "high tech" facilities with potential radiological impacts (i.e., accelerators, etc.) may need to have detailed analyses and assessments, with a strong basis to support a FONSI. These EAs, however, may need to exceed the suggested 10-15 page length, but should not contain more information and data than are necessary to support the analyses and conclusions. The length and scope of the EA should be related to or commensurate with the level of potential impacts.

#### IV. LESSONS LEARNED AND EA CONTENT SUGGESTIONS

Several Energy Research EAs have gone through the DOE review and



approval process (for which FONSI's have been issued) since the inception of SEN-15-90. The comments generated on the drafts of these EAs during the Field Office and HQ review process have provided insight into some problems common to those EAs. The lessons learned from these comments can assist ER in preparing future EAs. The common deficiencies generally were related to format and presentation, content, technical descriptions, and impact analyses. In some cases, these problems have slowed down the concurrence process. A study of the comments and problems resulted in the suggestions below for improving the quality of EAs, for simplifying the EA development process, and for expediting the EA review, concurrence, and approval process.

INCLUDE AN EXECUTIVE SUMMARY. Although an Executive Summary is not required, it is a useful addition to an EA on a more complex project. An Executive Summary is useful during the approval process, providing management with a focused summary of the analysis. Since the Executive Summary summarizes the EA, it also may be useful in the development of the FONSI. It should be noted, however, that the Executive Summary and the FONSI are consistent, but different, documents.

RECOGNIZE THE PROPOSED NATURE OF THE PROJECT. The NEPA document provides the decisionmaker with information on environmental consequences that can be factored into a program decision. Since EAs should be prepared before a decision is made to undertake a proposed action, the EA preparer must recognize the "proposed" nature of the actions and potential impacts being evaluated. Therefore, verbs such as "would" should be used instead of "is" or "will" when referring to the proposed action and potential impacts.

Example: A statement in an EA such as the following suggests that the final decision has been made by DOE prior to the completion of the NEPA process: "The new laboratory building is going to enhance (or 'will enhance') ER's capability in physics research." While this may be true, the project still is a proposal at this stage and, therefore, the EA should use the term "would enhance".

PROVIDE A CLEAR, CONCISE, AND CONSISTENT DESCRIPTION OF THE

PROPOSED ACTION BEING EVALUATED IN THE EA. The analysis of impacts of a proposed action is based on the potential interface of the action with the environment, and not on its programmatic need. The programmatic purpose and need for a new laboratory building project might be related to enhancing ER's capability in biomedical research and should be briefly discussed in the EA. The site-specific actions that actually would have potential environmental impact, however, are related to both the construction work to be done and the research operations to be conducted. The proposed action needs to be carefully described in terms of those activities with potential impact.

Example 1: The following is an example of removal, installation, and operating aspects of a proposed action to fund a new biomedical cyclotron for a university.

"The proposed action involves changing out the existing cyclotron and replacing it with another slightly smaller, new generation unit. No integral parts will be retained. The removal will be performed by a qualified contractor under a work plan approved by both the university's Radiation Safety Division and the state's Department of Health Services, by whom it is licensed. All of the work would occur within an existing room of the Biomedical Cyclotron Facility, which measures 21' by 34', on the university's campus. The instrument to be removed measures 7' high by 4' wide by 8' long. The parts no longer needed for the old cyclotron would be removed, packaged, and shipped off-site under radiological control procedures. The new biomedical isotope compact cyclotron would be an "off the shelf" catalog purchase from a commercial manufacturer of biomedical instruments. No new construction would be required for installation and assembly of the new instrument. The instrument is a negative ion "desk-sized" cyclotron that is 60% smaller than the existing instrument. The new instrument would occupy the Biomedical Cyclotron Facility's existing vault room. It has a unique and simplified design that allows greater isotope production at much lower cost than older positive ion instruments like the existing cyclotron. The new instrument would be used to produce positron emitting radiochemicals (Nitrogen-13, Carbon-11, Fluorine-18, and Oxygen-15) for use in the university's PET scan and clinical research program."

Example 2: The following is an example of construction aspects of a proposed three story office and physics research laboratory that will be used to conduct electron laser-based research.

"The building would be constructed on two acres of previously disturbed land that now primarily is grassland with some trees. Construction would involve: site preparation (tree removal, excavation for the foundation); placement of a temporary heavy haul road; temporary storage of excavated spoils; placement of utilities (sewer, water, electricity) and extension of piping and wires from existing sources; construction of an electrical equipment annex and a cryogenic cooling equipment annex adjacent to the lab building; placement of a temporary construction office trailer at the site; and assembly of the laser equipment in the laboratory space."

FOCUS THE ANALYSIS AND DESCRIPTIVE INFORMATION. The EA should not contain more information and data than are necessary to support the analyses and conclusions. The EA should focus on describing the environment commensurate with the expected impacts to that environment. Detailed discussions of components of the current environment that will not be impacted by the proposed action and alternatives should not be included in the EA.

Example: If wetlands occur at the site but will not be impacted by the action, the location of the wetlands should be mentioned in the EA, but no details need to be provided on the type or size of the wetlands.

ACKNOWLEDGE SEPARATE NEPA DOCUMENTATION FOR DECOMMISSIONING, IF APPROPRIATE. If decommissioning of a facility may play a future role in a proposed action, it should be discussed in the EA, and assessed in general terms for completeness. The EA should acknowledge that decommissioning would take place and should identify any potential impacts based on current information. It then should be stated that the process of D&D will be revisited and that a detailed decommissioning plan would be developed at an appropriate time in the future. The EA also should acknowledge that at an appropriate future time, the impacts would be assessed more fully via separate NEPA documentation,

the level of which would be determined according to standard DOE procedures.

AVOID TECHNICAL JARGON. EA preparers often are project or engineering professionals who are intimately familiar with the actions being evaluated in an EA. As such they may assume that the readers of the EA also understand the technical terms used by technical staff in describing project designs and operations. Keep in mind that the general public who may read an EA, as well as some of the DOE staff in the EA approval concurrence chain, will not be technical specialists. To assist the general public and other readers of Energy Research EAs, the documents should be written in plain English wherever possible. This suggestion is not intended to result in sacrificing technical quality or good scientific explanation of the projects or their impacts. Explanations and definitions may be especially helpful in this regard and should be provided in the text whenever possible. Background information should be provided to the extent necessary to allow the reader or reviewer to understand the findings of the EA. If the EA is highly technical, a glossary of terms and/or acronyms can be developed and added at the beginning or at end of the EA in an appendix.

USE NON-REACTOR LANGUAGE. Often, reactor-based language (e.g., "severe" accidents) is used to describe non-reactor projects and their environmental consequences. Use of reactor language should be avoided wherever possible, since it carries certain connotations that are applicable only to reactor projects, and are, therefore, not appropriate for other ER projects.

Example: The assessment of accidents can use terms such as "off-normal", "beyond design basis", or "abnormal occurrences or events".

USE EXISTING SITE INFORMATION. Information and statistics from existing documents or data bases (e.g., annual reports, monitoring reports, logs of existing operations) provide good sources for descriptions of existing operational impacts and environmental conditions, and should be used whenever possible in EAs on new proposals. This not only helps avoid "reinventing the wheel" with new studies, but also encourages consistent use

of data within ER.

Example: Information on doses to workers or airborne radiological emissions exists for current operations at ER sites. These data should be drawn upon and used in EAs being prepared for new proposed facilities at existing sites.

LOOK TO THE OPERATING EXPERIENCE OF SIMILAR PROJECTS WHEN THERE IS INCOMPLETE OR UNAVAILABLE INFORMATION ON POTENTIAL IMPACTS OF ACCIDENTS FROM OPERATIONS. An EA that assesses facility operations should address the potential impacts of accidents. The need for this analysis partly is a response to one of NEPA's goals related to unintended environmental consequences from agency actions: the goal to "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences." This analysis should address reasonably foreseeable significant adverse effects on the human environment. If this information cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, it is suggested that the following four CEQ requirements for EISs (40 CFR 1502.22) be included in the EA: 1) a statement that such information is incomplete or unavailable; 2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; 3) a summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impact on the human environment; and 4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

When there is incomplete or unavailable information to fully characterize the impacts of a proposed action, including impacts from accidents, the EA should draw upon the operating experience of similar projects or facilities to obtain information on the type of "abnormal events" that occur and the frequency of the occurrences. Whenever possible, a probability statistic should be provided for the frequency of such abnormal events. If it has occurred before in a similar facility, describe the conditions under which it occurred and the nature of the

observed consequences, if any, to people or the environment. This provides the reader with information on the chances of such an abnormal incident occurring and the possible impacts of it.

SUPPORT ALL CONCLUSIONS OF IMPACTS. The EA must provide supporting analyses and bases for any conclusions of no potential adverse impacts, or positive impacts (e.g., socioeconomics), if it is to support a FONSI (e.g., make sure that the discussion of environmental consequences supports the bottom line conclusion of impacts). As much as possible, the EA should be treated as a scientific document (i.e., with fully supported contentions and citations to sources of information, so that readers/reviewers can follow the rationale for statements made in the EA.) "Blind" unsupported statements that no impacts would occur should not be made. Statements of no impacts need a supporting basis (e.g., analytical support in the EA, references such as state agencies, U.S. Fish and Wildlife Service, USEPA, and Army Corps of Engineers consultations, etc.).

Example: An EA should not merely state "There would be no impacts to wetlands". This type of conclusion should be supported by information such as: the location of wetlands out of the influence of the project; the fact that no effluents would enter wetlands; no construction would occur in or near wetlands; there are no wetlands near the proposed project; etc. Cite any studies or agency consultations that support these conclusions.

CONCLUSIONS ON "SIGNIFICANCE" OF IMPACTS SHOULD BE IN THE FONSI, NOT IN THE EA. Conclusions on the "significance" of environmental impacts are related to whether a FONSI will be reached or whether an EIS will be needed. As such, DOE uses the FONSI as the decision document (and not the EA) for discussion of "significance", when an EIS will not be required. The EA, as a support document, is used as the technical and analytical tool to assess the potential impacts of an action or proposal, and to draw conclusions on the level (or proportionality) of impact (i.e., to ecological, cultural, or social systems). Language in the EA, therefore, should not express conclusions on the

potential "significance" of impacts. Potential impacts should be quantified whenever appropriate and possible, including the magnitude and duration. If relative magnitudes are provided in the analysis, they should be expressed against some benchmark.

Example: The following are examples of appropriate language to be used in an EA when either assessing the potential impact of an action or proposal or when drawing conclusions on the level of the impact: absence of impacts; minimal nature of the impacts; little potential for impact; resources that would not be affected; measures that would be used to avoid impacts; lack of an increase in doses or emissions; lack of a measurable contribution to cumulative impacts; lack of measurable radioactivity in groundwater; no wastes would be produced; no detrimental effects; no adverse environmental effects; etc. These types of conclusions would replace the use of "no significant impacts" in an EA.

INCLUDE DRAWINGS, MAPS, CHARTS, TABLES, AND FIGURES THAT ARE WELL LABELED AND CLEAR. Drawings, maps, charts, tables, and figures can be useful in describing the proposed project or illustrating potential environmental impacts. Use only those illustrations that are needed to enhance the understanding of the project and the analysis. The illustrations should be kept simple and should be well labeled, as well as be legible and uncluttered. The use of any illustrating materials should enhance the understanding of the written material, not confuse it. If tables or charts are used, units of measurements should be described and, if appropriate, an appendix containing conversion factors provided at the end of the EA.

Example: USGS quadrangle maps often are very helpful in EAs to illustrate the presence or absence of sensitive environmental areas in relation to the proposed action (i.e., floodplains, wetlands, surface waters, etc.).

ADD ROUTINE MAINTENANCE AND NORMAL SHUTDOWNS. The normal operations of a project or facility usually include planned routine maintenance, and perhaps, planned shutdowns and restarts. An EA prepared on such project or facility operations should identify these normal procedures and their estimated

frequency, and briefly assess the potential impacts to ensure that all aspects of the operation of a proposed facility are included in the EA. Specifically including this information in the EA also would reduce the future need to prepare additional NEPA documents for these actions that are part of normal operations, as assessed in the EA.