NCHRP Project 25-25, Task 1
Synthesis of Data Needs for EA and EIS Documentation
– A Blueprint for NEPA Document Content

DRAFT REPORT

Prepared by
TransTech Management, Inc. & Parsons, Brinckerhoff
With Akin, Gump, Strauss, Hauer & Feld LLP

September 2004
## Table of Contents

1.0. Introduction and Overview of Findings ................................. 1  
   1.1. Research Objective ........................................................................ 1  
   1.2. Research Methodology ................................................................... 1  
   1.3. Overview of Report ........................................................................ 2  

2.0. Summary of Research Results ............................................... 5  
   2.1. Interviews with Selected Practitioners ........................................... 5  
   2.2. Profiles of Selected NEPA Documents ......................................... 8  
   2.3 AASHTO-ACEC-FHWA Initiative .................................................. 20  

3.0. Techniques for Improving NEPA Documents ...................... 21  
   3.1. Document Organization and Format ............................................ 21  
   3.2. Visual Aspects ................................................................................ 24  
   3.2. Writing Style .................................................................................. 25  

4.0. A Blueprint for Better NEPA Documents ............................ 27  
   4.1. Document Summary ....................................................................... 28  
   4.2. Main Body ..................................................................................... 29  
   4.3. Technical Appendices .................................................................... 36  

5.0. Legal Sufficiency Considerations ........................................... 37  

6.0. Conclusions .................................................................................. 41  

**Appendices**

Appendix A – Persons Consulted  
Appendix B – NEPA Documents Examined  
Appendix C – AASHTO-ACEC-FHWA NEPA Document Initiative Materials
3.0. Techniques for Improving NEPA Documents

The research phase of the project helped identify a variety of techniques for improving NEPA documents. Some help to make documents more compact and others improve document clarity. All help improve the quality of NEPA documents and therefore, indirectly, the project delivery process. Anyone involved in NEPA document preparation is likely to find at least one or two useful techniques from the list of more than twenty presented in this chapter. The list is organized into three categories where improvements can be made, including 1) document organization and format, 2) use of visual elements, and 3) writing style.

3.1. Document Organization and Format

Poor organization and format are frequent criticisms of NEPA documents. Organization and format should help the reader easily understand document content. Practitioners highlighted a variety of techniques for improving document organization and format.

**Question Formulaic Document Organization Approaches.** A formula-driven mentality to preparing NEPA documents exists, driven in part by the complexity of guidance and regulation on NEPA, and in part by a desire to “play it safe” by reflecting back the framework implied in the regulatory process. Formulas can help bring consistency to NEPA documents and law requires some elements; they also provide a level of comfort and require little or no discussion or debate. The question is whether document preparers should be willing to consider the value of “breaking the mold” for how documents are organized, particularly in the case of large projects where traditional frameworks fail to capture the unique and compelling issues that are likely to determine whether and how a project is to proceed.

NEPA regulations and guidance do, in fact, allow flexibility in document organization. In many cases, when document writers make time for early and frequent consideration of opportunities to do things differently this has resulted in documents that stand out. Examples of “non-standard” approaches in some of the NEPA documents reviewed for this study include a Conclusions chapter in the Pennsylvania Turnpike Commission’s Mon/Fayette DEIS, a special Environmental Commitments section in North Carolina DOT’s Mid-Currituck Sound DEIS, and a unique approach in Indiana DOT’s I-69 FEIS that introduces alternatives after the Purpose an Need section and draws conclusions about alternatives after the Environmental Consequences section.

**Capture Compelling Crosscutting Issues.** Document preparers should pay special attention to addressing crosscutting issues that are of special concern, but may not fit within a single section of the NEPA document. Adequate attention in the NEPA document to these issues is often vital to successful management of the NEPA process. For example, on the INDOT’s I-69 project, an area of “karst” limestone landscape within the project corridor includes both water quality and threatened and endangered species issues. Many stakeholders were interested specifically in how the FEIS handled impacts to the karst landscape, yet the traditional document format would not allow such an issue
to be highlighted. The I-69 FEIS makes specific reference to karst impacts in multiple sections of the Environmental Consequences chapter. In a similar fashion, Utah DOT’s Southern Corridor FEIS brings together concerns about impacts from development in a special Smart Growth chapter. In both instances, these strategies helped to allay stakeholder concerns that important crosscutting issues were “slipping through the cracks.”

**Summarize Key Issues with Perspective.** An environmental document’s Summary is the most concise explanation of the project. Highlighting topics of major importance to the project in the Summary ensures that they are not lost or obscured by the rest of the information in the document. Montana DOT’s US 93 FEIS highlights in its Summary section endangered species issues that are a focus of the FEIS. Alternatively, or in addition, use a specific section heading in the FEIS to draw attention to sensitive issues and possibly study them in greater detail. This section can be used to describe the issue of concern, its effects on given resources or alternatives, and efforts to mitigate or otherwise address the issue. Several NEPA documents reviewed include special sections on the topic of secondary and cumulative impacts in the project study area.

**Storyboarding Helps Keep Documents Cohesive.** “Storyboarding” is a technique used to map out the complex array of individual elements inherent in any story -- issues, insights, options, opportunities, constraints, conclusions and so on-- and assemble them into a logical sequence that tells the whole story. It can be done from a range of perspectives to ensure objectivity and the inclusion of all relevant points. For a NEPA document, the storyboard can outline in rough form the organizational framework as well as the highlights of the story. By bringing together major participants, including FHWA, to storyboard document content early on, a vision for overall document direction can be established that helps guide the entire document.

**Incorporate Background Technical Materials by Reference or in Appendices.** The NEPA process is data intensive. But, NEPA does not specify the amount of information that must be in the hands of reviewers and decision-makers before a decision to proceed with a given project is made. Lengthy specialized technical studies and detailed project correspondence records are often included or quoted extensively in documents regardless of their relevancy to decision-making needs. Regulatory requirements and guidance necessitate inclusion of some types of information, but wherever possible non-essential information should be incorporated by reference. In this way, the main NEPA document

---

2 CEQ’s guidance on appendices and references is published as a response to Question 25 of the “Forty Most Asked Questions on CEQ’s National Environmental Policy Act Regulations” (46 FR 18026, March 23, 1981, as amended): “Lengthy technical discussions of modeling methodology, baseline studies, or other work are best reserved for the appendix… and a plain language summary of the analysis and conclusions of that technical discussion should go in the text of the EIS. Material that is not directly related to preparation of the EIS should be incorporated by reference. This would include other EISs, research papers in the general literature, technical background papers or other material that someone with technical training could use to evaluate the analysis of the proposal. These must be made available, either by citing the literature, furnishing copies to central locations, or sending copies directly to commenters upon request.”
remains a slimmer volume that can focus on significant environmental issues and alternatives and reduces paperwork and the accumulation of extraneous background data. Readers seeking greater detail on a particular issue can consult appendices and referenced documents, available on request. Utah DOT’s entire RP 13 FEIS, for example, is approximately 160 pages long and incorporates a considerable amount of material by reference, rather than including it in the document. A five-page section lists all references cited in the document.

**Use Markers and Overviews to Guide Readers.** The length of NEPA documents can be made more manageable by using one or more of a variety of techniques to help keep readers on track. Clear headings are vital in distinguishing major sections of the document. Tabs or dividers that physically separate major chapters also help to guide readers. Brief summaries that give an overview of key points can be included at the start of major sections. Highlighting -- using techniques such as bullets, different fonts, underlining and text boxes -- can help to emphasize key points and orient the reader to contents of the document. The Indiana DOT’s I-69 FEIS includes mini-summaries throughout the document to introduce major chapters.

**Use Computer Technology Effectively.** Advances in computer technology, such as access to the Internet and CD-ROM media, have dramatically expanded opportunities to distribute NEPA documents to a broad audience. Care should be taken, however, to ensure that NEPA documents are transferable across media. Web-based versions should be easily printed, color materials should still be readable in black and white format; and documents should be viewable in different web browser formats, and compliant with the Americans with Disabilities Act.

Many DOTs have chosen to make environmental documents available on the web in addition to by hard copy, usually as part of a project website accessible through the agency’s homepage. Examples of web-based NEPA documents reviewed in this study include the Indiana DOT’s I-69 FEIS ([http://www.deis.i69indyevn.org/FEIS/index.html](http://www.deis.i69indyevn.org/FEIS/index.html)), the Washington State DOT’s Alaskan Way DEIS ([http://www.wsdot.wa.gov/projects/viaduct/](http://www.wsdot.wa.gov/projects/viaduct/)), and the New York MTA’s Fulton Street Transit Center DEIS ([http://www.mta.nyc.ny.us/capconstr/fstc/deis.htm](http://www.mta.nyc.ny.us/capconstr/fstc/deis.htm)).

**Consider Software Choices for Preparing NEPA Documents.** Document preparers should consider the merits of using word processing software (e.g. MSWord) versus desktop publishing software (e.g. PageMaker) to prepare the document. Word processing applications provide the flexibility of a commonly shared platform that enables quick and easy sharing and editing of document drafts, while desktop publishing software facilitates a more polished document look and feel and readily accommodates non-standard document sizes. Both INDOT’s I-69 FEIS and WSDOT’s Alaskan Way DEIS were prepared with desktop publishing software; other NEPA documents reviewed in this study were mostly prepared using word processing software.

**Make Document Layout a Priority.** A good NEPA document should have a consistent look and feel. A graphic artist rather than a technical writer may be best suited to
achieving a quality result. Factors that help create a consistent look and feel include visual materials that are integrated with text, standard formatting of text headings, use of color and/or shading, and recurring motifs that are used to highlight key summary points.

3.2. Visual Aspects

In most NEPA documents, visual materials are used to convey points more clearly and emphasize certain information. Maps show where a project is located and how alternatives relate; diagrams are used to illustrate project design attributes; and, increasingly, computerized visualization tools are used to depict key design elements or information on how a project will relate to its surroundings. Readers usually grasp information communicated in visual material more quickly as compared to information presented in text, making visual materials a helpful way to produce documents that are clear and concise.

Haphazard use of visual materials, however, may not reduce text length or improve document clarity. A University of Illinois study found that for a sample set of EIS documents, most (70%) of citizens showed no better understanding of the projects after reading them and the study concludes that poor use of visual material contributes to this problem. A series of acclaimed books on visual display of data written by Yale University’s Edward Tufte (including *The Visual Display of Quantitative Information* (1983) and *Envisioning Information* (1990)) is recommended by one DOT as a resource for guiding the use of visual material in NEPA documents. In addition, practitioners highlighted a variety of techniques for using visual material that supplements text and enhances overall document clarity and brevity:

**Photographs.** Photographs can be an invaluable way to convey key information. For example, in a Purpose and Need chapter, photographs may communicate problems such as deteriorated infrastructure, congested traffic conditions, or safety concerns much more effectively than text. The Alaskan Way DEIS makes effective use of photographs of concrete spalling and cracking on the existing structure to communicate the urgency of the problems.

**Photosimulation.** Photosimulation techniques are particularly useful in employing computer generated “before” and “after” images of a project area to show potential changes. Advances in computer technology and software make realistic photosimulation possible with only minimal training and time. Research suggests that readers’ comprehension of EIS documents improves significantly with the addition of photosimulation as an aid for understanding the impact of alternatives. The Mid-Currituck Sound DEIS prepared by North Carolina DOT uses a variety of photosimulation images to improve understanding of alternatives.

**Maps.** Maps can supplement text for communication of information such as project location, alternative alignments, or presence of environmental resources. Most NEPA

---

documents include maps, but usually they are based on highly technical design
documents that are poorly suited for communicating information to a broader audience.
Maps included in the NEPA document should be designed to fit their purpose. Careful
consideration should be given to factors such as scale, labels, area covered, simplification
of detail, and removal of unnecessary information. A clear base format that is repeated
among maps also can help to keep readers oriented. The Alaskan Way DEIS includes a
series of maps that clearly show the alignments of proposed alternatives. Key features of
these maps include uniform base format, color coding to describe attributes of each
alternative (e.g. aerial structure, surface street, tunnel, etc.), clear identification of local
landmarks to orient the reader, and simplified depiction of surrounding streets.

Clarity of Visual Materials. Document preparers should ensure that visual materials
retain their clarity regardless of the formats used for distribution. If color visual materials
are used, they also should be understandable in black and white. If non-standard page
sizes are used in an electronic document, visual materials should still be readable if they
are printed on 8.5” by 11” paper.

Graphs and Charts. Displaying data in graphs and charts can be much clearer than in	tabular form. Picking the right graphic format, however, requires a certain talent. For
example, just deciding which form to use (e.g. bar chart, pie chart, line diagram, etc.)
requires a sense of what the data includes and what is the message of the chart. One
effective technique is to compose a very brief (bullet style) message that makes the key
points and place it on the graph or chart itself. It is also important not to resort to graphic
decception which distorts the true meaning of the underlying data, such as distortions in
the scale used or, most commonly, scale breaks that do not use a zero base.

Tables. Tables are a common and effective tool for summarizing information.
Complicated tables that discuss multiple variables should use different fonts, white space
and color to enhance their clarity. A table that gets too complicated or just too large,
however, may be so unwieldy and difficult to understand that it becomes virtually
useless. Some commonly used applications for tables in environmental documents
include comparisons among alternatives, and summaries of resource areas and impacts.

3.2. Writing Style

NEPA documents contain highly technical information, but they must communicate this
material to a range of audiences. Writing technical information so that non-technical
audiences can understand it is an art, but good writing is a characteristic common to all
successful NEPA documents. Indeed, CEQ's regulations require that documents be
written in plain language so that decision-makers and the public can readily understand
them. Any of several standard texts can provide additional detail on the attributes of good
writing. Some key points on writing style, exhibited throughout almost all of the
documents reviewed in this study, and that can be incorporated in any NEPA document
include:

---

Consider Using a Technical Editor to Achieve a Single Voice. Multiple authors with varying styles usually contribute to preparation of NEPA documents. Without careful guidance and editing, writing styles inevitably vary from section to section and this can result in a document that lacks coherence. By using a technical editor, the document can achieve a universal style that helps convey a single voice.

Use Clear Headings. Use headings to break sections into subsections of about three to six paragraphs, with headings serving as mini-overviews of the subsections. Framing headings as questions is one technique to induce readers to forge ahead and get to the answer. The section then, of course, must answer the question posed in the heading.

Use Bulleted Points. Use bullets rather than text paragraphs to convey a series of key points. Bullets contribute to brevity.

Avoid or Explain Technical Jargon. Wherever possible, technical language should be avoided even if plain language requires more words. If technical language is used, it should be explained as it comes up as well as in a glossary. When describing a technical material or process, choose one appropriate term and stick with it through the document. Otherwise, the reader is likely to assume that different terms mean different things. List the equivalent terms, then state which one will be used throughout the document.

Minimize Abbreviations. Reduce the use of abbreviations, including acronyms. Abbreviation should be used only for terms, projects, or facilities that will be named repeatedly throughout the document and should be defined the first time they are used.
4.0. A Blueprint for Better NEPA Documents

This chapter draws upon the research to offer a proposed Blueprint for better NEPA documents. The Blueprint is offered as a starting point and not as a rigid formula to be applied in all cases. The catalyst for creating the Blueprint is the research described in Section 2.0, and particularly the bold principles embodied in the Washington State DOT’s 168-page, Alaskan Way DEIS. Taken together, the best practices found in these documents indicate a mold-breaking vision for NEPA documents that are clearer, more focused, shorter, and that support efficient decision-making. The overarching attribute of the Blueprint is a greater emphasis on telling the project decision-making story clearly, while still meeting legal sufficiency needs. The Blueprint has three core components:

1. **Document Summary.** For many readers, the Summary may be the only part of the document they choose to read. Certainly it should provide a synopsis of why the project is needed, what alternatives were considered, how the alternatives affect the environment, and which alternative(s) are preferred or have been selected. Very importantly, the Summary needs to place proper emphasis on the key issues driving the project as well as potential constraints, such as major environmental and community concerns that may be controversial and difficult to resolve. Summaries should address these head-on and not understate by affording equal treatment of lesser issues.

2. **Main Body.** This is the main part of the EIS. In the Blueprint, the Main Body of the EIS includes the following sections (which are similar, but not identical, to the chapters of a traditional EIS):
   - **Purpose and Need.** This section is the cornerstone of the NEPA document. It introduces the reader to the project and focuses on why the project is justified. A clear and compelling case for the project can instill a common vision, and instill a sense of urgency to drive the rest of the process toward a timely and optimal outcome.
   - **Alternatives.** This section identifies the preliminary alternatives developed in the scoping process; explains the methods used for screening alternatives; summarizes the results of screening processes, including the reasons for eliminating any alternatives from consideration; describes each of the alternatives carried forward for detailed study; and explains how the alternatives carried forward achieve the goals established in the purpose and need statement. Additional analysis – including the rationale for selecting a preferred alternative, if one is identified – is provided in a separate section, *Comparison of Alternatives.* (See below.)
   - **Environmental Resources, Impacts, and Mitigation.** This section combines the Affected Environment and Environmental Consequences chapters of a traditional NEPA document. It presents a discussion of impacts, resource by resource, in a

---

5 This discussion focuses on content for EIS documents. Many of the principles discussed, however, also are applicable to EA documents.
rigorous fashion for each of the remaining alternatives. It presents this information in a completely neutral and objective fashion, even if a preferred alternative is identified in a later section. The volume of information in this section is weighted toward environmental impacts of most relevance to the decision-making process.

- **Public Comments and Agency Coordination.** This section discusses the processes for public involvement and agency coordination, and incorporates and addresses comments and suggestions emanating from these processes.

- **Section 4(f) Chapter.** If a 4(f) evaluation is required, the Main Body of the document must contain a separate Section 4(f) chapter as required under FHWA regulations.

- **Comparison and Selection of Alternatives.** This section analyzes each of the reasonable alternatives – i.e., the alternatives carried forward for detailed study – in light of the information presented in the preceding chapters on the benefits, impacts, and costs of those alternatives. If a preferred alternative has not yet been identified, this section describes each alternative and identifies the principal advantages and disadvantages of each. Once a preferred alternative is identified, this chapter also includes the rationale for selecting that alternative. This section is intended to address one of the most common shortcomings of NEPA documents – that they may be rich in data, but fail to “tell the story” of what the data means and how it led to the selection of the preferred alternative.

3. **Appendices and Technical Reports.** Appendices and technical reports become a repository of materials and information that are important to document as background information, supporting data or detailed source material for the information and analyses contained in the Main Body. The use of appendices and technical reports as a repository for voluminous material offers the greatest opportunity to “de-clutter” the Main Body of the document.

The Blueprint draws on practices that states are already using and is not intended to contradict CEQ and FHWA regulations and guidance; nor is it intended to be prescriptive. It is offered as a starting point for further discussion and the level of detail presented is intended as a conceptual snapshot for charting overall direction within this vastly complex topic. The authors acknowledge that many layers of detail must be addressed for the Blueprint to be implemented in any individual case. The following sections describe how each major element of the proposed Blueprint differ from more traditional NEPA document content.

4.1. **Document Summary**

The Blueprint places renewed emphasis on the Summary as a vital component of any NEPA document. It should provide the sharpest definition of the issues and basis for choice among options. CEQ regulations require a Summary as part of every EIS document. The purpose is to adequately and accurately summarize all key aspects of the environmental impact statement. The Summary sections of most NEPA documents,
however, are usually a greatly abbreviated version of the full document, often too brief to provide readers with a meaningful understanding of issues and choices vital to the project.

The research team’s findings suggest that a good Summary forms a vital component of an effective NEPA document. Depending on the length of the overall EIS, a separable Summary document may be a good idea. This document is more portable than the full EIS and provides a level of detail that many readers will find to be quite adequate. It can be distributed independently of the full EIS document. The Alaskan Way DEIS includes a separate Executive Summary that is 30 pages long, compared to the full DEIS, which is 168 pages long. Key attributes of a good summary include:

- **A Focus on Key Issues.** The most successful Summaries (and EISs) focus on the issues most relevant to key decisions. Environmental impacts that are listed in FHWA or CEQ guidance, but which are not a major project-specific concern should be noted only briefly, if at all. The Pennsylvania Turnpike Commission’s Mon/Fayette DEIS Summary, for example, notes that “the following resources do not exist within the study area and therefore will not be discussed in this document.” There is no need in summaries to carry forward trivial impacts that tend to obscure the real issues.

- **Use Maps and Tables in the Summary.** In the Summary, simple maps and tables can be particularly helpful for presenting and comparing alternatives and their environmental impacts succinctly. The Executive Summary for the Alaskan Way DEIS, for example, includes simple, full-color maps depicting the location of each alternative, graphics that demonstrate engineering solutions embodied in each alternative, and a chart that summarizes the elements of each alternative.

- **Don’t Over Simplify.** In summarizing complex information, EIS preparers sometimes oversimplify discussion of Purpose and Need, alternatives, and/or impacts. This makes the Summary less useful to the reader. The challenge is to provide succinct yet sufficient detail to convey both the absolute and relative importance of each impact. If an impact is at a trivial level for each alternative, then relative differences are not important.

- **Do Not Add New Information.** The Summary should not introduce ideas, information, or conclusions that are not otherwise in the Main Body of the EIS. To the greatest extent practicable, the Summary should use material from the Main Body as a means of assuring strict consistency. When the Summary requires new material to meet editorial requirements, this must be carefully developed and checked to ensure it is totally consistent with the Main Body of the EIS.

4.2. Main Body

The Main Body is the place where the story of the project is told in detail. The Blueprint adapts the traditional NEPA document format to provide a version that strengthens document clarity. It starts with a focused discussion of the driving forces that affect
project Purpose and Need. It continues by introducing potential alternatives and screening criteria to identify reasonable alternatives for further study. In a combined section, environmental resources and potential impacts and mitigation are discussed in a rigorous and objective manner. After public comments and interagency coordination, and section 4(f) if needed, are discussed, the Main Body draws conclusions in a section on comparison and selection of reasonable alternatives. The major components of the Main Body are discussed in the following sub-sections.

4.2.1. Purpose and Need Section

The project’s Purpose and Need section should convince readers about why the project is being proposed and it should set the stage for development of appropriate alternatives. It must offer a specific, clear, and justifiable explanation of Purpose and Need that draws from other sources such as statewide, regional, and local land use and transportation plans, corridor planning studies, or scoping initiatives. The Purpose and Need should be presented in a format that enables lay readers to understand complex technical information, such as structural condition, traffic safety, or congestion data that underpin Purpose and Need.

Unfocused Purpose and Need statements that respond almost mechanically to standard criteria identified in FHWA and FTA technical guidance are less likely to be convincing and could potentially jeopardize subsequent steps in the NEPA process that are rooted in Purpose and Need. Indiana DOT’s I-69 FEIS illustrates how Purpose and Need can be tightly focused. The first line of the first section in the Indiana DOT’s I-69 FEIS Purpose and Need chapter states that the purpose of the project “is to provide an improved transportation link between Evansville and Indianapolis which 1) strengthens the transportation network in Southwest Indiana; 2) supports economic development in Southwest Indiana; and 3) completes the portion of the National I-69 project between Evansville and Indianapolis.” These three criteria are subsequently used to judge whether alternatives meet Purpose and Need. The remainder of the I-69 Purpose and Need chapter is devoted to explaining the purpose and need in more detail. The strength of this approach is that it can couch detailed, operational factors common to most projects, which by themselves begin to sound mechanical and only moderately convincing (such as level of service, travel times, and crash statistics) within a framework driven by more strategic considerations that are more compelling and unique to this particular project (such as economic development in Southwest Indiana.)

Visual materials may illustrate elements of Purpose and Need more effectively than text and numbers, particularly for non-technical readers. Deterioration of infrastructure may be depicted in photographs, for example, or traffic congestion data may be presented graphically. The Alaskan Way DEIS includes an Introduction to the Project section that uses pictures to show earthquake damage to the road, which is a major element of the project’s Purpose and Need. The Fulton Street Transit Center in New York City’s lower Manhattan uses a half page graphic to explain how multiple elements of the project’s Purpose and Need fit together, including platform crowding, inadequate connectivity, and poor street access.
4.2.2. Alternatives Section

The primary function of a NEPA document is to help make informed choices from among reasonable alternatives. In the Blueprint, this section introduces readers to a set of potential alternatives that explicitly address the project’s Purpose and Need. With the universe of potential alternatives outlined, screening criteria are established and used to review preliminary alternatives and identify a subset of reasonable alternatives that meet the Purpose and Need and should therefore undergo detailed analysis. Discussion of alternatives can easily become confusing, particularly when many alternatives are possible, and this section places an emphasis on clear identification of reasonable alternatives using effective maps and diagrams. Strategies for creating clarity in the alternatives section include:

- **Describe Process for Refining Alternatives.** During EIS development, a process of screening preliminary alternatives and refining them into a set of reasonable takes place. Often a wide range of alternatives is narrowed down to a smaller set of reasonable alternatives for detailed analysis. The screening process for refinement should be explained and alternatives eliminated from detailed study should be documented before focusing on the range of reasonable alternatives to be considered in detail. In Indiana DOT’s Tier 1 I-69 FEIS, an explicit link between the project’s Purpose and Need and each alternative is made. Each alternative is scored according to major goals of the Purpose and Need. The scores demonstrate how well each alternative fits the Purpose and Need and are used in part to select a set of reasonable alternatives for further analysis.

- **Present Alternatives Clearly.** The document should present each alternative clearly. In the Pennsylvania Turnpike Commission’s Mon/Fayette DEIS, for example, a complex array of alternatives is simplified by grouping them into two major alternatives (a North Alternative and a South Alternative). For each alternative, five sections are considered in which multiple sub-options are described. The Alaskan Way DEIS uses a well-designed one-page color table that summarizes each of the five alternatives under consideration.

4.2.3. Environmental Resources, Impacts, and Mitigation Section

This section of the Blueprint combines the Affected Environment and Environmental Consequences chapters of traditional NEPA documents. Readers do not have to flip between chapters to get a full understanding of which environmental issues are significant in the project area (from the Affected Environment chapter), and how each alternative affects them (in the Environmental Consequences chapter). The section provides a rigorous, objective, and neutral analysis of major environmental resources and how reasonable alternatives might affect them; it provides the basis for subsequent comparison of alternatives.

This section is organized by environmental resource area. The results of relevant studies are summarized, but primary data and, or background information gathered during
research are kept in separate appendices or technical reports. The emphasis of text in this section is weighted towards reporting on the impacts of major issues that affect decision-making. Minor issues that do not affect the project are discussed in limited terms. Regulations and guidance from CEQ and FHWA dictate the range of issues that must be considered in the NEPA document. For individual projects, however, the magnitude of particular impacts varies considerably. The following criteria can help document preparers ensure appropriate balance in discussion of major and minor issues:

- Is the resource present in the study area?
- Is the resource a significant concern to the public and other stakeholders?
- Do technical studies suggest impacts are significant?
- Is the resource a differentiator among alternatives?
- Are there regulatory requirements that mandate explicit consideration of this resource?

If the answer is “no” to all of these questions for a particular resource, then discussion of the resource should be brief and technical reports indicating no impact may be referenced. If the answer is “yes” for any question, then at least some discussion of that resource should take place. There is no “cookie cutter” formula for the amount of analysis needed, but it may well be correlated to some extent with the number of “yes” answers to the five questions listed above.

### 4.2.4. Section 4(f) Evaluation Section

Section 4(f) evaluations may be incorporated with EISs, but they must be a separate section. The regulation concerning Section 4(f), states “the Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

- There is no feasible and prudent alternative to the use of land from the property; and
- The action includes all possible planning to minimize harm to the property resulting from such use.”

Also, “supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic, and environmental impacts, or community disruption resulting from such alternatives reach extraordinary magnitudes.”

The determination of no feasible or prudent alternative, analysis of the impact, efforts to minimize harm, and coordination efforts must be properly documented. For most EISs and EAs, Section 4(f) evaluations are provided as individual chapters or sections. The research team found that the majority of Section 4(f) statements were concise. Standard,
concise 4(f) evaluations within environmental documents, per FHWA guidance, should include the following:

- A description of the project, including a concise statement of the project Purpose and Need
- A description of proposed actions
- A description of the Section 4(f) resource
- A description of the alternatives, including avoidance alternatives
- A description of impacts
- A discussion of mitigation measures
- A discussion of coordination activities

Delivering concise but thorough Section 4(f) evaluations can be achieved in part by following the guidance published on the topic by CEQ and USDOT. Additional considerations include:

- **Refer to Appropriate Support Sections within the EIS.** The Blueprint is intended for EISs and EAs, where the 4(f) evaluation is a distinct chapter in the document. FHWA guidance points out that it is quite appropriate for this chapter to reference other sections of the document, such as Purpose and Need and Alternatives, rather than repeat information.

- **Use of Graphics, Tables and Maps.** Alternatives and their impacts can be summarized effectively in a table. A comprehensive map of the Section 4(f) resources will enable readers to visualize the locations under discussion, and to understand how any given alternative physically relates to a resource. Summary tables of resources organized by type also clarify which resources are being considered in any given section. The I-69 FEIS uses a summary table and a bulleted list at the beginning of the section to make clear which resources are under discussion. Photographs of each resource also quickly illustrate what is being discussed. Summary tables of the analysis performed also can untangle the complicated relationship among resources, alternatives, and impacts. The I-69 FEIS, for example, has a summary table of Section 4(f) analysis which, with only 4 columns, describes the resource, use, and potential for avoidance.

### 4.2.5. Public Comments and Agency Coordination Section

The CEQ regulations require a Public Comments and Coordination chapter for EISs. FHWA guidance advises that an EIS should summarize the scoping process, the results of any meetings that have been held, and any comments received during preliminary coordination. In the FEIS, this chapter must discuss any responsible opposing view that was not adequately discussed in the DEIS and must indicate the lead agency’s response to the issues raised. The lead agency must discuss, in a substantive and meaningful fashion,
why a specific course of action was taken, and why a commenting agency’s request did, or did not, elicit a substantive rewrite. The FEIS must include copies of the comments received and the agency's responses. If comments are voluminous, they may be summarized. If the FEIS was changed in response to comments, changes should be referenced in the responses.

The research team discovered many different approaches to distinguishing changes between the DEIS and FEIS. Guidance maintains that any minor changes between the documents can be dispensed with using errata sheets, or as an attachment to the DEIS, rather than a full rewrite. Succinctly describing the process of collecting and addressing public comments, paired with an accurate, concise narration of agency coordination provides the final touch to telling the story of project decision-making.

In addition to using the guidance issued by FHWA and CEQ concerning this chapter, the following techniques can help ensure that this chapter, rather than becoming a sprawling catch-all, succinctly completes the tale of the environmental process:

- **Grouping of Comments According to Common Element and Summarizing Comments.** The I-69 FEIS uses this technique. Comments are grouped according to a common theme and are summarized. The report also organizes the comments according to when they were raised. This chronological organization enables a reviewer to understand when and how major issues were raised, and how they were addressed by the process.

- **List of Agency Coordination.** A bulleted list of coordinating agencies, and reference to their letters, which can be placed in a technical report or appendix, clearly conveys the breadth of a coordination effort.

- **Use of Tables.** Comments and Coordination chapters by their nature summarize extensive public outreach and interaction with public agencies. Transparently conveying when and where a particular meeting was held, who attended, and what was discussed is critical to fulfilling the mission of the environmental process. A summary table is an effective way of capturing this information. The I-69 FEIS uses a summary table of public outreach and agency coordination after publication of the DEIS to good effect. In addition, a summary table of issues raised and their resolution enables the concerned party to quickly locate his or her particular comment or issue and understand how it was resolved.

**4.2.6.  Comparison and Selection of Alternatives Section**

NEPA documents are intended to support decision-making. Very often, however, they steer clear of making any kind of recommendations or conclusions because of concern about showing bias among alternatives. Ideally, the NEPA document should help the reader understand not only what the impacts of different alternatives are, but what they mean for decision-makers. This can be achieved by including a section that specifically
highlights conclusions. It should present clearly how the reasonable alternatives identified in the Alternatives section compare. The wording of this section may vary depending on the “draft” or “final” status of the NEPA document. In the draft stage, the document may include identification of one or more preferred alternatives based upon the evidence presented. The Pennsylvania Turnpike Commission’s Mon/Fayette DEIS includes a “Conclusions and Recommendations” chapter that presents a succinct listing of factors that influenced the agency’s recommendation for a preferred alternative to be carried through to the FEIS. The Indiana DOT’s I-69 FEIS includes a “Comparison of Alternatives” section that discusses each alternative in terms of performance, cost, and environmental impacts.

This section provides the link between the analysis of reasonable alternatives and the process of narrowing toward a preferred alternative. It reflects the logic and reasoning inherent in the decision-making process. In doing so, it fills a gap that is often cited about NEPA documents that are rich in data, but vague about how the data were interpreted and used in the thought process that led to the preferred or selected alternative. Techniques for strengthening this section include:

- **Summarize Impacts by Alternative.** Detailed analysis of environmental impacts takes place in the Environmental Resources section of the Blueprint. A summary table showing impacts by alternative, however, may be helpful. For example, the Utah DOT’s Southern Corridor DEIS includes a Comparison of Impacts sub-section in its Alternatives chapter. It provides a comparison table of the environmental impacts of the alternatives for resources affected. Impacts to the environment are described briefly in the table and are discussed in detail in the Environmental Consequences chapter. Indiana DOT’s I-69 FEIS includes a chapter that summarizes the impacts of alternatives.

- **Consider Including Discussion of Benefits and Costs.** Traditional NEPA documents focus on adverse impacts ascribed to individual alternatives. The benefits of alternatives should play an important part in decision-making. The discussion of environmental consequences can be balanced by a discussion of benefits and costs. The Washington State DOT’s Vancouver Rail FEIS includes discussion of benefits associated with the project in addition to adverse impacts.

- **Base Conclusions on Evidence.** The story described in the NEPA document should lead the reader towards conclusions that are clearly evident and well supported as presented. It is important to make an explicit link between technical evidence and any conclusions or recommendations. The Mon/Fayette DEIS Conclusions section explains the strengths and weaknesses of each detailed alternative before making a recommendation on a preferred alternative that is linked to an evaluation of the relative strengths and weaknesses. This is a critically important element not always done, or done well.
4.3. Technical Appendices

Lengthy specialized technical studies and detailed project correspondence records are often included or quoted extensively in documents regardless of their relevance to decision-making needs. Regulatory requirements and guidance necessitate inclusion of some types of information, but wherever possible non-essential information should be incorporated by reference. In this way, the Main Body remains a slim volume that focuses on significant environmental issues and alternatives and reduces paperwork and the accumulation of extraneous background data. Readers seeking greater detail on a particular issue can consult appendices and referenced documents, available on request. Other items that may work better as an appendix include mailing lists, summaries of public meetings, and records related to interagency/intergovernmental consultation and coordination (e.g. Memorandums of Understanding).

The Pennsylvania Turnpike Commission’s Mon/Fayette DEIS makes extensive use of technical references and appendices. These additional resources are noted in colored sidebar boxes that list additional reports and other resources available to readers that seek more information. For example, in the Cultural Resources section of the Environmental Consequences chapter, there are references to six project-specific studies. The WSDOT’s Alaskan Way DEIS includes a CD-ROM containing numerous technical reference documents mentioned in the main DEIS document.
5.0. Legal Sufficiency Considerations

Efforts to make NEPA documents more readable and concise often encounter objections on grounds of legal sufficiency. These concerns must be taken seriously. After all, a NEPA document must be accessible to the general public and considered acceptable by two other important audiences: regulatory agencies with the authority to grant or deny project approvals, such as wetland permits, and judges with the authority to overturn project approvals if a lawsuit is filed.

Satisfying agency reviewers and the courts often requires a substantial level of technical detail. The technical detail is needed to demonstrate compliance with legal requirements on unavoidably complex topics, such as air quality conformity, wetlands, Section 4(f), and many others. For example, an analysis of wetland impacts is unlikely to be considered sufficient by environmental regulatory agencies if the analysis refers generally to “wetlands.” The agencies will want to see a breakdown by type of wetland – and they will want to see the types described with the appropriate terminology. Thus, it is common for technical terms – e.g., “palustrine emergent wetlands” – to appear in NEPA documents. Explaining those technical terms is appropriate and helpful; eliminating them entirely is not.

Agency reviewers and the courts also value consistency in document formats. Consistent document formats are valuable – particularly to agency reviewers – because they simplify, and therefore expedite, the process of finding information in a document. This consideration is not as important for the general public, because in most cases, the general reader will be involved in the NEPA process only for a single project. For agency reviewers who read dozens or even hundreds of NEPA documents every year, it would be enormously time-consuming and frustrating if each document were organized completely differently. Consistency in presentation is a vital aspect of clear communication for those who regularly read NEPA documents.

Many of the factors that help to improve a document from the standpoint of the general public also will help to improve the document for agency reviewers and the courts. In particular, agency reviewers and courts place high value on clarity in the presentation of complex issues. Many NEPA documents today are frustrating to the general public not simply because they contain highly technical information, but because they fail to explain that information clearly. Agency reviewers and the courts share the same frustration. They, too, are seeking clearer and more concise explanations of complex technical issues.

Achieving greater clarity does not mean removing technical details; it means explaining those details in a way that can be readily understood by non-technical readers. (Although, as noted elsewhere in this report, there are times when such detailed information might best be located in a technical report or appendix.) Thus, the effort to make NEPA documents more accessible to the general public should not be viewed as an effort to oversimplify complex technical issues or to substitute generalizations for specifics. The

---

6 This chapter was prepared by William G. Malley, an environmental attorney with the law firm of Akin Gump Strauss Hauer & Feld., L.L.P, in Washington, D.C.
real goal is more difficult: preparers of NEPA documents must understand technical issues well enough that they can explain those issues in a manner that is understandable to the general reader.

Maintaining consistency in document formats does not preclude experimentation with new approaches. As noted above, consistency in document format is valuable because it makes it easier for agency reviewers to identify important information. This objective – ease of access to important information – also can be achieved in other ways. For example, if a new format is used, the NEPA document can include a “guide for agency reviewers” – i.e., a brief section explaining where important information on key topics can be found. This technique, or equivalent methods, can help to ensure effective communication with regulatory agencies while still allowing flexibility to experiment with innovative formats.

All of the suggestions contained in this report would, if implemented appropriately, contribute to the legal sufficiency of a NEPA document. The following specific recommendations are intended to emphasize key points that have particular value from the standpoint of legal defensibility:

- **Identify and Explain Key Assumptions.** The technical analyses contained in a NEPA document generally are based on a series of assumptions. For example, traffic forecasts are based on assumptions about future population and employment trends. These underlying assumptions must be credible in order for the results to be credible. Therefore, in presenting technical information, preparers of NEPA documents should specifically identify key assumptions and explain why those assumptions were made.

- **Describe Methods Used to Develop Data.** The persuasive power of technical data depends heavily on the reader’s confidence in the methods used to generate that data. If the reader cannot understand how the data were developed, the reader is essentially being asked to “take it on faith.” Thus, the credibility of a NEPA document can be enhanced by describing the methodologies used to develop the data. This approach requires more than giving the name of the model used; it requires explaining in simple terms how that model works and what type of information it provides. It also means explaining any inherent limitations in that model.

- **Use Effective Visuals to Present Key Results.** In addition to their value for the general reader, visual aids can be particularly helpful in litigation. The basic challenge facing attorneys in a NEPA case is to explain a complex series of events as briefly as possible. In most cases, the entire legal brief defending a NEPA study is less than 50 pages long, and often it is much shorter than that. Within those space constraints, there may be only a few pages available to explain the entire history of a single complex issue. As a result, a single visual aid can be profoundly helpful in litigation – not just because it reinforces a key argument, but also because it frees up space to develop other arguments more fully.
• **Don’t Just Summarize the Data, Analyze It.** A NEPA document presents a vast quantity of technical information. The most fundamental task of a NEPA document preparer is to explain what that data means. Explaining the data involves more than reciting in text the data that appears in an accompanying table or figure. The explanation should connect the dots—that is, it should identify patterns in the data, explain causal relationships, and explain anomalous or otherwise unexpected results. The data rarely speaks for itself; the responsibility for explaining the data rests with the preparer of the NEPA document.

• **Document Compliance with Key Regulatory Requirements.** The NEPA process is typically used as the vehicle for achieving compliance not only with NEPA, but also with a range of other laws, including Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act, Section 404 of the Clean Water Act, and air quality conformity requirements under Section 176(c) of the Clean Air Act. These regulatory requirements often are the subject of legal disputes. Given the potential for disputes, it is prudent for a NEPA document to include a systematic, point-by-point review of these regulatory requirements—explaining which are applicable, which are not applicable, and how the applicable requirements have been met. This overview of regulatory compliance may have limited value for the general reader, but has great value for a reviewing court.

• **Provide Overview of Major Project Issues.** In most NEPA studies, there are a few issues that receive a disproportionate amount of attention from regulatory agencies, interest groups, or the public. These issues often involve long-running efforts to resolve complex or controversial issues. By the time the NEPA process is completed, the issue may have generated hundreds of pages of technical studies, dozens of letters among agency officials, and hundreds of public comments. For permitting agencies or a reviewing court, it can be difficult to assess the lead agency’s handling of such a complex issue. The NEPA document can greatly facilitate the task of agency reviewers and the courts by listing these major issues and briefly explaining the concerns that were raised and how those concerns were addressed. This summary should provide cross-references to other locations in the document where more detail is provided.

• **Systematically Review Data to Ensure Internal Consistency.** The large amount of data presented in a NEPA document creates numerous opportunities for internal inconsistencies and contradictions. There may be inconsistencies in a single section between the tables and the text; there may be inconsistencies between discussions of the same issue in different sections; and there may be inconsistencies between discussions of different issues that happen to involve the same data (e.g., traffic, noise, and air quality). There is no simple or easy way to eliminate these inconsistencies; cross-checking is an inherently time-consuming and onerous task. Nonetheless, careful cross-checking to ensure rigorous consistency is a valuable effort that enhances the credibility of the document for the public, agency reviewers, and a reviewing court.
Following these recommendations will help to make NEPA documents more readily understandable by the general public, while at the same time helping to demonstrate for agency reviewers and the courts that all applicable legal requirements have been met.
6.0. Conclusions

The comments of practitioners taking part in this research project, as presented in Chapter 2 of this report suggest that many DOTs are likely to be receptive to best practices techniques for improving the content and format of NEPA documents. A number of such techniques are presented in Chapter 3. FHWA and CEQ standards for content and format of NEPA documents are often viewed as highly prescriptive. Projects such as Washington State DOT’s Alaskan Way and a handful of others, however, show that they can be interpreted differently. These projects appear to provide at least partial solutions for achieving more compact, reader-friendly documents that meet legal sufficiency needs. Together, they form the catalyst for a Blueprint that represents a potential opportunity for “managing the amount of data, detail, and documentation needed to support Environmental Assessment (EA) or Environmental Impact Statement (EIS) documents prepared under NEPA for major transportation projects.” The Blueprint presented in Chapter 4 includes three core components:

1. Document Summary
2. Main Body
   - Purpose and Need
   - Alternatives
   - Environmental Resources, Impacts, and Mitigation
   - Public Comments and Agency Coordination
   - Section 4(f) Chapter
   - Comparison and Selection of Alternatives
3. Appendices and Technical Reports

The overall approach of more clearly “telling the story” offers the potential for more readable documents that encourage well developed and documented decision-making that can fulfill stakeholder expectations and meet legal sufficiency requirements. These possibilities could well result in speeding up project delivery even though there may be no time savings directly inherent in the Blueprint.

The Blueprint is intended as a starting point for further discussion. For those prepared to embrace it, the starting point may provide a basic framework that could be adapted to particular project and project sponsor requirements and circumstances.

In a broader sense, the Blueprint, and indeed this entire research report, should serve to support the current initiative among AASHTO, ACEC, and FHWA to improve the quality of environmental documents. The results of a recent survey conducted by that group and a recent workshop (reported in detail in Appendix C) are remarkably similar to the findings from the independent research conducted for this project.
Appendix A

Persons Consulted

Parsons Brinckerhoff
John Page, AICP
Steve Plano, AICP, ALA
Ron Shimizu

Federal Highway Administration (FHWA)
Carol Adkins
Ken Diamond
Aung Gye
Zenia Hernandez
Keith Moore
Ron Moses
MaryAnn Naber
David Ortez
Harold Peaks
Ruth Rentch
Shari Schaftlein
Jim Scouten
Lamar Smith
Jim Thomason

Federal Transit Administration (FTA)
Susan Borinsky
Joe Ossi

U.S. Environmental Protection Agency (EPA)
Patricia Haman
Denise Rigney

U.S. Fish and Wildlife Service (FWS)
Bill Schultz

National Park Service (NPS)
Susan Hinton

U.S. Army Corps of Engineers (COE)
Paul Wettlaufer

Council on Environmental Quality (CEQ)
Horst Greczmiel

Pennsylvania Turnpike Commission
David Willis

Utah Department of Transportation
Brent Jensen

Washington State DOT
Kimberly Farley
Douglas MacDonald
CD-ROM Examples

Gold Line Phase II Pasadena to Montclair – Foothill Extension DEIS April 2004
Tampa Rail Project FEIS December 2002
The Centerline (light rail system for orange county) Supplemental DEIS and Revised DEIS October 2003
Capitol Expressway Corridor DEIST/Draft Environmental Impact Report Draft Section 4(f) April 2004 (Santa Clara Valley)
BART Extension to Milpitas, San Jose and Santa Clara DEIS/ Draft Environmental Impact Report Draft Section 4(f) March 2004