Synthesis of Data Needs for EA and EIS Documentation – A Blueprint for NEPA Document Content

Requested by:

American Association of State Highway
and Transportation Officials (AASHTO)

Standing Committee on the Environment

Prepared by:

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

January, 2005

The information contained in this report was prepared as part of NCHRP Project 25-25, Task 1, National Cooperative Highway Research Program, Transportation Research Board.

Acknowledgements

This study was requested by the American Association of State Highway and Transportation Officials (AASHTO), and conducted as part of the National Cooperative Highway Research Program (NCHRP) Project 25-25 . The NCHRP is supported by annual voluntary contributions from the state Departments of Transportation. Project 25-25 is intended to fund quick response studies on behalf of the AASHTO Standing Committee on the Environment. The principal investigator for the study was Joe Crossett of TransTech Management Inc. Hal Kassoff and Lisa Zeimer (Parsons Brinckerhoff) provided extensive comments and contributions to the content and direction of the report.

Meg Cederoth (Parsons Brinckerhoff) provided research support. William Malley (Akin, Gump, Strauss, Hauer, & Feld, LLP) contributed a special chapter on legal sufficiency issues, as well as overall comments on the report.

The work was guided by a task group chaired by Tim Hill which included Andrea Stevenson, Susan C. Swartz, Kathy Ames, Ned Hurle, and Dianna Noble. The project was managed by Christopher Hedges, NCHRP Senior Program Officer.

Disclaimer

Table of Contents

1.0. Introduction and Overview of Findings

1.1. Research Objective

Under the National Environmental Policy Act (NEPA), state departments of transportation (DOTs) invest considerable time, resources, and talent in compiling detailed information about environmental issues associated with federally funded projects and actions. The resulting documents are needed to guide key decisions about project options. Participants in all aspects of the NEPA process recognize, however, that managing the content of documents is often challenging.

Federal NEPA guidance and regulations continue to grow in complexity and the time and cost incurred in preparing large environmental documents have grown as well. The length and complexity of environmental documents may, in fact, deter some from reading and comprehending them, which is antithetical to their very purpose. In addition, project delivery timeframes and overall project costs may be adversely affected by the increased time and effort involved with NEPA document content.

AASHTO's Standing Committee on Environment (SCOE), comprised of the state DOTs, has sought guidance and strategies for creating Environmental Impact Statements (EISs) and Environmental Assessments (EAs) that are clearer and more concise and that support timely and effective decision-making. The research objective of this project, as identified in the original NCHRP 25-25 (Task 1) Scope of Work is to:

> *"Identify best practices about the amount of data, detail, and documentation needed to support Environmental Assessment or Environmental Impact Statement documents prepared under NEPA for major transportation projects."*

The research team's efforts have identified a range of effective content- and format-related practices, which appear to have widespread applicability and that have been tested in individual NEPA documents. This report reviews these documents and synthesizes the findings into suggested techniques as well as a possible "Blueprint" for creating improved NEPA documents.

1.2. Research Methodology

The research methodology for this project focused on identifying exemplary approaches in the form and content of NEPA documents for managing the volume of data and level of detail, for clarity in the quality of writing and graphic presentation, and for the way in which they "tell the story" in an easy-to-follow and engaging manner. Three components form the basis of the research methodology:

- **Interviews with Experienced NEPA Practitioners in Transportation and Resource Agencies.** The team interviewed 30 federal- and state-level practitioners

involved in NEPA document preparation and review including Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) headquarters staff, FHWA resource center legal services staff, federal resource agency staff (including personnel at the Environmental Protection Agency (EPA), Army Corps of Engineers (COE), and Fish and Wildlife Service (FWS)), as well as staff from several state DOTs. Interviews with federal-level staff focused on identifying exemplary practices from among the states, while interviews with state-level staff were used to gather information on projects for which environmental documents contained exemplary environmental practices. Collectively, the interviews offered a snapshot of best practices based on the views of a diverse group of experienced practitioners.

- **Electronic and Print Information Requests to State-level Practitioners.** The team's contacts with individual practitioners were supported by electronic and print communication to request information on innovative NEPA document form and content. This included a formal email request to AASHTO Standing Committee on Environment (SCOE) members from AASHTO's Director of Environmental Programs, an informal request for suggestions posted on the FHWA's "re:NEPA" electronic discussion board, and a verbal as well as a printed request at the SCOE annual meeting in Snowbird, Utah in 2004.

- **Review of NEPA Documents for Selected Transit, Rail, and Highway Projects.** Individual documents were obtained from several sources, including contacts at state DOTs and from the libraries of EIS documents kept by FHWA and FTA headquarters staffs to which the research team had free access. The team reviewed numerous documents from these libraries using simple screening criteria (such as document length, use of graphics, etc.) to identify exemplary characteristics. Ten NEPA documents were selected for a more detailed review.

In parallel with this research, AASHTO, along with the American Council of Engineering Companies (ACEC) and FHWA are engaged in an effort to improve the quality of environmental documents. The results of the recent AASHTO-ACEC-FHWA survey and related workshop were considered in this research. Additionally, it is now a goal of this research to contribute to this effort, which is expected to be ongoing in 2005 and beyond.

1.3. Overview of Report

According to practitioners interviewed for this project, and substantiated by this research, few NEPA documents stand out in their totality in offering exemplary approaches for form and content. In fact, interviewees had trouble identifying a single document that they felt merited a "best practices" designation in all aspects.

As many practitioners explained during the interviews, while the detail of each document is project-specific, most are actually very similar in overall style and content. Several practitioners emphasized that concerns about legal sufficiency of NEPA documents often cause agencies to err on the side of caution in meeting prescribed formats and in deciding what information to include in their documents. In this environment, practitioners say,

NEPA document issues such as format, content, length, organization, and 'readability' may take a backseat to the perceived safety of following a standardized approach. This is despite expressions in key regulations and guidance from the Council on Environmental Quality (CEQ) and FHWA, which emphasize brevity and relevance in NEPA document content. The CEQ's regulations, for example, state that an EIS shall normally be less than 150 pages, while FHWA's *Technical Advisory* states that "environmental documents should be concise, clear, and to the point."

Chapter 2, "Summary of Research Results" includes a brief summary of salient comments gathered in interviews and concise profiles of ten NEPA documents that feature best practices in the amount of data, detail, or documentation needed to support EA or EIS documents. Most of the documents identified include one or more sections that are considered exemplary. While none individually can be said to represent the overall model document that virtually any experienced practitioner would cite as being "ideal" in all aspects, taken collectively as a group they do reflect a wide array of excellent practices that are reported in Chapter 3. Also included in Chapter 2 is a discussion of the results to date of the ongoing AASHTO-ACEC-FHWA initiative to improve the quality of environmental documents.

Based on the interviews conducted, input from practitioners, and documents reviewed, this report synthesizes best practices into recommended techniques for improving NEPA documents (Chapter 3) and a potential Blueprint for NEPA document content that builds upon current approaches (Chapter 4).

Chapter 3, "Techniques for Improving NEPA Documents" offers a menu of techniques applicable to all document preparers for improving NEPA documents. The recommended techniques address:

- Organization and format;
- Visual aspects; and
- Writing style.

Chapter 4, "Blueprint for Better NEPA Document Content" weaves together the lessons learned from individual practitioners and from individual documents to offer a framework intended to improve NEPA documents. The Blueprint also is intended to stimulate interest and thinking among resource agencies and DOTs to find new and different ways to create clearer, more concise NEPA documents. It offers project sponsors a more coherent approach that "tells the story" through improved organization and content. The Blueprint includes three core components – Summary, Main Body, and Appendices/Technical Reports. The Main Body is further divided into six chapters:

1. Purpose and Need
2. Alternatives
3. Environmental Resources, Impacts, and Mitigation

4. Public Comments and Agency Coordination
5. Section 4(f) Chapter (if needed)
6. Comparison and Selection of Alternatives

Chapter 5, "Legal Sufficiency Considerations" gives a brief overview of the legal sufficiency issues that must be taken into account when considering ways to improve the content of NEPA documents. This chapter emphasizes that efforts to improve the readability of NEPA documents may actually enhance the legal defensibility of those documents.

Chapter 6, "Conclusions" reinforces the research findings and recommendations.

For convenience and consistency, throughout the report, when referring to environmental documents, most often this means draft and final environmental impact statements. Most of the research findings and recommendations, however, will apply in some form to other environmental documents that may be required. The underlying principles remain the same.

2.0. Summary of Research Results

The foundation for this report is information gathered in 1) a set of interviews with transportation and environmental practitioners involved in the preparation and/or review of NEPA documents and 2) a review of selected documents with content that merits special attention. The results of the research team's research are summarized in this chapter. Also included are the results of the AASHTO-ACEC-FHWA survey and workshop on problems with the quality of environmental documents.

2.1. Interviews with Selected Practitioners

Practitioners, including FHWA and FTA headquarters staff, representatives of key federal resources agencies, FHWA resource center legal services staff, and state DOT staff (see Appendix A for full listing) were interviewed to identify specific NEPA documents that offer exemplary best practices and to gather general observations about the topic area. This section describes the views and key concerns expressed by practitioners during the interviews.

No One-Stop-Shop Exists for Identifying "Best Practices." Practitioners interviewed as part of this project all expressed enthusiasm for the objectives embodied in this research, yet they struggled to identify NEPA documents that reflect best practices. Federal practitioners based in Washington D.C. observe that they often see or hear about documents only if they have problems that "require headquarters attention." State-level practitioners reported on their own experiences, but often indicated they are not familiar with other states' documents. Legal staff in the FHWA regional offices are perhaps best positioned to comment on the quality of content and format in NEPA documents since they see a complete array of documents prepared by multiple states, yet even these sources were hard pressed to identify individual documents that in their totality represent best practices.

While the single, overall, exemplary model document apparently is yet to be produced, one document in particular – the very recent Washington State DOT's Alaskan Way Draft Environmental Impact Statement (DEIS) – deserves recognition as perhaps the most ambitious effort to make a NEPA document more accessible to the general public.

Those who managed and executed the production of the Alaskan Way DEIS have clearly set out to reinvent the form and content of environmental documents. They have done this with an emphasis on communicating with lay citizens as opposed to resorting to the heretofore virtually standardized framework expected by review and resource agencies. In doing so, the document has received accolades from the press, politicians, and many NEPA practitioners who have praised the improved organization, the excellent use of graphics, and the ease of reading. The document also has drawn criticism, particularly from practitioners who argue that the dramatically different form and content hinder the work of reviewers who are

used to a different format and organizing structure, and may well be jeopardizing the legal sufficiency of the document.

One thing about the Alaskan Way DEIS document is clear. By its issuance in the midst of this research, it has stimulated increased interest in the subject of the form, content, and overall quality of environmental documents in a way that complements the underlying objectives of this effort.

Data Collection Versus Analysis. Interview participants frequently suggested that demonstrating legal sufficiency with NEPA has encouraged DOTs to prepare longer documents than might otherwise be necessary with more data on Purpose and Need, alternatives, the affected environment, and environmental consequences. What is often lacking, according to many practitioners, is a carefully documented analysis of the data and other information that draws conclusions about choices that are made, and in doing so reflects the thought processes and logic that are the basis for those conclusions and choices. They point out that data collection is easier than analysis, and that inclusion of data even with limited relevance may be seen by some as contributing to the appearance of a comprehensive analysis, when in fact it only clutters the document.

Despite the concern expressed by many practitioners about too much data in EIS documents and not enough analysis, no simple fixes or general rules of thumb emerged from the interviews. Support is widespread for more aggressive use of separable technical reports or references as a way to limit the amount of data in what this report refers to as the "Main Body" of NEPA documents. Some also noted, however, that shorter, more effectively organized documents are not necessarily less time consuming for DOTs to prepare, particularly if information is simply relocated to an appendix. Most agreed, however, that even if well-organized and compact documents take as long, or longer to prepare, they may well contribute to expediting overall project delivery.

The Importance of Telling "the Project Story." Many interview participants think that preparing NEPA documents with more emphasis on content that "tells the project story" would enhance the NEPA process. The chief hallmark of a story-oriented NEPA document approach identified by practitioners was the presence of a clear and logical structure that makes sense to lay readers, and which explains why the project is needed, what options are feasible, how they affect the environment, and what choices make the most sense. Integral to this approach are better writing and more effective use of visual techniques to support the text in making key points. The Washington State DOT's Alaskan Way DEIS was frequently cited for its ability to tell a story. Some practitioners cautioned that the differences between the needs of legal/technical audiences and lay/public audiences hinder efforts to produce more readable documents. Others suggested that the line between the two audiences is actually thin, and that a reader-friendly

document is not at all inconsistent with the spirit and letter of NEPA law and CEQ regulation.

Approaches to Affected Environment and Environmental Consequences Sections can be Improved. Several practitioners noted opportunities for improving the "Affected Environment" and "Environmental Consequences" components of NEPA documents:

- **Duplication between sections.** These two sections are highly correlated. An understanding of the affected environment is the lead-in to the discussion of impacts. Some noted that in most instances these two sections can be combined to provide a more manageable document and reduce duplication. Most FTA-sponsored documents do, in fact, combine these sections. With a combined section, readers do not have to flip back and forth between sections to get a complete picture and some duplicative text may be eliminated.
- **Recognize scale of impacts in narrative.** Some practitioners criticized traditional approaches that apply rote discussion of individual impacts without much regard to their significance. Document preparers often seek to demonstrate compliance with formulaic checklists drawn from CEQ or FHWA materials rather than apply creative thinking that gives priority to those issues that have highest relevance for the specific project under review and demonstrates a big picture perspective of environmental impacts.
- **Include discussion of benefits.** Some practitioners suggested that NEPA documents should incorporate discussion of project benefits as part of a complete project story. The NEPA format encourages a one-sided explanation of projects that focuses on adverse impacts, while decisions are of necessity made on the basis of information that weighs impacts against benefits as well as costs.

The Importance of Effective Visuals and Clear Writing. Practitioners stated frequently that good visuals (photographs, sketches, diagrams, maps, graphs, and tables, etc.) and clear writing style enhance document readability. Some noted the need to ensure that visuals are not only clear but relevant (not merely decorative); they should be placed adjacent to and referred by the text that provides the context and reinforces the key points that are being illustrated. Some practitioners mentioned that "visualization" techniques, which demonstrate the visual impact of alternatives, should reduce the amount of text needed to explain options. Interviewees universally supported encouragement of better writing practices as an immediate strategy for improving document quality. They cited the need for clearer language, less jargon, consistent styles and formats, and the need to be succinct.

Summaries are Useful. Most NEPA documents are lengthy and many of the practitioners interviewed noted the importance of providing an informative and useful Summary. The Summary can be helpful for readers interested in gaining an overall understanding for a project without having to pore through volumes of information.

The general findings from the interviews confirm the value of identifying and disseminating best practices. They suggest that prevailing NEPA document content and format practices offer room for improvement, particularly in areas such as data analysis, communicating the story, use of visuals, effective summaries, clear and consistent writing, and incorporating contextual information in appendices. These best practices are oriented toward more effective communication of the information contained in environmental documents and therefore offer potential for improving overall project decision-making and project delivery. Preparing more concise and more effective documents may not take less time in and of itself because it requires better planning, more thought to organization and format, careful layout of graphics and editing of text, and greater attention to analyses and articulating the logic behind conclusions that are drawn. Improved documents, however, may well result in a more efficient and possibly a faster review process characterized by fewer misunderstandings and fewer requests for additional clarification.

2.2. Profiles of Selected NEPA Documents

The interviews conducted for this research led to identification of particularly effective NEPA documents that are summarized in this section. Each of the ten documents profiled in this section is highlighted because practitioners believe it offers an example of one or more "best practices."[1] Compared to typical NEPA documents, these documents are not necessarily shorter, nor may they be quicker to prepare. They are, however, clearer, and according to those who prepared and/or reviewed them, they have helped improve decision-making and project delivery. The documents profiled represent a range of project types, including transit, rail, and highway projects from a variety of geographic regions. They demonstrate how "standards" for content authored by FHWA and CEQ actually offer flexibility to improve NEPA documents. The ten profiled documents are:

- Alaskan Way Viaduct and Seawall Replacement Project (Washington State DOT)
- Mon/Fayette Transportation Project, PA Route 51 to I-376 (Pennsylvania Turnpike Commission)
- Route Post 13 (I-15) Interchange (Utah DOT)
- Southern Corridor (I-15) (Utah DOT)
- Vancouver Rail Project (Washington State DOT)
- Fulton Street Transit Center (New York Metropolitan Transit Authority)
- US 93 Somers to Whitefish (Montana DOT)
- I-69 Evansville to Indianapolis (Indiana DOT)
- Mid-Currituck Sound Bridge (North Carolina DOT)
- Reno Railroad Corridor (Nevada DOT)

[1] Disclosure: Parsons Brinckerhoff led preparation of the Alaskan Way Viaduct DEIS and the Mid-Currituck Sound Bridge DEIS. William Malley of Akin, Gump, Strauss, Hauer, and Feld LLP worked with Indiana DOT on the preparation of the I-69 Tier 1 FEIS.

Each profile includes basic information about the project under consideration, the status of the NEPA document, who prepared it and when, and a series of bullet points that explain aspects of the documents considered as part of this study. Each document has strengths and weaknesses, yet they all include elements that make them stand out from NEPA documents routinely produced by DOTs.

Alaskan Way Viaduct and Seawall Replacement; Seattle, Washington
Draft Environmental Impact Statement, March 2004
Sponsors: USDOT (FHWA), City of Seattle, Washington State DOT (Preparer)
www.wsdot.wa.gov/projects/viaduct

Project and DEIS Description. The Alaskan Way Viaduct (SR-99) is a major waterfront transportation corridor that carries 20 to 25 percent of traffic passing through downtown Seattle. The Viaduct is immediately adjacent to the Alaskan Way Seawall that protects the shoreline and holds the Viaduct's foundation in place along Seattle's waterfront. Both the Viaduct and the Seawall are nearing the end of their useful lives; in particular, safety and connectivity of the State's transportation system are threatened by the vulnerability of the Viaduct and Seawall to seismic damage, which in fact occurred during the last earthquake in the area. The proposed project will replace the aging Seawall and Viaduct with earthquake resistant structures that meet modern design and construction standards, at a cost of between $3 billion and $4 billion depending on the alternative selected. The project corridor encompasses densely developed land uses in an urban setting.

The DEIS includes five major alternatives: rebuilding the existing structures, an aerial structure, a tunnel, a bypass tunnel, and a surface street. The DEIS is available as a CD-ROM, a printed document, and on the web. At the time of writing, the period for public comment on the DEIS had been closed and a Final Environmental Impact Statement (FEIS) is being prepared by WSDOT.

Document Strengths. The Alaskan Way DEIS is the product of a commitment by WSDOT's staff and leadership to rethink the content of NEPA documents that the agency produces. It has received considerable national attention, in part because its content is so different from other NEPA documents. Key strengths of the DEIS include:

- **Careful Attention to Writing Style.** Preparers of the DEIS have used various techniques to improve the clarity of the document. A question-and-answer format for section headings describes alternatives and their impacts in an understandable manner, e.g. *how do effects to parks, recreation, and open space compare among alternatives?* Use of engineering jargon that is not readily understood by a lay audience is avoided. The narrative text of the document is carefully edited to ensure consistent phrasing, tone, continuity, and consistency throughout the document. Most importantly, the document is structured to give a coherent explanation of why the project is needed, what the characteristics of reasonable project alternatives are, and how they affect the environment. One observer noted that after reading the document he had no question in his mind about the compelling case for the project, what

alternatives were being considered, and what were the anticipated effects of each alternative.

Critics of the document have questioned the unusual organization. For example, the formal Purpose and Need section is at the end of the document, but at the beginning is a section on why the project is important. Questions have been raised by some about the legal sufficiency of the document, though a clear case on this point has not yet been made.

- **Good Use of Visual Materials.** Throughout the DEIS, graphics and color are used to improve the clarity of the document, particularly with regard to comparison of alternatives. Color photographs illustrate key points, such as earthquake damage to roadway structures and traffic congestion. Simple diagrams of alternatives help translate engineering concepts and readable maps clearly illustrate their locations. Photographs that apply visual simulation techniques are used to demonstrate how alternatives might look if constructed. Tables and charts help to summarize key issues.

- **Technical Details are Kept Separate.** To keep the DEIS to a manageable length, a CD-ROM is included with paper copies of the main document. It contains more than 320 megabytes of technical information, much of which consists of detailed studies of various environmental impacts. Readers are directed to the CD if they seek more detailed information on a particular topic, while the actual DEIS is limited to 168 pages.

- **An Effective Summary Document.** The DEIS includes a separate Summary document that is more brief than the full DEIS, but provides an overview of each alternative and their relative impacts.

WSDOT management is pleased with the results. Starting with Alaskan Way, the Department has developed a style guide for its NEPA document preparers to use.

Mon/Fayette Transportation Project, PA Route 51 to I-376; Pennsylvania
Draft Environmental Impact Statement, May 2002
Sponsors: USDOT (FHWA), PA Turnpike Commission (PTC) (Preparer), PennDOT

Project and DEIS Description. The proposed project involves construction of a four-lane, limited-access, tolled expressway in the southeastern portion of the Pittsburgh metropolitan region in the Monongahela River Valley. It is the last of four related projects that together form a 65-mile north-south corridor between Pittsburgh, Pennsylvania and Morgantown, West Virginia in southwestern Pennsylvania. The project is intended to reduce congestion and improve mobility, access, and safety in an economically depressed region of the State with poor access to transportation, at a cost of about $1.9 billion. The project passes through built-up urban and suburban areas along a river valley.

The DEIS investigates three alternatives in detail. These include a no-build alternative, a north shore route, and a south shore route. Each alternative includes several design options along portions of its proposed route. The DEIS for the project is available on a CD-ROM that enables readers to move through the document easily. It makes extensive use of graphics and tables. The Mon/Fayette DEIS closely follows CEQ's format, however, it includes a stand-alone final section on Conclusions and Recommendations that helps readers tie together the information provided in the DEIS. Discussion of Affected Environment takes place earlier in the document than usual, immediately following the Purpose and Need section. At the time of writing, the project is between an FEIS and a Record of Decision.

Document Strengths. The Mon/Fayette DEIS is an attempt by PTC/PennDOT to produce a reader-friendly NEPA document that guides a non-technical audience through a large amount of material prepared as part of the NEPA process. Strategies used to achieve this goal include:

- **Easy to Navigate CD-ROM Format.** The full DEIS is available on a CD-ROM in Adobe PDF format, greatly improving portability of the document, which is over 700 pages long. An electronic table of contents eases navigation between major sections.

- **Good Use of Visual Materials.** Throughout the DEIS, graphics and color are used to improve the clarity of the document. Detailed 1 to 200 scale color maps provide comprehensive information about alternatives and potential impacts. For example, census tract data is mapped using color shading to provide an indication of environmental justice impacts. In selected instances, diagrams are used to show key engineering concepts. Photographs and illustrations are used to provide visual simulations of how key elements of alternatives might look if constructed. Tables are used to summarize key impacts by alternative.

- **Technical Details are Kept Separate.** The Mon/Fayette project is set in a largely developed river valley corridor and impacts are therefore potentially significant. Extensive studies, such as Section 106 reports, were required to achieve a full understanding of all potential impacts. Pertinent findings of these studies are reported in the DEIS and text boxes direct readers to full copies of technical reports and other resources that are maintained in a project office where they are available for review on request. This helped keep the document to a reasonable length.

- **New Project Overview and Conclusions Sections.** The Mon/Fayette DEIS includes a Project Overview section and a Conclusions and Recommendations section. The Project Overview helps the reader understand the project context. The Conclusions section provides a recommended preferred alternative for consideration and explains why this alternative is preferable. This section helps the reader understand the alternatives and environmental consequences.

Reference Post 13 Interchange and City Road; Washington City, Utah
Final Environmental Impact Statement, April 2003
Sponsors: USDOT (FHWA), Utah DOT (Preparer)

Project and FEIS Description. The proposed Reference Post (RP) 13 project consists of a new interchange on I-15 in Washington City, Utah; about 13 miles northeast of the Arizona border. Washington City is a fast growing community in the southwestern corner of the State. Planning for a second interchange on I-15 to service the main developed and future growth areas of Washington City has been part of the City's Land Use Master Plan since 1986. The project would include a one-mile road to connect the interchange to existing arterials south of I-15. A pedestrian and bicycle trail might be developed by the City and incorporated into the project.

At present, the only access to and from Washington City from I-15 is a single interchange at RP 10. As Washington City's population has grown, the street network surrounding RP 10 is becoming more congested and unsafe during peak hours. The primary purpose of the RP 13 project is to enhance mobility throughout the City by distributing traffic more evenly on the road network with improved access to areas of existing and planned development in the east and south parts of Washington City according to the Land Use Master Plan. In addition, the project should relieve congestion delays and improve safety at the RP 10 interchange and adjacent intersections.

The FEIS considers two alternatives, the no-build alternative and the preferred alternative, which is a "diamond" interchange. A major concern during preparation of the FEIS was the impact of new development encouraged by the creation of better access to I-15.

Document Strengths. Practitioners laud the RP 13 FEIS for its compactness; the entire document is about 160 pages long. Despite its brevity, the FEIS addresses important secondary and cumulative land use impacts effectively. Key features include:

- **An Effective Summary Document.** The FEIS includes a four page Summary that presents an overview of each alternative and their relative impacts. This Summary provides the reader with a succinct understanding of the advantages and disadvantages of the preferred alternative and the no-build alternative.

- **A Clear Focus on Critical Issues.** Cumulative and secondary impacts are a major concern on this project, which is located in a portion of the State experiencing rapid population growth. UDOT used several techniques to focus the FEIS around discussion of the topic without lengthening the document.

- **Discussion of Advantages and Disadvantages of Alternatives.** The FEIS includes a concise description of impacts by alternative in a table format, and includes a bullet list format narrative section on the advantages and disadvantages of each alternative.

- **Inclusion of a *References and Works Cited* Section.** The entire RP 13 FEIS is approximately 160 pages long. Incorporating a considerable amount of material by reference, rather than including it in the document minimizes the document length. A five-page section lists all references cited in the document.

Southern Corridor; I-15 at RP 2, St. George to SR 9; Hurricane, Utah
Draft Environmental Impact Statement, March 2003
Sponsors: USDOT (FHWA), Utah DOT (Preparer)

Project and DEIS Description. The proposed Southern Corridor would be a four-lane, limited-access highway beginning at Interstate 15 (I-15) about three miles north of the Arizona border near the southwest end of St. George and connecting with State Route 9 (SR 9) near Hurricane. The entire project is located within Washington County, Utah. Depending on the alternative selected, the highway would be between 20 and 26 miles in length. A multiple-use trail for pedestrians, bicyclists, and equestrians would parallel the highway. The primary purpose of the Southern Corridor is to provide a regional transportation facility between St. George, Washington City, and Hurricane that would complement local land use plans.

For the DEIS, three alternatives were developed in addition to the No-Build Alternative. The three alternatives are identical from I-15 to an area about 4 miles south of SR 9. At this point, the alternatives connect to SR 9 at three different locations. Each of these locations was selected based on planned development and recreation facilities.

Document Strengths. The Southern Corridor DEIS is short, but addresses controversial issues clearly. Key features include:

- ***Smart Growth* Chapter Highlights Key Issue.** Utah DOT includes a separate chapter on secondary and cumulative impacts. The proposed project passes through an area of the State that is growing rapidly and land development issues are a major concern for the region as a whole. This separate chapter includes concise discussion, graphically clear tables, and a bullet point list of mitigation measures.

Vancouver, Washington Rail Project, Washington State
Final Environmental Impact Statement, March 2003
Sponsors: USDOT (FHWA), Washington State DOT (Preparer)
www.wsdot.wa.gov/projects/PNWRC_Vancouver

Project and FEIS Description. Washington State is incrementally upgrading its Amtrak Cascades intercity passenger rail service along the Pacific Northwest Rail Corridor. The purpose of the Vancouver Rail Project is to provide safe and reliable passenger rail service without degrading freight operations. The first step towards increasing service reliability is to eliminate as many conflicts between passenger and freight trains as possible. Eliminating pedestrian and vehicular traffic across the railroad tracks would provide a safer environment for rail passengers, pedestrians, and motorists. Freight trains often stack up in the Vancouver rail yard area and block movement of faster moving

passenger trains. By simply clearing congestion in and around the rail yard, passenger train reliability would increase and potential vehicular/train conflicts would decrease.

The Vancouver rail yard serves as a major hub for freight and passenger rail traffic, with more than 100 trains passing through each day. Four specific areas of conflict need to be resolved: crew changes, bridge openings, yard activities, and grade crossings. Construction of double bypass tracks in the Vancouver rail yard would allow more fluid movement of passenger and freight trains. A vehicle/pedestrian overpass would enhance safety at this crossing. This project will reduce congestion and help Amtrak's on-time performance.

The FEIS considers two major build alternatives and a no build action.

Document Strengths. The Vancouver Rail Project FEIS places a strong emphasis on reader friendliness. Document layout is clear and compact, and easy to understand. Key features include:

- **Separate Summary.** A manageable separate Summary is provided for readers who do not wish to read the full FEIS document. The Summary incorporates graphics, maps and pictures to help communicate information about the project and alternatives under consideration.

- **Reader-Friendly Editing.** The authors of the Vancouver Rail Project FEIS placed a heavy emphasis on producing a document that reads well. In particular, they relied on a style guide to ensure a "single author" voice for the document. Headings are written in the form of questions, e.g. *What is the purpose of the Vancouver Rail Project?* and *Why do we need the Vancouver Rail Project?*

- **Good Use of Visual Materials.** Maps used in the document to depict the project location and alternatives are simple to understand. Tables are used to succinctly summarize impacts of alternatives.

- **Technical Details are Kept Separate.** To keep the FEIS to a manageable length, a CD-ROM that contains technical information, much of which includes detailed studies of various environmental impacts, is included with paper copies of the main document. Readers are directed to the CD if they seek more detailed information on a particular topic or resource.

Fulton Street Transit Center; New York City, New York
Draft Environmental Impact Statement, May 2004
Sponsors: USDOT (FTA), Metropolitan Transportation Authority (MTA), New York City Transit (NYCT)
www.mta.nyc.ny.us/capconstr/fstc/deis.htm

Project and DEIS Description. The proposed project, located in New York City would improve access to Lower Manhattan. The Fulton Street Transit Center (FSTC) is one of

three priority transit projects that address urgently needed transit repairs in Lower Manhattan following the New York terrorist attacks of 2001, and also address longer-term inadequacies in transit system capacity. The FSTC was listed as a pilot project for a federal environmental streamlining initiative, which has accelerated environmental reviews and expedited rebuilding of the transit system.

The DEIS examines construction of a rehabilitated, reconfigured, and enhanced multi-level, street-level and subsurface station complex in Lower Manhattan that would serve NYCT subway lines. The project's components include a new street level entrance, rehabilitation of the station, a subsurface pedestrian passageway, improvements to mezzanine access and platforms, a pedestrian and passenger connection between two lines, and improved street access. The project potentially impacts the Corbin Building, which is listed on the National Historic Register.

Document Strengths. Despite great pressure to produce a DEIS for a complicated project in a truncated timeframe, the FSTC DEIS is a highly readable document. Some of the features that enhance its readability include:

- **Use of Visual Materials to Support Purpose and Need.** The major elements of the FSTC Purpose and Need section are succinctly summarized in a one-page color graphic. (See Figure 2.) At a glance, the reader can see how platform overcrowding and other factors are creating a transportation need in Lower Manhattan. The use of images to portray Purpose and Need is an effective communications approach that helps the reader understand the need for this project without a lot of text.

- **Special Analysis Framework Chapter in DEIS.** The 2001 terrorist attacks on New York significantly complicated the methodology for forecasting project-level impacts in the FSTC DEIS. Long-term development trends in Lower Manhattan are uncertain, with clear potential for big jumps in demand for transit in the mid- to long-term as commercial and residential redevelopment of the World Trade Center site takes place. The authors of the DEIS include a special section describing how this unique situation is addressed in the DEIS. This upfront discussion of a complex and potentially controversial methodology helps the reader to clearly understand the parameters of the analysis and the decision.

US Highway 93 Somers to Whitefish, Montana
Final Environmental Impact Statement, September 1994
Sponsors: USDOT (FHWA), Montana DOT

Project and FEIS Description. US Highway 93 extends north of Missoula, Montana connecting Montana's two fastest growing areas and bisecting the Flathead Indian Reservation of the Confederated Salish and Kootenai Tribes. The alignment crosses a Native American Tribal reservation and habitat for listed and sensitive carnivore and fish species. US Highway 93 has been targeted for capacity improvements and reconstruction improvements for almost a decade, but concerns about the number of lanes, other design attributes, wildlife crossing issues, wetlands, and cultural resources have delayed the

project. A collaborative process involving Montana Department of Transportation (MDOT), FHWA, the Confederated Salish and Kootenai tribes of the Flathead Nation, resource agencies, tribes, watershed groups, and local governments allowed four separate transportation improvements to move forward, where impasse had formerly prevailed. MDOT's willingness to invest in wildlife crossings was a critical factor in coming to agreement. Design features will be utilized to decrease the amount of wildlife mortality caused by traffic on the highway, as well as to mitigate for the habitat loss, degradation, and fragmentation that currently exists.

Document Strengths. The US 93 Somers to Whitefish project is the only environmental streamlining pilot project that was credited as having successfully engaged the relevant project partners to achieve consensus regarding major issues. It is cited as a model for project delivery and stewardship. The FEIS illustrates an effective, yet succinct approach to discussing sensitive topics that have potential to derail a project. It achieves this in the following manner:

- **Contains an Effective Summary.** The US-93 FEIS includes a very short Summary that contains only relevant information and deals specifically with key areas of controversy, such as impacts to wildlife.

- **Uses Visual Cues to Guide Readers.** The US-93 FEIS clearly distinguishes the changes that have taken place between DEIS and FEIS in summary boxes at the beginning of each section.

- **Major Issues.** To facilitate understanding of key issues, they are described, their impact on a given resource is discussed, and a description of the mitigation measures are provided in a discrete section, rather than distributed across chapters. In addition, a new section was added to the FEIS that dealt with specific concerns regarding the tourism impacts of the new road, the appropriateness of potential development for the area, and what the secondary and cumulative impact of the project would be. As part of the entire US93 corridor, this project was particularly praised as the only environmental streamlining pilot project that successfully engaged the relevant project partners to achieve consensus regarding major issues. The project is sited as a model for project delivery and environmental stewardship.

I-69 Evansville to Indianapolis, Indiana
Final Tier 1 Environmental Impact Statement, December 2003
Sponsors: USDOT (FHWA), Indiana DOT
www.deis.i69indyevn.org/FEIS/index.html

Project and FEIS Description. This Tier 1 FEIS investigates multiple potential alignments for a new north-south interstate highway bisecting Indiana and connecting Evansville in the southwest corner of the State with the existing terminus of I-69 in Indianapolis. The project is part of a multi-state initiative that seeks to connect Canada, the United States, and Mexico via a major 2,100-mile highway that crosses through Michigan, Indiana, Kentucky, Tennessee, Mississippi, Arkansas, Louisiana, and Texas.

The corridor was designated by Congress in the Intermodal Surface Transportation Act of 1991 (ISTEA). Goals of the Indiana component of the I-69 initiative include strengthening the transportation network and improving economic development in southwest Indiana.

Document Strengths. The I-69 Evansville to Indianapolis Tier 1 FEIS illustrates how a complex and potentially overwhelming project with multiple impacts on multiple potential alignments over a very large study area can be analyzed in a relatively succinct manner. Key features of the document include:

- **Focused Purpose and Need Section.** The I-69 FEIS states the project Purpose and Need up front and succinctly in the opening paragraphs of the Purpose and Need chapter, which explains 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 the stated Purpose and Need.

- **Uses Visual Cues to Guide Readers.** The I-69 FEIS uses a variety of techniques to guide readers through the document. Examples of these techniques include:

  - ***Chapter Overviews.*** At the beginning of each chapter, a half page section gives an overview of its content.

  - ***Changes From DEIS to FEIS.*** Changes from the DEIS are also explained briefly at the beginning of each chapter.

  - ***Color and Layout.*** Color and formatting are used to help denote different areas and sections of the document.

- **Effective Alternatives Chapter.** The Alternatives chapter of the I-69 FEIS explains in detail how INDOT developed 14 alternatives and screened them using specified criteria to identify five alternatives to be carried forward for detailed study. The screening process establishes quantitative rankings of the degree to which alternatives address performance goals established in the Purpose and Need. These "scores" are highlighted at the beginning of discussion of each alternative, helping provide a quick overall summary of each alternative and how they relate to each other.

- **Use of Summary Tables.** Throughout the I-69 FEIS, summary tables are used to convey information quickly and succinctly. In the Summary, they are used to convey information on a variety of topics, including how and why data were collected, as well as alternatives and their impacts. The *Comparison of Alternatives* section begins with a summary table that describes key performance measures and environmental impacts for each of five alternatives studied in detail.

- **Separate *Comparison of Alternatives* Section.** At the end of the I-69 FEIS, a special section called "Comparison of Alternatives" provides a description of the impacts, performance, and cost of alternatives relative to other alternatives. It brings together information presented previously in the document in a concise and coherent manner that gives a clear indication of the advantages and disadvantages of each alternative.

Mid-Currituck Sound Bridge; North Carolina
Draft Environmental Impact Statement, January 1998
Sponsors: USDOT (FHWA), North Carolina DOT

Project and DEIS Description. The proposed project consists of the construction of a bridge approximately 5 miles long and associated approach roads across Currituck Sound in Currituck County, North Carolina. The bridge would connect the mainland with North Carolina's Outer Banks region, which is a poplar vacation destination. Six corridor alternatives were considered reasonable and feasible and met the Purpose and Need of the project. The project was estimated to cost between $70.5 million and $87.2 million depending on the exact alignment selected. The primary purpose of the bridge would be to provide a more direct route between Currituck County's Outer Banks and its mainland that reduces travel times and improves the efficiency of public service provision (such as access to schools and medical care) for the Outer Banks. Interestingly, since publication of the DEIS in 1998, NEPA planning has continued to evolve and the community has yet to agree on a preferred solution for this project.

Document Strengths. The document was an attempt by the North Carolina Department of Transportation (NCDOT) to produce a readable document, easily understood by a range of audiences, that facilitated decision-making. Some of its features that enhance document content include:

- **Use of Markers to Guide Readers.** The Mid-Currituck Sound DEIS uses frequent and clear headings to guide readers through the document. Sub-headings are generally included for every two or three paragraphs of text, making the document easy to follow. For example, in the Alternatives section, a sequence of headings and sub-headings provides easy identification of each alternative, its potential cost, its potential for environmental impacts, and its ability to meet the project's Purpose and Need.

- **Use of Tables.** The document preparers make extensive use of tables to clearly present data and information. For example, in the Alternatives section, a table is used to facilitate side-by-side comparison of the major differentiating factors for each alternative under consideration. The table uses a simple graphical key to indicate the magnitude of impacts for each alternative in terms of engineering considerations, traffic considerations, and human and natural environmental considerations.

- **Use of Photosimulation.** The Currituck Sound DEIS makes use of photosimulation techniques to demonstrate graphically how alternatives might look if constructed.

Images include aerial photosimulations of the bridge itself as well as approach roads and interchange facilities.

- **Statement of Major Issues.** The Summary section contains a short description of the areas of controversy and how they were addressed in the document, as well as major unresolved issues. Clearly addressing the major issues of the project in the document demonstrates to each concerned stakeholder and agency that their concerns were being considered and addressed, and had been noted in the public record.

Reno Railroad Corridor; Reno, Nevada
Final Environmental Impact Statement, December 2000
Sponsors: USDOT (FHWY), Nevada DOT
http://www.cityofreno.com/gov/retrac/library/

Project and FEIS Description. The Reno Railroad Corridor project consists of grade separation of track in downtown Reno. The project would eliminate at-grade conflicts in central Reno, which would have been exacerbated by increased rail traffic due to the recent merger of the Union Pacific and Southern Pacific Railroads. The purpose of the Reno Railroad Corridor is to reduce both existing and future adverse effects of railroad traffic through the City of Reno. In addition to the No Build Alternative, four build alternatives were considered: Depressed Trainway, Extended Depressed Trainway, Cover-and-Cut Tunnel, and Modified Extended Depressed Trainway. The Modified Extended Depressed Trainway was identified as the preferred alternative. It consists of a fully grade-separated two-track main line railroad corridor, from a point approximately 250 feet west of West Second Street on the west end to approximately 50 feet west of Sutro Street on the east end. The corridor would become a depressed trainway descending at a 1.20 % grade on the west end and ascending at a 1.00 % grade on the east. The length of the corridor is about 12,500 feet. The depressed trainway would be approximately 54 feet wide and 30 feet deep at its greatest point. The cost was estimated at approximately $210 million. A record of decision was recorded in February of 2003.

Document Strengths. The Reno Railroad Corridor FEIS was prepared by a committed group of stakeholders, led by the Nevada DOT. In a short time, they completed a complicated FEIS. Significant features that enhance document content include:

- **Summary Table.** The FEIS includes several graphically simple tables that document issues such as construction and operational impacts and mitigation measures.

  Purpose and Need. The Purpose and Need section for the DEIS is succinctly written and concise. In particular, it summarizes project “Needs,” such as “improve public safety” and “reduce noise and vibration from railroad activity” in a reader-friendly fashion that includes clearly labeled subsections for each need with jargon-free text explanations that are supported by summaries of technical report findings and other data.

2.3. AASHTO-ACEC-FHWA Initiative

AASHTO, ACEC, and FHWA began a joint initiative in the Fall of 2003 to improve the quality of environmental documents. Over the past year, these organizations have conducted an informal survey of AASHTO and ACEC members, held a 1-day workshop, and developed an action plan. Interestingly, in the survey, overly voluminous environmental documents were ranked the leading problem out of 12 problem factors. Also ranking as key problem areas were writing quality, Purpose and Need sections, and analysis of alternatives. The results of the survey, the outcome of the workshop, and a synopsis of the recently developed action plan are included in Appendix C.

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.[2] 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), the Washington State DOT's Alaskan Way DEIS (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).

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.[3] 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

[3] W.C. Sullivan, F.E. Kuo, and M. Prabhu, 1997. *Communicating with Citizens: The Power of Photosimulations and Simple Editing.* Environmental Impact Assessment Review 17: 295-310.

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 deception 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.[4] 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:

[4] For example, *The Elements of Style* (2000, 4th edition). William Strunk Jr. and E.B. White, or *The Chicago Manual of Style* (1993, 14th edition). Chicago University Press.

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.[5] 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[6]

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

Appendix B

NEPA Documents Examined

SR 99: Alaskan Way Viaduct & Seawall Replacement Project DEIS March 2004 WashDOT

US Highway 93 Somers to Whitefish West FEIS and Final Section 4(f). Montana DOT. December 1994

New River Parkway I-64 to Hinton. Raleigh and Summers County WV USDOT/FHWY-WVDOT July 2003

Mon/Fayette Transportation Project. PA RT 51 to I-376. Allegheny County PA DEIS and Section 4(f). January 2004

US 202 Section ES Improvement Project DEIS & 404 Permit Application

I-69 Mississippi River Crossing FEIS MissDOT April 2003

I-90 Two-way transit and HOV operations April 2003. SoundTransit, FHWA, WSDOT

State Highway 45 Southeast from IH35-SH130/US183 FEIS December 2003 TxDOT

Reference Post 13 Interchange and City Road FEIS April 2003

Legacy Parkway FEIS and Final Section 4(f) Section 6(f) June 2000

Mid-Currituck Sound Bridge, DEIS. North Carolina DOT January 1998.

US Route 67 and Illinois Route 336 Macomb Area Study. Illinois DOT. August 2004

US321 Improvements Project, Blowing Rock. DEIS & Section 4(f) evaluation. North Carolina DOT. July 2002.

Regional Rail System. Durham to Raleigh to North Raleigh. FEIS. Triangle Transit Authority. 2002.

I-69 Evansville to Indianapolis. FEIS. Indiana DOT. December 2003

Reno Railroad Corridor. Nevada DOT. December 2000.

Lake County Transportation Improvement Project. DEIS. September 2001. Illinois DOT

South Cushman Street FEIS. Alaska DOT. July 1989.

US Highway 89 Browning to Hudson Bay Divide. Montana DOT. August 2004.

Route 26 Transportation Improvements. S.R. 0026 Section C 02. Centre County, PA. PennDOT July 1995

Southeast Corridor DEIS (Phoenix)

Utah Transit Authority Weber County to Salt Lake City Commuter Rail Project DEIS

North Link Draft SEIS November 2003 (SoundTransit)

Fulton Street Transit Center DEIS May 2004

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

Appendix C

AASHTO-ACEC-FHWA Initiative to Improve the Quality of Environmental Documents

5. Survey on Quality of Environmental Documents

- The survey was developed by a Joint Task Force of AASHTO, ACEC & FHWA in the Fall and Winter of 2003-2004. It was an informal survey, not statistically rigorous, but still indicative of underlying issues and concerns among respondents.

- Question 1 identified the characteristics of the respondents.

- There were 48 AASHTO responses, 26 ACEC responses - - 74 in total

- The composition of AASHTO and ACEC respondent groups was very different
    - The largest group of AASHTO respondents – 31 of 48 – are "reviewers." The next largest category was "other" with 25 respondents, then dropping down to 18 of 48 as project managers. Only 8 and 9 respectively were either analysts or writer/editors.
    - On the other hand, the largest group of ACEC respondents were project managers - - 20 out of 26. Analysts and writers were a close 2nd at 17 each. Only 14 served in the role of reviewer.
    - Clearly the respondents fit the expected profile of consulting firms serving in project management and hands-on production role and client DOTs in review and oversight roles.

- In responding to Question 2 - - "what are the key elements that make a quality environmental document," both groups responded in reasonably high proportions to the choices offered:
    - 96% of AASHTO respondents, the largest percentage, checked (C) - - "analysis relevant to a decision" while 85% of ACEC respondents, that group's second highest percentage checked that category.
    - The highest response checked by ACEC members was (A) "clear, cohesive writing" - - at 88% - - with 90% of AASHTO members, that group's second highest percentage, checking that category.
    - 87% of AASHTO members and 73% of ACEC members checked (E) "Tables and Figures to illustrate comparisons, a bit of a difference there.
    - 75% of AASHTO members checked (B) "Synthesis and conveyance of objective information while 81% of consultant respondents checked that category.
    - Finally, 75% of State DOT respondents checked (D), Graphics, while 73% of ACEC members checked the same category.

- Question 3 asked whether the respondents believed there currently a problem with the overall quality of environmental documents for transportation projects. Interestingly, 85% of AASHTO respondents checked "yes" while 65% of ACEC members - - still a clear majority, though considerably less than ACEC's AASHTO clients, checked yes.

- The reasons behind checking "yes" as reported in AASHTO's summary were quite interesting - - first in the area of writing quality and format:
    - There was agreement from both groups that the documents are too large, wordy, repetitive, complex and cumbersome.
    - Lack of consistency in the format and approach was also cited by both groups.
    - The lack of a coherent story that follows a logical progression was cited by both groups as well.
    - An AASHTO comment focused on the conflicting goals of an airtight document that can withstand a legal challenge versus one that is that the public can readily understand.
    - On the other hand, an ACEC comment focused on overemphasis about the "look" of the document, and insufficient emphasis on the use of the document to make decisions.
    - Another AASHTO comment dealt with the problem of multiple authors of the same document who did into necessarily communicate with each other.

- In addressing issues that focused on the substance of the documents, AASHTO members mentioned significant inadequacies in analyzing indirect and cumulative impacts, and quite interestingly, AASHTO members complained about pre-conceived mind-sets about what alternative should be chosen, with a skewed analysis favoring that alternative.

- AASHTO members also cited problems in adequately addressing endangered species act and environmental justice requirements.

- ACEC members dealing in this area of substance of the documents singled out environmental justice and secondary and cumulative impacts as problematic.

- ACEC members also cited lack of integration between environmental and engineering issues, and in particular the difficulty of keeping environmental documentation current as projects advance into detailed design. They felt that many technical issues end up being treated superficially.

- In terms of the process, AASHTO members emphasized FHWA issues - - including expanding requirements for more and more information even though regulations have not changed. The issue of level of detail - - the key subject of the SCOE NCHRP 25-25 (1) Task Order, is particularly problematic with no FHWA benchmarks.

- AASHTO members also noted the inexperience of FHWA staff - - an interesting question is whether the lack of experience at FHWA has any bearing on the increased

level of information requested and on the reluctance to go on record about exemplary practices.

- ACEC respondents noted the problem of preparers with inadequate knowledge - - interesting coming from the group that is predominantly involved in the technical aspects of environmental document preparation.

- ACEC members also cited a lack of current and comprehensive policies and rules, and problems with quality control. An interesting observation from an ACEC respondent was that EIS's which are subjected to an independent QC/QA process and are revised accordingly are deemed acceptable and are signed off - - the inference being that QC/QA is of vital importance in determining the quality of environmental documents.

- Finally, ACEC members commenting on the process expressed concern about reviewers and managers infusing their personal perspectives, and noted the importance of leadership by the consultant and DOT community in addressing these issues.

- Question 4 asked respondents to rate each of a dozen elements of environmental documentation in terms of where the most improvement is needed. A scale of 1 to 5 was used with 1 indicating the most improvement needed and 5 indicating no improvement needed.

- There was a close correlation between AASHTO and ACEC members - - rankings of combined scores were no more than 2 positions apart for 11 of the factors and the 12th was within 3. So looking at the combined ranking of the two groups - - AASHTO and ACEC - - tracks closely with their individual rankings as well.

- Highest of the combined rankings at 3.56 - - meaning it needed the least improvement -- was (C) - - dealing with the "affected environment" - - a factor that certainly goes to the heart of the matter in environmental documents. That factor was rated number 1 by AASHTO and number 2 by ACEC respondents.

- Second highest of the combined rankings at 3.47 was (G) - - "404 evaluations and documentation. This one was ranked #1 by ACEC and #2 by AASHTO. This area, once a major challenge for many DOTs, seems to be settling down.

- Third in combined rank - - #3 by AASHTO and #4 by ACEC members went to (I) Section 106 historic preservation with a score of 3.32

- 4th position went to (H), Section 7 Endangered Species Act - - ranked 2nd by ACEC members and 4th by AASHTO and having a combined score of 3.3 - - not bad.

- the 5th highest ranked area with a combined score of 3.12 went to (J) with a combined score of - - Document formats required by federal agencies such as CEQ and FHWA

which can be viewed as constraints in attempting to improve environmental documents.

- Section 4(f), often characterized as a major problem area had a combined score of 3.11 and took 6th position in the ranking.

- 7th place went to (D) the treatment of environmental consequences in environmental documents with a combined score of 3.03

- The top 7 all scored 3 or over on the 1 to 5 scale, remembering that 1 meant "most improvement needed" and 5 meant "no improvement needed.

- Dipping below 3 for 8th position at a combined score of 2.93 was B - - "analysis of alternatives." This is an issue that has been fundamental to NEPA since its inception in 1969, so it's a little surprising to see it ranked so low by both groups - - 8th by AASHTO and 7th by ACEC.

- Another area needing much improvement and consistent with earlier comments is L, "overall writing and technical editing," in 9th position with a combined score of only 2.59. Interestingly, this factor was ranked less of a problem by AASHTO who had it in 9th position than by ACEC who had it in 11th place, just one from the bottom.

- In 10th position with a combined score of 2.53 is (A), "Purpose and Need." This was a bit worrisome, since similar to "Analysis of Alternatives" this has been a long-term NEPA requirement. And both factors are often cited in litigation that successfully stalls projects. AASHTO respondents ranked Purpose and Need 10th while ACEC members had it dead last in 12th position. This obviously requires significant attention

- In 11th combined position is (E), "Indirect and Cumulative", impacts with the low score of 2.20, an area that is relatively new, and clearly requires much attention. AASHTO had this ranked in 11th place and ACEC members had it in position.

- Bringing up the bottom of the barrel, the number one area of those listed that the combined groups felt needed improvement, with a score of 2.13, is (K), document size - - EA's and EIS's that are simply too voluminous. AASHTO members had this one dead last while ACEC members ranked it 10th out of the 12 elements.

- **AASHTO-ACEC-FHWA Workshop on the Quality of Environmental Documents – June 8, 2004**

On June 8, 2004, in conjunction with the annual meeting of AASHTO's SCOE (Standing Committee on the Environment) a workshop was convened to address the quality of environmental documents. Representation included 43 from state DOTs, 22 from the consultant community, and 12 from FHWA - - over 75 attendees. Participants received several presentations, including one on the results of the survey described above, one from Ohio on a unique system of training, testing and certifying DOT staff and consultants working on environmental documents for the DOT, one from Texas on a system to track and monitor the implementation of environmental commitments, and one from Washington State on the uniquely structured Alaskan Way Viaduct DEIS (the subject of much interest in this research project.).

In terms of the quality of environmental documents, the workshop, through several breakout groups, recommended the following themes:

- Documents should tell a story and provide a clear path of logic outlining the decision-making process.
- Legal sufficiency for key areas (e.g. indirect and cumulative impacts, environmental justice, format and process) needs to be established.
- Improve the writing and overall clarity of environmental documents.

- **AASHTO-ACEC-FHWA Action Plan**

At it's September, 2004 meeting the Joint AASHTO-ACEC Committee endorsed an action plan based upon the themes articulated at the June, 2004 workshop.

Theme 1: Improve the process, substance and format of environmental documents

Action Items: AASHTO to convene national task force(s) to "prepare national process templates", and " prepare a flexible framework for environmental guidance and best practices…"

Theme 2: Address legal sufficiency

Action Items: FHWA to "initiate a process to determine a definition of legal sufficiency" as well as initiate presentations and training on the subject

Theme 3: Improve the Writing and Clarity of Documents

Action Items: AASHTO and ACEC "develop a handbook of tools on how to improve writing and clarity…" and AASHTO to include best practices on its website

Theme 4: Improve training

Action Items: "A certification/training program should be created similar to the Ohio DOT program"

AASHTO and ACEC will form a Joint Steering Committee and appropriate task forces to implement this Action Plan.