MassDOT Guidance for

Improving the Quality of Environmental Documentation (IQED)

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

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Table of Contents

1.0 Introduction **1**
- 1.1 What is the purpose of this document? 2
- 1.2 Why do we need to improve NEPA/MEPA documents? 2
- 1.3 What are the benefits of quality environmental documents for the public, regulators, and MassDOT staff? 3

2.0 Keys to developing a quality environmental document **4**
- 2.1 Know your audience and tell them the story of your project 4
- 2.2 Achieving clear and concise text 6
- 2.3 Use a single voice throughout the document 7
- 2.4 Use exhibits to convey complex information 8
- 2.5 Develop an outline / table of contents 12
- 2.6 Consider alternative document format 14
- 2.7 Use of technical appendices 15

3.0 Planning for a better document **21**
- 3.1 Create your document team 21
- 3.2 Develop a Project Procedures Guidebook 24
- 3.3 Create accessible documents (Section 508 Compliance) 26
- 3.4 Plan for web-based document 26

4.0 Advice for NEPA and MEPA compliance **27**
- 4.1 Define purpose and need 27
- 4.2 Present and compare alternatives clearly 29

5.0 Creating legally sufficient documents **32**
- 5.1 What is legal sufficiency review? 32
- 5.2 Advice for writing a legally sufficient document 33
- 5.3 Avoiding common problems of legal sufficiency review 34

Appendix 1
Additional NEPA Guidance

Appendix 2
Section 508 Compliance Guidance

February 2015

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1.0 INTRODUCTION

The Massachusetts Department of Transportation - Highway Division (MassDOT) is committed to providing clear and concise environmental documents that enable the public to understand the environmental impacts and benefits of proposed projects. MassDOT understands that environmental documents are often the public's and regulators' most comprehensive source of information about a project and that it is critical that these documents convey project information in an easily understandable manner.

MassDOT and FHWA are committed to providing the public with quality environmental documents

For a number of years, the Federal Highway Administration (FHWA) and the Council on Environmental Quality (CEQ) have been advocating for higher quality environmental documents. To advance this goal, FHWA, in cooperation with the American Association of State Highway and Transportation Officials (AASHTO) and the American Council of Engineering Companies (ACEC), prepared a very informative report in 2006 titled *"Improving the Quality of Environmental Documents"*. In 2008, the Washington State Department of Transportation (WSDOT) produced a guidance document titled *"Reader-Friendly Document Toolkit"*. In 2014, AASHTO produced the two NEPA guidance documents; the "*Practitioner's Handbook – Preparing High Quality NEPA Documents for Transportation Projects" and "Examples of Effective Techniques for Preparing High-Quality NEPA Documents"*. These documents provide numerous best practices for producing higher quality environmental documents that will address regulatory requirements as well as communicate clearly and effectively to document reviewers. This MassDOT guidance document draws recommendations from these prior documents and others while also providing recommendations specific to projects in Massachusetts.

1.1 WHAT IS THE PURPOSE OF THIS DOCUMENT?

High quality environmental documents use plain language and visual displays to be more understandable to the public.

The purpose of this guidance document is to help environmental planners, scientists, and MassDOT staff prepare quality environmental documents that are shorter and more understandable to the public and regulatory agencies while also meeting their legal sufficiency requirements. As noted by Supreme Court Justice Robertson "The purpose of an environmental document is to 'promote informed decision-making by federal agencies by making detailed information concerning significant environmental impacts available to both agency leaders and the public.[1]'"

While this guidance is focused on National Environmental Policy Act (NEPA) documents (EIS or EA) and Massachusetts Environmental Policy Act (MEPA) documents (ENF or EIR), the recommendations are applicable to virtually all environmental permitting and planning documents. **The overarching objective is to develop documents that are clear and concise in their content and presentation in order to facilitate and streamline the process of advancing a project from concept to implementation.**

Each project is set within a complex environment of resources and issues.

1.2 WHY DO WE NEED TO IMPROVE NEPA/MEPA DOCUMENTS?

MassDOT designs and constructs projects that enhance residents' quality of life by improving public safety, increasing transportation choices, and enhancing economic competitiveness. The NEPA and MEPA process is a critical part of the overall project design.

NEPA and MEPA documents are prepared to ensure that the public and regulatory agencies understand the important facts of a proposed project such as:

- What is the purpose and need of the project?
- What is the preferred alternative?
- Why was the preferred alternative selected over other alternatives?
- What are the environmental impacts and proposed mitigation?

1 Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989).

Over time, however, NEPA and MEPA documents have evolved into very large complex documents oftentimes containing 500 to 1,000 pages of technical information, so much so that they are overwhelming and difficult for readers to understand. Contributing to the problem is the fact that these documents are frequently not well organized, not clearly written, and lack clear visual exhibits to convey the intended message. Environmental documents also often fail to focus on the key issues that led to the selection of the preferred alternative.

1.3 WHAT ARE THE BENEFITS OF QUALITY ENVIRONMENTAL DOCUMENTS FOR THE PUBLIC, REGULATORS, AND MASSDOT STAFF?

Documents that contain highly technical, scientific text, can be very difficult to comprehend. While technically accurate, this style of writing and communicating can be very challenging for a broad audience to understand.

A concise, clearly written, and well organized document that "tells the story" of the project with high quality text, tables, and exhibits (maps, diagrams, photographs, sketches, etc.) will lead to much better understanding of the project by the public and regulatory agency staff.

A better understanding of MassDOT's projects will lead to improved decision-making and a higher level of confidence by the public in the process. High quality environmental documents also serve the public interest by saving money through more timely review by regulators (allowing the project benefits to be realized quicker) and reducing the potential for costly and lengthy lawsuits.

Quality documents will lead to higher levels of confidence in MassDOT's decision making.

2.0 KEYS TO DEVELOPING A QUALITY ENVIRONMENTAL DOCUMENT

This section describes the overall keys to developing a quality environmental document.

2.1 KNOW YOUR AUDIENCE AND TELL THEM THE STORY OF YOUR PROJECT

Tell the story of your project and emphasize the benefits to the community.

The following recommendations are provided for anyone involved in preparing, reviewing, or approving an environmental document. These recommendations require you to frequently stop and think about the big picture of why your project is being proposed, how it fits into the existing environment, and how it will affect people who live in the project area and those who travel through it. These recommendations help to advance the three key principles described through this document for preparing a quality environmental document: writing clear and concise text, use of a single voice, and using a variety of exhibits to convey complex information.

An audience listens to a presentation of a MassDOT proposal at a public design hearing.

A successful document is more than a collection of facts, it must tell the story of your project. The environmental document needs to provide the reader with a clear understanding of how the decisions were reached that led to the identification of the project's preferred alternative and proposed mitigation. It's easy to get enveloped in the many facts of the project. Take time to think out the following questions:

Environmental documents are most effective when they convey the story of how projects fit into their context and improve communities where people live, work, and play.

Why is MassDOT doing this project in the first place?

What problems is MassDOT trying to improve? Common reasons for undertaking a project are traffic congestion, high crash rates, lack of transportation mode choices, poor connections between destinations, environmental enhancements, or (often) a combination of these reasons. It's important to explain the problem(s) and also why people should care. For example, if the problems are related to traffic congestion/safety issues, explain what this means to the user – how many extra minutes per day each person is delayed or how many crashes occur in this area. Or if the problem is lack of transportation mode choices, explain how pedestrians, cyclists, or transit users cannot

travel between two locations, or are forced to travel for a longer distance (and time) to reach their destination. A problem is easier to understand if the reader knows how it will affect actual people.

Know your audience.

Think about the project's key issues and be sure to write your "story" in a way that attempts to answers the questions of the people directly affected by the project. For example, if your project's goal is to remove through- traffic from neighborhood streets and place it back onto the highway system, explain how this will improve quality of life in that neighborhood through reduced traffic volumes, reduced crash potential, reduced noise levels, etc. Similarly, if your project involves work within a sensitive environmental area, provide assurance for environmental advocates and regulators that this issue is well understood and has been carefully incorporated into the analysis of alternatives.

It is important to tell the "story" of the project in a manner that is clear and engaging while also providing a summary of the findings of the technical analyses. The complete technical reports, such as the traffic volume projections, operational analyses, wetlands delineation documentation, cultural resource surveys, etc., should be provided in an appendix.

Highlight the benefits of your project.

A common problem with environmental documents is that they fail to take enough credit for all the potential benefits the users and/or neighbors would receive. This seems counter-intuitive but it's true. Of course people would want to trumpet all the benefits of their project, but often writers get too focused on the project-impact-mitigation discussion and miss the opportunity to emphasize the benefits of the project.

MassDOT discussing stream restoration and bridge replacement project in Becket.

To build support for the project, it's critical that people understand the benefits to them personally or to issues they care about. Describe benefits in plain language and make sure people understand the connection between the proposed project and the benefits. For example, increased roadway capacity will result in less time traveling and better air quality, or stormwater upgrades will improve water quality, or signalization of an intersection will reduce the severity of crashes and make it safer for pedestrians to cross the street.

Note that in highlighting the benefits of the project, it's important to do so in a neutral and objective manner. An environmental document is not an advocacy document that trumpets the proponent's preferred alternative. It is important to state all the facts in an impartial manner and present a similar level of detail for all alternatives.

Another area in which proponents fail to take enough credit is in describing the efforts made to avoid or minimize impact to people or environmental resources. Often the final avoidance/minimization efforts are described in detail (e.g., lane width, slope limits) but the initial planning efforts to avoid/minimize impacts are not described. These initial efforts could include identifying the project limits or establishing the alignment of a roadway in a way that avoids wetlands or private property impacts.

2.2 ACHIEVING CLEAR AND CONCISE TEXT

The goal in any environmental document is to tell the story of the project through clear, concise writing so that readers can easily understand the important details. The text in the main body of an environmental document must be written for readers who are not technical experts in the subjects being evaluated. Achieving this goal is not easy, and typically takes time to be done well. Patient use of the following techniques will lead to a better document:

- Identify the Document Editor for the project.
- Begin with a detailed outline and a style sheet.
- Use a single voice throughout the document.
- Use plain language and short sentences.
- Write in a neutral, objective tone. Maintain impartiality.
- Focus on key issues.
- Use easy-to-read layouts including wide margins, short sections, sidebars, and lots of exhibits. (Similar to this document.)
- Use sidebars to provide additional information.
- Separate technical information into appendices (these must also be written in a clear and understandable style).

Sidebars can be used to define technical terms

- Succinctly summarize the key findings of the technical appendices. Present information in relation to what it means to the decision to be made.
- Draw logical conclusions from the data presented.
- Avoid technical jargon, minimize abbreviations, define terms, and spell out acronyms.
- Discuss impacts in proportion to their significance.

The following sections provide additional guidance on many of these topics.

2.3 USE A SINGLE VOICE THROUGHOUT THE DOCUMENT

Using a 'single voice' throughout your document makes it easier for the reader to understand the story of your project. To achieve a 'single voice', ensure that the document is consistent throughout. A reader should never be able to tell that different parts of the document were written by different people or were written at different times. Use of single document editor is key to achieving overall consistency. The following are some of the key characteristics of a document that maintains a 'single voice':

- Includes a comparable level of detail for all topics.
- Refers to all people, places, and things in a consistent way throughout the document.
- Provide the same reasoning for actions (such as selection/dismissal of alternatives throughout the document).
- Ensure that exhibits are consistent, containing the same level of detail, same base layers, same legend, etc.

High quality exhibits allow people to quickly understand complex information

2.4 USE EXHIBITS TO CONVEY COMPLEX INFORMATION

The most effective method of relating complex information is through exhibits. Exhibits include any form of visual information such as figures, maps, photographs, photo simulations, sketches, tables, and charts. Notice how information is presented in some news magazines, with appealing graphics that simplify the presentation of complex information. Below is guidance for producing high quality exhibits that help the reader easily understand the information being conveyed.

Photo Simulation of proposed Route 9 Bridge over Lake Quinsigamond in Worcester & Shrewsbury, MA. By Fay, Spofford, & Thorndike

- Identify the lead Graphic Designer for the project.
- Plan for needed exhibits early in the document planning process.
- Create a standard template for each type of graphic or exhibit to be used.
- Establish a standard legend for each exhibit that includes (as appropriate) an exhibit number and title, north arrow, scale, source, and identification of shading or outlines.
- Exhibits should be placed on the same page as the accompanying text whenever possible, or on the pages immediately following the reference (not in a separate section or volume).
- Ensure all information referenced in the text is labeled and easily found on the accompanying exhibits including roads, place names, geographical features, resource areas, and public buildings.
- Ensure that the exhibit (including all text) is large enough to be read clearly.
- Create a library of high quality photographs (at least 300 dpi) for use in exhibits.
- Consider alternatives to tables. Graphs, bar charts, or illustrations are often a better alternative to a table.

The next page shows a good example of an exhibit that displays complex information in an understandable manner.

Example of Effective Tables and Graphs

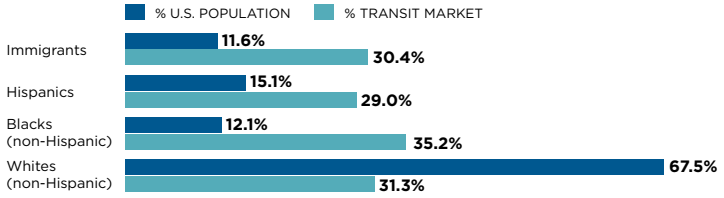
BY THE NUMBERS

Transportation Inequality

We all need good transportation systems, but the poor and minorities rely on public transportation the most. Here's a snapshot.

CORE USERS

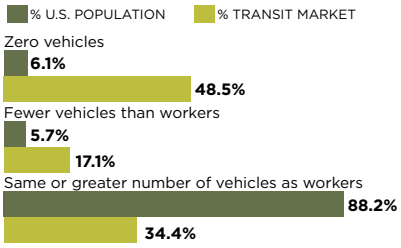
Minorities account for just a third of the country's total population, but make up transit's core ridership by a mile.



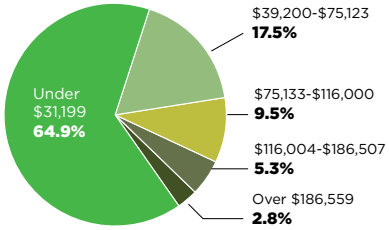
CARLESS AND POOR

People who live in carless households are also core users of transit. And, while some eschew auto ownership by choice, that's probably not true for low-income people. The majority of carless households in the U.S. earn less than $32,000.

The car-to-worker ratio



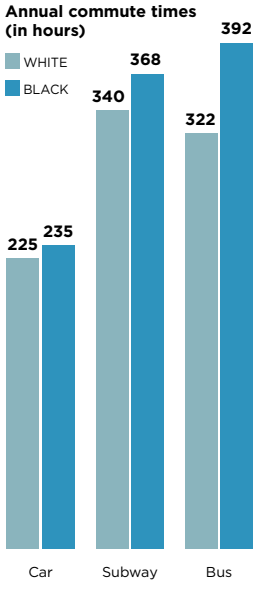
Annual incomes of carless households



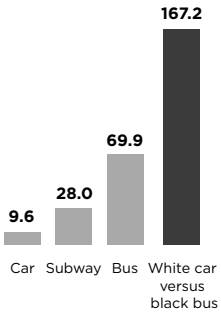
BLACK AND WHITE IN BOSTON

Looking at a particular place as an example, an analysis of travel times shows that black commuters spend more time getting to work. Blacks taking the bus spend an extra week a year commuting than do whites traveling by car.

Annual commute times (in hours)



Annual travel time penalty for black commuters (in hours)



SOURCES: The Kitty and Michael Dukakis Center for Urban and Regional Policy at Northeastern University; Dukakis Center's analysis of 2009 National Household Travel Survey and American Community Survey data.
Compiled by Meghan Stromberg, Planning's *executive editor. Graphics by David Foster.*

40 **Planning** May 2014

Figure from Planning, The Magazine of the American Planning Association, May 2014.

Depts_May2014.indd 40 4/14 5:04 PM

Note how the exhibit uses a variety of graphs and charts to display complex information in an interesting and understandable manner.

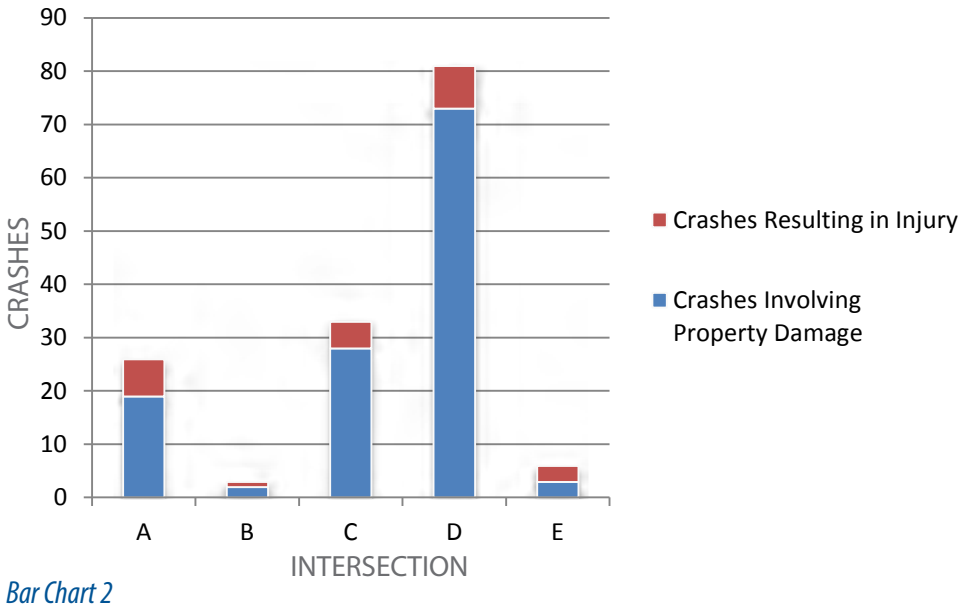
The use of traditional tables for presenting a lot of numerical data is common in environmental documents. However, consider alternatives to tables such as bar charts and pie charts.

Below is an example of a traditional table with number values for each of the types of crashes evaluated. While all the correct information is included, it is difficult to quickly recognize the differences among the different intersections. Bar Charts 1 and 2 on the next page show the same information in two bar charts. By looking at the bar charts it is much easier to identify the differences among the intersections; it only takes a quick look to see that Intersection D has by far the greatest amount of crashes. Similarly, by looking at the pie chart, one can quickly determine that rear-end crashes are the most common type of crash at Intersection D.

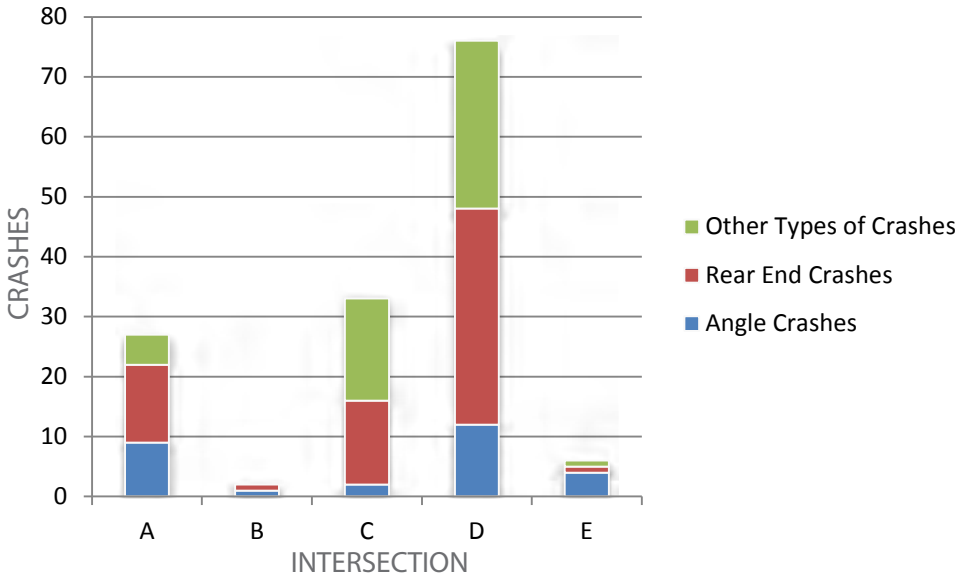
STUDY AREA CRASH DATA - three year summary							
Intersection	Total Number of Crashes (2009-11)	Crashes Involving Property Damage	Crashes Resulting in Injury	Angle Crashes	Rear End Crashes	Other Types of Crashes	Calculated Crash Rate
A	27	19	7	9	13	5	0.64
B	3	2	1	1	1	0	0.25
C	33	28	5	2	14	17	0.93
D	81	73	8	12	36	28	2.66
E	6	3	3	4	1	1	0.24

See next page for alternative methods for displaying this information.

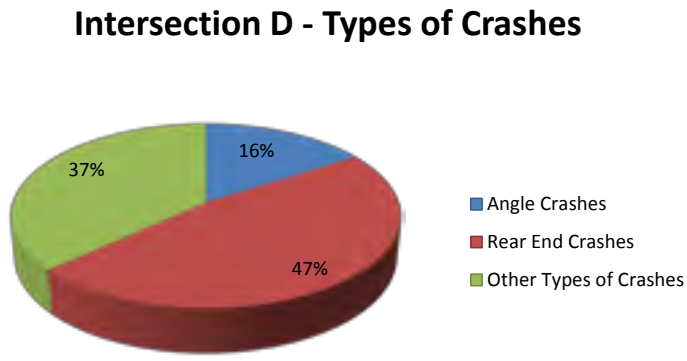
Bar Chart 1



Bar Chart 2



Pie Chart



2.5 DEVELOP AN OUTLINE / TABLE OF CONTENTS

Outline

Before writing any portion of the document, prepare an annotated outline of your document. This can be in the form of an expanded table of contents in which additional information is included to describe what information should be included in each section of the document.

Developing an annotated outline should also lead to the identification of the key issues for the project. Key issues are those that lead to the identification of the preferred alternative such as wetland impact, historic resources, park-land, right-of-way, hazardous materials, or something else entirely.

Every project is unique and the key issues will vary from project to project. The point is that the document should focus on the key issues and devote much less time to other issues. Provide only brief discussion of everything other than the key issues. Simply summarize the minor impacts and note why more study is not warranted. Beware that the key issues may change as the project progresses.

Table of contents – use of alternative format

The table of contents of NEPA documents for transportation projects nationwide are almost always the same - Summary, Introduction, Purpose and Need, Alternatives, Affected Environment, Environmental Consequences, etc. These traditional tables of contents follow the standard structure found in the Council on Environmental Quality (CEQ) regulations and FHWA's 1987 Technical Advisory T6640.8A. However, the NEPA regulations actually allow for a far greater amount of flexibility in document format and content.[2]

Alternative approaches to the outline of a document have been used successfully in Massachusetts and other states. These approaches involve changes to the naming of chapters and the order they are presented. Use of a question-and-answer type format for the chapter titles is recommended because it engages the reader far more effectively than the traditional chapter titles such as "affected environment" or "environmental consequences".

Reordering the traditional order of the chapters allows the story of the project to be told in a more logical way. For example, including a description of the project area before the alternatives chapter allows the reader to better understand the context of the alternatives evaluated. The following table presents portions of a traditional table of contents and an example of a more approachable table of contents that uses a question and answer format and is more logically ordered.

2 See Appendix 1 for information of CEQ and FHWA guidance on document format.

Traditional Table of Contents	More Approachable Table of Contents
Purpose and Need for Action	Why is this project needed?
Alternatives	
Affected Environment	What resources are in the project area?
Transportation	What are the traffic problems in this area?
Land Use	What are the alternatives being considered?
Social Environment	What would these alternatives look like?
Noise	Would noise levels increase?
Water Quality	Would traffic improve?
Visual Impacts	Would it be easier to walk or bike?
Mitigation	What mitigation is proposed?

The question-and-answer format for chapter and section titles engages the reader.

Other recommendations from AASHTO[3] concerning the document structure include:

- Add a "*Comparison of Alternatives*" chapter. This approach divides the Alternatives chapter into two parts - an "*Alternatives Considered*" chapter which describes the alternatives development and screening process, and a "*Comparison of Alternatives*" chapter which evaluates in detail the alternatives that have been advanced from the screening process. The Comparison of Alternatives would be placed after the Environmental Consequences chapter. As a reminder, use of "question and answer" chapter titles is recommended. Section 4.2 provides additional information on preparing an alternatives analysis.

- Add a *Mitigation* chapter. Mitigation commitments can often be scattered throughout a document. A *Mitigation* chapter provides a description or list of all mitigation commitments proposed for the project making it easier to understand the proposed mitigation package as a whole. Note, in a MEPA document all mitigation commitments are provided in the *Section 61 Finding*. Listing the commitments in a table format is recommended, providing a brief description of the mitigation commitment, the agency/organization the commitment is being made for, cost, and schedule.

3 AASHTO *Practitioner's Handbook – Preparing High Quality NEPA Documents for Transportation Projects*, 2014

- Add a *Transportation* chapter. Similar to the *Mitigation* chapter, the *Transportation* chapter brings together information that is often scattered throughout the document. This chapter would bring together information such as description of the existing transportation system, traffic modeling methodology, a comparison of the various alternatives' effect on the transportation system, and a discussion of each alternative's ability to meet the purpose and need.

- Provide *Summary* chapter. A chapter that briefly summarizes the contents of the environmental document. The *Summary* chapter is provided for elected officials and members of the public who want to know the essential facts of a project; the what, where, when of the project. Exhibits are a useful way of conveying complex information in a succinct manner. Generally, MassDOT recommends that the *Summary* chapter not exceed 20 pages for a complex project.

The *Summary* chapter may also be prepared to serve as a stand-alone document, especially for complex projects. The *Summary* should focus on key issues that led to the identification of the preferred alternative. Contents should include a study overview, summary of major comments, statement of purpose and need, major environmental impacts, alternatives evaluated in detail, selection/description of the preferred alternative, permitting and mitigation, and coordination.

It is important not to oversimplify the information being presented in the *Summary*. Sufficient detail must be provided to ensure the reader appreciates the important differences between the alternatives evaluated.

If you are preparing NEPA documentation, we recommend having the MassDOT Highway Division (Environmental Section) and the FHWA Division Office in Cambridge review and approve the proposed document format and organization before advancing the document.

2.6 CONSIDER ALTERNATIVE DOCUMENT FORMAT

11"x17" pages allow text and exhibits to be shown together

Environmental documents have traditionally used an 8½" x 11" format (perhaps with 11" x 17" tri-fold attachments). This format typically worked well with the software and printing capabilities of most state DOT's and engineering consultant firms.

Recently, many state DOTs (including MassDOT) have been using alternative document formats. These documents are often formatted in an 11" x 17" page size (in landscape orientation) that provides greater flexibility to display text

and exhibits in a larger format and on the same page, and is very effective for linear projects. An 8 ½" x 11" page format may be used for smaller projects.

The most effective means of producing quality environmental documents which easily incorporate text and exhibits together is through the use of desktop publishing software such as In-Design, PageMaker, iStudio Publisher, etc. While no particular software package is recommended, the flexibility of laying out the document is enhanced using desktop publishing software as compared to traditional word processing applications.

The following pages give several examples of pages formatted for both 11" x 17" and 8 ½" x 11" sheet sizes. Note how effectively this layout presents text and exhibits together. Various type and sizes of exhibits are used together to convey a lot of complex information in a single page.

2.7 USE OF TECHNICAL APPENDICES

To maintain a clear, concise writing style in the main volume of a document, it is recommended that all technical reports be provided as an appendix, preferably on a CD provided with the document. Similarly, Section 4(f) Evaluations can also be provided as an appendix. The main volume of the document, however, must contain a succinct summary of the technical reports. Use sidebars within the main document to direct technical reviewers to the correct appendix.

Use sidebars to guide technical reviewers to the location of the supporting technical information in the appendix

Sample 11" x 17" Page Layout #1

Bored Tunnel South Portal

What transportation improvements were assumed for the 2030 Viaduct Closed?

The transportation analysis conducted for the 2030 Viaduct Closed and build alternatives assumed that the following projects would be in place by 2030:

- S. Holgate Street to S. King Street Viaduct Replacement Project
- SR 519 Intermodal Access Project, Phase 2
- S. Spokane Street Viaduct Widening Project
- Mercer East Project from Dexter Avenue N. to I-5
- Third Avenue Transit Improvements
- Sound Transit Phase 1 and 2, including Sounder Commuter Rail, ST Express Bus, First Hill Streetcar, South Link, University Link, North Link, and East Link Light Rail
- Existing transit services and new services proposed in agencies' 6-year plans
- King County Transit Now

Appendix E, Alternatives Description and Construction Methods

Additional details about the alternatives and their construction methods are contained in Appendix E.

4 How would the Bored Tunnel Alternative replace SR 99 and the viaduct?

The Bored Tunnel Alternative would replace SR 99 between S. Royal Brougham Way and Roy Street as shown in Exhibit 3-1.

South Portal Area

Full northbound and southbound access to and from SR 99 would be provided in the south portal area between S. Royal Brougham Way and S. King Street. The northbound on-ramp to and southbound off-ramp from SR 99 would be reached from S. Royal Brougham Way at its intersection with the East Frontage Road, as shown in Exhibit 3-2. The southbound on-ramp to and northbound off-ramp from SR 99 would feed directly into a reconfigured Alaskan Way S. The northbound off-ramp would have a general purpose lane and a peak hour transit-only lane to accommodate transit coming from the south and West Seattle.

The reconfigured Alaskan Way S. would have three lanes in each direction up to S. King Street. A new street, S. Dearborn Street, would be constructed from Railroad Way S. to Alaskan Way S., and would include a new signalized intersection at Alaskan Way S. This intersection

Washington State Department of Transportation, July 2011 Alaskan Way Viaduct Replacement Project: Final Environmental Impact Statement and Section 4(f) Evaluation.

Note the effective way in which text, photos, and photo simulations are included on same page.

Sample 11" x 17" Page Layout #2

Environmental Assessment and Section 4(f) Evaluation
Rehabilitation and Restoration of the Longfellow Bridge

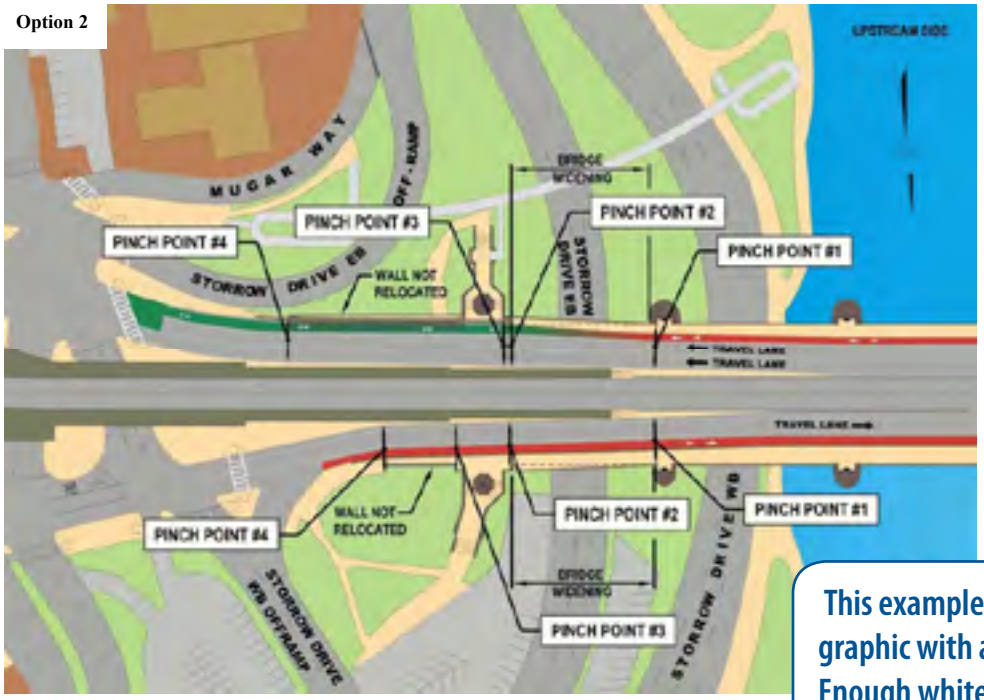
INBOUND PINCH POINTS

#	Sidewalk	Bike Lane	Roadway	Shoulder
1	6'-6"	5'-0"	21'-0"	1'-0"
2	4'-3"	Shared	29'-6"	1'-10"
3	0'-9"	Shared	31'-6"	1'-9"
4	1'-0"	Shared	31'-6"	1'-0"

OUTBOUND PINCH POINTS

#	Sidewalk	Bike Lane	Roadway	Shoulder
1	9'-11"	8'-0"	12'-0"	3'-3"
2	10'-8"	8'-0"	12'-0"	3'-4"
3	12'-0"	8'-0"	12'-0"	3'-7"
4	10'-11"	8'-0"	12'-0"	4'-0"

Option 2



Option 2: Three Lane Approach with no wall relocation at Charles Circle

Option 2 was developed in an effort to avoid widening the Boston approach. Under this option, the dimensions of the various roadway elements are reduced through the constricted area to widths below engineering design standards. The dedicated bicycle lane under this alternative would not be continued through the approach section, but would be striped with a shared use arrow ("sharrow") within the right turn lane.

Sidewalks would be extremely narrow under this option and in some locations would not exist. Without the cantilevered widening (as shown between points 2 and 3 on the graphic to the left) the sidewalks would be even narrower at the spot obstruction at pinch point 2. Without widening, this dimension would be reduced to just over two feet, and would not meet ADA requirements. Beyond pinch point one a dedicated bicycle lane would be lost under this option, and bicycles would ride with traffic.

This Option would not satisfy the purpose and need of the project in that it would not bring the bridge up into compliance with modern design standards, and would not provide ADA compliant sidewalks. It would not satisfy the desire of bicycle advocacy groups to provide a dedicated bicycle lane along the entire length of the bridge. This option would not remove the historically inaccurate cantilever of the sidewalk over the retaining wall. The operational efficiency of the Boston approach would be preserved through the provision of three lanes at the Charles Circle intersection and the bridge would continue to function as an evacuation route and principle arterial.

Although construction phasing impacts are temporary in nature and therefore are a secondary concern to the choice of a Preferred Alternative permanent layout, it should also be noted that the space constraints during construction are significant on this project as well. Without relocation of the retaining wall at this location, construction staging will be more challenging and fewer accommodations for users during construction would result.

Massachusetts Department of Transportation, January 2012, Environmental Assessment and Programmatic Section 4(f) Evaluation: Rehabilitation and Restoration of the Longfellow Bridge, Bridge No. B-16-009=C-01-002(4FO).

This example shows the use of a colorful, easy to understand graphic with accompanying tables and text.
Enough white space is remaining so as to not overwhelm the reader with too much information.

Sample 8.5" x 11" Landscape Page Layout

Note text, photos, and bar charts on same page. Bar charts are more effective through use of color and data within the bars.

3: BENEFITS OF BIKE SHARING

Bike share has been transformative for many cities. Relative to its cost, bike sharing brings numerous benefits. This section provides a summary of some of the financial, health, environmental, and transportation / mobility benefits that support bike sharing.

Financial Benefits

Bike sharing is a relatively inexpensive and quick to implement urban transportation option compared to other transportation modes. As shown in **Figure 3.1**, the relative cost of launching a bike share system is several orders of magnitude less than investments in other modes.

Unlike other transportation modes, North American cities have generally funded bike sharing through federal and state grants, private donations, corporate sponsorship, and user revenues. Little to no *local* public funding has been used in bike sharing to date.

Shelby Farm Recreation (Photo: Baxter Buck)

Bike share systems in the US have performed well in terms of "farebox recovery" (i.e. the percentage of operating cost recovered by user revenues). **Figure 3.2** compares bike share farebox recoveries to traditional transit services and shows that recoveries of 36% (Boulder) to 97% (Capital Bikeshare[1]) compare favorably to traditional rail and bus transit systems in the U.S. that operate with an average farebox recovery of 35 percent and for major Tennessee cities, generally even lower.

Full farebox recovery may or may not be possible in Memphis; however where user fees do not cover the cost of operating the system, other cities have been able to pick up the shortfalls without having to rely on public funding.

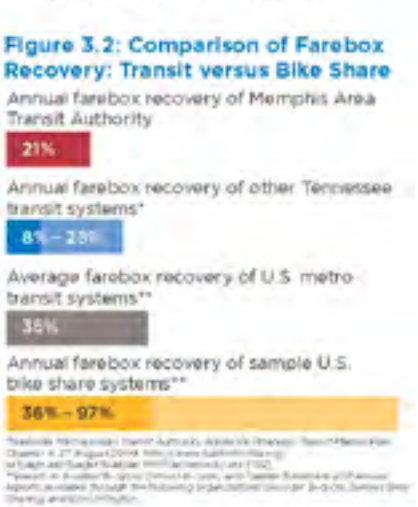
Bike sharing systems are also:

- High-profile additions to a city that in themselves become an **attraction for visitors and tourists and generate positive national and international media** exposure that would otherwise be difficult or costly to generate.
- **Create "green" jobs** with on-going positions for managing and operating the system. The size of system being considered in Memphis (approximately 40 stations) could generate around 8 full-time jobs.

[1] Pedestrian and Bicycle Information Center (2012). Economic Benefits: Money Facts. Retrieved 1/22/2013 from www.bicyclinginfo.org/why/benefits_economic.cfm

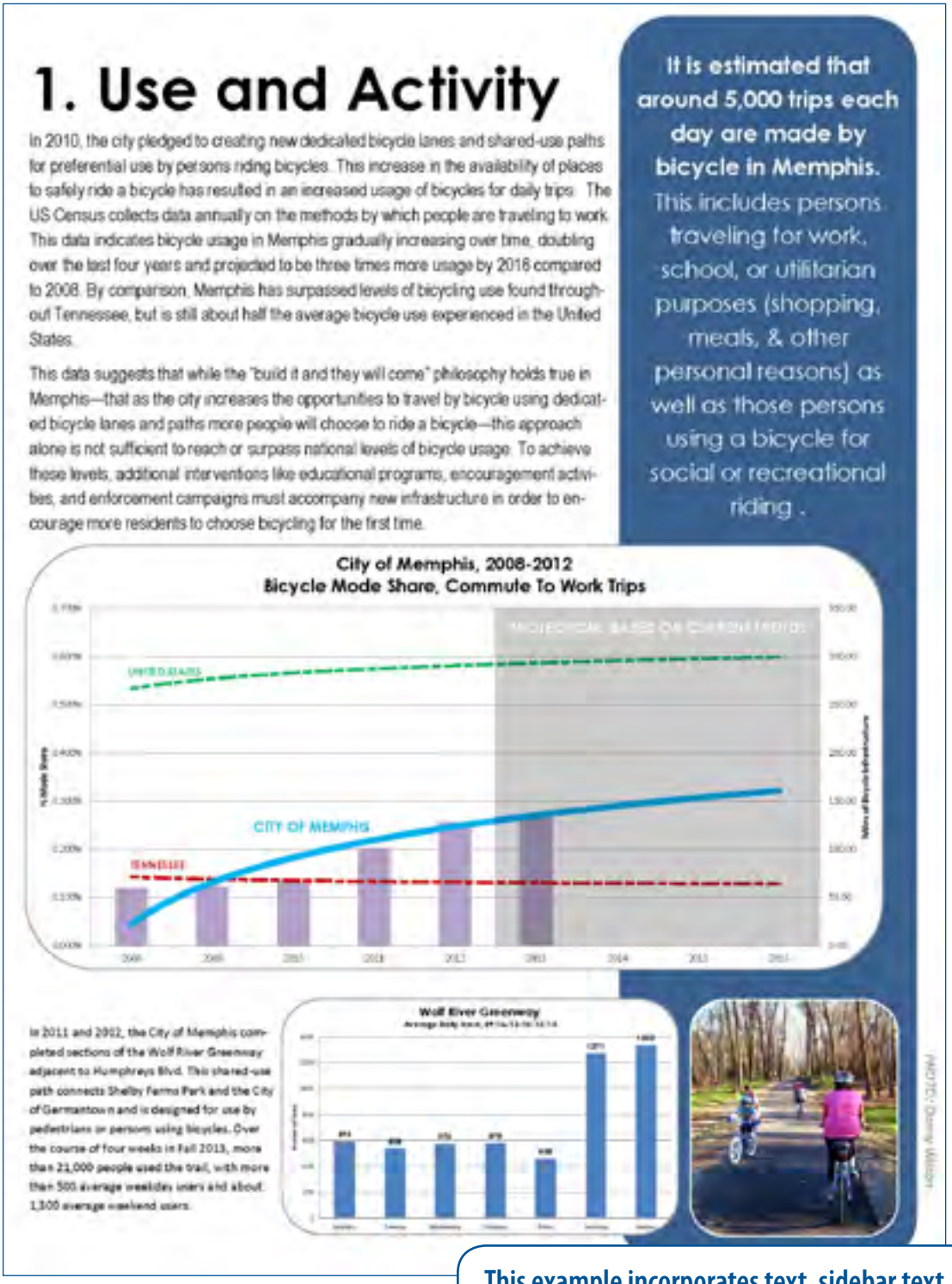
Figure 3.1: Relative Cost of Transportation Investments

Figure 3.2: Comparison of Farebox Recovery: Transit versus Bike Share



Alta Planning + Design, February 2013 Memphis Bike Share Feasibility Study

Sample 8.5" x 11" Portrait Page Layout #1



1. Use and Activity

In 2010, the city pledged to creating new dedicated bicycle lanes and shared-use paths for preferential use by persons riding bicycles. This increase in the availability of places to safely ride a bicycle has resulted in an increased usage of bicycles for daily trips. The US Census collects data annually on the methods by which people are traveling to work. This data indicates bicycle usage in Memphis gradually increasing over time, doubling over the last four years and projected to be three times more usage by 2016 compared to 2008. By comparison, Memphis has surpassed levels of bicycling use found throughout Tennessee, but is still about half the average bicycle use experienced in the United States.

This data suggests that while the "build it and they will come" philosophy holds true in Memphis—that as the city increases the opportunities to travel by bicycle using dedicated bicycle lanes and paths more people will choose to ride a bicycle—this approach alone is not sufficient to reach or surpass national levels of bicycle usage. To achieve these levels, additional interventions like educational programs, encouragement activities, and enforcement campaigns must accompany new infrastructure in order to encourage more residents to choose bicycling for the first time.

It is estimated that around 5,000 trips each day are made by bicycle in Memphis. This includes persons traveling for work, school, or utilitarian purposes (shopping, meals, & other personal reasons) as well as those persons using a bicycle for social or recreational riding .

City of Memphis, 2008-2012
Bicycle Mode Share, Commute To Work Trips

In 2011 and 2012, the City of Memphis completed sections of the Wolf River Greenway adjacent to Humphreys Blvd. This shared-use path connects Shelby Farms Park and the City of Germantown and is designed for use by pedestrians or persons using bicycles. Over the course of four weeks in Fall 2013, more than 21,000 people used the trail, with more than 500 average weekday users and about 1,300 average weekend users.

Wolf River Greenway

PHOTO: Danny Wilson

City of Memphis, Tennessee, 2014 State of Bicycling.

This example incorporates text, sidebar text, photos, and combination line chart/bar chart on same page. Use of color enhances effectiveness.

Sample 8.5" x 11" Portrait Page Layout #2

Gaining Agency Support and Structure for the Program

Transportation officials considering the development of a Solar Highway Program should first confirm that the program concept is consistent with the overall goals and objectives of the transportation agency and that other agency members have a clear understanding of how the proposed program is compatible with the agency's mission.

Relevant agency policy and planning

Identifying existing policy frameworks that explicitly justify pursuit of a program is important in providing the policy rationale and legal justification for the agency to act.

Oregon Solar Highway Program Highlight

When considering whether to proceed with the demonstration project, staff at ODOT discovered language supporting the project concept in a number of policy frameworks.

While it was clear that the spirit and letter of these frameworks would justify pursuit of the project concept, agency staff deliberately sought out the specific endorsement of the Oregon Transportation Commission prior to proceeding. This endorsement served two purposes.

First, the endorsement confirmed support for the project concept from the leading policy body and provided part of the legal justification for proceeding.

Second, the endorsement served to crystallize agency leadership support for the project concept.

Moreover, seeking authorization from agency and political leaders provides these decision-makers the opportunity to exercise their proper management and oversight functions.

Potential policy and planning frameworks that may validate agency support for a solar highway program include:

- State transportation plan
- Agency or state sustainability plans
- Executive Orders on energy or sustainability
- State climate action plans or greenhouse gas emissions reduction targets
- Legislative mandates on renewable energy or sustainable economic development

Agency capacity and commitment

Project champion and manager

Developing a program requires the substantial investment of staff time from a skilled project manager who can also serve as a project champion. As with all transportation improvements, there are multiple tasks and processes that must be simultaneously managed to bring a solar highway project to fruition.

The project manager, Allison Hamilton, provides tours of the solar highway demonstration project.

The good company's August 2011 document for the Oregon DOT, Solar Highway Program: From Concept to Reality - A Guidebook for Departments of Transportation to Develop Solar Photovoltaic Systems in the Highway Right-Of-Way.

This example effectively uses color to create a distinctive look for the document. Text boxes highlight key information.

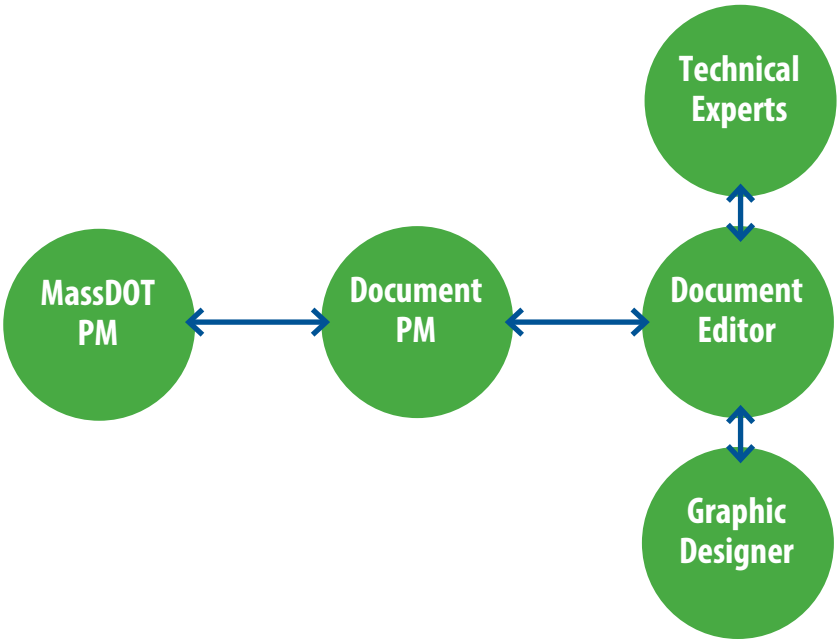
3.0 PLANNING FOR A BETTER DOCUMENT

This section describes procedures that will lead to a high quality document that is easily understood by a wide range of readers.

3.1 CREATE YOUR DOCUMENT TEAM

Identify your project team when you begin your project. While the size of your team will depend on the size and complexity of your project, each team should contain the follow key team members.

As described below, consultant firms preparing the environmental documents typically engage a number of technical disciplines to address different aspects of the project. This contributes to the challenge of providing quality environmental documents, as the technical experts often have different writing styles and techniques. To address this issue, an overall Document Production Team approach is recommended.



MassDOT Project Manager

The MassDOT Project Manager (MassDOT PM) typically works in the Environmental Section and is the main contact at MassDOT for the document team. This is often in addition to the MassDOT Design Project Manager.

The MassDOT PM must have a strong understanding of the NEPA/MEPA regulations and other major environmental regulations, and an appreciation of the engineering design criteria controlling the project. The main responsibilities of the MassDOT PM include:

- Keeping the consultant team informed of all new project-related information from MassDOT.
- Serve as the MassDOT main point of contact for the project for FHWA, local and state elected officials, state legal counsel, regulatory staff, and the public.
- Coordinate internal document reviews by other MassDOT staff.
- Review and recommend approval of the document to the Massachusetts Secretary of Transportation.

The MassDOT PM must review all comments from MassDOT staff on draft documents for accuracy and consistency with other comments and ensure that these comments do not result in the document moving away from the spirit of a "quality environmental document". For example, a MassDOT staff reviewer might request that the entire noise technical report be included in the main body of the document. The MassDOT PM would need to explain to this reviewer that doing this would be inconsistent with the goal of preparing a clear and concise document.

Document Project Manager

The consultant team's Document Project Manager (Document PM) is responsible for the overall progress of the document, particularly the production schedule, and overall content of the environmental document. Ideally, this is not the same person as the consultant team's design project manager. The Document PM must have a strong understanding of the NEPA/MEPA regulations and other major environmental regulations and ideally also understands the technical aspects of transportation/facility engineering.

The Document PM is the main point of contact for MassDOT and is ultimately responsible for all aspects of the project. This person should understand and keep up-to-date with all aspects of the project development, including the project alternatives, environmental resources, potential impacts, key mitigation/permitting issues, and potential controversy. Close coordination between the Document PM and the project's engineering team staff is essential.

Document Editor

The Document Editor is responsible for the production of the document, including format, text, and exhibits. The Document Editor should also have a strong understanding of the NEPA/MEPA regulations and other major environmental regulations. The Document Editor ensures that the document clearly "tells the story" of the project while maintaining a "single voice". The Document Editor also ensures that the document is consistent throughout including terminology, description of alternatives, impacts, mitigation, response to comments, etc.

For smaller projects the roles of Document PM and Document Editor may be assigned to the same person. The Document Editor (and their assigned staff) are the main "keepers" of the document, completing the bulk of the writing, editing, and organization of the document and incorporating summaries of the technical reports into the main body of the document (keeping the complete technical reports in the appendix). The Document Editor ensures that the document production follows the standards established in the Project Procedures Manual (see Section 3.2).

Graphic Designer

The Graphic Designer is responsible for creating all visual displays of information such as figures, maps, photographs, photo simulations, sketches, tables and charts (referred to collectively as exhibits). Creating quality environmental documents requires a much larger emphasis on visual displays and therefore, a larger, more consistent role for the Graphic Designer. It is important to identify a good graphic designer and include sufficient budget for their increased role. Clear exhibits will be important to streamline the overall document and improve quality.

The Graphic Designer will work closely with the Document Editor to ensure that all graphics display project information in a clear and effective manner, is consistent with the accompanying text, and follow the standards established in the Style Guide (see Section 3.2).

The Graphic Designer should also be highly involved in formatting the document. As noted previously, the most effective means of producing quality environmental documents which easily incorporate text and exhibits together is through the use of desktop publishing software such as In-design, PageMaker, iStudio Publisher, etc. The Graphic Designer will lead the effort in producing a clean, easily-readable document.

Creating quality environmental documents requires an expanded role for graphic designers

Technical Experts

The role of the subject matter Technical Experts is to provide in-depth examination of a range of issues related to the specific project. As listed in the NEPA and MEPA regulations (and often supplemented in the MEPA ENF Certificate), these issues range from those common to most transportation projects such as traffic, wetlands, rare species, air, noise, and historic/archeological resources to more project-specific issues that may include impacts to farmland, hiking trails, parkland, or tribal issues.

Whatever the issue, the Technical Expert is responsible for determining if the resource is present in the project area (normally requiring field work to determine the presence or boundaries of the resource), determining if and to what extent the proposed project alternatives will affect the resource, and the requirements of regulations that protect that resource. This information is generally documented in a technical report.

A summary of the findings should be prepared by the Technical Expert and included in the technical report (to be incorporated into the main body of the NEPA/MEPA document). This summary should include methodology, regulatory requirements, research, and findings.

Technical Experts are usually needed throughout the document production process to provide expert opinion (or an updated technical report) related to changes in the project design or regulatory requirements. It is recommended that the budget includes time for coordination with the Technical Experts beyond the time needed to produce the technical report.

3.2 DEVELOP A PROJECT PROCEDURES GUIDEBOOK

Prior to the beginning of the project, the Document PM should prepare a Project Procedures Guidebook. This short guidebook is useful to ensure that everyone involved in producing the document (and all accompanying technical reports) understands the established project procedures and documentation requirements. The following is a recommended list of items that may be addressed in a Project Procedures Manual but manuals should always be tailored to the specific project need:

- Organization Chart - Names and project roles of all team members, including MassDOT.
- Contact Information – Name, firm name, phone numbers, e-mail address of all team members.

- Tasks - Brief description of each deliverable and firm/department responsible.
- Schedule - An abbreviated schedule broken down by all major tasks and subtasks.
- Style Guide - Provides detailed information on the format of the text and exhibits for the document. This information will include standards for page size, fonts, margins, headings, bullets, sidebars, text boxes, columns, and structure of tables. It is recommended that the Procedures Manual itself be prepared in the same format as that required for the environmental document.
- File organization and naming conventions – Create a standard for electronic file structure and naming conventions.
- Quality Assurance/Quality Control (QA/QC) requirements – Describes process to ensure that all deliverables are subject to an independent technical review to assure the document adheres to the standards in the Style Guide and is reviewed for spelling, grammar, references, and consistency between text and graphics. The completion of these QA/QC procedures should be documented. The project schedule must include time for completion of QA/QC review.
- Section 508 Accessibility requirements – Provide general guidelines (and directions to where more specific information can be found) for the creation of accessible documents. Section 508 compliance is a federal requirement and is not optional. It is highly recommended that Section 508 compliance be considered in the earliest stages of the document development (see Sections 3.3 and 3.4).
- Naming conventions - Establishes the standard manner for identifying people, organizations, and places in your project area. For example, reference to:
    - People: Mayor Michael Richards
    - Organizations: Department of Environmental Protection (Spell out first time in each chapter, thereafter refer to as MassDEP.
    - Places: I-95/Summer Street Interchange
- Client preferences - A catch-all for other known preferences of the client that is not addressed elsewhere in the Procedures Manual. For example, client may prefer that aspects of the project area always be described north to south.

A project procedures guidebook simplifies and improves document production

3.3 CREATE ACCESSIBLE DOCUMENTS (SECTION 508 COMPLIANCE)

Federal law[4] requires that federal agencies make their electronic information accessible to people with disabilities. Federal agencies must give disabled employees and members of the public access to information that is comparable to access available to others.

Creating an accessible document is not difficult but it takes an understanding of the requirements and methods to implement this for the software you are using. **Warning: trying to modify a completed document to be Section 508 compliant is substantially more difficult (if not impossible) than planning for this from the beginning.**

Once you have selected the software you will be using to create the document (perhaps a combination of different software), read the latest web-based guidance on producing accessible documents. If using a combination of software (say Microsoft Word text to be incorporated into InDesign), ensure the source document is accessible. Website links are provided in Appendix 2 to assist in creating accessible document (current as of February 2015).

3.4 PLAN FOR WEB-BASED DOCUMENT

In addition to creating a Section 508-compliant document, it is important to plan for making the document easily downloadable from the internet (typically through MassDOT's website). The public will be discouraged from reading the document if it is so large that it takes more than 1 or 2 minutes to download. Break up the document into logical sections, none of which is larger than 5 MB.

To reduce the overall size of the document, focus on reducing the file size of data-rich files such as AutoCAD- or ArcGIS-based figures, photos, photo simulations, etc.

Web-based documents are typically created in PDF format. To improve the ease of use of the document, create a bookmarked table of contents. This allows the user to easily go to any section of the document simply by clicking on that section within the table of contents (this includes the main body and all appendices).

4 Section 508 of U.S. Rehabilitation Act of 1973, as amended in 1998.

4.0 ADVICE FOR NEPA AND MEPA COMPLIANCE

This section provides advice for compliance with specific key areas of NEPA and MEPA requirements including Purpose and Need and Alternatives Analysis. Further advice regarding meeting legal sufficiency for these topics is provided in Section 5.0.

4.1 DEFINE PURPOSE AND NEED

The purpose and need statement is one of the most important sections of a NEPA document because it informs the public of why the project is being proposed and is the basis for determining the range of alternatives to be evaluated. The preferred alternative identified must satisfy the purpose and need of the project. The purpose and need is also important for determining which alternatives can be approved under Section 404 of the Clean Water Act, and Section 4(f) of the USDOT Act of 1966. Without a well-defined, well-established, and well-justified purpose and need, it will be difficult to determine which alternatives are reasonable, prudent and practicable, and it may be impossible to dismiss the no-build alternative.

Many documents prepared for projects in Massachusetts are combined NEPA and MEPA documents. While the MEPA regulations do not specifically require the preparation of a purpose and need statement, the MEPA regulations contain a similar requirement to include "the objectives and anticipated benefits of the project" (see 301 CMR 11.07(6)(e)2). Even if a project only requires MEPA compliance, to build support for the project it is beneficial to clearly demonstrate the purpose of the project and how the preferred alternative will meet that purpose.

The key to developing an effective purpose and need statement is to ensure that it is not overly broad/unfocused or too narrowly defined. An overly broad purpose and need can jeopardize future steps in the NEPA process because the public is unconvinced that the project is really needed or it lends itself to the evaluation of such a wide range of alternatives that it is difficult (and indefensible in court) to narrow the alternatives down because they all meet the purpose and need.

Section 404 of the Clean Water Act is a federal regulation that protects wetlands and waterways.

Section 4(f) of the DOT Act protects public recreation areas, refuges and historic sites.

Further, if a project's purpose and need is too broad, resource agencies, interest groups, or the public will be able to generate one or possibly several alternatives which avoid or limit resource impacts and "appear" practicable. Sometimes long, drawn out negotiations or additional analyses are needed to clearly demonstrate that an alternative is not practicable, where a well-justified purpose and need would have clearly established it.

Conversely, a purpose and need that is too narrowly defined can lead to criticism that the range of reasonable alternatives was improperly narrowed. The public and regulators may feel that the NEPA process was flawed because MassDOT had selected its preferred alternative before the project development process began and wrote the purpose and need in a way that only their preferred alternative could be selected. Note that a purpose and need can evolve as the project develops, more information is gathered, and the transportation problems are more fully understood.

The following are recommendations for preparing a purpose and need statement.

- The purpose and need should be written in plain language that allows lay people to understand the technical reasons behind the "need" for the project. Generally, avoid overly technical terms but when technical terms are needed, provide an explanation of its meaning (this can be done in a sidebar or text box).

- Many (if not most) projects have more than one purpose. For that reason, a bulleted purpose and need statement help readers understand the multiple needs for a proposed project. This can be particularly helpful when identifying the preferred alternative among several alternatives. The preferred alternative is often the alternative that provides the best balance of meeting each purpose of the project while limiting impact to the environment.

- Each point in the purpose and need must be supported by sound data. If the data does not exist or does not strongly support your stated need, the entire project is at risk of not passing legal sufficiency. Additionally, a description of the agency/public involvement process conducted to establish the purpose and need is very effective in building support for the project. This process is required when preparing an EIS.

- Visual materials are very effective at conveying the often complex information within a purpose and need statement. For example, photos of a deteriorated bridge or of traffic congestion are much more powerful than a technical description of a fracture-critical beam or LOS F transportation link.

4.2 PRESENT AND COMPARE ALTERNATIVES CLEARLY

After describing the purpose and need, the principal function of a NEPA and MEPA document is to evaluate a range of alternatives to determine which alternative best satisfies the purpose and need of the project. Ultimately, the alternatives analysis will identify a preferred alternative that most closely meets all aspects of the purpose and need while limiting impact to the environment to the greatest extent practicable. The MEPA document also facilitates determination by state regulatory agencies that the preferred alternative is consistent with the specific regulations of that agency.

Leading the reader through this process in a concise and understandable way is challenging. As described in Section 2.5, the alternatives evaluation may be divided into two separate chapters, an "*Alternatives Considered*" chapter and a "*Comparison of Alternatives*" chapter.

The *Alternatives Considered* chapter would describe the alternatives development and screening process. This process is normally conducted at a high level, reserving the more detailed analyses to the smaller set of alternatives advanced from the initial screening process. The *Alternatives Considered* chapter should provide a summary of this process with the technical report of the screening process placed in an appendix. It is important that the summary in the main body of the document explain the process and reasoning of the screening process, not just the results. The reader should understand that the result of the preliminary screening process is to identify reasonable alternatives (those that would satisfy the purpose and need and do not have significant environmental impact) to be advanced for further study, and dismiss all other alternatives except the no-build alternative. Visual displays and tables/bar graphics are effective ways of presenting and comparing alternatives.

The *Comparison of Alternatives* chapter provides an evaluation of the alternatives that have advanced from the initial screening process for further study. The major elements of each alternative should be presented clearly (detailed descriptions of each alternative can be provided in a technical appendix). Side-by-side visual displays are especially effective in demonstrating the differences among alternatives.

Use side-by-side visual displays to compare alternatives

Bike Lanes

Bike Routes

Bikepaths

Consider grouping major alternatives together that have many characteristics in common (for example, East Alignment and West Alignment). The differences among the sub-Alternatives (East Alternative 1– 4 lanes vs. East Alternative 2- 6 lanes) can be more easily described once the overall alternative is understood. A scoring method can be developed to compare the features of the alternatives such as their ability to satisfy the Purpose and Need, traffic operations, level of impact to various environmental resources, etc. However, the scoring method must not be subjective. Each item to be scored must be based on defensible data. While the scoring needs to be objective, it may include both qualitative and quantitative data. Presenting the results of the scoring in a matrix is an effective way of comparing alternatives.

Table 1: RESULTS OF DESIGN CRITERIA EVALUATION[1]

Alt.	Primary Project Design Criteria Categories						
	Roadway Function & Safety	Context Sensitive	Navigation Function & Safety	Initial Construction Cost	Life Cycle Costs	Maintenance & Service Life	Environment
1	Good	Good	Poor	Good	Fair	Poor	Poor
1A	Good	Good	Fair	Good	Fair	Poor	Poor
1B	Good	Satisfactory	Satisfactory	Good	Fair	Fair	Fair
2	Good	Satisfactory	Good	Fair	Poor	Fair	Fair
3	Good	Fair	Good	Fair	Satisfactory	Satisfactory	Satisfactory
4	Good	Fair	Good	Fair	Satisfactory	Satisfactory	Satisfactory
5	Good	Poor	Good	Satisfactory	Good	Good	Satisfactory

Notes:

1. Good – Best meets the intent of the criterion compared among all alternatives considered.
   Satisfactory – Generally meets the intent of the criterion, with some exception, relative to all alternatives considered.
   Fair – Meets some of the intent of the criterion, but not as well as the more highly rated alternatives.
   Poor – Essentially does not meet the intent of the criterion or meets the criterion at a low threshold as compared to the more highly rated alternatives.
   For more detailed explanation of the design criteria, as well as the full evaluation, see the *Bridge Alternatives Evaluation and Life Cycle Cost Comparison* in the Appendix E.

Table 2: CONTEXT SENSITIVE SOLUTIONS - SUMMARY OF BRIDGE ELEMENTS with TIMBER

Alt.	Approach Substructure	Approach Beams	Deck	Sidewalks	Pedestrian Railings	Traffic Railings	Bascule Span
1	✓	✓	✓	✓	✓	✓[5]	✓
1A	✓	✓	✓	✓	✓	✓[5]	✓
1B	✓	✓	✓	✓	✓	✓[5]	✓[6]
2	✓	✓	✓	✓	✓	✓[5]	✗[4]
3	✗	✓[5]	✓	✓	✓	✓[5]	✗[4]
4	✗	✗[1]	✓	✓	✓	✓[5]	✗[4]
5	✗	✗[2]	✗[3]	✓	✓	✓[5]	✗[4]

Notes:

1. Steel stringers are obscured by the timber sidewalks.
2. Concrete deck beams are obscured by the timber sidewalks.
3. Concrete deck includes a stamped concrete pattern and color admixtures to simulate a timber deck.
4. Concrete bascule pier contains stone facing and steel bascule leaf is obscured by the timber sidewalk.
5. Denoted timber members are glue laminated (i.e. glulam) timber in lieu of sawn lumber.
6. Timber bascule leaf is supported concrete bascule pier which contains stone facing.

These example tables from MassDOT's November 2012 Mitchell River Bridge Replacement Project Environmental Assessment, present a summary of the project's alternatives evaluation

The scoring matrices provided within MassDOT's EA for the Mitchell River Bridge Project are examples of effective matrices used to compare alternatives (see above).

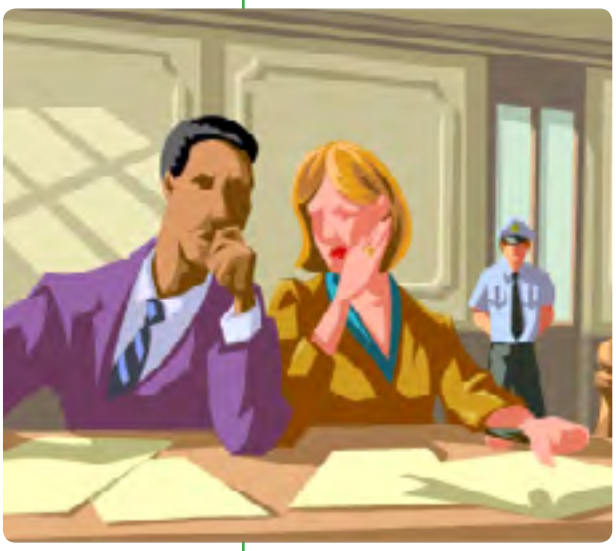
For additional information on developing a purpose and need statement and a range of alternatives, refer to the AASHTO Practitioner's Handbook, *Defining a Purpose and Need and Determining a Range of Alternatives for Transportation Projects (2006)* and FHWA's *Environmental Review Toolkit* (Appendix 1).

5.0 CREATING LEGALLY SUFFICIENT DOCUMENTS

This section provides information and advice for successfully completing legal sufficiency review

5.1 WHAT IS LEGAL SUFFICIENCY REVIEW?

FHWA conducts a legal sufficiency review of every NEPA document for projects to be approved for NEPA/Section 4(f) compliance. This process evaluates the ability of a NEPA document and/or Section 4(f) Evaluation to be sustained in court under litigation. While legal sufficiency review is generally conducted for EIS-level projects, FHWA may conduct this review for any type of NEPA document (an EA or even a CE) depending on the perceived level of risk for litigation.



The legal sufficiency review is performed by FHWA attorneys concurrent with the local Division Office review of the draft Final EIS. The attorneys assess the legal standards and litigation risk, while assuming that the technical aspects of the documentation are correct and complete.

Compliance with the following legislation, regulations, and guidance are the backbone of the legal sufficiency review process for FHWA:

- National Environmental Policy Act of 1969 as amended
- Regulations of the Council of Environmental Quality, 40 CFR parts 1500-1508
- Section 4(f) at 49 USC 303 and 23 USC 138
- Administrative Procedures Act
- 23 CFR 771.125(b), legal sufficiency review for final EIS issued by FHWA
- 23 CFR 771.135(k), legal sufficiency review for final Section 4(f) report issued by FHWA.

For NEPA documentation, the attorneys focus on the following topic areas: purpose and need, alternatives, scope of environmental resources and impact analysis, interagency coordination, public involvement, and responses to comments. For Section 4(f) documentation, the attorneys focus on whether the document meets the standards within the Section 4(f) regulations[5] which require a clear and logical analysis of 'no practicable alternative to the use of the Section 4(f) resource', and demonstrates that the standards of Section 4(f) are satisfied including adequate mitigation of the impacts to the resource.

Legal sufficiency review is another reason to strive to improve the quality of environmental documents. Documents that are clearly organized and well written make it easier for attorneys and courts to make determinations about legal sufficiency. It is important to avoid poor writing, excessive use of jargon, and missing or incomplete information. A legally sufficient document needs to be read and understood by the public, decision makers, and potentially the court in the case of litigation.

However, there can be inherent conflict between legal sufficiency and efforts to make NEPA documents concise and easier to read. A 2005 Transportation Research Board (TRB) Report, the *Survey on Environmental Documents*, found there was agreement among survey respondents that NEPA documents are too large, wordy, repetitive, complex and cumbersome[6]. However, the fear of failing legal sufficiency review is one of the factors identified that may lead to NEPA documents becoming longer, more technical, and harder to read.

5.2 ADVICE FOR WRITING A LEGALLY SUFFICIENT DOCUMENT

Advice for writing a legally sufficient document involves much of the same advice as previously provided for writing a quality environmental document. The same TRB report mentioned above includes a chapter prepared by William G. Malley, an attorney with the law firm Akin Gump Strauss Hauer & Feld, LLP, with recommendations from the standpoint of legal defensibility, which are reiterated here[7]:

- Identify and Explain Key Assumptions: preparers of NEPA documents need to document all assumptions and explain those assumptions to ensure the credibility of that analysis.

5 23 CFR 774.

6 National Cooperative Highway Research Program, Transportation Research Board. *Synthesis of Data Needs for EA and EIS Documentation – A Blueprint for NEPA Document Content. NCHRP Project 25-25. January, 2005*

7 Ibid.

- Describe Methods Used to Develop Data: credibility of the technical analysis is enhanced by describing methodologies, including limitations, in the document.
- Use Effective Visuals to Present Key Results: visual aids can be beneficial to both the general reader, and for litigation.
- Don't Just Summarize the Data, Analyze It: explaining the data means connecting the dots, rather than just reciting the data that is displayed in a table.
- Document Compliance with Key Regulatory Requirements: the NEPA process is often used as a method to achieve compliance with other environmental regulations and policies.
- Provide Overview of Major Project Issues: usually a few issues receive a disproportionate amount of attention during the NEPA process.
- Systematically Review Data to Ensure Internal Consistency: back-checking and cross-checking references to data are important to eliminate inconsistencies.

Do not hesitate to request consultation with attorneys from MassDOT or FHWA at any point during the development of a NEPA and/or MEPA document, not just during the legal sufficiency review.

Writing a legally sufficient document doesn't mean covering your bases by continuously adding more information to the document; it involves preparing a succinct, well-organized, and thoroughly researched document that logically leads the reader through the project development process.

5.3 AVOIDING COMMON PROBLEMS OF LEGAL SUFFICIENCY REVIEW

In its report, *Improving the Quality of Environmental Documents*, AASHTO has provided a list of common issues that are essential to the legal sufficiency review process. An abbreviated version of this discussion is provided below[8].

8 American Association of State Highway and Transportation Professionals (AASHTO). *Improving the Quality of Environmental Documents*, A Report of the Joint AASHTO/ACEC Committee in Cooperation with the Federal Highway Administration. Washington, DC. May 2006.

Purpose and Need

The project purpose and need statement is the linchpin of any NEPA study and is often a point of criticism and target in litigation. Common concerns include:

- The project purpose and need are defined too narrowly. This can lead to criticism that the range of reasonable alternatives was improperly narrowed.
- Project goals are established either vaguely or too broadly.
- Local agencies' policy and goals established in transportation, land use, and other relevant planning studies are not addressed in the purpose and need statement.

Alternatives screening and analysis

Related to purpose and need, the development and screening of alternatives is a frequent cause of criticism and target in litigation. The administrative record must support the development and elimination of alternatives. Some common concerns include:

- Failing to explain the alternative development, screening, and evaluation process adequately so that it can be found rational, reasonable, and complete.
- Eliminating alternatives without adequate or appropriate analysis to support the decisions.
- Eliminating alternatives based on outdated information or older studies that may no longer be reliable.
- Failing to reconsider alternative screening decisions later in the project development process when new information becomes available.
- Over-reliance on weighting and scoring techniques. Such numerical rating systems can be useful for screening alternatives, particularly if numerous alternatives are being considered; however, the results of these techniques can be misleading if important information is not available or if too much or too little weight is given to certain factors. Scoring techniques should be used appropriately and with care.

Project segmentation

The FHWA NEPA guidance requires project alternatives to have logical termini, have independent utility, and not restrict consideration of alternatives for reasonably foreseeable future transportation improvements.

Study area and boundaries

Appropriate study area and environmental resource boundaries are critical to the NEPA process, yet are often described vaguely or without clear rationale. The study area is sometimes defined by limited boundaries, despite the fact that project impacts may extend over a wide geographic area or include different and overlapping environmental resource boundaries. Sometimes the terms study area and project area are interchanged when in fact, the effects of the project can extend significantly beyond the limits of the project area.

Compliance with procedural requirements

The National Historic Preservation Act of 1966 (NHPA) Section 106, Endangered Species Act (ESA) Section 7, and other procedural processes require the lead agencies to consult with resource and regulatory agencies concerning project impacts to specific resources. One way to address this concern is to include a summary in the relevant section of the NEPA document that highlights the consultation process, with key dates, participants, and reference to related documents in the record.

Compliance with substantive requirements

Legal sufficiency reviews will look at the substantive requirements that will potentially influence the ultimate project decision. Two important requirements are Section 4(f) and Section 404, both of which require specific findings prior to approval of the project or permit.

Responses to public comments

For some high-profile projects, public comments on the Draft EIS can be voluminous and substantive. Responding to these comments can be challenging and time consuming. In many cases, responses will be prepared by a team, which can make the process more efficient but also may introduce inconsistency or result in responses that fail to address the substantive issue. The Document Editor must ensure these responses are consistent before publication.

Responses to resource agency concerns

For large and complex projects, tension or disagreement can develop between the lead agency and resource agencies. It is important that relevant and reasonable resource agencies' concerns be considered and adequately addressed. Courts often look to resource agencies as subject-matter experts in the public sector, and failure on the part of the lead agency to adequately respond to their comments or address their concerns can present serious problems during litigation. This is achieved through open and constructive communication before the document is finalized. It must be recognized that each agency has its own regulatory compliance issues.

Accounting for new information or circumstances

Essential information related to the project analysis and decision making must be kept current. Ideally, project studies should be continually updated, with new information incorporated into the document and administrative record as it becomes available.

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APPENDIX 1
ADDITIONAL NEPA GUIDANCE

AASHTO - *Improving the Quality of Environmental Documents*, A Report of the Joint AASHTO/ACEC Committee in Cooperation with the Federal Highway Administration. Washington, DC. May 2006.
http://environment.transportation.org/pdf/IQED-1_for_CEE.pdf

TRB - National Cooperative Highway Research Program (NCHRB). *Synthesis of Data Needs for EA and EIS Documentation – A Blueprint for NEPA Document Content*. NCHRP Project 25-25. January, 2005
http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25(1)_FR.pdf

Washington State Department of Transportation, Reader-Friendly Toolkit, June 2008
http://www.wsdot.wa.gov/Environment/ReaderFriendly.htm

AASHTO NEPA Practitioner's Handbooks.
http://www.environment.transportation.org/

AASHTO/FHWA – Examples of Effective Techniques for Preparing High Quality NEPA Documents
http://environment.transportation.org/center/products_programs/reports/quality_enviro_docs.aspx

FHWA Environmental Review Toolkit.
http://www.environment.fhwa.dot.gov/projdev/tdmneed.asp

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APPENDIX 2
SECTION 508 COMPLIANCE GUIDANCE

The following website links provide guidance on producing a Section 508 Accessible document

Microsoft –

http://office.microsoft.com/en-us/word-help/creating-accessible-word-documents-HA101999993.aspx

Adobe –

http://www.adobe.com/accessibility.html

Apple OSX –

http://www.apple.com/accessibility/resources/

massDOT
Massachusetts Department of Transportation
Highway Division