



U.S. Department of Transportation
Federal Highway Administration

Examples

of Effective Techniques for Improving the Quality of Environmental Documents

Introduction

For more than a decade, the Federal Highway Administration (FHWA) has been engaged in an effort to improve the quality of environmental documents prepared under the National Environmental Policy Act (NEPA). This effort has included several initiatives undertaken in collaboration with the American Association of State Highway and Transportation Officials (AASHTO) and the American Council of Engineering Companies (ACEC).

In 2006, this collaborative effort resulted in the publication of a joint report, *Improving the Quality of Environmental Documents*, which identified three core principles that should guide the preparation of high-quality NEPA documents:

- **Tell the Story:** Tell the story of the project so that the reader can easily understand the purpose and need for the project, how each alternative would meet the project goals, and the strengths and weaknesses associated with each alternative.
- **Keep it Brief:** Keep the document as brief as possible, using clear, concise writing; an easy-to-use format; effective graphics and visual elements; and discussion of issues and impacts in proportion to their significance.
- **Meet Legal Requirements:** Ensure that the document meets all legal requirements in a way that is easy to follow for regulators and technical reviewers.

Since 2006, many State departments of transportation have embraced reader-friendly approaches to NEPA documents. In addition, FHWA has actively encouraged efforts to improve NEPA document quality as part of the Every Day Counts initiative. This broad commitment has resulted in a growing body of examples of completed NEPA documents that embody reader-friendly principles. But in practice, it can be difficult for practitioners to find relevant examples of the various techniques that have emerged across the country.

The purpose of this report is to help practitioners bridge the gap between the theory and practice of producing high-quality NEPA documents by providing examples that illustrate specific techniques. The examples are organized into two broad categories:

- **Improving Overall Document Quality.** This group includes techniques for improving the quality and readability of the NEPA document as a whole. These examples address such issues such as page layout, writing style, and graphics.
- **Meeting NEPA and Related Requirements.** This group includes techniques for strengthening portions of the document that address specific requirements under NEPA and other environmental laws. These examples address issues such as purpose and need, alternatives analysis, methodologies, and mitigation.

For a full list of the techniques covered in this report, refer to the Table of Contents below.

Background

How is this report organized?

This report consists of 17 chapters, each addressing a technique for improving the quality NEPA documents. Each chapter begins with a brief introduction, which provides context and describes the technique. Following the introduction, the chapter includes a series of examples. Each example is an excerpt from a recent EIS. The examples are annotated to describe the techniques that they are intended to illustrate.

How was this report was developed?

The examples in this report were gathered based on input received from State departments of transportation and consultants, as well as independent research. The examples in this report were selected because they illustrate a range of potential methods for improving the quality and readability of NEPA documents. For a list of the NEPA documents used in developing this report, refer to the Reference Documents section below.

How is “document quality” defined?

For purposes of this report, “quality” is defined broadly to include both readability and legal sufficiency. Therefore, this report does not focus solely on ways to make NEPA documents more “reader-friendly.” Some of the techniques primarily enhance readability, while others primarily enhance legal sufficiency and defensibility.

Does this report create any new requirements? Is it official guidance?

No. The goal of this report is to serve as a source of ideas about ways to improve NEPA documents. The report does not create requirements, nor does it provide official guidance.

What other materials are available to assist in improving NEPA document quality?

The 2006 report, *Improving the Quality of Environmental Documents*, provides an excellent overview of approaches to improving NEPA document quality. In addition, several States have developed their own guidance documents, as listed in Resource Materials below.

In addition, a Practitioner’s Handbook on Improving NEPA Document Quality is in development by the Center for Environmental Excellence by AASHTO. The Practitioner’s Handbook will synthesize and expand upon the techniques shown in this report.

Where can copies of this report be obtained?

Copies of this report are available for download, without charge, on the website of the Center for Environmental Excellence by AASHTO at www.environment.transportation.org.

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Reference Documents

Excerpts from the following NEPA documents are included in this report.

Colorado

- **US 36 Corridor, Final Environmental Impact Statement** (Oct. 2009), prepared by FHWA and Colorado Department of Transportation
- **I-70 Mountain Corridor, Final Programmatic Environmental Impact Statement** (March 2011), prepared by FHWA and Colorado Department of Transportation

Illinois

- **Elgin-O'Hare Bypass, Tier 1 Final Environmental Impact Statement** (May 2010), prepared by FHWA and Illinois Department of Transportation

Indiana

- **I-69, Tier 1 Final Environmental Impact Statement** (Dec. 2003), prepared by FHWA and Indiana Department of Transportation

Maryland

- **Baltimore Red Line Project, Final Environmental Impact Statement** (Nov. 2012), prepared by FTA and Maryland Transit Administration
- **Purple Line Project, Final Environmental Impact Statement** (Aug. 2013), prepared by FTA and Maryland Transit Administration
- **Intercounty Connector, Final Environmental Impact Statement** (Jan. 2006), prepared by FHWA and Maryland State Highway Administration

North Carolina

- **Mid-Currituck Bridge, Final Environmental Impact Statement** (Jan. 2012), prepared by FHWA and North Carolina Department of Transportation

Ohio

- **Cleveland Opportunity Corridor, Draft Environmental Impact Statement** (Aug. 2013), prepared by FHWA and Ohio Department of Transportation

Oregon

- **OR 62, I-5 to Dutton Road, Final Environmental Impact Statement** (May 2013), prepared by FHWA and Oregon Department of Transportation

Utah

- **West Davis Corridor, Draft Environmental Impact Statement** (April 2013), prepared by FHWA and Utah Department of Transportation

Washington State

- **SR 520, I-5 to Medina, Final Environmental Impact Statement** (June 2011), prepared by FHWA and Washington State Department of Transportation
- **I-90 Snoqualmie Pass East, Final Environmental Impact Statement** (Aug. 2008), prepared by FHWA and Washington State Department of Transportation
- **Mukilteo Multimodal Project, Final Environmental Impact Statement** (June 2013), prepared by FTA and Washington State Department of Transportation

Resource Materials

Council on Environmental Quality

- **Final Guidance on Improving the Process for Preparing Efficient and Timely Environmental Reviews Under the National Environmental Policy Act** (March 2012).
- **Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations** (March 1981).

FHWA

- **Memorandum, Improving the Quality of Environmental Documents** (July 31, 2006) from Fred Skaer, Director, Office of Project Development and Environmental Review, to FHWA Division Administrators (adopting AASHTO-ACEC-FHWA report).

AASHTO-FHWA-ACEC

- **Improving the Quality of Environmental Documents** (May 2006), prepared AASHTO, FHWA, and the American Council of Engineering Companies.

California Department of Transportation

- **Environmental Impact Statement Annotated Outline** (Aug. 2013), prepared by California Department of Transportation.

Colorado Department of Transportation

- **CDOT NEPA Manual, Version 3** (March 2013), prepared by Federal Highway Administration and Colorado Department of Transportation.

Oregon Department of Transportation

- **NEPA Document Dos and Don'ts, 2nd Edition** (Aug. 25, 2011), prepared by Federal Highway Administration and Oregon Department of Transportation.
- **Environmental Impact Statement Template** (May 2010), prepared by Federal Highway Administration and Oregon Department of Transportation.

Washington State Department of Transportation

- **Reader-Friendly Document Tool-Kit** (2009), prepared by Washington State Department of Transportation.



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A. Techniques for Improving Overall Document Quality

Chapter 1. Page Layout

The readability of a NEPA document depends not only on the content, but also on the way that content is presented. For example, a reader's ability to absorb complex information can be enhanced by techniques such as white space, use of color, and careful placement of graphics in relation to the text.

The examples in this section illustrate several page layout techniques, which can be used separately or in combination. They include:

- *Use of white space and color.* Color can be used in headings, footers, tables, and even in the body text to add visual interest and alert the reader to navigation aids (e.g., section numbers). White space makes it easier for the reader to absorb complex information by presenting the content in more digestible chunks rather than in long, dense blocks of uninterrupted text, which can be overwhelming to the reader
- *Integration of graphics and text.* The selection of photos and other visual elements can be used to draw the reader's attention to specific conclusions in the text, or to highlight certain resources that are especially important to the analysis. For example, as shown in this chapter, a Section 4(f) chapter for a transit project included an inset photo showing a historic building that would be removed as part of construction of the preferred alternative.

Using these techniques may require the involvement of team members with expertise in document layout and design. It also may require using special software programs that allow more flexibility in combining graphics and text, which in turn may require more time for document production. Therefore, while layout techniques may improve the quality of the NEPA document, they do not necessarily simplify preparation. It is important to take these additional efforts into account when preparing project schedules and budgets.

White Space, Use of Color

- OH: Opportunity Corridor DEIS
- OR: OR 62 FEIS
- CO: I-70 PEIS

Techniques to note:

- use of color
- use of white space



the CLEVELAND
OPPORTUNITY CORRIDOR
PROJECT

**Draft Environmental
Impact Statement**

AUGUST 2013



HNTB



Documents

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Techniques to note:

- use of color in section headings, page numbers, and charts.
- use of white space - e.g., large left margin

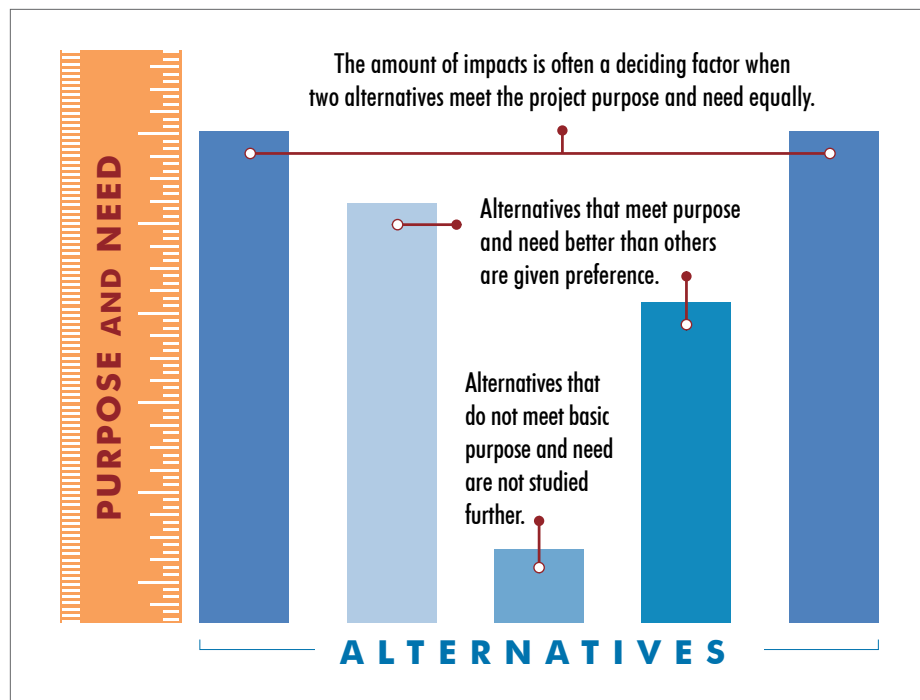
Chapter 2 || **PURPOSE and NEED**

WHAT ARE PURPOSE AND NEED?

The purpose and need for a project define the transportation problems that the project must solve. The purpose and need also act as “measuring sticks” for the project alternatives, helping determine to what extent each alternative meets each project need (Figure 2-1). Alternatives that do not meet the basic needs of a project are not studied further. Assuming all other concerns are equal, if one alternative meets the project purpose and need better than another, then that alternative is favored as the project progresses. And as alternatives are developed,

the purpose and need can help determine if an impact is necessary.

Figure 2-1: Measuring Alternatives Using Purpose and Need



The purpose and need also help decide where a project will begin and end by defining the “who, what, where, when and why” of the transportation needs. This allows an agency to create alternatives that satisfy the project’s needs completely – no more, no less. The beginning and end points of the project are also called “logical termini.” Logical termini for roadway projects are usually interchanges or intersections where travel demand changes.

The purpose and need are updated throughout the planning and engineering stages as the project team learns more. The purpose and need are not final until they are approved in the Final Environmental Impact Statement (FEIS).

The purpose and need for the Cleveland Opportunity Corridor project are documented in the project’s *Purpose and Need Statement*¹ (May 2011), which can be found on the CD included with this Draft Environmental Impact Statement (DEIS). Since 2011, the purpose and need have been updated with new population data from the 2010 U.S. census. These changes are included in the following sections.

¹ This document is incorporated by reference into this DEIS.

Techniques to note:

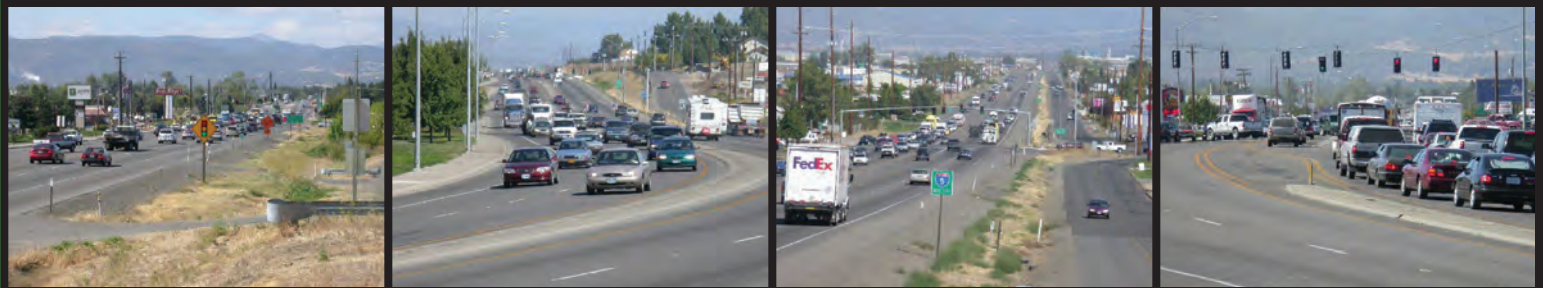
- use of color on cover
- cover includes design elements used throughout the EIS.

OR 62:

I-5 to Dutton Road

Final Environmental Impact Statement and Record of Decision

May 2013



Documents

Federal-Aid Number: X-NH-S022(022) • ODOT Key Number: 13226

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Techniques to note:

- use of color in headings, section numbers
- use of color to highlight text that has changed since DEIS
- use of white space

Executive Summary

How To Use This Executive Summary

In the FEIS and this Executive Summary:

- Text from the DEIS that remains substantially unchanged from the DEIS, including minor edits, such as corrections of typos and numerical errors and rewording to clarify meaning, is printed in black.
- New text is printed in burnt orange, which is the color of this text.
- Figures from the DEIS are reprinted. Where the content of a DEIS figure has changed, such as to show a change in design or impacts, the DEIS figure is immediately followed by a new figure with the same figure number, but with “FEIS” added.
- Where impact numbers or text in a table have changed because of a change in design or impacts, the numbers or text from the DEIS remain in the table and the new numbers or text are added in burnt orange immediately below the original numbers or text from the DEIS.
- The DEIS text on mitigation measures is retained, followed by the mitigation measure commitments that are incorporated into the action.

The FEIS contains new numbers and text because of changes from the DEIS in the roadway projects expected to be built under the No Build Alternative, in the design and impacts of the Preferred Alternative, and in information and circumstances. The design of the alternative and the design options that were not identified as the Preferred Alternative have not been changed and the FEIS does not contain changes to those impacts.

This Executive Summary provides an overview of the project and its potential impacts. The OR 62: I-5 to Dutton Road Project Environmental Impact Statement (EIS) provides the information in greater detail.

Introduction

The Oregon Department of Transportation (ODOT) and the Federal Highway Administration (FHWA) propose building the Oregon Highway 62 (OR 62): I-5 to Dutton Road Project, a 7.5-mile, four-lane, access-controlled expressway to serve as a bypass of existing OR 62 from Medford to north of White City in Jackson County, Oregon. The project includes the bypass, four interchanges, and changes to local streets and roads to accommodate the bypass. The project would reduce congestion and improve safety on existing OR 62 in Medford and north through White City by redirecting traffic to the bypass. The Bypass would provide faster travel and improved safety for vehicles traveling within and through the region. Figure ES-1 shows the general location of the project.

NEPA, enacted in 1970, requires disclosure of the environmental impacts of federally-funded projects and opportunity for public comment.

A Section 4(f) *de minimis* finding for the historic Cingcade Complex, was made by FHWA on December 16, 2011. The DEIS proposed a Section 4(f) *de minimis* use of the Denman Wildlife Area by both build alternatives, and Section 4(f) *de minimis* uses of the Bear Creek Greenway path and the planned Midway Park by the SD Alternative. These three are recreational Section 4(f) resources in the project area. A *de minimis* use of a Section 4(f) resource is a use that does not adversely affect the activities, features, and attributes that qualify a park or historic resource for protection under Section 4(f) of the U.S. Department of Transportation Act of 1966 (referred to below as Section 4(f)).

FHWA has made final Section 4(f) *de minimis* determinations for impacts to the Denman Wildlife Area, the Bear Creek Greenway path, and the planned Midway Park by the Preferred Alternative and those are included in Appendix E.

If the SD Alternative is selected, 1.3 acres of land purchased with Land and Water Conservation Fund (LWCF) grants and protected by Section 6(f) would be converted to transportation use. The location of replacement land for this use would be identified prior to issuing the Final Environmental Impact Statement (FEIS).

Because ODOT's and Jackson County's records differ from those of National Park Service (NPS) and Oregon Parks and Recreation Department (OPRD), two additional parcels of land could also be protected by Section 6(f). This would result in an additional conversion of 0.3 acres of land protected by Section 6(f). ODOT will continue to work with NPS and the OPRD to resolve the status of these parcels. This resolution will occur as part of final design and property acquisition.

ODOT and FHWA invite review of the proposed project. Giving citizens, stakeholders, and public agencies the opportunity to review and comment on the proposed project is a vital part of the National Environmental Policy Act (NEPA) process. The process helps decision-makers evaluate project alternatives. All substantive comments submitted will be considered.

The publication of the FEIS and ROD concludes the NEPA process. Comment is no longer being invited.

To learn more about the proposed project or to submit comments on the DEIS and proposed Section 4(f) *de minimis* findings for the use of the Bear Creek Greenway, planned Midway Park, and Denman Wildlife Area, please visit the OR 62 project website at http://www.oregon.gov/ODOT/HWY/REGION3/hwy62_index.shtml.

Section 4(f) *de minimis* findings have been completed. The publication of the FEIS and ROD concludes the NEPA process. Comment is no longer being invited.

Agencies and the public may send written and e-mail comments to:

Anna Henson
Oregon Department of Transportation
ODOT Region 3
100 Antelope Road
White City, OR 97503
Anna.HENSON@odot.state.or.us

Comments may also be given at a public hearing held during the review of the DEIS. Following the public hearing, ODOT and FHWA will review, consider, and address all substantive comments. Responses to comments will be provided in the FEIS. Comments on the DEIS must be received within 45 days from the date on the cover of this document.

The publication of the FEIS and ROD concludes the NEPA process. Comment is no longer being invited.

Techniques to note:

- use of color 'tab' on right side of section dividers to assist in navigation



T A B L E O F C O N T E N T S

Chapter 1. Purpose and Need

1.1 What's in Chapter 1?

Chapter 1 describes the transportation problems that exist in the Interstate 70 (I-70) Mountain Corridor (the Corridor) today and are forecast to occur in the future. These problems lead to the definition of the project purpose and need. **Chapter 1** documents the transportation problems and the need for a solution to these problems. The purpose and need provides the basis for defining reasonable alternatives and the foundation for eliminating alternatives in **Chapter 2, Summary and Comparison of Alternatives**. **Chapter 1** also describes the study limits, briefly describes the Corridor, and summarizes background information from other studies that contribute to an understanding of the Corridor and its transportation problems. Other related project information presented in **Chapter 1** includes a description of the 2035 and 2050 forecast years used to examine potential future growth and the associated travel demand, including the various types of trips that are likely to occur. For more detailed information on the travel demand forecasts, see the *I-70 Mountain Corridor PEIS Travel Demand Technical Report* (Colorado Department of Transportation [CDOT], March 2011).

1.2 Why was this Corridor study initiated?

Interstate 70 is the only east-west interstate to cross Colorado and the only continuous east-west highway in the study area. It is the major corridor for access to established communities and recreational areas that are important contributors to the quality of life and the economic base in the state. This Corridor provides access to the White River National Forest and the Arapaho and Roosevelt National Forests, the two most visited National Forests in the United States. Destinations along the Corridor include a number of major ski resorts that attract local, national, and international visitors. Recreational travel is the most predominant contributor to peak I-70 highway traffic, especially during summer and winter weekends and holidays. Existing traffic during peak travel times is characterized by congestion that noticeably affects local travel, suppresses the number of skier and other recreational visits, and affects the tourism economy.

In addition to recreational travel, the Corridor is important to freight movement in Colorado. Heavy vehicles—trucks, buses, and recreational vehicles—represent about 10 percent of traffic along the Corridor. The variation in speeds between these vehicles and faster moving automobiles, particularly on the steep grades, contributes to safety, mobility, and congestion in the Corridor. **Figure 1-1** displays Colorado and the I-70 Mountain Corridor.

Growth in the Corridor and the Denver metropolitan region has resulted in an increase in the number of trips along the Corridor. Travelers currently experience congestion, and in the future will experience substantial travel time delays, which restrict mobility and accessibility along the Corridor. Projected travel demands in this Corridor exceed the design capacity of the facility and will result in severe congestion for extended periods of time.

The Corridor traverses the Rocky Mountains of Colorado. The portion of the I-70 highway examined in this document extends for 144 miles and traverses the rugged terrain and outstanding scenery of central Colorado, including the steep grades leading up to the Continental Divide and Vail Pass, and the narrow, steep walled Clear Creek and Glenwood Canyons. Tight curves, steep grades, deficient interchanges, and the lack of climbing and passing lanes contribute to capacity limitations throughout the Corridor's 144 miles.

The lead agencies prepared this document to identify transportation solutions at the Corridor level and to provide a foundation for future project-level analysis of specific improvements. This document recommends the general location, mode types, and capacity for future transportation improvements in the Corridor.

The I-70 Mountain Corridor (referred to as the Corridor) extends 144 miles from Glenwood Springs in western Colorado to C-470/Jeffco Government Center light rail on the western edge of the Denver metropolitan area (**Figure 1-1**). The Corridor includes both the I-70 highway and the associated infrastructure.

Integration of Text and Photos

- OH: Opportunity Corridor DEIS
- MD: Purple Line FEIS
- MD: Baltimore Red Line FEIS
- WA: 520 FEIS
- WA: I-90 Snoqualmie Pass FEIS



Techniques to note:

- inset photo, in close proximity to related text; highlights important resource in affected environment



▲ Figure 4-32: The study area includes industrial properties that are vacant or no longer in use but that could contain polluted soil or groundwater.

is a high possibility of pollution, a Phase II ESA is done to test the site and determine how much pollution may exist. The primary focus of these efforts is to identify potential liability from buying polluted properties, determine if there is any pollution that will need to be specially managed and identify related costs.

The ESA studies also help protect the public and construction workers. In some cases, contaminated material such as soil may need to be removed from a property. If this type of work is required, the details would be included in the final design plans.

ODOT completed an ESA screening and 29 Phase I ESAs for the project. Due to the large number of properties that need to be studied, ODOT could not complete all the Phase I ESAs prior to publication of this DEIS. No Phase II studies have been completed yet. Of the 29 properties studied, 16 would be affected by the preferred alternative and will require Phase II studies. An additional 26 properties will require Phase I studies. The properties requiring further study are shown on Figure 4-33, page 4-38.

All remaining Phase I and Phase II ESA studies will be completed during the final design of

the project. The results of those ESAs and any requirements for material handling and disposal and worker protection would be included in the design plans for the project.

For additional details about the industrial properties in the area of the project, refer to the *Environmental Site Assessment Screening* (November 2009) and the *Phase I Environmental Site Assessment Opportunity Corridor Project Area* (April 2011). These reports are on the CD included with this DEIS.

As part of a separate project, the City of Cleveland received a grant from EPA to develop a plan to assess, clean up, and reuse existing brownfield sites in the study area. This grant is part of a partnership between the U.S. Department of Housing and Urban Development (HUD), USDOT and EPA. This partnership, called the Partnership for Sustainable Communities, helps communities meet their housing, transportation and environmental goals. The City's plan for brownfields redevelopment is being coordinated closely with the Cleveland Opportunity Corridor project. This coordination would continue during final design.

The No-Build Alternative would not affect land from industrial properties.

HOW WOULD CONSTRUCTION ACTIVITIES AFFECT THE SURROUNDING COMMUNITY?

Short-term impacts to the community likely would occur while the Cleveland Opportunity Corridor project is built, and then stop after construction is finished. Construction activities in any one area could last for 24 months or more. Potential temporary construction effects could include the following:

- Temporary use of land to build the new boulevard and other features;
- Temporary increase in noise from construction equipment and activities;



Techniques to note:
- inset photo, in close proximity to related text; highlights an important feature of the study area

several factors, including the loss of local manufacturing jobs and the overall shift from railroads to trucks to move goods and products. Also, the rail lines – which once served the industries in the area – and the Kingsbury Run Valley are now barriers to local access.

These changes caused local businesses to leave the area for locations with better access to the Interstate and new roads to support their needs. As businesses closed or relocated, job opportunities declined. Residents also began moving to other areas.

The decrease in population, combined with the recent economic recession, has led to a number of other trends affecting the area. Overall, approximately 29 percent of the land in or near the project area is currently vacant (Figure 4-6), and the City of Cleveland has increased its efforts to demolish vacant and abandoned structures. The increased number of vacant lots has left areas where only a few houses remain. Industrial

sites no longer in use are not maintained. Lack of maintenance and abandonment have led to the demolition of some local cultural and historic resources. Property values and the tax base have also fallen, and there has been limited economic development and outside investment in the area. Declining populations and challenging economic conditions have also caused area churches and schools to close.

WOULD THE PROJECT BE CONSISTENT WITH PLANNED DEVELOPMENTS AND LOCAL LAND USE PLANS?

The City of Cleveland is working on an overall strategy to promote redevelopment and renewal in southeast Cleveland, including the area known as the “Forgotten Triangle” – an area bordered roughly by Kinsman Road, Woodland Avenue and Woodhill Road (Figure 4-5, page 4-4). The No-Build Alternative would not result in any changes to land use.



▲ Figure 4-6: Approximately 29 percent of the land in or near the project area is currently vacant.



Techniques to note:

- inset photo, in close proximity to related text; highlights an important resource that would be impacted by the project

December 2012

continued coordination with the officials with 23 CFR 774.5(b)(2), all potential de minimis

impacts are being presented for public review and comment with the FEIS, in conjunction with the requirements of NEPA. The 45-day comment period for the FEIS also applies to comments on the proposed de minimis impact findings.

The proposed Inner Harbor Station has the potential to result in a permanent, non-de minimis use of land within the Business and Government Historic District, as a result of the demolition of two historic resources that would be required for the construction of the station ancillary building (see photo below).

In accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, the undertaking would result in an “adverse effect” to the Business and Government Historic District, so a finding of de minimis impact cannot be made. Therefore, an avoidance alternative evaluation and least overall harm analysis for the properties was conducted and is included the Draft Section 4(f) Evaluation (**FEIS Chapter 6**). A final analysis and conclusion would be included in the Final Section 4(f) Evaluation, based on the views of the official with jurisdiction, Section 106 consulting parties, and comments on the Draft Section 4(f) Evaluation. The Final Section 4(f) Evaluation will be completed and included as part of the ROD.



Proposed Section 4(f) permanent use of two contributing properties within the Business and Government Historic District

ES.10 Summary of Preferred Alternative Long-Term Effects

Table ES-4 below summarizes the long-term effects to resources that would result from the Preferred Alternative. Specific commitments and mitigation measures for the effects from the Preferred Alternative are identified in **Chapters 4 and 5**, when applicable and summarized in **Sections 4.7 and 5.27** of the FEIS.

Table ES-4: Summary of Preferred Alternative Long-Term Effects

Summary of Preferred Alternative Long-Term Effects	
Land Use	
Minimal because the current land use plans and zoning for Baltimore County and Baltimore City have been developed to anticipate the Red Line project, and to maximize the potential benefits from the project.	

Techniques to note:

- use of color accent in table
- Inset photo in close proximity to related text

Table 6-7. Summary of Preferred Alternative Historic Sites Uses/Impacts

Section 4(f) Property	Section 106 Effect	Permanent Use, Not <i>De minimis</i>	Permanent Use, <i>De minimis</i>	Existing Property Acreage	Permanent Use Acreage	Percent of Property Permanently Used
M: 35-140 — Columbia Country Club	No Adverse Effect		•	146.00	0.55	<1%
M:36-87 — Rock Creek Park Montgomery County Survey Area	No Adverse Effect			500.00	0.00	0
PG: 69-26 — Baltimore-Washington Parkway (Gladys Noon Spellman Pkwy)/Riverdale Road Bridges	No Adverse Effect		•	1,353.00	0.54	<1%
M: 32-15 — Sligo Creek Parkway	No Adverse Effect		•	181.80	0.24	<1%
M: 36-30 — Bridge No. M-0085, Talbot Avenue Bridge	Adverse Effect	•		0.04	0.04	100%
M: 37-16 — Metropolitan Branch, B&O Railroad Corridor	Adverse Effect	•		3,960.00	2.40	<1%
M:36-12 — Falkland Apartments	Adverse Effect	•		19.61	0.52	<1%
PG:66-35 — University of Maryland Historic District	No Adverse Effect		•	1,250.00	14.19	<1%

- Prepare web-based map providing documentation and educational information on historic properties within the APE
- Develop an interpretive plan that will include historically themed signage or incorporation of historic images at stations
- Provide Consulting parties with the opportunity to review and comment on project plans during engineering design phases
- Develop a plan to monitor impacts to historic properties during construction
- Continue coordination with Consulting Parties throughout design and construction

Columbia Country Club (M: 35-140)**Section 4(f) Property Description**

The Columbia Country Club (Club) (Figure 6-39) is historically significant for the period from its founding in 1911 through 1962. It is locally significant under NRHP Criterion A as an excellent example of a recreational and social complex in the suburban development of the surrounding Chevy Chase area and for its contributions, both directly and indirectly, to development of the Chevy Chase area. It is also locally significant under Criterion C for the landscape design of its golf course and the Spanish Revival-style design of its clubhouse.

Figure 6-39. Columbia Country Club Clubhouse

The boundaries of the Columbia Country Club as a National Register-eligible property generally follow the Club's existing property boundaries. The Club property is made up of two irregular parcels of land which are separated by the 100-foot-wide Georgetown Branch right-of-way. This 100-foot-wide right-of-way is the former Georgetown Branch of the B&O Railroad, which operated as a freight line from 1909 until 1985 between Silver Spring, Maryland and Georgetown, Washington DC. The Georgetown Branch predated the Columbia Country Club. The right-of-way was previously determined to be not eligible for the NRHP on April 11, 2002. An interim trail is now located in a

Techniques to note:

- use of color in headers and headings
- photos used to 'set the scene' in the introduction to the chapter
- use of white space



Chapter 4: The Project Area's Environment

The SR 520, I-5 to Medina: Bridge Replacement and high-occupancy vehicle (HOV) Project area encompasses one of the most diverse and complex human and natural landscapes in the Puget Sound region. It includes areas in Seattle from I-5 to the Lake Washington shore, the waters of Lake Washington, and a portion of the Eastside communities and neighborhoods from the eastern shoreline of the lake to Evergreen Point Road. It also includes densely developed urban and suburban areas and some of the most critical natural areas and sensitive ecosystems that remain in the urban growth area. The project area includes the following:

- *Seattle neighborhoods—Eastlake, Portage Bay/Roanoke, North Capitol Hill, Montlake, University District, Laurelhurst, and Madison Park*
- *The Lake Washington ecosystem and the bays, streams, and wetlands that are associated with it*
- *The Eastside community of Medina*
- *Usual and accustomed fishing areas of the Muckleshoot Indian Tribe, who have historically used the area's fisheries resources and have treaty rights for their protection and use*

This chapter describes what the project area is like today, setting the stage for the project's effects described in Chapters 5 and 6.



Traffic on Evergreen Point Bridge

- use of color in headers and headings
- "sidebar" photos, in close proximity to related text
- use of white space

EIS Summary

Introduction

Interstate 90 (I-90) is a critical link connecting Puget Sound's large population and business centers with the farmlands, diverse industries, and extensive recreational areas of Eastern Washington. The uninterrupted movement of people, freight, and business over Snoqualmie Pass is essential to our quality of life and the economic vitality of Washington State.

The I-90 Snoqualmie Pass East Project is located on the east side of Snoqualmie Pass between Hyak, at milepost (MP) 55.1, and Easton (MP 70.3). This 15-mile stretch of I-90 is in Kittitas County, Washington, and passes through the Okanogan-Wenatchee National Forest. The beginning point at Hyak is located where the existing highway narrows from six lanes to four lanes. The end point at Easton is just outside the Okanogan-Wenatchee National Forest boundary, where the terrain becomes flatter and the highway is straighter.

This project would build a safer, more efficient, and more reliable highway from Hyak to Easton, adding capacity and ensuring the continued availability of I-90 as a primary statewide transportation corridor. The Washington State Legislature has funded the first phase (Phase 1) of the project: the five miles between Hyak and Keechelus Dam.

Why is this project unique?

The project presents many unique environmental and design challenges due to its location along a high mountain pass in the Central Cascades. The project area receives high levels of rain and snow, requiring specialized designs to manage stormwater runoff and snow storage. In some parts of the project area, the highway exists in a narrow corridor between the eastern shore of Keechelus Lake and steep cliffs, making the area susceptible to rockfall and avalanches. Large areas of protected state, federal, and conservation lands north and south of I-90 support a broad range of habitats and a diverse array of plants and wildlife that have been separated by the highway.



I-90 at Gold Creek valley looking north.



Gold Creek bridges. (Design visualization)

What is the project purpose and need?

The purpose of the project is to meet projected traffic demands, improve public safety, and meet the identified project needs for a 15-mile stretch of I-90 between the communities of Hyak and Easton, in Kittitas County, Washington.

Avalanches

I-90 is frequently closed due to avalanches and associated control work. These closures strand motorists and freight on Snoqualmie Pass, resulting in substantial safety hazards to the traveling public, travel delays, and impacts to the state's economy. The traveling public and movement of goods remain at risk as long as the avalanche problem is not resolved. The risk will increase with growth in traffic volumes.

Slope Instability

I-90 has several unstable slopes, which results in rock and debris falling onto the roadway, causing damage to property and loss of life. These slopes will continue to pose a threat to property and safety if they are not stabilized or if the highway is not realigned to avoid areas of slope instability.

Structural Deficiencies

The pavement on I-90 is beyond its design life and the roadway is rapidly deteriorating. If it is not repaired or replaced, continued deterioration of the roadway will result in unsafe driving conditions, increased vehicle damage, travel delay, and eventual failure of the roadway.

Traffic Volumes

Traffic volumes on I-90 are increasing at an estimated rate of 2.1 percent per year and are expected to increase at a similar rate well into the future. Traffic volumes already exceed the highway's design capacity during peak travel periods. The worsening traffic situation may lead to higher numbers of accidents, adverse economic impacts, and increased travel times.



Avalanches in the project area regularly close I-90.



Unstable slopes in the project area regularly lead to rock fall.



Cracked and deteriorated pavement on I-90.



Recreational vehicles and freight travel I-90 during a holiday weekend.

Chapter 2. Writing Style

Text in the main body of a NEPA document should be written for readers who lack technical expertise in the subjects being addressed. As one court explained, the document “must be organized and written so as to be readily understandable by governmental decision-makers and by interested non-professional laypersons likely to be affected by actions taken ...” *Or. Env'tl. Council v. Kunzman*, 817 F.2d 484, 494 (9th Cir.1987).

Clear writing involves explaining complex topics in a way that can be readily understood by most readers. Some effective techniques include:

- *Clear, succinct sentences.* Using plain language and keeping sentences short helps to ensure that even complex topics are presented in digestible chunks. For example, one of the NEPA documents in this chapter defines mobility very simply: “Mobility is the easy movement of people and goods through an area.”
- *Use of bullets.* Bullets provide a way to highlight a series of distinct points, which could be blurred together if they were all lumped into a single block of text. For example, the examples in this chapter show how bullets can be used to summarize the elements of an alternative, the reasons an alternative was eliminated, and the consequences of the No Action Alternative and the preferred alternative.
- *Defining key terms and concepts.* Clear writing does not require avoiding the use of technical terms. In some cases, clarity *requires* using a specific term - because that term plays an important role in the environmental analysis. The key to clear writing is to explain those terms when they are first used; the explanation should be easy to understand and should be prominent – for example, in a text box.

To produce a document with high-quality writing, it is beneficial to include a technical editor and to ensure that the schedule includes time for the technical editor to review and revise chapters of the document as they are developed.

Clear, Succinct Language

- OH: Opportunity Corridor DEIS
- WA: SR 520 FEIS
- WA: I-90 Snoqualmie FEIS

Techniques to note:

- clear, succinct explanation of key concept in Purpose & Need ("mobility")

Recent changes on two of these primary routes have reduced the capacity of the roads between the Interstates and University Circle. Carnegie Avenue once had six lanes that could be switched to provide four or five lanes in the rush hour direction and one or two lanes in the opposite direction, but the avenue was restriped in 2005 to have two fixed lanes in each direction and a center lane for left turns. This eliminated up to three lanes to and from University Circle. Two bus-only lanes were built on Euclid Avenue in 2008, reducing the lanes from four to two.

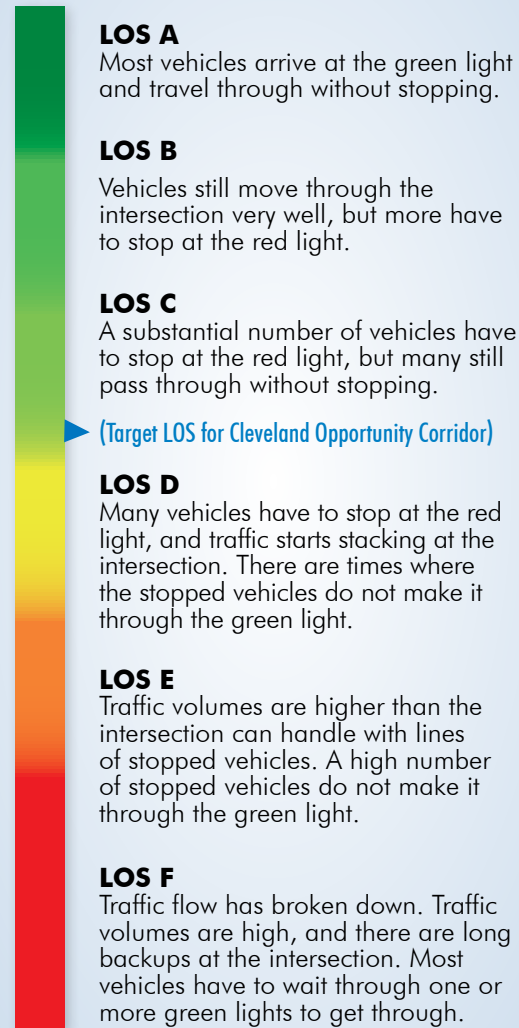
In addition, the street grid (Figure 2-2, page 2-2) is missing an east-west connection between Woodland and Union avenues, a distance of about two miles. As a result, north-south and diagonal roadways are not directly linked, and drivers must twist and turn their ways through the local streets to reach University Circle, creating a traffic bottleneck at the I-490-East 55th Street and East 55th Street-Woodland Avenue-Kinsman Road intersections. Drivers' other option to reach University Circle is to travel on I-90 or I-490, merge onto Cleveland's Innerbelt Freeway and travel through the central business district.

The Cleveland Opportunity Corridor project must provide improved access between I-77 and University Circle.

What is "mobility?"

Mobility is the easy movement of people and goods through an area. It is difficult for trucks to negotiate the roads between I-77 and University Circle. Rail lines used to move most of the goods in this area, so the streets were built mostly for cars. Today, the remaining industries are served mostly by trucks that have to use streets that were not built for them. Also, traffic to and from the houses, apartments, churches and stores in the area does not mix well with the heavy, industrial trucks.

The closest Interstate for travelers in the study area is I-490, and most, if not all, traffic

Figure 2-3: Levels of Service (LOS)

traveling in this area must pass through the I-490-East 55th Street intersection before spreading out to other roads or highways. As a result, 2005 and 2010 traffic counts show that this intersection operates at Level of Service F (Figure 2-3), meaning the traffic flow has broken down. Roadways with this poor level of service have more users than they can handle.

The Cleveland Opportunity Corridor project must provide improved mobility and better levels of service for traffic traveling to, from and within the area between I-77 and University Circle.

Techniques to note:

- clear, succinct explanation of the need for the project (e.g., "vulnerable to catastrophic failure")

What is the project purpose?

In 2000, the Trans-Lake Washington Study Committee developed the project's statement of purpose, which has guided the environmental review process since that time:

The purpose of the project is to improve mobility for people and goods across Lake Washington within the SR 520 corridor from Seattle to Redmond in a manner that is safe, reliable, and cost-effective, while avoiding, minimizing, and/or mitigating impacts on affected neighborhoods and the environment.

The statement of purpose—part of a longer purpose and need statement also adopted in 2000—has helped the project team develop and evaluate alternatives for the EIS analysis by defining the objectives that the alternatives must meet. Although the project limits have changed since the original statement was adopted, the project still has the purpose of improving mobility within the SR 520 corridor, and its transportation performance is evaluated on a corridor-wide basis. The I-5 to Medina project also serves another important purpose: to replace the aging and vulnerable Evergreen Point, Portage Bay, and west approach bridges. The following section describes the need for the project in terms of both mobility and safety.

Why is the project needed now?

The Evergreen Point Bridge is a critical component of the Puget Sound region's transportation infrastructure. It is one of only two connections across Lake Washington that link urban centers in Seattle and the Eastside. The SR 520, I-5 to Medina project addresses two key issues facing the SR 520 corridor: 1) bridge structures that are vulnerable to catastrophic failure and 2) worsening traffic levels and congestion due to growth in jobs and housing over the last two decades.

the Evergreen Point Bridge are vulnerable to earthquakes. In 1999, WSDOT estimated the remaining service life of the floating portion of the Evergreen Point Bridge to be 20 to 25 years, based on its structural condition and the likelihood of severe windstorms. Its life expectancy now is only 10 to 15 years.

The floating span was originally designed for a sustained wind speed of 57.5 miles per hour (mph). In 1999, WSDOT rehabilitated the bridge to allow it to withstand sustained winds up to 77 mph. This still falls well short of the current design standard of 92 mph. Moreover, some bridge mechanisms have been damaged in recent storms. The floating pontoons currently float about 1 foot lower than originally designed, increasing the likelihood of waves breaking onto the bridge deck. Cracks in the structure leak water that WSDOT must pump out on a regular basis. The probability that the bridge will sustain serious structural damage (i.e., sink or become impassable to traffic) over the next 15 years is extremely high. To bring the Evergreen Point Bridge up to current design standards and eliminate the risk of its catastrophic failure, the existing span must be completely replaced. Exhibit ES-2 shows the vulnerable sections of SR 520.

The ever-present possibility of an earthquake in the Seattle area poses additional risks to other bridges in the SR 520 corridor. The columns of the Portage Bay Bridge and both the west and east approaches to the Evergreen Point Bridge are hollow and do not meet current seismic design standards. Hollow-core columns are difficult and costly to retrofit to today's accepted seismic protection levels; WSDOT studies indicate that such retrofitting would cost nearly as much as building new structures, and would have similar environmental effects. WSDOT estimates that over the next 50 years, there is a 20 percent chance of serious damage to these structures in an earthquake.

SR 520's bridges are vulnerable to catastrophic failure.

The Evergreen Point Bridge and its approaches are in danger of structural failure. Recent WSDOT studies have demonstrated that the floating span of the Evergreen Point Bridge is highly vulnerable to windstorms, while the Portage Bay Bridge and the east and west approaches to

Techniques to note:

- clear, succinct explanation of key concept in Purpose & Need (existing and future congestion)

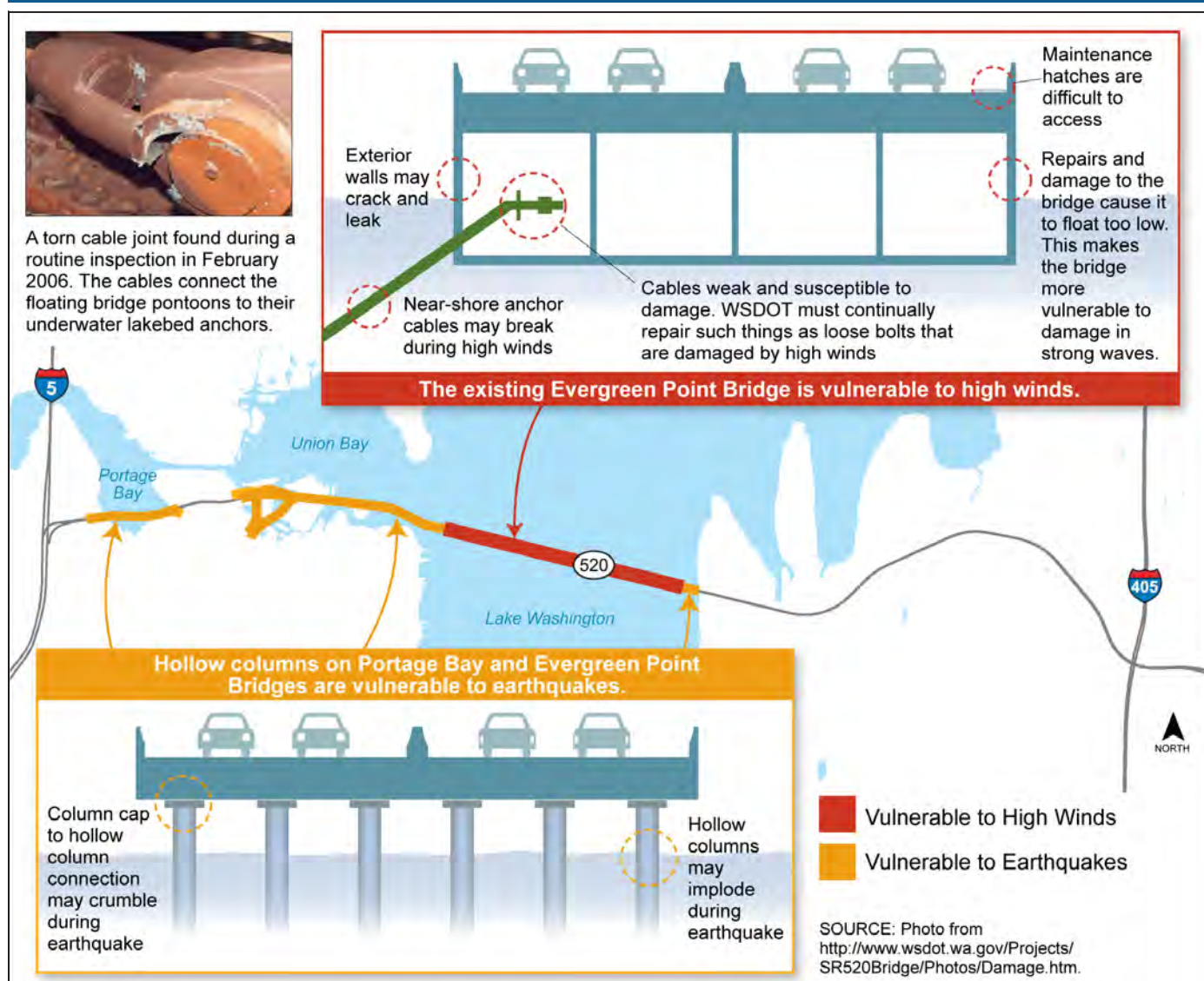
SR 520 is congested and unreliable, and does not encourage maximum transit and carpool use.

A second key reason for implementing this project now is the severe traffic congestion in the SR 520 corridor, which was the reason for initiating the original Trans-Lake Washington Study in 1997. The traffic demand in both directions exceeds the highway's capacity, creating several hours of congestion every weekday. The corridor was not built to handle as many vehicles as currently want to use it. Today, seven times more vehicles cross SR 520 each day

than when the bridge first opened in 1963; traffic during peak hours is nearly equal in each direction. All of these vehicles result in frequent breakdown of the traffic flow and long backups of vehicles traveling at very slow speeds.

Beyond the number of people and cars, another important factor causing today's congestion is the design of the Evergreen Point Bridge. By today's engineering standards, the bridge is too narrow. The narrow shoulders provide no room for vehicles to pull over after an accident or breakdown. Instead, disabled vehicles must stay in the

Exhibit ES-2. Points Along SR 520 Vulnerable to Earthquake and Windstorms



Techniques to note:

- clear, succinct explanation of conditions that would exist under No Action Alternative

through lane and block other traffic, immediately rendering a full lane of traffic unusable. This slows down traffic and impedes emergency vehicle response. In addition, the westbound HOV lane on the Eastside ends at the bridge, creating congestion as westbound HOV traffic is forced to merge with general-purpose traffic.

Together, growth and physical limitations will make the future traffic situation on SR 520 worse if the corridor is not improved. Under average evening peak-hour conditions today, a single-occupant vehicle traveling westbound takes approximately 39 minutes to travel SR 520 from SR 202 in Redmond to I-5 in Seattle—a distance of about 13 miles. By 2030, if the project is not built, this same trip will take over an hour. This makes it imperative that commuters be provided with travel choices that allow them to avoid driving alone, and that the proposed project be built to support increased use of transit and HOVs.

What would happen if the project were not built?

If the project were not built, the section of SR 520 between I-5 and Evergreen Point Road would not be improved, and these critical needs would not be met:

- The risk of bridge failure in a storm or earthquake would increase as the structures continued to age, with consequences ranging from severe traffic congestion to loss of life. As the floating bridge becomes more fragile, it would require more frequent closures to protect its components from damage.
- Planned growth in the project area over time would cause continued growth in traffic volumes on SR 520, increasing congestion and raising the potential economic and social cost of traffic closures and/or bridge failures.
- Transit vehicles and carpools would remain in congested general purpose lanes, increasing travel time, reducing reliability, and discouraging commuters from choosing transit.
- The facility's narrow shoulders would continue to result in blocked lanes and long delays when accidents occur.

- Without lids, SR 520 would continue to serve as a barrier between neighborhoods.
- Pedestrians and bicyclists would remain limited to I-90 as a choice for crossing Lake Washington.
- Stormwater discharging from SR 520 into Portage Bay and Lake Washington would remain untreated.

Who has been involved in the environmental process?

Who are the lead agencies?

For environmental review of this project, FHWA is the federal lead agency under NEPA, and WSDOT is the project proponent and the state lead agency under SEPA. FHWA is providing highway design guidance and environmental oversight. WSDOT is leading the highway design efforts and development of the EIS. The lead agencies also give close consideration to public, agency, and tribal comments on the project.

Who are FHWA and WSDOT's cooperating agencies for this project?

Staff from the affected jurisdictions, representatives of state and federal natural resource agencies, and tribes have provided advice and recommendations to the lead agencies about the scope and content of environmental analysis. These "cooperating agencies" are defined under NEPA as those that have an interest in a proposed project for which environmental documents are being prepared. Most cooperating agencies issue or contribute to permit decisions for a project, and will adopt the SR 520, I-5 to Medina project Final EIS under NEPA or SEPA in support of these decisions.

WSDOT worked with the cooperating agencies through a forum known as the Regulatory Agency Coordination process (RACp). All agencies with jurisdiction over the project were invited to attend, as were all tribes with fishing rights and/or cultural resource interests in the project area. While the RACp itself was primarily focused on sharing of information, smaller technical working groups (TWGs) met more often to focus on topics of specialized interest, including natural resource effects,

Techniques to note:

- clear, succinct explanation of the benefits of the Preferred Alternative

I-90 Snoqualmie Pass East Project 3-119

What are the expected environmental consequences?

What beneficial effects would result?

No-Build Alternative

The No-Build Alternative would result in no beneficial effects to transportation. The current transportation problems would continue and worsen over time.

Build Alternatives

Solving the transportation problems is part of the project's purpose and need. Under all of the build alternatives, WSDOT would replace the existing deteriorated pavement, widen the existing four-lane highway to six lanes, add additional chain-up and chain-off areas, and straighten unsafe curves. These improvements would have the following beneficial effects:

Avalanche Control. Under all of the build alternatives, WSDOT would make improvements at all of the avalanche chutes. These would include scaling (forcing loose rocks to fall in a controlled setting), bolting, wire mesh, reducing the steepness of the slope, and improving catchment areas. WSDOT would revegetate cut slopes with soil. The existing snowshed would be replaced with a larger and longer structure under all of the Keechelus Lake Alignment Alternatives except Alternative 1. WSDOT designed these improvements to prevent all avalanches that have a 30-year return period or less from reaching the highway.

Highway Capacity Improvements. Constructing additional lanes would increase the highway's capacity substantially. Exhibit 3-35 shows that constructing the Preferred Alternative would delay the deterioration to LOS D by approximately 23 years compared to the No-Build Alternative. These beneficial effects would be similar for all of the build alternatives.



The new snowshed will cover the entire width of I-90, preventing avalanches from reaching the highway at this location. (Design Visualization)

Avalanche return period: the average expected time between events reaching or exceeding a given position. Larger return periods imply that the avalanche is larger. A 30-year return period event is the largest avalanche expected every 30 years (Canadian Avalanche Association).

*Exhibit 3-35**Change to Level of Service – Preferred Alternative vs No-Build Alternative*

LOS	Preferred Alternative		No-Build Alternative	
	Year	AADT	Year	AADT
D	2041	47,500	2013	31,500
E	2058	57,200	2025	38,400
F	2070	64,000	2033	43,000

AADT – annual average daily traffic

Unstable Slope Stabilization. WSDOT would stabilize slopes using methods including scaling, bolting, installing wire mesh, or reducing the steepness of the slope (see Section 3.1, *Geology and Soils*). Sufficient catchment at the toe of the slopes would be provided so that rock fall would not reach the highway.

Low-Clearance Bridge Replacement. Replacing low-clearance bridges with new structures that meet or exceed the minimum 16-foot 6-inch clearance would reduce the need for oversized trucks to detour around them and reduce the risk of accidents. Replacing the snowshed would eliminate the need to close the eastbound lanes in order to move oversized loads around it because of its low clearance.

Additional Chain-up/Chain-off Areas. WSDOT would build additional chain-up/chain-off areas where conditions are favorable (Gold Creek to Wolfe Creek, Resort Creek to Townsend Creek, and Price Creek to Bonnie Creek) under all the build alternatives (Exhibit 3-36). Chain-up areas would be 30 feet wide, and chain-off areas would be 20 feet wide. This would reduce the potential for chain-up/chain-off activities to interfere with normal traffic flow, and would concentrate chain-up/chain-off areas closer to the Snoqualmie Pass summit, where they are needed most.



WSDOT installs rock bolts and netting to improve safety from rock fall within the project area.

Use of Bullets to Summarize Key Points

- NC: Mid-Currituck FEIS
- OR: OR 62 FEIS
- WA: Mukilteo FEIS

Techniques to note:

- use of bullets to summarize elements of an alternative

the combined corridor/design public hearing maps for each of the five DEIS alternatives. These maps were displayed at the public hearings and on the NCTA web site at <http://www.ncdot.gov/projects/midcurrituckbridge/>. They present the design features of each DEIS detailed study alternative and were used to assess the impacts of the detailed study alternatives. A list of these maps is included in Appendix D.

2.1.2.1 ER2

ER2 was developed to achieve maximum transportation benefits using the existing roadways, while minimizing impacts to communities along those roads. The basic features of ER2 are:

- Adding for evacuation use only, a third outbound evacuation lane (Figure 2-3) on US 158 between NC 168 and the Wright Memorial Bridge as a hurricane evacuation improvement or using the existing center turn lane as a third outbound evacuation lane; in either case one inbound lane on the Wright Memorial Bridge and on the Knapp (Intracoastal Waterway) Bridge would be used as a third outbound evacuation lane;
- Widening US 158 to a six-lane super-street (Figure 2-4) between the Wright Memorial Bridge and Cypress Knee Trail that widens to eight lanes between Cypress Knee Trail and the Home Depot driveway (both locations indicated are just west of the existing US 158/NC 12 intersection);
- Constructing an interchange (Figure 2-4) at the current intersection of US 158, NC 12, and the Aycock Brown Welcome Center entrance, including six through lanes on US 158 starting at the Home Depot driveway and returning to four lanes just south of Grissom Street (which is just south of the existing US 158/NC 12 intersection); and
- Widening NC 12 to three lanes (two travel lanes and a center lane for left turns; Figure 2-5) between US 158 and a point just north of Hunt Club Drive in Currituck County (except for the existing three-lane section in Duck, which will be unchanged) and to four lanes with a median from just north of Hunt Club Drive to Albacore Street (Figure 2-6).

As illustrated on Figure 2-4, the unique characteristic of a super-street is the configuration of the intersections. Side-street traffic wishing to turn left or go straight must turn right onto the divided highway where it can make a U-turn through the median a short distance away from the intersection. After making the U-turn, drivers can then either go straight (having now accomplished the equivalent of an intended left turn) or make a right turn at their original intersection (having now accomplished the equivalent of an intention to drive straight through the intersection).

2.1.2.2 MCB2

MCB2 involves construction of a Mid-Currituck Bridge, as well as improvements to existing NC 12 and US 158. MCB2 was developed to examine the travel benefits of combining a Mid-Currituck Bridge with substantial NC 12 and US 158 improvements.

Techniques to note:

- use of bullets to summarize reasons an alternative was eliminated from consideration

2.3.5 Regional Improvements: Public Alternative 1

Description

- The southern terminus of this bypass would be near the intersection of OR 62 and OR 99 on the west side of I-5.
- The bypass would widen and use Merriman Road north to its intersection with Table Rock Road, then cross I-5 on a new structure and continue north on Table Rock Road. It was assumed that the current configuration on Table Rock Rd would be four lanes. At a point south of Gregory Road it would turn east then curve northeast on a new four lane facility that follows the Medco Haul Road alignment to Agate Road. It would follow a widened Agate Road to Merry Lane.
- No interchanges were included in the design, although new ramps to and from northbound I-5 are shown connecting to the bypass.

Reasons for Not Advancing

- Did not address the OR 62 transportation problem by diverting a significant amount of the through trips. OR 62 would still experience significant mobility issues.
- Preliminary traffic analysis showed that in 2030, traffic congestion on OR 62, between Delta Waters Road and Vilas Road, would be worse than the No Build Alternative, as shown in Figure 2-23.
- There would be Section 4 (f) impacts on the Bear Creek Greenway (new access ramps/bridge).
- There would be significant impacts on the residential areas west of I-5, east of Table Rock Rd and north of OR 62.
- There would be significant impacts on businesses along Table Rock and Merriman Road.
- This alternative would have impacted an estimated 327 parcels and an estimated 439 buildings, as shown in Table 2-6.

Figure 2-23 2030 d/c Ratios for Public Alternative 1

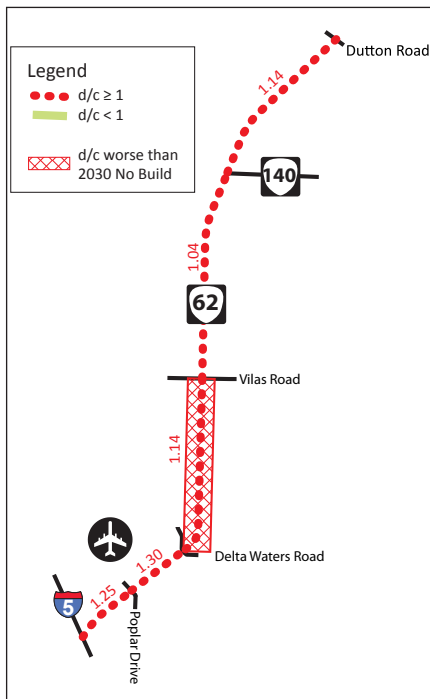


Table 2-6 Estimated Impacts from Public Alternative 1

Estimated Parcels						
	Residential	Commercial	Industrial	Farm	Forest	Total
Lots	135	34	136	5	17	327
Acres	64	18	83	7	51	223
Estimated Displacements						
	Residential	Commercial	Unknown			Total
Units	228	151	60			439

1.4.1 Project Purpose

The purpose of the Mukilteo Multimodal Project is to provide safe, reliable, and efficient service and connections for general-purpose transportation, transit, high-occupancy vehicles (HOVs), pedestrians, and bicyclists traveling between Island County and the Seattle/Everett metropolitan area and beyond. The project is intended to:

- Reduce conflicts, congestion, and safety concerns for pedestrians, bicyclists, and motorists by improving local traffic and safety at the terminal and the surrounding area
- Provide a terminal and supporting facilities with the infrastructure and operating characteristics needed to improve the safety, security, quality, reliability, and efficiency of multimodal transportation
- Accommodate future demand projected for transit, HOV, pedestrian, bicycle, and general-purpose traffic

1.4.2 Project Need

The existing facility is deficient in a number of aspects, including safety, multimodal connectivity, capacity, and the ability to support the goals of local and regional long-range transportation and comprehensive plans, including future growth in travel demand. Those factors, which are further described below, demonstrate the need for an improved multimodal facility.

Safety and Security

Safety is WSDOT's top priority, and security at transportation facilities is a national concern. Safety and security come into play with this project in several ways: at the pedestrian/vehicle interface, with the general traffic flow in the SR 525/Front Street vicinity, and in maintaining safety and security for the facility itself. Safety and security improvements are needed because:

- The Mukilteo ferry terminal has received few improvements since it was built in 1952. The existing timber structures, including the docking facilities, are beyond the end of their useful lives.
- The existing terminal does not meet current seismic standards. The existing facility is underlain by deep, potentially liquefiable soils that are highly susceptible to lateral spreading during an earthquake.
- Changed U.S. Coast Guard and U.S. Department of Homeland Security protocols now require the ability to secure terminal areas when there is a natural disaster, heightened security alert, or other emergency. The existing facility has city streets within the terminal area and does not allow for a physical separation between the terminal and open public areas, which increases safety and security concerns, and could require WSDOT to interrupt service or close the terminal to respond to an emergency or heightened security alert.
- Collisions near the SR 525/Front Street intersection have included sideswipes, vehicle/pedestrian collisions, and collisions with parked vehicles.

Technical Terms Prominently Explained

- CO: US 36 FEIS
- MD: Purple Line FEIS

Techniques to note:

- key terms are prominently defined early in the alternatives chapter; the reader does not have to hunt for them in the glossary

2.1 INTRODUCTION

Chapter 2, Alternatives Considered, presents the development of alternatives, the alternative screening criteria, and the process used to eliminate alternatives from further consideration. This chapter also describes the packages of alternatives that are evaluated in detail in this Final Environmental Impact Statement (FEIS), the development of a hybrid alternative, and identifies a Preferred Alternative.

Useful Chapter Definitions

The alternatives development and screening process and resulting packages are presented using some technical terms, which are defined for this project as follows:

Station Types

- **Bus rapid transit (BRT) station** is a station that provides enhanced bus service and facilities. A BRT station and the associated platforms could be located in the highway median or highway on- and off-ramps.
- **park-n-Ride** is a station that provides both a parking and a loading area for bus service. Buses access the park-n-Ride from the arterial street network or via highway bus pull-outs. A pedestrian bridge or underpass connects parking on both sides of the highway.
- **Rail station** is a station that provides a boarding location for rail service.
- **Transit station** is a general term used to refer to any combination of the above station types. This term also includes multi-modal hubs, such as Denver Union Station (DUS).

Lane Types

- **BRT/high-occupancy vehicle (HOV) lanes** are lanes designated for use by buses and HOVs (including carpools and vanpools). Single-occupant vehicles (SOVs) are not allowed in these lanes.
- **Express lanes** are the existing managed lanes on Interstate 25 (I-25) and United States Highway 36 (US 36).
- **Managed lanes** are toll lanes designated for use by buses and HOVs at no cost. Any remaining capacity would be sold to SOVs through variable or dynamic pricing. The Colorado Department of Transportation (CDOT) intends to manage the high-occupancy toll lanes with the goals of optimizing their use, maximizing travel time savings, and keeping traffic flowing in the managed lanes at 45 miles per hour or faster, even when the general-purpose lanes are congested. To accomplish this goal, CDOT will employ dynamic pricing in which the toll rate is increased or decreased depending on the levels of congestion needed to meet the goals. The definition of HOV is another tool that could be used to manage the lane. The current definition of HOV requires vehicles to have two or more occupants. Revising the HOV definition to require more than two occupants per vehicle would also reduce HOV demand for the managed lane.
- **Special lanes** is a general term used to refer to BRT/HOV lanes, the US 36 managed lanes, and the I-25 express lanes.



Techniques to note:

- text box is used to define key terms that could be confusing to the reader ("exclusive" vs. "dedicated" lanes)

Based on the public and agency comments received during scoping, a range of alternatives was developed for consideration in the evaluation process. These alternatives included most of the alignments presented at scoping, as well as others identified during scoping.

Exclusive Lanes—A right-of-way that is solely for use of transit vehicles and is not occupied by any other type of vehicle or by pedestrians. Exclusive lanes may be either grade-separated or protected by a fence or substantial permanent barrier. All crossings are grade-separated.

Dedicated Lanes—Lanes used solely for transit vehicles, separated and protected from parallel traffic, but which crosses roads, driveways, and pedestrian pathways at-grade. Separation may be achieved by mountable or un-mountable curbs, barriers, or fences. If the transit is light rail, protection at grade-crossings would be provided at some locations by railroad-style flashers and gates if required, or traffic signals at others.

Mixed-use Lanes—Lanes in which the transit vehicles operate in mixed traffic, sharing the same space with other types of road users. Transit vehicles in mixed-use lanes would be controlled by the existing traffic signals and signs.

Consideration of Other Transit Modes

During scoping, two modes were proposed by MTA: LRT and BRT. Monorail and heavy rail were not included in the alternatives initially presented during scoping. These modes had been eliminated in previous studies based on prohibitive capital costs, environmental impacts, and other factors. Based on the *Capital Beltway Purple Line Study* (2002), FTA and MTA concluded that monorail and heavy rail would not be reasonable.²

During the scoping process, a few commenters suggested additional consideration of heavy rail alternatives. FTA and MTA considered these comments and determined that heavy rail was not a

reasonable alternative for meeting the purpose and need of this project, as concluded earlier in the *Capital Beltway Purple Line Study*. After scoping was completed, the County Executive of Montgomery County recommended consideration of a heavy rail alternative referred to as the Red Line or Metrorail Loop which would connect the Metrorail Red Line from Bethesda to Silver Spring along the Capital Beltway. MTA and FTA conducted additional analysis of this heavy rail alternative, and concluded that it should not be carried forward for detailed study because it did not meet the purpose and need of this project, and because it had other drawbacks, including environmental impacts and cost (see *Definition of Alternatives* (2008), pages 1-8, and *Supporting Documentation on Alternatives Development* (2013)).

2.1.3 Screening of Alternatives

Screening Methodology

Between 2004 and 2008, FTA and MTA examined a number of alternatives and design concepts. The screening process evaluated the alternatives based on a number of factors, including ability to meet the project's Purpose and Need, engineering feasibility, natural and social environmental impacts, preliminary cost estimates, and input from the public and agencies. Alternatives that did not meet these criteria were not considered reasonable.³ Alternatives that were not considered reasonable were eliminated from further consideration and not included in the AA/DEIS (see *Definition of Alternatives* (2008) pages 1-7).

Many alternatives met the reasonableness standard. In order to reduce the number of reasonable alternatives for study in the AA/DEIS, the screening process focused on weighing the relative merits or disadvantages of the various alignments or options within the definition of low, medium and high investment. For example, where two low investment surface options for a particular mode were under consideration, if one had appreciably greater impacts to the environment or the local

² *Capital Beltway/Purple Line Study*, SHA/MTA, 2002

³ *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (1981), Response to Question 2a.



Chapter 3. Document Structure

The CEQ regulations define a “standard format” that “should be followed [in an EIS] unless the agency determines that there is a compelling reason to do otherwise.” 40 CFR 1502.10. This format includes the following elements: Cover Sheet; Summary; Table of Contents; Purpose and Need; Alternatives; Affected Environment; Environmental Consequences; List of Preparers; and List of Agencies, Organizations, and Persons.

FHWA’s Technical Advisory on NEPA documents (T6640.8A, issued in 1987), recommends using the standard format outlined in the CEQ regulations. But in a memorandum issued on July 1, 2006, FHWA recognized that alternative approaches are encouraged if they convey information more effectively:

What is more important than the way an EIS document is organized is that it convey, in reasonable and understandable terms, the substance of project purpose and need, the alternatives considered, the affected environment and environmental consequences of the action. We encourage you to consider ways to improve the effectiveness of the NEPA documents prepared in your state, including the use of different formats or alternative approaches to making documents easier to read, while demonstrating compliance with NEPA and other applicable environmental laws that satisfy the needs and expectations of our partners and stakeholders.¹

As recommended in the 2006 guidance, the state of the practice has evolved to include variations on the standard format. Some variations include:

- *Combining the Affected Environment and Environmental Consequences chapters.* Combining these chapters helps to reduce duplication and can be easier for readers to follow because information about a resource is consolidated in one place. Typically, the combined chapter addresses regulatory setting, existing conditions, impacts, and mitigation.

¹ F. Skaer, FHWA, *Memorandum: Improving the Quality of Environmental Documents* (July 31, 2006), at http://www.environment.fhwa.dot.gov/projdev/pd_doc_quality.asp.

- *Placing the Affected Environment chapter before the Alternatives chapter.* The logic of this approach is that the Affected Environment provides context for understanding the Alternatives, so the Affected Environment should be presented first. A variant of this approach condenses the Affected Environment and re-names it “Environmental Context.”
- *Adding an “Comparison of Alternatives” chapter.* This approach breaks the Alternatives chapter into two parts: “Alternatives Considered,” which describes the alternatives development and screening process, and “Comparison of Alternatives,” which evaluates the detailed-study alternatives.² With this approach, the Comparison of Alternatives is placed after the Environmental Consequences chapter.
- *Adding a Transportation Chapter.* Many NEPA documents for highway and transit projects include a separate transportation chapter. This format provides an efficient way to present information that otherwise would be scattered - such as the data sources and methods used in traffic modeling; the description of the existing transportation system; the alternatives’ effects on the existing transportation system; and the alternatives’ ability to meet the purpose and need.
- *Adding a Finance and Cost Chapter.* Issues related to project financing and cost may play an important role in the NEPA process, especially for large-scale projects where the availability of funding is uncertain. Where these issues are important to the analysis of alternatives, a separate chapter can be included to present cost estimates; explain how cost estimates were developed; describe potential funding sources; and address any related issues, such as potential use of innovative financing.
- *Adding a Phasing Chapter.* For large projects, phased implementation is sometimes proposed as a way to accommodate funding constraints. In some cases, FHWA has included a separate chapter or section describing the project phases and distinct impacts associated with each phase.

When a non-standard format is used, it is important to make sure that all of the required information is included and can be easily found. To this end, it may be helpful to include a table that correlates the document’s chapters to the elements required in the CEQ regulations.

² See NCHRP Report 25-25(01), *Synthesis of Data Needs for EA and EIS Documentation—A Blueprint for CEQ Document Content* (Jan. 2005), at [http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25\(1\)FR.pdf](http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25(1)FR.pdf).

Combine Affected Environment Chapter and Environmental Consequences Chapter

- CO: US 36 FEIS
- OH: Opportunity Corridor DEIS
- NC: Mid-Currituck FEIS
- UT: West Davis Corridor FEIS
- WA: Mukilteo FEIS

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Techniques to note:

- combining the Affected Environment and Environmental Consequences chapters
- providing an overview of the chapter and describing the purpose of the chapter at the beginning

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Techniques to note:

- combining the Affected Environment and Environmental Consequences chapters
- grouping topics within the chapter - e.g., a section on "Community Characteristics and Impacts"

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