Navigating Multi-Agency NEPA Processes to Advance Multimodal Transportation Projects

DETAILS

138 pages | 8.5 x 11 | PAPERBACK
ISBN 978-0-309-37551-1 | DOI 10.17226/23581

AUTHORS

Donald J. Emerson, Doris Lee, Crystal M. Cummings, Jennifer Thompson, Bridget M. Wieghart, and Shelly Brown; National Cooperative Highway Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP REPORT 827

Navigating Multi-Agency NEPA Processes to Advance Multimodal Transportation Projects

Donald J. Emerson
Doris Lee
WSP | PARSONS BRINCKERHOFF
San Francisco, CA

Crystal M. Cummings
Jennifer Thompson
WSP | PARSONS BRINCKERHOFF
New York, NY

Bridget M. Wieghart
WSP | PARSONS BRINCKERHOFF
Portland, OR

Shelly Brown
SHELLY BROWN ASSOCIATES, LLC
Seattle, WA

Subscriber Categories
Highways • Public Transportation • Environment

Research sponsored by the American Association of State Highway and Transportation Officials
in cooperation with the Federal Highway Administration

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.
2016
www.TRB.org

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research is the most effective way to solve many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation results in increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

Recognizing this need, the leadership of the American Association of State Highway and Transportation Officials (AASHTO) in 1962 initiated an objective national highway research program using modern scientific techniques—the National Cooperative Highway Research Program (NCHRP). NCHRP is supported on a continuing basis by funds from participating member states of AASHTO and receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine was requested by AASHTO to administer the research program because of TRB's recognized objectivity and understanding of modern research practices. TRB is uniquely suited for this purpose for many reasons: TRB maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; TRB possesses avenues of communications and cooperation with federal, state, and local governmental agencies, universities, and industry; TRB's relationship to the Academies is an insurance of objectivity; and TRB maintains a full-time staff of specialists in highway transportation matters to bring the findings of research directly to those in a position to use them.

The program is developed on the basis of research needs identified by chief administrators and other staff of the highway and transportation departments and by committees of AASHTO. Topics of the highest merit are selected by the AASHTO Standing Committee on Research (SCOR), and each year SCOR's recommendations are proposed to the AASHTO Board of Directors and the Academies. Research projects to address these topics are defined by NCHRP, and qualified research agencies are selected from submitted proposals. Administration and surveillance of research contracts are the responsibilities of the Academies and TRB.

The needs for highway research are many, and NCHRP can make significant contributions to solving highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement, rather than to substitute for or duplicate, other highway research programs.

NCHRP REPORT 827

Project 25-43
ISSN 0077-5614
ISBN 978-0-309-37551-1
Library of Congress Control Number 2016943332

COPYRIGHT INFORMATION

NOTICE

The report was reviewed by the technical panel and accepted for publication according to procedures established and overseen by the Transportation Research Board and approved by the National Academies of Sciences, Engineering, and Medicine.

The opinions and conclusions expressed or implied in this report are those of the researchers who performed the research and are not necessarily those of the Transportation Research Board; the National Academies of Sciences, Engineering, and Medicine; or the program sponsors.

The Transportation Research Board; the National Academies of Sciences, Engineering, and Medicine; and the sponsors of the National Cooperative Highway Research Program do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of the report.

Published reports of the

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

are available from

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

and can be ordered through the Internet by going to

http://www.national-academies.org

and then searching for TRB

Printed in the United States of America

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

The **National Academy of Sciences** was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, non-governmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to research. Dr. Ralph J. Cicerone is president.

The **National Academy of Engineering** was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. C. D. Mote, Jr., is president.

The **National Academy of Medicine** (formerly the Institute of Medicine) was established in 1970 under the charter of the National Academy of Sciences to advise the nation on medical and health issues. Members are elected by their peers for distinguished contributions to medicine and health. Dr. Victor J. Dzau is president.

The three Academies work together as the **National Academies of Sciences, Engineering, and Medicine** to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

Learn more about the National Academies of Sciences, Engineering, and Medicine at **www.national-academies.org**.

The **Transportation Research Board** is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to increase the benefits that transportation contributes to society by providing leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied committees, task forces, and panels annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

Learn more about the Transportation Research Board at **www.TRB.org**.

COOPERATIVE RESEARCH PROGRAMS

CRP STAFF FOR NCHRP REPORT 827

Christopher W. Jenks, *Director, Cooperative Research Programs*
Christopher J. Hedges, *Manager, National Cooperative Highway Research Program*
Lori L. Sundstrom, *Senior Program Officer*
Danna Powell, *Senior Program Assistant*
Eileen P. Delaney, *Director of Publications*
Margaret B. Hagood, *Editor*

NCHRP PROJECT 25-43 PANEL
Field of Transportation Planning—Area of Impact Analysis

Elizabeth "Libby" B. Rushley, *Lawhon & Associates, Ashville, OH* (Chair)
Brandon Weston, *Utah DOT, Taylorsville, UT*
Michelle Oswald Beiler, *Bucknell University, Lewisburg, PA*
Faisal Hameed, *Parsons Corporation, Washington, DC*
Michael R. Kies, *Arizona DOT, Phoenix, AZ*
Dan Lamers, *North Central Texas Council of Governments, Arlington, TX*
Christina M. Minkler, *CHA Consulting, Albany, NY*
Karin Morris, *Delaware Valley Regional Planning Commission, Philadelphia, PA*
Xavier Pagan, *Florida DOT, Tallahassee, FL*
Bruce Bender, *FHWA Liaison* (retired)
Christine Gerencher, *TRB Liaison*

FOREWORD

By Lori L. Sundstrom
Staff Officer
Transportation Research Board

NCHRP Report 827: Navigating Multi-Agency NEPA Processes to Advance Multimodal Transportation Projects analyzes approaches taken by state departments of transportation (DOTs), their local partners, and other project sponsors to satisfy National Environmental Policy Act (NEPA) requirements for transportation projects involving more than one mode. Case studies illustrate successful practices and provide examples of institutional arrangements used to comply with NEPA requirements for two or more U.S. DOT agencies. The report should be of immediate use to executives and senior planning officials who are contemplating a multimodal approach to NEPA compliance.

States are increasingly pursuing balanced transportation solutions that, in addition to highways, may include improvements to other parts of the local surface transportation network and incorporate elements such as bus, commuter and inter-city rail, freight rail, street car or light rail, bicycle, pedestrian, intermodal freight facilities, and airport access. This practice has increased the likelihood of two or more U.S. DOT modal administrations being involved in the NEPA environmental review process. The term "environmental review process" is defined at 23 U.S.C. § 139 and is the process for preparing an environmental impact statement, environmental assessment, categorical exclusion, or other document prepared under NEPA for a planned transportation project. The term "environmental review process" also includes the process for and completion of any environmental permit, approval, review, or study required for a project under any federal law other than NEPA.

From the perspective of state DOTs, their local partners, and other project sponsors, the involvement of different combinations of U.S. DOT modal administrations, whether in lead, cooperating or participating roles, can increase the complexity of the NEPA process while also providing opportunities for synergy. Myriad challenges can arise when navigating different interpretations, policy, guidance, and expectations of the NEPA process by combinations of the involved agencies.

Under NCHRP Project 25-43, WSP|Parsons Brinckerhoff was asked to identify practices and strategies that state DOTs and other project sponsors can use to efficiently and effectively fulfill NEPA requirements for multimodal transportation projects. Following a literature review, they selected a dozen recent multimodal projects that involved at least two U.S. DOT modal administrations and conducted in-depth interviews with those involved. Case studies were prepared and analyzed to identify successful practices and factors that influenced success. *NCHRP Report 827* should be helpful for agency staff who are responsible for structuring a multi-agency effort to advance a multimodal project through the NEPA process.

CONTENTS

SUMMARY

Navigating Multi-Agency NEPA Processes to Advance Multimodal Transportation Projects

This research study was commissioned to help state departments of transportation (DOT) and their local partners structure and implement an efficient and effective approach to meeting National Environmental Policy Act (NEPA) requirements for multimodal transportation projects that require some form of approval by more than one U.S. DOT agency. Specific objectives of the research were to:

1. Characterize the challenges inherent in satisfying the NEPA requirements of multiple U.S. DOT agencies;
2. Identify strategies and tactics that state and local transportation agencies have used to overcome these challenges; and
3. Suggest new and innovative strategies that can be applied by state and local transportation agencies in future multimodal NEPA processes.

Research Methodology

The research utilized a case study methodology and was conducted in three phases. In the first phase, the research team identified and described five challenges that project sponsors encounter when addressing NEPA for multimodal projects that engage more than one U.S. DOT agency. This phase involved a literature review, interviews with select U.S. DOT staff, and input from an industry focus group. Approximately 50 candidate case studies were screened to identify the final set of 12 case studies that met the following criteria: geographic diversity, achievement of at least one major NEPA milestone in the past 10 years, involvement of U.S. DOT agencies in various leadership configurations, utilization of a variety of NEPA approaches, and potential to present rich lessons learned in terms of the five key challenges. The case study selection screening resulted in 12 case studies:

1. Dulles Corridor Metrorail Project, Northern VA
2. Port of Miami Tunnel, Miami, FL
3. Eastern Corridor Project, Cincinnati, OH
4. National Gateway Clearance Project Phase I, Ohio, Pennsylvania, and Maryland
5. Chicago Region Environmental and Transportation Efficiency Program (CREATE), Chicago, IL
6. TRansportation EXpansion Project (T-REX), Denver, CO
7. I-70 East Corridor Project, Denver, CO
8. Mountain View Corridor Project, Salt Lake City, UT
9. XpressWest Project, California and Nevada
10. Columbia River Crossing Project, Portland, OR and Vancouver, WA

11. East Link Extension/I-90, Seattle, WA
12. Orange Line LRT Extension to DFW Airport, Dallas, TX

In Phase 2 the research team examined the NEPA process for each case study by reviewing environmental documents and interviewing participants. In Phase 3 the research team synthesized the case study findings, seeking parallels among the cases, and prepared this final report.

Challenges of Multimodal NEPA Processes

The following potential challenges associated with implementing a multimodal NEPA process were initially identified by the research team:

Challenge 1—Unique Agency-specific Program Requirements under the NEPA Umbrella. U.S. DOT agencies have built on the concept of a "NEPA umbrella" by hanging their own unique program requirements onto the NEPA framework, adding to the complexity of the NEPA process when multiple U.S. DOT agencies are involved.

Challenge 2—Differing Agency Interpretations of NEPA Requirements. Each U.S. DOT modal administration maintains distinct NEPA procedures which reflect its respective interpretations of NEPA requirements. Project sponsors must understand each agency's NEPA approach to navigate requirements and expectations. Creating a single process that meets the legal and procedural requirements of all parties can require significant effort, which is easily underestimated by project sponsors.

Challenge 3—Anticipating Which Agencies Will Have a Major Federal Action. An important first step in the NEPA process is determining which federal agency will have a major action. While this can be straightforward on certain projects, a lack of clarity in project scope and funding for multimodal projects can make it difficult to know in advance which agency(ies) will have a major federal action and/or which agency should serve in a lead or cooperating role.

Challenge 4—Efficient Coordination among Agencies. By their very nature, multimodal projects involving more than one U.S. DOT agency require more coordination than is needed for a project involving only one. When developing coordination mechanisms, sponsors need to recognize the differing objectives, interests, and priorities of the agencies involved.

Challenge 5—Securing Funding for Multimodal NEPA Studies. Funding to complete multimodal NEPA processes can be difficult to secure. In terms of federal funding, if a project spans boundaries of various programs, it may not be "owned" by any program. State and federal laws can limit the use of certain funds to particular modes.

Research Findings

The first four challenges were present to varying degrees in the 12 case studies. The research found many different ways to carry out NEPA for situations involving more than one mode or U.S. DOT agency. The case studies offer examples of agencies working out hybrid processes and trying new approaches tailored to their particular situation. Flexibility and openness to new approaches were often necessary to achieve satisfactory outcomes.

The fifth challenge—securing funding to carry out a multimodal NEPA process—was not found to be an issue in any of the 12 cases studied. However, interviews with U.S. DOT staff early in the study as well as feedback from the study's focus group and the NCHRP Project 25-43 panel indicated that securing funding should be regarded as a challenge. Where the funding that

a sponsor typically uses for NEPA and related project development is not available for other modes, funds may need to be assembled from a variety of sources.

Transferrable Strategies and Tactics

Twenty-three strategies for addressing the challenges to multimodal NEPA processes emerged from the case studies. The strategies are presented in Table 10 in Chapter 5, Case Study Synthesis. Many of these strategies and tactics address the challenge of coordinating between and among U.S. DOT agencies and state and local agencies. Strategies include committees, task forces, and working groups; joint project offices; memoranda of agreement; frequent in-person meetings; and technical documents to address and record solutions to issues.

Crosscutting Themes and Keys to Success

The synthesis of strategies, tactics, and lessons learned identified a number of recurring themes, including:

- Maintain early and continuous coordination across all agencies—federal, state, and local—with a potential stake in the project.
- Leverage agency relationships and high-level interests.
- Be flexible and seek opportunities for compromise.
- Engage all necessary staff throughout the process.
- Ensure that all agencies (both local and federal) have similar levels of interest and commitment.
- Allocate adequate time and resources.
- Become familiar with agency and private partner processes and reconcile differences early.
- Understand each agency's constraints and expectations, and recognize they may differ.

The case studies demonstrated that there is no single best way to approach the NEPA process for multimodal situations. Success may depend more on the willingness and motivation of the agencies to work together, to find common ground, and to work around differing processes, and less upon a specific organizational structure. An effective interagency approach depends on how well the project sponsor and other agencies are able to work together and bridge their procedural differences.

Stumbling Blocks to Avoid

The case studies also revealed stumbling blocks to be aware of when undertaking a multi-agency NEPA process. These include different levels of commitment to a project, insufficient time or resources, limited interest on the part of project sponsors to coordinate or learn other agency requirements, failure to communicate the benefits of full agency engagement, resistance on the part of state and local sponsors to alter their customary NEPA processes, and reluctance of federal agencies to engage in projects before their major action is identified.

Practitioner's Tool and Implementation Plan

The products of this research are intended to help practitioners understand the challenges of multimodal NEPA processes and consider how they might benefit by applying some of the best practices, innovative strategies, and lessons learned identified in this research. To

help practitioners anticipate and work through these challenges in a collaborative manner, the research team produced a practitioner's self-assessment tool, found in Appendix O. The tool is based on insights gained from the case study results and synthesis, as well as the input of practitioners on this research effort's focus group. The final report also suggests several methods for communicating the study findings, along with a PowerPoint presentation that could be used as a starting point for future presentations.

CHAPTER 1

Background

Increasingly, state departments of transportation and other agencies are pursuing transportation solutions that feature more than one mode and that involve two or more U.S. DOT agencies in the NEPA process. Multi-agency participation in NEPA often occurs when projects with different modes share the same right-of-way, where more than one mode might be developed to serve the same travel markets and needs, or where one mode offers mitigation for the impacts of another. It may also occur when a project featuring a single mode requires some form of approval by more than one U.S. DOT agency.

The proliferation of projects that involve more than one U.S. DOT agency stems in part from growing transportation needs, increased interest in multimodal solutions, and limited availability of rights-of-way. It also may be a result of changing federal program structures and initiatives, including growth in the number of projects seeking funds from the FTA's New and Small Starts program, the FRA's High-Speed Intercity Passenger Rail Program, and the U.S. DOT's Transportation Investment Generating Economic Recovery (TIGER) program. The FAA initiatives to protect airports and airspace also have contributed.

From the perspective of state DOTs and their local partners, the involvement of two or more U.S. DOT agencies can increase the complexity of complying with the NEPA process and create challenges for expeditiously meeting NEPA and related requirements. Having more project partners—with differing interests and requirements—increases the need for coordination and the opportunity for misunderstanding and disagreement.

Prior to conducting this research, the research team had observed three general approaches to conducting the NEPA process where different modes and two or more U.S. DOT modal administrations were involved. Figure 1 illustrates these approaches.

In the first approach, all modal alternatives or components (and federal agency involvement) are covered within one merged NEPA process. In the second, the NEPA process starts out merged, but is later separated into two or more processes with separate findings and decisions for each modal project. In the third, separate NEPA processes are used for each modal project, with individual study elements coordinated and information shared throughout the processes. In the figure, each general approach is shown as requiring one or more EISs, although in practice the process also applies to

NEPA

The National Environmental Policy Act of 1969 (NEPA) established federal policies and procedures related to environmental protection. It requires that federal agencies utilize a systematic, interdisciplinary approach and that they ensure that environmental amenities and values are given appropriate consideration in decision-making. Whenever a federal action likely to have a significant impact on the environment is contemplated, NEPA requires preparation of a detailed statement on the action's impacts and alternatives. An action could include a funding commitment or other approval, such as a permit. The statement is prepared in consultation with other agencies with jurisdiction or special expertise.

Implementing regulations, promulgated by the Council on Environmental Quality at 49 CFR 1500, establish three types of statements, depending on the significance of an action's impacts. They are: Environmental Impact Statement (EIS) followed by a Record of Decision (ROD), an Environmental Assessment (EA) followed by a Finding of No Significant Impact (FONSI) (or possibly followed by an EIS and ROD), and a Categorical Exclusion (CE).

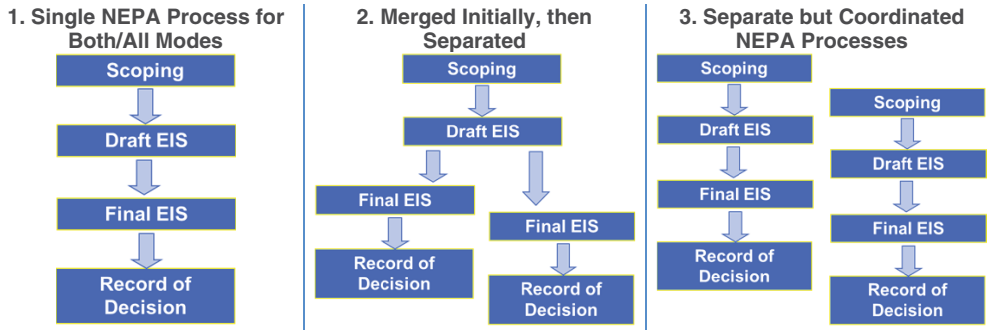


Figure 1. Three general approaches to multimodal NEPA.

an EA/FONSI or a CE. In some cases, particularly those following the second approach, tiered NEPA documents have been used. Regardless of the method used, reconciling different U.S. DOT agency rules, approaches, and processes can be difficult for sponsoring agencies. This report offers case studies and "lessons learned" to help state DOTs and their local partners structure and implement an efficient and effective approach to meeting NEPA requirements for multimodal transportation projects.

The Moving Ahead for Progress in the 21st Century Act (MAP-21), like previous surface transportation authorizing legislation, included provisions aimed at streamlining the environmental review process, and made other changes to planning and project development processes. The case studies carried out in this research all predated MAP-21. Nevertheless the overall findings, transferrable strategies, and lessons learned from this research are likely to be relevant regardless of the evolving requirements of federal law and regulations.

Objectives of NCHRP Project 25-43

The objectives of this research were to:

- Characterize the challenges inherent in satisfying NEPA requirements from multiple U.S. DOT agencies;
- Identify strategies and tactics that state and local transportation agencies have used to overcome these challenges; and
- Suggest new and innovative strategies that can be applied by state and local transportation agencies in future multimodal NEPA processes.

Scope of Study

The research approach had three phases, as depicted in Figure 2.

In Phase 1, the research team gathered background information, documented the challenges involved in satisfying the NEPA requirements of multiple U.S. DOT agencies, and selected 12 case studies of multimodal NEPA projects that involved multiple U.S. DOT agencies. Phase 2 was the core of the research effort, during which the case studies were conducted and documented. In Phase 3 the research team synthesized the case studies and prepared the final report, a self-assessment tool for practitioners, and presentation materials.

Previous Research

While numerous case studies of NEPA processes have been carried out since NEPA was enacted, the research team found no systematic analysis of the challenges and best practices for multimodal NEPA activities.

NCHRP Project 25-25, Research for the AASHTO Standing Committee on the Environment, Task 05, looked at the causes and extent of environmental delays in transportation projects (TransTech Management 2003). It included five case studies of NEPA process delays but did not identify multimodal or multi-agency issues. NCHRP Project 25-25, Task 27, developed tools and tips to assist NEPA project managers (ICF International 2008). While the final report addressed the importance of working relationships and collaboration, it did not delve into the unique challenges of multi-agency and multimodal projects.

NCHRP Project 8-36A, Research for the AASHTO Standing Committee on Planning, Task 48, produced a toolbox for improving the linkage between transportation planning and NEPA (PB Consult, Parsons Brinckerhoff Quade & Douglas 2006). The project drew upon research, case studies, pilot projects, and experiences of states and metropolitan areas throughout the United States. Many of the suggested strategies were identified in preparation for, or during the delivery of, a series of FHWA and FTA seminars and workshops on Linking Planning and NEPA conducted in 18 states during 2004 and 2005. The tools suggested in the final report could be applied to multi-agency and multimodal NEPA processes, although the toolbox did not focus on multi-agency and multimodal situations.

In 2005, the Safe, Accountable, Flexible, Efficient, Transportation Equity Act—A Legacy for Users (SAFETEA-LU)

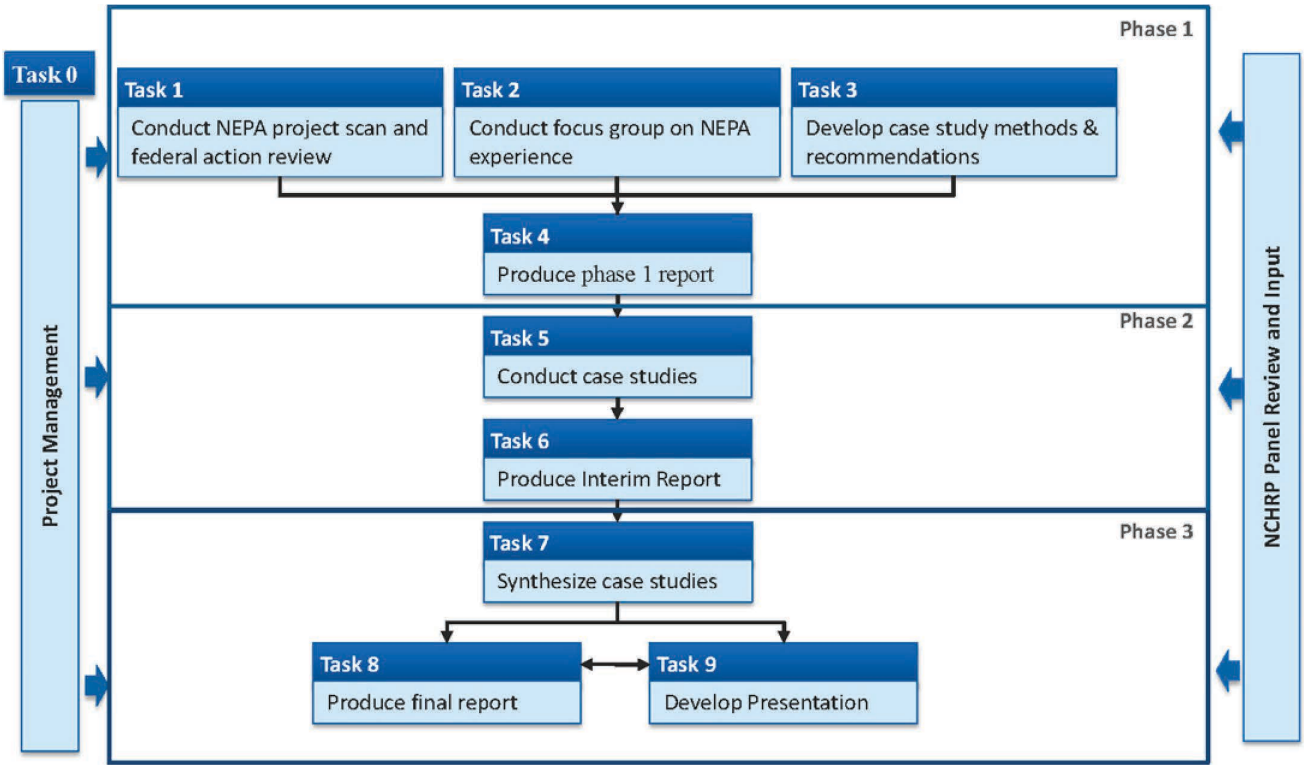


Figure 2. NCHRP Project 25-43 research approach.

authorized the second Strategic Highway Research Program (SHRP 2), a large-scale research effort to discover and analyze solutions to some of transportation's largest issues. The research focused on four areas: safety, renewal, reliability, and capacity. Within this program, the SHRP 2 C19 research project focused on analyzing constraints and solutions to expediting project delivery, planning, and environmental review of projects. The C19 research identified common constraints that kept projects from being expedited or that caused delays during initial phases of project development.

Over the course of their research, the C19 team created and refined a list of expediting themes that best described the constraints and solutions identified in their analysis. These themes are directly related to the challenges and strategies identified later in this report, specifically in the context of navigating the NEPA process for multimodal projects. The C19 themes were:

- Improve public involvement and support.
- Improve resource agency involvement and collaboration.
- Demonstrate real commitment to the project.
- Improve internal communication and coordination.
- Streamline decision-making.
- Integrate [resources] across all phases of project delivery.

While the SHRP 2 C19 research has a broader mandate—reviewing constraints to project delivery in all of the initial phases of project development—the research findings reinforce many of the themes and solutions identified and discussed in this study. Used together, the C19 research provides a comprehensive overview of a range of project delivery challenges and solutions, and this study focuses on tools that can be used during the environmental review phase for multimodal projects.

PlanWorks, developed under the SHRP program (and originally known as Transportation for Communities—Advancing Projects through Partnerships, or TCAPP) is a web-based resource that facilitates a collaborative approach to project planning and development, capturing environmental, community, and mobility needs. PlanWorks provides guidance on when and how to engage cross-disciplinary participants in the planning process in order to ensure more effective coordination and knowledge-sharing among all those affected by the project. In addition to facilitating processes for working through mitigation strategies, the tool also identifies potential challenges, allowing a project team to anticipate where issues may arise in the planning process. Like the self-assessment tool developed in the course of this research, PlanWorks can help project teams navigate complex, multi-disciplinary decisions that are fundamental to successful project planning and development.

CHAPTER 2

Challenges of Multimodal NEPA Processes

Five potential challenges that agencies face when navigating NEPA processes that involve more than one U.S. DOT agency were identified during Phase 1 of the research based on the research team's project experience, review of relevant literature, and interviews with select U.S. DOT staff. The research team then convened a small focus group to review and refine the initial list of challenges. The focus group consisted of experienced practitioners from state DOTs, transit agencies, an airports authority, and consulting firms, plus a former FHWA environmental specialist. The five challenges, as refined with focus group input, are described in this section.

The case studies conducted for this research offer examples of the challenges presented in this section as well as successful strategies for addressing them. A summary of the key findings of the case studies by challenge is presented in Chapter 4.

Challenge 1: Unique Agency-Specific Program Requirements Under the NEPA Umbrella

The term "NEPA umbrella," as depicted in Figure 3, is used to explain how the NEPA process provides a framework within which U.S. DOT agencies address multiple related federal laws and executive orders. It is within the NEPA process, for example, that requirements of the Clean Air Act and the Executive Order on Environmental Justice are addressed. Federal requirements related to parklands and cultural resources are addressed as part of the NEPA process. Other laws that are addressed as part of the NEPA process include the Endangered Species Act and the National Historic Preservation Act. Bringing these various requirements under the NEPA umbrella generally helps streamline the overall process, although it also adds complexity and leads to extensive coordination and collaboration with non-U.S. DOT entities.

Individual U.S. DOT agencies have built on the concept of a NEPA umbrella by integrating their own unique program requirements with the NEPA process. FTA, for example, has integrated the New Starts process, with its unique approval steps and criteria, with the NEPA process. Similarly, FRA and FAA have tended to overlay their program-specific safety requirements onto the NEPA process.

Project sponsors that are accustomed to following one U.S. DOT agency's NEPA process can be challenged by the need to combine processes and meet unfamiliar requirements. The focus group noted that for multimodal projects, the responsibility for reconciling the requirements from different agencies and crafting a composite process largely falls on the project sponsor(s).

Challenge 2: Differing Agency Interpretations of NEPA Requirements

Each U.S. DOT modal administration maintains distinct NEPA procedures which reflect their respective interpretations of NEPA requirements. To some degree these interpretations stem from differences in legislation, NEPA litigation history, internal organization, and agency culture. Project sponsors must understand the differences between each agency's NEPA approach to navigate their individual requirements and expectations. Creating a single process that meets the legal and procedural requirements of all parties can require significant effort, which is easily underestimated by project sponsors.

Although FHWA and FTA have joint NEPA regulations (23 CFR 771, "Environmental Impact and Related Procedures"), they tend to apply their processes differently. Certain paragraphs in the joint regulations apply only to FHWA projects, while others apply only to FTA projects. The joint regulations

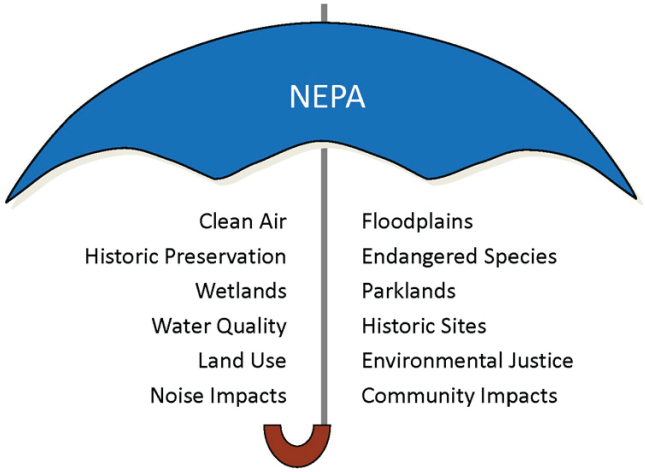


Figure 3. NEPA umbrella.

have separate sections on public involvement, reflecting the different approaches taken by each. There are also separate lists of situations that qualify for a CE.

Triggers for NEPA Review

All U.S. DOT agencies conduct a NEPA review of projects before granting federal funding. NEPA can also be triggered by other major federal actions, such as approval to access the Interstate right-of-way, change an airport master plan, or allow a project to be constructed on federal land.

FTA and FHWA differ in the extent to which they delegate authority to project sponsors. FHWA tends to rely heavily on state DOTs to prepare NEPA documents (with FHWA oversight and legal accountability for the NEPA process), recognizing that state DOTs have been developing compliant documents for more than 40 years. FTA, on the other hand, tends to take a more hands-on role in the NEPA process. For example, FTA does not typically delegate historic preservation or tribal liaison processes to a transit agency, whereas FHWA does delegate this responsibility to a state DOT.

SAFETEA-LU codified and expanded FHWA's delegation authority, allowing the agency to delegate its complete NEPA role to state DOTs, including authority to sign NEPA documentation. Only California has completed the steps necessary to take advantage of this provision. For multimodal projects in California, the California Department of Transportation (Caltrans) found itself with the ability to act under the FHWA delegation, while it worked directly with the other federal agencies on multimodal projects. As a result, FHWA was not involved in reconciling the differences among agencies because it had delegated its role to Caltrans.

Further examples of differing interpretations include:

- **Level of evaluation and documentation required for a specific action.** Each U.S. DOT agency has distinct criteria for determining the significance of impacts and whether a CE, EA, or EIS is required. FAA and FRA tend to grant CEs in fewer circumstances and have a lower threshold for triggering an EIS than do FHWA and FTA.
- **Analysis required under NEPA-related environmental requirements.** Each agency may employ different standards for evaluating a project under NEPA-related requirements such as the Clean Air Act, the Clean Water Act, and Section 4(f). Agencies may apply different standards for the outline of a NEPA document and have different expectations for the level of detail. These differences in standards may in some cases be due to different legal and regulatory requirements. Under the Clean Air Act, for example, FHWA- and FTA-funded projects are subject to one set of conformity requirements, while FRA and FAA projects are subject to a different set of requirements.
- **Planning and NEPA linkages.** Agencies have differing expectations within the planning and project development continuum, and differing conditions under which decisions reached in the planning phase can be carried into NEPA.

Understanding the different requirements and expectations among U.S. DOT agencies can be complicated by changes in laws, regulations, and policies. There can be a considerable lag between the enactment of new legislation and the issuance of implementing rules and guidance. Sponsors can be challenged when laws, regulations, or policies change over the course of a project, particularly when there are joint lead agencies and the requirements change for just one of them.

Challenge 3: Anticipating Which Agencies Will Have a Major Federal Action

An important first step in the NEPA process is determining which federal agency will have a major action. While this can be straightforward on certain projects, a lack of clarity in project scope and funding for multimodal projects can make it difficult to know in advance which U.S. DOT agency(ies) will have a major federal action and/or which agency should serve in a lead or cooperating role.

When more than one agency is expected to take action on a project, there is a need to establish the appropriate roles of each in the NEPA process, including which will serve as lead and cooperating. The lead agency is responsible for the environmental analysis and documentation. Cooperating

agencies support the lead agency in the NEPA process by participating in the scoping process, preparing information and environmental analyses for portions of the project for which the agency has special expertise, and providing staff support at the lead agency's request.

The process to designate the lead federal agency(ies) tends to be project- and agency-specific. U.S. DOT agencies may be more willing or less willing to serve depending on a variety of factors. Even when the respective roles of the federal agencies are generally agreed upon, there are no readily available templates or examples of a memorandum of understanding (MOU). An MOU developed for a specific project may have ambiguities or miss elements that are not anticipated.

Challenge 4: Efficient Coordination among Agencies

By their very nature, multimodal projects involve more than one U.S. DOT agency and, as such, typically require more coordination than is needed for a project involving only one. When identifying the coordination mechanisms to be used in a particular situation, sponsors need to recognize the differing objectives, interests, and priorities of the agencies involved.

Each U.S. DOT agency tends to be focused on its own mission, legal mandates, and policies. Project priorities may differ and, given limited staff resources, a different pace of work may result in schedule and process conflicts. It can be difficult to maintain momentum over the course of a lengthy NEPA process involving multiple agencies with different—and sometimes competing and changing—requirements and interests. Up-front agreement on roles and coordination mechanisms, and perhaps on dispute resolution procedures, can help ensure that each agency's involvement is efficient, timely, and consistent with its defined responsibilities.

Challenge 5: Securing Funding for Multimodal NEPA Studies

Funding to complete multimodal NEPA processes can be difficult to secure, particularly when funds are being sought from multiple sources. The research team hypothesized that difficulties encountered in securing funding from multiple sources could delay the NEPA process. Multimodal projects that receive funding from multiple federal sources may not fall neatly under the requirements of a single program. While a multimodal project may provide more opportunities to receive funding from new and/or multiple sources, preparing multiple applications can be time-consuming and the outcome can be uncertain. Legal restrictions on the use of certain funds also come into play. Funds whose use is restricted (e.g., gasoline tax revenues or bond proceeds whose use is strictly proscribed) can complicate the task of assembling and administering the funds needed to complete a multimodal NEPA process.

CHAPTER 3

Case Study Methods

The research used case studies to further explore the five challenges discussed in Chapter 2. It was expected that the case studies would illustrate the challenges and offer transferrable best practices to overcome them, ultimately leading to recommendations supported by evidence from the field. It was also anticipated that new challenges might be revealed through the case studies, and that one or more of the initial five challenges might be found to be less challenging than originally thought. This chapter demonstrates how the criteria were used to select the case studies, the approach for obtaining data and information used in each case study, and the means by which case study results were analyzed to facilitate broader applications.

Identification of Case Study Projects

In Phase 1, the research team aimed to identify 10 to 12 case studies for in-depth study through a three-step screening process, depicted in Figure 4. A diverse set of cases was sought, with the number of cases large enough to identify crosscutting themes, but small enough to allow the team to delve deeply into each case to understand the challenges faced and how they were handled.

In the first step, the research team developed a list of nearly 50 multimodal, multi-agency projects based on their experience, interviews with key U.S. DOT staff, and input from the NCHRP Project 25-43 panel and the focus group. The long list of projects and the information gathered is provided in Appendix N.

In the second step, the research team applied two criteria to narrow the long list of case studies to a shorter list of approximately 30 projects. For consideration as a case study, a project must have (1) involved two or more U.S. DOT agencies in a significant way, and (2) achieved at least one major NEPA milestone within the last 10 years. The first criterion reflected direction by the NCHRP Project 25-43 panel at the study kick-off meeting. The second criterion was based on the research team's view that if the project milestones were achieved more than a decade ago, the lessons learned may no longer be applicable (due to changing regulations or circumstances), and reliable institutional memory may no longer exist. Likewise, if the project recently started or is early in its process, there are likely to be fewer fully developed lessons learned. Thus, those projects that had not yet completed one major NEPA milestone were removed from consideration as a case study.

In the third step, based on feedback from the focus group and the panel, the research team determined that the mix of recommended case studies should include:

- Representation by all U.S. DOT agencies in a variety of leadership configurations, e.g., single and joint lead;
- Various approaches to the NEPA process—at a minimum, this would include the three approaches outlined in Chapter 1 of this report;
- Geographic diversity;
- A range of size and complexity, e.g., EIS, EA, CE;
- Rich lessons, both positive and negative, that highlight a variety of challenges and innovative approaches and contribute to addressing the research objectives; and
- Examples likely to illuminate the list of five challenges presented earlier in this report.

The selection screening resulted in 12 case studies:

- Dulles Corridor Metrorail Project (Dulles Project), Northern VA
- Port of Miami Tunnel, Miami, FL
- Eastern Corridor Program (Eastern Corridor), Cincinnati, OH
- National Gateway Clearance Project Phase I (National Gateway), Ohio, Pennsylvania, Maryland, and West Virginia
- Chicago Region Environmental and Transportation Efficiency Program (CREATE), Chicago, IL
- TRansportation EXpansion Project (T-REX), Denver, CO
- I-70 East Corridor Project (I-70 East), Denver, CO

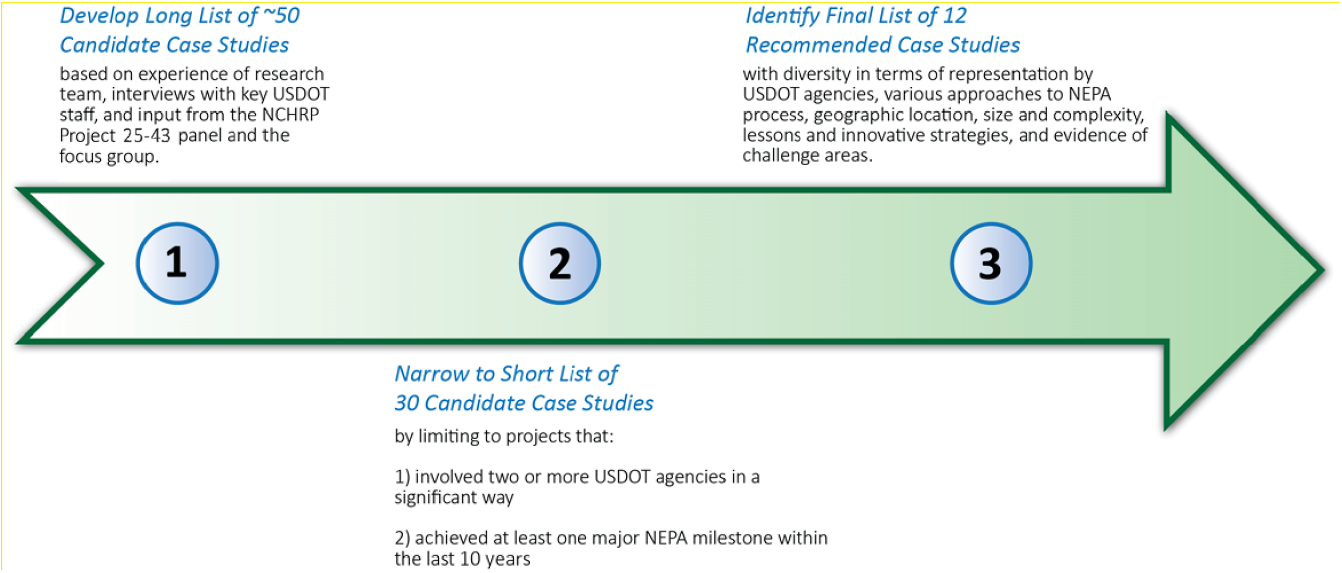


Figure 4. Process for selecting case study projects.

- Mountain View Corridor Project (Mountain View), Salt Lake City, UT
- XpressWest Project (XpressWest), California and Nevada
- Columbia River Crossing Project, Portland, OR, and Vancouver, WA
- East Link Extension/I-90 (East Link), Seattle, WA
- Orange Line LRT Extension to DFW Airport (DART DFW Extension), Dallas, TX

Brief descriptions of the 12 case studies are provided in Chapter 4.

Summary of How Case Studies Address Selection Criteria

This section summarizes how the individual projects meet the criteria applied in Step 3 of the case study screening process.

Geographic Distribution

The case studies were selected to ensure a reasonable geographic distribution. As shown in Figure 5, the projects are scattered across the country.

U.S. DOT Representation and Leadership Configurations

The case studies collectively encompass FAA, FHWA, FRA, FTA, the Surface Transportation Board (STB), and the U.S. Coast Guard (USCG), which was part of U.S. DOT prior to 2002.

Leadership structures were also of interest. Table 1 illustrates the variety of agency roles in the 12 cases. Four had joint leads and eight were led by a single agency, which provided researchers with the opportunity to assess the issues associated with each structure.

Figure 5. Geographic distribution of case study projects.

Table 1. U.S. DOT agency representation and leadership configurations for case study projects.

Project and Location	Agency Role (single lead, joint lead, cooperating, participating)					
	FAA	FHWA	FRA	FTA	STB	USCG
Dulles Project, Northern VA	Co-op			Lead		
Port of Miami Tunnel, Miami, FL		Lead				Co-op
Eastern Corridor, Cincinnati, OH		Lead		Co-op		
National Gateway, OH, PA, MD, WV		Jt. Lead	Jt. Lead			
CREATE, Chicago, IL		Lead	Co-op	Co-op		
T-REX, Denver, CO		Jt. Lead		Jt. Lead		
I-70 East, Denver, CO	Co-op	Jt. Lead	Co-op	Jt. Lead		
Mountain View, Salt Lake City, UT		Lead		Co-op		
XpressWest, CA, NV	Part.	Co-op	Lead		Co-op	
Columbia River Crossing, WA, OR	Co-op	Jt. Lead		Jt. Lead		Co-op
East Link, Seattle, WA		Co-op		Lead		
DART DFW Extension, Dallas, TX	Co-op			Lead		

Approaches to NEPA, Size, and Complexity

Table 2 shows that the case studies represent a variety of approaches to addressing NEPA requirements in a multimodal context. All three of the approaches illustrated in Figure 1 are represented. In addition, two of the case studies were approached as a program of projects (Eastern Corridor and CREATE). A tiered NEPA process has been used for the Eastern Corridor.

The case studies also present diversity in terms of size and complexity, as indicated by the NEPA classes of action shown in Table 3.

Relevance to Five Challenge Areas

Finally, a preliminary review of the case studies showed that each had potential to offer rich lessons across multiple challenges.

Case Study Methodology

Phase 2 was the information-gathering step of conducting each case study. The research team relied on two major sources:

- **Document reviews**—The project team compiled and reviewed documentation of the environmental processes of the selected case study projects. Sources included environmental documentation and findings (e.g., EIS and ROD), industry papers and/or presentations on the project, and other relevant and available materials. The research team used the document reviews as a starting point for answering the following interview questions. Findings were summarized to inform the questions posed during the phone interviews.
- **Interviews**—Telephone interviews were used to gather further information on each of the case studies. After the case studies were chosen, the research team identified key

Table 2. NEPA approach for case study projects.

Project and Location	Single NEPA Process for Both/ All Modes	Merged Initially, then Separated	Separate but Coordinated NEPA Processes
Dulles Project, Northern VA	✓		
Port of Miami Tunnel, Miami, FL	✓		
Eastern Corridor, Cincinnati, OH		✓	
National Gateway, OH, PA, MD, WV	✓		
CREATE, Chicago, IL			✓
T-REX, Denver, CO	✓		
I-70 East, Denver, CO		✓	
Mountain View, Salt Lake City, UT		✓	
XpressWest, CA, NV	✓		
Columbia River Crossing, WA, OR	✓		
East Link, Seattle, WA	✓		
DART DFW Extension, Dallas, TX	✓		

Table 3. NEPA class of action for case study projects.

Project and Location	CE	EA	EIS
Dulles Project, Northern VA			✓
Port of Miami Tunnel, Miami, FL		✓	
Eastern Corridor, Cincinnati, OH	✓	✓	✓
National Gateway, OH, PA, MD, WV		✓	
CREATE, Chicago, IL	✓	✓	✓
T-REX, Denver, CO			✓
I-70 East, Denver, CO			✓
Mountain View, Salt Lake City, UT			✓
XpressWest, CA, NV			✓
Columbia River Crossing, WA, OR			✓
East Link, Seattle, WA			✓
DART DFW Extension, Dallas, TX			✓

participants in each project and prepared a set of questions that formed the basis for the telephone interviews. To the extent possible, those interviewed included one or more representatives of the project sponsor and/or the project sponsor's consultant, as well as the U.S. DOT agencies that played significant roles. A pilot case study was developed (the DART DFW Extension) to test the case study approach and to ensure that the methodology was sound.

In keeping with the criteria introduced above, the interview questions focused on those aspects of multi-U.S. DOT agency NEPA participation that provide the most relevant and credible input into the research—that is, challenges and barriers, topics and applications, strategies, and available data and information. Listed below is the initial set of questions the research team aimed to answer for all case studies.

1. Describe the project and/or alternative(s) subject to the NEPA procedures and processes, including multimodal features.
2. Describe the NEPA process and/or approach [e.g., single Draft Environmental Impact Statement (DEIS), separate scoping and DEIS, or separate EISs].
3. Which U.S. DOT agencies played a significant role in the NEPA effort?
4. Who led the effort? How was coordination among the agencies accomplished?
5. For each U.S. DOT agency, describe the agency NEPA or other program requirements that were applied to the effort.
6. Which of these requirements were inconsistent with the requirements of other U.S. DOT agencies?
7. What major federal actions were ultimately required? Were they anticipated?
8. How was the NEPA process funded?
9. Which of these issues provided the greatest challenges in meeting the schedule and/or goals of the process?
10. What strategies/tactics did the project sponsor adopt to overcome these challenges?
11. What were the impacts on these differences in requirements on the process and on the ultimate outcome?
12. What were the key lessons learned in applying these strategies/tactics—that is, what worked? What did not? Why or why not?
13. What new and innovative strategies/tactics would you recommend to other agencies conducting a NEPA analysis of multimodal projects to overcome these challenges?
14. Are there reports or internal memoranda that we could obtain to provide more background on this project/arrangement?

The research team used the document reviews to develop preliminary answers for as many of the questions as possible. The team used the interviews to confirm its understanding of the project, fill in gaps, and seek further clarification. Research team members aimed to conduct multiple interviews for each case study to capture different perspectives. Although the research team selected cases with NEPA activity within the past 10 years, in some cases it was challenging to find interviewees who had played key roles, as many had retired or are now employed by other organizations.

Case Study Synthesis Approach

In Phase 3 the research team sought parallels among the 12 cases, tying the lessons learned and innovative strategies more directly to the challenges, and then identifying cross-cutting themes. To guide the synthesis, the team considered a series of questions to identify the characteristics of successful strategies, identify the common or unique nature of circumstances, and provide some sense of how the case study results

might offer useful guidance and best practices. The questions applied to each case study across the challenges follow.

1. What recurring problems were identified among the case studies? What were unique problems specific to individual case studies?
2. What practices emerged that could be applied in other NEPA processes relating to multimodal transportation projects (or a subset thereof)?
3. For those strategies that might be applied in other NEPA processes, what are the steps needed to make this happen?
4. Of the different strategies and actions illustrated in the case studies, which ones seem most promising as general practice?
5. What are some of the institutional and procedural barriers that might have to be overcome to implement the strategies or actions?
6. What are the most compelling "stories" of how state and local officials developed a proactive strategy for responding to the challenges of multiple federal agency administrative requirements?
7. What suggestions do case study participants have that merit further exploration?

Further refinement and analysis of the challenges led to a set of crosscutting themes and takeaways in the form of keys to the success, stumbling blocks to avoid, and strategies for addressing the challenges. As the synthesis progressed in collaboration with the NCHRP Project 25-43 panel, the research team decided to produce a self-assessment tool that NEPA project teams and individual staff may find helpful as they undertake planning and execution of multimodal NEPA processes in the future.

CHAPTER 4

Case Study Results

This section summarizes the 12 case studies, including the challenges encountered and strategies employed to address them. It is organized to help a reader identify those cases that may be similar to his or her particular situation or interests, and that may offer relevant lessons learned. The full case studies are presented as Appendices A through L.

Case Study Overviews

Dulles Project—Northern Virginia

The Dulles Corridor Metrorail Project is a 23-mile extension of the metropolitan Washington, D.C., heavy rail system from East Falls Church, VA, to the Dulles International Airport in Loudoun County, VA. The project features the new Silver Line, built in two phases, and a new rail yard facility at Dulles Airport, as well as improvements to the existing rail yard at West Falls Church. Phase 1 added four new stations along 11.7 miles from the existing Orange Line to Reston, VA. Much of this phase used land in the median of the access road owned by the Metropolitan Washington Airports Authority (MWAA). Phase 2 is adding five stations, including one at Dulles Airport, along the remaining 11.5 miles.

A single lead agency, FTA, guided the NEPA process, with FAA providing input on aviation-related issues as needed. FAA adopted FTA's environmental documentation, ultimately saving time and resources. The project team also established a joint project office, which facilitated effective coordination and communication.

Port of Miami Tunnel—Miami, FL

The Port of Miami Tunnel project is a 2.98-mile roadway connection between the Port of Miami on Watson Island and I-395. Prior to tunnel opening, access to the port was via the Port of Miami Bridge, which required vehicles to use local surface streets through downtown Miami. The Port of Miami Tunnel project has two 0.8-mile, two-lane bored tunnels. The project also added one lane in each direction to the MacArthur Causeway and realigned the Florida East Coast Railway (FEC) tracks and Port Boulevard lanes on Dodge Island.

A challenge faced by the project was identifying funding and financing for the project, and thus the federal agency to serve as the lead for NEPA. Well into project development, the Florida Department of Transportation (FDOT) elected to seek a federal loan, and FHWA agreed to lead the NEPA process. Due to effective coordination between FDOT and FHWA—a practice established by the state on previous highway projects—the team was able to complete NEPA activities quickly with minimal delays to the construction schedule.

Eastern Corridor—Cincinnati, OH

The Eastern Corridor Program is a set of multimodal improvements in the Cincinnati, OH, region. The goal of the program is to relieve congestion and improve transit, bicycle, and pedestrian mobility. The program includes five major highway and rail transit improvement projects, as well as small-scale roadway network improvements and expanded bus operations. A tiered NEPA process is being used.

The challenge to completing a multimodal NEPA process stems from the lack of funding and the low priority given to the rail transit component of the program. FHWA served as lead agency during Tier 1, which covered the entire multimodal program, and is the NEPA lead for the Tier 2 process for highway projects. A Tier 2 NEPA process for the rail component depends upon local decisions to make the project a priority. Other NEPA challenges have included the risk that some projects in the program would have significant environmental impacts. Formal meditation and re-scoping were undertaken to begin to resolve impact and mitigation issues.

National Gateway—OH, PA, MD, WV

The Phase 1 National Gateway Clearance project is a $183 million initiative to raise vertical clearances along CSX

track between Ohio and Pennsylvania. Phase I includes rail clearance and other rail improvements between Northwest Ohio and Chambersburg, PA. The project will clear remaining obstacles to the use of double-stacked rail cars between Midwestern markets and Mid-Atlantic ports.

The project faced tight deadlines due to the award of a TIGER I grant. Coordination was required among the multistate project team, which included four governors, state staff, and multiple U.S. DOT agencies. The project team was able to limit potential delays by coordinating early and frequently—both to coordinate NEPA approaches and procedures as well as to keep all relevant parties informed and engaged.

CREATE—Chicago, IL

The CREATE program is a series of freight rail, passenger rail, and related improvements in the Chicago region aimed at enhancing mobility by increasing capacity and efficiency. The program consists of approximately 70 projects, of which three have significant environmental impacts.

Given the unique structure of the program—numerous component projects in an urban region, participation of multiple U.S. DOT agencies as well as several private Class I rail operators, and projects with varying degrees of impact—the program team has developed several strategies for navigating the complex project development and environmental review process. A program-specific environmental review process was created that allows numerous component projects having little or no significant environmental impact to move forward while environmental reviews continue on the more complex projects. Governance roles and procedures facilitated effective communication between project partners and enabled trust to be built in a situation where some participants had little experience with the NEPA process.

T-REX—Denver, CO

T-REX consisted of highway and transit improvements in the I-25/I-225 corridor southeast of Denver. It included widening and rehabilitating 17 miles of Interstate highway and constructing 19 miles of double-tracked light rail transit. The transit component encompassed 13 new stations and the purchase of 34 light rail vehicles.

The project was able to avoid major NEPA process challenges through effective coordination and strong relationships between both the local and federal participating agencies. FTA and FHWA operated under the principles of "One DOT"—a U.S. DOT initiative at the time of the NEPA study to foster collaboration across modal administrations—and established an Interagency Agreement to streamline the overall NEPA process. The project capitalized on studies conducted pre-NEPA. Task groups with representation from federal, state, and local agencies were convened to address issues within specific technical focus areas, and technical resource papers were prepared for the project team. Co-locating sponsoring agencies and the consultant team in the same building as the FTA regional office and in proximity to FHWA helped to foster teamwork and collaboration.

I-70 East—Denver, CO

The I-70 East Corridor Project involved transit and highway improvements in the I-70 corridor in the Denver metropolitan area. The transit project was the East Rail Link, a 22.8-mile rail line linking Denver Union Station to Denver International Airport. The highway project was a proposed reconstruction of I-70 between I-25 on the west and Tower Road on the east.

A single NEPA process was undertaken for both projects. Coordination among multiple U.S. DOT agencies (FHWA, FTA, FRA, and FAA) was carried out through an executive office committee and technical working groups. The project team was challenged, however, by the fact that funding was available for implementing the East Rail Link but not for reconstructing I-70. Sponsors of the transit project were eager to move the process forward. Initial studies conducted as part of the NEPA process showed that the highway and transit projects had independent utility, even though they shared the same corridor. Ultimately the state and local participants decided to split the NEPA process into two separate processes, which allowed the transit project to advance more quickly. Separating the processes involved several workshops, stakeholder involvement, redefining the purpose and need (which had originally been written to be multimodal), and rewriting several technical reports.

Mountain View—Salt Lake City, UT

Mountain View was a combined highway/transit project in a 38-mile corridor in Salt Lake and Utah counties. The highway component, sponsored by the Utah Department of Transportation (UDOT), was a new six- to eight-lane limited access freeway connecting I-80 west of Salt Lake City to I-15 near Provo. The transit component, sponsored by the Utah Transit Authority (UTA), was a 24-mile dedicated facility in the northern section of the corridor. A combined NEPA process was undertaken for both projects, with FHWA and FTA serving as co-lead agencies at the beginning. Later, FTA reduced its role to cooperating agency because UTA did not consider the transit project to be a high priority, and FTA did not anticipate having a major federal action. This made it difficult for the state and local project partners and FTA to engage in the process.

UDOT and UTA entered into an Interlocal Agreement to demonstrate their joint interest and commitment to the multimodal project. The Interlocal Agreement linked the full implementation of the highway to the implementation of the transit project, and was incorporated into the FHWA ROD.

XpressWest—CA, NV

The XpressWest High-Speed Passenger Train is a planned passenger rail project along a 200-mile corridor between Victorville, CA, and Las Vegas, NV, largely within the I-15 right-of-way. The project is sponsored by a private company, DesertXpress Enterprises, LLC (DXE). The goal of the project is to relieve congestion on I-15 and at major commercial airports serving the Los Angeles and Las Vegas metropolitan areas.

The project faced challenges in coordinating among several partners participating in the project, including FRA, FHWA, FAA, and a private entity. Although FRA was the lead agency for NEPA, DXE played a major role in coordinating between participating entities, and provided information when needed to help move the NEPA process forward. The project team met in person when possible to help facilitate solutions to safety concerns and other issues, and used web conferences and third-party experts to work through solutions.

Columbia River Crossing—WA, OR

The I-5 Columbia River Crossing Project was a five-mile multimodal (highway, transit, bicycle, and pedestrian) project connecting Vancouver, WA, to Portland, OR. The goal of the project was to replace aging and substandard bridges while increasing transportation options in a corridor experiencing frequent crashes, congestion, lack of mobility, and poor bicycle and pedestrian connections. A combined NEPA process was undertaken with FHWA and FTA as co-leads. State and local project sponsors included the Washington State DOT (WSDOT), the Oregon DOT, Tri-Met, and Clark County Transit (C-Tran).

The project faced the challenge of differing processes among participating state and U.S. DOT agencies. The sponsors worked to develop relationships with both federal lead agencies and ultimately crafted a hybrid process acceptable to all. Tactics that built trust included thoroughly learning each U.S. DOT agency's requirements and procedures, conducting face-to-face meetings when possible, and holding separate meetings with U.S. DOT agencies when necessary to avoid conflicts and resolve issues.

East Link—Seattle, WA

The East Link Extension/I-90 project is an 18-mile extension of the Link Light Rail system along I-90, which will connect Seattle to Mercer Island, Bellevue, and Redmond in the eastern Puget Sound region. The project will relocate existing high-occupancy vehicle lanes located in the center lanes of I-90 and the I-90 floating bridge and replace them with bi-directional light rail. The project is to be completed in five segments, and would be the first known rail operation to be located on a floating bridge.

The project faced challenges in reconciling the NEPA requirements of FTA and FHWA. The project team was able to work through these conflicts in part due to the strong working relationships and coordination among the local and federal partners in the region established on past projects. The team also benefitted from prior coordination and policy actions that had been documented in issue papers prepared by the Environmental Action Team, a group formed by the WSDOT and the regional transit authority, Sound Transit, with the support of FTA and FHWA. The issue papers proved to be a valuable tool to help the East Link project team move past impasses related to NEPA approach on multimodal components of the project.

DART DFW Extension—Dallas, TX

The Orange Line LRT Extension to DFW Airport project is a 14-mile extension of light rail from downtown Dallas to the Dallas/Fort Worth Airport (DFW). The project was completed in two phases. The first phase extended the Orange Line 9.3 miles to the Beltline Station on DFW Airport property. The second phase extended the line from the Beltline Station to the DFW Airport terminal station. This phase was entirely on DFW Airport property.

The project faced unique FAA program requirements. Dallas Area Rapid Transit (DART) addressed them by being attentive to differences in the NEPA approach between FAA and FTA, and by hiring an expert to advise the project team on FAA's requirements and process. The project team also practiced effective coordination by defining roles and responsibilities early in the project and adhering to that protocol, and by fostering constant communication throughout all phases of the project. Close working relationships among project staff and the federal agencies proved to be a key to the project's success.

Problems and Strategies by Challenge

The case studies validated the first four challenges as shown in Table 4. These challenges were experienced to varying degrees across the case studies. The fifth challenge—securing funding to carry out a multimodal NEPA process—was not apparent in any of the 12 cases studied. No additional challenges emerged.

Table 4. Challenges by case study.

Project and Location	1. Unique Agency-Specific Program Requirements	2. Differing Interpretations of NEPA Requirements	3. Anticipating Which Agencies have Major Federal Actions	4. Efficient Coordination among Agencies	5. Securing Funding for Multimodal NEPA
Dulles Project, Northern VA	✓	✓		✓	
Port of Miami Tunnel, Miami, FL			✓		
Eastern Corridor, Cincinnati, OH			✓	✓	
National Gateway, OH, PA, MD, WV	✓	✓	✓	✓	
CREATE, Chicago, IL	✓			✓	
T-REX, Denver, CO	✓	✓		✓	
I-70 East, Denver, CO	✓	✓		✓	
Mountain View, Salt Lake City, UT			✓	✓	
XpressWest, CA, NV	✓	✓	✓	✓	
Columbia River Crossing, WA, OR	✓	✓	✓	✓	
East Link, Seattle, WA		✓		✓	
DART DFW Extension, Dallas, TX	✓	✓		✓	

The following sections summarize the problems faced and strategies employed under each challenge. More detailed discussion on the challenges faced, the strategies and tactics applied, and the lessons learned can be found in the detailed case study write-ups, presented as Appendices A through L.

Challenge 1: Unique Agency-Specific Program Requirements

Seven of the 12 case studies revealed specific problems related to this challenge. The problems observed by the case studies as well as their corresponding strategies/tactics are summarized in Table 5.

Summary of Problems Faced

In many of the cases in which FTA was either a lead or cooperating agency, FTA's New Starts requirements were cited as a unique agency requirement linked to the NEPA umbrella. State department of transportation sponsors tended to be unfamiliar with the FTA's New Starts approval steps and associated analyses that needed to occur concurrently with the NEPA process. On the Columbia River Crossing Project, it took several years to arrive at a hybrid process that was acceptable to FHWA, FTA, and the participating state and local agencies. Seeking to identify a project that is competitive for New Starts funding can add to the analysis and documentation required during NEPA and can influence the selection of the locally preferred alternative, as illustrated by the Dulles project. Project sponsors and/or U.S. DOT agencies were unaware of or did not fully understand other agencies' specific requirements, which tended to result in delays. During Phase 1 of the DART DFW Extension project, for example, DART was not aware until after the DEIS was published that FAA would require an Airspace Study to separately assess potential impacts of the one-mile alignment on airport property. Fulfilling this requirement after the DEIS was published instead of integrating it into the DEIS process delayed the project by several months.

The case studies also offer examples of the challenges caused by changes in federal legislation and policy affecting one or more agencies. On the Dulles Corridor Metrorail Project, changes in FAA rules related to the runway protection zone were raised in the context of NEPA. This led to changes to the project and additional NEPA review. During the CREATE program, enactment of the American Recovery and Reinvestment Act of 2009 (ARRA) created new opportunities for funding through FRA. The state's interest in these funds led to increased FRA involvement in NEPA, and an expanded scope of NEPA review to include operational issues of interest to FRA.

Transferrable Strategies

Successful strategies for addressing the first challenge included early and frequent coordination to enable a collaborative and cooperative approach to problem-solving. Specific strategies that successfully ameliorated the challenges of agency-specific requirements under the NEPA umbrella included:

- Developing relationships between sponsor and federal agency staff;
- Understanding each other's positions and building compromises that respect those positions;

Table 5. Summary of problems and strategies across case studies: Challenge 1.

Project and Location	Specific Problem	Strategies/Tactics
Dulles Project, Northern VA	FTA New Starts requirements were overlaid onto the NEPA process.	Project sponsors incorporated New Starts criteria into NEPA process, adapting the alignment to meet the criteria.
National Gateway, OH, PA, MD, WV	Project was subject to general conformity and additional disclosure requirements of contractors under FRA.	FHWA assigned a senior NEPA expert to FRA to administer the project. Being based in the FRA office, this project administrator was able to obtain the necessary guidance about FRA requirements and avoid or resolve interagency conflicts.
CREATE, Chicago, IL	ARRA and the creation of a new High-Speed Rail Program led to increased FRA involvement and expanded the scope of the NEPA process to include issues of interest to FRA.	Enhanced coordination between agencies and project team facilitated resolution of unique FRA issues.
T-REX, Denver, CO	FTA New Starts requirements were overlaid onto the NEPA process.	Established an FTA and FHWA Interagency Agreement, which included guidelines for how FTA-specific New Starts requirements would be addressed.
XpressWest, CA, NV	FHWA and FAA had safety concerns that affected project footprint, and thus affected the project's design and impacts. Safety concerns had to be addressed within the NEPA process.	The private project sponsor engaged FHWA, FRA, Caltrans, and the Nevada Department of Transportation in developing a Highway Interface Manual to address safety concerns. Volpe Transportation Systems Center was brought in to facilitate discussions on operational and safety issues, leading to refinements to the Highway Interface Manual.
Columbia River Crossing, WA, OR	FTA New Starts grant requirements overlaid onto the NEPA process were a source of procedural differences.	Staff eventually learned other agency procedures. The environmental consultant knew both FHWA and FTA processes and could facilitate agreement. Sponsor staff developed relationships with each federal agency and developed a hybrid process.
DART DFW Extension, Dallas, TX	DART was not familiar with the FAA requirement for an Airspace Study, leading to a delay in the first phase.	DART hired a consultant with expertise in FAA regulations for the second phase.

- Hiring an expert familiar with both processes to facilitate agreement; and
- Committing to interagency agreements detailing specific requirements and roles and outlining a high degree of coordination between the U.S. DOT agencies.

Challenge 2: Differing Interpretations of NEPA Requirements

The second challenge was found in eight of the 12 cases studied. Table 6 summarizes specific problems encountered and strategies/tactics applied.

Summary of Specific Problems

Five types of problems were encountered under this overall challenge. The first related to differing agency methodologies for assessing specific impacts, such as noise and Section 4(f). Differences between FTA and FHWA as well as FTA and FAA requirements emerged from the case studies.

Second, the case studies illustrated differing agency procedural requirements, perhaps stemming from different legal requirements and/or interpretations of the law and court rulings. These specifically emerged from the DART DFW Extension, National Gateway, and XpressWest case studies. In XpressWest, for example, the private project sponsor handled the design while the NEPA process was handled by a consultant hired by FRA. Coordination was challenging because project design and NEPA were handled by different entities. FHWA and the state DOTs were unclear at first on which agency to talk to regarding various aspects of the project. This differed from the typical relationship between FHWA and state DOTs for NEPA projects under the highway program, where the states own the projects and are responsible for design.

Table 6. Summary of problems and strategies across case studies: Challenge 2.

Project and Location	Specific Problem	Strategies/Tactics
Dulles Project, Northern VA	Both FTA and FAA had major federal actions and would have to issue RODs for the project.	• Conducted NEPA within the framework of FTA requirements, while addressing FAA requirements separately. • FAA adopted FTA's environmental documentation and in its ROD acknowledged responsibility for the scope and content that address FAA actions.
National Gateway, OH, PA, MD, WV	FRA initially thought that the project should require an EIS.	• The parties collaborated and were able to agree that an EA would be sufficient.
	FHWA required more extensive outreach than FRA and the project was under tight timeline.	• Meetings were held and comments accepted via the project website.
	FRA did not have a programmatic evaluation for 4(f).	• The project used FHWA's programmatic evaluation.
T-REX, Denver, CO	FHWA and FTA had different methodologies for measuring impacts under specific categories such as noise and vibration.	• Established an FTA and FHWA Interagency Agreement that reconciled differences in and outlined agency requirements. • Colorado Department of Transportation (CDOT) convened task forces for focused input on specific impacts, e.g., air quality, noise, historic resources, and wetlands. • Consultant prepared technical memoranda as a resource for all agencies involved.
I-70 East, Denver, CO	FHWA and FTA had different methodologies for measuring impacts under specific categories such as environmental justice, air quality, and noise.	• Project sponsors adapted the *Environmental Policies and Procedures Manual* developed for another project to help address issues related to differing NEPA requirements. • CDOT and the Regional Transportation District (RTD) convened several Technical/Issues Working Groups to provide focused input in distinct areas, including reconciling differences between FHWA- and FTA-specific requirements.
XpressWest, CA, NV	FRA managed the consultant conducting NEPA, while the private project sponsor (DXE) focused on design. It took some time for FHWA and the state DOTs to understand this unique institutional relationship. Under the highway program, states own the projects and are responsible for design.	• Many discussions and meetings were conducted among the participating agencies and DXE.
Columbia River Crossing, WA, OR	Differences between FHWA and FTA delegations of authority to project sponsors had to be reconciled.	• Utilized staff with recognized expertise in a particular area. • Over time, sponsors developed collaborative relationships with each federal agency, which enabled compromise.

(continued on next page)

Table 6. (Continued).

Project and Location	Specific Problem	Strategies/Tactics
East Link, Seattle, WA	FTA and FHWA used different methodologies to assess and mitigate impacts (i.e., noise).	• Close and preexisting coordination between local agencies led to a process for dealing with these issues. • Documentation of successful methodologies and mitigation through issue papers of the Environmental Action Team (dating back to early 2000) created a record of precedents that was employed as a base for negotiation on future projects. • FHWA agreed to limit its review to highway issues.
DART DFW Extension, Dallas, TX	FAA, the one federal agency that initially was expected to have a major action, did not have the staff with technical expertise to review a light rail project.	• All parties agreed from the start that FTA was the most logical lead agency. DART created an action for FTA by using FTA funds for a small portion of the project. • DART executed a reimbursement agreement with FAA to fund its participation in the review.
	Differing emphases of FAA and FTA during NEPA. DART was unfamiliar with many FAA concerns.	• DART was attentive to the FAA NEPA guidance and created a separate section in the documents for airport impacts in a format familiar to FAA. • DART hired an FAA expert.
	NEPA plays a different role in decision-making for each agency. FAA applies NEPA when the design is well developed, while FTA sees the NEPA process as part of the project development process.	• Staff on the project developed strong relationships and had good communications.
	FAA was going to require a supplemental environmental document for alignment changes made during the design-build process.	• FAA determined that changes made to the alignment during the design-build process were not significant enough to trigger a Supplemental EIS, and that a re-evaluation was sufficient.

The third type of problem relates to what might be called differences in philosophy or emphasis between and among U.S. DOT agencies, often stemming from the nature and history of their funding programs and enabling legislation, subsequent administrative rule-making, and leadership priorities. On the DART DFW Extension, for example, FAA wanted to coordinate directly with the other U.S. DOT agency, FTA, rather than coordinating through a local sponsor. During the Columbia River Crossing Project, FTA and FHWA maintained unique delegation practices, as discussed under Challenge #2 in Chapter 2 of this report.

Fourth, as discussed under Challenge #2 in Chapter 2 of this report, U.S. DOT agencies tend to have differing perspectives on the role of the NEPA process in local and federal agency planning and decision-making, with FHWA and FTA tending to see the NEPA process as part of project planning and development. In the Mountain View and Eastern Corridor cases, FTA was reluctant to take a formal role in NEPA activities until the transit project was seen as a local priority for federal funding. FHWA was willing to engage in the Port of Miami Tunnel project before the source of funding was identified (see Challenge 3). For FAA, projects are essentially developed and then subjected to NEPA review.

Finally, in some cases, practices within a U.S. DOT agency were found to differ by region, as noted in Chapter 2 of this report. FHWA and FTA have more or less involvement in the NEPA process in different parts of the country, depending on their relationship with the local sponsor agency. In Washington, Oregon, and California, for example, FHWA tended to delegate extensively to the state DOT.

Transferrable Strategies

Four broad strategies emerged across the case studies that could be transferred to other projects. The first involved developing strong working relationships and coordinating

early and often. Several of the case studies demonstrated success with this strategy. On East Link, close and preexisting coordination between local agencies, including Sound Transit and WSDOT, helped lead to a process for addressing differences between FTA and FHWA NEPA requirements. National Gateway is another example of this strategy.

A second strategy involved agreeing—early in the process—on which agency's requirements will govern NEPA activities. Perhaps the most illustrative case of this strategy is the development of the FTA and FHWA Interagency Agreement for the T-REX project, which identified areas where the agency's NEPA requirements differed and documented a recommended approach to reconciling them.

Third, by developing documentation, either in the form of a series of papers or a single manual, agencies were able to explain and help reconcile differences in agency requirements. Examples include the technical working groups that prepared technical memoranda for specific focus areas in the T-REX, I-70 East, and East Link cases.

A fourth strategy involved retaining staff or consultant specialists. DART, for example, hired a former FAA staff person as a consultant to advise on FAA requirements and procedures for the second phase of the Orange Line to DFW. On the Columbia River Crossing Project, staff with recognized expertise in specific technical areas were helpful in reconciling differences in agency approaches.

Challenge 3: Anticipating Which Agencies Will Have a Major Federal Action

Five of the 12 studies faced challenges related to anticipating which agency would have a major federal action. The specific problems encountered and corresponding strategies are summarized in Table 7.

Table 7. Summary of problems and strategies across case studies: Challenge 3.

Project and Location	Specific Problem	Strategies/Tactics
Port of Miami Tunnel, Miami, FL	Unclear which federal agency would have a major federal action (if at all) due to the lack of a funding strategy at the outset of the project.	• FDOT's Project Development & Environment (PD&E) process follows the same milestones as NEPA does, facilitating transfer of environmental analyses should NEPA be triggered. • FHWA was willing to be the lead federal agency before the federal source of funding was finalized. • MOU between FHWA and USCG clarified roles and responsibilities of each agency.
Eastern Corridor, Cincinnati, OH	The Oasis Rail Transit project (the transit component of the Eastern Corridor Program) currently has no lead federal agency. FTA has not actively engaged in the NEPA process and is waiting for local agencies to decide whether they will proceed with the project.	• FHWA was the lead agency for Tier 1 NEPA, which included the entire multimodal program. • ODOT and local agencies are doing further studies of the transit component prior to Tier 2.
National Gateway, OH, PA, MD, WV	There was uncertainty about which agency would administer the TIGER grant. Initially it was assumed the funds would flow through FRA but the funds were ultimately administered by FHWA. FRA did not have the staff resources or procedures to manage the NEPA process.	• FRA was the lead agency, with staff assistance provided by FHWA.
Mountain View, Salt Lake City, UT	UDOT and UTA sought to demonstrate commitment to a multimodal process and solution. FTA did not anticipate that it would have a role as a lead agency because the transit component of the multimodal program was not a UTA priority.	• FTA was initially identified as a co-lead agency, but its role was changed to cooperating agency.
XpressWest, CA, NV	FAA safety concerns were raised late in the NEPA process and led to additional engineering studies that delayed the NEPA schedule.	• Although FRA coordinated with FAA early, aviation-related safety concerns were not identified until late in the NEPA process.

Specific Problems Identified

Most of the identified problems resulted from a lack of clarity about which U.S. DOT agency's funding would be used to pay for a multimodal project. This led to uncertainty as to which federal agency would have a federal action that would trigger their role under NEPA. In some cases, the NEPA process was put on hold until the major federal action became clear.

The selection of a lead agency—or co-leads—drives the rest of the process. The case study projects reached this decision in different ways. In the case of National Gateway, the lack of certainty about which U.S. DOT agency would award the TIGER grant led to a decision that FRA and FHWA would be co-leads. In the end, FHWA was the only agency with a major action, but FRA remained involved.

Funding unknowns also created uncertainty about which agency would have a major action early in the Port of Miami Tunnel project. The project sponsors anticipated using a combination of local, city, county, state, and private financing, thus engaging the state's environmental process. More than halfway through project development, FDOT elected to use FHWA funding, and the FHWA NEPA process was initiated. While the NEPA process had to catch up with the advanced stage of project development, FDOT had followed its standard practice of keeping FHWA informed of possible major projects and completing the necessary steps for NEPA approval, should federal funding and/or a major federal action become necessary.

In DART's DFW Extension, funding played a role in a slightly different way. At first, FAA was the only agency with a major federal action. When all parties agreed that FTA would be a more logical lead federal agency for a light rail project, DART directed a small amount of FTA formula funding into the project to create a major action for FTA. DART found an innovative solution to ensure that the most appropriate lead agency had an action.

In the Mountain View case, UDOT and FHWA sought to take a more comprehensive approach to NEPA. Transit and highway alternatives were considered during corridor planning, and the preferred alternative included both a new highway and bus rapid transit. FTA was reluctant to engage because the transit element was not perceived to be a local priority that would require a major federal action by FTA. A similar situation occurred on the Eastern Corridor in Ohio.

On the XpressWest project, FAA safety concerns were not addressed early because it was not clear that an FAA action would be required. When it became apparent that the project would cross a runway protection zone, requiring FAA approval, additional engineering studies became necessary.

Transferrable Strategies

Strategies potentially transferrable to other projects involve coordinating and communicating with federal agencies to help anticipate any major federal actions that might trigger NEPA. This theme is exemplified by the Port of Miami Tunnel project, in which FDOT kept FHWA informed of its project development. By aligning the state's PD&E process with the NEPA process, the project sponsors faced minimal delay when FDOT decided to use FHWA funds late in project development. In the case of XpressWest, major FAA actions were unanticipated and led to delays when discovered. In the Mountain View and Eastern Corridor cases, communication about the resources and constraints of all the federal agencies might have led to better understanding of which agencies had the capability to play which role in the NEPA process.

Challenge 4: Efficient Coordination among Agencies

In nearly all of the case studies, efficiently coordinating among all the participating agencies proved to be challenging. The specific problems faced as well as strategies/tactics are summarized in Table 8.

Specific Problems

The coordination challenge generally related to the need to engage multiple agencies in the process and the difficulty of integrating the different approaches of the participating agencies. Specific case study examples of this challenge include the Columbia River Crossing, DART DFW Extension, and the National Gateway. On the Columbia River Crossing, differences in approach between the two states and different U.S. DOT agencies required additional resources and time to establish a structure through which agency roles, responsibilities, and processes were defined and agreed upon by all parties. Similarly, on the DART DFW Extension project, FAA's approach differed from FTA's for analyzing the project, and this required extra coordination steps to make sure each agency's concerns were met. On the National Gateway project, the involvement of four states, with differing procedures and approaches, along with the strict deadlines imposed by the TIGER I grant, necessitated efficient coordination from the beginning of the project to define roles and gain consensus.

CREATE was a unique case due to the large number of entities and the governance structure created to ensure that partners were part of the decision-making process. Changes to the budget, program scope, and related contracts required unanimous agreement among 11 entities—federal and local, public and private, and three U.S. DOT agencies. For example, coordination issues between FRA and FHWA/FTA regarding CE project classification caused the CP Canal Flyover project to be evaluated as an EA instead of a CE. The project involved several Class I railroads that had worked together, but were

Table 8. Summary of problems and strategies across case studies: Challenge 4.

Project and Location	Specific Problem	Strategies/Tactics
Dulles Project, Northern Virginia	Coordination among a large group of stakeholders, including FTA and FAA.	• Established a joint project office, including staff familiar with FTA policies and procedures and MWAA serving as a liaison with FAA to help resolve airport-related issues. • Engaged FAA for the entire project, although its role was small in the first implementation phase of the project.
National Gateway, OH, PA, MD, WV	Project received a TIGER I grant, with short and specific deadlines imposed by law. Project included improvements in four states. Each state had its own impacts and procedures, and the longest timeline controlled the overall schedule. Ohio had fewer issues and felt it was delayed by environmental processes in other states.	• Held a high-level kick-off meeting in Washington, D.C., which highlighted the timeline for the project. The governors of the involved states were aware of the project and coordinated as needed to resolve issues. • Sought coordination at all levels. Regular phone calls were held with all states.
	CSX, a private partner, was not familiar with NEPA and problems arose when CSX or its contractor moved ahead of the process.	• Clear communication from the project manager to the agencies helped resolve issues.
	The consultant CSX hired to complete NEPA documentation lacked knowledge of local conditions.	• FHWA assigned a senior NEPA expert to FRA to administer the project. This person had working relationships with several of the state DOTs.
CREATE, Chicago, IL	Coordinating decision-making among various parties in a disparate process with many component parts.	• Created formal governance structure (complete with management board) to coordinate decision-making among private and public partners.
T-REX, Denver, CO	NEPA required coordination between FHWA and FHWA, as well as among state and local agencies.	• Co-located sponsoring agencies and the consultant team in the same building as FTA regional office and in proximity to FHWA. • Developed a detailed critical path method schedule updated weekly. • Capitalized on coordination that occurred before the NEPA process began.
I-70 East, Denver, CO	NEPA required coordination between FHWA and FTA, as well as among several agencies.	• Established an Intergovernmental Coordination and Compliance Committee to provide technical guidance and support. • FTA and FHWA coordinated directly as the two regional offices, located in the same building, helped to facilitate internal communications.
Mountain View, Salt Lake City, UT	FTA did not actively engage in the NEPA process, since it did not anticipate having a major federal action.	• Representatives of state and local agencies traveled to the FTA regional office to seek more active engagement from FTA.
XpressWest, CA, NV	Orchestrating the involvement of many parties, particularly FRA and DXE, while producing a NEPA document that met the needs of all agencies. Learning curve for all agencies and individuals with varying levels of expertise.	• Robust and frequent communication among all agencies, including meetings, teleconferences, web conferences, letters, and e-mails.

(continued on next page)

Table 8. (Continued).

Project and Location	Specific Problem	Strategies/Tactics
Columbia River Crossing, WA, OR	Differences in approach to NEPA, both between FHWA and FTA and between the states and transit agencies, required time to work through. FHWA and FTA had differing priorities and areas of emphasis. Late in the process, after the ROD, the USCG determined that the bridge height had to be raised. The U.S. Army Corps of Engineers raised new Clean Water Act Section 404 and 408 permit issues late in the process.	• Frequent communication and face-to-face meetings. • An elevation process was used when needed to resolve procedural differences. • Relationships were purposely built between staff of all agencies, enabling compromise. • Project partners prepared an agreement about roles and responsibilities. • FHWA and FTA attempted to coordinate on selection of project team members. • Resolution of the bridge height issue was elevated to headquarters and required an environmental re-evaluation, adding time to the schedule. • The InterCEP agreement and process were useful for facilitating timely and productive engagement of resource agencies but could not address coordination issues within an agency.
East Link, Seattle, WA	NEPA required coordination among several agencies.	• Development of a coordination plan between transit and highway partners (both local and federal) early on helped negotiate solutions to issues before they affected the schedule.
DART DFW Extension, Dallas, TX	Numerous partners and different approaches to NEPA, especially between FTA and FAA. FAA preferred to coordinate with other federal agencies or the local airport, rather than the transit project sponsor.	• DART met periodically with FTA and FAA and copied both agencies on all correspondence. • DART held frequent (bi-weekly) meetings with Technical Advisory Committee comprised of local partners. • DFW played a major role in coordinating issues on the airport and addressing FAA concerns.

also competitors. In the end, FHWA was the lead agency of a program in which rail was the dominant mode.

Coordination challenges were faced on other projects that required resource and regulatory agency sign-off and involved a large number of stakeholders. In each case there was the need to coordinate procedures among agencies whose cooperation is needed to move forward.

Transferrable Strategies

For each of the projects, project teams created coordinating structures and guidelines for how, where, and how frequently stakeholders would coordinate and communicate. This tactic, at the very least, is necessary for ensuring that all parties are included in the NEPA process. More in-depth coordination strategies included developing governing documents, setting up a formal decision-making structure, co-locating staff, and establishing other techniques for how partners would coordinate given their unique set of issues.

On the Dulles, T-REX, and Columbia River Crossing projects, each project team established a joint project office to expedite coordination and improve communication. To further enhance communication and a shared understanding of issues, the Dulles team invited all involved federal agencies to participate in meetings throughout every phase of NEPA activities—even meetings not directly affecting their interests. This promoted information-sharing and enabled project sponsors to gain an understanding of all agencies' perspectives on issues as they arose, which helped avoid and address subsequent issues. Use of critical path schedules and weekly staff meetings created an interface through which agencies could regularly share information and be kept on a schedule. In all cases, a clear understanding of the approaches and perspectives of the federal agencies involved may help mitigate possible conflicts in approach and analysis. DART copied both FTA and FHWA on all project correspondence.

On the National Gateway, XpressWest, and CREATE projects, private partners were key participants in the NEPA pro-

cess. This raised a distinct set of coordination challenges as teams worked to understand and align the fundamentally different needs and approaches of public and private sector partners.

The overarching lesson from all cases is the need for frequent and early communication and coordination to identify and resolve issues.

Challenge 5: Securing Funding for Multimodal NEPA Studies

Securing multimodal funding for NEPA did not emerge as a challenge in any of the 12 cases studied. Although several of the cases faced a lack of funding to complete NEPA and implement projects, the lack of funding did not seem to stem from the multimodal nature of the project and the need for different modal agencies to contribute. The criteria used to select the case studies—which favored cases where there had been at least one major NEPA milestone in the last 10 years—may have screened out cases where project sponsors had been unable to assemble the funding for a multimodal NEPA process.

Specific Problems

Early interviews with U.S. DOT staff as well as feedback from the study's focus group and the NCHRP Project 25-43 panel indicated that funding should be regarded as a challenge in the early stages of a multimodal NEPA study. When a multimodal project involves multiple agencies and programs, it may not be "owned" by any one program, and it may then be difficult to assemble funding for NEPA activities from multiple sources. While many of the multimodal NEPA processes examined in this research used funds from a single mode, several states (e.g., Ohio and Arizona) do not allow gasoline tax revenues to be used for modes other than highways. The Eastern Corridor is an example of a program with this restriction. Lack of funding can delay the start of the NEPA process or lead to delays while additional funds are secured.

Transferrable Strategies

The case studies may provide helpful examples of how to fund multimodal NEPA studies. As shown in Table 9, most of the 12 case studies were funded by the state and/or local project sponsors, with the most common arrangement being one entity taking the lead in funding most of the NEPA costs. State DOTs were a primary funding partner in seven of the 12 cases. For the Mountain View and National Gateway projects, local partners also made in-kind contributions of staff time.

At least five cases used federal funds; in these cases, funding was contributed by only one of the U.S. DOT agencies involved. This arrangement did not appear to present any major issues, even in cases where the U.S. DOT agencies served in joint lead roles. In the case of the Columbia River Crossing, FHWA funded the bulk of the NEPA process and related engineering studies to address both FHWA and FTA requirements, with the expectation that New Starts funding would cover a substantial portion of the construction costs.

Table 9. Funding partners for NEPA across case studies.

Project and Location	Federal	Non-Federal
Dulles Project, Northern Virginia	FTA	• Commonwealth of Virginia • Fairfax County
Port of Miami Tunnel, Miami, FL		• FDOT
Eastern Corridor, Cincinnati, OH	FHWA (Tier 2 only)	• Ohio DOT • Local partners (metropolitan planning organization/city/counties)
National Gateway, OH, PA, MD, WV		• CSX • State partners (in-kind)
CREATE, Chicago, IL	TIGER and other sources	
T-REX, Denver, CO	FHWA	• CDOT
I-70 East, Denver, CO		• CDOT • RTD
Mountain View, Salt Lake City, UT		• UDOT • UTA (in-kind)
XpressWest, CA, NV		• DesertXpress Enterprises
Columbia River Crossing, WA, OR	FHWA	• WSDOT • Oregon DOT
East Link, Seattle, WA		• Sound Transit
DART DFW Extension, Dallas, TX		• DART (through sales tax proceeds)

The strategies recommended for other challenges may help project sponsors secure funding. For example, early coordination with federal agencies—before initiating NEPA—can provide clarity on the level of involvement needed from federal agencies and perhaps reveal potential funding opportunities.

Conclusions

The 12 case studies examined in this research illustrate the challenges faced by those undertaking multimodal NEPA processes involving more than one U.S. DOT agency. They capture an array of NEPA processes, institutional arrangements, and strategies that may be transferrable to others. The first four of the five challenges identified in Chapter 2, Challenges of Multimodal NEPA Processes, are particularly well represented. In these cases, overcoming the challenges involved a variety of strategies—some of which were new and innovative for the agencies involved. In the end, success tended to depend more on the willingness and motivation of all parties to work together, to find common ground, and to work around differing processes, and less upon a specific organizational structure or approach.

Chapter 5, Case Study Synthesis, draws on the case study results to provide a consolidated list of strategies/tactics and to highlight crosscutting themes, keys to success, and stumbling blocks to avoid. Further detail on the cases can be found in Appendices A through L.

CHAPTER 5

Case Study Synthesis

The research found many different ways to carry out NEPA for situations involving more than one mode or U.S. DOT agency. The case studies offer examples of agencies working out hybrid processes and trying new approaches that worked for their particular situation and parties involved. In other cases, participants took away some lessons learned that will benefit them the next time they face a similar situation. In its own way, each case study demonstrates that flexibility and openness to new approaches were necessary to achieve satisfactory outcomes.

In the previous chapter, transferrable strategies were listed under each of the five challenges. Many of these were listed multiple times, because there were instances where a particular strategy was used to address more than one challenge. This chapter begins with a consolidated list of transferrable strategies and tactics. Crosscutting themes and stumbling blocks to avoid for successful outcomes are then presented.

Consolidated List of Transferrable Strategies and Tactics

Twenty-three strategies for addressing the challenges to multimodal NEPA projects emerged from the case studies. Table 10 lists these strategies, identifies the challenges they addressed, and references the case studies that used each strategy. More detailed descriptions of each application can be found in the individual case study summaries, presented as Appendices A through L.

Many of these strategies relate to the challenge of coordinating between and among U.S. DOT and local agencies. Successful techniques varied widely and included committees, joint project offices, memoranda of agreement, and frequent in-person meetings. Coordination also occurred through the use of local task forces, groups, or technical documents to address and record solutions to technical issues.

Crosscutting Themes and Keys to Success

As expected, the most prevalent theme across the case studies was the **need for early and continuous coordination across all agencies—federal, state, and local—with a potential stake in the project.** Coordination emerged in every case study as either a factor for success or, when effective coordination was lacking, as a source of frustration and delay. This theme is applicable to all five challenges. Coordination is critical to the success of any project involving more than one partner. Variations on this theme include knowing the best point at which to engage specific agencies and the most effective strategy to employ in a given situation. **Remaining flexible and seeking opportunities to find common ground** also emerged as important themes, and are generally tied to the need for cooperation.

Case Study Highlight: T-REX and "One DOT"

FTA and FHWA operated as "One DOT," and established an Interagency Agreement early in NEPA, streamlining the NEPA process for T-REX. The two agencies identified areas where their NEPA requirements differed and identified an approach to reconciling these issues in an Interagency Agreement. Staff from both agencies understood their roles and responsibilities throughout NEPA, saving time and resources. The One DOT approach—a U.S. DOT initiative at the time—was intended to foster collaboration across modal administrations. It was applied through construction and garnered the FHWA Colorado Division and FTA Region VIII a special award in recognition of the efforts.

Table 10. Transferrable strategies and tactics applied in case studies.

Transferrable Strategies and Tactics	Challenges				Case Studies that Demonstrate Strategy/Tactic
	1. Unique Agency-Specific Program Requirements	2. Differing Interpretations of NEPA Requirements	3. Anticipating Which Agencies Have Major Federal Actions	4. Efficient Coordination among Agencies	
1. Utilize various channels to maintain regular communication with all appropriate partners.	✓	✓		✓	• All
2. Establish process where federal agencies coordinate directly.				✓	• I-70 East • National Gateway • DART DFW Extension
3. Foster a sense of teamwork and collaboration and develop relationships among all parties, particularly with and between federal agency staff.	✓	✓		✓	• Dulles Project • T-REX • I-70 East • Columbia River Crossing • DART DFW Extension
4. Establish interagency agreement(s) to detail specific agency requirements, procedures to be followed, and agency roles.	✓	✓		✓	• T-REX • Mountain View • Columbia River Crossing • Port of Miami Tunnel
5. Build coordination among agencies pre-NEPA and capitalize on preexisting relationships.		✓		✓	• I-70 East • Columbia River Crossing • East Link
6. Hire a mediator and/or facilitator to help work through challenging issues and facilitate agreement.	✓	✓			• XpressWest • Eastern Corridor
7. Leverage work that took place before NEPA began.				✓	• T-REX
8. For phased projects, engage all lead and cooperating federal agencies in every phase, even if their interests aren't directly affected across all phases.			✓	✓	• Dulles Project • Port of Miami Tunnel • DART DFW Extension
9. Designate a single lead agency or designate which agency's requirements and/or processes will be followed early; conduct evaluations for other agency requirements separately.		✓			• Dulles Project • National Gateway • DART DFW Extension
10. Aim to prepare a single NEPA document and address unique agency requirements in standalone sections.		✓			• DART DFW Extension
11. Develop a detailed critical path method schedule that is updated and referenced on a regular basis.				✓	• T-REX
12. Hire or identify a staff expert to provide necessary expertise in specific technical areas and/or expedite unfamiliar processes.	✓	✓	✓		• Columbia River Crossing • DART DFW Extension

Table 10. (Continued).

Transferrable Strategies and Tactics	Challenges				Case Studies that Demonstrate Strategy/Tactic
	1. Unique Agency-Specific Program Requirements	2. Differing Interpretations of NEPA Requirements	3. Anticipating Which Agencies Have Major Federal Actions	4. Efficient Coordination among Agencies	
13. Co-locate or assign staff from partner agencies, or defer to agency specialists, to provide specific technical expertise and/or expedite unfamiliar processes.	✓	✓	✓	✓	• National Gateway • DART DFW Extension • Dulles Project • T-REX • Columbia River Crossing • I-70 East
14. Establish a committee, task force, or working group to provide technical guidance and support.		✓		✓	• T-REX • I-70 East
15. Create a formal governance structure (with management board) to coordinate decision-making among private and public partners.	✓			✓	• CREATE
16. Establish a detailed charter or coordination plan that includes ground rules and procedures for conflict resolution and facilitation.				✓	• East Link
17. Develop technical memoranda or white papers to explain and reconcile differences in agency requirements.		✓			• T-REX • I-70 East • East Link
18. Apply documented policies, procedures, and successful methodologies for resolving issues that were implemented on other multimodal NEPA projects.		✓			• I-70 East • East Link
19. Develop a formal dispute resolution process that engages higher-level staff to resolve procedural differences.				✓	• T-REX • Columbia River Crossing
20. Closely align state and federal environmental processes.			✓		• Port of Miami Tunnel
21. Incorporate a thorough scoping process.			✓		• XpressWest
22. Visit the regional or field office of an agency to encourage greater participation.				✓	• Mountain View • Eastern Corridor
23. Create an action so that the most appropriate U.S. DOT agency can lead the NEPA process.		✓			• DART DFW Extension

Closely related is **engaging all necessary staff as needed throughout the process.** Several of the strategies were related to this theme, including engaging staff with expertise in specific NEPA or agency-specific requirements, as was done on National Gateway and the DART DFW Extension; using executive-level staff to resolve differences, as was done on Columbia River Crossing and T-REX; and seeking external experts as needed to provide guidance or facilitate resolutions, as was done on XpressWest.

Similarly, **ensuring that all agencies (both local and federal) have the same level of interest in and commitment to the project** is critical to moving the NEPA process forward and minimizing delays on a combined process. In the Eastern Corridor and Mountain View case studies, one U.S. DOT

agency did not actively participate in the multimodal NEPA process due to a lack of local commitment to a multimodal outcome that would lead to a federal action on their part. On I-70 East, a merged process was eventually split because of differing levels of funding commitment to the highway and transit elements.

Another overarching theme was **strategic use of the most advantageous agency relationships and high-level interests**. This was perhaps most evident on the National Gateway project, which used a high-level kick-off meeting in Washington, D.C. to capture the attention of the participating states and engage their governors. The project team also emphasized the economic and community benefits of the National Gateway to win support. Leveraging shared interests and executive-level strategic relationships can help engage agency partners that may not otherwise be interested in coordinating.

Allocating adequate time and resources to the NEPA process was cited frequently as crucial to addressing the identified challenges to multimodal projects. Some of the strategies may require extra time to execute. Factoring in the time required to meet the approval requirements of multiple agencies—even after coordination strategies are implemented—is good practice.

Becoming familiar with agency and private partner processes and reconciling differences early in the NEPA process was also a significant crosscutting theme. This was particularly important for addressing the first two challenges, but lack of understanding may also preclude identification of project elements that may trigger federal action—a problem under the third challenge of anticipating major federal action. **Gaining an early understanding of agency constraints and expectations and recognizing they may differ** also recurred across such case studies as Mountain View, Eastern Corridor, CREATE, and XpressWest.

Finally, the case studies demonstrate that **there is no single best way to approach the NEPA process for multimodal situations**. The T-REX and I-70 East projects illustrate this point particularly well. In the T-REX project, a single EIS was prepared for both the highway and the transit improvements, and both modes then moved to a single design-build procurement for implementation in a shared corridor. The subsequent I-70 East process was modeled after T-REX, but due to the differing levels of funding commitment in that case, the highway and transit elements were ultimately split into separate NEPA processes (with associated delays and costs).

Ultimately, the success of multimodal NEPA activities may depend more on the willingness and motivation of the agencies to work together, to find common ground, and to work around differing processes, and less upon the team's organizational structure or approach. Achieving an effective interagency approach depends on how well the project sponsor and other agencies are able to bridge the differences in requirements and agency practices.

Stumbling Blocks to Avoid

The case studies also highlighted stumbling blocks to avoid when undertaking a multi-agency NEPA process. In particular:

- Differences in perspective and emphasis between U.S. DOT agencies—whether from differing program structures, legislative mandates, past legal challenges, or leadership priorities—can complicate the development of a shared process. Agreement on a single process and scope that accommodates each agency's needs may require cooperation and compromise.
- Different levels of commitment to a project can nullify or limit the effectiveness of prior agreements.
- Insufficient time or resources allocated to applying these strategies can hinder successful implementation.
- Limited commitment on the part of project sponsors to coordinate or learn other agency requirements, and failure to communicate the benefits of full agency engagement, can be barriers to implementing the recommended strategies.
- Resistance on the part of state and local sponsors to adapt their current processes to reflect the nuances of U.S. DOT agency NEPA processes can lead to frustration and delays.
- Reluctance of federal agencies to engage in projects before their major action is identified can thwart coordination and overall progress.

The strategies and tactics summarized in Table 10, along with the Self-Assessment Tool in Appendix O, can be used to help anticipate and avoid the stumbling blocks listed in this section.

Appendix M identifies key NEPA requirements for each of the U.S. DOT agencies featured in the case studies. This appendix can help future project sponsors identify the relevant requirements before starting a multi-agency, multimodal NEPA process.

CHAPTER 6

Implementation Plan

The products of this research are intended to help practitioners understand the challenges of multimodal NEPA processes and consider how they might benefit by applying some of the best practices, innovative strategies, and lessons learned identified in this research. This chapter outlines a broad implementation approach to help make the results of this research accessible and transferrable to the unique situations that practitioners may face with future multimodal NEPA projects.

Self-Assessment Tool

A primary product of this research is the creation of a toolkit for practitioners to apply as they are developing a plan of action and working through the NEPA process for multimodal projects. The self-assessment tool, provided in Appendix O, is one of three main tools resulting from this research. It was designed to facilitate discussions among the NEPA project team about the challenges inherent in multimodal projects, and steps that can be taken to mitigate them. The tool was designed with insights gained from the case study results and synthesis discussed earlier, as well as the input of practitioners that comprise this research effort's focus group. The tool comes with a set of instructions to guide practitioners on how to use the tool.

Tool Guidance

The color guidance that accompanies each statement helps the user identify those competency areas needing the most attention. When users check the green box, they are indicating that they already have a high understanding and have given attention to the issue. Those checking a brown or red box are indicating that there may be a need for greater understanding and attention. The provided scale, ranging from "completely agree" to "completely disagree," is meant to be illustrative; each user or project team can create an alternative that works best for them. Each individual statement is important in assessing the user's or the project team's competency. The average of greens and reds in one section does not equate to overall competency in a section.

Tool Discussion

Within the self-assessment tool following each section, further guidance is given on the relevant NCHRP Project 25-43 tools (e.g., final report results and case studies) to reference in order to become more familiar with the issues and available strategies. The goal of the discussion sections is to lead the project team to the in-depth study of the relevant challenges explored in that section, ways in which those challenges arose and affected project development, and strategies and lessons learned from project teams who worked through these challenges. While the materials touch on "how" project teams were able to create solutions to the challenges by highlighting key strategies and lessons learned, the application of these strategies will be unique for each project team depending on the context of the project, challenges, and resources available.

Other Uses of the Tool

The tool was designed for NEPA project teams working on multimodal projects involving more than one U.S. DOT agency. However, as the research team developed the tool, it became apparent that many of the challenges explored in the tool's statements are applicable more broadly, e.g., to NEPA processes in which just one U.S. DOT agency and multiple other agencies (not necessarily U.S. DOT) are involved. Project teams may customize the tool to suit their particular needs.

Suggestions for Further Exploration

The research suggests a few areas for further exploration.

Use of Interagency Agreements. The recurring theme of agency cooperation across case studies and the success of

projects where roles and relationships were clearly documented suggest that interagency agreements might be helpful tools for multimodal NEPA projects that involve multiple U.S. DOT agencies. Agencies embarking on interagency projects examine previously used agreements to help identify specific points where early consensus is critical. A future effort could attempt to pinpoint a specific threshold or scenario under which project sponsors and U.S. DOT agencies should consider using an interagency agreement. A related question to consider is the extent to which it is possible to implement preemptive agreements between U.S. DOT agencies that frequently partner on multimodal projects.

White Paper on Requirements that Differ among U.S. DOT Agencies. A paper discussing the requirements that differ among U.S. DOT agencies and specific guidance on how multimodal projects may address them could be useful. Appendix M offers a starting point.

Revisit the Challenge of Securing Funding for Multimodal NEPA Studies. As noted previously, Challenge 5, Securing Funding for Multimodal NEPA Studies, did not emerge from the 12 case studies, likely because the case study selection criteria favored cases where there had been at least one major NEPA milestone in the last 10 years. Those cases where project sponsors had been unable to assemble the funding for a multimodal NEPA process were thus screened out. Future research could specifically explore examples of this challenge. As noted previously, some of the strategies recommended in this study might be appropriate for addressing specific problems related to this challenge that may emerge from future research.

Abbreviations, Acronyms, and Initialisms

AA	Alternatives Analysis
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AMPO	Association of Metropolitan Planning Organizations
APTA	American Public Transportation Association
ARRA	American Recovery and Reinvestment Act of 2009
BLM	Bureau of Land Management
BNSF	BNSF Railway
BRC	Beltway of Chicago
BRT	Bus rapid transit
CAC	Community Advisory Committee; Citizens Advisory Committee
Caltrans	California Department of Transportation
CDOT	Chicago Department of Transportation; Colorado Department of Transportation
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CIP	Corridor Improvement Project (75th CIP of CREATE)
CN	Canadian National Railway Company
CP	Canadian Pacific Railway
CPG	Chicago Planning Group
CREATE	Chicago Region Environmental and Transportation Efficiency Program
CRC	Columbia River Crossing Project
CRMF	Commuter Rail Maintenance Facility (I-70 East Corridor Project)
CSX	CSX Transportation
C-TRAN	Clark County (Washington) Public Transit Benefit Area Authority
DART	Dallas Area Rapid Transit
DEIS	Draft Environmental Impact Statement
DERM	Miami-Dade County Department of Environmental Resource Management
DFW	Dallas/Fort Worth Airport
DIA	Denver International Airport
DIAAH	Dulles International Airport Access Highway
DOT	Department of Transportation
DRCOG	Denver Regional Council of Governments
DRPT	Virginia Department of Rail and Public Transportation
DUS	Denver Union Station
DXE	DesertXpress Enterprises, LLC
EA	Environmental Assessment

EAT	Environmental Action Team (East Link project)
ECAD	Environmental Class of Action Determination
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEC	Florida East Coast Railway
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTE	Florida Turnpike Enterprise
HAZMAT	Hazardous materials
HCT	High-capacity transit
HSIPR	High-Speed Intercity Passenger Rail Program
ICCC	Intergovernmental Coordination and Compliance Committee (I-70 East Corridor project)
ICOET	International Conference on Ecology and Transportation
IDOT	Illinois Department of Transportation
IJR	Interchange Justification Report
InterCEP	Interstate Collaborative Environmental Process (Columbia River Crossing Project)
LAS	Las Vegas McCarran International Airport
LPA	Locally preferred alternative
LRT	Light rail transit
MDOT	Maryland Department of Transportation
Metro	The metropolitan planning organization of Portland, OR
MIS	Major Investment Study
MOU	Memorandum of Understanding
MPO	Metropolitan planning organization
MSAT	mobile source air toxics
MWAA	Metropolitan Washington Airports Authority
NCHRP	National Cooperative Highway Research Program
NCTCOG	North Central Texas Council of Governments
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NOFA	Notice of Funding Availability
NPS	National Park Service
NS	Norfolk Southern Corp.
ODOT	Oregon Department of Transportation; Ohio Department of Transportation
OKI	Ohio-Kentucky-Indiana Regional Council of Governments
P3	Public-Private Partnership
PD&E	Project Development and Environmental
PennDOT	Pennsylvania Department of Transportation
PMOC	Project Management Oversight Consultant (Columbia River Crossing project)

POMT	Port of Miami Tunnel
PSC	Project Sponsors Council (Columbia River Crossing Project)
PSRC	Puget Sound Regional Council
ROD	Record of Decision
RPZ	Runway Protection Zone
RTC	Southwest Washington Regional Transportation Council
RTD	Regional Transportation District
SAFETEA-LU	The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
Section 106	Historic resources review compliant with Section 106 of the National Historic Preservation Act of 1966
SEPA	State Environmental Policy Act (Washington State)
SHPO	State Historic Preservation Officer
SNSA	Southern Nevada Supplemental Airport
SORTA	Southwest Ohio Regional Transit Authority
SPEED	Systematic, Project Expediting, Environmental Decision-Making Strategy (CREATE program)
STB	Surface Transportation Board
TAC	Technical Advisory Committee
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery (federal grant program)
TCAPP	Transportation for Communities—Advancing Projects through Partnerships
TOD	Transit-oriented development
TRB	Transportation Research Board
T-REX	TRansportation EXpansion Project (Denver, CO)
Tri-Met	Tri-County Metropolitan Transit District (Portland, OR)
TSM	Transportation system management
TxDOT	Texas Department of Transportation
USCG	U.S. Coast Guard
U.S. DOT	U.S. Department of Transportation
UDOT	Utah Department of Transportation
UP	Union Pacific Corporation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish & Wildlife Service
UTA	Utah Transit Authority
WMATA	Washington Metropolitan Area Transit Authority
WSDOT	Washington State Department of Transportation
WSRA	Wild and Scenic Rivers Act
WVDOT	West Virginia Department of Transportation

APPENDIX A

Case Study—Dulles Corridor Metrorail Project, Northern Virginia

Summary

Project Description

The Dulles Corridor Metrorail Project is a 23-mile extension of the Washington, D.C., metropolitan area's heavy rail system from East Falls Church in Fairfax County, VA, to Washington Dulles International Airport and Loudoun County, VA.

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Lead
- Federal Aviation Administration (FAA)—Cooperating

Key State and Local Agencies

- Metropolitan Washington Airports Authority (MWAA)—Project Sponsor
- Virginia Department of Rail and Public Transportation (DRPT)—Project Sponsor, 2000–2008
- Washington Metropolitan Area Transit Authority (WMATA)
- Fairfax County
- Loudoun County

Challenges Faced

The Dulles Corridor Metrorail Project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table A-1).

Strategies, Tactics, and Lessons Learned

- Conduct NEPA activities within the framework of single lead agency's requirements, while addressing second U.S. DOT agency requirements separately.
- Establish a joint project office.
- In cases where more than one U.S. DOT agency has a major action, consider having one agency lead preparation of the environmental documentation, with the other agencies adopting it.
- Combine NEPA processes and select a single lead agency.
- For phased multimodal projects, engage all federal agencies in every phase, even if their interests are not directly affected by all phases.
- Align the NEPA and New Starts processes.

Case Study Detail

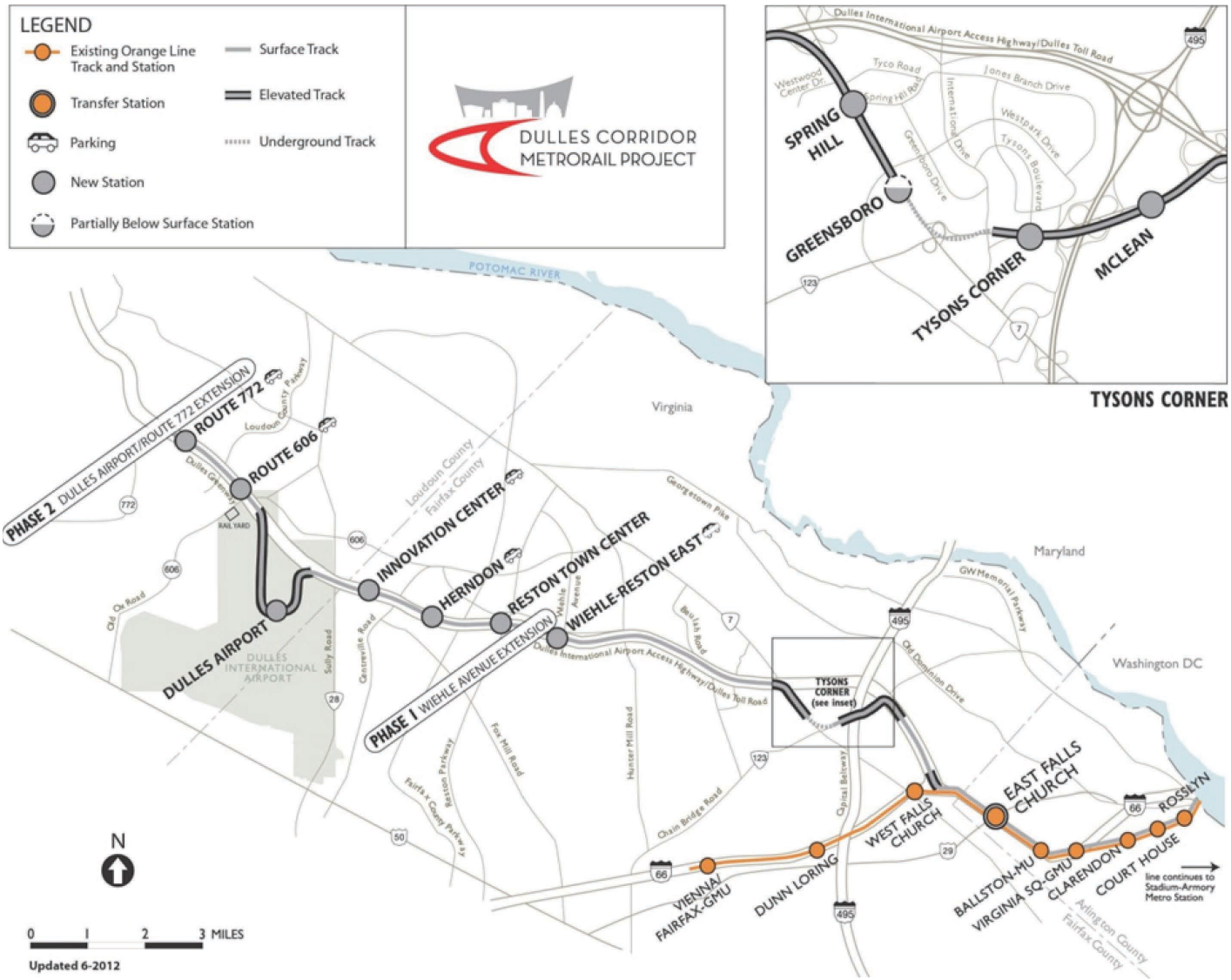
Introduction

The Dulles Corridor Metrorail Project is a 23-mile extension of the existing WMATA Metrorail system. The project will serve Virginia's two largest employment centers—Tysons Corner and the Reston/Herndon area—and will provide a one-seat ride from Washington Dulles International Airport (Dulles Airport) to downtown Washington, D.C. The alignment will be primarily at-grade within the medians of the Dulles International Airport Access Highway (DIAAH)/Dulles Toll Road and the Dulles Greenway.

MWAA is managing construction of the new heavy rail line in two phases. The first phase extends 11.7 miles from west of the East Falls Church Station on the Metrorail Orange Line, adding four new stations within Tysons Corner, and terminating at the Wiehle Avenue Station in Reston. The second phase completes the remaining 11.5 miles from Wiehle Avenue in Fairfax County to the Route 772 station just west of Ashburn in Loudoun County, adding five stations, including one at Dulles Airport (see Figure A-1). The project includes construction of a new rail yard on Dulles Airport property and improvements to an existing rail yard at the West Falls Church Station. Phase 1 opened for revenue service in July 2014, and Phase 2 is slated for completion in 2018. Upon completion of Phase 1, MWAA turned over the segment to

Table A-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓		✓	



Source: Dulles Corridor Metrorail Project, Project Overview, March 2012, Version 2

Figure A-1. Dulles Corridor Metrorail Project map.

WMATA to own and operate as part of the existing Metrorail system as the "Silver Line." Phase 2 will similarly be owned and operated by WMATA upon completion.

Lead, Cooperating, and Participating Agencies

FTA served as the lead federal agency for NEPA activities. FTA also provided federal funding for NEPA, covering approximately 80 percent of the cost. FAA served as a cooperating agency, as construction of the project requires use of the airport property and FAA's approval of the change in the Airport Layout Plan, per FAA Order 5050.4b, "NEPA Implementing Instructions for Airport Actions."

The Virginia DRPT was the project sponsor from NEPA initiation in 2000 through 2008, when ownership of the project was transferred to MWAA. The transfer was part of a larger agreement between the Commonwealth of Virginia and MWAA, under which MWAA assumed responsibility for operating the Dulles Toll Road and building the Dulles Corridor Metrorail Project, using a portion of the revenues generated by the Dulles Toll Road toward financing construction of the Metrorail project. After transfer of project ownership, DRPT continued to provide oversight and remained a funding partner.

WMATA was a participating agency for the duration of NEPA activities. WMATA served as the technical manager for the NEPA process because the agency is assuming ownership and operation of the line upon construction of each phase. WMATA hired and managed the consultants that supported the NEPA process. WMATA also served as the FTA grantee for most of the NEPA process, until grantee status was transferred to MWAA. The project involved numerous other participating agencies at the state and local levels, most notably Fairfax County and Loudoun County. Although the counties did not play large roles in preparing or reviewing NEPA documents—other than to confirm that the assumptions (e.g., population and employment forecasts) were consistent with their long-range plans—they did conduct land use planning for Tysons Corner and other station areas, and Fairfax County established benefit assessment districts to help fund the project. The regional Metropolitan Planning Organization, the Transportation Planning Board at the Metropolitan Washington Council of Governments, worked closely with the project team during ridership forecasting.

Coordination was fostered by a joint project office that housed WMATA staff, WMATA's consultant, and DRPT. As ownership of the line transferred upon completion of each phase, DRPT shifted its role and responsibilities in the joint project office, including its staff, to MWAA. During most of the NEPA process, the project team coordinated directly with FTA headquarters in nearby Washington, D.C.

The Final Environmental Impact Statement (FEIS) was initiated in 2010 and was subject to a new FTA process for NEPA coordination, which required the D.C. metropolitan field office—a subset of FTA Region 3—to take a direct role in day-to-day activities. This new approach added layers to FTA coordination efforts as FTA headquarters was still kept informed and involved in key decisions. The joint project office coordinated with the FTA D.C. metropolitan field office, which coordinated with the FTA Region 3 office, which communicated with FTA headquarters. Decisions and information from FTA headquarters then flowed in reverse to the joint project office.

Before MWAA assumed the role of project sponsor, the joint project office conducted most FAA coordination through MWAA, as its staff had working relationships with FAA.

NEPA Process/Approach

Studies for transit alternatives in the Dulles Corridor date back to the planning of Dulles Airport in the 1950s. The original adopted regional plan for the Metrorail system excluded the Dulles Airport connection because the level of development in the corridor at the time did not warrant heavy rail service. However, a transit connection to the airport remained a local and regional goal. Formal consideration of alternatives continued in the 1990s, with the *Dulles Corridor Transportation Study* (1997) and the *Supplement to the Dulles Corridor Transportation Study* (1999). These studies, which addressed FTA New Start program requirements for an analysis of mode and alignment alternatives, recommended a rail line between the Metrorail Orange Line and Route 772, primarily using the median of the Dulles International Airport Access Highway and leaving the highway to directly serve Tysons Corner and Dulles Airport.

The formal NEPA process began with issuance of a Notice of Intent to prepare an Environmental Impact Statement (EIS) in June 2000, followed by scoping meetings in July 2000. Two years later, FTA, DRPT, and WMATA, in cooperation with FAA, published the *Dulles Corridor Rapid Transit Project Draft Environmental Impact Statement and Section 4(f) Evaluation* (DEIS), which considered five alternatives: No Build, BRT, Metrorail, combined BRT/Metrorail, and Phased Implementation (the recommendation that emerged from previous studies). The DEIS identified an extension of the existing Metrorail Orange Line from just east of the West Falls Church Metrorail station to Route 772 as the locally preferred alternative (LPA). This alternative included 11 new stations and ancillary facilities.

Subsequently, FTA recommended that the project be implemented in phases due to concerns about FTA's ability to fund the full LPA—which had an estimated capital cost of $2.9 billion to $3.1 billion in year-of-expenditure dollars—through

the Section 5309 New Starts program. Prior to undertaking the FEIS, the project team conducted additional environmental review to address phasing. The October 2003 *Dulles Corridor Rapid Transit Project Supplemental Draft Environmental Impact Statement and Section 4(f) Evaluation* (Supplemental DEIS) identified the Metrorail alternative terminating at Wiehle Avenue with express bus service running to the western end of the Dulles Corridor as the Phase 1 LPA. FTA determined that the Phase 1 LPA had independent utility and would be considered for federal funding as a standalone project. Phase 2 was defined as an extension of heavy rail west from Wiehle Avenue to Dulles Airport and Route 772. The *Dulles Corridor Rapid Transit Project Final Environmental Impact Statement and Section 4(f) Evaluation* (FEIS), issued in December 2004, evaluated three alternatives: the No Build Alternative, the Wiehle Avenue Extension (Phase 1 LPA), and the full 23-mile LPA. The FEIS confirmed that the Wiehle Avenue Extension would perform similarly to the full LPA and met the criteria for FTA Section 5309 New Starts funding.

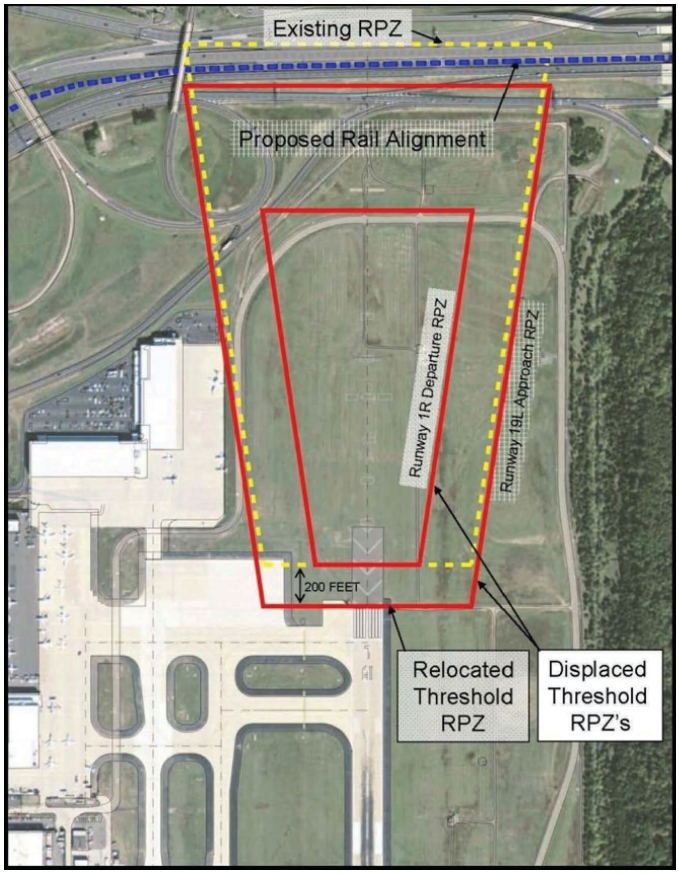
FTA and FAA issued separate Records of Decision (RODs). FTA issued its ROD in March 2005, signifying completion of the NEPA process for the full LPA and the Phase 1 LPA. FAA issued a ROD for the full LPA in April 2005, then retracted it and issued a second ROD in July 2005 in order to distinguish its federal actions and findings for Phase 1 and Phase 2 of the project. FAA's ROD signified FAA environmental approval of Phase 1 and generally left many of the findings for Phase 2 open for review at a later time. Most significantly, FAA's July 2005 ROD specified that a "written re-evaluation of the continued adequacy, accuracy, and validity of the FEIS will be required prior to commencement of Phase II actions . . ." FAA added this clause because Phase 2 of the project was planned for construction more than three years after approval of the FEIS and included the portion of the alignment through airport property. The reissuance of FAA's ROD did not have a material effect on the NEPA schedule and was ultimately beneficial to the project overall, as distinguishing between the two phases of the project allowed the first phase to proceed more rapidly.

Preliminary engineering for the Phase 1 LPA yielded design changes that triggered additional NEPA review. Among the proposed design refinements were a shift in the project alignment and reconfiguration of the roadway travel lanes within Tysons Corner, alternative station designs, simplified aerial guideway structures and architectural treatments, and a revised connection with the existing Metrorail Orange Line. An Environmental Assessment (EA) was completed in February 2006 and FTA determined that the design refinements would not result in new significant impacts or significant changes to the impacts evaluated in the FEIS. FTA issued an Amended ROD adopting the preliminary engineering refinements in November 2006. The refinements did not trigger FAA action and thus did not require amending the FAA ROD. A New Starts Full Funding Grant Agreement for Phase 1 of the project was signed in March 2009 and construction commenced that month. The project opened in July 2014.

Similar to Phase 1, several refinements to the Phase 2 design emerged during preliminary engineering that required additional environmental review. Most significantly, the refined design replaced the tunnel and underground station at Dulles Airport with an elevated guideway and aerial station. Alternatives considered in the *Dulles Corridor Metrorail Project, Phase 2 Preliminary Engineering Design Refinements Environmental Assessment* (April 2012) were limited to the full LPA and a refined LPA. The EA did not evaluate a No Action Alternative, as doing so would override the decision made in FTA's Amended ROD; this is consistent with FTA policies and regulations in that changes of limited scope do not necessitate reconsideration of the entire project.

The Phase 2 EA also responded to the condition in FAA's 2005 ROD that Phase 2 undergo written re-evaluation prior to construction. FAA remained a cooperating rather than lead agency, but as the EA progressed FAA took a more active role. Prior to the Phase 2 EA, FAA's role was largely to review and verify that assumptions and findings were consistent with the airport's long-term plans. In 2012, however, FAA began a nationwide initiative to clarify existing and establish new requirements related to the protection of Runway Protection Zones (RPZ). The RPZ is a two-dimensional trapezoidal area at ground level at either end of a runway to enhance the safety and protection of people and property on the ground. While it is preferred to keep this area clear of all objects, certain uses are permissible; FAA maintains strict guidelines. A portion of the project alignment is located in the median of DIAAH, which runs along the northern edge of the RPZ of Runway 1R/19L. Under the Refined LPA, the alignment would encroach into the RPZ as shown in Figure A-2.

While protecting the RPZ was not a new requirement, FAA had issued more stringent guidance in 2012 that clarified permissible land uses in RPZs and outlined an evaluation process for FAA approval of land uses not expressly permitted. Further, as noted previously, the refined Phase 2 alignment on airport property (including Dulles Airport Station) would be aerial rather than below grade. The Dulles alignment was found to be an incompatible land use for the RPZ per FAA guidelines and was thus subject to the revised requirements and review process. As a result, the Phase 2 EA evaluated three mitigation alternatives that focused on shifting the RPZ south of the Dulles Metrorail track layout to eliminate the conflict. FAA deemed all three mitigation alternatives viable. MWAA is responsible for selection and implementation of the mitigation alternative separate from, but concurrent with, the Phase 2 project and coordinating with FAA to conduct separate environmental review of the preferred mitigation alternative per NEPA and Council on Environmental Quality (CEQ) regulations as well



Source: Dulles Corridor Metrorail Project, Phase 2, PE Design Refinements, Environmental Assessment, April 2012

Figure A-2. Dulles Metrorail alignment in RPZ.

as FAA Orders. FTA issued a Finding of No Significant Impact (FONSI) for Phase 2 in December 2012 as an attachment to FTA's 2006 Amended ROD for the full project. The FONSI satisfied the environmental requirements for a loan under the U.S. DOT's Transportation Infrastructure Finance and Innovation Act (TIFIA) program.

Subsequent to the issuance of the Phase 2 EA, FAA independently evaluated the document for compliance with FAA requirements and later certified its agreement with the findings and mitigation strategies in a combined FONSI/ROD that was signed in January 2013, just over one year after the FTA ROD was issued. The January 2013 FONSI/ROD for Phase 2, along with FAA's July 2005 ROD, is FAA's approval of the revision of the Airport Layout Plan and Airport Property Map to depict the Phase 2 design refinements. It also is the determination that the EA prerequisites associated with any future applications for Passenger Facility Charge Program or Airport Improvement Program funding have been fulfilled (the Passenger Facility Charge Program and Airport Improvement Program are federal grant programs for planning and development projects for public-use airports that are included in the National Plan of Integrated Airport Systems). FAA's FONSI/ROD issuance concluded the NEPA process for the Dulles Metrorail Project. As of November 2014, Phase 2 had begun early construction activities, with a scheduled opening in 2018.

Agency Requirements Applied to NEPA

FTA NEPA requirements are detailed in 23 CFR Part 771, "Environmental Impacts and Related Procedures." FAA NEPA requirements are outlined in FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures" and FAA Order 5050.4B, "NEPA Implementing Instructions for Airport Actions." FAA Order 1050.1E sets agency-wide environmental protocol while FAA Order 5050.4B provides instructions for federal actions that support airport development projects. Both agencies' requirements respond to the statutory requirements of NEPA, the Council on Environmental Quality's "Regulations for Implementing the Procedural Provisions of NEPA" (40 CFR 1500-1508), and U.S. DOT's Order 5610.C, "Policies for Considering Environmental Impacts." The two agencies' NEPA requirements address the same topic areas and were not found to be incompatible during the NEPA process for the Dulles Corridor Metrorail Project.

FTA overlaid New Starts program requirements on the NEPA process. Most significant was the recommendation that the project be phased following completion of the DEIS because the full LPA was too costly for a single New Starts full funding grant agreement. FTA's requirement that New Starts projects meet certain cost-effectiveness thresholds heavily influenced alignment decisions in the Tysons Corner area. FTA allowed the full LPA as well as the Phase 1 LPA to be incorporated into both the DEIS and FEIS, as well as the 2005 ROD, even though only Phase 1 was being advanced for FTA New Starts funding. This allowed engineering on Phase 2 to proceed while the project sponsors addressed funding.

Prior to the Phase 2 EA, FTA revised its project management procedures and protocols for day-to-day oversight activities and coordination with the joint project office to make them consistent with other FTA regions. Rather than coordinating directly with FTA headquarters, the joint project office was directed to coordinate with FTA's Metropolitan Field Office in Washington and its Region 3 office in Philadelphia.

FAA largely exercised its statutory authority to adopt another agency's environmental documentation, per the CEQ and FAA regulations listed above. Over the course of the NEPA process, FAA provided input and direction to FTA and the joint project office as needed. Its RODs acknowledged responsibility for the scope and content that specifically address FAA actions. One example relates to compliance with RPZ protection under FAA's Advisory Circular 150/5300-13A, "Airport Design" (September 28, 2012) and "Interim Guidance on Land Uses within

a Runway Protection Zone" (September 27, 2012). Operating rail lines are considered "places of public assembly," which are prohibited in an RPZ. Given that the median of DIAAH was deemed the only viable alignment through the airport property, the RPZ, not the project alignment, would have to be shifted in order for the project to proceed. At FAA's direction, mitigation alternatives were evaluated as part of the Phase 2 EA.

In other instances, where compliance with FAA regulations could not be addressed within the framework of FTA's NEPA process, FAA conducted the requisite supplemental evaluation separately. For example, prior to FAA's approval of the proposed change to the Airport Layout Plan for the Dulles Project, FAA undertook an additional evaluation separate from the analysis conducted for the FTA's EA.

Impact of These Requirements

The Dulles Corridor Metrorail project completed a DEIS, Supplemental DEIS, and FEIS for a 23-mile project within four years. The ROD for Phase 1 of the project was received within five years. This relatively rapid progress was partially due to strong political and public support for the high-profile project and regional commitment to advancing the project as expeditiously as possible to receive a New Starts Full Funding Grant Agreement.

Overlaying FTA New Starts requirements added to the analysis and documentation required for the project, and played a large role in the ultimate phasing and alignment of the project. FTA's decision to phase the project, for funding purposes, following the DEIS, led to a need for additional NEPA review of the phased project. To reduce costs and meet FTA's cost-effectiveness thresholds for New Starts, the alignment through Tysons Corner had to be mostly elevated, rather than below grade as originally proposed.

The change in FTA's project management procedures and protocols for coordinating with the joint project office affected the schedule for the Phase 2 EA. After FTA's metropolitan office was given project oversight responsibilities, FTA became more involved in day-to-day coordination. Rather than following MWAA's typical approach of coordinating directly with FAA, the FAA's concerns regarding protection of the RPZ were addressed within the context of the FTA's EA. FTA also took a lead role in resource agency coordination. For example, up until the Phase 2 EA, the project office conducted Section 106 coordination directly with environmental resource agencies. After FTA's project management procedures changed, all coordination was handled through FTA. This ultimately slowed progress because FTA had limited staff available to devote to this project. In addition, the new protocol resulted in a tiered review structure that delayed the flow of information between FTA headquarters and the joint project office. Even so, the project proceeded relatively smoothly overall.

Compliance with FAA's aviation rules, particularly as related to RPZ protection, had the most substantial impact on the project schedule. FAA's greater level of input in the Phase 2 EA increased the time it took for the EA document to be issued, and FAA's subsequent independent evaluation of the EA and FTA's findings added time to the project schedule.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements Under the NEPA Umbrella: FAA's nationwide initiative to clarify existing and establish new requirements related to protecting the RPZ added time to the project schedule. The Phase 2 EA contemplated alternatives for shifting the northern boundary of the affected RPZ, although this was an FAA action completely separate from the project scope. The New Starts process resulted in additional work over the course of NEPA, including completion of a Supplemental DEIS for project phasing and incorporation of preliminary New Starts criteria evaluations in the environmental documents. The FTA's cost-effectiveness criterion and thresholds for New Starts played a large role in the alternatives studied and alignment decisions within Tysons Corner.

Differing Agency Interpretations of NEPA Requirements: One difference related to the role of the NEPA process in federal agency decision-making. For FTA, the NEPA process is part of the project development process and the project evolves incrementally during NEPA. For FAA, projects are subjected to NEPA review after they are developed.

Anticipating Which Agencies Will Have a Major Federal Action: From the start of the NEPA process, it was clear that the project would require the involvement of both FTA and FAA, as the project was envisioned to be an extension of the Washington, D.C., Metrorail system that would use airport right-of-way for a portion of its alignment and be funded partially through the FTA's New Starts program.

Efficient Coordination among Agencies: The Dulles Corridor Metrorail Project had a large group of stakeholders, including two U.S. DOT agencies. Working through the joint project office for coordination with participating agencies helped to expedite the project. The project office included staff familiar with FTA policies and procedures, and MWAA served as a liaison with FAA to help resolve airport-related issues.

Securing Funding for Multimodal NEPA Studies: NEPA activities were funded through a combination of federal and state sources, with a federal share of 80 percent and the remaining 20 percent contributed by the Commonwealth of Virginia and Fairfax County. Securing this funding was not a challenge.

Strategies/Tactics Used to Overcome Challenges

Having a single agency in a strong lead role helped to address challenges related to agency-specific requirements and differing agency interpretations of NEPA requirements. It was agreed from the start that FTA and FAA were the agencies that would have a federal action. FTA served as the lead because the region was seeking FTA funding for the project. The original 1964 Master Plan for the airport included transit access. In the 1985 Master Plan Update, FAA recommended that the median of the DIAAH—a dedicated access road to the airport from Washington, D.C.—continue to be reserved for a future Metrorail extension to the airport. Use of airport property required FAA to approve the modification to the Dulles Airport Layout Plan, which was FAA's major federal action for the project.

Much of the NEPA work was conducted within the framework of FTA's requirements, with FAA providing input as needed. In general, if additional FAA analysis was required, FAA conducted the work separately. FAA ultimately adopted FTA's environmental documentation, acknowledging in its RODs responsibility for the scope and content that specifically address FAA actions. This approach limited the potential for delays due to differences in agency requirements or interests. Conducting coordination through the joint project office helped keep both FTA and FAA informed over the course of the project.

The project team noted that having adequate funding to complete the NEPA process was key. In total, the costs for NEPA activities are estimated to have been more than $30 million. Much of the work was completed at an 80/20 split between federal and local funding; funding NEPA activities would have been challenging without substantial federal involvement. The local match was provided by the Commonwealth of Virginia and Fairfax County.

Lessons Learned

Combine NEPA processes and select a single lead agency. FAA adopted FTA's environmental documentation throughout the NEPA process, ultimately saving time and resources. Federal agency roles shifted some in Phase 2, as FAA undertook a separate evaluation for changes to the Airport Layout Plan. While this added time to the project schedule, overall the project progressed relatively smoothly because FTA served in a clear lead role and FAA focused its review on aviation-related issues.

For phased multimodal projects, engage all federal agencies in every phase, even if their interests are not directly affected by all phases. The project team noted that it was helpful having FAA at the table for the entire project, even though their role was minimal in the first phase of NEPA. It was more efficient to structure the Dulles project as one NEPA process rather than having to do sequential NEPA processes because all agencies were not involved from the outset.

Align the NEPA and New Starts processes. While the phased approach has ultimately proven successful, FTA didn't suggest phasing the project until after completion of the DEIS, leading to the need for a Supplemental DEIS. FTA's evolving policies and criteria for New Starts funding also played a significant role in alignment decisions in Tysons Corner. Alignment options meeting the criteria had to be considered within the NEPA process and documents.

Bibliography

Federal Aviation Administration. July 2005. "Record of Decision, Dulles Corridor Metrorail Project."

Federal Aviation Administration. January 8, 2013. "Finding of No Significant Impact/Record of Decision, Dulles Corridor Metrorail Project, Phase 2."

Federal Transit Administration. November 17, 2006. "Amended Record of Decision, Dulles Corridor Metrorail Project."

Federal Transit Administration. December 17, 2012. "Finding of No Significant Impact, Dulles Corridor Metrorail Project, Phase 2 Preliminary Engineering Design Refinements."

Federal Transit Administration, Metropolitan Washington Airports Authority, and Washington Metropolitan Area Transit Authority. April 2012. *Dulles Corridor Metrorail Project, Phase 2 Preliminary Engineering Design Refinements Environmental Assessment.*

Federal Transit Administration, Virginia Department of Rail and Public Transportation, and Washington Area Metropolitan Transit Authority. June 2002. *Dulles Corridor Rapid Transit Project Draft Environmental Impact Statement and Section 4(f) Evaluation.*

Federal Transit Administration, Virginia Department of Rail and Public Transportation, and Washington Area Metropolitan Transit Authority. October 2003. *Dulles Corridor Rapid Transit Project Supplemental Draft Environmental Impact Statement and Section 4(f) Evaluation.*

Federal Transit Administration, Virginia Department of Rail and Public Transportation, and Washington Area Metropolitan Transit Authority. December 2004. *Dulles Corridor Rapid Transit Project Final Environmental Impact Statement and Section 4(f) Evaluation.*

APPENDIX B

Case Study—Port of Miami Tunnel, Miami, Florida

Summary

Project Description

The Port of Miami Tunnel (POMT) is a 2.98-mile highway connection between the Port of Miami and I-395 via the MacArthur Causeway. The project includes two 0.8-mile, two-lane bored tunnels from Watson Island to Dodge Island, where the port is located, crossing beneath the Main Channel of Miami Harbor. The project includes adding lanes to the MacArthur Causeway Bridge, realigning the Florida East Coast Railway (FEC) line, and relocating Port Boulevard lanes on Dodge Island.

Key U.S. DOT Agencies

- Federal Highway Administration (FHWA)—Lead Agency
- U.S. Coast Guard (USCG)—Cooperating Agency

Key State and Local Agencies

- Florida Department of Transportation (FDOT)—Sponsor
- Florida Department of Environmental Protection (FDEP)
- Miami-Dade County Department of Environmental Resource Management (DERM)
- Port of Miami

Challenges Faced

The Port of Miami Tunnel project team faced one of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table B-1).

Strategies, Tactics, and Lessons Learned

- Coordinate with federal and local agencies prior to the start of NEPA activities.
- Engage stakeholders formally in the review process.
- Foster an early partnership between the lead agency and sponsor.
- Implement new technologies to avoid environmental impacts.

Case Study Detail

Introduction

The Port of Miami is the largest cruise port and 11th largest container port in the United States. It is located on a 518 acre site on Dodge Island in Biscayne Bay between the City of Miami and the City of Miami Beach. Previously, the only direct roadway access to the port was the six-lane Port Boulevard Bridge (known as the Port Bridge), which begins at the western edge of Dodge Island and becomes NE 6th Street in downtown Miami. This route required tractor-trailers bound for the port to use surface streets through Miami's Central Business District. The return trip from the port was also routed through downtown Miami.

The POMT project created a direct roadway link between I-395 and the port, allowing traffic to bypass downtown Miami (see Figure B-1). The project included three components:

- Constructing two 0.8-mile, two-lane bored tunnels crossing beneath the Main Channel of Miami Harbor between Watson and Dodge Islands;
- Adding one lane in each direction to the MacArthur Causeway Bridge to meet capacity needs created by the tunnel; and
- Realigning FEC railroad tracks and relocating eastbound and westbound Port Boulevard lanes on Dodge Island to accommodate the new tunnel portals.

Construction began in May 2010 and the project opened to the public in August 2014.

The main objectives of the project were to divert port traffic from surface streets in downtown Miami, reduce traffic delays accessing the port caused by congestion on downtown

Table B-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
		✓		

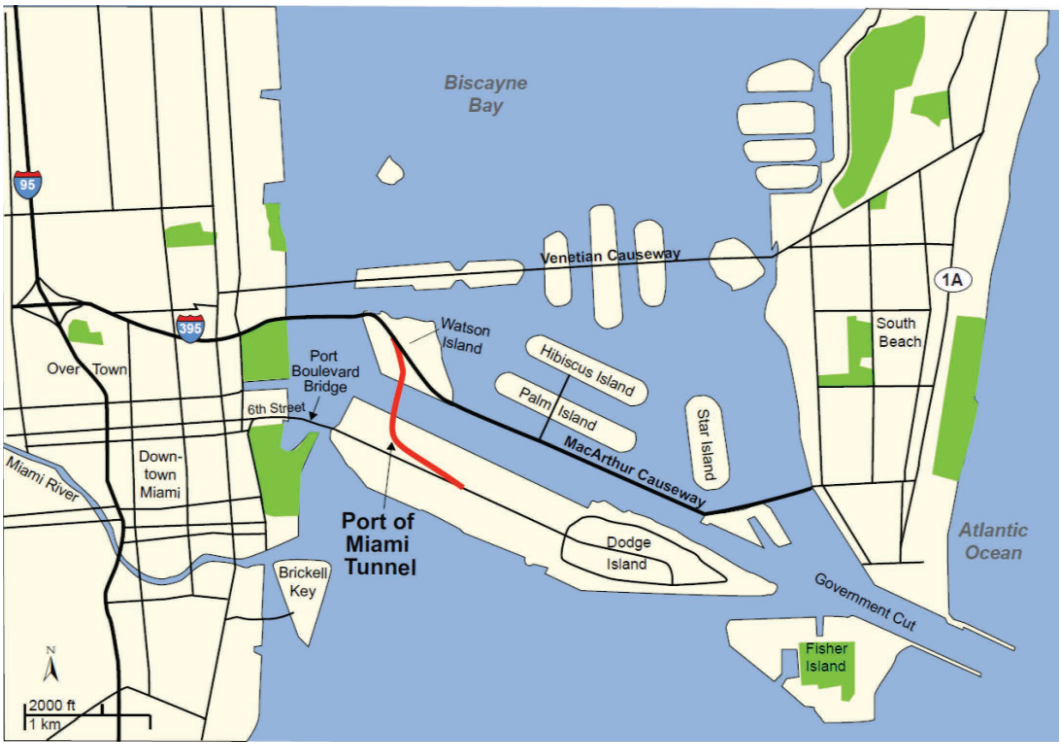
streets, increase the capacity of the route to handle projected increases in port traffic, support the city's development plans for downtown Miami, and improve air quality in downtown Miami by reducing traffic and congestion (idling vehicles) on city streets.

The concept of a direct roadway tunnel connecting the Port of Miami (constructed in 1960) and I-395 had been part of area development plans since the 1980s. The need for new roadway access was explored through a Vehicular Access Study commissioned by the City of Miami in 1981. Through several rounds of analysis, the Port of Miami Access Task Force, created by the Miami-Dade Metropolitan Planning Organization (MPO), identified both bridge and tunnel alternatives along several alignments under the Main Channel of Miami Harbor. In 1984, the Miami-Dade County Board of Commissioners approved a three-phase plan to improve transportation access to the Port of Miami, including intersection improvements near Port Boulevard and Biscayne Boulevard, replacement of the bascule Port Boulevard Bridge with a fixed-span bridge (which occurred in the 1990s), and construction of a new direct access tunnel connecting the Port to I-395. This led to the commencement of the environmental review process for tunnel alternatives.

Lead, Cooperating, and Participating Agencies

FHWA was the lead federal agency for NEPA activities. FHWA was the natural lead agency given that almost all of the project components involved roadways and bridges, and ultimately a direct connection to I-395. The USCG, which was part of the U.S. Department of Transportation (U.S. DOT) when the NEPA process was initiated, served as a cooperating agency. FDOT was the project sponsor.

The POMT project went through multiple stages of NEPA review. In 1989, FDOT began a Project Development and Environmental (PD&E) study, a state process that is carried out in conjunction with the federal NEPA process. FDOT had



Source: Parsons Brinckerhoff

Figure B-1. Map of project area.

not yet identified specific funding sources for the project, and wanted to keep the option of federal funding open. The possibility of incorporating federal funding in the future prompted FDOT to engage FHWA in the NEPA process. FDOT followed its standard practice of keeping FHWA aware of possible major projects and completing the necessary steps for NEPA approval, should federal funding and/or a major federal action become necessary. More than a decade later, this forethought proved crucial for completing the project.

The USCG and the U.S. Army Corps of Engineers (USACE) participated as cooperating agencies due to the need for permitting of project components. The project was originally conceived as an immersed tube tunnel under the shipping channel in Miami Harbor, to be constructed using cut-and-cover methods. Therefore, impacts to shipping and cruise ships were anticipated during construction, precipitating a cooperating agency role for the USCG. Other issues included potential impacts to water quality and manatees in Biscayne Bay, and the need for a Section 404 permit from the USACE. Because the cut-and-cover tunnel would pass through a sole-source aquifer, the project had to comply with Section 1424(e) of the Safe Drinking Water Act, and thus included review by the U.S. Environmental Protection Agency (EPA). Although a realignment of railroad tracks was included in the project scope, the Federal Railroad Administration (FRA) did not participate in the environmental review. The rail work consisted of realigning a single track and second spur. The impact was minimal and necessitated no review by FRA.

FDOT, as the project sponsor, was the state lead agency for NEPA. FDOT coordinated among several state and local agencies, including the City of Miami, the Miami-Dade MPO, and Miami-Dade County. The local agencies were critical to the project development process because the tunnel plans had to be consistent with current development plans for Miami's Central Business District and Watson Island. The project is located in the Biscayne Bay Aquatic Preserve, which is classified as one of the state's Outstanding Florida Waters. This necessitated the participation of FDEP.

Due to the multimodal nature of the project and overlapping local governance, the NEPA process included the participation, both formally and informally, of several other federal, state, and local agencies. FDOT organized these stakeholders into Technical and Community Advisory Committees (TAC and CAC, respectively). Table B-2 lists the agencies represented on each committee. The committees provided a formal structure through which participating agencies could evaluate alternatives and provide comments.

NEPA Process/Approach

The project evolved in three major phases from 1989 to 2009:

- Phase I: In 1989, FDOT began a PD&E study to examine bridge and tunnel alternatives. That study ultimately led to a 1996 Draft Environmental Impact Statement (DEIS) for a tunnel alternative crossing diagonally between the port (Dodge Island) and Watson Island under the Main Channel, connecting the port directly to the MacArthur Causeway. The DEIS identified significant impacts assuming the use of cut-and-cover construction.
- Phase II: Advances in tunneling technology allowed FDOT to change the construction method to a bored tunnel, which allowed the NEPA class of action to be reduced from an Environmental Impact Statement (EIS) to an Environmental Assessment (EA). FHWA approved a Finding of No Significant Impact (FONSI) in 2000.
- Phase III: In 2005, consideration of tolling as a potential funding option triggered a re-evaluation of the 2000 FONSI.

Table B-2. Committees involved in the state and federal environmental review processes.

Technical Advisory Committee Member Organizations	Community Advisory Committee Member Organizations
FDOT	Beacon Council
Port of Miami	Tropical Audubon Society
FHWA	Marine Council
Miami-Dade Transit Authority	Downtown Development Authority
Dade County Public Works Department	Greater Miami Chamber of Commerce
DERM	Chalk's International Airlines
FDEP	Dade Helicopter
Miami-Dade MPO	Watson Island Fuel & Fishing Supplies
Dade County Planning Department	Greater Miami Convention and Visitors Bureau
USACE	Downtown Miami Business Association
South Florida Regional Planning Council	Congressman Lehman's Office
USCG	Latin Chamber of Commerce
Florida East Coast Railway	The Miami Herald
	Bayside Management Center

Subsequent discussions with the port's stakeholders revealed that tolling was not a viable option. No changes were made to the NEPA document at that time, but the FONSI was updated in 2009 to reflect a project change to widen I-395 and the MacArthur Causeway.

Phase I of the NEPA approach began with the state PD&E study, which analyzed seven corridor alternatives: two tunnel options and five bridge options. FDOT's PD&E manual provided a useful framework for engaging agencies and resolving issues. The manual aligns FDOT's process with the federal NEPA process, and provides in-depth guidance for each relevant agency on their requirements related to specific transportation modes and environmental issues.

The TAC and CAC were involved throughout the PD&E study and the first phase of the NEPA process, meeting at least a dozen times to discuss the preferred corridor alternatives, and later to fine-tune the tunnel alignment during the DEIS process. The tunnel construction method was assumed at that point to be cut-and-cover. Through the DEIS it became clear that this method would have disturbed the Biscayne Bay Aquifer and Aquatic Preserve, causing negative water quality impacts. FDEP communicated concerns over impacts to Biscayne Bay resulting from blasting and dredging. Port stakeholders, such as freight operators and cruise lines, were also concerned about the effect of construction on port operations.

After comments were received from stakeholder agencies, FDOT began to consider the tunnel boring machine method. FDOT was introduced to this method at an industry forum for another Miami project, the East-West Corridor. Analysis showed that tunnel excavation using this method greatly reduced the impact of construction on water quality and port operations.

In Phase II, POMT plans were updated to specify excavation by tunnel boring machine rather than cut-and-cover methods. FHWA changed the NEPA class from an EIS to an EA in May 1997, and issued a FONSI in 2000.

In Phase III, several years later, FDOT and the Florida Turnpike Enterprise (FTE), along with the City of Miami, the Port of Miami, and Miami-Dade County, began identifying potential funding sources for the project, one of which was tolling. FTE is a business unit of FDOT, tasked with developing and managing FDOT owned and operated limited-access toll facilities. At this time, federal funding was not anticipated. To evaluate the potential for tolling, FTE initiated a re-evaluation of the FONSI and updated project documents. Because no major changes were made that affected the project's environmental impacts, FHWA approved the re-evaluation in 2005.

Concurrently, FDOT began looking further into implementing the POMT using bored tunnel technology and the risks of constructing a 40-foot-diameter tunnel, with which the state (and U.S. industry) had little experience. FDOT hosted an industry forum in December 2005 to assess the industry's appetite for bored tunnel technology and evaluate industry interest in the POMT as a public-private partnership (P3). During this phase, tolling was determined to be unfeasible, as it would lower the port's competitiveness with neighboring ports.

FDOT determined that pursuing the project as a P3 was the best approach for controlling the state's risk and funding the project. A recent amendment to the state P3 legislation, as well as the availability of funds garnered from property taxes, had opened new project structuring options for the State of Florida. FDOT chose a consortium to design, build, and finance the project. In 2008, due to the recession, the consortium realized that long-term private debt had become a less attractive financing option, and turned to the U.S. DOT Transportation Infrastructure Finance and Innovation Act (TIFIA) credit program as an option to replace private financing. TIFIA financing meant that the project needed to be "federalized," as the inclusion of federal financing was a major federal action. FHWA reviewed the NEPA documents to make sure they met federal requirements. Federalizing the project at this stage proved less difficult than it might have been because FDOT and FHWA had completed the NEPA process years earlier.

In 2009, around the time of financial close on the project, the FONSI was updated to incorporate changes to the adjacent I-395. The 2000 FONSI had assumed a separate project would be undertaken to widen I-395 to four lanes to match the addition of lanes on the MacArthur Causeway. The project was delayed, and to bridge the gap between the MacArthur Causeway widening and I-395 improvements, an interim project was created to add one lane to I-395. This smoothed the movement of traffic from four lanes on the newly widened MacArthur Causeway to three lanes on the interim stretch to two lanes on I-395. The interim project did not cause additional challenges or require review beyond the original agencies involved in the NEPA process.

Agency Requirements Applied to NEPA

FHWA's NEPA requirements are detailed in 23 CFR Part 771, "Environmental Impacts and Related Procedures." USCG NEPA implementing procedures regarding this project can be found in Commandant Instructions M16590.5C, *Bridge Administration Manual.* USCG procedures include agency-specific definitions of each NEPA class of action. This can add complexity to projects in which USCG is not the lead agency, because USCG officials must certify that the NEPA class chosen was adequate.

Due to USCG's jurisdictional role in the project, the process of reconciling differences between USCG and FHWA was simplified because the two agencies had a Memorandum of Understanding (MOU) on how to approach NEPA approval for bridge projects requiring action by both. The MOU delineated the roles and responsibilities of each agency, depending

on the NEPA class of action. The following requirements in the MOU were relevant to the project:

- FHWA will act as lead agency when a highway project requires action by both FHWA and USCG.
- FHWA will consult with the USCG prior to determining that any project which may require a USCG permit is a CE, EA, or EIS.
- For any project that may require a bridge permit, and is to be classified as an EA or EIS, FHWA will request that USCG become a cooperating agency.
- For EA projects, FHWA will consult with the USCG during the preparation of both the EA, and if so determined, the FONSI.
- FHWA will consult the USCG relative to the need for highway and USCG public hearing opportunities and consider a joint public hearing where appropriate.
- Navigational impacts are to be included in the EA or EIS.

USACE's procedures were in line with those stipulated in the NEPA Improvement Act (42 U.S.C. 4371), closely aligning them with FHWA procedures. The procedures dictate that the USACE will adopt another federal agency's NEPA document unless it finds "substantial doubt as to the technical or procedural adequacy or omission of factors important to the Corps decision." Examples of the factors important to the Corps decision are not referenced, implying that the USACE district commander managing the review has discretion to raise flags when necessary.

Impact of These Requirements

The requirements of the cooperating agencies in the NEPA process for the POMT project did not exceed those of the lead agency, FHWA. In fact, the procedures of USCG enhanced the efficiency of the NEPA process by defining conditions under which FHWA and USCG would coordinate their environmental approval. Similarly, USACE presented no agency-specific requirements, only reserving the right to require additional analysis at the discretion of the district commander in charge.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: Neither of the cooperating agencies involved in the POMT had additional specific program requirements that negatively impacted the NEPA process. USACE requirements reflected broader NEPA regulations, and the agency was willing to adopt FHWA's environmental document unless the district commander deemed otherwise. The supporting documentation in the FONSI indicated that the USACE was satisfied with the environmental analysis provided in the EA, and only stipulated the permitting required for the project. The permitting process subsequently became the responsibility of the private partner in the P3.

Similarly, the pre-existing agreement between FHWA and the USCG removed complexity which might otherwise have existed due to USCG's specific NEPA requirements. The project was also subject to permitting requirements from USCG, which was the responsibility of the P3 partner.

Differing Agency Interpretations of NEPA Requirements: NEPA requirements among the agencies were aligned, but the focus of each agency led to different areas of emphasis. The USCG and USACE focused on the effect of the project on water quality in Biscayne Bay and port operations, especially during the first phase of the project when the tunnel was planned to be constructed using the cut-and-cover/immersed tube method. FHWA focused on increasing roadway capacity and mitigating noise and congestion in creating a direct access roadway between MacArthur Causeway and the tunnel. Disagreements regarding the construction impacts of a cut-and-cover tunnel on the bay and shipping were much less significant after the tunnel construction method changed—the tunnel boring method allowed the project to avoid the significant impact and disruption to the vulnerable environment of Biscayne Bay that would have occurred during cut-and-cover construction.

Anticipating Which Agencies Will Have a Major Federal Action: One challenge was determining which agency would have a major federal action, due to the lack of a concrete financial plan for the project at the start of the NEPA process. Early on, FDOT decided to engage FHWA as the lead agency for the project to keep its funding options open. Although there was no major federal action at that point to trigger FHWA's involvement, FHWA was FDOT's federal partner, and was aware of FDOT's practice of following federal processes before a major action is triggered. The inclusion of roadway, bridge, and tunneling work made FHWA the obvious federal partner on the project if it were to be federalized in the future. Due to an existing bridge permit and construction in the harbor, USCG and USACE were expected to have some role in the NEPA process.

Efficient Coordination among Agencies: FDOT set up two advisory committees to engage participating agencies in the environmental review process. Through this formal structure, the participating agencies met frequently throughout the state and federal review process and were part of the process of choosing the preferred alternative for the project.

Securing Funding for Multimodal NEPA Studies: FDOT paid 100 percent of the cost of the NEPA study for the project.

Strategies/Tactics Used to Overcome Challenges

The major challenge faced during the NEPA process for the POMT was anticipating which agency would have a major federal action. While it was clear that the USCG and USACE would be involved due to the project's tunnel and bridge components, it was less clear whether FHWA had a major federal action because federal funding and financing were not yet part of the financial plan. FDOT engaged FHWA in the NEPA process early to keep its funding options open, and that proved to be extremely valuable to the project when it sought federal financing years after NEPA approval. The PD&E process also served as a key tool during the environmental clearance; the alignment of the PD&E process with the NEPA process allowed project staff to anticipate issues that would arise and meet the requirements of all agencies involved. FDOT's practice of integrating the NEPA process into its PD&E process and keeping federal agencies informed and involved helped the state avoid a large hurdle later in the process.

FDOT also had the flexibility to change the project's tunneling method after the DEIS was completed in 1996. The willingness of FDOT to adopt new industry practices led to the modification of the construction method, and ultimately led to changing the NEPA class from EIS to EA/FONSI. The change of the construction method alone allowed the project to avoid many of the issues and impacts that would have had to be analyzed, negotiated, and potentially mitigated.

Lessons Learned

Coordinate with federal and local agencies prior to the start of NEPA activities. Early in the planning process, FDOT convened a technical team of federal, state, and local stakeholders to analyze and evaluate several corridor options for the project. This stakeholder engagement was initiated at the project development stage pre-NEPA, and included more than 10 agencies—some which would became lead and cooperating agencies during the NEPA process. By engaging stakeholders early on, especially during the first phase of the project, FDOT and FHWA were able to pinpoint many of the project's potential issues and make appropriate adjustments before a final EIS or ROD was issued. Additionally, the existence of a MOU between two of the federal agencies on roles during NEPA review removed any doubt about the responsibilities of each agency in participating in NEPA.

Engage stakeholders formally in the review process. The early coordination with agencies and stakeholders through the advisory committees also created a vehicle through which to solicit local and public participation in the environmental process. The committees met at least a dozen times and provided input from their constituents throughout every stage of the process, from corridor analysis to choosing the preferred alternative.

Foster an early partnership between the lead agency and sponsor. FDOT's early partnership with FHWA led the state to pursue a NEPA review for the POMT before there was a major federal action to trigger FHWA's official participation. This planning allowed FDOT to quickly federalize the project later when it sought TIFIA financing in 2008. Had FDOT not engaged FHWA until that point in the project, implementation would have been significantly delayed.

FHWA and FDOT had built a productive partnership prior to the launch of the POMT project, developed over time while working together on many projects in the state. That partnership, coupled with strong project management on the part of FDOT, helped maximize the benefits of the close relationship during the NEPA process. FHWA's early involvement allowed its staff to quickly review project documents for compliance with regulations to meet federal aid requirements. FDOT also had strong relationships with USCG and USACE that helped streamline coordination. FDOT had used a similar approach for a number of other projects—going through NEPA review without the trigger of a major federal action—in order to keep the state's federal aid options open.

Implement new technologies to avoid environmental impacts. For the POMT, the most influential factor in streamlining the NEPA process was the use of improved tunneling technology. With the original cut-and-cover tunnel construction method, the environmental impacts—especially to water quality and port operations—would have been significant, and considerable mitigation would have been required. The willingness of FDOT to embrace a new, relatively untested (in the United States) tunnel boring machine construction method allowed FDOT to avoid the most significant environmental impacts, and allowed a change in the class of action from an EIS to an EA.

Bibliography

Florida Department of Transportation. February 17, 2006. *Port of Miami Tunnel and Access Improvement Project Information Memo.* Accessible via: http://www.portofmiamitunnel.com/system/js/back/ckfinder/userfiles/files/news-clips/06-0216-PIM-Final.pdf.

Florida Department of Transportation. *Project Development & Environment Manual (PD&E Manual) Parts 1 & 2.* http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm. (As of March 23, 2015).

Federal Highway Administration, Region Four. December 13, 2000. "Administrative Action Finding of No Significant Impact, Port of Miami Tunnel & Access Improvements From I-395 to the Port of Miami in Miami-Dade County, Florida."

Federal Highway Administration, United States Coast Guard. January 19, 1986. "USCG/FHWA Memorandum of Understanding on Implementing NEPA." https://www.fhwa.dot.gov/legsregs/directives/notices/n6640-22.cfm. (As of November 9, 2015).

APPENDIX C

Case Study—Eastern Corridor Program, Cincinnati, Ohio

Summary

Project Description

The Eastern Corridor Program is a set of road, transit, bicycle, and pedestrian improvements in the Cincinnati region. The program includes four core highway projects—improvements to Red Bank Expressway, SR 32 relocation, SR 32 improvements, and improvements to the SR 32/I-275 interchange—plus a new commuter rail line, expanded bus service, and transportation system management improvements.

Key U.S. DOT Agencies

- Federal Highway Administration (FHWA)—Lead Agency for Tier 1 NEPA and for Tier 2 roadway components
- Federal Transit Administration (FTA)—Cooperating Agency for Tier 1

Key State and Local Agencies

- Ohio Department of Transportation (ODOT)—Public Agency Lead
- Southwest Ohio Regional Transit Authority (SORTA)
- Hamilton County Transportation Improvement District
- Clermont County Transportation Improvement District
- City of Cincinnati
- Ohio-Kentucky-Indiana Regional Council of Governments

Challenges Faced

The Eastern Corridor Program project team faced two of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table C-1).

Strategies, Tactics, and Lessons Learned

- Be willing to employ a non-traditional approach for a unique project.
- Secure agency buy-in on complex issues early in the process.
- Recognize that a tiered approach alone does not solve issues and conflicts related to environmental impact and coordination.

Case Study Detail

Introduction

The Eastern Corridor Program is a multimodal set of projects in the Cincinnati region aimed at improving mobility between Cincinnati and its eastern suburbs. The program area encompasses 165 square miles, extending from the Cincinnati Central Business District and riverfront redevelopment area in Hamilton County east to the I-275 outer belt corridor in Clermont County. There are currently limited routes connecting the eastern suburbs with downtown Cincinnati—four local roads traversing the Little Miami River, and a circuitous route using the Interstate highway system (I-471 and I-275) which requires two crossings of the Ohio River. The Eastern Corridor Program, advocated by Hamilton County and a stakeholder group called the Eastern Corridor Partners, aims to address the challenges that have led to insufficient transportation capacity, safety issues, and lack of transportation alternatives in the project area.

Planning for transportation improvements between Cincinnati and its eastern suburbs began in the 1960s. Over the 30 years that followed, a series of feasibility and planning studies was conducted, but improvement projects were delayed due to a lack of funding to move projects to the planning or construction phases, or due to planning information being out of date by the time funding became available. In September 1999, the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) completed a major investment study (MIS) for the Eastern Corridor Program, titled "2020 Vision for the Eastern Corridor." The MIS, carried out under FHWA/FTA planning regulations promulgated pursuant to the Intermodal Surface Transportation Efficiency Act of 1991, was a

Table C-1. Challenges summary.

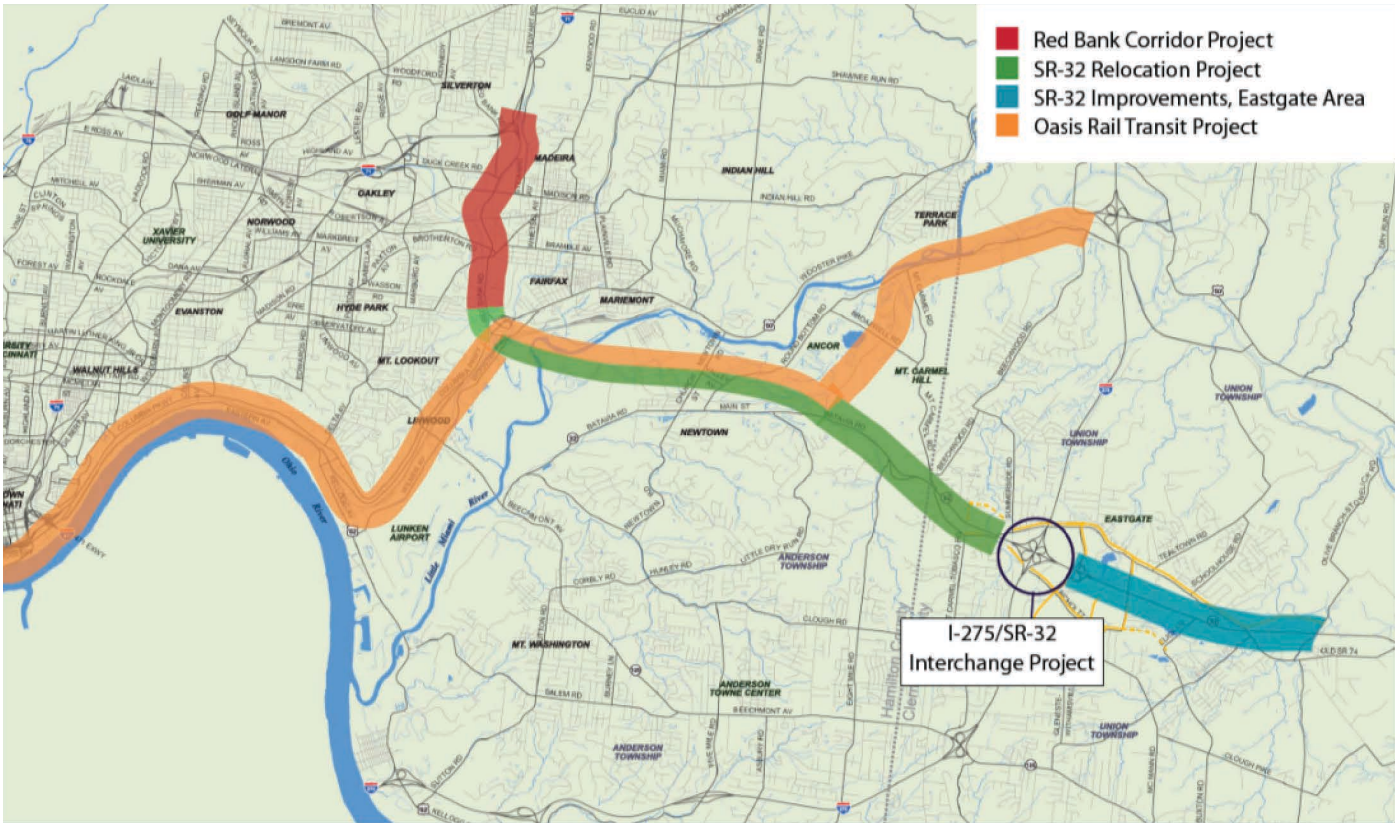
Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
		✓	✓	

local planning study aimed at identifying transportation alternatives that could best meet the transportation needs of the corridor, while minimizing environmental impacts and maximizing social and economic benefits. In 2003 and 2004, ODOT decided to pursue a tiered approach to developing the program and project list and fulfilling NEPA requirements. The goal of the first tier was to identify broad corridors for program improvements and establish a common purpose and need statement; the goal of the second tier was to carry out detailed environmental analysis for individual projects. The tiered approach allowed projects with minimal environmental impacts to be implemented while analysis and consensus building continued on projects with more complex issues.

Program Overview

The projects comprising the Eastern Corridor Program are grouped into four categories (see Figure C-1):

- New Highway Capacity:
  - *Red Bank Corridor (Segment I):* The project includes a series of improvements to Red Bank Expressway between I-71 and US 50. The improvements were proposed to reduce congestion and delays along the expressway, improve major intersections, enhance traffic flow, and accommodate bicyclists and pedestrians. Work includes removal, relocation, and rehabilitation of roadways, sidewalks, access points, and intersections.



Source: ODOT

Figure C-1. Eastern Corridor project map.

  - *SR 32 Relocation (Segments II and III):* SR 32 is one of the primary thoroughfares in the Eastern Corridor Program area. The roadway suffers from congestion, a high crash rate, and heavy truck traffic. Consideration has been given to moving the western end of SR 32 to create a new connection between SR 32, US 50, and Red Bank Road. This relocation would include a new multimodal bridge for SR 32, rail transit, bicycle, and pedestrian traffic across the Little Miami River—a designated wild and scenic river—connecting SR 32, US 50, and Red Bank Road.
  - *SR 32 Improvements, Eastgate Area (Segments IV (a) and (b)):* Improvements to SR 32 in the Eastgate area focus on improving capacity and access to SR 32 between the I-275 interchange and Olive Branch-Stonelick Road. The project includes the construction of a new interchange and road extensions. The project also includes separate improvement work on the I-275/SR 32 exchange and connected access roads.
  - *SR 32/I-275 Interchange Improvements (Segment IV):* The project upgrades the I-275/SR 32 and SR 32/Eastgate Boulevard interchanges and improves capacity and access along SR 32.
- New Rail Transit Capacity:
  - *Oasis Rail Transit:* Oasis Rail Transit is a proposed 17-mile commuter rail line between Cincinnati, Hamilton County, and western Clermont County. The line would be built on existing freight tracks and on a railroad right-of-way that the Southwest Ohio Regional Transit Authority (SORTA) purchased in the early 1990s with FTA funds. New track would be laid to complete connections in the corridor. The project could share a multimodal bridge crossing of the Little Miami River with the SR 32 Relocation project.
- Transportation System Management (TSM) Projects: Approximately 180 small-scale roadway network improvements are included, such as changes to traffic signal timing, intersection improvements, improvements to existing roadways, and development of new bike trail/multipurpose facilities.
- Expanded Bus Transit: Local transit providers would expand bus service.

Lead, Cooperating, and Participating Agencies

The Eastern Corridor Program team has been using a tiered approach to NEPA, which in turn has guided the timeline and status of the individual projects. The tiered approach divided the assessment of alternatives and environmental impacts into two phases: the first tier established the purpose and need of the overall program and identified broad corridors, and the second tier analyzed the alternatives in greater depth on a project-by-project basis. The Tier 1 Final Environmental Impact Statement (FEIS) was approved in November 2005, and the Tier 1 Record of Decision (ROD) was approved in June 2006.

FHWA was the lead federal agency for the Eastern Corridor Program during Tier 1; FTA was a cooperating agency. Other cooperating federal agencies during Tier 1 included the U.S. Fish & Wildlife Service, the National Park Service, and the U.S. Army Corps of Engineers. ODOT was the co-lead agency with FHWA.

The agencies met in 2002, early in the tiered approach process, to determine each agency's role. As the program consisted mainly of roadway improvements, it was determined that FHWA and ODOT would be the lead agencies.

In Tier 2, FHWA and ODOT are the lead agencies for all of the roadway projects in the program, including the new highway capacity projects and TSM projects. The major federal action on these projects is the use of federal funds for design and construction.

New Starts grant funding from FTA is seen as a potential funding source for the Oasis Rail Transit project. As this would trigger a major federal action for FTA, it is anticipated that FTA would be the lead federal agency if the project advances. As of late 2015, ODOT was conducting a conceptual alternatives study as a precursor to undertaking Tier 2 NEPA for transit.

While ODOT is leading the Eastern Corridor program overall, SORTA's support for Oasis Rail Transit is critical to moving the project forward. In 2002, an initiative to finance public transportation improvements in Hamilton County through a half-cent sales tax levy was defeated by a public vote. Without a clear source of funds, the Oasis Rail Transit project has been a low priority for SORTA, and consequently FTA has not actively engaged in the NEPA process.

NEPA Process/Approach

Previous planning efforts in this corridor—conducted in the 1960s and again in the 1990s—were lengthy and ultimately unsuccessful. The complexity of environmental issues and insufficient funding for planning and NEPA resulted in delays and outdated environmental documents.

In the early 2000s, the participating federal and state agencies determined that a tiered environmental approach would be the most effective way to analyze the complex issues associated with the Eastern Corridor Program, as some of its projects could be expected to have significant impacts on surrounding parklands, waterways, and communities. Tier 1 provided a high-level review of the program, allowing stakeholders to reach agreement on the corridors that would be improved, without getting bogged down by the complexity

of the environmental impacts of individual projects. The tiered approach allowed those projects with lesser impacts to advance and be constructed after their more rapid Tier 2 approval, and kept the more complex projects from delaying the entire program. The tiered approach also gave the public opportunities to shape the overall program.

Tier 1 EIS Process

Tier 1 of the NEPA process identified and broadly analyzed feasible alternatives in corridors with a conservative footprint. The goal of Tier 1 was to identify how various potential modal projects could be best implemented in terms of engineering, environmental, financial, public input, land use, and community development concerns. During Tier 1, a Draft EIS and Final EIS were developed and approved by FHWA and ODOT. The Tier 1 review led to a Tier 1 ROD, approved by FHWA in June 2006, which identified a set of multimodal improvements to undergo a more detailed analysis in Tier 2. The ROD specified the class of action and type of NEPA document to be prepared for each project.

Tier 2 NEPA Process

Tier 2 analyses are evaluating the preliminary alternatives recommended in the Tier 1 ROD. Tier 2 will produce separate NEPA documents for each of the program components, with classes of action reflective of the level of impact of each project. Specific issues such as preferred project alignments, detailed environmental impacts, and mitigation strategies are being evaluated. After each project is evaluated in Tier 2, and the environmental document necessary for that project is approved, final design and construction for that project will begin.

As of late 2015 four major projects in the Eastern Corridor Program are preparing for significant Tier 2 NEPA review.

- *Red Bank Corridor:* In January 2014 ODOT published a Preferred Alternative Implementation Plan identifying five different project components, the next steps for planning and engineering, the estimated construction cost of the project, and the next steps for NEPA. ODOT recommended that each of the five components be advanced with separate NEPA documents.
- *SR 32 Relocation:* The project faces several hurdles due to the risk of significant environmental impacts and permitting issues, stemming primarily from the location of project alternatives in the Little Miami River valley—a state and national scenic area. Specifically, the issues include Section 4(f) historic preservation, Section 7(a) of the Wild and Scenic Rivers Act (WSRA), and the need for concurrence from Native American tribes to construct through and impact important archeological sites. Federal agencies in addition to FHWA, including the U.S. Fish & Wildlife Service, the National Park Service, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers, as well as non-federal parties, such as the National Trust for Historic Preservation and Native American tribes, have been deeply involved in negotiations over mitigation strategies to minimize the project's impact. Following the release of a feasibility study in 2012, the stakeholders could not agree upon an alignment and mitigation strategy.

  In 2013 ODOT and FHWA engaged the U.S. Institute for Environmental Conflict Resolution and the Consensus Building Institute to assess the interests of each of the stakeholders and coordinate their priorities on mitigating the various impact issues. The Institutes reviewed all Eastern Corridor Program documents including Tier 1 NEPA documents, and included local communities and other stakeholders in the mediation process. In August 2015, ODOT and FHWA published a status update from the mediation process, outlining the major impact risks to SR 32 and recommendations for moving the project forward. The major recommendation is to split SR 32 into two segment projects that can proceed independently. It was also recommended that the project purpose and need be reviewed and the needs and solutions prioritized. These steps are expected to be taken in early 2016. The multimodal bridge crossing of the Little Miami River is on hold.
- *SR 32 Improvements, Eastgate Area:* A Conceptual Alternatives Solutions Report was completed in July 2012. The report recommended that four alternative corridor alignments be studied in further detail in preparation for the Tier 2 NEPA process. As of late 2015, ODOT and the Clermont County Transportation Improvement District are exploring funding options for project construction.
- *Oasis Rail Transit:* The rail transit project is divided into four segments. A Conceptual Alternatives Solutions Report was published in November 2013, and a Conceptual Alternatives Study is under way as a precursor to a possible Tier 2 NEPA phase. Alternative alignments are being evaluated that do not require a new crossing of the Little Miami River. If the project moves ahead, decisions remain on implementation roles, responsibilities, and funding.

The remaining highway projects—the SR 32/I-275 interchange and the TSM projects—satisfied Tier 2 with Categorical Exclusions (CEs). FHWA approved a Level 4 CE for the $48 million SR 32/I-275 interchange, and the project has been constructed and is open to traffic.

Most of the 180 TSM projects have reached substantial completion or are in design. Of those that have not yet been completed, approximately 10 are on hold due to funding issues, approximately five have been cancelled (due to changing

needs), and two have been rolled into other existing projects within the Eastern Corridor Program. The bus operation improvement projects, which fall under SORTA's jurisdiction, have been put on hold due to a lack of operating funding and public need.

Agency Requirements Applied to NEPA

FHWA's and FTA's NEPA requirements are detailed in 23 CFR Part 771, "Environmental Impacts and Related Procedures." The regulations state, " . . . when both the FHWA and FTA are involved in the development of a project, or when the FHWA or FTA acts as a joint lead agency with another federal agency, a mutually acceptable process [for coordinating regarding NEPA] will be established on a case-by-case basis." Many of the roadway and transit projects are structured as distinct and independent projects, with the exception of the multimodal bridge crossing the Little Miami River proposed as part of the SR 32 Relocation project.

The Oasis Rail Transit project, if it proceeds, would also be subject to FTA procedures and criteria for New Starts funding. FTA's New Starts requirements for planning and project development are overlaid on the NEPA process. FTA has reminded SORTA that the right-of-way purchased with FTA funds must remain in active planning or SORTA could be asked to refund the federal funds.

Impact of These Requirements

Some of the Eastern Corridor projects would have significant impacts on surrounding park land, waterways, and local communities. The overall program was able to move through Tier 1 analysis by examining the broader project corridors and deferring review of more detailed environmental impacts to Tier 2. The tiered approach allowed the program to move ahead and the less impactful components of the program to be constructed.

Tier 2, however, must address the impact issues and establish preferred alternatives and mitigation plans for each of the projects in the program. For the SR 32 Relocation project, regulatory requirements such as Section 4(f) and WSRA Section 7(a) are significant hurdles. FHWA, ODOT, and various stakeholders have been unable to reach consensus on a mitigation strategy or a project alignment. The lack of consensus has led to a conflict resolution process that recommended next steps for moving the project forward. As of late 2015, the purpose and need statement is being revised, and the process is looking at alternatives to reduce costs and impacts. The concept of a new multimodal bridge crossing the Little Miami River is on hold.

FTA's New Starts requirements related to project development would be addressed in conjunction with the Tier 2 NEPA process.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: ODOT undertook a multimodal NEPA process assuming that the FTA and FHWA requirements were similar, and expecting that FTA would be a willing participant. It did not understand the FTA New Starts process and how New Starts funding requirements would affect FTA's willingness to engage as a cooperating agency in NEPA. Frequent changes to the FTA's New Starts program requirements have added to the difficulties of advancing a multimodal program with a long lead time.

Differing Agency Interpretations of NEPA Requirements: The challenges that have delayed progress and are continuing to be addressed for the SR 32 Relocation project have been raised by federal and state resource and regulatory agencies such as the National Park Service, the Ohio Department of Natural Resources, and the U.S. Fish & Wildlife Service, as well as Native American tribes. The delays are not rooted in differing interpretations of NEPA requirements; rather, they are rooted in the varying objectives of the involved entities and lack of consensus on an acceptable solution.

Anticipating Which Agencies Will Have a Major Federal Action: FHWA's major federal action was triggered on the project due to the large roadway components that were candidates for federal aid funding. An FTA major federal action could be triggered if the Oasis Rail Project and related transit components of SR 32 Relocation move forward for FTA grant funding. While FHWA fulfilled the role of lead federal agency in Tier 1, both agencies, along with other resource agencies, were engaged in developing the tiered approach and program-level strategies.

There was little continuing coordination with FTA during Tier 1. ODOT met with FTA at the outset of Tier 1, and at that time FTA expressed a reluctance to be involved because it seemed unlikely that Oasis Rail Transit would meet the requirements for New Starts funding. As a cooperating agency, FTA agreed to review the Draft EIS and commented on displacements and environmental justice, bus rapid transit, and cost/benefit analysis.

FHWA issued a Notice of Intent for the Tier 2 EIS on the Oasis Rail project, but later decided that FTA would be the more appropriate agency to lead the NEPA process for this project. FTA has not yet accepted this role. Because the project is not currently a SORTA priority, and due to a lack of local funds, FTA does not anticipate that it will have a major federal action to take in the foreseeable future. However, FTA has acknowledged that both it and SORTA would need to be involved if the rail project advances.

Efficient Coordination among Agencies: A tiered NEPA process has been under way for a dozen years. A formal coordination schedule has allowed stakeholders to participate in the NEPA process, and FHWA meets monthly with local staff on environmental impact issues. In addition, quarterly or bi-annual meetings are held between local funding partners (county and city officials and area metropolitan planning organization and transportation improvement district chairs) and stakeholder groups (townships and communities, civic organizations, and special interest groups). Since the start of Tier 2 efforts, the participating state and federal agencies have been meeting to discuss Tier 2-specific NEPA issues.

Although there has been a formal participation structure, the agencies were unable to agree on a preferred alternative for the SR 32 project alignment that would avoid or mitigate all of the impact issues that concern FHWA, the National Park Service, the U.S. Fish & Wildlife Service, and the affected Native American tribes. Mediation was ultimately required, and the SR 32 project is now being re-scoped to reduce costs and impacts.

FTA has not engaged in the process since the beginning and the sponsoring agencies are unsure of FTA's role going forward.

Securing Funding for Multimodal NEPA Studies: Funding for NEPA studies was an issue in the 1960s and again in the 1990s. In Ohio, state gas tax revenues can only be spent on highways. ODOT did not consider this limitation to be an obstacle to using gas tax funds on the multimodal Tier 1, which was funded 50-50 between local funding partners (MPO, city, and counties) and ODOT. For Tier 2, however, ODOT determined that gas tax revenues could not be used for advancing the Oasis Rail project. Surface Transportation Program funds are being used for the current Conceptual Alternatives Study.

Strategies/Tactics Used to Overcome Challenges

The tiered NEPA approach allowed ODOT and the stakeholders to establish a high-level purpose and need and broad alternatives that could then be examined separately through the Tier 2 NEPA analyses. Through the Tier 1 process a list of alternatives and projects was created that coordinated with existing land use planning and the vision for the region. The use of multiple modes was considered to be critical to addressing the growing travel demands and reaching consensus on a solution.

The use of mediation through the Consensus Building Institute was intended to aid in resolving environmental impact issues on the SR 32 Relocation project. The mediation led to a recommendation to split the SR 32 project into two segments in hopes of making progress.

Lessons Learned

Be willing to employ a non-traditional approach for a unique project. The tiered approach was useful for this program because it transformed years of feasibility studies and project recommendations into a structured process and set of projects with a common purpose and need. By approving the broad corridors through the first tier of NEPA, much-needed projects with minimal impacts are being constructed, and are not delayed by the complex issues of two or three projects in the program.

Secure agency buy-in on complex issues early in the process. Project staff at ODOT noted that it would have been helpful to get early buy-in from FTA on the process for the Oasis Rail Transit project. FTA has not agreed to assume the role of lead agency, and FTA's ultimate decision on the Tier 2 NEPA process is uncertain. Part of FTA's reluctance reflects local reservations about the project due to the major capital and operating funding requirements, design concerns, and ridership projections.

Recognize that a tiered approach alone does not solve issues and conflicts related to environmental impact and coordination. ODOT staff note that one of the biggest drawbacks to the tiered NEPA approach is the "kicking down the line" of important issues. While the tiered process allowed many of the more straightforward projects to move forward, it did not make it easier to resolve the significant environmental and funding issues that have held up two or three projects. Developing a plan earlier on how to tackle these significant impacts might have prevented delays. Staff commented that they are hesitant to move forward with a tiered approach again due to the lack of resolution to the complex project issues in Tier 1. They stated that a robust planning process that can identify projects, needs, and challenges followed by project-specific NEPA reviews would have worked as well in identifying and mitigating impacts.

Bibliography

Federal Highway Administration. June 2006. "Record of Decision for Eastern Corridor Multi-Modal Projects—Tier 1."

Federal Highway Administration, Ohio Department of Transportation, and Hamilton County Transportation Improvement District. November 2004. *Tier 1 Draft Environmental Impact Statement, Eastern Corridor Multi-Modal Projects.*

Federal Highway Administration, Ohio Department of Transportation, and Hamilton County Transportation Improvement District. November 2005. *Tier 1 Final Environmental Impact Statement, Eastern Corridor Multi-Modal Projects.*

Ohio–Kentucky–Indiana Regional Council of Governments. September 1999. *2020 Vision for the Eastern Corridor: A Comprehensive Plan for Improving Transportation in the Cincinnati Metropolitan Area.*

http://easterncorridor.org/. (As of March 23, 2015).

APPENDIX D

Case Study—Phase I National Gateway Clearance Initiative, Ohio, Pennsylvania, Maryland, and West Virginia

Summary

Project Description

Phase I of the National Gateway Clearance Initiative is a $183 million program to raise vertical clearances along CSX track between North Baltimore, OH, and Chambersburg, PA, to accommodate double-stacked trains.

Key U.S. DOT Agencies

- Federal Railroad Administration (FRA)—Co-lead
- Federal Highway Administration (FHWA)—Co-lead

Key State and Local Agencies

- Ohio Department of Transportation (ODOT)—sponsor
- Pennsylvania Department of Transportation (PennDOT)
- Maryland Department of Transportation (MDOT)
- West Virginia Department of Transportation (WVDOT)

Challenges Faced

The National Gateway Clearance project team faced four of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table D-1).

Strategies, Tactics, and Lessons Learned

- Coordinate early with federal agencies to foster relationships and carefully determine the correct class of action.
- Maintain frequent coordination with interested partners and resource agencies at all levels.
- Become familiar with other agency processes early.
- Allocate additional time to accommodate multiple agency issues and approaches.
- Leverage high-level interests and relationships to drive the process.
- Focus on broader economic and community benefits to obtain project buy-in.
- Be aware of different interest in, and understanding of, NEPA when working with private partners.
- Hire a specialist familiar with local agency requirements to expedite approvals.
- Use the most advantageous agency relationships and procedures.

Case Study Detail

Introduction

The National Gateway Clearance Initiative is an improvement program designed to achieve a minimum of 21 feet of vertical clearance along the CSX Transportation, Inc., (CSX) rail corridor in order to accommodate double-stacked rail cars. It spans six states to connect Mid-Atlantic ports and Midwestern markets (see Figure D-1).

Phase I includes rail clearance and other rail improvements between Northwest Ohio and Chambersburg, PA. The project is funded in part by a U.S. Department of Transportation (U.S. DOT) Transportation Investment Generating Economic Recovery (TIGER) grant.

The NEPA process was an Environmental Assessment (EA).

Lead, Cooperating, and Participating Agencies

The Federal Railroad Administration (FRA) and the Federal Highway Administration (FHWA) were co-lead agencies. The Ohio Department of Transportation (ODOT) was the local sponsor. The departments of transportation for Pennsylvania (PennDOT), West Virginia (WVDOT), and Maryland (MDOT) were cooperating agencies.

CSX had already begun working with some of the individual states on the clearance issue. Several states, including Ohio and Pennsylvania, had active obstruction removal programs.

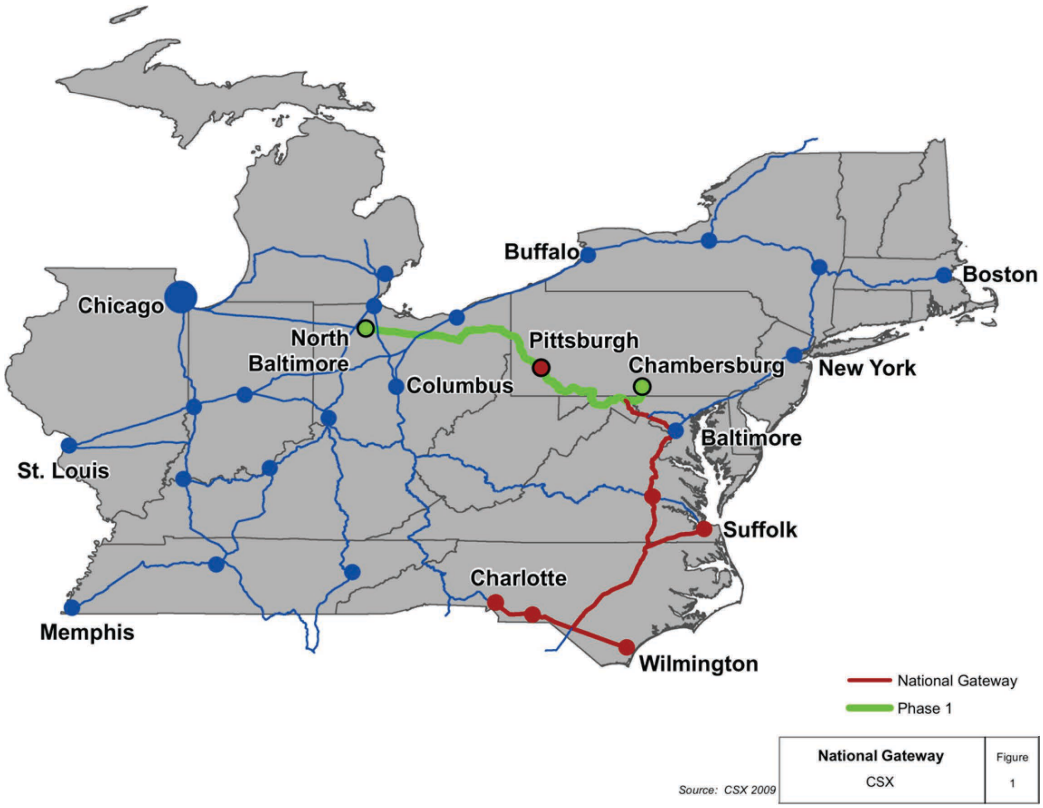
Table D-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓	✓	✓	

In 2009, taking advantage of a TIGER I grant opportunity under the American Recovery and Reinvestment Act of 2009 (ARRA), Ohio submitted an application on behalf of Pennsylvania, Maryland, Virginia, and West Virginia for $258 million to modify railroad infrastructure at 61 locations. In 2010, the U.S. DOT awarded a smaller, $98 million grant to four states (excluding Virginia) to connect major intermodal facilities. Each state prepared individual Categorical Exclusions (CE). PennDOT led the local coordination.

The FRA was initially thought to be the appropriate agency to manage the grant. Since FRA did not have the resources to manage the large number of projects under TIGER, and had not historically administered a significant grant program, an FHWA staff person was assigned to FRA. Ultimately, the grant flowed through FHWA and both FHWA and FRA were co-leads for NEPA.

The fact that the project was funded under the first round of TIGER, and that ARRA had statutorily imposed deadlines, brought high-level attention to the project. The goal of ARRA was to help stimulate the national economy during the 2008–2010 recession, and the grant came with specific dates by which funds were to be obligated. A kick-off meeting and another coordination meeting were held in Washington, D.C., and a subsequent project kick-off meeting was held at MDOT. Senior staff from the four state DOTs attended. Periodic conference calls among the states, FRA, and FHWA kept everyone informed. The FRA project manager (on detail from FHWA) organized regular staff level calls. PennDOT arranged some of the higher level meetings involving the office of the U.S. DOT Assistant Secretary for Policy. The governors spoke to each other regularly, both informally and formally in telephone meetings.



Source: CSX

Figure D-1. National Gateway Clearance Initiative map.

The NEPA process benefitted from the involvement of higher level officials who were able to bring attention and resources to resolving issues.

NEPA Process/Approach

After the project was awarded a grant under the TIGER program, FHWA and FRA determined that the individual states needed to combine efforts into a single NEPA document. The NEPA class of action was determined to be an EA primarily because several tunnels had effects on historic structures and the clearance of the 130-year-old J&L tunnel in Pittsburgh required cut-and-cover construction in a mixed-use residential and commercial area that would impact the community. Individual CEs that had been prepared by the states provided much of the information needed for the EA and were attached to it. CSX hired a consultant to complete the NEPA documentation.

FRA initially thought that the project would require an EIS. Under FHWA's procedures, however, projects largely within existing right-of-way could satisfy NEPA with an EA; FRA agreed that the correct class of action was an EA. Given FHWA's long history with NEPA and the state DOTs' familiarity and experience with FHWA's NEPA procedures, FHWA and FRA agreed to follow the FHWA process while ensuring that FRA's requirements were also met. FHWA's nationwide programmatic Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to Section 4(f) Property was particularly useful in addressing some impacts to individual historic properties. FRA does not have a similar programmatic approach for addressing historic properties.

Agency Requirements Applied to NEPA

Interviewees indicated that there were no conflicts between the agency requirements, but there were differences. Since the project was subject to both FHWA and FRA procedures, generally the more stringent requirement was followed on any given issue. For example, FHWA typically does more extensive public outreach than does FRA for environmental assessments. FRA would have issued a notice of availability for the EA whereas FHWA required a public comment period and outreach sessions throughout the alignment. CSX and the state DOTs developed a single website to solicit public comments.

FRA has a more involved process for vetting contractors to make sure they do not have a competitive advantage in later project phases. FRA requires additional disclosure documents from the consultants and there are more steps in the review. This more involved disclosure process was followed.

Finally, FHWA and FRA are subject to different air quality regulations for determining whether a project will conform to the State Implementation Plan. Under 40 CFR Part 93 subpart A, FHWA is required to perform transportation conformity analysis for projects funded under Title 23 of the U.S. Code. Since the project was funded by a TIGER grant, which is not a Title 23 program, the General Conformity Rules under Title 40 CFR Part 93, subpart B, were applied.

Impact of These Requirements

The differing requirements added some complexity to the process but the impact to the schedule was not significant. Because the FRA project manager (on detail from FHWA) learned of the additional disclosure process required by FRA early and incorporated it into the schedule, it did not delay the project. The general conformity analysis was new to the project manager as well, and while it took some additional time, it was not on the project's critical path. The public involvement meeting and comment period caused CSX some concern because, as a private entity, it was not used to these requirements. However, the public meetings and notices did not add to the overall timeline.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: Because the project was subject to both FRA and FHWA requirements, it did have to complete additional processes. As described above, the project was subject to general conformity under FRA and additional disclosure requirements for contractors. While there were differences between the agencies, the interviewees did not consider the additional requirements to be onerous or to require significant additional time.

Differing Agency Interpretations of NEPA Requirements: FHWA and FRA differed significantly in their approach to determining the appropriate class of action. FRA initially thought the project should require an EIS, but both agencies agreed early on that an EA was the appropriate class of action.

FHWA requires more extensive public outreach for EAs than FRA does. Although the state DOTs were familiar with FHWA's outreach requirements, CSX was concerned that additional requirements for public review would add to the project schedule. The schedule for expending TIGER funds was subject to tight timelines under the ARRA.

Because the project followed FHWA' process, the project was able to use FHWA's programmatic evaluation for 4(f). FRA's rules do not have this option.

Anticipating Which Agencies Will Have a Major Federal Action: There was uncertainty about which agency would

administer the TIGER grant. Initially, it was assumed the funds would flow through FRA. However, because FRA did not have the staff and resources to devote to this project and FHWA did, the agencies decided that FHWA would administer the grant. Thus, FHWA and not FRA had the federal action. An added benefit was that the state DOTs had greater familiarity with FHWA's processes than with FRA's.

Efficient Coordination among Agencies: Coordination between the federal agencies was efficient. The agency kick-off meeting was helpful, as was the high-level attention the project received. Following initial face-to-face meetings, all meetings were conducted by telephone. Most important were the regular monthly calls with the states and the FRA project manager. These eventually included the Eastern Federal Lands Division, which was tasked with managing construction.

Working with so many states—each with its own processes and issues—was challenging. The project had varying levels of impacts in each state, the state DOTs had varying abilities to address their issues, and the longest timeline controlled the overall schedule. Because there are no historic railroads in Ohio and ODOT processed projects with historic structures separately, ODOT did not have as many significant issues as other states. ODOT indicated that work in Ohio was significantly delayed by combining the four state corridors into one project. In hindsight, ODOT questioned the determination that the project required a single NEPA document because the decision was based on an older project description that included more states and was all-inclusive. FHWA and FRA disagreed.

Another coordination challenge involved working with a private sector partner. CSX hired a single consultant to complete the NEPA documentation for all states. That consultant did not have local knowledge in each of the states. The consultant did not anticipate some federal requirements timelines and there were missteps as a result. At one point, for example, the mitigation for cutting trees had been identified and CSX proceeded to cut the trees prior to completion of NEPA. In another case, after a derailment damaged a bridge, CSX discarded trusses which were supposed to be saved as mitigation. These issues were worked through with the resource agencies, but they required additional oversight.

Securing Funding for Multimodal NEPA Studies: Funding the study was not an issue. CSX covered most of the consultant cost. Each state paid for its employee staff time. Some states reimbursed CSX for a portion of the NEPA costs.

Strategies/Tactics Used to Overcome Challenges

The TIGER grant brought high-level attention to the project at the federal and state levels and forced the participants to follow a tight schedule. A high-level kick-off meeting in Washington, D.C., was used to highlight the tight schedule for the project. Attention from the office of the U.S. DOT Assistant Secretary for Policy was helpful in resolving problems quickly and the governors also coordinated with each other. This allowed the Governor of Pennsylvania—the state leading local coordination of the NEPA process—to talk to his counterparts and focus high-level attention on issues within their states.

FHWA assigned one of its senior NEPA experts to FRA to administer the project and fill a resource gap at that agency. That FHWA employee had long-standing working relationships with several of the state DOTs. In addition, the state DOTs had already been working together and had developed productive relationships.

A key tactic was holding regular telephone calls with all of the state DOTs, FRA, FHWA, and CSX. This allowed the team on the ground to coordinate regarding issues, to identify problems early, and strategize about solutions. Many of the calls focused on obtaining agreements with the State Historic Preservation Officers (SHPOs) because these issues were on the critical path. Routine communication among the states was invaluable.

Lessons Learned

Coordinate early with federal agencies to build and maintain relationships and carefully determine the correct class of action. The state DOTs coordinated with their FHWA division offices as they proceeded with separate CEs. After they received a federal TIGER grant, the parties determined to proceed with a single, phased project. FRA's initial decision that an EIS was needed was changed early enough in the process—by mutual agreement with FHWA—to avoid impacting the schedule. And, although this change meant state DOTs had to adjust their approach, a number of benefits to the project resulted. Moreover, the decision to pursue an EA instead of an EIS was made in a timely manner by FRA and FHWA and did not result in significant schedule delays.

Productive working relationships between the states and FHWA (particularly Eastern Federal Lands) had been established before the project began, and were an important factor in its success. The states were familiar with FHWA processes. The project manager that FHWA loaned to FRA was experienced and knowledgeable, had decision-making authority, and had worked previously with several of the state DOTs. That individual was able to resolve or avoid misunderstandings that resulted from the states' relative lack of familiarity with FRA's requirements.

Maintain frequent coordination with interested partners and resource agencies at all levels. The regular conference calls among the state DOT representatives, FHWA, and FRA were critical to moving the project forward. Several states had serious issues with historic properties and agreements that

needed to be addressed. High-level support did not necessarily translate to the line staff level at all agencies. PennDOT noted that engagement with SHPOs should have been initiated earlier by project staff to facilitate more timely decisions and approvals. The delay in sign-off from historic and cultural resource agencies in Pennsylvania added about two weeks to the timeline. Existing relationships between state DOT cultural resources staff and their respective SHPOs greatly helped advance these agreements. Finally, when Ohio had problems getting the CSX consultant to complete products, FHWA helped finish the work.

Become familiar with other agencies' processes early. Lack of awareness of additional FRA requirements (disclosure forms and general conformity) could have slowed the process, especially because the federal staff lead was on loan from FHWA and unfamiliar with the requirements. The fact that FRA staff alerted the team to the requirements allowed them to be addressed without causing delay.

Allocate additional time to accommodate multiple agency issues and approaches. The multi-state nature of the project meant that individual state issues were on the critical path for the entire project; the slowest state would establish the schedule. A couple of the states had more significant issues with historic properties and/or SHPOs who did not initially accept the FHWA programmatic agreement, which relies on a beneficial use determination. Additionally, Pennsylvania had a cut-and-cover section, which required significant reconstruction in a low-income urban neighborhood in Pittsburgh. Resolution of both of these issues added several weeks to the overall project schedule.

Leverage high-level interests and relationships to drive the process. The fact that several states had already been working on raising railroad clearances provided a shared level of interest. They realized that only by working together could they achieve the full benefits of double-stack clearance. This shared interest helped them win the TIGER grant, which provided a significant additional impetus to the project. The TIGER grant spurred the involvement of high-level staff at the federal level and drove the schedule. Higher level coordination among the governors and periodic involvement of higher level DOT headquarters staff helped resolve roadblocks and sustain the project as a priority.

Focus on broader economic and community benefits to obtain project buy-in. Resource and local agencies acknowledged the economic benefits of the project quickly. This helped clear initial hurdles in terms of agency engagement and participation.

Be aware of different interest in, and understanding of, NEPA when working with private partners. In this case support from a private partner was critical to moving the project forward, but a lack of understanding about NEPA and other federal regulations had to be overcome. CSX's interest served as the initial impetus for the project and CSX also fronted the funding for the NEPA consultant. However, CSX was not as familiar with federal requirements and at times took actions that were out of sync with the NEPA schedule, including acting before clearances were obtained.

Hire a specialist familiar with local agency requirements to expedite approvals. The NEPA consultant hired by CSX was not familiar with Ohio resource agency procedures. This led to problems in completing certain products. FHWA had to step in to finish the work.

Use the most advantageous agency relationships and processes. A major factor in the success of the project was the productive relationship between the FRA project administrator (loaned from FHWA) and the state DOTs. They "spoke the same language" and had an established working relationship. Also, the project utilized FHWA procedures, such as the nationwide programmatic 4(f) evaluation, which were advantageous for the project.

Bibliography

Federal Highway Administration, Federal Railroad Administration, and Ohio Department of Transportation. September 7, 2010. *Environmental Assessment and Section 4(f) Evaluation, Phase I National Gateway Clearance Initiative.*

Federal Railroad Administration and Federal Highway Administration. November 22, 2010. "Finding of No Significant Impact and Determination of Applicability of Programmatic Section 4(f) Evaluation, Phase I National Gateway Clearance Initiative."

http://www.itre.ncsu.edu/adc10/conferences/trb_91/johnson.pdf. (As of March 23, 2015).

https://www.environment.fhwa.dot.gov/4f/4fnetbenefits.asp. (As of October 31, 2015).

APPENDIX E

Case Study—Chicago Region Environmental and Transportation Efficiency Program (CREATE), Chicago, Illinois

Summary

Project Description

The CREATE program consists of 70 freight rail, passenger rail, and related improvements in the Chicago region. The projects span roadway, bridge, and rail modes.

Key U.S. DOT Agencies

- Federal Highway Administration (FHWA)—Lead Agency
- Federal Railroad Administration (FRA)—Cooperating Agency
- Federal Transit Administration (FTA)—Cooperating Agency

Key State, Local, and Private Agencies

- Illinois Department of Transportation (IDOT)—Public Agency Lead
- Chicago Department of Transportation (CDOT)
- Metra (the Chicago region's commuter rail operator)
- Association of American Railroads (AAR) and associated Class I freight rail, passenger rail, and commuter rail agencies

Challenges Faced

The CREATE project team faced two of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table E-1).

Strategies, Tactics, and Lessons Learned

- Tailor the environmental approach to expedite the unique project structure.
- Maintain frequent coordination with partner agencies.
- Begin coordination early.
- Establish a formal governance structure as a unification tool.
- Utilize joint meetings among federal lead and cooperating agencies.
- Establish a flexible communication strategy to reflect project coordination needs.
- Implement a structured, reliable review process to ensure consistency during environmental review.

Case Study Detail

Introduction

Program Overview

The CREATE program is a series of freight rail, passenger rail, and related improvements in the Chicago region. Chicago is the busiest rail hub in the United States, handling one-quarter of the nation's freight rail traffic. It is also strategically situated where six out of seven Class I freight railroads converge, including the lines of Norfolk Southern Corp. (NS) and CSX Transportation (CSX) from the east, BNSF Railway (BNSF) and Union Pacific Corporation (UP) from the west, as well as the Canada Pacific Railway (CP) and Canadian National Railway Company (CN). The volume of rail traffic and related infrastructure demand in the region has surpassed the existing capacity, causing delays and negative impacts on the current freight and passenger rail system. The goal of the program is to decrease congestion and delays and increase efficiency to better handle the current volume and projected increases in rail traffic.

The program includes 70 component projects classified by rail corridor type (passenger or freight) and type of improvement. The classifications are:

- Western Avenue Corridor—8 projects
- Beltway Corridor—11 projects
- East-West Corridor—4 projects
- Passenger Corridor—7 projects
- Grade Separations—25 projects
- Towers—12 projects

Table E-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓			✓	

- Other—3 projects (viaduct improvements, "Common Operational Picture" central dispatch improvement, grade crossing safety program)

Figure E-1 illustrates the location of the projects along the regional corridors. It does not include all the projects in the CREATE program, such as the viaduct projects, grade crossing safety program projects, and the Common Operational Picture project.

Component Project Selection Process

Project selection for the CREATE program dates back to the early 1990s, when regional groups and private stakeholders began identifying vital freight transportation improvements as part of regional planning efforts in the Chicago area. Figure E-2 highlights catalytic events that led to component project selection.

Projects with Potential for Significant Impacts

As of late 2015, 51 of the 70 projects were in Phase 1 (environmental review), Phase II (final design), Phase III (construction), or had reached final completion. Three sizable packages of improvements have moved considerably through the NEPA process as an Environmental Assessment (EA) or Environmental Impact Statement (EIS). The three are:

- **75th Corridor Improvement Project (also known as P2/3) (EIS):** The project is comprised of four CREATE components that were grouped due to their related environmental impacts. The project will alleviate the most congested bottleneck in Belt Junction where more than 80 Metra (commuter rail) and freight trains cross daily. The project will reconfigure Beltway of Chicago (BRC) tracks between Dan Ryan and Belt Junction, construct a second main track for Metra's SouthWest service operations, construct a bridge that will reduce conflicts between Metra lines and four freight rail carriers, and construct a road-rail grade separation.
- **Grand Crossing Rail Project (also known as P4) (EIS):** The project will provide a direct route for Amtrak trains into Chicago Union Station by constructing new mainline capacity. The project will affect 20 Amtrak trains and 46 freight trains daily.
- **Englewood Flyover (also known as P1) (EA):** The project is the construction of a double-tracked flyover to grade-separate passenger and freight rail traffic. The project will also increase speeds from 50 to 70 mph. The project will affect 16 passenger rail trains and 81 freight rail trains daily.

The 75th Corridor Improvement Project (P2/3) received a Record of Decision (ROD) in October 2014. The ROD was issued by FHWA and allows the project to move into final design as funding becomes available. The Englewood Flyover project (P1) is in construction and near completion. The remaining EIS project, the Grand Crossing Rail Project (P4) is still in the environmental review process and currently inactive.

Lead, Cooperating, and Participating Agencies

The major federal action triggering NEPA review for the CREATE program was the anticipated receipt of federal funding from various U.S. DOT programs to construct the component projects. Despite the rail focus of the program, many projects and project components include the improvement of grade crossings and grade separations. The potential use of FHWA funds for these projects triggered FHWA's involvement.

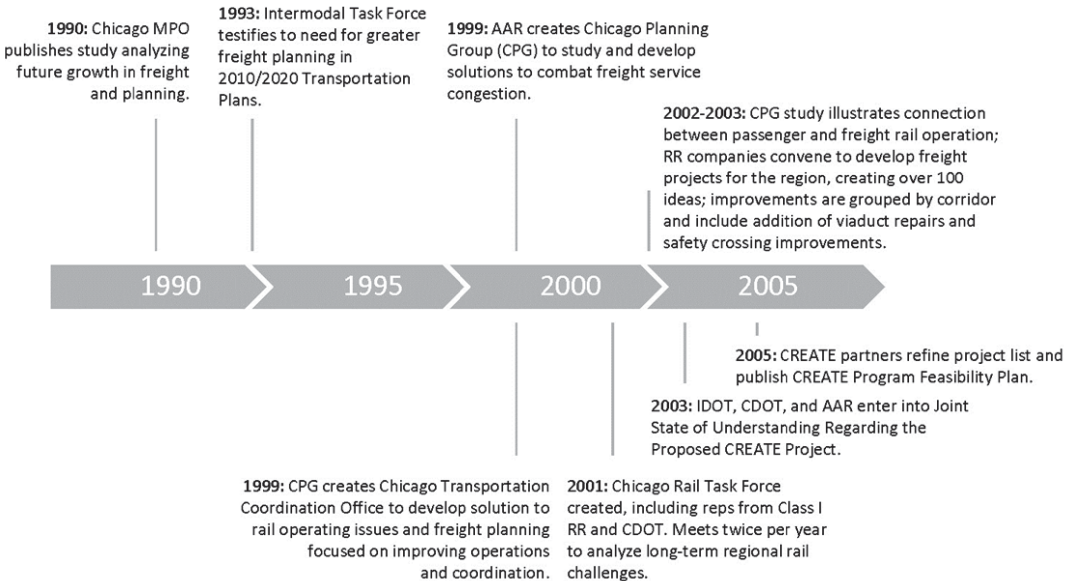
The decision was made early in the NEPA process to have FHWA serve as the lead federal agency for the entire CREATE program. FHWA and its division office could provide the resources necessary for a program of CREATE's size. Plus, CREATE included several highway component projects within FHWA's purview. FTA and FRA were given the role of cooperating agencies on passenger rail and freight rail components as deemed necessary. According to project staff, FHWA was considered to be the best-equipped federal agency to guide the comprehensive environmental review process.

IDOT is the state public agency lead for the CREATE program. In addition to agency coordination at the federal and state levels, project consultants and representatives from IDOT and FHWA met with CDOT representatives to work through design issues throughout the environmental process.

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material in "Waters of the U.S."As part of Illinois' NEPA-404 Merger process, IDOT invited several state and local agencies to participate in NEPA-404 Merger meetings. Once FHWA determined that the project would

Source: CREATE Program

Figure E-1. Map of CREATE projects.



Source: CREATE Program, compiled by Parsons Brinckerhoff

Figure E-2. Timeline of freight planning activities.

not require Section 404 permits from the U.S. Army Corps of Engineers, the meetings were used for coordination and informational purposes among the participants. Two additional meetings were held in 2011 and 2012 for coordination and information sharing purposes. The federal, state, and local agencies invited are listed in Table E-2.

NEPA Process/Approach

The environmental review process for the CREATE program is challenging due to the large number of projects and stakeholders involved. To meet this challenge and create a strategy that worked best for the CREATE program, the FHWA Illinois Division Office, IDOT, and CDOT created the Systematic, Project Expediting, Environmental Decision-making (SPEED) Strategy to guide the CREATE program's environmental review process. The objectives of the SPEED Strategy are to:

- Support systematic decision-making;
- Provide an expeditious method for moving low-risk project components forward; and
- Assess potential environmental impacts according to their degree of severity of impact.

The SPEED Strategy is rooted in the CREATE Program Feasibility Plan, which outlines the program needs, component projects, and partners' goals and responsibilities. The first step in the SPEED Strategy is preliminary screening of projects, which identifies each project's intent, description, and project limits. The screening process for each project includes a test of NEPA principles:

- Logical termini—The project has rational end points for transportation improvements and rational end points for environmental impact review;
- Independent utility—The project is usable and a reasonable expenditure if no additional transportation improvements in the area are made; and
- Restriction of alternatives—The project does not constrain other potential transportation improvements in the project area.

These tests are important for ensuring reasonableness in the separation and linking of component projects that are located close together.

The next step in the SPEED Strategy is to identify the level of environmental review for all linked and component projects through the Environmental Class of Action Determina-

Table E-2. Agencies formally invited to NEPA-404 merger meetings.

Federal Agencies	State Agencies
U.S. Army Corps of Engineers	Illinois Historic Preservation Agency
U.S. Fish and Wildlife Service	IDNR
EPA	Illinois Department of Agriculture – Bureau of Land & Water Resources
	Illinois Environmental Protection Agency

tion (ECAD) process. The process allows FHWA to determine whether a project will be a Categorical Exclusion (CE), EA, or EIS.

The SPEED Strategy is illustrated in Figure E-3.

At the time of this research three projects—the 75th CIP (P2/3), Grand Crossing Rail Project (P4), and Englewood Flyover (P1)—are expected to require an EA or EIS, with the remaining projects categorized as CEs.

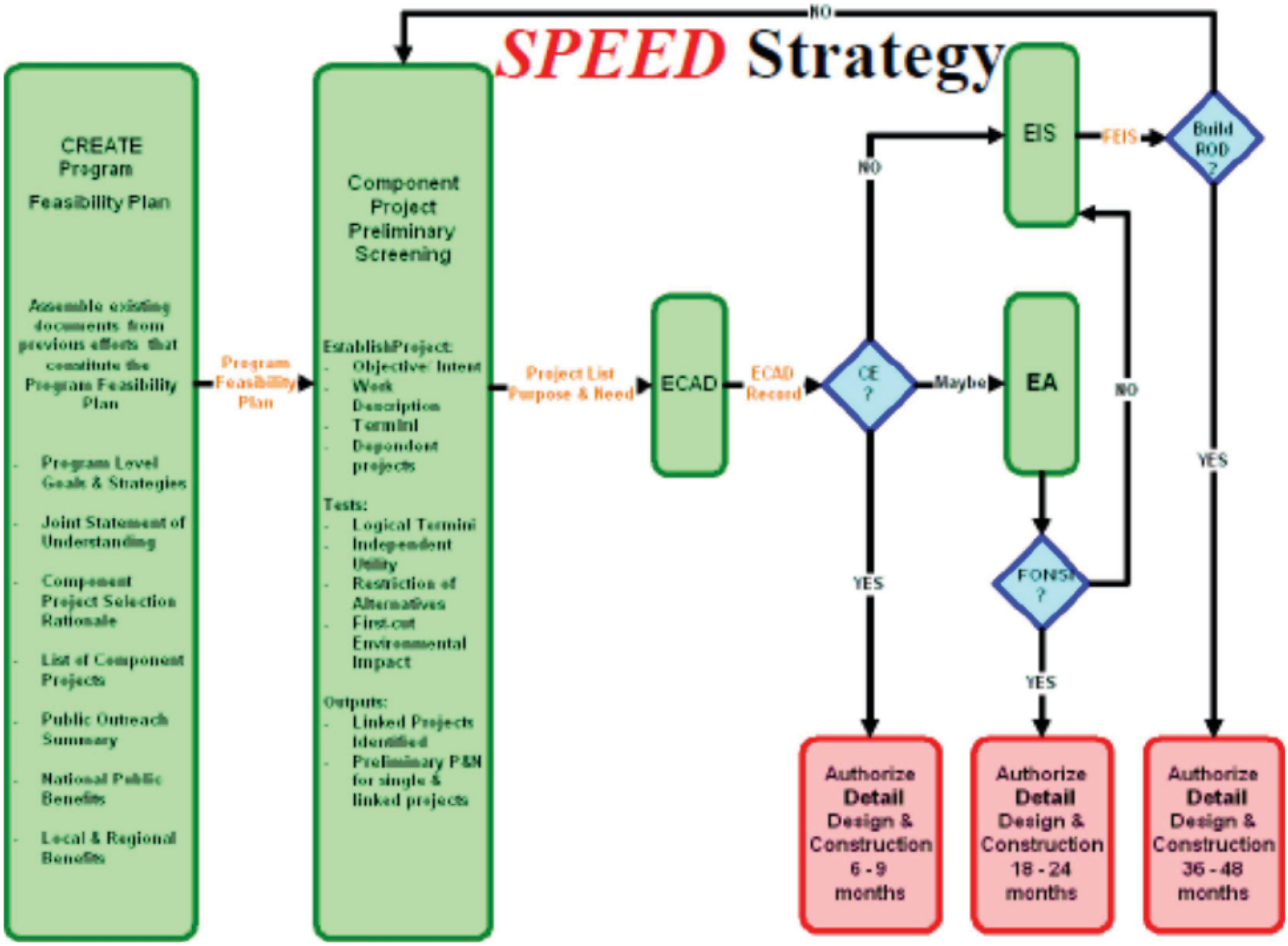
Agency Requirements Applied to NEPA

The FHWA and FTA NEPA requirements are detailed in 23 CFR Part 771, "Environmental Impact and Related Procedures." The regulation states,

> . . . when both the FHWA and FTA are involved in the development of a project, or when the FHWA or FTA acts as a joint lead agency with another federal agency, a mutually acceptable process [for coordinating on NEPA] will be established on a case-by-case basis.

FRA's NEPA guidance is provided in 45 FR 40854, with minor updates published in 1999 in 64 FR 28545. FRA guidance provides 20 examples of project scenarios that are classified as CEs, developed over years of encountering similar projects. FHWA and FTA have their own lists of CEs which are similar to, but not the same as, the FRA list. In 2009, FRA noted that it was working with the Council on Environmental Quality (CEQ) to update its list of CEs, but that the process was not completed. In December 2013, a report published by the Office of the Inspector General analyzed coordination efforts on NEPA among FHWA, FTA, and FRA for multimodal projects. It found that FRA's guidance is outdated, but that there are no differences among the agencies that hinder their coordination on projects.

The American Recovery and Reinvestment Act of 2009 (ARRA) allocated $8 billion to fund future high-speed rail projects, under the purview of FRA. Following ARRA, FRA released the High-Speed Rail Strategic Plan and Notice of



Source: CREATE Program

Figure E-3. SPEED strategy workflow.

Funding Availability (NOFA) for Fiscal Year 2009 ARRA funds, which formally established the High-Speed Intercity Passenger Rail Program (HSIPR Program). U.S. DOT released two additional NOFAs, in Fiscal Year 2010 and Fiscal Year 2011, allocating a total of $10 billion to the HSIPR Program. The NOFA that established the HSIPR Program announced FRA's responsibility as sponsoring agency of the HSIPR Program to "[assure] NEPA compliance while accomplishing the purposes, priorities, and requirements of the HSIPR Program."

The HSIPR Program also augmented FRA's resources and its ability to oversee the development of rail projects. FRA expanded its role in regional rail planning and the NEPA process to include an increased responsibility for coordinating projects like the Grand Crossing Rail Project (P4), the Englewood Flyover (P1), and the 75th CIP (P2/3) with other current and potential FRA investments in the region.

Impact of These Requirements

While the NEPA requirements of the federal lead and cooperating agencies were aligned, each agency had its own modal interests which affected the focus of its environmental reviews. FHWA focused on how construction of the facility and general operations would affect the environment. An additional focus for FRA was on how projects will affect existing and future rail operations.

These differences in focus and the introduction of the HSIPR Program added a new set of issues for consideration in NEPA review. The lack of a general formalized coordination process between FHWA, FTA, and FRA, coupled with outdated FRA guidance (as highlighted by the Office of Inspector General Report), left the onus on the lead and cooperating agencies to coordinate NEPA interests on a case-by-case basis.

The impact of the new HSIPR Program was felt by the team during the EIS process for the Grand Crossing Rail (P4) project. The expanded role of FRA led to a realization that environmental review as led by FHWA did not account for all of the operational rail issues considered significant by FRA, in part because FHWA lacked the technical familiarity to identify and analyze the underlying operational impacts. Thorough analysis of these issues is a priority for FRA who may fund a significant portion of the project. The reconsideration of the environmental impact through the lens of FRA operational concerns has delayed the EIS progress on the Grand Crossing Rail (P4) project.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: The development of the intercity passenger rail program, growth of FRA resources, and expansion of FRA's role in regional planning had a tangible effect on the Grand Rail Crossing project. These developments did not introduce NEPA requirements that were not already there, but they enhanced FRA's resources and capacity to highlight agency-specific perspectives and request new analyses deemed to be necessary for the agency to give environmental approval. For the Grand Crossing Rail (P4) project, FRA's interest in addressing rail operational issues in the NEPA process affected the scope, cost, and approach to satisfy NEPA.

Differing Agency Interpretations of NEPA Requirements: The different perspectives of FHWA and FRA reflected differing programmatic interests and expertise rather than differing interpretations of NEPA.

Anticipating Which Agencies Will Have a Major Federal Action: From the beginning of the CREATE program, it was understood that FHWA, FRA, and FTA might each have major actions to take in implementing the program. FHWA agreed to serve as the lead agency for NEPA, with FTA, FRA, and state agencies supporting and serving as cooperating agencies. As FRA gained more funding authority through ARRA and the intercity passenger rail program, its role in supporting the program and the NEPA process expanded.

Efficient Coordination among Agencies: The governance structure agreed upon by stakeholder parties in the Joint Statement of Understanding calls for unanimous agreement on changes to project scope, budget, and related contracts. Securing agreement increased the time needed to address issues as they arose.

Project sponsors also faced a challenge in developing collaborative partnerships with private sector rail operators. Private, for-profit companies are accustomed to competing with each other, and much of their information relevant to NEPA was considered proprietary. This included the understanding of future freight rail operations needed to establish the purpose and need, optimize planned routes and operations, and analyze project impacts. A period of adjustment was necessary to build trust and initiate collaboration. There has also been a concern that collaboration with and among the railroads might raise anti-trust issues.

The inclusion of public funds triggered government and community oversight and compliance with regulations that presented a challenge for these private sector stakeholders, who are accustomed to more rapid decision-making and project execution. All participants had to learn and understand the legally required review and compliance activities.

Securing Funding for Multimodal NEPA Studies: Funding for NEPA came from several partners. Some came from a Transportation Investment Generating Economic Recovery (TIGER) grant and American Recovery and Reinvest-

ment Act (ARRA) funding for passenger rail projects. Other sources were used as well.

Funding for planning, design, and construction has not yet been secured for all the component projects. NEPA review of the Grand Crossing Rail (P4) Project is currently on hold due to lack of sufficient funding to complete the NEPA process and move into design and construction. By the time FRA raised concerns over the project's impact on rail operations in the region, the team had used a significant portion of the allotted funding. New funding sources need to be found to complete the NEPA process to satisfy all the project stakeholders.

Strategies/Tactics Used to Overcome Challenges

One strategy used to overcome challenges in the project was the SPEED Strategy for evaluating projects. Rather than grouping all of the projects together in a tiered environmental analysis, the SPEED Strategy allows FHWA, IDOT, and cooperating agencies to evaluate the environmental impact of projects as the funding for final design and construction is secured. The strategy also allows projects with a lesser environmental impact to be completed without waiting for the analysis that is needed for projects with greater impacts. The SPEED Strategy worked well for the CREATE program, facilitating a consistent review process for each component project and making class of action decisions transparent.

Frequent coordination and communication, as well as learning over time, have ameliorated some of the challenges described above. As stakeholders have worked together, concerns and mistrust have dissipated—both between private companies that simultaneously coordinate and compete with each other and between public agencies and private partners that are working together to satisfy federal requirements.

Ongoing communication among stakeholder agencies has improved the shared understanding of project alternatives. In-person meetings were found to be the best approach for eliciting clear and effective coordination. The project team tries to meet monthly in person in addition to maintaining existing management and project-level team calls to work through pressing issues.

Lessons Learned

The following approaches helped resolve challenges in a timely manner, and prevent additional challenges given the unique scope and structure of the CREATE program.

Maintain frequent coordination with partner agencies. Monthly in-person meetings have improved communication among partner agencies and improved response and review times. Meeting in person has also fostered trusting relationships between parties who have found themselves in new relationships that require enhanced collaboration and resource sharing. This strategy was put in place to avoid repeating the delays and miscommunication experienced during the Grand Crossing Rail (P4) Project environmental review.

Begin coordination early. At the inception of the CREATE program, new communication and coordination protocols and processes had to be developed to respond to the new nature of the partnerships on the project. Starting regular coordination (quarterly management committee meetings, monthly implementation team meetings, and weekly or bi-weekly project management meetings) early in the process gave the partners time to develop trusting relationships, especially among rail partners. It also provided an opportunity for the private rail partners to learn about NEPA requirements.

Project staff acknowledge that improved communication among agencies and a better understanding of underlying needs in analyzing impact could have mitigated some of the issues faced in the Grand Crossing Rail (P4) project. Appropriate analysis of rail impact issues would have benefitted from more input and knowledge from FRA, a role they did not initially assume.

Establish a formal governance structure as a unification tool. Establishing a governance structure through the JSU in the CREATE Feasibility Plan holds partners accountable because every stakeholder is involved throughout all stages of the program, and must sign off on modifications to project scopes and budgets. The ability to present a united front on project technical decisions at public meetings has been an important benefit of and motivator for reaching consensus.

Bibliography

Federal Highway Administration and Illinois Department of Transportation. February 28, 2014. *75th Corridor Improvement Project Draft Environmental Impact Statement.*

Federal Highway Administration, Illinois Department of Transportation, Chicago Department of Transportation, and Association of American Railroads. January 2011. *Chicago Region Environmental and Transportation Efficiency Program Final Feasibility Plan (August 2005), Amendment 1.*

http://createprogram.org/about.htm. (As of March 23, 2015).

http://www.fra.dot.gov/eLib/details/L02561. (As of March 23, 2015).

http://www.fra.dot.gov/Page/P0262. (As of March 23, 2015).

APPENDIX F

Case Study—TRansportation EXpansion (T-REX) Project, Denver, Colorado

Summary

Project Description

The T-REX Project is a program of multimodal transportation improvements to Denver's I-25/I-225 Southeast Corridor, including widening and rehabilitating 17 miles of Interstate highway and constructing 19 miles of double-tracked light rail transit.

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Co-Lead
- Federal Highway Administration (FHWA)—Co-Lead

Key State and Local Agencies

- Colorado Department of Transportation (CDOT)
- Regional Transportation District (RTD)

Challenges Faced

The T-REX Project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table F-1).

Strategies, Tactics, and Lessons Learned

- Identify key federal agencies and initiate coordination efforts early.
- Implement the "One DOT" approach to promote direct collaboration between federal agencies.
- Capitalize on coordination of agencies pre-NEPA.
- Convene task forces with representation from federal, state, and local agencies for technical focus areas including air quality, noise, historic resources, and wetlands.
- Use technical memoranda as resource papers for the federal and resource agencies and project team.
- Co-locate sponsoring agencies and the consultant team; foster a strong sense of teamwork and collaboration.
- Develop a detailed critical path schedule updated weekly to schedule, facilitate, and secure critical regulatory agency sign-offs.

Case Study Detail

Introduction

The Transportation Expansion (T-REX) Project, originally known as the Southeast Corridor Multi-Modal Transportation Project, was a $1.67 billion multimodal initiative to improve travel time and enhance safety along one of Denver's most congested highway corridors. As shown in Figure F-1, major highway elements included widening I-25 from six lanes to eight or 10 lanes and widening I-225 from four lanes to six lanes, along with reconstruction of seven interchanges and numerous bridges. The transit elements added 19 miles of double-tracked light rail, connecting to the existing light rail system in Denver and extending along the west side of I-25 and the median of I-225 to Denver's southeastern suburbs. The light rail project included 13 stations, a new light rail maintenance facility, and an additional 34 light rail vehicles for the Regional Transportation District's fleet. The project also replaced the highway's existing stormwater drainage system and improved pedestrian and bicycle access.

T-REX was jointly commissioned by CDOT and RTD and was conceived and advanced through a major investment study, NEPA, design, and construction as a single integrated multimodal project. Construction of the highway elements was completed in September 2006 and the Southeast Corridor Light Rail line opened on November 17, 2006.

Lead, Cooperating, and Participating Agencies

FHWA and FTA served as joint lead agencies. FHWA formula funds and CDOT funds helped fund the NEPA process. Coordination between FHWA and FTA embodied the One DOT approach, a U.S. DOT initiative to foster collaboration

Table F-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓		✓	

across modal administrations. The roles and responsibilities of each agency during NEPA as well as subsequent phases of project development through construction were outlined in an Interagency Agreement between the FHWA Colorado Division and FTA Region VIII.

CDOT and RTD were joint sponsors of the project, with CDOT taking a stronger lead early in the process due to limited support, at the time, from the RTD Board of Directors for the transit element. CDOT funded the local share of NEPA activities as well as the federal share before the federal funds were obligated. CDOT and RTD entered into an Intergovernmental Agreement that outlined each agency's roles and responsibilities from NEPA through construction.

The primary means of coordination among the key agencies was the project's Executive Oversight Committee, which included the CDOT executive director, the RTD general manager, the FHWA division administrator, and the FTA regional administrator. The committee established the project goals and met regularly over the course of NEPA activities and during the design-build procurement process, as well as during the implementation of the multimodal project. In addition, the project staff took advantage of CDOT, RTD, FTA, and the project's consultant team being located in the same building (with FHWA located in a nearby facility and having assigned one FHWA employee to work in the building full time), conducting regular working sessions and holding weekly project management meetings.

NEPA Process/Approach

The history of the T-REX Project dates back to 1992 when the Denver Regional Council of Governments (DRCOG) commissioned a congestion study for the region. The study concluded that the Southeast Corridor was one of the most congested corridors in the region, and expected traffic growth along I-25/I-225 would exceed capacity by 15 percent by 2015. The study recommended that a package of capital improvements be considered for the corridor, including I-25/I-225 widening, high-occupancy vehicle lanes, and rapid transit.

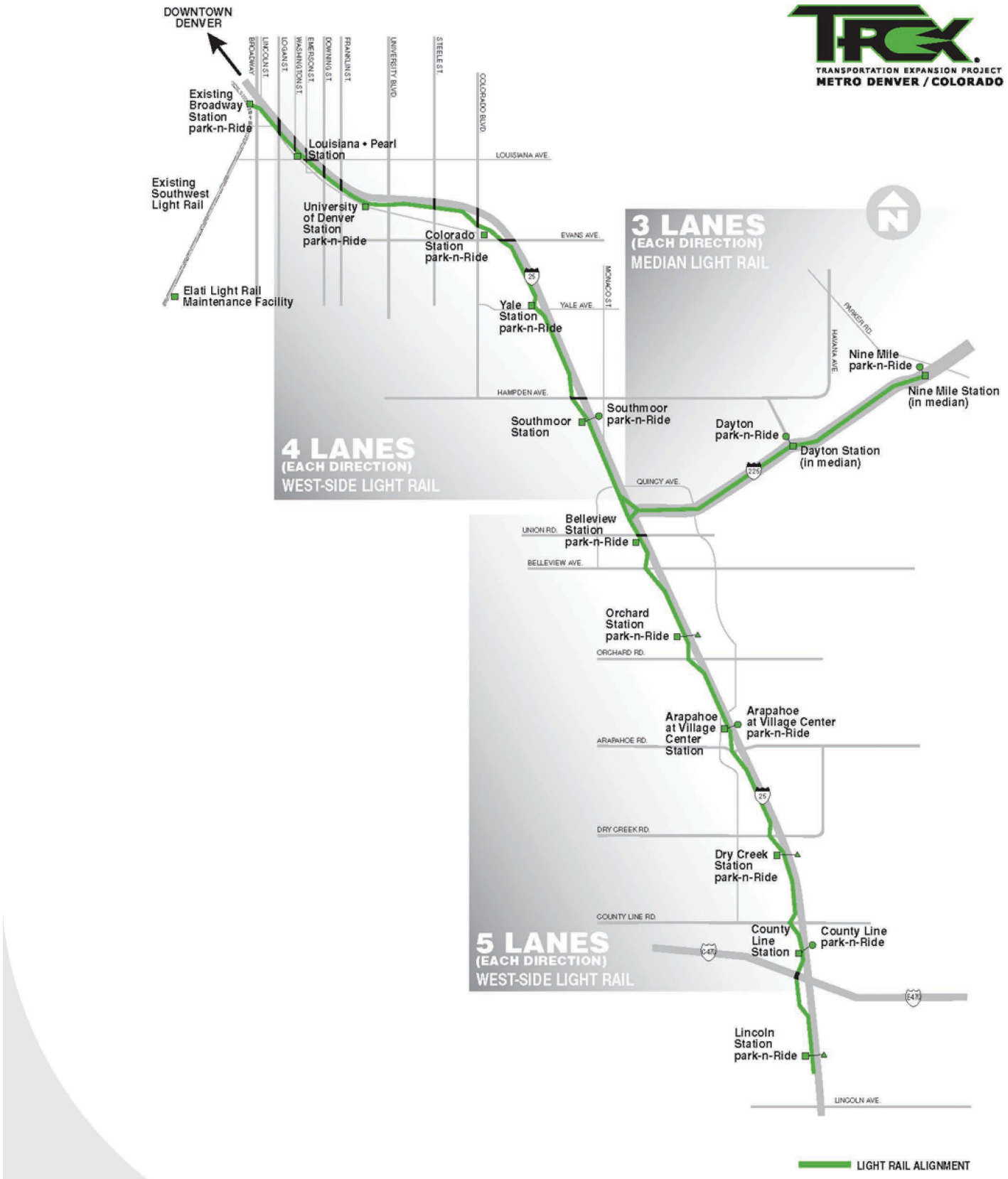
In 1995, CDOT, RTD, and DRCOG commissioned the Southeast Corridor Major Investment Study (MIS) to examine the entire length of the corridor, including I-25 from Broadway in the north to Lincoln Avenue in the south, and the spur of I-225, from the I-25 interchange to Parker Road in Aurora. The study, led by CDOT and completed in 1997, evaluated and narrowed the range of alternatives for the corridor. The MIS recommended:

- Adding highway lanes to I-25 and I-225, reconfiguring several interchanges, replacing 13 bridges and repairing nine others, replacing drainage systems, and widening shoulder space along the highway;
- Constructing 19.7 miles of new double-track light rail, including 15.2 miles from the Broadway station on the existing RTD light rail line to a new station at Lincoln Avenue in Douglas County, and 4.5 miles along I-225 from Parker Road to a new I-25/I-225 interchange;
- Developing 13 new light rail stations;
- Improving pedestrian and bicycle facilities; and
- Implementing transportation system management elements.

In 1997, DRCOG adopted these recommendations.

FHWA, FTA, CDOT, and RTD had collaborated to complete the MIS prior to initiating NEPA activities. A major challenge was negotiating the location of the light rail alignment. The rail line was proposed to operate along the western edge of I-25. FHWA desired to shift the light rail transit alignment from the outer edge of the shoulder to the western edge of the right-of-way to preserve as much right-of-way as possible for highway uses. Following discussions among FHWA, FTA, CDOT, and RTD, the recommendation from the MIS was refined to reflect the alignment shift before the Environmental Impact Statement (EIS) was initiated.

The Notice of Intent was issued in February 1998. All of the alternatives analyzed had been identified in the MIS; the team reviewed them to determine whether there were any changed conditions that might alter findings. CDOT, RTD, FTA, and FHWA continued to work in a highly cooperative and collaborative manner. Weekly coordination meetings were held with managers and staff from FHWA's division office and FTA's regional office, as well as from CDOT, RTD, and the consultant team. FHWA and FTA partnered to help advance the Southeast Corridor project in a timely manner. Although both agencies had already been working cooperatively from the project outset, they formalized their partnership with a project-specific Interagency Agreement signed October 7, 1999.



Source: CDOT and RTD

Figure F-1. T-REX Project map.

This collaborative spirit extended to the physical location of the project team, as team members from CDOT, RTD, FTA, the NEPA consultant, and its subconsultants were co-located in the same office building. FHWA offices were located in a nearby building. The team capitalized on the co-location, which allowed for spontaneous working sessions and immediate internal reviews of EIS sections.

The Draft Environmental Impact Statement (DEIS) for the project was approved in August 1999. The Preferred Alternative presented several environmental issues, including residential and business displacements, adverse impacts to historic sites, an increase in noise levels, and loss of wetlands. CDOT organized task force groups for the various issue areas to give relevant agencies the opportunity to directly address project issues and review analyses and sections of the EIS as they were prepared. In addition to CDOT, RTD, FHWA, and FTA, DRCOG, the Colorado Department of Public Health and Environment (Air Pollution Control Division and Water Quality Control Division), the Colorado State Historic Preservation Office, the Colorado Division of Wildlife, the U.S. Army Corps of Engineers, the U.S. Fish & Wildlife Service, and the U.S. Environmental Protection Agency were also involved in the task force groups.

With the initiation of the EIS process, the question of how to pay for the T-REX Project became an issue for public consideration and debate. On November 2, 1999, voters approved two separate bond initiatives that allowed funding for the project and endorsed the concept of light rail along the corridor. Approval of the bond initiative meant that CDOT and RTD could proceed with the project without having to divert funds earmarked for other projects. It also meant that the project could move forward as a whole, realizing the benefits of the full project sooner, instead of being designed and built in segments.

The Final Environmental Impact Statement (FEIS) was approved in December 1999, with a joint FHWA and FTA Record of Decision signed in March 2000, just 25 months after the Notice of Intent. In addition to the light rail improvements, significant highway expansion elements were added to the original MIS recommendations. In November 2000, RTD also received a Full Funding Grant Agreement (FFGA) for $525 million from the FTA. Local municipalities contributed more than $350 million to help ensure federal financial support for the light rail construction.

In anticipation of the selection of the design-build contractor—and to signify the beginning of construction and facilitate clear public communications during construction—the Southeast Corridor Multi-Modal Transportation Project underwent a re-branding, changing its name to the Transportation Expansion Project, or T-REX Project. In May 2001, a team was selected to design and build the $1.67 billion multimodal project. Due to the innovative funding and design-build approach, the schedule and cost savings were significant, and the project was completed in the fall of 2006, almost two years ahead of the schedule established by CDOT and RTD.

Agency Requirements Applied to NEPA

The NEPA process for the joint highway and transit project was conducted in accordance with the FHWA/FTA joint NEPA regulations in 23 CFR Part 771, "Environmental Impacts and Related Procedures." FTA overlaid New Starts program requirements on the NEPA process, but this did not impede the NEPA schedule.

The joint FTA and FHWA NEPA regulations did not significantly conflict. The two agencies used their Interagency Agreement to detail how each agency's specific regulations would be addressed.

FTA's specific requirements were as follows:

- Analysis of vibration from transit vehicles.
- Use of FTA noise abatement threshold criteria for the analysis of noise impacts around stations and other locations where the highway and light rail alignments are not adjacent to one another.
- Inclusion of a separate Transportation Impact chapter, separate Financial Analysis chapter, and section in the Impacts chapter on Public Safety and Security.
- Analysis of ridership on opening day and for a horizon year (2020) for some project elements.

Many of the above provisions allowed for the evaluation of New Starts criteria during selection and refinement of alternatives.

FHWA's specific requirements were:

- Use of FHWA noise abatement threshold criteria for the analysis of noise impacts where the highway and light rail alignments are adjacent to one another.
- Inclusion of a rigorous discussion of alternatives and commitment to mitigation in the Wetlands section. In the appendix, there will be a separate "Wetland Finding."
- Coordination with the Colorado Division of Wildlife in compliance with Colorado Senate Bill 40, which protects stream corridors and riparian vegetation.
- Drafting and review of a separate Air Quality Technical Report, with a sign-off letter from the Colorado Air Quality Control Commission, Air Pollution Control Division.

The agreement also outlined the process of legal sufficiency review—FTA would determine legal sufficiency after consultation with FHWA's legal counsel. It also noted that FHWA letterhead would be used to transmit environmental documents to all applicable federal agencies, with signatures of both FHWA and FTA representatives.

Impact of These Requirements

The T-REX environmental process was completed in only two years. A number of factors contributed to this expedited timeline, including strong political and public support for the high-profile project, ability to capitalize on the work completed for the MIS, and the collaborative approach undertaken by the key agencies. Significantly, while FTA and FHWA had agency-specific requirements, the Interagency Agreement reconciled the differing approaches and united all parties with respect to approach and methodologies. An example is in the evaluation of noise impacts. Not only was noise a major issue of concern for residential communities adjacent to the project, it also is one of the technical areas under which FHWA and FTA prescribe different methodologies for assessing impacts. As discussed previously, the FTA approach was used when rail and highway were not adjacent to each other, and the FHWA approach was used when they were adjacent.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements Under the NEPA Umbrella: FTA's program requirements were folded into the NEPA process, including unique New Starts analysis requirements and procedures. FTA's requirements were outlined in the Interagency Agreement (along with FHWA's requirements).

Differing Agency Interpretations of NEPA Requirements: FHWA and FTA have different methodologies for measuring impacts under specific categories such as noise and vibration. FHWA and FTA reconciled differences in the Interagency Agreement. In cases where more focused input was required, CDOT convened task forces—including for air quality, noise, historic resources, and wetlands—and the consultant prepared a series of technical memoranda as a resource for all agencies involved.

Anticipating Which Agencies Will Have a Major Federal Action: From the start of the NEPA process, it was clear that the planned highway and transit elements of the project would require the involvement of both FHWA and FTA. FHWA and FTA had been engaged during the MIS, so they were able to anticipate where their input would be especially critical.

Efficient Coordination among Agencies: Formal coordination among the agencies was accomplished through the project's Executive Oversight Committee. In addition, the project staff took advantage of the co-location of CDOT, RTD, FTA, and the project's consultant team, with FHWA located nearby. Team members conducted regular working sessions and held weekly project management meetings.

Securing Funding for Multimodal NEPA Studies: The roughly $18 million NEPA effort was funded through a combination of federal and state funds. Interviewees did not identify particular challenges related to securing the funds.

Strategies/Tactics Used to Overcome Challenges

The FTA and FHWA Interagency Agreement and the CDOT and RTD Intergovernmental Agreement were the primary tools used to anticipate and address challenges that could have arisen during NEPA due to having multiple U.S. DOT agencies involved in the project. In addition, the project built upon early involvement of the federal agencies during the MIS phase. Further, between completion of the MIS in July 1997 and initiation of the NEPA process in February 1998, team members addressed issues that could have led to a major delay during NEPA activities. Chief among these was modifying the location of the proposed light rail alignment.

CDOT organized task force groups for the various issue areas, including air quality, noise, historic resources, and wetlands. The purpose of the task force groups was to give relevant agencies the opportunity to directly address project issues and review analyses and sections of the EIS as they were prepared. The task forces' work on reviewing their EIS sections and analyses resulted in substantial time savings to the project. One specific and important achievement of this effort was the air quality task force's completion of the project's air quality conformity analysis in one month.

The consultant team also prepared a series of technical memoranda on each of the project issues to be covered in the EIS, which served as resource papers for the federal and resource agencies and project team.

Having CDOT, RTD, FTA, and the consultant team under one roof, with FHWA nearby, allowed for a level of interaction not often achieved during typical NEPA processes. FHWA assigned one person to work in the building full time. Project team meetings did not require lengthy advance notice for scheduling, and spontaneous working sessions became the norm. This eliminated delivery times for documents and materials, resulting in critical time savings for preparing analyses and completing reviews.

The project team also developed a detailed critical path schedule that was updated weekly. This was used to schedule, facilitate, and secure critical regulatory agency sign-offs such as air quality conformity, Section 106 MOA sign-offs, and

Section 404 permitting. The team made weekly adjustments to critical tasks to make sure the project stayed on schedule.

Lessons Learned

Identify key federal agencies and initiate coordination effort early. CDOT and RTD used the MIS process as an opportunity to build momentum among the key agencies (CDOT, RTD, FTA, and FHWA) for the NEPA process. Prior to entering NEPA, all of the agencies were familiar with the remaining alternatives and had anticipated and begun to address many of the issues that could have been a major source of delay. This also contributed to streamlining the NEPA process.

Implement the "One DOT" approach to promote direct collaboration between federal agencies. Having FTA and FHWA operate as "One DOT" and establish an Interagency Agreement early in the NEPA phase streamlined the overall NEPA process. The two agencies identified areas where their NEPA requirements differed and documented a recommended approach to reconciling them in the Interagency Agreement. Staff from both agencies were clear on their roles and responsibilities throughout NEPA, saving time and resources. The One DOT approach was applied through construction and garnered the FHWA Colorado Division and FTA Region VIII a special award in recognition of their efforts.

Foster a strong sense of teamwork and collaboration across all agencies at all levels. The core team for T-REX operated in a highly collaborative environment that was the result of early coordination beginning with the MIS, the agreements signed between CDOT and RTD and between FTA and FHWA, and physically locating the personnel in geographic proximity. The staff exchanged critical information on a daily basis, in between formal executive leadership and project management meetings, and enforced consistent procedures within and between these agencies. Staff across agencies worked together closely, and informal reviews and discussions eliminated common sources of delay for NEPA projects.

Bibliography

Colorado Department of Transportation. July 1997. Southeast Corridor Major Investment Study Final Report.

Colorado Department of Transportation and Regional Transportation District. 2006. *T-REX Project Fact Book, 1999–2006.*

Colorado Department of Transportation and Regional Transportation District. September 1999. "Intergovernmental Agreement, Southeast Corridor Intermodal Transportation Project."

Federal Transit Administration and Federal Highway Administration. October 1999. "Interagency Agreement for the Southeast Corridor Project."

http://environment.fhwa.dot.gov/strmlng/casestudies/co.asp. (As of June 20, 2014).

APPENDIX G

Case Study—I-70 East Corridor Project, Denver and Aurora Counties, Colorado

Summary

Project Description

The I-70 East Corridor Project comprises a set of transit and highway improvements along the I-70 corridor east of Denver. The transit element was a 22.8-mile commuter rail transit line between Denver Union Station and Denver International Airport. The highway element is a proposed widening and possible realignment of the existing I-70 between I-25 on the west and Tower Road on the east.

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Lead for transit elements, cooperating for highway elements
- Federal Highway Administration (FHWA)—Lead for highway elements, cooperating for transit elements
- Federal Aviation Administration (FAA)—Cooperating
- Federal Railroad Administration (FRA)—Cooperating
- U.S. Army Corps of Engineers (USACE)—Cooperating

Key State and Local Agencies

- Colorado Department of Transportation (CDOT)
- Regional Transportation District (RTD)
- City and County of Denver
- City of Aurora
- Adams County

Challenges Faced

The I-70 East Corridor Project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table G-1).

Strategies, Tactics, and Lessons Learned

- Adapt environmental guidance already developed for a nearby project to help address issues related to differing NEPA requirements.
- Establish an Intergovernmental Coordination and Compliance Committee to provide technical guidance and support.
- Establish several Technical/Issues Working Groups to provide focused input in distinct areas, including reconciling differences between FHWA- and FTA-specific requirements.
- Define study methodology and clearly identify roles and responsibilities early in the process.
- Recognize that the best course of action may be to split a merged multimodal NEPA process into separate coordinated processes, even if NEPA activities have already begun.
- Conduct a pre-scoping study to identify and vet potential issues associated with conducting a single NEPA process for multimodal NEPA projects.

Case Study Detail

Introduction

The I-70 East Corridor Project was conceived as a single project combining highway and transit elements designed to improve safety, access, and mobility, while addressing congestion on the I-70 corridor. The project consisted of highway improvements along I-70 between I-25 and Peña Boulevard (the corridor was later extended east to Tower Road) and potential rapid transit options from Downtown Denver to Denver International Airport (DIA). The study area is depicted in Figure G-1. In July 2003, the NEPA action for the project was initiated as a single, joint EIS, but by June 2006, the highway and transit elements of the I-70 East Corridor were separated into two independent projects with distinct NEPA processes.

Table G-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓		✓	

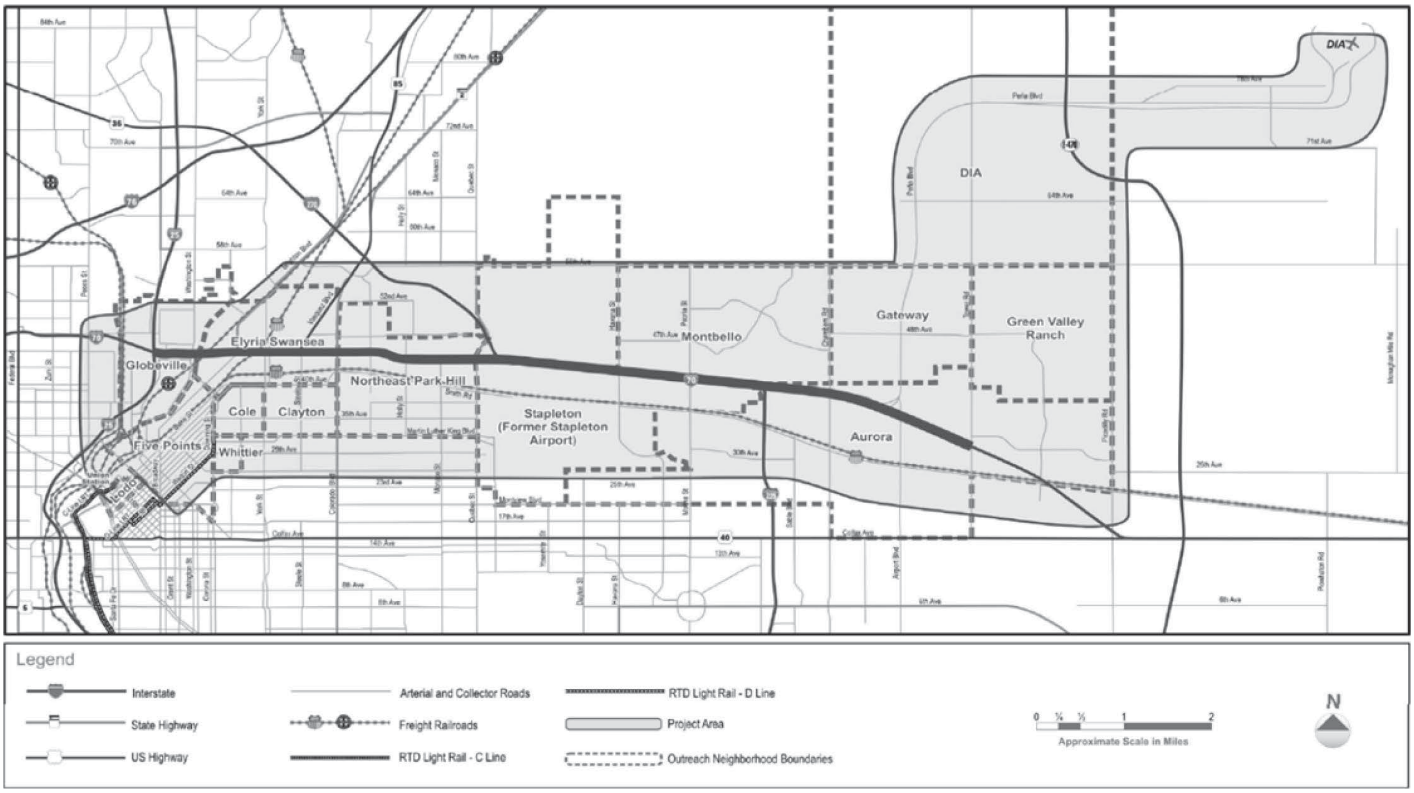
The I-70 East EIS focused on highway improvements and was sponsored by CDOT. The East Corridor EIS focused on transit improvements and was sponsored by RTD.

The East Rail Line, a 22.8-mile electric commuter rail line between Denver Union Station (DUS) and DIA, emerged as the preferred alternative for the transit element. The project is shown Figure G-2. FTA issued a Record of Decision (ROD) for the project in November 2009. Construction began in August 2010 as part of the larger Eagle P3 Project, a public-private partnership constructing a total of 36 miles of new commuter rail and a commuter rail maintenance facility, with the line scheduled to open in 2016.

The preliminary preferred alternative for the highway element was identified in May 2012. The alternative adds lanes in each direction between I-25 and Tower Road, removes an existing viaduct between Brighton Boulevard and Colorado Boulevard, rebuilds I-70 along this segment below grade on the existing alignment, and places a cover on the highway between Columbine Street and Clayton Street next to Swansea Elementary School. The preferred alternative, shown in Figure G-3, was identified in supplemental environmental work subsequent to the issuance of the Draft Environmental Impact Statement (DEIS) for the highway element. The Supplemental DEIS was released for public comment from August 29, 2014 through October 31, 2014.

Lead, Cooperating, and Participating Agencies

For the I-70 East Corridor EIS process, which included both highway and transit elements, FTA and FHWA initially served as joint lead agencies. After the project was split into



Source: CDOT and RTD

Figure G-1. I-70 East Corridor EIS study area.

Source: RTD FasTracks

Figure G-2. Preferred alternative for the East Rail Line.

Source: CDOT

Figure G-3. Preferred alternative for I-70 East.

two separate but coordinated NEPA processes, FHWA served as lead agency for the highway project (I-70 East EIS) and FTA served as the lead agency for the transit project (East Corridor EIS). Each agency continued its participation in the other modal project as a cooperating agency.

For the East Corridor EIS, the FAA also served as a cooperating agency, as the proposed rail alignment was situated near a Runway Protection Zone (RPZ) at DIA. An RPZ is a two-dimensional trapezoidal area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground. While it is preferred to keep this area clear of all objects, certain uses are permissible. FAA maintains strict guidelines and has strict requirements for protecting RPZs from being encroached upon by land uses not expressly permitted. The FRA also served as a cooperating agency, as the alignment would be located largely within an existing freight rail corridor. The USACE served as a cooperating agency for both the transit and highway projects, as the alternatives presented impacts to wetlands within the study area.

Among the local agencies, the I-70 East Corridor EIS was initially launched as a joint effort of CDOT, RTD, and the City and County of Denver, which owns and operates DIA. CDOT and RTD funded the project, with RTD contributing funding on behalf of the City of Denver. All of the agencies maintained involvement in the separate highway and transit projects, with CDOT sponsoring the I-70 East Project and RTD sponsoring the East Corridor Project.

Coordination for the I-70 East Corridor EIS was conducted largely through an Executive Oversight Committee, comprised of agency leadership for the primary federal, state, and local entities involved in the project. After the split, CDOT interfaced with FHWA directly and RTD interfaced with FTA directly. FHWA and FTA coordinated with one another directly—the two regional offices are located in the same building, which facilitated communication. RTD also interfaced directly with FRA, but allowed most coordination with FAA to be conducted through DIA as the airport was familiar with FAA's related procedures and requirements.

NEPA Process/Approach

The I-70 East Corridor Project dates back to Denver Regional Council of Government's (DRCOG) *2015 Interim Regional Transportation Plan*, published in 1993, which designated the East Corridor, defined as the area between downtown Denver and DIA, as a Major Transportation Investment Study corridor. In July 1997, DRCOG completed a major investment study (MIS) for the East Corridor that identified 23 miles of commuter rail transit between DUS and DIA, an extension of the Central Corridor Light Rail one mile north to intersect with the proposed commuter rail, widening I-70 to five lanes, and transportation management elements.

I-70 East Corridor EIS

Six years later, in July 2003, CDOT, RTD, the City and County of Denver, FTA, and FHWA initiated an EIS for the commuter rail and highway elements that emerged from the MIS. The stated purpose of the I-70 East Corridor EIS was to improve transportation along the I-70 highway corridor from I-25 to Tower Road and to explore potential rapid transit options from Downtown Denver to Denver International Airport. The process was modeled after the successful Transportation Expansion (T-REX) Project which simultaneously rehabilitated I-25 and I-225 and constructed a 19-mile light rail transit extension within the highway envelope in southeast Denver (see Appendix F).

FHWA and FTA served as joint lead agencies for NEPA. Coordination with CDOT, RTD, and the City and County of Denver was primarily conducted through an Executive Oversight Committee, which met regularly and included representatives from the key agencies. Given experience on projects such as T-REX and U.S. 36, a joint highway-transit project between Downtown Denver and Boulder, the project team anticipated and proactively worked to address potential challenges related to differing NEPA requirements between FHWA and FTA. The project sponsors adapted the *Environmental Policies and Procedures Manual* developed for the U.S. 36 project to help address issues related to differing NEPA requirements for the I-70 East Corridor EIS. In addition, an Intergovernmental Coordination and Compliance Committee (ICCC) was established, tasked with providing technical guidance and support related to members' agencies, regulations, and areas of expertise. Participants included FTA, FHWA, CDOT, RTD, the City and County of Denver, FAA, DRCOG, DIA, the U.S. Environmental Protection Agency, and the consultants for the NEPA process. The ICCC also provided a forum for staff to work toward balancing potentially conflicting needs from a corridor-wide perspective, provide technical review of the various project processes and deliverables, and assist in developing and screening project alternatives. The project sponsors also established several Technical/Issues Working Groups to provide focused input in distinct areas. An early task of these working groups was to draft memos that would direct the technical analyses of the project, specifically as related to such areas as environmental justice and air quality, where federal U.S. DOT agency requirements differed.

As NEPA work for the combined highway and transit project progressed, two issues between the highway and transit elements of the project emerged. First, evaluation of project alternatives revealed that the highway and rail elements did not need to be co-located within the I-70 right-of-way. The

two elements would effectively serve two different travel markets, and it was determined to be more logical for the transit alignment to follow the existing rail corridor rather than I-70, mainly due to right-of-way issues and economic development interests. Second, in 2004, the local funding match for the transit element of the project was secured when Denver-area voters approved a 0.4 percent regionwide sales tax increase to fund the $4.7 billion FasTracks regional transit initiative. With the local match for the transit element secured, advancing the rail project became a priority for RTD. Funding for the highway element remained uncertain, and advancement was less urgent.

In June 2006, three years into the combined NEPA process, the NEPA process for the highway and transit elements was split into two parallel processes. Separating the two projects did take some time. CDOT and RTD had to work with FHWA and FTA to document that the projects had independent utility. This was accomplished primarily through a series of large workshops. There was substantial work involved in ensuring that all agencies and stakeholders were notified of the action and the reason for separating the modal elements. The purpose and need statement and other early NEPA technical reports—originally written to be multimodal—had to be dissected to create separate purpose and need statements and reports. The resulting NEPA work for the highway element—the I-70 East EIS—focused on identifying highway improvements along I-70 between I-25 and Tower Road that would improve safety, access, and mobility and address congestion. The transit study—the East Corridor EIS—focused on transit improvements between downtown Denver and DIA. The consultant that originally supported the joint EIS continued work under two separate contracts—one with CDOT for the highway element and the other with RTD for the transit element.

East Corridor EIS (Transit Element)

For the East Corridor EIS, FTA served as the lead agency, with FHWA, FAA, and FRA serving as cooperating agencies. RTD and the City and County of Denver were the primary local agencies, with ongoing coordination with CDOT. FTA and RTD released the East Corridor DEIS for public comment on January 30, 2009. FTA and RTD released the East Corridor Final Environmental Impact Statement (FEIS) on September 4, 2009, for a 30-day review period ending on October 7, 2009. The ROD for the project was signed on November 6, 2009. The preferred alternative consisted of a 23-mile, electric multiple-unit commuter rail train and track system between DUS and DIA, using a combination of Union Pacific Railroad right-of-way, private property, and shared City and County of Denver and City of Aurora right-of-way. East Corridor trains would use a shared alignment with other planned commuter rail in the region north of DUS (Gold Line, North Metro, and the Northwest Commuter Rail Corridor) to the planned Commuter Rail Maintenance Facility (CRMF). Because it is a required supporting component of the Preferred Alternative, the CRMF was included in the project. A Supplemental Environmental Assessment to support the Gold Line and East Corridor DEIS documents was prepared for the CRMF and was incorporated into the East Corridor ROD by reference.

Key to the success of the project was efficient coordination among the U.S. DOT agencies. FTA served as the lead agency and none of the cooperating agencies had major federal actions. The involvement of the cooperating agencies in the project was due to their interest in one or more components. FRA had jurisdiction over the rail corridor and FAA was interested in ensuring that the project alignment remained clear of the RPZ. FRA requirements for shared use of freight rail corridors for commuter rail were generally anticipated due to FRA's participation in the study's working groups. However, some requirements were discovered incrementally, triggering minimal redesign of the alignment. Examples of safety requirements that caused design changes included maintaining 25 feet of separation between the centerline of freight rail track and commuter tracks and construction of "corridor protection walls" in certain areas where the separation threshold was not achieved. A particularly helpful FRA provision for the project was the "horn rule" that allowed the use of Quiet Zones for noise mitigation. DIA handled all coordination with FAA. The project also adapted the U.S. 36 Environmental Procedures Manual and continued the working groups established under the joint project.

I-70 East EIS (Highway Element)

FHWA served as the lead agency for the I-70 East EIS, with FTA serving as a cooperating agency. In November 2008, a DEIS was released. No preferred alternative was identified in the DEIS, because extensive comments from the public, stakeholders, elected officials, and public agencies indicated a lack of strong support for any of the four alternatives identified in the document. Following a subsequent process of intensive public outreach, the preferred alternative emerged in May 2012. The preferred alternative was developed based on a previously eliminated alternative that was modified and re-envisioned. The new alternative—the Partial Cover Lowered Alternative—would still widen existing I-70 but also would lower the highway through two neighborhoods and cover the below grade section for a short stretch adjacent to an elementary school. It succeeded in addressing many of the issues previously identified in the DEIS while providing an alternative that responded more closely to the concerns of the community. As of November 2014, CDOT had released the I-70 East Supplemental DEIS for public comment, and

it included detailed analysis of the new alternative while also updating the previously analyzed alternatives. The EIS process is anticipated to be completed and a ROD signed on the project in March 2016.

Agency Requirements Applied to NEPA

The NEPA process for the joint highway and transit project was conducted in accordance with the FHWA/FTA joint NEPA regulations described in 23 CFR Part 771, "Environmental Impacts and Related Procedures." In general the NEPA requirements of the two agencies did not conflict. Following the split, the FTA's procedural requirements and rating criteria for New Starts funding came into play during the NEPA process. Further, the Eagle P3 Project (which included the East Corridor commuter rail element) was accepted into FTA's Public-Private Partnership Pilot Program authorized in SAFETEA-LU, leading to concerted efforts to expedite NEPA and other preconstruction processes.

Impact of These Requirements

Although the NEPA requirements of FHWA and FTA did not conflict, there were instances where FHWA and FTA had different analytical approaches for evaluating impacts. CDOT and RTD convened working groups to work through these differences and establish the methodology for the I-70 East Corridor environmental work. For example, for environmental justice impacts, FHWA defines low-income populations using data from the U.S. Department of Housing and Urban Development, while FTA typically relies on data from the U.S. Census Bureau. However, for this project, both agencies considered alternative approaches. The project sponsors ultimately adopted the FHWA approach for the joint EIS as well as the subsequent separate EISs. The measurement and analysis of noise and vibration impacts is another area where requirements differed. In this case, however, both methodologies were followed.

An additional area of concern stemmed from the alignments of the highway and transit elements being located adjacent to environmental justice neighborhoods that had been bisected by the original construction of I-70. The EPA also had significant concerns related to health issues and mobile source air toxics (MSATs) for the I-70 East Corridor Project. Due to its experience with MSATs, FHWA led the methodology and analysis of MSATs for the I-70 East Corridor.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: Agency-specific requirements did not directly affect the environmental process during the three years when the NEPA processes were merged. RTD addressed FTA's New Starts requirements after the highway and transit projects were split into separate, coordinated processes. Notably, the FTA's unique requirements under the Public-Private Partnership Pilot Program helped expedite the NEPA process for the transit element after it was separated from the highway element.

Differing Agency Interpretations of NEPA Requirements: FHWA and FTA have different methodologies for measuring impacts under specific categories such as environmental justice, air quality, and noise. CDOT and RTD convened working groups to reconcile differences between these requirements.

Anticipating Which Agencies Will Have a Major Federal Action: From the start of the NEPA process in 2003, it was clear that the planned highway and transit elements of the East Corridor Project would require the involvement of four U.S. DOT agencies—FHWA, FTA, FAA, and FRA. This did not change as the NEPA process progressed, although splitting the process into two separate NEPA processes, each with its own set of major federal actions, was not anticipated and it took time to separate the projects.

Efficient Coordination among Agencies: Coordination among the agencies was accomplished through the Executive Office Committee and technical working groups for coordination and interpretation. FTA and FHWA coordinated directly—the two regional offices are located in the same building, which facilitated communication.

Securing Funding for Multimodal NEPA Studies: CDOT and RTD funded the project, with RTD contributing funding on behalf of the City of Denver. Interviewees did not identify particular challenges related to securing the funds.

Strategies/Tactics Used to Overcome Challenges

The project sponsors adapted the *Environmental Policies and Procedures Manual* developed for the U.S. 36 project to help address issues related to differing NEPA requirements for the I-70 East Corridor EIS.

In addition, an Intergovernmental Coordination and Compliance Committee was established, tasked with providing technical guidance and support related to members' agencies, regulations, and areas of expertise. Participants included FTA, FHWA, CDOT, RTD, the City and County of Denver, FAA, DRCOG, EPA, DIA, and the consultants for the NEPA process. ICCC coordination also helped balance potentially conflicting needs from a corridor-wide perspective, provide

technical review of the various project processes and deliverables, and assist in the development and screening of project alternatives.

The project sponsors also established several Technical/Issues Working Groups to provide focused input in distinct areas. An early task of these working groups was to draft memos that would direct the technical analyses of the project, specifically as related to such areas as environmental justice and air quality where federal U.S. DOT agency requirements differed.

Lessons Learned

Define study methodology and clearly identify roles and responsibilities early in the process. Overall the NEPA process proceeded relatively smoothly, as ample time had been spent at the outset establishing the methodology, particularly as related to reconciling differing procedural requirements of the federal agencies and identifying environmental resources and analytical methodologies. RTD stated that the coordination plan required under SAFETEA-LU Section 6002 was a helpful tool for keeping parties "on the same page," as it defined the schedule, comment period, and key decision timeframes.

Recognize that the best course of action may be to split a merged multimodal NEPA process into separate coordinated processes, even if NEPA activities have already begun. For the I-70 Corridor East project, the original intent was to model Denver's T-REX project, which successfully implemented a joint FHWA/FTA NEPA process for construction of highway improvements and a new transit line in a shared right-of-way. The T-REX model turned out to be less workable in the East Corridor for the reasons cited above. Had the transit and highway elements continued to be advanced through NEPA as one project, progress on the transit component could have been substantially delayed due to the challenges associated with selecting a preferred alternative for the highway element.

Conduct a pre-scoping study to identify and vet potential issues associated with conducting a single NEPA process for multimodal NEPA projects. Engaging key U.S. DOT agencies early would be helpful in determining whether it is advantageous to combine improvements to different modes into one project and one alignment. Such an effort could have avoided the aforementioned need to split the I-70 East Corridor Project into two distinct projects after the NEPA process had already been initiated.

Bibliography

Denver Regional Council of Governments. July 1997. *East Corridor Major Investment Study Final Report.*

Regional Transportation District of Denver. FasTracks July 2008. *Environmental Policies & Procedures, Volume I.* Section 1, "Environmental Methodology Manual Update, Revision 1."

Federal Highway Administration. November 2008. *I-70 East Draft Environmental Impact Statement and Section 4(f) Evaluation.*

Federal Transit Administration. November 2009. "Record of Decision, East Corridor Project."

APPENDIX H

Case Study—Mountain View Corridor, Salt Lake City, Utah

Summary

Project Description

Mountain View is a 38-mile north-south corridor west of Salt Lake City. The project includes a limited-access highway component and related roadway facilities, a transit component [bus rapid transit (BRT) convertible to light rail], and an emphasis on pedestrian- and transit-oriented land use.

Key U.S. DOT Agencies

- Federal Highway Administration (FHWA)—Lead
- Federal Transit Administration (FTA)—Cooperating

Key State and Local Agencies

- Utah Department of Transportation (UDOT)—Lead Sponsor
- Utah Transit Authority (UTA)—Co-sponsor

Challenges Faced

The Mountain View Corridor project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table H-1).

Strategies, Tactics, and Lessons Learned

- Use a multimodal approach to facilitate implementation.
- Understand other agencies' issues and constraints before undertaking a multi-agency process.
- Be cautious about including local interagency agreements in NEPA documents.

Case Study Detail

Introduction

UDOT and FHWA undertook a multimodal NEPA process to evaluate highway and transit options in a 38-mile corridor running north-south along the west side of the developed areas within Salt Lake County and Utah County (see Figure H-1). UTA was a co-sponsor; FTA was a cooperating agency. Participants described the process as a corridor planning effort designed to evaluate a number of highway, transit, and land use solutions within the NEPA process to determine a preferred strategy.

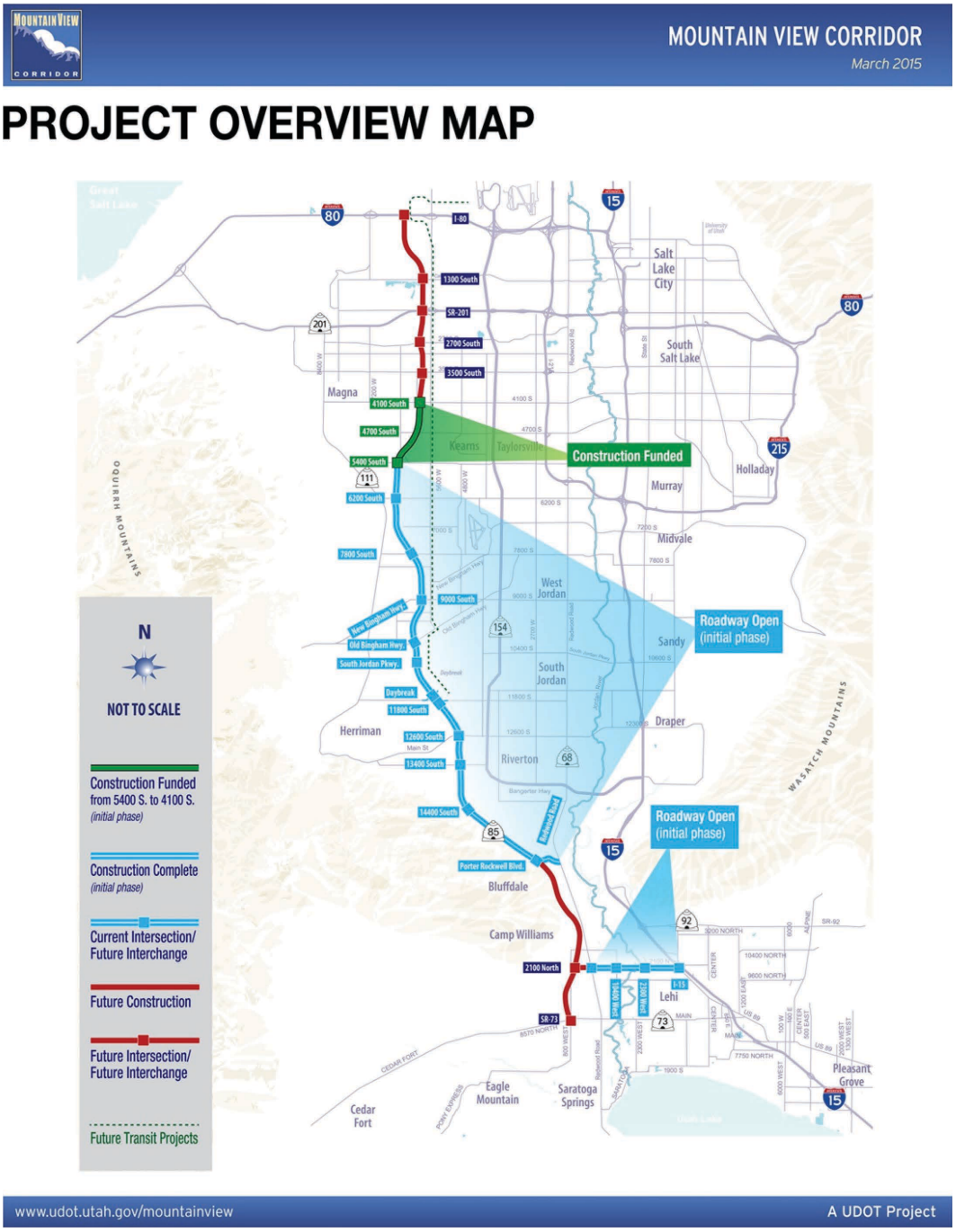
The primary project objective was to improve regional mobility—both by reducing roadway congestion and by supporting increased transit availability. Secondary objectives were to support local growth objectives, increase roadway safety, and support increased bicycle and pedestrian options.

A combined highway and transit project emerged from the NEPA process. The highway component is a new six- to eight-lane limited-access freeway connecting I-80 west of Salt Lake City to I-15 near Provo. The first phase of development for the roadway component includes right-of-way acquisition for the eventual freeway facility, construction of an arterial roadway with signalized intersections, construction of two interchanges, and construction of a trail. The transit component, in the northern portion of the corridor, is a 24-mile dedicated facility in the median of an arterial roadway parallel to the new freeway. The transit component would initially be built as BRT, with potential conversion to light rail.

The NEPA process was carried out between 2003 and 2008, producing a Draft Environmental Impact Statement (DEIS), Final Environmental Impact Statement (EIS), and Record of Decision (ROD). These NEPA documents described both the highway and transit elements and their impacts, but the federal action (location and design approval by FHWA) was limited to the highway project.

Table H-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
	✓	✓	✓	



Source: UDOT

Figure H-1. Mountain View Corridor project area.

Lead, Cooperating, and Participating Agencies

UDOT was the project sponsor, UTA was a co-sponsor, and FHWA was the lead federal agency for NEPA. Initially, FTA agreed to serve as a joint lead agency. Its status was later changed to a cooperating agency when FTA concluded that the Mountain View transit component was not a high priority project for UTA. At the time, UTA was advancing a number of other major transit investment projects through FTA's New Starts and other grant-making processes for funding. Because no FTA action on Mountain View was anticipated in the foreseeable future, FTA elected to invest its staff time and limited travel funds on more immediate projects.

Communications between the project team and FTA were routed through UTA, which had an established relationship with FTA staff in Denver. FTA staff participated in coordination calls and assisted with document reviews but were not able to participate fully in Mountain View NEPA activities.

As part of the NEPA process, UDOT requested the involvement of Envision Utah—a non-profit organization based in Salt Lake City that had been working with local jurisdictions since 1997 to link land use and transportation planning. In 2004, Envision Utah facilitated a Growth Choices Study to help local municipalities understand the relationship between land use and transportation policy choices and to facilitate agreement on a vision of future development with complementary land use and transportation policies. Participating cities in the corridor signed a Mountain View Vision Voluntary Agreement intended to guide future land use and transportation decisions. The agreement outlined a future land use concept—to be implemented by each jurisdiction—consisting of pedestrian-oriented mixed-use centers and corridors and a variety of housing types.

NEPA Process/Approach

The NEPA process for the Mountain View Corridor was undertaken shortly after UDOT had lost an environmental lawsuit over the Legacy Highway. UDOT therefore chose to take a different approach with Mountain View to reduce the risk of a legal challenge. The new approach considered highways, transit, and land use together in addressing mobility needs. Between 2003 and 2008, a DEIS, FEIS, and ROD were completed for the combined highway and transit project. The voluntary agreement on land use noted above was used in the analysis of alternatives and impacts under the NEPA process.

As a demonstration of their commitment to a multi-modal solution, UDOT and UTA entered into an Interlocal Cooperation Agreement that laid out a phased plan for implementing the program of highway and transit projects:

- UDOT will proceed with Phase 1 of the 5800 West Freeway Alternative immediately following issuance of the ROD, to the fullest extent possible given available funding.
- UTA will take all actions necessary to (1) complete Phase 1 of the 5600 West Transit Alternative and begin revenue operation by December 31, 2015, and (2) complete Phase 2 of that alternative and begin revenue operation of that phase by December 31, 2025.
- UDOT will not initiate construction of Phase 2 of the roadway until after Phase 1 of transit is in revenue operation [with certain exceptions and conditions further described in the ROD].
- UDOT will not proceed with construction of Phase 3 of the roadway until after Phase 2 of transit is in revenue operation.

Interlocal Cooperation Agreement between
the Utah Department of Transportation
and the Utah Transit Authority

FHWA signed the NEPA documents, but made it clear in the ROD that it had no approval responsibility for the transit element. If a future FTA action should occur, the ROD stated, FTA would need to decide on the appropriate level of environmental study necessary for that action. FHWA also stated that additional NEPA processing would be needed for Phase 3 of the highway project, which was anticipated to be years away from being implemented. Thus, the EIS was seen as the first in a potential series of NEPA documents for the combined highway and transit program.

The implementation phasing contained in the interlocal agreement was included in the FEIS and was made a requirement of the ROD. The land use scenario in the Mountain View Vision Voluntary Agreement was assumed for all analyses in the EIS, including the travel demand forecasts. The agreement was included in the EIS as an appendix.

In 2009, UTA applied for a TIGER grant to help fund the transit component. FTA informed UTA that it would require an Environmental Assessment (EA) for the BRT project, because the level of project definition and environmental analysis in the Mountain View EIS was not detailed enough to satisfy FTA's NEPA requirements. An EA was prepared, but the process was never completed because the transit component project was not selected for a TIGER grant.

Agency Requirements Applied to NEPA

The NEPA process was conducted in accordance with the FHWA/FTA joint NEPA regulations at 23 CFR Part 771. Approval of the ROD by FHWA constituted location and design approval for the highway. The ROD authorized UDOT to proceed with construction for Phases 1 and 2 and with right-of-way acquisition for Phase 3, but was conditioned upon compliance with the phasing schedule in the Interlocal Cooperation Agreement.

Impact of These Requirements

Differences between the FHWA and FTA approaches to planning and NEPA were an issue. At the time of the Mountain View NEPA process, federal laws governing the transit program required a corridor-level analysis of alternative modes and alignments for fixed guideway transit projects funded with New Starts grants. FTA tended to expect that local decisions on the scope of a transit project would emerge from an alternatives analysis carried out prior to NEPA. FHWA was more comfortable relying on the NEPA process to arrive at project scope decisions.

In addition, FTA was unwilling to fully engage in the process without knowing that the transit project was a UTA priority, and how the project would be funded (i.e., FTA wanted to know what federal action it would be expected to take). FHWA, however, was prepared to work with UDOT and its partners to clear the highway project through NEPA so that environmental approvals would be in place when construction funding became available.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: FTA's unique requirements for New Starts projects were not directly addressed, since UTA did not identify New Starts as its intended funding source. However, since the transit element of the Mountain View study was to be a fixed guideway project, FTA tended to view the project through the lens of its New Starts requirements.

Differing Agency Interpretations of NEPA Requirements: FHWA, as the lead agency, was willing to participate in a corridor planning study and incorporate the corridor planning results into a NEPA document before funding was identified. FTA saw the Mountain View study as more of a planning exercise. Without a clear sense that the transit component would be using FTA funds, FTA did not anticipate that it would be called upon for a major federal action triggering NEPA.

Anticipating Which Agencies Will Have a Major Federal Action: FTA agreed to be named as a cooperating agency, but declined to play an active role because it did not anticipate having a major federal action. It directed its staff resources to projects that were UTA's priorities for implementation. FHWA's ROD states that subsequent NEPA processing would be required before any federal action could be taken on the transit component.

Efficient Coordination Among Agencies: FTA was reluctant to fully engage in the process because the transit project was not a UTA priority and the FTA's federal action was unclear. With the goal of establishing a new multimodal approach, UDOT and the local participants sought a greater level of involvement than FTA could provide.

Securing Funding for Multimodal NEPA Studies: The cost of the NEPA process was largely borne by UDOT. UTA provided in-kind staff support, and perhaps a minor cash contribution, but cost-sharing between the highway and transit project sponsors was not an impediment.

Strategies/Tactics Used to Overcome Challenges

The Growth Choices process and the Mountain View Vision Voluntary Agreement were focused efforts to more closely link land use and transportation decisions within the context of a federal NEPA process. With the subsequent turnover of elected officials and planning staff, however, local government commitment to the voluntary agreement has diminished. UDOT and UTA report that suburban development is now taking place in a manner that is not particularly supportive of transit.

Another strategy was the Interlocal Cooperation Agreement between UDOT and UTA, which was an effort to demonstrate the agencies' joint commitment to a multimodal program of projects and obligate both agencies to carry out their respective parts of the program. UDOT has built the initial 18 miles of the highway component. Under the ROD, however, UDOT cannot proceed with the second phase until the BRT component is constructed. UTA has no funding for BRT at this time, and without the higher-density development envisioned in the voluntary agreement, there may not be sufficient transit ridership to support BRT.

Lessons Learned

Use a multimodal approach to facilitate implementation. By taking a multimodal approach to the NEPA process and involving local jurisdictions in creating a land use vision for the corridor, UDOT succeeded in building an 18-mile highway segment and preserving right-of-way for the remainder of the envisioned project without legal challenge.

Understand other agencies' issues and constraints before undertaking a multi-agency process. Engaging other agencies in the NEPA process can be difficult. Other agencies have their own programs and priorities to manage, and their staff time and resources are limited. It should not be assumed that a cooperating agency will be able to devote its full attention to the NEPA process for a given project. If a U.S. DOT modal agency is unable to actively participate, a multi-agency approach may lead to frustration and an inability to move forward efficiently.

Be cautious about including local interagency agreements in NEPA documents. UDOT and UTA tied the highway and transit project implementation schedules together in an interlocal agreement that was made part of the ROD. Although the agreement seemed strategic at the time, without the necessary transit funding commitments, the ability of UDOT to advance subsequent phases of the highway project is put at risk. A change in the phasing schedule for either mode could be cause to reopen the NEPA process.

Bibliography

Federal Highway Administration. November 17, 2008. "Record of Decision, Mountain View Corridor Project in Salt Lake and Utah Counties."

Federal Highway Administration, Utah Department of Transportation and Utah Transit Authority. September 2008. *Mountain View Corridor Final Environmental Impact Statement and Section 4(f) Evaluation.*

Utah Department of Transportation and the Utah Transit Authority. November 13, 2008. "Interlocal Cooperation Agreement between the Utah Department of Transportation and the Utah Transit Authority."

APPENDIX I

Case Study—XpressWest High-Speed Passenger Train, Victorville, California, to Las Vegas, Nevada

Summary

Project Description

XpressWest is a planned high-speed rail project sponsored by DesertXpress Enterprises, LLC (DXE), along a 200-mile corridor between Victorville, CA, and Las Vegas, NV.

Key U.S. DOT Agencies

- Federal Railroad Administration (FRA)—Lead
- Surface Transportation Board (STB)—Cooperating
- Federal Highway Administration (FHWA)—Cooperating
- Federal Aviation Administration (FAA)—Permitting

Key State and Local Agencies

- California Department of Transportation (Caltrans)
- Nevada Department of Transportation (NDOT)

Challenges Faced

The XpressWest project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table I-1).

Strategies, Tactics, and Lessons Learned

- Perform a thorough scoping process to identify issues and potential conflicts.
- Consider a range of project alternatives in carrying out the NEPA process.
- Anticipate that participating agencies may have differing expectations.
- Schedule regular meetings and ensure all appropriate parties are involved.
- Enlist a mediator to facilitate meetings and work through challenging issues.

Case Study Detail

Introduction

The XpressWest project, formerly known as "DesertXpress," is a planned high-speed rail project along a 200-mile corridor between Victorville, CA, and Las Vegas, NV (see Figures I-1 and I-2). The project would be constructed and operated by DXE, a private entity. The selected alternative also includes an operations, maintenance, and storage facility in Victorville, a maintenance and storage facility in Las Vegas, and facilities near Las Vegas to power the electric multiple-unit train technology. The rail alignment would run primarily along the I-15 corridor. The system would be constructed as a grade-separated, dedicated double-track, passenger-only railroad, utilizing a design-build process.

The project is expected to relieve congestion on Interstate 15 and at major commercial airports in both the Los Angeles metropolitan area and Las Vegas. By reducing the number of automobiles that travel the corridor, the project is also expected to improve safety.

Lead, Cooperating, and Participating Agencies

Although the XpressWest project is sponsored by a private entity, DXE, the project was still required to comply with NEPA and obtain approvals and permits from FRA and other cooperating agencies. FRA was the lead federal agency for the environmental review process, because the agency has authority over railroad safety. FHWA participated as a cooperating agency because portions of the project would use or affect Interstate right-of-way, and FHWA has approval authority over joint- and multiple-use permits and changes in access control. STB served as a cooperating agency because it has exclusive jurisdiction over the construction and operation of new rail lines for Interstate commerce. FAA participated

Table I-1. Challenges summary.

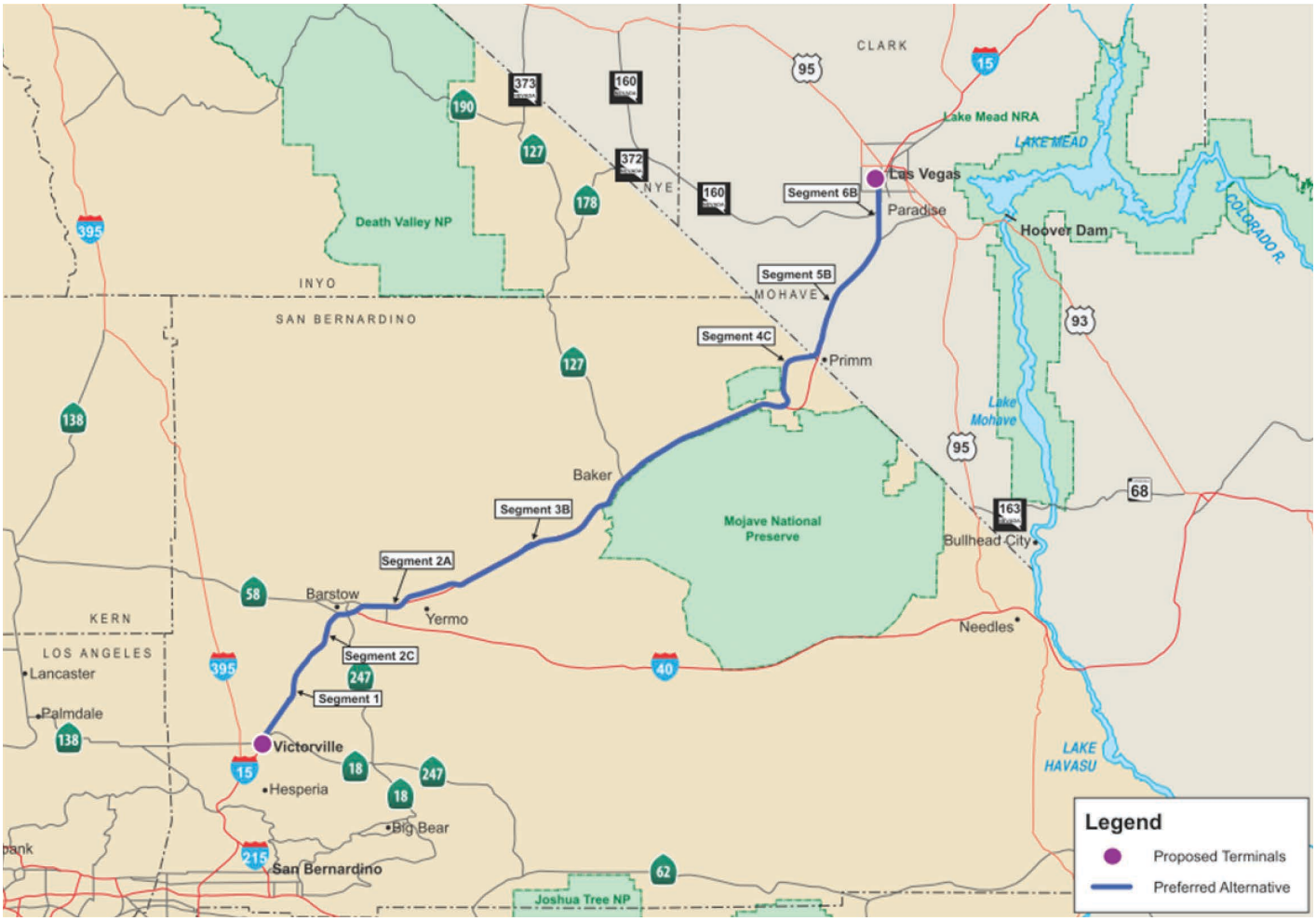
Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓		✓	✓	

in the NEPA process because the proposed project would be close to airports and could require a permit.

The alignment would pass through land managed by two federal agencies: the Bureau of Land Management (BLM) and the National Park Service (NPS). BLM participated as a cooperating agency because the project would require the use of public lands that are managed by the BLM under the Federal Land Policy and Management Act (FLPMA). In addition, 1.55 miles of one proposed alignment (Segment 4A) would cross through the Mojave National Preserve, which is managed by the NPS.

NEPA Process/Approach

The XpressWest project required an Environmental Impact Statement (EIS) because of the anticipated major federal actions and because the construction and operation of the high-speed rail system was expected to have a significant impact on the surrounding environment. DXE, as a private entity, could not prepare the EIS. In February 2006, FRA entered into a Memorandum of Understanding (MOU) with DXE, a third-party contractor retained by FRA, and STB. The MOU established the conditions and procedures to be followed in preparing the



Source: FRA

Figure I-1. XpressWest selected alternative alignment.

Source: DesertXpress Enterprises, LLC

Figure I-2. XpressWest train visualization.

environmental document. FRA adopted aspects of STB's procedures for third-party contracting under 40 CFR 1506.5(c), 49 CFW 1105.4(j), and 1105.10(d). FRA selected the NEPA contractor and DXE agreed to engage the contractor at its own expense. The third-party contractor worked under the sole supervision and direction of FRA.

FRA prepared one EIS to meet the needs of all federal agencies; subsequently each agency issued a separate Record of Decision (ROD). The environmental review process for the XpressWest project began in July 2006 with the release of the Notice of Intent, and public scoping meetings were held in August 2006. The Draft Environmental Impact Statement (DEIS) was published in March 2009. A Supplemental DEIS was published in August 2010 due to modifications to the project to address substantive comments received during the public comment period of the DEIS. The Final Environmental Impact Statement (FEIS) was released to the public in April 2011.

FRA sought to ensure that the FEIS was sufficient to meet the needs of all the federal agencies involved and to support the subsequent RODs from each cooperating agency. This was accomplished by sharing administrative drafts of the DEIS, Supplemental DEIS, and FEIS. FRA collected comments, discussed issues with all participating agencies to ensure they were addressed to each agency's satisfaction, and then revised and finalized the environmental document. FRA issued its ROD on July 8, 2011. The three cooperating agencies issued their RODs on October 20, 2011 (STB), October 31, 2011 (BLM), and November 18, 2011 (FHWA).

STB granted DXE's request for a declaratory order finding that the project is not subject to state and local environmental review and land use and other permitting requirements because of the preemption in 49 U.S.C. 10501(b). While STB's order exempted the project from the requirements of the California Environmental Quality Act, FRA and cooperating agencies still consulted with state and local agencies in developing the EIS to obtain unique expertise or knowledge of the project area and address any concerns about the project. FRA met regularly with the four cooperating agencies and the EIS Working Group, which included Caltrans and NDOT, throughout the preparation of the EIS. Caltrans and NDOT will be responsible for issuing encroachment permits to allow for construction of the proposed rail line within the designated Interstate rights-of-way.

Agency Requirements Applied to NEPA

In addition to the regulations set forth by the Council on Environmental Quality (CEQ), FRA follows its "Procedures for Considering Environmental Impacts" [64 FR 28545 (May 26, 1999) as amended, 78 FR 2713 (January 14, 2013)] in conducting environmental reviews. The Procedures for Considering Environmental Impacts require preparation of a Section 4(f) evaluation concurrently with the EIS if the proposed project would take land from any 4(f) protected properties, including parks and recreation lands, wildlife and waterfowl refuges, and historic sites. Since FRA also has oversight of railroad safety issues, the agency required the project to comply with regulations and advice developed by FRA's Engineering Task Force of the Passenger Safety Working Group of the Railroad Safety Advisory Committee.

As noted above, STB has the authority to exempt a proposed rail project from certain state and local environmental procedures. The applicant must demonstrate that the project would ensure the development and continuation of a sound transportation system and foster sound economic conditions. The agency concluded that the project met these requirements because it would alleviate air traffic constraints and make positive contributions to the economies of Nevada and California. The planned Interstate passenger rail was within the agency's jurisdiction under 49 U.S.C. 10501 because DXE would be a rail carrier providing Interstate common carrier rail transportation, and the project would not pose a threat to shippers since it would not provide freight service.

Projects requiring access to Interstate right-of-way require approval from FHWA, and such approval can be a major federal action triggering NEPA. DXE involved FHWA, along with FRA, Caltrans, and NDOT, in the development of the project's *Highway Interface Manual* to address safety and security issues and provide guidance for implementing the project within Caltrans and NDOT highway rights-of-way. DXE was also responsible for completing an Emergency Preparedness Plan for review and approval under 49 CFR Part 239 by the FRA Office of Safety. SAFETEA-LU requirements for efficient environmental reviews did not apply to this project because FHWA was not a funding participant or the lead agency.

FAA is responsible for the safe use of airspace. The proposed project would be located near several aviation facilities,

including McCarran Las Vegas International Airport (LAS), therefore, FAA had to determine under 14 CFR Part 77 whether the project would result in any obstructions to air navigation, navigational aids, or navigational facilities.

Impact of These Requirements

Interstate design standards became a primary issue for the project. Since high-speed rail is still a relatively new concept in the United States, operational and safety concerns created policy issues that FHWA had not previously addressed. There was concern that drivers on I-15 could become startled or distracted by a 150-mile-per-hour train traveling in the opposite direction adjacent to the highway. While FRA was concerned that drivers could crash on the highway and damage track piers or enter the railroad tracks, FHWA had concerns that the train could crash and land on the highway. A highway shutdown for any length of time could have significant economic impacts as Interstate 15 is the only roadway between Las Vegas and Los Angeles. Mitigation strategies for safety risks could affect the project's footprint and its environmental impacts.

Employees from the Volpe National Transportation Systems Center were brought in to help facilitate the discussions surrounding operational and safety issues among DXE, FRA, and FHWA. The project's *Highway Interface Manual* was refined through these discussions and expanded to address additional concerns. Developing the manual required that the team gain a greater understanding of the physics of trains that travel faster than anything else on the Interstate right-of-way and the implications for rail safety. This included understanding the high-speed rail technologies that would be used, how fast trains would be traveling, what would happen if a derailment were to occur, how the project would affect the motoring public on the highway, implications for the highway-clear zone, what types of barriers would be needed, and how these barriers would vary across the different environments through which the system would travel. The work to develop the manual ultimately put the project sponsor (DXE) in a good position to secure FHWA approval for Interstate access.

FRA also consulted with FAA early in the EIS process, although it did not expect FAA would have any direct action with the project. At the time, planning was under way for a proposed Southern Nevada Supplemental Airport (SNSA) to be located in the Ivanaph Valley to serve Las Vegas. No direct interface with SNSA was anticipated because it was a parallel project to XpressWest. Late in the process, however, FAA raised a concern that the proposed alignment of XpressWest would cross through a designated Runway Protection Zone (RPZ) for SNSA. FRA coordinated with FAA to develop a mitigation measure to ensure that conflicts would be avoided. Planning for the SNSA was suspended in 2010 due to a decrease in air traffic during the economic downturn. The mitigation measure published in the FRA ROD is subject to change if SNSA planning resumes.

FAA also raised a safety concern about the potential conflict that a segment of the high-speed rail alignment would have on the one-engine inoperative zone associated with Runway 25R at LAS. This concern was identified after the DEIS had been published. DXE was required to provide an engineering study to FAA, and FRA mediated to develop mitigation commitments to resolve the safety concern. The required engineering study delayed the overall schedule for approximately one month.

As operating administrations of the U.S. DOT, FHWA, FAA, and FRA had to comply with Section 4(f) of the U.S. DOT Act in conjunction with the environmental review process. Segment 4 of the project would potentially use land from the Mojave National Preserve, a protected resource under Section 4(f). Three alignment options crossed through the preserve. Option 4B was deemed not feasible because it posed conflicts with a planned solar energy project, and Option 4C was developed to avoid these conflicts. Option 4A was initially chosen as the preferred alignment because it was located within the existing I-15 right-of-way and would have less infringement on the undisturbed and undeveloped surrounding areas. Because the NPS does not have the statutory authority to grant any private transportation right-of-way through the Mojave National Preserve, Option 4C was developed as an alternative to Segment 4A if the NPS was not able to gain the authority to convey an easement for DXE for the right-of-way. As the DEIS had already been published based on Option 4A, a Supplemental DEIS was prepared covering Option 4C and other changes.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements Under the NEPA Umbrella: FHWA and FAA both had safety concerns that created challenges for the NEPA process. The project's *Highway Interface Manual* was developed to provide design guidance to address FHWA safety concerns. Although FAA only participated as a permitting agency, the agency raised late concerns about the preferred alignment conflicting with the proposed SNSA and a runway at LAS. Since these safety concerns could have affected the project's footprint and environmental impacts, they had to be addressed before the NEPA process was completed.

Differing Agency Interpretations of NEPA Requirements: FRA followed its "Procedures for Considering Environmental Impacts" in conducting environmental reviews. These procedures did not pose any inconsistencies with other

agency NEPA requirements, but there were differing expectations on the process. FRA's role was to lead the environmental process and DXE's role was to manage the design of the project. It took some time for other agencies to understand that FRA was not responsible for design. While this was not an issue with BLM and NPS since both agencies frequently encounter private sector proposals, FHWA and the state DOTs were accustomed to an environmental process in which the lead public agency is also responsible for design. FHWA expected FRA to take a lead role in the design, however, FHWA's design concerns actually needed to be communicated with DXE. It took considerable discussion and many meetings among FRA, FHWA, and DXE to communicate effectively on design issues.

Anticipating Which Agencies Will Have a Major Federal Action: The agencies with major federal actions were anticipated and engaged through the NEPA scoping process. FRA had two major federal actions—a safety approval and a funding approval. FHWA anticipated the need for access to the Interstate right-of-way and STB approved the creation of the railroad and certification for construction. The role of FAA surfaced later in the process, and the potential for encroaching into the engine inoperative zone at LAS led to the need for supplemental engineering studies that delayed the NEPA process.

Efficient Coordination Among Agencies: Leadership and oversight from FRA was critical to ensuring efficient and productive coordination, which was accomplished through regular meetings (in person or via teleconferences or web conferences), document sharing (including administrative drafts during the deliberative phase of the process), letter writing, and e-mails. Although FRA was the lead agency, DXE was also responsible and heavily involved in ensuring that each federal agency received the documentation it needed to provide input during the environmental review process. Working with a consistent group of individuals from each agency made the exchange of information easier and fostered strong working relationships. This coordination helped FRA ensure that all agencies' needs were met.

FRA faced a challenge in trying to develop an environmental document that would satisfy the needs of all agencies involved. In taking on this task, the agency recognized that there would be a learning curve for all agencies, and that the people involved would have varying levels of experience. It was also critical to keep the lines of communication open and establish the roles of each agency early on, since XpressWest, as a proposed, privately sponsored high-speed railway within the public right-of-way, did not conform to the conventional model for publicly sponsored transportation projects, where the lead public agency is responsible for design.

Securing Funding for Multimodal NEPA Studies: The NEPA study was funded entirely by DXE as the project sponsor. Funding from DXE covered the services of the FRA's third-party contractor but excluded staff costs for FAA, FHWA, and FRA. The FRA staff person responsible for the preparation of the EIS spent about 50 percent of her time on the effort, but there was no dedicated staff assigned to the project. Other agencies, including FHWA, devoted staff time and assigned individuals to work on the project, but they were not exclusively dedicated to it.

Strategies/Tactics Used to Overcome Challenges

Although DXE did not lead the environmental process, it was heavily involved in overall coordination. DXE played an active role in developing relationships, working proactively to develop information to respond to agency concerns, and meeting with political appointees and elected officials to keep the agencies focused on the project as a priority. DXE was willing to meet in person with the different agencies and work to resolve issues to achieve timely conclusions and resolutions. Because in-person meetings were not always possible, web conferences were especially helpful for sharing documentation and reviewing design documents.

FHWA brought in the Volpe National Transportation Systems Center as an interested but neutral third party to help DXE, FRA, and FHWA overcome the different perspectives on safety between highway and rail and to resolve some of the language and terminology differences between highways and railways. The Volpe Center ensured that the environmental process kept moving forward and that both agencies were able to resolve their issues. In addition, the mediated discussions led to refinement of the *Highway Interface Manual.*

FRA adopted guidance from other sources that did not strictly apply to the agency to address topics that required a more detailed, structured approach. FRA followed FHWA's Section 4(f) Policy Paper and regulation as well as the Caltrans and NDOT guidance for highway modifications, and incorporated BLM guidance for cultural resource surveys.

Lessons Learned

Perform a thorough scoping process to identify issues and potential conflicts. Identifying all affected parties and any critical issues and potential conflicts during the early stages of scoping is important to developing an approach to begin to address those issues. Scoping is also critical in establishing the limits of the project and what problems the project is and is not intended to solve. FHWA encountered policy issues because high-speed rail is still a relatively new concept in the United States. While FHWA's two division

offices were involved throughout the process, those interviewed said that because the project involved issues not yet addressed by current policy, it would have been helpful to involve FHWA headquarters staff earlier in the process to address those policy issues in a timely manner.

Consider a range of project alternatives in carrying out the NEPA process. DXE recognized that the NEPA process would work better if the range of project alternatives could be considered in an unencumbered manner. Although the proposed route of XpressWest was fairly confined—since Interstate 15 is the only highway connecting the Los Angeles basin with Las Vegas—several alternatives were considered. The preferred alternative was not identified until the FEIS, after considering environmental analysis results and public and agency comments. To minimize and avoid impacts related to Interstate 15 and the solar project, the EIS process considered alignment changes such as moving the alignment farther from the highway, even though this could cause greater impacts to natural resources.

Anticipate that participating agencies may have differing expectations. Recognizing that agencies may have different expectations about roles and how processes will work, even if their basic NEPA requirements are the same, was an important step in overcoming challenges. FHWA expected that the lead agency managing the environmental process would also direct the design of the project, even though the involvement of a private sponsor dictated a different process. It took education and relationship-building to move past these challenges.

Schedule regular meetings and ensure all appropriate parties are involved. Information sharing and developing working relationships with key individuals in each participating agency proved essential to identifying issues and achieving timely resolutions. The XpressWest NEPA process involved numerous interagency coordination meetings, teleconferences, working group meetings, and other consultations. Working with a consistent group of individuals made the extensive coordination effort and the exchange of information easier and ensured that everyone was on the same page as the process moved forward.

Enlist a mediator to facilitate meetings and work through challenging issues. A mediator can help agencies build consensus and overcome difficult issues by focusing meetings, facilitating communication, drafting language everyone can agree to, and facilitating resolution of issues and inconsistencies of internal processes. The mediator was a neutral party with no stake in the environmental process in order to maintain objectivity.

Bibliography

Bureau of Land Management. October 31, 2011. "Record of Decision, DesertXpress High-Speed Passenger Train."

Federal Highway Administration. November 18, 2011. "Record of Decision, DesertXpress High-Speed Passenger Train."

Federal Railroad Administration. March 2011. *Final Environmental Impact Statement and Final Section 4(f) Evaluation for the Proposed DesertXpress High-Speed Passenger Train.*

Federal Railroad Administration. July 8, 2011. "Record of Decision, DesertXpress High-Speed Passenger Train."

Federal Railroad Administration; Surface Transportation Board; DesertXpress Enterprises, LLC; and Circlepoint, Inc. February 2006. "Memorandum of Understanding."

Surface Transportation Board. June 25, 2007. Surface Transportation Board Decision, STB Finance Docket 34914, "DesertXpress Enterprises, LLC—Petition for Declaratory Order."

Surface Transportation Board. October 20, 2011. "Record of Decision, DesertXpress High-Speed Passenger Train."

APPENDIX J

Case Study—Interstate 5 Columbia River Crossing, Washington and Oregon

Summary

Project Description

The Columbia River Crossing was a proposed five-mile-long highway, transit, bicycle, and pedestrian project connecting Vancouver, WA, with Portland, OR, across the Columbia River.

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Co-lead
- Federal Highway Administration (FHWA)—Co-lead
- Federal Aviation Administration (FAA)—Cooperating

Key State and Local Agencies

- Washington Department of Transportation (WSDOT)
- Oregon Department of Transportation (ODOT)
- Tri-County Metropolitan Transit District (TriMet)
- Clark County (Washington) Public Transit Benefit Area Authority (C-TRAN)
- Cities of Vancouver, WA, and Portland, OR
- Metropolitan Planning Organizations—Metro (Portland area) and Southwest Washington Regional Transportation Council (RTC) (Vancouver area)

Challenges Faced

The Columbia River Crossing project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table J-1).

Strategies, Tactics, and Lessons Learned

- Build relationships with federal and sponsor agencies prior to the start of NEPA activities.
- Hold frequent in-person meetings with federal and state agencies to review progress and resolve issues promptly.
- Maintain regular coordination with other interested partners and with state, federal, and local resource agencies.
- Become familiar with other agency processes early and seek opportunities to align interests and create a platform for reaching compromise if needed.
- Develop and implement a detailed agreement about which procedures will be followed.
- Allocate additional time to accommodate multiple agency issues and approaches.
- Develop a comprehensive staffing plan and coordinate selection of team members.
- Defer processes to specialists, where possible.
- Establish a charter, including ground rules and procedures for conflict resolution and facilitation.

Case Study Detail

Introduction

The Columbia River Crossing (CRC) project was initiated in 2005 to address transportation needs in the I-5 Columbia River Crossing Bridge influence area in the Portland, OR, and Vancouver, WA, metropolitan areas. Problems in the corridor—including crashes, congestion, restricted freight mobility, limited transit options, poor bicycle and pedestrian connections, and earthquake risk—had been studied since 1999. In 2006, the project purpose was adopted and the NEPA process commenced. The project was intended to improve mobility, reliability, accessibility, and safety for automobile, freight, transit, bicycle, and pedestrian users of the I-5 corridor from State Route 500 in Vancouver to approximately Columbia Boulevard in Portland.

The required NEPA process was an Environmental Impact Statement (EIS). The Draft Environmental Impact Statement (DEIS) was published in 2008 and a Record of Decision was signed in 2011. Following the DEIS, a locally preferred alternative (LPA) was adopted. It included a replacement bridge across the Columbia River, a light rail extension to Clark College in Vancouver, and bicycle and pedestrian facilities (see Figures J-1 and J-2). The bridge height, number of lanes, interchange improvements, and local connections were further

Table J-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓		✓	

Source: CRC

Figure J-1. CRC project area map.

Source: CRC

Figure J-2. Visualization of CRC bridge.

studied and the LPA was modified after completion of the Final Environmental Impact Statement (FEIS).

In 2014, the project was put on hold due to lack of construction funding.

Lead, Cooperating, and Participating Agencies

FTA and FHWA were co-lead agencies. WSDOT and ODOT were local sponsors and staffed the NEPA effort. WSDOT provided most of the project staff, but ODOT provided the environmental lead. Both the Washington and Oregon divisions of FHWA were involved; they appointed a project manager to the Oregon office to lead their effort. FTA staffed the project out of its regional office in Seattle. Each agency committed to attend meetings in person. FAA served as a cooperating agency due to the project's proximity to the flight paths of Portland International Airport and Pearson Field.

The bi-state project was characterized by a high degree of involvement from numerous local, regional, state, and federal agencies as well as business and citizen associations. In addition to WSDOT and ODOT, local sponsors included RTC, Metro, TriMet, and C-TRAN. These agencies, together with the governors of both states and the cities of Portland and Vancouver, comprised the Project Sponsors Council (PSC), the main project advisory committee.

Cooperating agencies included the U.S. Army Corps of Engineers (USACE), the U.S. Coast Guard (USCG), the Federal Aviation Administration (FAA), the National Park Service (NPS), the Washington State Department of Archaeology and Historic Preservation, and the U.S. General Services Administration.

Staff from FTA, FHWA, and the CRC project office met in person bi-weekly throughout the NEPA process. FHWA and FTA also coordinated directly with each other. FHWA participated in the FTA quarterly meetings regarding the project. In addition, there was periodic involvement from the division and regional administrators and the attorneys of both agencies to resolve higher level issues and procedures.

The PSC met approximately once a month throughout the NEPA process to discuss all major aspects of the alternatives, the environmental review, and the design.

The CRC project established the Interstate Collaborative Environmental Process (InterCEP), which included most of the state and federal resource agencies. The InterCEP agreement, signed by participating agencies, established tenets of participation and included comment, concurrence, and dispute resolution processes.

NEPA Process/Approach

FHWA and FTA were co-leads throughout the process. The NEPA class of action was an EIS, which began in 2006. Although the proposed project had been studied for several years, the study methods were not geared toward narrowing options into a streamlined list of alternatives to be analyzed in the DEIS. Therefore, the alternative development and review process started anew under NEPA. In addition to roadway and transit improvements, the need for bicycle and pedestrian improvements was identified in the purpose and need.

Due to the number of modes under study, more than 70 individual components were considered. These components were screened, resulting in 31 components being combined into 12 representative alternatives, which were narrowed to five alternatives. After further review, five multimodal alternatives were selected for detailed study in the EIS: a supplemental bridge with bus rapid transit (BRT), a supplemental bridge with light rail transit (LRT), a replacement bridge with BRT, a replacement bridge with LRT, and no build.

The project represented a very large investment for both highways and transit. The CRC project is an example of a true co-lead project in every aspect and every element. As a result, the differences between FHWA and FTA processes were accentuated. One difference was that FTA does not delegate as much responsibility to the project sponsor as FHWA does. Further, because much of FHWA project funding flows through formula programs, FHWA does not generally evaluate projects from a competitive perspective, as FTA does.

In 2006, FHWA and FTA signed a Memorandum of Understanding that set forth which agency's process would be followed for major components within environmental, preliminary engineering, New Starts, and financial plan work activities. However, the agreement lacked detail for the NEPA process and was difficult to enforce. Ultimately, the methodology for each activity was negotiated as that phase was beginning.

Differences between FTA and FHWA processes introduced challenges during DEIS development. State DOT staff was more accustomed to FHWA procedures and being delegated to, and

it took them time to adjust to FTA's differing procedures and the level of FTA involvement. WSDOT had a stewardship agreement with FHWA, but FTA does not sign stewardship agreements. Instead, FTA staff referenced a series of white papers which outlined roles that Sound Transit and WSDOT held for Seattle-region projects in which the transit elements were much more significant than the highway elements. On occasion, the FTA regional administrator and the two FHWA division administrators and/or agency attorneys became involved to determine procedures and decide issues.

Due to staffing limitations, FTA relied heavily on a Project Management Oversight Contractor (PMOC), which increased the amount and complexity of coordination. Additionally, part way into the NEPA process, FHWA brought on a major project engineer from another region, whose background was primarily large roadway construction projects and who was less familiar with the NEPA process and FTA's expectations.

These factors added time to the DEIS process. By the time the FEIS was being developed, however, many issues had been resolved, staff had learned to work together, and the process went much more smoothly.

In addition to the InterCEP process, the DOTs funded liaisons with several state and local resource agencies. Both of these actions were helpful in keeping resource agencies involved throughout the process. In addition, FHWA engaged a staff biologist for the Endangered Species Act (ESA) activities who had considerable expertise and gained the trust of all parties. Further, the Washington State Tribal Liaison office had a long-term working relationship with many of the 35 federally recognized tribes affected by the project and was helpful during the consultation process.

Agency Requirements Applied to NEPA

While there were differences between the FTA and FHWA interpretations of NEPA requirements, the NEPA processes per se were consistent. The differences between the FTA's discretionary New Starts program and FHWA program requirements were more substantive and impacted the NEPA process. Concurrent with NEPA, FTA's New Starts process required approval into New Starts Preliminary Engineering, which involved FTA review of such technical aspects as travel demand forecasting and cost estimates, along with application of statutory project evaluation criteria. FTA's PMOC reviewed all aspects of the project, including the highway aspects.

Some substantive differences related to the financial chapter of the NEPA document. FTA, as a part of the New Starts program, requires a much more detailed financial plan than does FHWA. FHWA was able to accept WSDOT's cost-estimating process, which includes analysis of cost, risk, impact, and mitigation. FTA required its own cost estimate and risk assessment procedure to facilitate comparisons with other FTA projects.

There were differences between the FHWA and FTA approaches to mitigating impacts. In terms of noise mitigation, for example, FTA can pay for modifications to buildings (such as improved windows to reduce sound transmission) while FHWA relies on noise walls constructed alongside the highway.

Finally, FTA is authorized to pursue transit-oriented development, so it is interested in property acquisitions with that potential. By contrast, property acquired by FHWA for a project cannot be used for transit-oriented development.

The more significant differences centered on process and authority. For example, FTA does not typically delegate authority to contact the State Historic Preservation Officer (SHPO), whereas FHWA does. There was disagreement over whether the state DOT archaeologist could sign letters to the SHPO during the Section 106 process.

There was also a difference related to the locally preferred alternative (LPA) and when to get buy-in from the partner agencies. FTA typically allows selection of an LPA prior to commencement of the DEIS, while FHWA does not. In this case, however, the DEIS was serving as the New Starts Alternatives Analysis (AA). FHWA was uncomfortable with having a preferred alternative without disclosing it, and wanted to include that in the DEIS. FTA was concerned about selecting an LPA prior to the DEIS since the DEIS was serving as documentation of and inviting input on the New Starts AA. FHWA agreed to select the preferred alternative as part of the public involvement process for the DEIS. FTA also seeks approval of the preferred alternative by all local partners, and while FHWA does not typically do this, they agreed to in this case.

Impact of These Requirements

Differing requirements added time and costs to the NEPA process. For example, using two cost-estimating processes instead of one—to satisfy FHWA and FTA requirements—added about $1 million to the project cost.

The differences in mitigation and TOD approaches did not lead to significant issues or impacts to the project or process; it was the procedural questions that caused delays. Time spent negotiating approaches on individual activities during the DEIS added several months to the schedule.

Additionally, the NEPA process was not conducted in a vacuum. Disagreements between local jurisdictions and the project sponsors led to heightened tensions among the participants. During the LPA decision-making process, for example, local jurisdictions placed a number of conditions on the project. Staff at all agencies worked hard throughout the NEPA process to resolve issues and maintain the schedule.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: New Starts grant requirements were the source of continuing differences between the transit and highway agencies. While accommodation was reached, resolving the differences took time. The FTA did not adopt the WSDOT cost-estimating methodology that FHWA accepted. Using two separate comprehensive cost-estimating processes increased project development costs.

Differing Agency Interpretations of NEPA Requirements: The biggest differences in interpretation related to process. Discussions to reach agreement on the approach added time to the project schedule.

Anticipating Which Agencies Will Have a Major Federal Action: The project team knew that both FHWA and FTA would have major actions and both agencies accepted their roles as co-leads.

Efficient Coordination among Agencies: Constant communication and face-to-face meetings were helpful in working through the differences in approach between the agencies. At some points in the project, higher level officials met to negotiate an agreement on procedures. Over time, the project staff developed a productive relationship and the two U.S. DOT agencies coordinated relatively seamlessly on such matters as who would attend meetings with resource agencies.

The need for a bridge permit was anticipated from the beginning, and the project team coordinated with the USCG. A change of staff at the USCG led to a lack of continuity. After the ROD, as part of the permit process, the USCG requested that the height of the bridge be increased to provide additional clearance over the Columbia River. This led to a re-evaluation under NEPA to determine whether there were new or different impacts.

Securing Funding for Multimodal NEPA Studies: The NEPA portion of the project was largely funded by a variety of FHWA funds that flowed to the states. The states provided the local match. Although obtaining the funding for NEPA and associated studies was not challenging, FHWA funded the bulk of the NEPA process, which included addressing both FHWA and FTA requirements. FTA funds were expected to cover a substantial portion of the construction cost.

Strategies/Tactics Used to Overcome Challenges

The strategy for overcoming challenges during NEPA activities was to maintain constant communication. The sponsor staff worked proactively to develop productive working relationships with federal partners, and this facilitated the ability to compromise when needed. Over time, sponsor staff was able to convene forums and address differences constructively. Tactics included talking through each issue, conducting face-to-face meetings whenever possible, and holding separate conversations with the U.S. DOT agencies, as needed, to avoid and resolve conflicts.

Another strategy was learning each agency's procedures and respecting the agency's positions on issues. As staff members came to better understand each other's positions, they were able to anticipate and avoid issues. Additionally, it helped to have staff people with recognized expertise in a topic area. For example, while FTA does not typically delegate the tribal coordination process, it allowed Washington State Tribal Liaison staff to facilitate the coordination process. Similarly, the expertise of the FHWA's biology staff was critical to the timely completion of the ESA consultation process.

Involving higher level officials or staff attorneys to mediate certain challenging issues was helpful. Senior management and legal staff from all agencies were able to focus on compliance with NEPA law and were less concerned about differences in process, making them relatively neutral arbiters. Another important asset was the expertise and experience of the environmental lead, whose productive relationships with FHWA and FTA enabled successful facilitation of agreements and resolution of disputes.

The InterCEP agreement and process were useful in engaging the participating state and federal resource agencies. Conversations were held at the headquarters level to resolve issues with both the USACE and the USCG after the ROD.

Lessons Learned

Build relationships with federal and sponsor agencies prior to the start of NEPA activities. It takes time to develop trusting, productive working relationships and build a collaborative project environment. Encouraging a new team to work together under tight deadlines and stressful conditions is less successful than building on established relationships.

Hold frequent in-person meetings with federal and state agencies to review progress and resolve issues promptly. Frequent meetings allowed the staff from each agency to get to know each other's perspective and work through the many issues on this complex project. Face-to-face meetings resulted in more complete communication and less disagreement. Over time, the team members got to know each other and individuals developed trusting relationships that were fundamental to effective partnering.

Maintain regular coordination with interested partners and with state, federal, and local resource agencies. The

InterCEP group was quite effective. It, along with the FHWA biology staff, significantly accelerated resolution of ESA issues. The extensive tribal coordination process, which included quarterly staff level meetings and annual leadership meetings with the DOT heads, allowed for successful coordination with the 35 federally recognized tribes affected by the project.

Become familiar with other agency processes early and seek opportunities to align interests and create a platform for reaching compromise if needed. All key project members on joint projects should become familiar with other agency processes, and should be respectful and open to compromise in order to move all interests forward. Sponsor agency staff was able to move the project forward more quickly as they became more knowledgeable about FTA and proposed solutions that were acceptable to both FTA and FHWA.

Develop and implement a detailed agreement about which procedures will be followed. The initial MOU between FHWA and FTA had limited benefit: it was not specific enough to rely on throughout the NEPA process. Developing a more detailed agreement up front might have brought issues to the surface earlier.

Allocate additional time to accommodate multiple agency issues and approaches. Agency coordination issues on this large and complex project added at least six months to the NEPA process—between the DEIS and the ROD—as compared to the process each would have used for its single mode.

Develop a comprehensive staffing plan and coordinate selection of team members. The team initially lacked sufficient collective knowledge of both FHWA and FTA procedures. Earlier agreement on needed skills, both technical and "soft," for key staff on the project team and developing a staffing plan for the entire project up front could have limited the need to supplement staff later in the process.

Defer processes to specialists, where possible. Having a project team with significant expertise in the various technical issues enabled FHWA and FTA to delegate some of their responsibilities. The tribal coordination and the ESA consultation processes were considered to be success stories.

Establish a charter, including ground rules and procedures for conflict resolution and facilitation. Large, complex projects may need the involvement of senior and executive staff to resolve conflicts in a timely manner. At times, the Columbia River Crossing project relied on the FHWA and FTA division and regional administrators and their staff attorneys to facilitate conflict resolution.

Bibliography

Columbia River Crossing Project. January 25, 2006. "Interstate Collaborative Environmental Process Agreement."

Federal Highway Administration and Federal Transit Administration. December 18, 2006. "Columbia River Crossing Memorandum of Understanding."

Federal Highway Administration and Federal Transit Administration. December 2011. "Record of Decision, Interstate 5 Columbia River Crossing Project."

Federal Highway Administration, Federal Transit Administration, Oregon Department of Transportation, Southwest Washington Regional Transportation Council, Tri-County Metropolitan Transit District, and Clark County (Washington) Public Transit Benefit Area Authority. April 2008. *Project Draft Environmental Impact Statement, Interstate 5 Columbia River Crossing.*

Federal Highway Administration, Federal Transit Administration, Oregon Department of Transportation, Southwest Washington Regional Transportation Council, Tri-County Metropolitan Transit District, and Clark County (Washington) Public Transit Benefit Area Authority. September 2011. *Final Environmental Impact Statement and Final Section 4(f) Evaluation, Interstate 5 Columbia River Crossing Project.*

http://www.columbiarivercrossing.org/ProjectInformation/ResearchAndResults/AlternativesConsidered.aspx. (As of May 15, 2014).

http://www.columbiarivercrossing.org/FileLibrary/ConcepMaps/ProjectAreaIllustratedMap.pdf. (As of May 5, 2014).

APPENDIX K

Case Study—East Link Light Rail Project Puget Sound Region, Washington

Summary

Project Description

East Link is an 18-mile extension of the Link light rail system in the Puget Sound region. The project, which will relocate the existing high-occupancy vehicle (HOV) lanes on I-90, will cross Lake Washington and connect Seattle to Mercer Island, Bellevue, and Redmond to the east.

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Lead
- Federal Highway Administration (FHWA)—Cooperating Agency

Key State and Local Agencies

- Central Puget Sound Regional Transit (Sound Transit)—Public Agency Lead
- Washington State Department of Transportation (WSDOT)

Challenges Faced

The East Link project team faced one of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table K-1).

Strategies, Tactics, and Lessons Learned

- Begin coordination early.
- Secure early buy-in from stakeholders.
- Document consensus on environmental issues.
- Encourage an efficient approval process.

Case Study Detail

Introduction

In 2004, the Puget Sound Regional Council (PSRC) sponsored the Central Puget Sound Regional High Capacity Transit Corridor Assessment to create a framework for more detailed planning studies of transit potential in the region. This framework built on 40 years of planning work in the region, as well as an existing Memorandum of Agreement on Design and Construction of the I-90 Floating Bridge, signed in 1976 by the Washington State Highway Commission and the municipalities of Seattle, Mercer Island, and Bellevue. The agreement, developed during a period when expansion plans for I-90 were stalled, called for the future conversion of the center roadway lanes into a dedicated transit corridor. The agreement identified the corridor connecting Seattle, Bellevue, Overlake, and Redmond as the best option for high capacity transit (HCT) in the region. Sound Transit included HCT along I-90 serving the above cities in its 2006 Long-Range Plan. The East Link project executes this element of the plan.

The goal of the East Link project is to expand the Sound Transit Link light rail system and connect the urban centers of Seattle, Bellevue, Overlake and Redmond. The I-90 corridor experiences congestion and delays in both directions. Existing transit options, operating in mixed traffic, do not offer fast or reliable travel times.

The East Link project is an 18-mile extension of the Link light rail system from downtown Seattle to Mercer Island across Lake Washington, continuing east to the cities of Bellevue, Overlake, and Redmond along I-90. East Link will connect to the existing light rail system at the International District/Chinatown Station in downtown Seattle. The line will operate 20 hours per day Monday through Saturday, and 18 hours on Sunday. The project is separated into five segments (see Figure K-1):

Table K-1. Challenges summary.

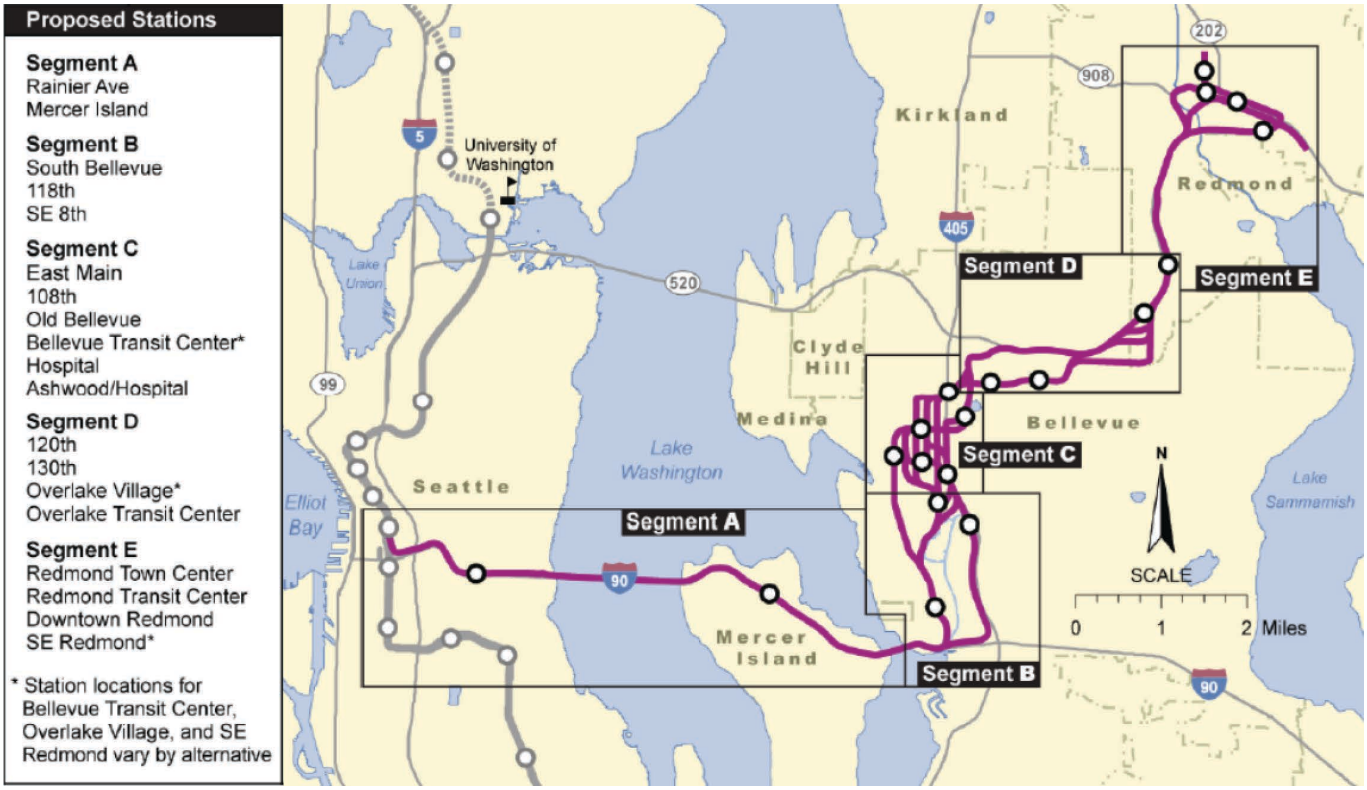
Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
	✓			

- Segment A: Seattle (International District Station) to South Bellevue in the center lanes of I-90
- Segment B: South Bellevue to SE 6th Street
- Segment C: Downtown Bellevue—SE 6th Street to 116th Avenue NE or BNSF railroad and NE 12th Street
- Segment D: 116th Avenue NE to Overlake Transit Center (NE 40th Street and SR 520)
- Segment E: Overlake Transit Center to downtown Redmond

The project includes aerial, at-grade, and tunnel alignments of electrified light rail connecting 10 stations. The project also includes a maintenance facility to provide light rail vehicle storage, operator report facilities, light rail vehicle maintenance, and maintenance-of-way facilities.

The project was approved by voters in November 2008 as part of Sound Transit's ST2 Plan (*Sound Transit 2: A Mass Transit Guide—The Regional Transit System Plan for Central Puget Sound*). ST2 was slated to fund construction and operation for segments A through D from Seattle to Overlake Transit Center, and preliminary design and environmental review of segment E. Due to lower than projected funds from ST2, it is possible that funding will run out for construction and operation before Segment D to Overlake Transit Center is complete. The minimum planned project would run from Seattle to Hospital Station, representing segments A through C.

The preferred alignment for Segment A of the East Link project between Seattle and Mercer Island will occupy the center lanes of the existing I-90 Floating Bridge, requiring the existing HOV lanes to be moved to the outside shoulder of the highway. Several design, construction, and maintenance considerations factored into decisions on adding light rail to



Source: Sound Transit

Figure K-1. East Link project area and segments (with possible alternative alignments).

the floating bridge. This project is the first known rail operation on a floating bridge, and thus inherently presents construction and operation risk.

The Draft Environmental Impact Statement (DEIS) was completed in December 2008. A Supplemental EIS was completed in November 2010. The Final Environmental Impact Statement (FEIS) was completed in July 2011, and FHWA and FTA issued separate RODs in November 2011. The project is in final design, with construction expected to begin in 2015 and revenue operations slated to begin in 2021.

Lead, Cooperating, and Participating Agencies

FTA was the lead federal agency for East Link NEPA activities; FHWA served as a cooperating agency. At the state level, Sound Transit and WSDOT both served as lead agencies, with Sound Transit taking the title of "nominal lead agency." The State Environmental Policy Act (SEPA) in Washington State stipulates that when multiple state agencies are acting as lead agencies on a project, one should be named "nominal lead agency," with an agreement created between the lead agencies to outline their roles and responsibilities in the environmental process. The agreement allows two or more agencies at the state level to share lead agency responsibilities, while designating one agency as the nominal lead for reporting purposes.

FTA became involved on the project because Sound Transit was investigating federal funding options to fund the construction of the project. Sound Transit did not pursue funding through the New Starts program, but intends to use other federal funding available through FTA to construct the project.

FHWA became involved in the project because segments A and B would be built within the existing Interstate roadway, and because the project would cross over I-405. FHWA's major action on the project is two-fold: the first is that FHWA approval was needed to convert the center HOV lanes on I-90 to track for light rail. The access approval for the center lanes was obtained through an Interchange Justification Report (IJR). The second is approval for the use of the "airspace" above the Interstate highway for the purpose of adding light rail.

Sound Transit invited several local, state, and federal agencies to participate as cooperating and participating agencies (see Table K-2). For coordination and decision-making purposes, FTA, Sound Transit, WSDOT, and FHWA served on the Executive Sponsorship Team. The Executive Sponsorship Team would step in if decisions could not be resolved at the staff level between co-leads.

Table K-2. East Link cooperating and participating agencies.

Cooperating Agencies	Participating Agencies
FHWA	U.S. Department of the Interior
U.S. Army Corps of Engineers	National Park Service
U.S. Coast Guard	U.S. Fish and Wildlife Service
City of Bellevue	U.S. Environmental Protection Agency
City of Mercer Island	National Marine Fisheries Service
City of Redmond	Advisory Council on Historic Preservation
City of Seattle	Bureau of Indian Affairs
King County	Federal Emergency Management Agency
	Affected Tribes: Muckleshoot Tribe, Snoqualmie Tribe, Squamish Tribe, Tulalip Tribe, Yakama Tribe, Duwamish Tribe (not federally recognized but included in consultation)
	Washington Department of Archaeology and Historic Preservation
	Washington Department of Natural Resources
	Washington Department of Fish and Wildlife
	Washington Department of Ecology
	Puget Sound Regional Council
	Puget Sound Clean Air Agency
	City of Clyde Hill
	City of Kirkland
	City of Issaquah
	Town of Beaux Arts Village
	City of Medina

NEPA Process/Approach

Although the project is complex due to its length and the number of alignment alternatives, the NEPA process was fairly straightforward. The four main agencies—Sound Transit, WSDOT, FTA, and FHWA—had worked together in the past on transit/highway alignment projects, and thus were accustomed to coordinating and anticipating the issues of importance to each agency.

Light Rail Components

Although the East Link corridor was long, with several alternatives (19 alignment alternatives within the 18-mile corridor), the project team decided to move forward with a single environmental review process, noting in interviews that while analyzing the corridor alternatives was complex, there was no better strategy for approaching environmental review. The most significant challenge appeared to be describing and analyzing the impact of the multiple alternatives, especially in a manner that would be clear to the public during community outreach.

The NEPA process began with a Notice of Intent in the Federal Register in 2006. An EIS was pursued due to the significant impact the light rail alignment would have on communities along the East Link corridor. The DEIS was completed December 2008. As a result of public input during the DEIS process, additional alignment alternatives and issues were raised for all the segments, warranting additional analysis through a Supplemental DEIS, completed in November 2010. The issues raised during the Supplemental DEIS included:

- Segment A: Properties adjacent to I-90 were deemed eligible for the National Register of Historic Places. It was determined that the inclusion of light rail on I-90 would not affect these properties.
- Segments B through E: New alignment and station location options were reviewed after receiving public comments.

The FEIS was approved in July 2011.

Highway Components

In order to approve the addition of light rail to I-90, WSDOT and FHWA completed an IJR to address access changes to the facility. An IJR is required if a project proposes modifications to access on a limited-access facility; FHWA's approval of the IJR requires compliance with NEPA. The IJR includes eight policy areas that must be analyzed to justify the project modifications, providing a comprehensive tool to evaluate changes to the existing network beyond environmental approval. These policy areas include project need; evaluation of reasonable alternatives; operation and accident analysis; review of access connections and design; land use and transportation plans; overview of future planned interchanges; coordination with other projects; and summary of NEPA process. While there were no major access changes to the facility as a result of the project, WSDOT and FHWA used this process as a means for evaluating the engineering and operating feasibility of light rail on I-90, specifically Segment A. The IJR was approved in May 2011, shortly before the FEIS.

FHWA and FTA issued concurrent RODs in November 2011—the first time the agencies had done so on a Sound Transit project. FHWA traditionally waits for the lead agency ROD, and then negotiates its approval in a single document, often slowing down the approval process. FHWA and FTA decided to issue concurrent RODs; this allowed each federal agency to focus on its own approval and respective areas of importance without having to coordinate the approvals on a single document and potentially slowing down the approval process—which had been both agencies' experience with previous joint environmental documents.

Agency Requirements Applied to NEPA

FHWA's and FTA's NEPA regulatory requirements are detailed in 23 CFR Part 771, "Environmental Impacts and Related Procedures." The regulation states, ". . . when both the FHWA and FTA are involved in the development of a project, or when the FHWA or FTA acts as a joint lead agency with another Federal agency, a mutually acceptable process [for coordinating on NEPA] will be established on a case-by-case basis."

The participating agencies had differing perspectives, however, on how to approach the project and on the importance of particular environmental issues. These differences derive from the different components of the project that are important to each agency, rather than the statutory and regulatory differences, as further described below. At the state level, Sound Transit and WSDOT also have different procedures and practices for implementing SEPA.

Impact of These Requirements

One area in which these differences in perspective were illustrated is the agreement on the purpose and need statement in the EIS. FTA and Sound Transit thought the purpose and need of the project should be to implement light rail in the region, consistent with past planning conducted by Sound Transit and the PSRC. FHWA and WSDOT preferred a broader purpose and need statement. Project staff noted that an example of a broader purpose might include a statement such as "improve mobility." The negotiation

around the purpose and need statement reflected a desire to keep transportation options open, as there was some hesitancy to proceed with the project because of the shift of lane capacity on I-90 in Segment A. This project is tied closely to the I-90 HOV lane project, which will replace the HOV capacity lost to light rail by converting the shoulders to an additional lane that will accommodate HOV traffic. The tension between maintaining and increasing highway capacity and instituting reliable public transportation played out in the environmental review.

Another area in which differing perspectives arose was how to measure and mitigate environmental impacts. For example, due to the modal differences between the agencies, their responses to mitigating an impact such as noise differ due to the origin and nature of the impact. Rather than negotiating these relatively common divergences on every project, Sound Transit, WSDOT, FTA, and FHWA found an efficient way to reach consensus on recurring environmental issues on regional projects.

In 2001, WSDOT and Sound Transit formed an Environmental Action Team (EAT), with support from FHWA and FTA, to coordinate and document mutually agreed upon action from all parties on common environmental issues that arose on Sound Transit regional projects. The catalyst for the EAT was the implementation of the Sound Transit Regional Express project, which added several bus routes to highway corridors in the region.

The EAT participants agreed upon policy actions through "issue papers" authored by staff at the agencies. The issue papers are kept in an online library that is accessible to project staff. The papers discuss topics ranging from air quality to right-of-way acquisition to transit-oriented development requirements for FTA and FHWA. Project staff on the East Link project from both Sound Transit and WSDOT mentioned the EAT as a valuable tool in efficiently working through varying perspectives on methodologies and mitigation strategies for environmental impacts.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: There were no specific program requirements under NEPA that provided unique challenges on the project.

Differing Agency Interpretations of NEPA Requirements: FTA and FHWA approach their similar requirements from different perspectives. The agencies' varying perspectives were a challenge, but not insurmountable due to a tradition of coordination among the agencies (including Sound Transit and WSDOT). The issue papers created by the EAT assisted in providing a foundation for methodologies and mitigation strategies that could be agreed to by all agencies.

Anticipating Which Agencies Will Have a Major Federal Action: Anticipating major federal action on the project was not a challenge because federal agency involvement was clear throughout the project. Sound Transit was seeking FTA funding, necessitating FTA's involvement. The change to access along I-90 triggered FHWA's involvement. FHWA expressed early on that it should not be the lead agency, which was another factor in FTA assuming that role.

Efficient Coordination among Participating Agencies: The agencies—Sound Transit, WSDOT, FHWA, and FTA—had worked together in the past on the Central Link project as well as the Sound Regional Express projects. The institutional knowledge from these previous partnerships led to a good working relationship among the agencies. On the East Link project, Sound Transit created a coordination plan that outlined the team structure and a project work plan outlining the NEPA and SEPA processes.

Sound Transit made an effort to communicate with WSDOT and FHWA early on to facilitate timely approvals later in the process and avoid delays. Sound Transit also met monthly with FHWA to work through traffic analysis and ridership forecasting for the IJR process, providing a platform for consistency between the EIS and IJR processes.

Securing Funding for Multimodal NEPA Studies: Sound Transit funded the NEPA process, including funding for work completed by WSDOT.

Strategies/Tactics Used to Overcome Challenges

The most valuable strategy used to overcome project challenges was put in place before the start of the NEPA process. The creation of the EAT and issue papers in the early 2000s helped to establish foundations upon which to build solutions to complex, recurring environmental issues among the four agencies. While each issue requires project-specific solutions, having already agreed to principles and approaches to govern the measurement and mitigation of impacts enabled timely resolution of problems and conflicts.

The 1976 Memorandum of Understanding signed by local stakeholders that included transit on the I-90 corridor in the future was also an important contributor to success. This might have helped to mitigate challenges related to the inclusion of light rail on the I-90 Floating Bridge, and it did help solidify the focus on public transit in the purpose and need statement.

Lessons Learned

The following approaches helped resolve challenges in an efficient manner, and mitigated additional issues:

Begin coordination early. Sound Transit included WSDOT and FHWA as partners early on in the project, allowing the agencies to work through any issues, especially related to traffic and ridership projections along Segment A of the East Link corridor. Coordination among the agencies was also frequent due to the IJR process, allowing Sound Transit to address the highway agencies' concerns early in the process. The development of a coordination plan early in the NEPA process also helped to structure the project team and environmental review work plan.

Secure early buy-in from stakeholders. The biggest public controversy on the project was the alignment of the project and the replacement of the center HOV lanes on the I-90 Floating Bridge with light rail. The Memorandum of Agreement documented the importance of HCT to regional partners, and their formal coordination and support proved valuable in countering some of the backlash against the project.

Document consensus on environmental issues. The EAT issue papers were a valuable resource as a starting point for discussing methodologies and mitigation techniques to address specific issues that arose during the project. The ongoing working relationships among the four agencies were strengthened as a result of developing issue papers to guide decision-making, and reinforced the credibility of the issue papers.

Encourage efficient approval process. One of the process improvements emerging from the project was issuance of separate, concurrent RODs by FTA and FHWA. The efficiency of the process resulted in part because of the separate, targeted focus on certain project components by each agency and coordination on components through the DEIS and FEIS.

Bibliography

Central Puget Sound Regional Transit Authority (Sound Transit). May 2011. *I-90 East Link Project Final Interchange Justification Report.*

Federal Highway Administration. November 17, 2011. "East Link Light Rail Transit Project: Record of Decision."

Federal Transit Administration. November 16, 2011. "Record of Decision for Central Puget Sound Regional Transit Authority's (Sound Transit) East Link Light Rail Transit Project."

Federal Transit Administration, Washington State Department of Transportation, and Central Puget Sound Regional Transit Authority (Sound Transit). July 2011. *East Link Project Final Environmental Impact Statement.*

APPENDIX L

Case Study—Orange Line LRT Extension to Dallas/Fort Worth International Airport, Dallas, Texas

Summary

Project Description

The Orange Line LRT Extension project is a 14-mile extension of the Dallas, TX, light rail system between downtown and Dallas/Fort Worth International Airport (DFW).

Key U.S. DOT Agencies

- Federal Transit Administration (FTA)—Lead
- Federal Aviation Administration (FAA)—Cooperating

Key State and Local Agencies

- Dallas Area Rapid Transit (DART)—Sponsor
- Dallas/Fort Worth International Airport (DFW)
- Cities of Dallas and Irving
- North Central Texas Council of Governments (NCTCOG)
- Texas Department of Transportation (TxDOT)

Challenges Faced

The Orange Line LRT Extension project team faced three of the five common challenges related to multi-agency National Environmental Policy Act (NEPA) activities (see Table L-1).

Strategies, Tactics, and Lessons Learned

- Coordinate early with federal agencies to establish the most effective project structure and staffing.
- Develop relationships with federal and sponsor agencies prior to the start of the project.
- Become familiar with other agency considerations early in the project.
- Hire a knowledgeable specialist to efficiently navigate any unfamiliar processes.
- Combine NEPA processes.
- Maintain frequent coordination with interested partner agencies.
- Leverage mutual interest in the project.
- Utilize joint meetings and open, transparent communication among federal lead and cooperating agencies.
- Allocate additional time to reconcile differing agency approaches.

Case Study Detail

Introduction

DART expanded its light rail system by adding a 14-mile extension of the Orange Line to the Dallas/Fort Worth International Airport (DFW) (see Figure L-1). The extension was completed in two phases. The first phase, called "Irving 1 and Irving 2," extended the Orange Line 9.3 miles from Bachman Station (where the Orange Line diverges from the Green Line) to the Beltline Station. The last mile and one station of this phase, which opened for revenue service in 2012, are on DFW property.

The second phase, called "Irving 3," extends the Orange Line approximately 5 miles from Beltline Road to the DFW airport terminal station. It includes only one station and is completely on the airport. It opened in August 2014.

The NEPA process for the first phase required an Environmental Impact Statement (EIS), while NEPA requirements for the second phase were satisfied by an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI).

Lead, Cooperating, and Participating Agencies

The lead federal agency for NEPA on both phases of the Orange Line was FTA. FAA was a cooperating agency for both phases. DART was the local sponsor and coordinated directly with FTA and FAA. DART held several joint meetings with both FTA and FAA, but usually met individually with either

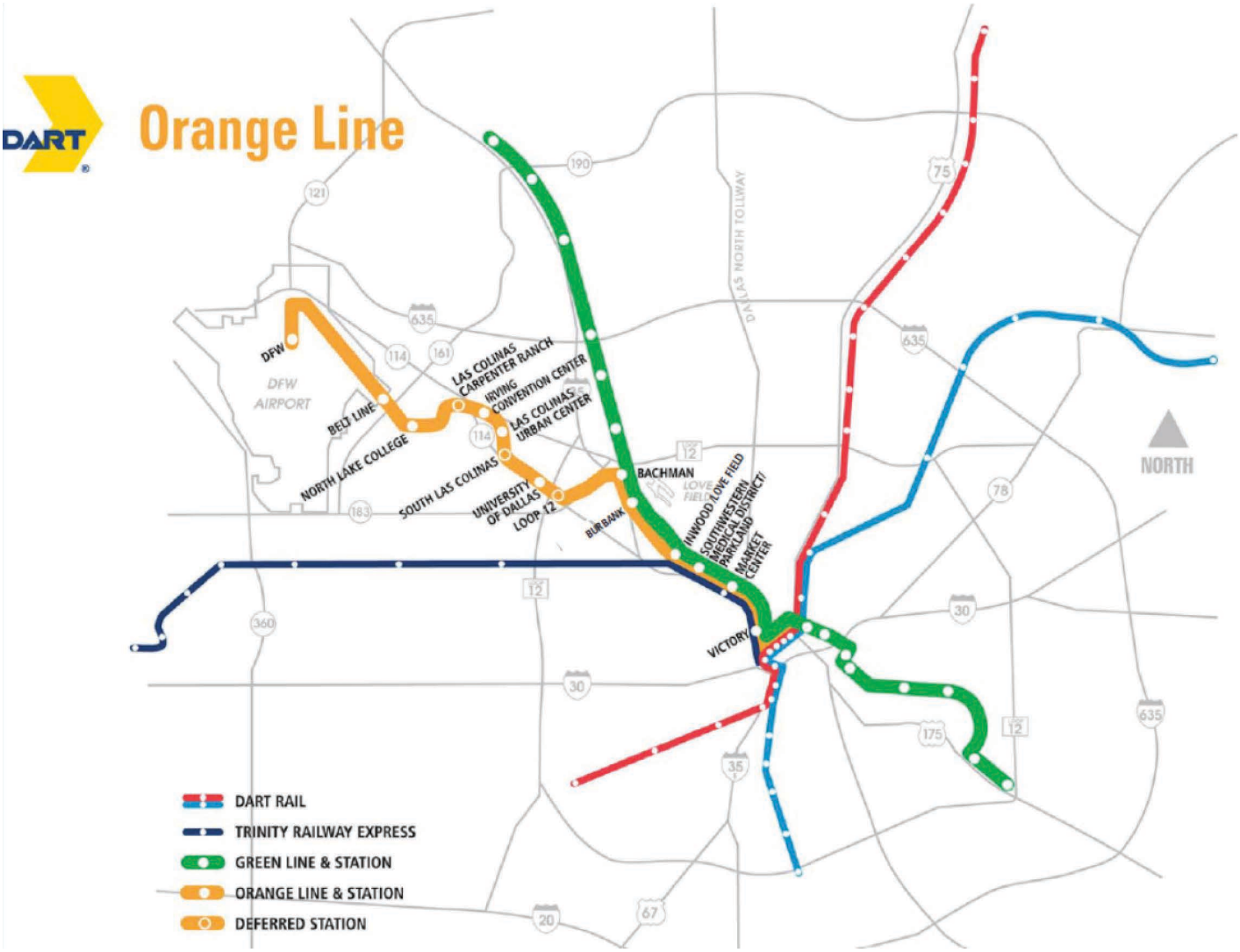
Table L-1. Challenges summary.

Unique agency-specific program requirements under the NEPA umbrella	Differing agency interpretations of NEPA requirements	Anticipating which agencies will have a major federal action	Efficient coordination among agencies	Securing funding for multimodal NEPA studies
✓	✓		✓	

FTA or FAA. DART copied FAA and FTA on its communications with the other agency, so that both agencies would be informed.

DFW, as the airport sponsor, was a participating agency. DFW represented airport issues and acted as a facilitator with FAA to support design and construction. FAA coordinated with DFW before signing off on anything related to the airport.

DART had separate reimbursement agreements, funded by DART, with DFW and FAA. The agreement with FAA paid for dedicated personnel at FAA who reviewed design and NEPA documents. This helped accelerate the process. DFW served as the local entity to coordinate airport requirements with DART and other jurisdictions. Through the agreement, DART reimbursed DFW for its staff time associated with the project.



Source: DART

Figure L-1. DART System map highlighting the Orange Line.

From FAA's perspective, the major federal action triggering NEPA was the change to the Airport Layout Plan required by the light rail transit (LRT) alignment. Such changes require FAA approval. Sections 49 USC 47107 (a) and (g) of the Federal Reauthorization Act of 1996 allow the U.S. Secretary of Transportation to prescribe certain assurances from airport sponsors in exchange for receiving FAA funds. Under these regulations, the airport sponsor is required to keep the Airport Layout Plan up to date. The sponsor must obtain FAA approval of any changes to the Airport Layout Plan, and this approval is a major federal action under FAA Order 5050.4b (NEPA Implementing Instructions for Airport Actions).

Initially, the light rail project was anticipated to be funded locally. However, after consultation between DART, FTA, FAA, and DFW, all parties agreed that it would be preferable for FTA to be the lead agency for NEPA with FAA as a cooperating agency—FTA is more familiar with the environmental impacts associated with a light rail project, FTA had staff resources to commit to the project, and DART had the expertise to manage the NEPA process. In order for FTA to be the lead agency for NEPA, it was necessary that FTA have a major federal action. DART elected to pursue federal funds for the first phase, since an FTA grant is a federal action under NEPA. Following the Record of Decision (ROD), DART obtained a $60 million grant under the American Recovery & Reinvestment Act of 2009 (ARRA) and $50 million in Congestion Mitigation and Air Quality funds to construct the first phase. For the second phase, DART applied a small amount of its Section 5307 formula funds to the project so that there would be an FTA action.

DART formed a Technical Advisory Committee (TAC) comprised of interested agencies that provided input on each phase. For the first phase, the cities of Irving and Dallas, TxDOT, and DART served as the core participants in the TAC. For the second phase, DART, the Fort Worth Transportation Authority, and DFW served as the TAC. DFW hosted bi-weekly TAC meetings at the airport primarily to coordinate the many DFW departments with an interest in the project. The meetings also addressed other project issues, such as emergency response, as needed.

NEPA Process/Approach

The Orange Line extension to the airport has a long history. Rail from Dallas through Irving to DFW was part of DART's first Transportation System Plan in 1985. In 2000, a corridor-level major investment study concluded with a locally preferred alternative (LPA) of light rail to the north end of DFW. In 2002, the DFW Rail Access Study considered three light rail alignments that would directly serve the DFW Airport Central Terminal Area.

The purpose of the Orange Line extension was to serve the City of Irving and to connect DART's extensive light rail system to DFW Airport. As such, the project was divided into two phases. The first phase extended light rail through the City of Irving to DFW property. The second phase provided rail service directly to the central terminal area. At the onset of NEPA for the first phase, the exact route of the second phase was yet to be determined. FTA determined that each phase had independent utility, allowing the phases to advance with two separate environmental efforts.

Due to the potential impacts along the nine-mile line through the cities of Dallas and Irving to the airport property, the first phase (Irving 1 and 2) required an EIS. Public scoping for the Draft Environmental Impact Statement (DEIS) commenced in March 2005. The DEIS was published in January 2008. The DART Board approved the refined alignment and stations in April 2008. The Final Environmental Impact Statement (FEIS) was published in July 2008, and the FTA ROD was signed on September 5, 2008. The FAA ROD was approved on January 7, 2009.

In January 2009, DART awarded its first-ever design-build contract for Irving 1 and Irving 2. Construction began in June 2009, and revenue service on the first phase began in late 2012.

The second phase (Irving 3) was shorter, entirely on airport property, and had far fewer impacts. It qualified for an EA. Initial coordination between DART, FTA, FAA, DFW, and NCTCOG began in late 2008. Scoping began in 2009, and the EA was published in August 2011. FTA and FAA each issued a FONSI in October 2011. The design-build contractor was selected in December 2011.

When the design-build contractor for the second phase suggested an alignment change as a cost-saving measure, FAA determined that a supplemental EA would be required. A draft supplemental EA was submitted in February 2012. In March 2012, FAA reduced the level of review to a re-evaluation. The re-evaluation was finalized in April and both FTA and FAA determined that their previous FONSIs were valid.

A single environmental document was prepared for each phase of the project, but FTA and FAA each issued an ROD/FONSI. As the project sponsor, DART took the lead during both phases, managing the environmental analysis and preparing the NEPA documents. The much shorter timeframe for the second phase was partly due to the lessons learned by DART during the first phase. Construction of Irving 3 began in April 2012 and was completed in August 2014 (see Figure L-2).

Agency Requirements Applied to NEPA

FTA's NEPA requirements are detailed in 23 CFR Part 771, "Environmental Impacts and Related Procedures." FAA guidance is contained in FAA Order 5050.4b, "NEPA Implementing Instructions for Airport Actions." FTA and FAA requirements

Source: DART

Figure L-2. Construction at DFW station, September 2013.

are not incompatible, but the agencies have different interests and tend to emphasize different elements.

FTA and FAA NEPA documents respond to the same statutory requirements in NEPA, and the same regulations from the Council on Environmental Quality (CEQ), and their documents cover the same topic areas. However, some of the considerations differ due to the differing nature of each agency's typical projects. Noise impacts, for instance, are addressed differently by each agency. Due to the linear nature of transit projects, which travel through or adjacent to numerous properties, FTA tends to deal with many impacts to individual noise receptors. Typical airport projects, by contrast, lead to concerns about how an increase in flights might impact overall noise levels in the surrounding community. There are also unique concerns on an airport due to potential interference with airport communications.

The FAA guidance requires the evaluation of specific environmental impact categories of particular interest to airports: air quality, compatible land use, construction impacts, flood plains, light emissions and visual effects, water quality, wetlands, and Waters of the United States. In addition, FAA has a greater focus on safety and security. Finally, FTA and FAA have different thresholds for resource categories.

FAA typically requires an Airspace Study before changing an Airport Layout Plan. The Airspace Study allows FAA to determine whether the height, layout, and composition of the structure will obstruct the navigable airspace or adversely affect FAA facilities, such as navigational aids.

The Airspace Study can assess a wide range of potential impacts, depending on the airport's particular interests. These may include airport design standards, objects affecting navigable airspace, airport navigation, human factors, safety, and risk management. Even if there are no tall structures that exceed obstruction standards, there may be physical or electromagnetic effects that impact navigation. Airport navigation relies on electromagnetic radiation, which is highly sensitive to a variety of factors, including reflection from lower structures and the metal associated with a light rail project. Differing impact thresholds for wetlands also became a factor during the second phase. FAA initially asked for a Supplemental EA when the design-build contractor proposed more at-grade design. FAA also requires public meetings in some situations that FTA does not.

Impact of These Requirements

During the first phase, DART was unfamiliar with FAA requirements and did not realize that an Airspace Study would be required until after the DEIS was published. Starting the Airspace Study late delayed the project by several months—FTA's ROD was issued several months prior to FAA's. Nevertheless, DART's design-build contractor was able to start work on the off-airport portion of the project prior to FAA's ROD that covered the on-airport portion.

For the second phase, DART hired an aviation expert—a well-respected professional who had been involved in the first phase to guide coordination and compliance with FAA. The Airspace Study was started early. As a result, the EA proceeded more smoothly and the FONSI was issued two years after scoping. Subsequently, however, issues arose over the way DART approached design-build contracting. DART paid its design-build proposers to develop a book of ideas as part of the selection process. The approach was intended to generate innovative solutions for reducing costs and schedules and addressing other challenges. DART waited to initiate the design-build competition until after the NEPA process was complete. At that point, changes in the project needed to be considered in terms of their potential to reopen NEPA.

This invitation to propose improvements concerned FAA during the second phase. FAA rarely modifies a project after the NEPA process. After environmental review was completed, the design-build firm proposed putting more of the project at-grade and reducing the amount of structure at DFW. The refined alignment also avoided the need to relocate the navigational aids and windshear devices. While these alignment adjustments reduced costs, they modified floodplain impacts and brought the project closer to the airfield. The refined design also involved different access roads both during and after construction than had been originally analyzed.

Initially FAA thought that a supplemental environmental review would be required. There is a "pinch point" where the project is close to several highways and other roads and the landing strips. Separation and clearance had to be protected for these areas, which was a constant challenge. A supplemental document would have required sign-off by FAA's navigational aids specialists after a lengthy, complex review process.

It was determined that the changes would not alter the original findings and a re-evaluation was sufficient. Nevertheless, evaluating the issue delayed the project by several months, as FAA would not allow the project to move forward on the airport until the environmental approval was in place.

Challenges to Multimodal NEPA Studies Relevant to the Project

Unique Agency-Specific Program Requirements under the NEPA Umbrella: The FAA requirement for an Airspace Study created some of the biggest challenges for the project. DART did not anticipate the need for an Airspace Study as part of the first phase which delayed the project by several months. In addition, even though DART anticipated the Airspace Study in the second phase, it did not recognize how sensitive the airport's navigational aids were to interference from reflection and the metal associated with light rail vehicles. There were challenges throughout the second phase in terms of the design and potential impacts on the navigational aids and airfields as the project passed through the pinch point.

Differing Agency Interpretations of NEPA Requirements: While the interpretations of NEPA requirements between FTA and FAA were not in conflict, differences in emphasis created challenges for the project. FTA is accustomed to dealing with linear projects where impacts to properties along the way, both residential and business, can be an issue. FTA initially viewed DFW as simply one of the property owners along the corridor, and did not anticipate intense scrutiny of all aspects of the project by DFW and FAA. For example, DART did not consider the alignment modification proposed by its design-build contractor to be a significant change, but FAA initially required a Supplemental DEIS. Another difference between agencies is the level of review required for various NEPA processes. A Supplemental EIS automatically triggers a higher level of review within FTA than a re-evaluation, and takes much more time.

A further difference relates to the role of the NEPA process in federal agency decision-making. For FTA, the NEPA process is a part of the project development process, and projects are expected to evolve incrementally during NEPA. For FAA, projects are essentially developed and then subjected to NEPA review.

Anticipating Which Agencies Will Have a Major Federal Action: Anticipating major federal actions was not an issue after DART decided to seek FTA funding for the project. Early coordination with FTA and FAA revealed that FAA would have to approve a modification to the Airport Layout Plan, which would trigger a review under NEPA as described above.

Efficient Coordination among Agencies: A tremendous amount of coordination was required to resolve the many issues among DFW, FAA, and FTA, as well as TxDOT, local cities, and resource agencies. Effective coordination, while time consuming, was one of the keys to success for the project. Based on previous projects, DART anticipated the need for strong project management and worked closely with all major players. DFW led regular and frequent meetings to coordinate issues among its departments. FAA requires sign-off from the airport sponsor for all issues relating to facilities. By resolving issues on the airport, DFW facilitated FAA approval.

Securing Funding for Multimodal NEPA Studies: Light rail to the airport had long been a priority in DART's system plan. DART funds its NEPA studies with revenue from a one percent sales tax levied by member cities. It also traditionally pays for most of the capital costs of its projects, although it did obtain some federal funds for construction of both phases of this project. DFW paid for design and construction of the station on the airport in the second phase, but did not contribute funding to the NEPA process.

Strategies/Tactics Used to Overcome Challenges

In order to efficiently address FAA's unique program requirements, DART hired an experienced aviation consultant for the second phase. The individual was familiar with the technical and procedural requirements, and knew the staff at FAA. This consultant conducted the Airspace Study for the second phase, and had been involved with the Airspace Study for Phase 1.

DART was also attentive to the differences in approach between FTA's and FAA's NEPA procedures. For example, initial coordination with FTA, FAA, and DART led to agreement that FTA should be the lead agency. FTA's funding was a federal action that triggered NEPA, thereby giving FTA status to be the lead agency. DART also adhered faithfully to FAA NEPA guidance (5050.4b). It created a separate chapter in the EA and a separate section in the EIS where airport impacts were summarized in a format familiar to FAA.

Interviewees also emphasized the importance of productive relationships and constant communication as keys to effective coordination on multimodal projects. DART took a proactive and hands-on management approach throughout the process. It met periodically with FTA and FAA and copied them both on correspondence to keep them informed. DART also worked closely with local partner agencies. In the first phase, DART worked with a TAC comprised of the Cities of Dallas and Irving as well as TxDOT. In the second phase, DARTs partners were the Fort Worth Transportation Authority and DFW. DFW provided guidance on the FAA process and played a key role in addressing on-airport issues by hosting

numerous meetings with various parts of its organization. The TAC was instrumental in resolving airport issues.

Lessons Learned

Coordinate early with federal agencies to establish the most effective project structure and staffing. Coordination enabled the project partners to understand challenges and identify the most expeditious path. The early meetings with FTA and FAA confirmed that FTA should be the lead federal agency. In addition, in projects involving FAA, developing a well-structured reimbursement agreement is key, because funding is necessary for FAA staff to be able to engage with project teams. DART's regular communications throughout were also important in moving the project forward.

Build relationships with federal and sponsor agencies prior to the start of the project. The positive relationships among DART, FTA, FAA, and DFW created an environment of trust. As a result, when a challenge emerged, there was a willingness to collaborate toward a solution.

Become familiar with other agency considerations early in the project. Earlier awareness of the FAA Airspace Study requirement would have avoided the delay in the first phase of the project.

Hire a specialist to expedite any unfamiliar processes. DART's engagement of an experienced professional who knew FAA requirements and was known to FAA staff significantly expedited FAA coordination in the second phase of the project.

Combine NEPA processes. Having a single lead agency and a single environmental document saved resources and time. Consolidating analysis into one document helped foster a shared understanding of the project and its impacts and alternatives.

Maintain frequent coordination with interested partner agencies. The regular TAC meetings with interested federal, state, regional, and local agencies allowed the project team to identify and resolve issues in a timely manner.

Leverage mutual interest in the project. DFW had worked with DART and others in the region for years on proposed light rail access to the airport and was consistently supportive of the project. They put the time and resources into coordinating their interest as well as translating and facilitating communication between DART and FAA as needed.

Utilize joint meetings and open communication among federal lead and cooperating agencies. DART's practice of always copying both FTA and FAA when e-mailing one of the agencies was an efficient way to facilitate coordination. In addition, more joint meetings between the FTA and FAA might have facilitated more rapid resolution of differences. For example, FTA might have been able to address some of FAAs concerns regarding the alignment refinement had they met directly during the design-build selection process.

Allocate additional time to reconcile differing agency approaches. In this case, the schedule could have allotted time for environmental review when project changes were contemplated on the airport.

Bibliography

Dallas Area Rapid Transit. June 17, 2009. "I-3 DFW Connection." Presented at public meeting, Dallas, TX.

Dallas Area Rapid Transit. 2009. "Fact Sheet: DART Orange Line to North Irving/DFW Project Overview, Summer 2009."

Dallas Area Rapid Transit. 2009. "Irving 3 Newsletter, DFW LRT Extension," Issue 1.0, Fall 2009.

Dallas Area Rapid Transit. 2010. "Orange Line Update News Letter," Spring 2010 Issue.

Dallas Area Rapid Transit. 2011. "Orange Line Update Newsletter," Spring 2011 Issue.

Dallas Area Rapid Transit. September 2011. *DART Orange Line DFW Airport Extension Irving-3, Environmental Assessment.*

Dallas Area Rapid Transit. 2012. "Orange Line Winter 2012 Newsletter."

Dallas Area Rapid Transit. June 2, 2011. "I-3 DFW Extension." Presented at public hearing, Dallas, TX.

Dallas Area Rapid Transit. 2011. "DART System Access to DFW." Presented at One DOT meeting, June 30, 2011, Fort Worth, TX

Federal Transit Administration, Dallas Area Rapid Transit, and Federal Aviation Administration. July 2008. *Northwest Corridor LRT Line to Irving/DFW Airport, Final Environmental Impact Statement.*

Federal Transit Administration and Dallas Area Rapid Transit. October 2009. "Notice of Intent for the DART Irving-3 LRT Extension to DFW Airport."

Federal Aviation Administration. September 2011. "Finding of No Significant Impact, DART Orange Line DFW Airport Extension IRVING-3."

Federal Transit Administration. October 11, 2011. "Finding of No Significant Impact, Dallas Area Rapid Transit Orange Line DFW Airport Extension (Irving-3)."

APPENDIX M

Key NEPA Requirements of U.S. DOT Agencies

The National Environmental Policy Act (NEPA) provides the statutory basis for agency rules and guidance implementing the law. NEPA is implemented through Council on Environmental Quality (CEQ) regulations found at 40 CFR Parts 1500-1508, and through agency-specific regulations and guidance promulgated by individual federal agencies. Table M-1 identifies the most significant U.S. DOT agency laws, regulations, and guidance supplementing NEPA and the CEQ regulations, as noted in the case studies documented in this research. Some of the case studies were advanced under rules and guidance that have been subsequently revised. This is not intended to be a complete list of the numerous federal statutes, regulations, and executive orders governing environmental review of transportation infrastructure projects in the United States. Consulting agency staff and websites is necessary for more complete and current information.

Table M-1. Key NEPA requirements of U.S. DOT agencies.

Agency	Reference	NEPA-Related Contents	Specific Considerations Identified in Case Studies	Relevant Case Studies
U.S. DOT	DOT Order 5610.1C	Department-wide procedures for considering environmental impacts of proposed U.S. DOT actions.		
Federal Highway Administration (FHWA)	23 USC Part 168: Integration of Planning and Environmental Review	Provisions enacted in MAP-21 to address the integration of transportation planning and environmental review.		
	23 CFR Part 771: Environmental Impact and Related Procedures	Rule establishing joint FHWA and Federal Transit Administration (FTA) procedural requirements for satisfying NEPA.	While this is a joint regulation with FTA, separate provisions apply to each agency. For example, there are different Categorical Exclusion (CE) lists and public involvement requirements.	
	23 CFR Part 772: Procedures for abatement of highway traffic noise and construction noise	Rule establishing evaluation and abatement of noise for FHWA projects.	These rules contain different thresholds for mitigation than apply to FTA projects.	• T-REX • East Link
	23 CFR Parts 450 and 500, 49 CFR Part 613: Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule	Paragraph 450.318 and Appendix A provide rules and guidance for linking planning and NEPA.	While these are joint regulations with FTA, the case studies show some differences in approach to linking planning and NEPA, e.g., number of alternatives reviewed and selection of the preferred alternative during NEPA.	• Columbia River Crossing • Mountain View • East Link
	40 CFR Part 93, Subpart A: Conformity to state or federal implementation plans of transportation plans, programs, and projects developed, funded, or approved under Title 23 USC or the federal transit laws	EPA rule on air quality conformity analysis for transportation projects funded under Title 23 or FTA.	Transportation conformity is different than general conformity air quality analysis, which is required for projects not funded under these funding categories under subpart B of the Clean Air Act amendments.	• National Gateway
Federal Transit Administration (FTA)	23 CFR Part 771: Environmental Impact and Related Procedures	Rule establishing joint FHWA and FTA procedural requirements for satisfying NEPA.	While this is a joint regulation with FHWA, separate provisions apply to each agency.	
	23 CFR Parts 450 and 500, 49 CFR Part 613: Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule	Paragraph 450.318 and Appendix A provide rules and guidance for linking planning and NEPA.	While these are joint regulations with FHWA, the case studies show some differences in approach to linking planning and NEPA, e.g., number of alternatives reviewed and selection of the preferred alternative during NEPA.	• Columbia River Crossing • T-REX • East Link
	49 USC 5309: Major Capital Investment Projects; New and Small Starts Evaluation and Rating Process Final Policy Guidance	Rule and policy guidance that spells out the procedural requirements and criteria that apply during the planning and development of projects proposed for funding with the Section 5309 New Starts and Small Starts funds.	Requires FTA review and approval of the project as it advances from planning into project development and then into engineering. Project must be approved into project development before NEPA is completed. Rating criteria for grant funding can affect the selection of preferred alternative.	• Columbia River Crossing • Dulles Project • T-REX • I-70 East

Table M-1. (Continued).

Agency	Reference	NEPA-Related Contents	Specific Considerations Identified in Case Studies	Relevant Case Studies
Federal Aviation Administration (FAA)	FAA Order 1050.1E Environmental Impacts: Policies and Procedures	Agency-wide policies and procedures for NEPA compliance.	Requires the evaluation of specific environmental impact categories and different thresholds of interest to airports for noise, air quality, land use, construction, floodplains, light emissions and visual effects, water quality, wetlands, and Waters of the United States. Also focuses on safety, security, and public involvement requirements. These considerations may result in requiring an EIS in some situations that would not be required for other U.S. DOT agencies.	• DART DFW Extension • Dulles Project • XpressWest
	FAA Order 5050.4B: NEPA Implementing Instructions for Airport Actions	Instructions for federal actions that support airport development projects.	Paragraph 9.g, 1-11 lists federal actions that require NEPA review. The list includes conditional, unconditional, and mixed approval of Airport Layout Plans. Section 202 discusses Airport Layout Plans.	• DART DFW Extension • Dulles Project • XpressWest
	FAA Order JO7400.2K: Procedures for Handling Airspace Matters, Chapter 32, Environmental Matters	General procedures applicable to airspace management and policy and procedures unique to Objects Affecting Navigable Airspace and Airport Airspace Analysis.	Chapters 4 and 6 contain policies and procedures related to NAVAID, Aeronautical Studies, and evaluation and determination of effects. These considerations may trigger NEPA review even if airport property is not touched by project.	• DART DFW Extension • Dulles Project • XpressWest
	14 CFR Part 77: Safe, Efficient Use and Preservation of Navigable Airspace	Standards and notification requirements for Objects Affecting Navigable Airspace.	Obstruction Evaluation/Airport Airspace Analysis is required to change the Airport Layout Plan. These considerations may trigger NEPA review even if airport property is not touched by project.	• DART DFW Extension • Dulles Project • XpressWest
	Advisory Circular 150/5300-13A: Airport Design, and Interim Guidance on Land Uses within Runway Protection Zones	Procedures for review of potential impacts to Runway Protection Zone (RPZ).	Operating rail lines are considered “places of public assembly” and are prohibited land uses in RPZ.	• Dulles Project
Federal Railroad Administration (FRA)	Procedures for Considering Environmental Impacts, 64 FR 28545 and 78 FR 2713	Non-regulatory guidance on FRA procedures for compliance with NEPA and related environmental laws, executive orders, and regulations.	Outlines 20 different CEs that are different from FTA and FHWA. Requires additional review of contractors. Impacts to 4(f) properties require a separate 4(f) analysis concurrent with the NEPA document. Since FRA is responsible for rail safety, there are additional safety reviews by the Rail Safety Advisory Committee.	• XpressWest
	40 CFR Part 93, Subpart B: Determining Conformity of Actions to State or Federal Implementation Plans, Subpart B	U.S. Environmental Protection Agency (EPA) rules requiring general conformity air quality analysis.	General conformity involves different air quality analysis than projects funded under Title 23 or transit programs, which are subject to transportation conformity under Subpart B of the Clean Air Act Amendments.	• National Gateway

(continued on next page)

Table M-1. (Continued).

Agency	Reference	NEPA-Related Contents	Specific Considerations Identified in Case Studies	Relevant Case Studies
	49 CFR Part 239: Passenger Train Emergency Preparedness	Rules requiring Emergency Preparedness Plans.	FRA Office of Safety approval of Emergency Preparedness Plan is a federal action.	• XpressWest
	High-Speed Intercity Passenger Rail (HSIPR) Program NEPA Guidance and Table	Additional non-regulatory guidance that applies to programs and specific projects funded through the HSIPR program.	Requires consideration of potential effect on HSIPR when reviewing projects.	• CREATE
Surface Transportation Board (STB)	49 CFR Part 1105: Procedures for Implementation of Environmental Laws	Rules to assure adequate consideration of environmental and energy factors in the Board's decision-making process pursuant to NEPA and related laws.	Paragraph b allows STB to exempt state and local environmental and land use requirements under certain circumstances.	• XpressWest
U.S. Coast Guard (USCG)	Commandant Instructions M 16590.5C: Bridge Administration Manual	NEPA implementation instructions for USCG projects.	Navigational impacts must be evaluated. FHWA leads but consults USCG on level of environmental review and need.	• Port of Miami Tunnel

APPENDIX N

Inventory of Multimodal NEPA Processes

State	Project	Modes	Lead Federal Agency(ies)	Other Federal Agencies Participating	Lead State/Local Agency(ies)	Other State & Local Participating Agencies
AK	Northern Rail Extension Project	Rail (Passenger and Freight) Transit	STB	FRA FTA USCG Alaska Command BLM USACE U.S. Air Force Alaska Dept. Natural Resources	Alaska Railroad Corporation	
AZ	Phoenix to Tucson Passenger Rail	Commuter/ Intercity Rail Bus (in Highway ROW)	FRA FTA	FHWA (cooperating) USACE BLM Bureau of Reclamation USFWS (future)	ADOT	Communities between Phoenix and Tucson
CA	Mid-Coast Corridor Transit Project	Transit Highway	FTA	FHWA (delegated to Caltrans)	SANDAG	Caltrans City of San Diego Traffic Metropolitan Transit System
CA	I-5 North Coast Corridor Project	Highway Intercity Rail Bike/Ped	FHWA (delegated to Caltrans)	EPA USFWS USACE USCG NOAA National Marine Fisheries	Caltrans	CA Fish & Game CA Coastal Commission CA Water Quality Control Board CTC Cities and counties
CA	Sacramento Green Line (Downtown-Natomas-Airport)	Transit Highway Airport	FTA	FAA	Sacramento RT	City of Sacramento Sacramento Airports Authority
CA	LA Green Line Century Freeway	Highway Transit	FHWA			
CA	LA Green Line extension to LAX	Transit Airport			LA Metro	Airports Authority
CO	Denver Southwest	Highway Transit Railroad	FHWA FTA	FRA	CDOT Denver RTD	
CO	I-25 N. Bus/HOV	Transit Highway	FTA FHWA		CDOT Denver RTD	City of Denver DRCOG
CO	Southeast (T-REX)	Transit Highway	FTA FHWA		Denver RTD CDOT	
CO	US36	Highway Transit	FHWA FTA		CDOT Denver RTD	

(continued on next page)

State	Project	Modes	Lead Federal Agency(ies)	Other Federal Agencies Participating	Lead State/Local Agency(ies)	Other State & Local Participating Agencies
CO	East I-70	Highway Transit Airport Rail	FTA FHWA	FAA	Denver RTD CDOT	City of Denver Denver International Airport
DC	South Capitol Street Corridor	Highway Bicycle Pedestrian Transit	FHWA	NPS USACE National Marine Fisheries USCG U.S. Navy	District DOT	Architect of the Capitol National Capitol Planning Commission DC Department of the Environment
FL	SR836 in Miami	Highway Transit Airport Seaport Rail	FHWA	FTA FAA U.S. Coast Guard Maritime Secretary of Transportation	Florida DOT	Miami Dade Transit Tri-Rail Miami-Dade Expressway Authority Miami-Dade Airport Authority Port of Miami
FL	I-4 in Orlando	Highway Transit (LRT)	FHWA FTA		Florida DOT Lynx	
FL	Port of Miami Tunnel	Highway Port	FHWA	USACE USCG	Florida DOT	City of Miami Port of Miami Florida Department of Environmental Resources
GA	I-75/I-575 north of Atlanta	Highway Transit	FHWA	FTA	GDOT	Cobb County Transit MARTA
IL	Elgin-O'Hare West Bypass (Tier Two NEPA)	Highway Airport	FHWA FAA	EPA USACE USFWS USDA TSA	IDOT Illinois State Toll Highway Authority	Illinois EPA Illinois Dept. of Natural Resources Local jurisdictions
IL	Chicago to St. Louis High Speed Rail	Rail Highway	FRA	FHWA USFWS USACE EPA	IDOT	SHPO Illinois Departments of Natural Resources and Agriculture
IL	I-290	Highway Transit	FHWA	FTA	IDOT	CTA
IL	CREATE (rail grade crossing removal)	Highway Rail	FHWA	FRA AAR	IDOT	Multiple railroads represented by ARRA Chicago DOT
MD	I-270 express Toll Lanes and Transit	Highway Transit	FHWA FTA	NPS EPA USACE (Cooperating)	MDOT - State Highway Admin. and Transit Admin.	MD Parks Transportation Planning Board MD Dept. of Environment
MA	Central Artery/Silver Line BRT	Highway Transit Airport	FHWA FTA	FAA	Mass DPW MBTA Logan Airport	Mass Turnpike
MN	Hiawatha	Highway Transit Airport	FHWA	FTA FAA	Mn/DOT	Metro Council Airports Authority
MN	I-94 Gateway	Highway Transit		FTA	Mn/DOT	
NV/ CA	XpressWest (formerly DesertXpress)	Rail (High-speed) Highway	FRA	FHWA FAA STB BLM NPS USFWS USACE	DesertXpress Enterprises, LLC (private enterprise)	Caltrans NDOT

State	Project	Modes	Lead Federal Agency(ies)	Other Federal Agencies Participating	Lead State/Local Agency(ies)	Other State & Local Participating Agencies
NY	Lower Manhattan Redevelopment	Transit (rail, ferry) Airport access Pedestrians Roadway	FTA	HUD EPA	MTA PANYNJ	Lower Manhattan Development Corp. Empire State Development Corp. City Economic Development Corp
NY	Tappan Zee Bridge	Highway Transit (rail)	FHWA	FTA		
NY	Automated Guideway Transit, Jamaica Station to JFK Airport	Airport	FAA		PANYNJ	Long Island Rail Road
OH	Eastern Corridor (Cincinnati)	Highway Transit (bus, rail) Bikeway Pedestrian	FHWA FTA	NPS USFWS	ODOT	SORTA OKI Ohio Department of Natural Resources Hamilton County Transp. Improvement District Clermont County Transp. Improvement District City of Cincinnati
OH	Fort Washington Way	Highway Transit (rail, bus)	FHWA	EPA USACE	ODOT City of Cincinnati	SORTA OKI
OH (Mid-Atlantic States)	National Gateway Phase 1	Rail (freight) Highway	FHWA FRA		CSX Ohio Pennsylvania West Virginia Maryland	
OR	I-205/Portland Mall Light Rail Transit Project	Highway Transit (rail) Local Roads	FHWA FTA	EPA USACE Advisory Council on Historic Preservation, USFWS National Marine Fisheries	Portland Metro TriMet	ODOT SHPO Oregon Departments of State Lands, Fish and Wildlife, Environmental Quality, Geological and Mining Industries Cities and counties
OR	Portland-Milwaukie LRT Project	Transit Highway Rail	FTA	FHWA FRA USCG EPA USACE National Marine Fisheries NPS Native American Tribes	Portland Metro TriMet	ODOT SHPO Department of State Lands DEQ Department of Fish and Wildlife Cities and counties
TX	Dallas Fort Worth Airport Light Rail Extension	Light Rail High Speed Rail Commuter Rail People Mover Airport	FTA	FAA	DART	Trinity Railway Express (TRE), DFW Airport
TX	Katy Freeway	Highway Transit	FHWA FTA		TxDOT Houston Metro	
UT	I-15/Main Street	Highway Transit	FHWA FTA		UDOT UTA	WFRC
UT	I-15 to Provo	Highway Light rail Commuter rail Bus	FHWA	FTA	UDOT	UTA 2 MPOs Cities (15 +/-) State Wildlife Resources

(continued on next page)

State	Project	Modes	Lead Federal Agency(ies)	Other Federal Agencies Participating	Lead State/Local Agency(ies)	Other State & Local Participating Agencies
UT	Mountain View	Highway Transit	FHWA	FTA (started as co-lead, changed to cooperating during the process)	UDOT	UTA
UT	Mountain Transportation Corridor (Access Wasatch)	Highway Transit	FTA	FHWA U.S. Forest Service	UTA	UDOT Salt Lake City Salt Lake County Summit County
VA	Dulles Corridor Metrorail Project	Transit Airport	FTA	FAA TSA USACE	DRPT	MWAA WMATA Fairfax County VDHR VDEQ
VA	WMATA Infill Station at Potomac Yards	Metrorail Commuter rail	FRA FAA	NPS	WMATA	MWAA
WA/OR	Interstate 5, Columbia River Crossing	Highway Transit Airport	FHWA FTA	FAA USCG USACE NPS GSA National Marine Fisheries EPA USFWS Native American Tribes	WSDOT Oregon DOT Metro TriMet CTRAN	City of Portland City of Vancouver Washington Departments of Ecology, Fish and Wildlife, Archaeology and Historic Preservation Oregon Departments of Land Conservation and Development, State Lands, DEQ, SHPO.
WA	SR520	Highway Transit Bicycle Pedestrian	FHWA	FTA	WSDOT	Sound Transit City of Seattle King County Metro
WA	I-405	Highway Transit	FHWA	FTA	WSDOT	Sound Transit Puget Sound Regional Council King County
WA	East Link/I-90	Transit Highway	FTA	FHWA	Sound Transit WSDOT	Bellevue Mercer Island Seattle King County
WA	Point Defiance, Tacoma	Rail	FHWA, FRA (at different times)		WSDOT	

APPENDIX O

Self-Assessment Tool

Instructions

This tool is designed to help those undertaking multimodal NEPA processes to assess their preparedness to address the challenges they are likely to face. The tool contains five sections:

I. Identifying U.S. DOT Agency Participants, Roles, and Resources
II. Identifying and Reconciling U.S. DOT Agency Requirements and Procedures for NEPA Process
III. Establishing NEPA Approach
IV. Project Organizational Structure
V. Project Procedures through the NEPA Process

Each section provides a series of statements that represent the decisions and issues that have challenged those performing previous multimodal NEPA processes. By agreeing or disagreeing with each statement, practitioners can gauge their own familiarity with the issues and identify those where they seem to be least prepared. At the end of each section, there is a reference to places within the final report to look for further information and guidance.

The tool can also be used by individual practitioners or as the starting point for discussion at a workshop during the kick-off phase of the multimodal NEPA process. A group discussion might be particularly useful for identifying needed capabilities and establishing expectations among team members.

The color guidance that accompanies each statement is meant to be a signal to which competency areas the team needs to work on the most. Each statement is important to assessing the project team's competency. The scale of "completely agree" (green) to "no progress" (red) is meant to be illustrative—a project team may choose to develop its own scale based on its own circumstances. An average of greens and reds in one section does not equate to overall competency in a section. When a practitioner or a team disagrees with any one of the statements, the tool is suggesting a need for further consideration as to their readiness for a multimodal NEPA process.

Answer Key:

Completely Agree
Somewhat Agree
Somewhat Disagree
Completely Disagree
No progress has been made in this area
Not applicable

After applying the tool, one can review the final report and individual case studies to learn more about the challenges other project sponsors faced, the strategies they used to address them, and the lessons they learned.

Tool and Discussion

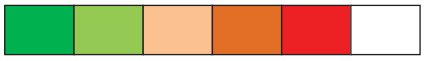
I. Identifying U.S. DOT Agency Participants, Roles, and Resources

Identifying all interested federal parties and their roles is an important early step in a multimodal NEPA process. The following statements relate to identifying the roles, responsibilities, and resources of the U.S. DOT agencies that may be involved.

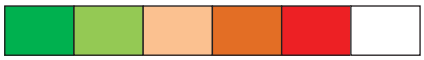
1. All U.S. DOT agencies that may have a major federal action for the project have been identified, including agencies that administer potential funding sources for project construction and those with non-funding roles.

2. There is agreement among those agencies on which is going to be lead and which will be cooperating agency(ies).

3. The lead agency has the necessary resources, staff experience, and procedures, where resources means funds and staffing needed to carry out the NEPA process, and procedure means a basic process for carrying out their responsibilities during NEPA.

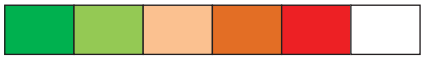


4. If the lead agency lacks any of the necessary resources, experience, and procedures, other interested parties have been identified (including agencies, private partners, or consultants) who can provide resources, relationships, or expedite portions of the NEPA process.



5. If there is more than one lead agency, agencies have complementary responsibilities, skills, and resources that will help move the NEPA process forward.

6. If there is more than one lead agency, agencies have developed complementary schedules to complete project components, and have aligned funding and review periods to avoid schedule delays.



References

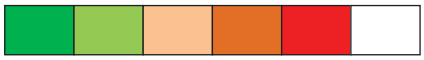
Sources of information in the NCHRP Project 25-43 final report are:

- Challenge 3. Anticipating Which Agencies Will have a Major Federal Action in Section 3 of the Synthesis
- Table 10, Transferrable Strategies and Tactics Applied in Case Studies, numbers 8, 9, 12, 13, 23
- Example Case Studies: Dulles Project, National Gateway, DART DFW Extension, CRC, Port of Miami Tunnel

II. Identifying and Reconciling U.S. DOT Agency Requirements and Procedures for NEPA Process

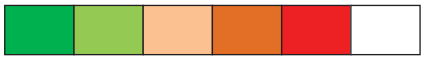
A complete up-front understanding of each U.S. DOT agency's requirements, expectations, and related procedures can save time and money. Obtaining agreement on which procedures will be followed can be a key strategy for success.

7. The state/local project sponsor is familiar with the NEPA requirements of all U.S. DOT agencies involved, including non-NEPA requirements that are generally met during the NEPA process. If not, the sponsor has hired an expert to help familiarize it with the necessary requirements and procedures.



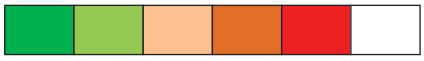
8. The U.S. DOT agencies' NEPA requirements/interpretations are consistent, or if inconsistent, an agreed upon plan of action has been created to overcome inconsistencies in requirements and/or interpretations.

9. Agencies' procedures regarding Section 106 consultations and related processes have been discussed and aligned.

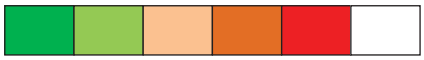


10. If the project will utilize a combination of agency procedures, this plan of action is mapped out in detail and agreed upon by all interested parties.

11. Written procedures exist to help navigate inconsistencies in agencies' NEPA requirements/interpretations.



12. There is a well-established working relationship between U.S. DOT agencies that sets the precedent for mapping out and overcoming inconsistencies in NEPA requirements/procedures.



13. Committees or teams have been established to facilitate communication within and among agencies to guide the process and resolve disagreements.

References

Sources of information in the NCHRP Project 25-43 final report are:

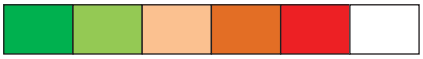
- Challenges 1 and 2: Unique Agency-specific Program Requirements under the NEPA Umbrella, Differing Agency Interpretations of NEPA Requirements

- Table 10, Transferrable Strategies and Tactics Applied in Case Studies, numbers 1, 3, 4, 5, 6, 10, 18, 19
- Example Case Studies: Dulles Project, DART DFW Extension, T-REX, CRC, East Link, I-70 East

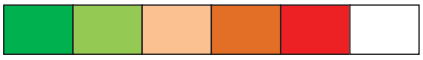
III. Establishing NEPA Approach

Several NEPA approaches are available: a single NEPA process for all modes, separate but coordinated processes, or an approach that starts out merged and then the modes separate. The following statements represent points to consider in making a decision about the appropriate preferred approach.

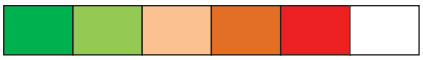
14. The sponsor and lead agency(ies) have consulted with each other about the approach.



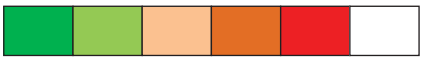
15. The lead and cooperating agencies have agreed upon an approach that addresses critical issues and established/potential points of conflict.



16. The NEPA approach is mapped out from start to finish with agreement from lead agency(ies) and sponsor(s).



17. A plan for coordination of separate but concurrent NEPA processes has been established.



References

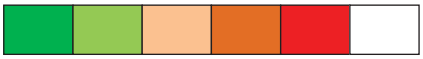
Sources of information in the NCHRP Project 25-43 final report are:

- Challenges 3 and 4: Differing Agency Interpretations of NEPA Requirements, Efficient Coordination among Agencies
- Table 10, Transferrable Strategies and Tactics Applied in Case Studies, numbers 2, 4, 5, 8, 11, 16, 17
- Example Case Studies: CRC, East Link, CREATE, T-REX, DART DFW Extension, Dulles Project

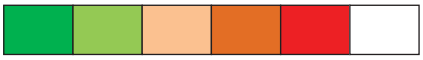
IV. Project Organizational Structure

A project organization and staffing plan can identify the specific roles and responsibilities of the participating agencies, serving as the foundation for day-to-day workflow and project decision-making. The following statements represent points to consider in structuring the project.

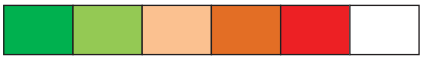
18. The lead agency(ies) and sponsor(s) have agreed upon roles and responsibilities in progressing NEPA on the project.



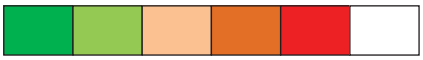
19. The lead agency(ies) and sponsor(s) have an agreed upon decision-making process and structure.



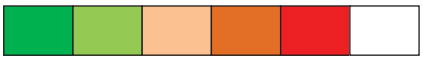
20. A staffing plan for all interested agencies, with necessary skills/experience and roles, has been agreed upon.



21. If the project has more than one lead agency, agencies have committed to working together throughout the NEPA process, and have an agreed upon work ethic, set goals, and schedule that will minimize risk of delays on the project.



22. Key project staff has worked together in the past, and will use that relationship and experience on this project.



23. If the project has more than one lead agency, these agencies have worked together in the past, and will use that relationship and experience on the project to minimize the risk of delays on the project.

24. The project manager/team leads have experience/skills with interdisciplinary teams, multimodal NEPA, collaboration, communication, and other abilities or knowledge necessary for project success.

25. Special expertise required for the completion of a multimodal NEPA process has been sourced, either internally or externally.

26. Procedures to resolve conflicts (formally or informally) in roles, responsibilities, and/or interpretations of NEPA requirements have been established through training, facilitation, and/or teambuilding.

References

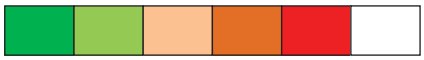
Sources of information in the NCHRP Project 25-43 final report are:

- Challenge 4: Efficient Coordination among Agencies
- Table 10, Transferrable Strategies and Tactics Applied in Case Studies, numbers 4, 7, 15, 16, 17, 19
- Example Case Studies: T-REX, Mountain View, CRC, I-70 East, CREATE, East Link

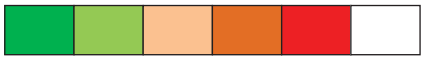
V. Project Procedures through the NEPA Process

Good communication—through multiple channels—is a key to success in multi-agency NEPA processes. The following statements represent points to think about in formulating project processes.

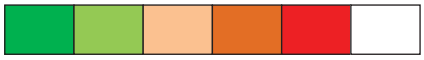
27. There is agreement on the alternatives to be carried into the NEPA process and on the means for evaluating these alternatives.



28. Technical procedures/manuals will be prepared and agreed to before analyses are conducted, ensuring agreement on methods and assumptions.



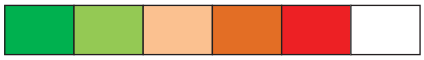
29. There is agreement on how to engage resource/regulatory agencies and other stakeholders in the process, and who will engage them.



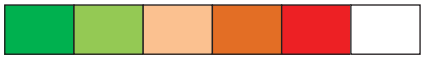
30. Procedures have been put in place for direct consultation between the sponsor and lead agencies.

31. Procedures have been put in place for direct consultation between the U.S. DOT agencies as needed.

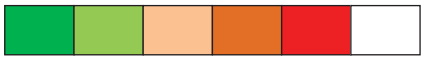
32. There are agreed upon committees/decision-making structures at different levels between sponsor and lead agencies to ensure efficient coordination.



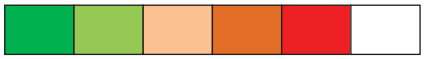
33. A detailed NEPA project schedule has been created and agreed to by all parties.



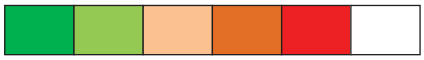
34. The project schedule takes into account review time by multiple interested parties.



35. The project team meets frequently to discuss updates and resolve potential conflicts.



36. Project team meetings are conducted face-to-face when possible, otherwise completed by phone.



References

Sources of information in the NCHRP Project 25-43 final report are:

- Challenge 4: Efficient Coordination among Participating Agencies
- Table 10, Transferrable Strategies and Tactics Applied in Case Studies, numbers 1, 3, 5, 14, 18, 20, 21, 22
- Example Case Studies: Dulles Project, T-REX, I-70 East, CRC, DART DFW Extension

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation Act (2015)
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TDC	Transit Development Corporation
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation

TRANSPORTATION RESEARCH BOARD
500 Fifth Street, NW
Washington, DC 20001

ADDRESS SERVICE REQUESTED

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

The nation turns to the National Academies of Sciences, Engineering, and Medicine for independent, objective advice on issues that affect people's lives worldwide.
www.national-academies.org

ISBN 978-0-309-37551-1
90000
9 780309 375511