Forward 44 Purpose and Need Study

STUDY

MoDOT Job No. ST0058

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic (vehicles per day [VPD])
AASHTO	American Association of State Highway and Transportation Officials
AGO	ArcGIS Online
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMV	Commercial Motor Vehicle
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPG	MoDOT Engineering Policy Guide
ESA	Endangered Species Act
EWGCOG	East-West Gateway Council of Governments
F44	Forward 44
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FSS	Future Study Sections
FY	Fiscal Year
GIS	Geographic Information System
IPaC	Information for Planning and Consultation
LEP	Limited English Proficiency
LOS	Level of Service
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
MDC	Missouri Department of Conservation
MDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHT	National Historic Trails
NPS	National Park Service
NRHP	National Register of Historic Places
NTS	National Trails System
RCRA	Resource Conservation and Recovery Act
RPC	Regional Planning Commission
SHPO	State Historic Preservation Office
STIP	State Transportation Improvement Program
TIP	Transportation Improvement Plan
USACE	US Army Corps of Engineers

USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VMT	Vehicle Miles Traveled
VPD	Vehicles Per Day

Executive Summary

ES-1. Introduction

This Executive Summary provides an overview of the findings from the *Updated I-44 Statewide Purpose and Need Study* (herein F44 Study), which provides an updated comprehensive review of the issues on Interstate 44 (I-44) that were detailed in the *2008 I-44 Statewide Purpose and Need Study* (herein 2008 Study) from the Oklahoma State Line to the St. Louis/Franklin County line. The fundamental goals for this "pre-NEPA" study are to validate the outcomes of the 2008 Study with the opportunity for the public to provide input and to divide the 253 miles of the I-44 corridor into logical independent segments that can be further studied in more detail.

ES-2. Updated Corridor Characteristics

The F44 Study found no significant changes to character, land use, or corridor uses that have occurred along the corridor since 2008, apart from interspersed adjacent new industrial and commercial developments. The study area remains predominantly rural except for adjacent urbanized long-established communities. The corridor characteristics reviewed and updated were roadway, traffic and safety, environmental, and social and economic characteristics.

The F44 roadway characteristics were reviewed against current design criteria and standards as provided in the latest version of the Missouri Department of Transportation (MoDOT) Engineering Policy Guide (EPG) (as of October 2024). The review focused on existing roadways, bridges, interchanges, and utilities and the supporting components of each.

The roadway update and analysis were applied to the "geometry" of the road and included reviewing lane and shoulder widths, median widths, vertical and horizontal clearances, vertical grades, and horizontal curves. Overall, this analysis demonstrated the roadway dimensions along I-44 generally meet driver expectations. A few horizontal curve deficiencies and numerous vertical grade deficiencies occur along the corridor. Eighty percent (80%) of the curves along the corridor do not meet the super elevation requirements. Additionally, bridges along I-44 are approaching their useful design life, and a substantial portion have exceeded their useful life. Overall, lane widths meet design criteria, however, most shoulder widths along the corridor do not meet the current design criteria.

Similar to the 2008 Study, much of existing pavement along the F44 Study corridor is in Good or Very Good condition. Ten percent (10%) of the I-44 pavement mileage in the study area is rated as poor or very poor. Existing pavement rated in poor or very poor condition needs to be evaluated for major rehabilitation or complete replacement.

The interchange analysis evaluated access management features, lengths of acceleration and deceleration lanes, and horizontal geometry features at each interchange within the F44 corridor. Roughly 14% of the 81 interchanges evaluated have existing conditions that comply with the access management guidelines regarding spacing between ramp termini and the nearest intersection away

from the interchange. Given the predominantly rural nature of the corridor, most of the existing interchanges meet the established criteria for interchange spacing. However, nearly all (94%) of the interchanges in the corridor were found to have ramps with deficient acceleration and deceleration lengths.

The bridge analysis evaluated existing bridges carrying I-44, over I-44, and adjacent to I-44. The bridge analysis confirmed that the bridge infrastructure along I-44 is approaching its useful design life, and a substantial portion has exceeded it.

The existing traffic conditions analyses examined performance measures related to travel time, delay, level of service (LOS), speeds, volume-to-capacity ratio, and vehicle miles traveled (VMT). Traffic safety analyses examined safety concerns and issues related to roadway geometry, pavement conditions, pavement marking visibility, traffic control, and driver behavior, all of which result in potentially unsafe travel conditions. Summarized crash statistics and safety data are protected under federal law.

An operations analysis performed on existing year 2023 volumes found acceptable conditions throughout the corridor with sections of I-44 currently operating at LOS D through the eastern part of Franklin County and through Springfield in Greene County. Several segments operate at LOS C. By 2050, over 30% of the corridor will operate at LOS D or worse, nearly 10% will operate at LOS E or worse, and 4% of the corridor will witness LOS F during peak hour conditions.

I-44 experiences varied crash trends throughout the corridor. Based on analysis of crash rates between interchanges, of the 250-mile I-44 corridor, approximately 23 miles of mainline I-44 in the eastbound direction and 29 miles in the westbound direction experience crash rates higher than the statewide average. Overall, the I-44 corridor features segments with crash rates more than 50% above the statewide average.

A high-level review of the F44 corridor's environmental characteristics was conducted using desktop literature resources, coordination with government agencies, and outreach to the public. Applicable environmental characteristics were mapped using a Geographic Information System (GIS) database and included in a digital GIS constraints map, the Environmental Constraints ArcGIS Online Map.

Natural resources reviewed within the F44 study area include threatened and endangered species, public lands, wetlands, water bodies and floodplains.

The cultural resources assessment reviewed previously published documents and websites containing information on archaeological resources, built environment, cemeteries, churches and schools, U.S. Route 66, National Historic Trails (NHT), and bridge resources. No detailed cultural resources survey or other investigations were conducted as part of the F44 Study.

Hazardous materials sites were assessed and reviewed using the MDNR's E-Start database and a custom corridor report prepared by Environmental Data Resources, Inc. The results from these assessments were prioritized as to the likelihood of soil and/or groundwater contamination present in

or near the F44 study area for each site listed. The priority assigned was either “None-to-Low” (Priority 3), “Low-to-Moderate” (Priority 2), or “Moderate-to-High” (Priority 1).

The air quality of the counties within the F44 Study corridor was also reviewed and updated. Franklin County was the only county designated as a non-attainment area, meaning it did not meet certain air quality standards.

Potential impacts to economic development were considered when updating the F44 Study’s corridor characteristics. Communication with numerous local and regional planning/economic development agencies were conducted. Responses included anticipated strong demand for industrial development near exits on I-44, high-speed broadband internet expansion along the I-44 corridor, planned mixed-use developments in Joplin, Marshfield, and Springfield, and housing developments in Mt. Vernon and Neosho.

The social and economic update also included reviewing available community facilities and services. The updated inventory of facilities and services for the communities ranged from commuter lots, fire and EMS stations, hospitals, to places of worship.

On January 20, 2025, President Trump signed Executive Order (E.O.) 14154 – Unleashing American Energy. The E.O. revoked E.O. 14096 – Revitalizing Our Nation’s Commitment to Environmental Justice for All (April 21, 2023). Subsequently on January 21, 2025, President Trump signed E.O. 14173 – Ending Illegal Discrimination and Restoring Merit-Based Opportunity. This E.O. revoked E.O. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). As a result of E.O. 14154 and 14173, all federal environmental justice requirements are revoked and no longer applicable to the environmental review process.

ES-3. Resiliency

A resiliency analysis was conducted along the F44 Study corridor with the purpose of analyzing the provision and maintenance of the corridor’s acceptable functionality in the face of disruptions. During the analysis, locations were identified where I-44 is potentially vulnerable to hazards caused by extreme events, such as flooding and extreme temperatures. The utilization of annual average daily traffic (AADT) data, FEMA floodplain data, and MoDOT pavement condition data, led to the identification of six key segments in the F44 Study corridor vulnerable to natural hazards that could disrupt normal operations. Highlighting these potentially vulnerable segments along I-44 is an important aid in determining future projects within the F44 Study corridor.

ES-4. Purpose and Need

The goal of the F44 Study was to evaluate and determine the continuing validity of the six Purpose and Need elements identified in 2008, in addition to identifying any new need elements. The six Purpose and Need elements from the 2008 Study were:

- Roadway capacity inadequate for expected demand
- Degrading safety environment on I-44
- Interchanges operations, safety, and geometrics are deficient
- Freight traffic is an essential element of traffic on I-44
- Engineering standards result in inconsistent roadway design
- Balance access, economic development, and human/natural resources

The Federal Highway Administration (FHWA) and MoDOT recognize safety is a fundamental goal of all transportation projects in Missouri, ensuring every project is designed to enhance safety for all systems users. Therefore, "Degrading safety environment on I-44" was removed as a specific need for the F44 Study.

In addition, "Preserve the existing I-44 facility as needed to carry existing and future traffic" was identified as an additional need element as part of the F44 Study. The Purpose and Need elements in this F44 Study are:

- Roadway capacity is inadequate for expected demand
- ~~Degrading safety environment on I-44~~ – *Removed*
- Interchanges ***and portions of the mainline along I-44 have safety and operation issues and are inconsistent with current design standards*** – *Modified*
- Freight traffic is an essential element of traffic on I-44
- Engineering standards result in inconsistent roadway design
- Balance access, economic development, and human/natural resources
- Preserve the existing I-44 facility as needed to carry existing and future traffic - *Added*

ES-5. Future Study Sections Logical Termini and Prioritization

Due to time and changes to design standards, an updated review of the logical termini and Future Study Sections (FSS) was warranted. The F44 Study proposes 13 FSSs. The average length of the adjusted FSS is approximately 20 miles. The fundamental factors used to determine the FSSs were jurisdiction, landscape, traffic volumes, traffic composition, traffic destination, crash densities, and roadway condition. Upon determination, the FSSs in the F44 Study were also given a preliminary prioritization. The F44 Study utilized a combined qualitative and quantitative approach to evaluate the metrics for the 13 FSSs developed. The prioritization is intended to aid MoDOT in evaluating when and how to implement future potential improvements.

Future potential projects within each FSS will likely vary in type, size, complexity, and can have impacts ranging from negligible to significant to both the natural and human environment. The class of National Environmental Policy Act (NEPA) document will direct the level of study that will be required for each particular project. The F44 Study Team summarized NEPA resources and future NEPA considerations applicable to all FSSs. Similar impacts are assumed for each FSS, but none are assumed to be significant enough to warrant an Environmental Assessment (EA) or Environmental Impact Statement (EIS). To appropriately determine the NEPA classification for each FSS, the specific project and ROW impacts are necessary and will occur during the "next steps" outlined in **Section ES-8.**

ES-6. Agency and Tribal Outreach

The purpose of the agency coordination was to request feedback from resource agencies on potential issues before significant time or effort has been invested in the F44 Study or future associated projects. Agency coordination letters were emailed on March 28, 2024. Seven federal agencies and five state agencies were contacted. From these agencies, a total of four responses were received. Additionally, 18 Native American Tribes were contacted, and no responses were received.

ES-7. Public Outreach

The F44 Study included a robust Public Involvement Plan with several opportunities for public involvement throughout the F44 Study. Public engagement included a website, email list, public meetings, and stakeholder meetings. A study specific website, Forward 44, included general information on the study, completed studies, the F44 Study schedule, and additional public outreach information. The website also contained a comment page allowing visitors to provide general comments. A stakeholder database was developed to keep interested stakeholders informed on the study via email. The stakeholder database included advocacy groups, community centers, media, individuals that requested to be informed about the F44 Study via the website or public meetings, and more.

Two identical virtual stakeholder meetings were held via Zoom in May 2024.

Five in-person public meetings were held in July and August 2024. A digital online map of the study area was available for meeting attendees to provide comments on locations throughout the corridor via GIS mapping. The public was encouraged to ask questions during the meetings or submit comments online through the comment deadline period.

Additional public and stakeholder engagement included an online survey, available July 10, 2024, through August 21, 2024, to coincide with the public comment period for the public meetings. The survey was made available via the project website. Overall, safety, congestion, and freight traffic were respondents' top concerns.

A second round of virtual stakeholder meetings were conducted on January 22, 2025. Findings of the F44 Study and next steps were presented at the meetings. At the conclusion of the F44 Study, a third round of virtual stakeholder meetings will be held.

ES-8. Next Steps

Next steps will be considered as transportation options for each FSS are advanced and implemented. Next steps include project scoping, alternatives development and NEPA studies, and an assessment of potential project delivery methods. A project scoping meeting will be held once a project for an FSS is included in the Statewide Transportation Improvement Plan (STIP) and funding requirements are confirmed. After project scoping, the build alternatives can be considered and the NEPA process can begin.

Once the build alternatives are decided and the NEPA process complete, the next step is determining the project delivery method. There are numerous options available for project delivery methods including Design-Bid-Build and Design-Build. As the F44 Study progresses, communication and coordination will be paramount.

1. Introduction

1.1. Purpose of Forward 44 Study

The Missouri Department of Transportation (MoDOT), in partnership with the Federal Highway Administration (FHWA), initiated this *Updated I-44 Statewide Purpose and Need Study* (herein F44 Study) to provide an updated comprehensive review of the issues on Interstate 44 (I-44) that were detailed in the *2008 I-44 Statewide Purpose and Need Study* (herein 2008 Study) from generally the Oklahoma State line to the St. Louis/Franklin County line. This is a planning-level study that will not look at solutions and is not a design, maintenance, or construction project. Specifically, this study will re-evaluate what was defined in the original study and will feed into future National Environmental Policy Act (NEPA) projects, based on need and funding availability.

Missouri's Fiscal Year (FY) 2024 budget from the General Assembly signed into law by the Governor at the time, Mike Parson, provided $20 million of General Revenue funds for an environmental study of I-44, a critical step in preparing for future projects on I-44.

The fundamental goals for this "pre-NEPA" study are to validate the outcomes of the 2008 Study with the opportunity for the public to provide input and to divide the 253 miles of the I-44 corridor into logical independent segments that can be further studied in more detail. Essentially, this F44 Study was conducted to update identified existing conditions, anticipated challenge areas, safety, and operational needs along the I-44 corridor and to determine its short- and long-term transportation priorities. In summary, the F44 Study outcomes include:

- Identifying a strategic purpose that addresses the I-44 corridor transportation needs.
- Accounting for environmental resources, community context, and risk/resiliency.
- Identifying and prioritizing short- and long-term transportation priorities.

1.2. Background – 2008 I-44 Statewide Purpose and Need Study

The F44 Study builds on information from the previous study, to gain a better understanding of the corridor history. The focus of this effort was built on the 2008 Study. Information from the 2008 Study will be incorporated throughout the F44 Study process. A copy of the 2008 Study can be found in **Appendix A**.

MoDOT initiated studying the I-44 corridor in 2007 by hiring a consultant to identify areas for future potential improvements affecting I-44 from the Oklahoma State line to the St. Louis/Franklin County line. The 2008 Study did not propose solutions. Specifically, the 2008 Study:

- Identified transportation problems on the I-44 corridor.
- Investigated potential important parameters in determining how well future alternatives addressed identified transportation problems.
- Investigated conceptual strategies with potential to address transportation problems.

- Established Future Study Sections (FSS).
- Presented existing environmental, planning, engineering, and traffic conditions.

It has been over 16 years since the information in the 2008 Study was developed; therefore, an updated comprehensive review, or validation, of the information presented was warranted. During this time, the corridor has experienced evolving engineering standards and safety components, which suggests problems identified in the 2008 Study may no longer be consistent with current design standards.

1.3. Forward 44 Study Area

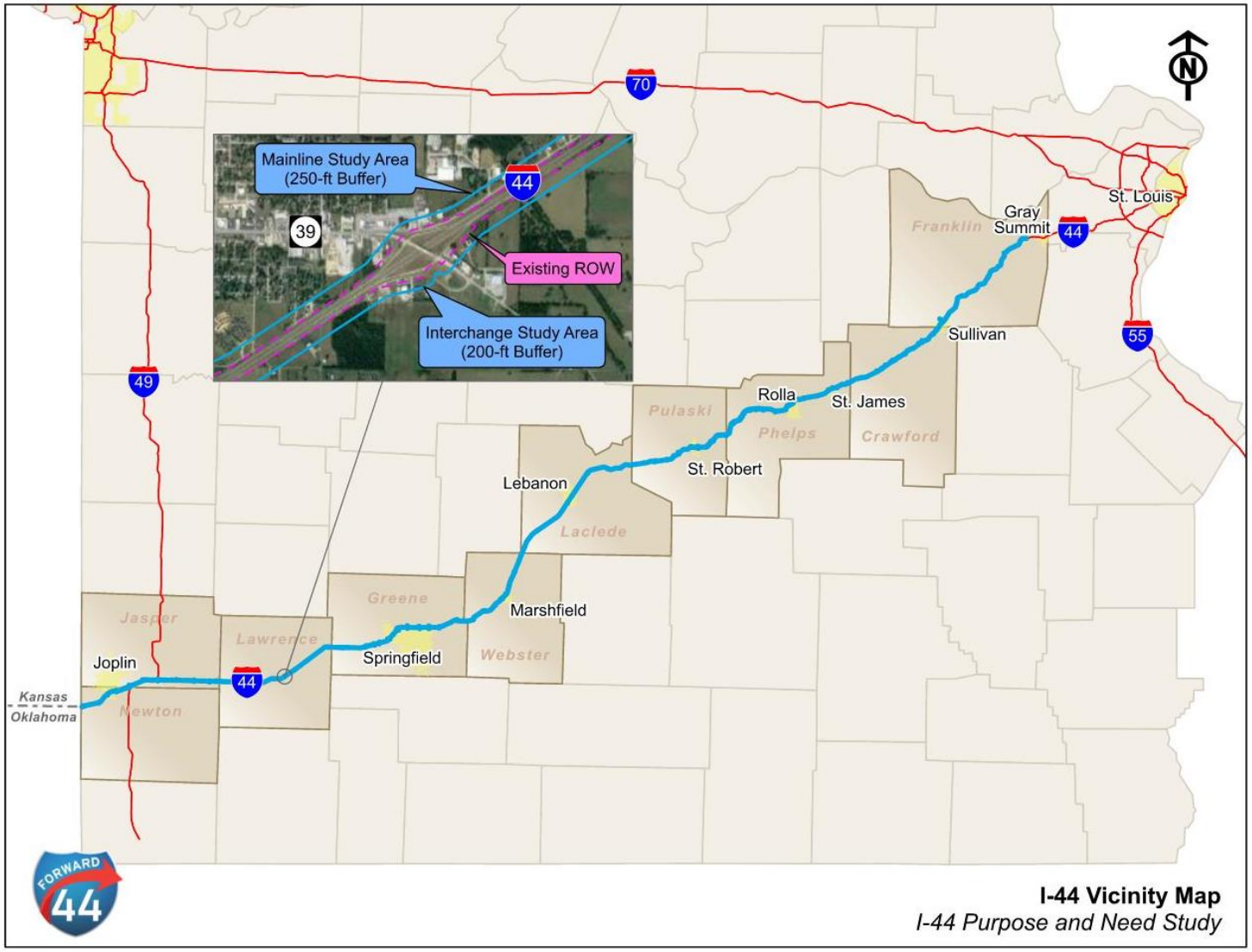
The F44 Study area was limited to a reasonable width for potential future interstate improvements, defined as approximately 250 feet on either side of the existing highway right of way (ROW) on the mainline and an additional 200 feet at the interchanges (**Figure 1-1**). In the 2008 Study, the generalized west and east terminus of the study area was defined as approximately 257 miles of I-44 from the Oklahoma/Missouri State line to the St. Louis/Franklin County line (Exit 257). Due to improvements along I-44 in Franklin County since the 2008 Study was completed, the east terminus for this F44 Study was adjusted to the I-44/Route 100 East (Exit 253) interchange at Gray Summit, for a total of 253 miles.

Similar to the 2008 Study, the F44 Study area includes Newton, Jasper, Lawrence, Greene, Webster, Laclede, Pulaski, Phelps, Crawford, and Franklin Counties, traversing the state from the southwest corner in a northeasterly direction to the mid-eastern portion of the state. The larger communities adjacent to the F44 Study area include Joplin, Springfield, Marshfield, Lebanon, St. Robert, Rolla, St. James, Sullivan, St. Clair, and Gray Summit. As noted in the 2008 Study, several recreation and tourist destinations are located within proximity of the study area; however, these facilities remain outside the actual F44 Study corridor.

No significant changes to character, land use, or corridor uses have occurred along the corridor since the 2008 Study, except for interspersed adjacent new industrial and commercial developments. The study area remains predominantly rural except for adjacent urbanized long-established communities.

I-44 is a vital east-west link across Missouri. As noted in the 2008 Study, the corridor was completed in 1966, and in the decades since, has established itself as a route of statewide and national importance and a key commercial trucking corridor. The primary north-south facilities that intersect I-44 remain as U.S. 71, now I-49 (from Joplin to the Kansas City Metropolitan Region), U.S. 65 (from Springfield to Branson), Route 5 (from Lebanon to the Lake of the Ozarks region), and U.S. 63 (running from Rolla through Vienna to Jefferson City). Historically, I-44 replaced Route 66 across Missouri completely by 1972.

Figure 1-1. Forward 44 Study Area



In general, the I-44 corridor is a four-lane divided freeway facility with posted speed limits of 60 miles per hour (mph) in urban areas and 70 mph in rural areas. The westernmost segments of I-44 through the urbanized areas of Joplin and Springfield are represented by flat terrain while the majority of I-44 east of Springfield is in rural areas where the terrain is characterized by hills.

1.4. Regional Planning Context

The F44 Study follows guidelines, plans, and policies established by state, regional, and local planning organizations. It is important this study considers input from stakeholders to help guide any resulting transportation improvements to be feasible and beneficial not only to the public, but to agencies and stakeholders as well.

In Missouri, Regional Planning Commissions (RPCs) and Metropolitan Planning Organizations (MPOs) are transportation planning partners that work with MoDOT on statewide and federal transportation projects. The F44 Study area spans several RPCs and MPOs. The RPCs from west to east across the state include Harry S Truman Coordinating Council, Southwest Missouri Council of Governments, Lake of the Ozarks Council of Local Governments, Meramec Regional Planning Commission, and East-West Gateway Council of Governments (EWGCOG). The study area includes three MPOs from west to east and include Joplin Area Transportation Study Organization (in Joplin), Ozarks Transportation Organization (in Springfield), and EWGCOG (in St. Louis). The EWGCOG is unique for the study area, in that it functions as the MPO and RPC for the region.

Because I-44 serves as a regional corridor for providing mobility and accessibility, it is critical to develop and evaluate effective strategies and future alternatives to meet the F44 Study's Purpose and Need while maintaining consistency with regional planning efforts. Input from these agencies was incorporated into the F44 Study to assist in guiding the development process of validating the Purpose and Need. Furthermore, these agencies will be involved in future development phases and assessments of alternatives to determine consistency with regional plans.

Since the 2008 Study, the only planning contextual change has been MoDOT districts. In 2008, the districts were numbered and included four different districts along the I-44 corridor. Currently, the districts within the study area include MoDOT-Southwest, MoDOT-Central, and MoDOT-St. Louis.

1.5. Organization of Study

This study was completed with the goal of highlighting key information in a concise and useful manner. As such, this study follows a planning document format. As a planning-level document, the information contained within this document is obtained from and references various reports, limited field investigations, websites, and other documentation. Each section includes key findings from the review and collection of updated data. The appendices include detailed content for further review.

The F44 Study is organized in eight sections following this Introduction as summarized below:

- **Section 2, F44 Updated Corridor Characteristics**: This section provides an overview of the comprehensive data updated/validated within the corridor study area for roadway, traffic and safety, environmental, social and economic characteristics, and the multimodal existing transportation network.
- **Section 3, Resiliency**: This section includes an assessment to inform planning decisions and incorporate resiliency considerations where transportation assets may be vulnerable to risk in the context of physical threats, given the increasing prevalence of extreme weather events.
- **Section 4, Purpose and Need**: This section provides an updated review/validation of the purpose and supporting needs of the I-44 corridor.
- **Section 5, Future Study Sections (FSS) Logical Termini and Prioritization**: This section provides a detailed updated review/validation of the logical termini for potential future study sections within the corridor and subsequent prioritization of each.
- **Section 6, Agency and Tribal Outreach**: This section details coordination efforts with agencies and Native American tribes that were provided an opportunity to comment on the study and identify resources of concern along or adjacent to the corridor.
- **Section 7, Public Outreach**: Stakeholder outreach strategies, meeting summaries, and topics of feedback are presented in this section.
- **Section 8, Next Steps**: The study concludes with this section, which highlights potential next steps as funding becomes available and potential projects are advanced and implemented within the corridor.

2. Updated Corridor Characteristics

This section provides an overview of the updated roadway, traffic and safety, environmental, and social and economic characteristics of the F44 Study area. Due to the amount of time since the 2008 Study, an updated comprehensive review was warranted.

This section summarizes updated characteristics of the F44 Study area. Each subsection is supported by detailed memorandums or matrices and are included in referenced appendices. The discussion references the reader to the appropriate appendix, which details the characteristics within the entire corridor.

2.1. Roadway Characteristics

As part of an overall assessment of the highway corridor, existing roadway characteristics were compared with current design standards. It is understood that design standards change, and the highway itself was constructed decades ago, using standards current at that time.

The F44 roadway characteristics were reviewed against current design criteria and standards as provided in the latest version of the MoDOT Engineering Policy Guide (EPG) (as of October 2024). The review focused on existing roadways, bridges, interchanges, and utilities and the supporting components of each. Detailed information on the roadway characteristics reviewed for the corridor can be found in the following technical memorandums and matrices:

- Existing Conditions Matrix – Roadway (October 22, 2024), **Appendix B.1**
- *Geometric Analysis Methods and Assumptions Technical Memorandum* (October 22, 2024), **Appendix B.2**
- Existing Conditions Matrix – Pavement Condition (July 29, 2024), **Appendix B.3**
- Existing Conditions Matrix – Utilities (July 29, 2024), **Appendix B.4**
- Existing Conditions Matrix – Outer Roads (July 29, 2024), **Appendix B.5**
- Existing Conditions Matrix – Interchanges (November 11, 2024) **Appendix B.6**
- *Interchange Evaluation Technical Memorandum* (July 29, 2024), **Appendix B.7**
- *Climbing Lane Technical Memorandum* (September 10, 2024), **Appendix B.8**
- Existing Conditions Matrix – Bridges (July 29, 2024) **Appendix B.9**
- *Bridges Existing Conditions Technical Memorandum* (October 30, 2024), **Appendix B.10**

Physical characteristics considered in this study include corridor geometries, pavement, utilities, outer roads, interchanges, climbing lanes, and bridges. Understanding the different data to evaluate roadway characteristics is critical in developing corridor roadway evaluations and future improvements. **Table 2-1** provides a list of reviewed roadway characteristics for each element.

Table 2-1. Reviewed Roadway Characteristics

Roadway Element	Characteristics	Technical Memorandum/Matrix
Corridor cross-section and associated roadway geometries	• Number of lanes, lane width, median type, clearance, and shoulders • Vertical and horizontal geometrics • Speed, passing regulations, and sight distances • Steep grades	• Existing Conditions Matrix – Roadway • *Geometric Analysis Methods and Assumptions Technical Memorandum*
Pavement condition	• Pavement condition rating • Material type	• Existing Conditions Matrix – Pavement Condition
Utilities	• Type and length	• Existing Conditions Matrix – Utilities
Outer Roads	• Presence, length, presence of safety feature	• Existing Conditions Matrix – Outer Roads
Interchanges geometries	• Length of acceleration and deceleration lanes • Interchange spacing	• Existing Conditions Matrix – Interchanges • *Interchange Evaluation Technical Memorandum*
Climbing lane geometries	• Length of lane • Grade of lane	• *Climbing Lane Technical Memorandum*
Bridge condition	• Bridge condition rating • Vertical clearance (over roadways and waterways)	• Existing Conditions Matrix – Bridges • *Bridges Existing Conditions Technical Memorandum*

2.2. Traffic and Safety Characteristics

Identifying traffic and safety needs is a critical component of all planning studies. Existing traffic conditions analyses examine performance measures related to travel time, delay, level of service (LOS), speeds, volume-to-capacity ratio, and vehicle miles traveled (VMT).

Traffic safety analyses examine safety concerns and issues related to roadway geometry, pavement conditions, pavement marking visibility, traffic control, and driver behavior, all of which result in potentially unsafe travel conditions. Safety analyses are informed by crash frequency, crash type, and contributing factors at historical crash locations.

The November 27, 2024, *Traffic and Safety Technical Memorandum* (**Appendix C**) details the updated traffic and safety characteristics reviewed for the corridor. Crash statistics and safety data summarized or presented in the memorandum and subsequently in this document are protected under federal law. **Table** 2-2 provides a summary of traffic and safety performance measures reviewed in detail in the memorandum.

Table 2-2. Traffic and Safety Performance Measures

Category	Performance Measure
Mobility	• Level of service and delay • Travel time • Free flow speed vs. peak period speed • Travel time reliability • Volume-to-capacity ratio • Vehicle miles of travel
Freight Traffic	• Vehicle classification and percentage
Safety	• Number of fatal and suspected severe injury crashes compared to a similar facility type • Analysis of crash types and contributing causes

2.3. Environmental Characteristics

The F44 Study provides reference framework for future implementation of projects. When a project is chosen for implementation, project teams will need to complete an environmental review in accordance with NEPA, which requires additional design advancement, social, economic, and environmental impact analysis, and public involvement.

Applicable environmental characteristics have been mapped using a Geographic Information System (GIS) database and included in a digital GIS constraints map, the Environmental Constraints ArcGIS Online Map (herein Constraints AGO Map). The Constraints AGO Map is an interactive map primarily depicting natural, cultural, hazardous material, and air quality characteristics along the corridor.

2.3.1. Natural, Cultural, and Hazardous Materials

A high-level review of environmental features and characteristics in the study area have been identified through desktop literature resources, coordination with government agencies, and outreach to the public. The review and supporting Constraints AGO Map were completed to identify existing conditions and environmental features that may need additional analysis or research. This review informs the feasibility of potential corridor improvements or routes considering environmental constraints, as well as possible avoidance and minimization of impacts to significant environmental resources (e.g., historic sites, parks, hazardous materials sites, etc.).

Refer to the following memorandums prepared for the study for further discussion of potential environmental constraints on the natural and built environment along the I-44 corridor:

- *Natural Resources Assessment Memorandum* (November 4, 2024), **Appendix D.1**
- *Cultural Resources Assessment Memorandum* (November 4, 2024), **Appendix D.2**
- *Hazardous Materials Assessment Memorandum* (November 4, 2024), **Appendix D.3**

Table 2-3 outlines the features, regulatory implications, and data sources for each resource reviewed in the above-referenced memorandums.

Table 2-3. Environmental Features Reviewed

Category	Regulatory Implication	Data Sources
Natural Resources		
Water Features (Streams/Rivers, Wetlands, Wetland Reserve Easement Program, MS4 Regulated Areas, Floodplains, Buyout Sites)	• Sections 208, 401, and 404 of the Clean Water Act (CWA) • Executive Order (EO) 11988, Floodplain Management •	• U.S. Fish and Wildlife Service (USFWS) – National Wetland Inventory • U.S. Geological Survey (USGS) • Missouri Department of Natural Resources (MDNR) • Federal Emergency Management Agency (FEMA)
Protected Habitat (Listed Species, Migratory birds, Eagles, Critical Habitat)	• Endangered Species Act (ESA) • Migratory Bird Treaty Act (MBTA) • Bald and Golden Eagle Protection Act	• USFWS – Information for Planning and Consultation (IPaC) • Missouri Department of Conservation (MDC) – Natural Heritage Program
Caves	• Federal Cave Resources Protection Act • ESA	• Missouri Speleological Survey • USFWS - IPaC
Public Lands and Conservation Areas (Parks, Recreational Facilities, Wildlife Refuges and Management Areas)	• Section 4(f) of the U.S. Department of Transportation (DOT) Act • Section 6(f) of the Land and Water Conservation Fund (LWCF) Act	• MDC • MDNR • Cities/Counties • The LWCF Coalition
Cultural Resources		
Archaeological Sites	• Section 4(f) of the U.S. DOT Act	• MDNR – State Historic Preservation Office (SHPO)

Category	Regulatory Implication	Data Sources
Built Environment Sites (Cemeteries, Churches, & Schools; U.S. Route 66, Trail of Tears, Bridges)	• Section 106 of the National Historic Preservation Act	• U.S. National Park Service (NPS) • National Register of Historic Places (NRHP)
Hazardous Materials		
Hazardous Sites (Landfills, Superfund Sites, Wells)	• Resource Conservation and Recovery Act (RCRA) • Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	• Environmental Data Resources, Inc. (EDR) • MDNR – Environmental Site Tracking and Research Tool (E-Start)

2.3.2. Air Quality

If an area is in attainment for all pollutants, it is in compliance with the Clean Air Act. Furthermore, the area is considered to have air quality that meets or is cleaner than the national standard for all criteria pollutants. The US Environmental Protection Agency (USEPA) Green Book provides detailed information about area national ambient air quality standards (NAAQs) designations, classifications and nonattainment/maintenance status.

Per a review of the USEPA Green Book, all counties except for Franklin County within the F44 Study area, are currently designated in attainment for all NAAQS. The Constraints AGO Map depicts the area of the corridor in nonattainment.

Franklin County was designated in nonattainment (not meeting standards) for 8-hour ozone (2015) in 2018 and remains today. Additionally, Franklin County was in nonattainment for 1-hour ozone (1979), 8-hour ozone (1997), 8-hour ozone (2008), and PM2.5 (1997) in the past but has since been redesignated to maintenance for each. An area considered 'in maintenance' for a pollutant suggests the area was previously classified as 'nonattainment' for that pollutant, meaning it did not meet air quality standards, but has now achieved compliance and is actively working to maintain those standards through a 'maintenance plan' as required by the Clean Air Act; therefore, any future projects in that area must be reviewed to ensure they do not contribute to exceeding the air quality standards again.

Comparative criteria pollutant emissions analyses are recommended in all areas of future potential projects, not just nonattainment/maintenance areas, to ensure the project would not create a violation that could put the area into nonattainment. Furthermore, air quality conformity, NEPA, and the MPO's (East-West Gateway Council of Governments) developed Transportation Improvement Plan (TIP) must conform to air quality goals by computer models to estimate air pollution levels from any proposed transportation system improvement and comparing it to air quality standards.

2.4. Social and Economic Characteristics

2.4.1. Proposed Economic Development

As with any major transportation study, the potential impacts to economic development must be considered. Outreach to the Missouri Department of Economic Development, local Chambers of Commerce, MPOs, and RPCs via email was conducted in July and August 2024. This communication focused on planned or proposed developments that may impact local communities, traffic patterns, and the usage and function of the I-44 facility itself. **Table** 2-4 provides a summary of the responses received.

Table 2-4. Economic Development Organization Responses Summary

Organization	Response
Missouri Department of Economic Development	• No projects announced.
Meramec Regional Planning Commission	• Currently working on the Fort Leonard Wood Military Installation Resiliency Review (MIRR) and Housing Study (expected Fall 2025). Recently completed studies include the following: Active Transportation Plan for Bourbon (September 2024) and the Comprehensive Economic Development Strategy (CEDS) for the Meramec Region (September 2024). The City of Bourbon Strategic Plan was completed in 2021.
Ozark Transportation Organization	• Several trail crossings located between U.S. 160 and Missouri Highway 266 • Relocation plans of the outer road and Evergreen/Missouri Highway 125 in Strafford • Springfield Underground planned expansion at Division & U.S. 65 and industrial growth west of Missouri Highway 266 and I-44 • Property ready for development in Republic; a traffic study has been completed • The City of Marshfield is working to develop over 80 acres of mixed-use and housing at the Marshall Road exit • The 200-acre Strafford Rail and Industrial Park at Missouri State Highway 125 is over half full and growing • Over 700 acres of industrial and mixed-use development is anticipated over the next decade between Beaver Road and U.S. 65 in Springfield • Expansion in the next decade at the Springfield-Branson Airport is under consideration

Organization	Response
	• The City of Republic is anticipating strong demand for industrial development along Missouri State Route MM, the James River Freeway, and their exits on I-44
Harry S. Truman Coordinating Council Regional Planning Commission	• Kodiak Fields Workforce Housing Development: 40 housing units planned in Neosho, near highway 86 • High-speed internet expansion along the I-44 corridor • Recycling and composting initiatives are being considered along the I-44 corridor inspired by the success of the Neosho Recycling Center • A comprehensive network of pedestrian and bicycle paths are being analyzed in Noel
Southwest Missouri Council of Governments	• Trucking company headquarters expansion expected in Strafford • The City of Marshfield is planning to capitalize on the new interchange • Expansion is expected in Mt. Vernon near the new truck stop on the south/southeast side of the interchange at Exit 46 as well as additional realignments/development north of this interchange
City of Joplin	• Crossroads Industrial Park 330-acre expansion forward at the Missouri Highway 249/I-49 Interchange and east to the Prigmore Avenue Interchange • Commercial, manufacturing, and/or industrial development anticipated north of I-44 along the Missouri Highway 249 corridor; attempting to obtain Interstate designation for Highway 249 to promote economic development • Proposed manufacturing/industrial development focused along the 32nd street corridor • Possible future commercial and/or retail development southwest of Exit 4 and Blackcat Road
Mt. Vernon Chamber of Commerce	• Large Housing project underway at Exit 46 • Ozark Trails Travel Center construction at Exit 46

2.4.2. Title VI

Title VI of the 1964 Civil Rights Act prohibits recipients of federal financial assistance (states, etc.) from discriminating based on race, color, or national origin in any program or activity. Title VI is a statutory and regulatory requirement, and all federally funded studies or projects must comply with the provisions of Title VI.

As part of Title VI, Limited English Proficiency (LEP) populations were reviewed within the study area to understand the degree to which I-44 serves these populations. For purposes of this review, LEP is defined as the percentage of all individuals over 5 years of age who speak a language other than

English and speak English less than "very well." This data was sourced from the US Census Bureau American Community Survey (ACS) 2018-2022 (5-year estimates).

Among the 10 F44 study area counties, four counties (Webster, Lawrence, Jasper, and Newton) had a percentage of 3% for LEP persons, which was the highest within the study area. One percent of individuals 5 years or older in the study area plus three-mile buffer speak English not well or not at all, which is lower than Missouri (2%) and the US (8%). The percentage of LEP persons varies from zero percent to 11 percent. The block group with the highest percentage is Census Tract 43.03 Block Group 1 in Greene County, with 11%.

Table 2-5 provides a high-level summary of the number of block groups with potential LEP populations. Delineated by the US Census Bureau, a block group is the smallest geographic unit for which demographic data are readily available.

Table 2-5. Number of Block Groups with Potential LEP Populations by County

County	Block Groups intersected with Study Area	Potential LEP Persons - Block Groups
Franklin	16	3
Crawford	10	1
Phelps	19	4
Pulaski	12	1
Laclede	12	4
Webster	7	0
Greene	24	5
Lawrence	11	0
Jasper	9	0
Newton	9	3
Total	**129**	**21**

Identifying LEP populations early assures these populations have a meaningful opportunity to participate during every phase of a project. Specialized outreach may be necessary based on the extent of anticipated impacts and stakeholder concerns. In addition, future improvement projects will need to determine whether language assistance measures are needed to ensure meaningful access to the process. Consideration of businesses and community facilities important to LEP populations is also critical.

2.4.3. Community and Social Institutions and Services

There are a variety of facilities and services in proximity to the study area that serve community needs and utilize the I-44 corridor, including municipal buildings and maintenance facilities, post offices, Fort Leonard Wood Army Base, and several more. Specific to within the study area, these services include the following:

- **Fire, Emergency Medical Systems (EMS), Police Facilities** – The study area includes the Hazelgreen Rural Fire Protection (Laclede County), Pulaski County Ambulance-Laquey Station (Pulaski County), and the Waynesville Rule Fire Protection District Training Center (Pulaski County).
- **Hospitals** – There are four hospitals within the study area: Mercy Hospital (Joplin, Newton County), Perimeter Behavior Hospital (Springfield, Greene County), Mercy Hospital (Lebanon, Laclede County), and Phelps Health Hospital (Rolla, Phelps County). Several of these include associated rural health clinics adjacent to the F44 Study area.
- **Places of Worship** – There are over 40 churches of various religious affiliations throughout the study area. Some worship in standalone traditional facilities and others share space in non-traditional facilities. Pulaski and Greene Counties had the most facilities, with 8 and 7, respectively.
- **Additional Resources** – Additional facilities include the Missouri Veterans Commission (Mt. Vernon, Lawrence County), Humane Society of Southwest Missouri (Springfield, Greene County), and several MoDOT commuter lots.

2.4.4. Transportation Deficiencies and Needs and Those Affected

The *Transportation Deficiencies and Needs Analysis Memorandum,* **Appendix D.4**, was prepared to determine transportation deficiencies and needs for those who use and depend on the I-44 corridor. Current conditions and projected trends were evaluated to assess possible needs for education and social services, economic generating services, and the Department of Defense. Community needs for these services were assessed by evaluating the current and future trends of local populations, schools, recreational destinations, and social and emergency services. Likewise, economic needs were assessed by evaluating current and future trends associated with commerce and freight, along with industries such as tourism and agriculture. **Table** 2-6 summarizes each category and identified needs as further detailed in the *Transportation Deficiencies and Needs Analysis Memorandum*.

Table 2-6. Transportation Needs for those who Use and Depend on I-44

Category	Needs
Education and Social Services • Education • Health Care/Essential Services	• Reliable, efficient connections and access to amenities and services only available at the nearest urbanized centers with consideration of special events and seasonal peak times for university visitors.

Category	Needs
Economic Generating Industries • Commerce • Freight • Recreational/Tourism • Agriculture	• Accommodate for the continued capacity growth for trucks and farm equipment to maintain and meet agriculture and other industry needs in transporting goods and services. • Maintain and provide additional safe and efficient access to tourist and recreational destinations along the I-44 corridor, especially during seasonal peak seasons, along with maintaining an efficient interstate facility for through traffic.
Department of Defense • Fort Leonard Wood Installation	• Continue to meet growing military population and families and potential increases in the movement and transport of military products, equipment and supplies.

2.5. Multimodal Existing Transportation Network

The I-44 corridor serves a variety of adjacent travel modes including, bicycle, pedestrian, and bus.

2.5.1. Bicycle and Pedestrian

Although walking and bicycling is not permitted on I-44 – which is the facility of primary focus for this study – it does interact with and affect bicyclists and pedestrians within the corridor. The I-44 corridor has several existing adjacent bicycle and pedestrian facilities, but no facilities within the study area. Many of the adjacent facilities are disconnected and fail to provide an integrated network for bicycle and pedestrian travel in the study area. Pedestrian facilities such as sidewalks, crosswalks, and curb ramps are disconnected or missing from interchanges throughout the study area corridor, limiting safe crossing opportunities. Further, the deteriorated quality of existing facilities emphasizes the need for maintenance and improvement.

As a major interstate facility, I-44 acts as a barrier for bicyclists and pedestrians to cross and presents an obstacle to bicycle and pedestrian connections. Due to the relative vulnerability experienced by pedestrians and bicyclists in comparison to motorists, these travelers are often averse to making trips that would involve leaving the designated bicycle/pedestrian facilities. Bicyclists and pedestrians are also more exposed to the noise and environmental impacts of high-volume roadways, which is why off-street facilities are often favored for recreational trips.

Subsequent studies of alternatives along the corridor should include evaluation of pedestrian and bicycle facilities, including potential grade-separated crossings. Each potential future alternative would present barriers to pedestrian and bicycle movements, but construction of any alternative would present an opportunity to address these impacts directly and concurrently and could result in improved environments for all users.

2.5.2. Transit

Transit offers an alternative to vehicle travel and represents a key alternate mode choice for users traveling through the corridor. Although limited transit services currently travel on I-44 within the corridor, existing transit services cross and run alongside I-44 in the more urbanized areas such as Rolla (Southeast Missouri Transportation Service) and Springfield (The Bus). Adjacent transit service within the corridor primarily includes bus services. Greyhound provides interstate bus service throughout the corridor as well. The corridor does not include light rail.

Existing transit service within the study area is limited due to the rural nature of a majority of the corridor; therefore, there is minimal opportunity to provide transit-oriented improvements. Potential future alternatives will need to consider existing transit routes within the alternative, and new park-and-rides and transit signal priorities at major interchanges in urbanized areas, where appropriate.

3. Resiliency

Regarding resiliency of a major transportation corridor like I-44, understanding and correcting the weaknesses of the existing infrastructure creates a better transportation system that can consistently and reliably meet the transportation needs of all road users. Evaluating the resiliency of the corridor provides value and important information to consider as the F44 Study transitions from a corridor-level evaluation to more-detailed, future project-level studies.

As part of the F44 Study, a resiliency analysis was conducted along the I-44 corridor. The purpose of this analysis is to provide and maintain acceptable functionality of the corridor in the face of disruptions. The objectives of the resiliency analysis included:

- Identify roadway, bridge, and culvert assets located along the I-44 corridor.
- Identify locations where I-44 is vulnerable to hazards caused by extreme events, such as flooding and extreme temperatures.
- Evaluate the effect of extreme weather events on I-44 corridor assets.
- Determine potential mitigation/prioritization strategies for vulnerable transportation assets.

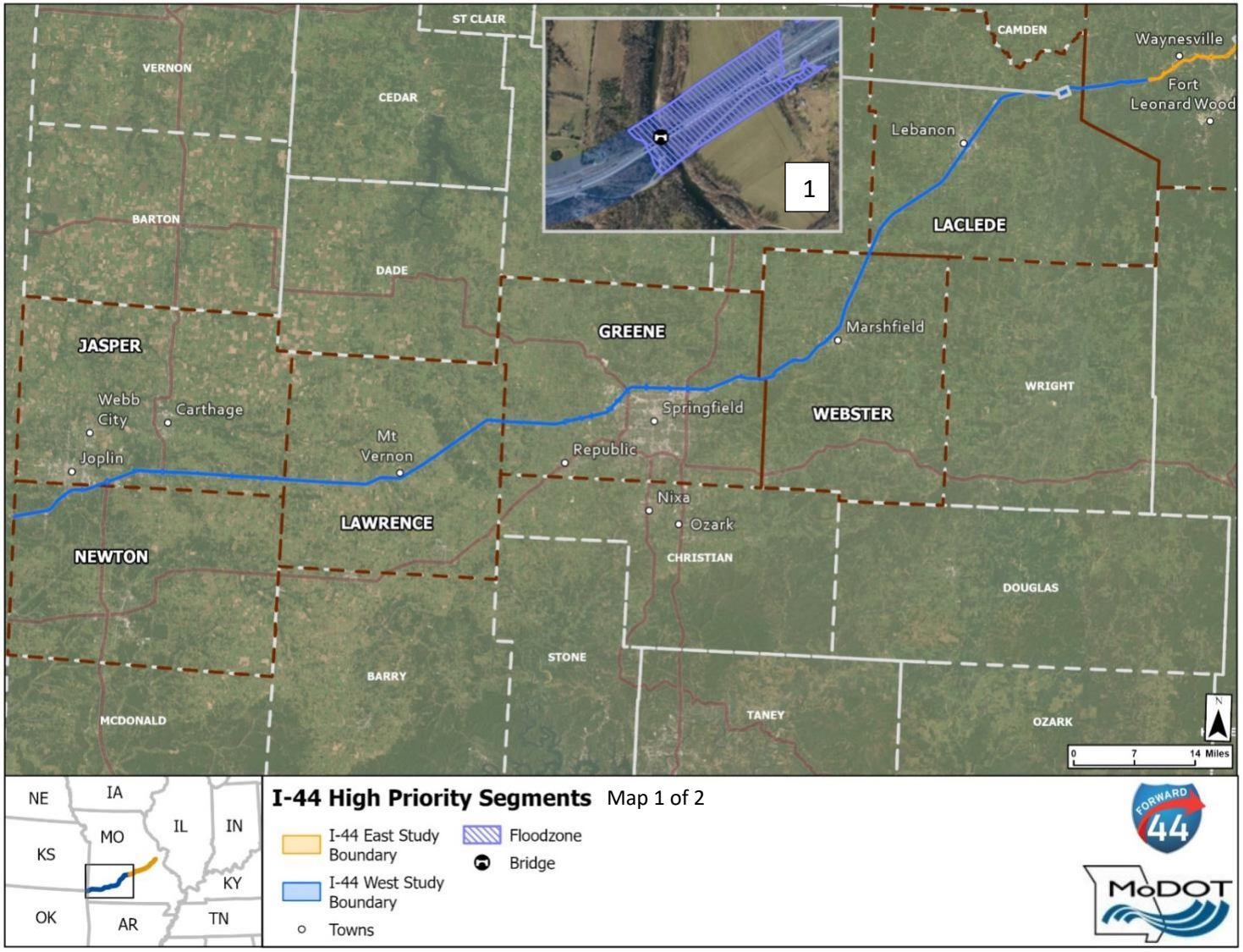
The January 2025 *Resiliency Analysis Memorandum*, **Appendix E**, details these objectives. In summary, the resiliency analysis of the I-44 corridor identified key segments vulnerable to natural hazards that could disrupt normal operations. Using a combination of AADT data, FEMA floodplain and MoDOT pavement condition data, as well as feedback from MoDOT maintenance staff, the analysis focused on segments where critical assets, high traffic, and hazard-prone conditions overlap. This enabled a comprehensive understanding of I-44's most vulnerable sections, resulting in six high-priority areas (see **Table** 3-1). These areas (i.e., segments) included heavy traffic volumes and frequent exposure to flooding or vulnerability due to poor pavement conditions and past frequent closures, necessitating enhanced resilience strategies to prevent disruptions (see **Figure** 3-1).

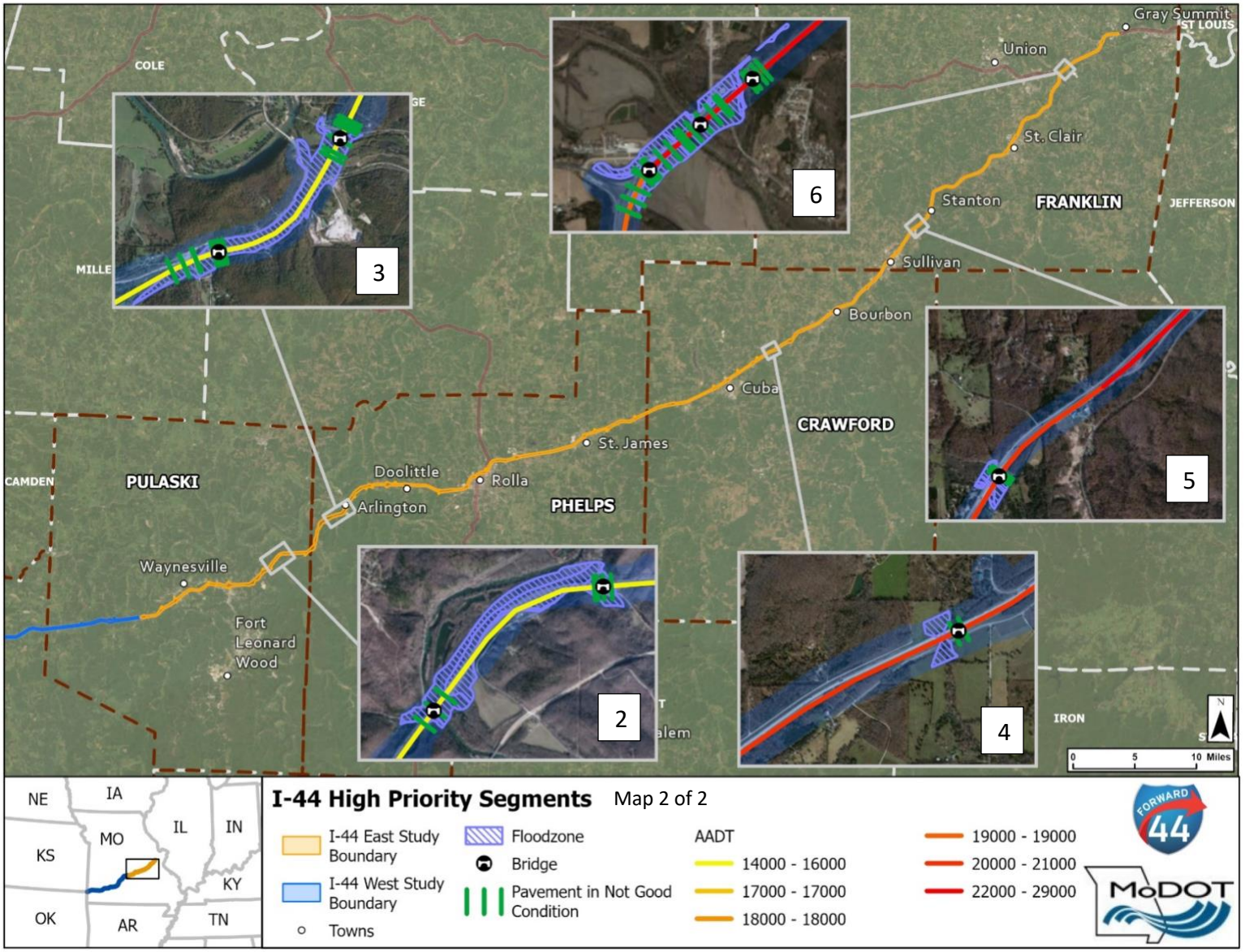
Table 3-1. High-Priority Areas

Map Key	High-Priority Segments (Mile Markers)	Key Issues	2023 Traffic Volume (AADT)	Relevant Features
1	142-143	Flood zone, proximity to Gasconade River, high AADT	27,100	Recurring flooding issues and maintenance needs, noted by MoDOT.
2	165-167	Flood zone, poor pavement, proximity to Piney River	30,000	Frequent flood-related road closures, highlighted by MoDOT surveys.

Map Key	High-Priority Segments (Mile Markers)	Key Issues	2023 Traffic Volume (AADT)	Relevant Features
3	172-174	Flood zone, poor pavement, Proximity to Gasconade River	31,100	Recurring flooding issues and maintenance needs, noted by MoDOT.
4	212-213	Flood zone, poor pavement, high AADT	36,400	Key segment with high-priority conditions.
5	228-229	Flood zone, poor pavement, high AADT	39,800	Similar vulnerability profile to MM 212-213 (May Key #4).
6	247-248	Flood zone, poor pavement, high AADT, bridges	47,500	Multiple bridges, critical for connectivity during disruptions.

Figure 3-1. High-Priority Areas




Gray Summit
ST LOUIS
Union
St. Clair
Stanton
FRANKLIN
JEFFERSON
Sullivan
Bourbon
Cuba
CRAWFORD
St. James
Doolittle
Rolla
Arlington
PHELPS
PULASKI
CAMDEN
Waynesville
Fort Leonard Wood
COLE
MILLE
IRON
6
3
5
2
4
0 5 10 Miles
I-44 High Priority Segments
Map 2 of 2
I-44 East Study Boundary
I-44 West Study Boundary
Towns
Floodzone
Bridge
Pavement in Not Good Condition
AADT
14000 - 16000
17000 - 17000
18000 - 18000
19000 - 19000
20000 - 21000
22000 - 29000
NE
IA
MO
IL
IN
KS
KY
OK
AR
TN
MoDOT

4. Purpose and Need

4.1. What is a Purpose and Need?

According to FHWA, a study's "Purpose and Need" provides justification for the project and drives the development and screening of potential future alternatives. Furthermore, a 'purpose' is a set of objectives future projects associated with this study intend to meet. The 'need' is the transportation deficiency the study is intended to address.

4.2. 2008 Study Purpose and Need

The 2008 Study identified the purpose as defining the potential issues that affect the I-44 Study corridor from the St. Louis/Franklin County line to the Oklahoma State line.

The six needs identified in the 2008 Study were:

- Roadway capacity is becoming inadequate for expected demand.
- There is a degrading safety environment on I-44.
- Interchanges along I-44 have safety and operation issues and are inconsistent with current design standards.
- Freight traffic represents an essential element of the traffic stream on I-44.
- Evolving engineering standards result in inconsistent roadway designs.
- Balancing access, economic development, and human/natural resources.

These needs were developed from corridor-wide traffic, safety, environmental and engineering data collection and analyses that examined focus areas over the 257 miles reviewed in the 2008 Study.

4.3. Forward 44 Study Purpose and Need Update/Validation

MoDOT initiated the F44 Study to update and/or validate the 2008 Study. MoDOT and the F44 Study team worked in collaboration with FHWA and corridor stakeholders to update/validate the Purpose and Need for guiding the F44 Study process.

The December 2024 *Purpose and Need Update Memorandum*, **Appendix F**, includes a detailed 2024 evaluation and validation of the 2008 Study's Purpose and Need. Data collected and subsequent analyses from the F44 Study informed these conclusions.

In addition to re-evaluating the needs identified in the 2008 Study, MoDOT also evaluated current infrastructure condition data to identify any additional needs in the I-44 corridor. A review of that data revealed that the pavement condition on I-44 should be considered as an additional need to address in future proposed improvements.

To validate the elements of the F44 Purpose and Need update, five public involvement meetings were conducted in the summer of 2024. The public comments expressed at each of these meetings validated the needs of I-44 identified in the 2008 Study. In addition, the technical traffic, safety, and geometric data collected in 2024, and the resulting analyses, will inform the basis to evaluate any future corridor improvements.

The update/validation resulted in five of the needs from the 2008 Study remaining and the addition of a need related to system preservation, as listed below. FHWA and MoDOT recognize that safety is a fundamental goal of all transportation projects in Missouri, ensuring every project is designed to enhance safety for all systems users; therefore, safety is not considered a need, but an overarching goal.

- Roadway capacity is becoming inadequate for expected demand.
- Interchanges and portions of the mainline along I-44 have safety and operation issues and are inconsistent with current design standards.
- Freight traffic represents an essential element of the traffic stream on I-44.
- Evolving engineering standards result in inconsistent roadway designs.
- Balancing access, economic development, and human/natural resources.
- Preserve the existing I-44 facility as needed to carry existing and future traffic.

4.4. Summary

Table 4-1 details the summary of the 2008 Study's purpose and need elements and validation for the F44 Study.

Table 4-1. Summary of 2008 Purpose and Need Element Validation

2008 Purpose and Need Element	2008 Need Conclusions	2024 Need Summary	Purpose and Need Element Validated
Roadway capacity inadequate for expected demand	88% of F44 Study corridor expected to exceed LOS thresholds by 2035.	LOS F is projected to occur on segments of I-44 in the Springfield area by 2030. By 2050, over 30% of the corridor will operate at LOS D or worse, nearly 10% will operate at LOS E or worse, and 4% of the corridor will witness LOS F during peak hour conditions.	Yes

2008 Purpose and Need Element	2008 Need Conclusions	2024 Need Summary	Purpose and Need Element Validated
Degrading safety environment on I-44	Many injury and fatal crashes occurred in close vicinity to each other. Nearly all injury/fatal crash clusters occurred in the eastern 100 miles of the F44 Study corridor.	The ISATe analysis shows approximately 40% of I-44 experiences notably more crashes than predicted safety equations.	Modified - FHWA and MoDOT recognize that safety is a fundamental goal of all transportation projects in Missouri, ensuring every project is designed to enhance safety for all system users.
Interchanges and portions of the mainline along I-44 have safety and operation issues and are inconsistent with current design standards	51 interchanges exceeded at least one crash criteria established for the project. 8 interchanges exceeded all three criteria. In 2035, 1/3 of interchanges are expected to not meet all traffic operations criteria.	19% of interchanges do not meet current MoDOT access management ramp termini spacing guidelines. Nearly 93% of the interchanges in the corridor have ramps with acceleration and deceleration lengths not meeting current design standards.	Yes, with modification to include “and portions of the mainline”
Freight traffic is essential element of traffic on I-44	Truck volume percentages are expected to range from 15% (central) to 35% (Joplin) in the F44 Study corridor.	Trucks currently comprise approximately 30% of the daily traffic volume on I-44. The number of trucking source facilities has significantly grown along the F44 Study corridor.	Yes
Engineering standards result in inconsistent roadway design	Horizontal curves, steep grades, and some bridge structures are in need of evaluation and improvement.	80% of the curves along the corridor do not meet the super elevation requirements. Bridges along I-44 are approaching their useful design life, and a substantial portion has exceeded it.	Yes

2008 Purpose and Need Element	2008 Need Conclusions	2024 Need Summary	Purpose and Need Element Validated
Balance access, economic development, and human/natural resources	Attention and coordination, consistent with the MoDOT *EPG*, will balance the access that I-44 provides with the economic development and natural resources.	No additional natural or economic development resources should be added to the 2008 list of resources. All resources identified in the 2008 Study should be evaluated for potential impacts	Yes
New identified need element – Preserve the existing I-44 facility as needed to carry existing and future traffic	Not a 2008 identified need.	10% of the I-44 pavement mileage in the F44 Study corridor is rated as poor or very poor, much of it located in the St. Louis and Springfield areas. Existing pavement rated in poor or very poor condition needs to be evaluated for major rehabilitation or complete replacement.	New need element

5. Future Study Sections Logical Termini and Prioritization

To begin the process of establishing future detailed NEPA studies' limits and scopes, the study area was split into manageable sections with logical termini. Like the 2008 Study and for purposes of the F44 Study, these sections are referred to as Future Study Sections (FSS). Each section can function on its own without further consideration of an adjoining section.

As part of the 2008 Study, a logical termini memorandum was prepared (**Appendix A**). The memorandum included a detailed discussion of the rationale for the western and eastern termini of the study. The 2008 Study also included a memorandum discussing seven proposed FSS (**Appendix A**) and defined the factors used to establish the proposed FSS and the similarities of each. Due to the amount of time since the 2008 Study was completed and changes to design standards, an updated review of the logical termini and FSS are warranted.

The January 2025 *Future Study Sections Logical Termini and Prioritization Memorandum*, **Appendix G**, was completed to verify the logical termini for the F44 Study area and the FSS. This memo includes a detailed description of the selection and rationale of the updated FSS logical termini, as well as the preliminary prioritization of each FSS.

5.1. Forward 44 Study Area Logical Termini

The F44 Study's proposed western terminus is the Oklahoma/Missouri State line, located approximately 0.4 mile west of the U.S. Highway 166/400 and I-44 Interchange (Exit 1) and approximately 5 miles west of Joplin, Missouri. The 2008 Study identified Exit 1 as the western terminus; however, to allow for improvements through the Exit 1 Interchange, the terminus in the F44 Study was adjusted west of the interchange gore area and outside the merge/diverge influence area. In consideration of the western terminus, this is appropriate because:

- It serves as a viable location for future coordination between the Oklahoma Department of Transportation (ODOT), Oklahoma Turnpike Authority (OTA) and MoDOT, since the area represents the transition to tolled roadway (OTA Will Rogers Turnpike).
- The typical section of I-44 changes from a 4-lane section with a grass median (Missouri) to a 4-lane section with a concrete median (Oklahoma).

The F44 Study's proposed eastern terminus is the Route 100 East/I-44 Interchange (Exit 253) at Gray Summit, located approximately five miles west of the Franklin/St. Louis County line. The 2008 Study identified the Business Loop 44 (Historic Route 66)/I-44 Interchange at Pacific (Exit 257); however, due to improvements over the last 15 years in the vicinity of this interchange, the eastern terminus was adjusted for the F44 Study. The Route 100 East/I-44 Interchange (Exit 253) was selected as the eastern terminus because:

- Improvements will need to be made 0.5 mile east of the Route 100 West Overpass (Exit 251) due to the existing ramps at Exit 253 needing to be realigned to make room for future improvements.

- This serves as a notable traffic generator serving Route 100 and surrounding development in Gray Summit and Villa Ridge.

5.2. FSS Logical Termini

Per FHWA regulations, three guiding principles in 23 Code of Federal Regulations (CFR) 771.111(f) are used to frame a highway project:

1. Connects logical termini and be of sufficient length to address environmental matters on a broad scope.

2. Has independent utility or independent significance. Must be usable and be a reasonable expenditure even if no additional transportation improvements are made in the area.

3. Does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Logical termini are defined as:

1. Rational end points for a transportation improvement, and

2. Rational end points for a review of the environmental impacts.

This guidance, in coordination with the following seven factors outlined in **Table** 5-1 and detailed further in **Appendix G**, established the logical termini for the FSS in the 2008 Study and the F44 Study.

Table 5-1. Factors Used to Establish 2008 Study and F44 Study FSS

Factor	Description
Jurisdictional	Roadways under common administrative or jurisdictional control are generally subject to common planning strategies and are, therefore, logical to group together. Among the jurisdictions considered were metropolitan planning organizations (MPOs), various municipal jurisdictions such as counties, cities, townships, and MoDOT Districts.
Landscape	On a statewide scale, there can often be important terrain differences to consider. Addressing these challenges in a comprehensive way can have benefits in the design, construction, and maintenance cycle as well as maximizing driver expectations regarding roadway design.
Traffic Volume	Roadways that handle similar volumes of vehicular traffic often have common problems whose solutions need to be considered collectively. Consequently, major breaks in traffic volumes were considered in the establishment of the FSS.

Factor	Description
Traffic Composition	Similarly, the types of vehicles that make up the traffic stream can influence problems and solutions. Common issues of this type include commuter traffic and truck traffic.
Traffic Destination	Incorporating the entire trip into a transportation solution is often key to adequately addressing associated needs.
Crash Densities	Generally, there are three elements to safe roadway design: traffic, geometrics and crashes. Areas of crash densities were utilized in determining the FSS, as a means for determining the origin of vehicular safety issues.
Roadway Condition	Roadways are under continual maintenance. Grouping roadway sections in ways that acknowledge the existing condition of the roadway and the future maintenance projects can maximize the effectiveness of public expenditures. Operational similarities such as common speed limit and design features are also important.

The 2008 Study identified logical termini for seven FSS. The FSS were numbered west to east, with FSS 1 starting at the 2008 Study western terminus and FSS 7 ending at the 2008 Study eastern terminus (Exit 257).

To determine the logical termini of the FSS for the F44 Study, it was necessary to define the assumed general scope. Assuming the overall scope of adding capacity to I-44 throughout the corridor, in coordination with an updated review of the factors used to establish the 2008 Study FSS, the FSS were adjusted from seven to 13. Like the 2008 Study, the FSS were numbered west to east, with FSS 1 starting at the western terminus (Oklahoma/Missouri State line) and FSS 13 ending at the eastern terminus (Route 100 East/I-44 Interchange, Exit 253, at Gray Summit). The FSS adjustments provide independent utility for a reasonable expenditure on future transportation improvements.

For comparison purposes, the seven (7) 2008 Study FSS and the 13 F44 Study FSS are depicted in **Figure** 5-1. The graphic provides context to the changes in logical termini of each FSS. The details (e.g., length, county, termini descriptions, number of interchanges) of each FSS for the 2008 Study and the F44 Study are depicted in tabular format in the memorandum in **Appendix G.**

5.3. FSS Prioritization

The process to prioritize the FSS for the F44 Study focused on addressing the question "How well does each FSS meet the F44 Study Purpose and Need?" The FSS were prioritized by the key issues summarized in the purpose and need and then categorized as Tier I, II, or III:

- Tier I – Issues affecting these FSS suggest improvements be considered in the short term.
- Tier II - Issues affecting these FSS suggest improvements be considered in the comparative short term but are not as urgent as those required under the high priority designation.
- Tier III - Issues affecting these FSS suggest improvements may not be as critical in the short term.

For comparison purposes, the prioritization of the seven (7) 2008 Study FSS and the 13 F44 Study FSS are depicted in a split-screen graphic in **Figure** 5-2.

Figure 5-1. 2008 Study and F44 Study FSS

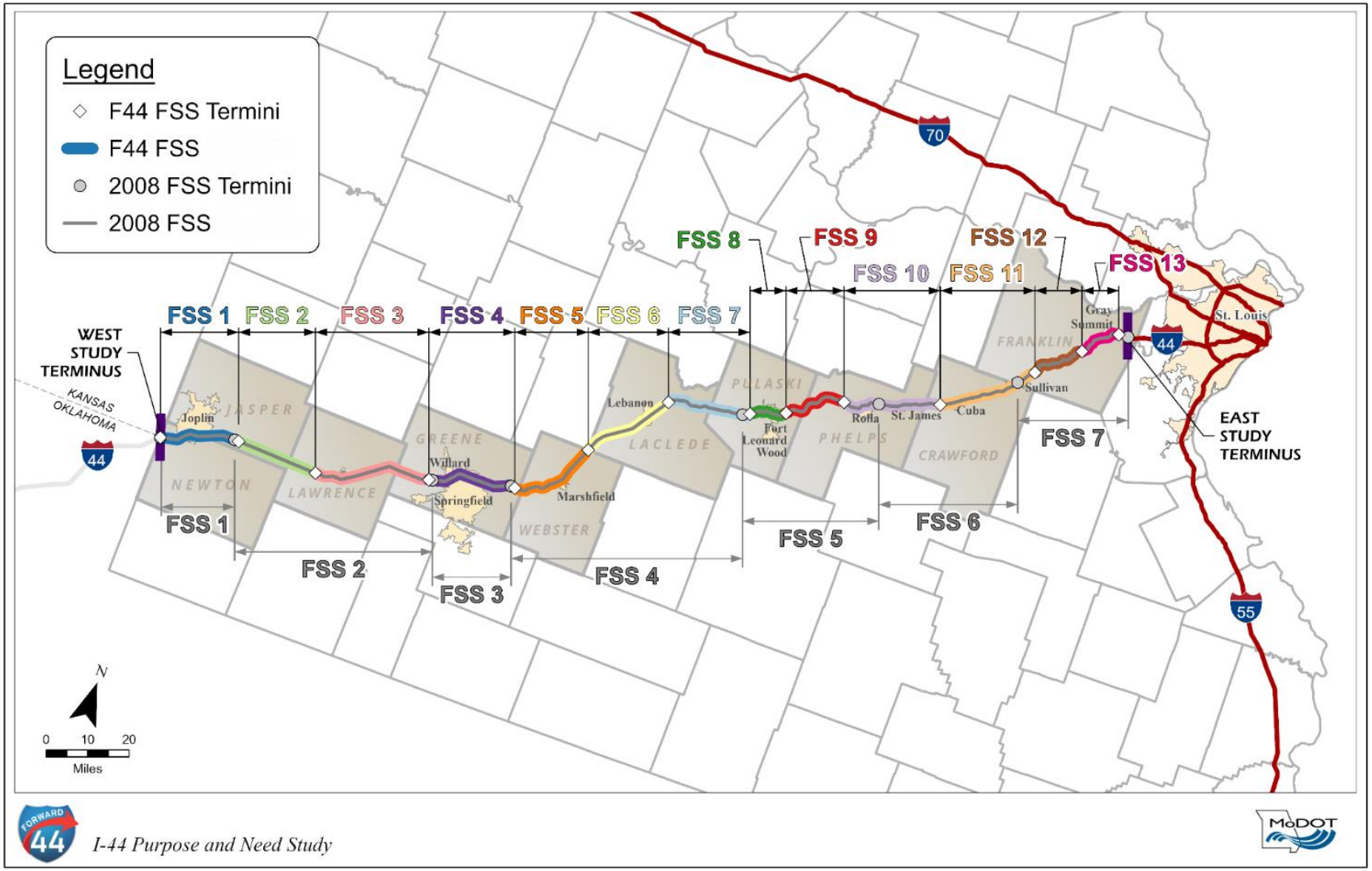
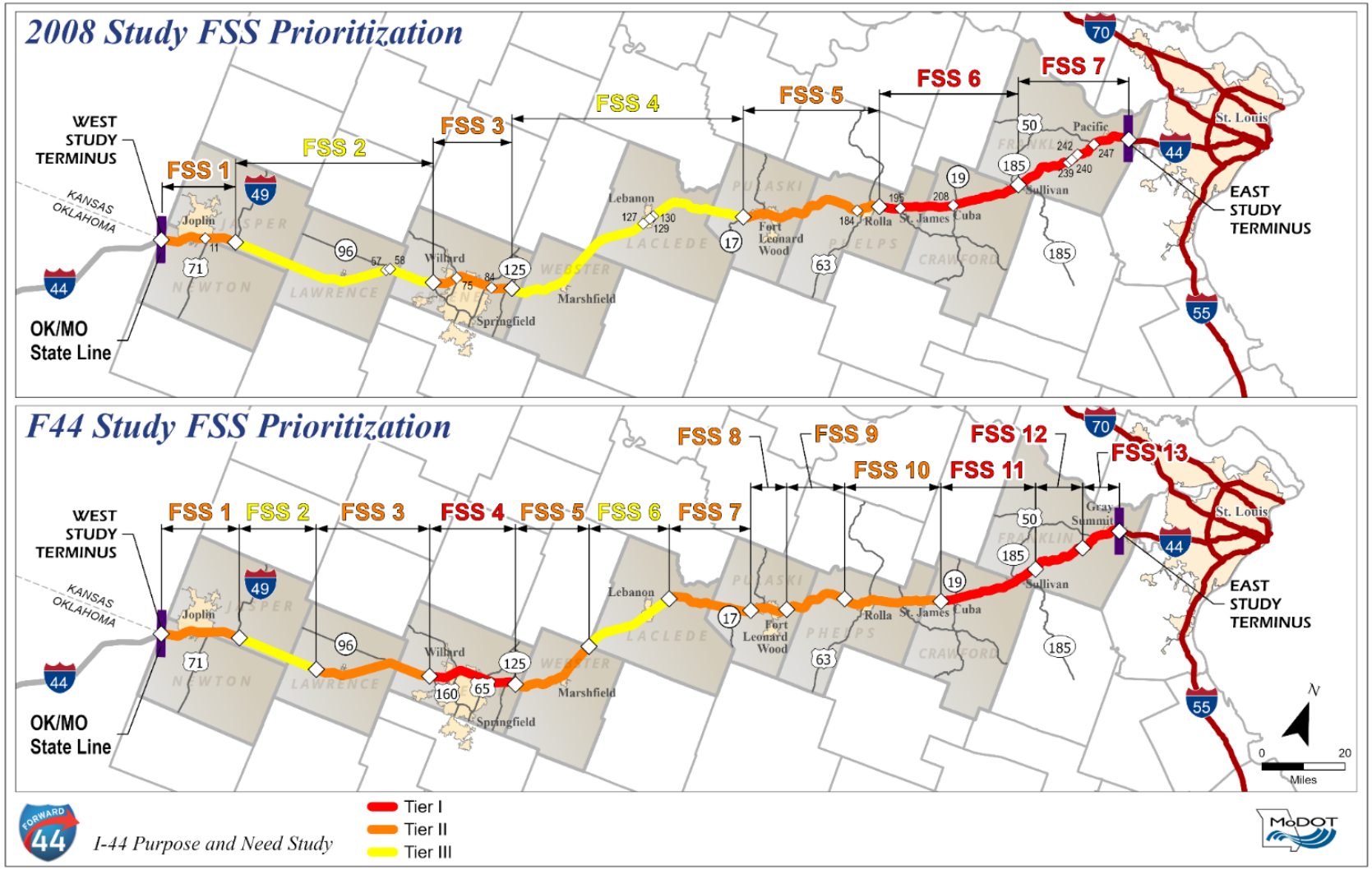


Figure 5-2. 2008 Study and F44 Study FSS Prioritization



5.4. Potential NEPA Classification for Forward 44 Study FSS

Future potential projects within each FSS will likely vary in type, size, complexity, and have impacts ranging from negligible to significant on the natural and human environment. The class of NEPA document will direct the level of study required for a particular project, from the level of stakeholder involvement to the required field studies. Therefore, the class of document is identified as early as possible.

MoDOT, in coordination with FHWA, assigns projects a NEPA classification based on scope and assessment of anticipated social and environmental impacts. To account for the variability of project impacts, three basic NEPA classifications[1] determine how compliance with NEPA is carried out and documented:

- Categorical Exclusion (CE) – has no significant impact on the human and natural environment.
- Environmental Assessment (EA) – determines the need for an EIS if environmental impacts are uncertain or finds that there is no significant impact on the human and natural environment.
- Environmental Impact Statement (EIS) – detailed documentation where the action is likely to cause significant impacts or significant impacts are known (23 CFR 771.115) on the environment and results in a record of decision.

Additionally, MoDOT processes CEs in two ways:

- Programmatic CE (PCE) – for actions that do not exceed the 14 thresholds (e.g., amount of new right of way and/or easements combined is less than five acres) described in the May 23, 2023, executed programmatic agreement between FHWA and MoDOT.
- CE2 - for actions that will not individually or cumulatively involve significant social, economic, or environmental impacts, and do not meet the criteria for a PCE.

Using the assumed general scope in determining the FSS logical termini, adding capacity, but without the ability to determine the significance of potential social, economic, or environmental impacts, it is difficult to determine the NEPA classification for each FSS. Based on desktop data collected and preliminary agency coordination efforts related to the typical resource categories reviewed under NEPA, general impact assumptions are considered. Impact assumptions were discerned via an evaluation of the study area relative to mapped environmental resources, as detailed in the supporting natural and cultural assessments (**Section 2.3**) and the associated environmental constraints ArcGIS online map. **Table** 5-2 details general impact assumptions and the associated potential NEPA considerations.

[1] MoDOT EPG 127.14

Table 5-2. F44 Study FSS NEPA Resources and Future Considerations

NEPA Resource	Future NEPA Considerations
Noise	Traffic noise levels in the study area would increase with added capacity. Each FSS would require a Noise Technical Analysis/Report.
Hazardous Materials	Roadway construction activities have potential for encountering hazardous materials or contaminated sites at most interchanges along the corridor. Each FSS would require more detailed investigations into potential impacts resulting from encountering hazardous materials.
Social & Economic Conditions	No changes to community cohesion would likely occur. Some changes to property values and local government revenue might occur due to ROW acquisition. Beneficial effects are expected to quality of life, mobility, and safety. Each FSS would require a Community Impact Assessment.
Air Quality	The only area of the corridor not in attainment is in Franklin County (FSS 13). Air quality mitigation identified during the NEPA process would likely include best management practices during construction.
Vegetation	Vegetation growing within the existing highways' ROW is owned and maintained for safety and aesthetics by MoDOT. The assumed scope would likely remove some vegetation to incorporate improvements. Where additional ROW would be needed for, more vegetation would be removed, consisting primarily of shrub/scrub, pasture/ hay, and grasslands. A revegetation plan may be necessary to address vegetation disturbance.
Land Use	Potential interchange improvements would convert adjacent land uses to transportation use. Adding capacity to the corridor would support the goals identified in area plans along the corridor and would not alter any future land use planning. Future NEPA processes should include coordination with adjacent jurisdictional planners. Plans and projects currently underway should be reviewed for updated information.
ROW	Additional ROW would be required at interchanges; however, most of the capacity improvements along the corridor are not expected to require significant ROW consistently throughout the corridor. ROW may be needed for potential retaining walls or guardrails. Future NEPA studies should identify future ROW needs through more detailed design and property mapping.
Parks & Recreation	The corridor includes several parks, trails, and MDC lands adjacent and in proximity of assumed existing ROW. The most significant property along the corridor is Mark Twain Nation Forest in Laclede, Pulaski, and Phelps Counties. Impacts to any of these properties would require coordination with agencies that manage these areas for potential Section 4(f)/6(f) impacts.

NEPA Resource	Future NEPA Considerations
Visual & Aesthetics	Each FSS would likely experience cut, fill, lighting, guardrails, or bridge improvements impacting vegetation and the surrounding landscape. Future NEPA processes should evaluate the need to conduct visual impact assessments to determine important views.
Historic & Archaeological Resources	Few NRHP listed or eligible historic and archaeological properties were noted within or adjacent to the 253-mile corridor assumed ROW. During future NEPA processes, potential resources will be evaluated and field surveys conducted to confirm presence and/or impacts, and if impacts can be avoided or minimized.
Water Resources & Floodplains	Each FSS includes numerous water resources and floodplains. Temporary impacts to waters resources could occur during construction from working in water resources to install bridge structures. Adding capacity to I-44 may widen the roadway footprint in places; therefore, impacts to water resources within the corridor may be impacted. During the NEPA process, the location of drinking water supplies and groundwater resources potentially affected by runoff from both construction activities and operation would be identified. Additionally, as alternatives are developed, attention would be necessary to identify the location of current FEMA maps in that area to be consistent with local floodway plans and floodplain management programs to determine impacts.
Wetlands & Other Waters of the US	Wetlands and associated water features and tributaries occur consistently within each FSS throughout the corridor. Adding capacity to I-44 may widen the roadway footprint in places; therefore, impacts to wetlands and associated water features within the corridor are likely. During the NEPA process, MoDOT will review wetland delineations to determine jurisdictional resources and related permanent and temporary impacts, and if resources can be avoided or impacts minimized.
Special Status Species	Special status species include plants and animals that are listed under the ESA as threatened or endangered, those being considered for listing under the ESA (candidate species), and those that receive protections under state or other laws. Per preliminary coordination with USFWS and MDC, several special species and habitats (e.g., caves) exist within the corridor. During the NEPA process, an updated list of special species and habitats would need to be obtained and reviewed for additions or deletions. Field surveys would be necessary to determine the presence of special species and habitats and areas of potential impacts. Impacts to these would require a biological assessment to be reviewed and approved by USFWS.

Per the NEPA considerations detailed in **Table** 5-2. F44 Study FSS NEPA Resources and Future Considerations, similar impacts are assumed for each FSS, but none are assumed to be significant

enough to warrant an EA or EIS. To appropriately determine the NEPA classification for each FSS, the specific project and ROW impacts are necessary. Since this is a pre-NEPA Purpose and Need Study and no engineering design for probable solutions has been initiated, the ROW impacts and project implications are unknown. Therefore, it was assumed that all 13 FSS within the corridor could be classified initially as CE2 documents. During project development, as refinements are considered through engineering design, ROW and impacts would be determined and the thresholds for a CE2 may or may not be met, requiring a change to elevate or lower the NEPA classification for an FSS.

6. Agency and Tribal Outreach

The purpose of the agency coordination was to request feedback from resource agencies on potential issues before significant time or effort has been invested in the F44 Study or future associated projects. Agencies were consulted regarding resources under their jurisdiction to obtain information on potential issues. Avoidance of resources and mitigation of impacts can then be reviewed from the beginning rather than in the form of revisions later.

Agency coordination letters were emailed on March 28, 2024. **Table** 6-1 lists the resource agencies contacted, the date of their response, and a brief summary of their response, if one was received. **Appendix H.1** includes the agency coordination letter and **Appendix H.2** includes the responses received.

Table 6-1. Agency Coordination

Agency	Response Date	Response Summary
Federal		
EPA, NEPA Program Manager		
USFWS, Field Supervisor		
NPS, Regional Program Office Leader	April 12, 2024	Provided coordination considerations for how to identify protected Land and Water Conservation Fund (Section 6f) lands.
US Department of Agriculture, State Soil Scientist	April 10, 2024	Provided general considerations related to the Farmland Protection Policy Act (FPPA), hydric soils, erosion, soil chemical and physical properties, endangered species, and cultural resources.
USACE-St. Louis, Regulatory Branch Chief		
FEMA		
USACE-Kansas City, Regulatory Branch Chief		
State		
MDNR, Director's Office	April 30, 2024	Provided considerations for the following: geology and geospatial data, water protection, demolition and construction of waste management, air pollution, historic

Agency	Response Date	Response Summary
		preservation, floodplain, and endangered species.
SEMA, Director		
MDNR		
Office of Administration, Federal Assistance Clearinghouse	April 9, 2024	No comments or recommendations.
MDC, Policy Coordination		

Note: If blank, no response was received.

MoDOT initiated tribal coordination via email on April 15, 2024 (**Appendix H.3**) however, no responses were received. The following tribes were contacted:

- Caddo Nation of Oklahoma
- Cherokee Nation
- Delaware Nation
- Delaware Tribe of Indians
- Eastern Shawnee Tribe of Oklahoma
- Iowa Tribe of Oklahoma
- Kaw Indiana Nation of Oklahoma
- Kickapoo Tribe of Kansas
- Kickapoo Tribe of Oklahoma
- Miami Tribe of Oklahoma
- The Osage Nation
- Ponca Tribe of Nebraska
- Ponca Tribe of Oklahoma
- Sac and Fox Nation of the Missouri in Kansas and Nebraska
- Sac and Fox Tribe of the Mississippi in Iowa
- Sac and Fox Nation of Oklahoma
- Shawnee Tribe
- United Keetoowah Band of Cherokee Indians in Oklahoma

7. Public Outreach

The F44 Study included a robust Public Involvement Plan (**Appendix I.1**), which:

- Described the overall public involvement approach.
- Identified interested and affected stakeholders and expectations for their involvement.
- Established strategies to achieve public involvement goals for the study.
- Specified tools and techniques to support the coordination strategies.
- Determined the timing and format for public involvement.

There were several opportunities for public involvement throughout the F44 Study.

7.1. How was the public engaged?

Public engagement took many forms through the F44 Study including a website, electronic mailing list, public meetings, and stakeholder meetings.

7.1.1. Website

A study specific website, Forward 44, was developed to keep the public informed. The website includes general information on the study, completed studies, the F44 Study schedule, and public outreach information. It also included a comment page, which allowed visitors to provide general comments to MoDOT. Additionally, notifications of upcoming public meetings were posted on the website. Prior to public meetings, presentation materials, such as informative handouts and the display boards, were added to the website. An additional key feature of the website after completion of the F44 Study efforts will be the Constraints AGO Map, as referenced in **Section 2.3**.

7.1.2. Stakeholder List

To keep the stakeholders informed on the study, a master stakeholder database was developed and utilized to disseminate information concerning the F44 Study. The stakeholder database included:

- Heavy fleet/trucking industry
- Motorists
- Railroads (Federal Railroad Administration)
- Local travelers
- Cross-state I-44 travelers
- Local stakeholders including first responders, business/property owners, civic organizations, municipal staff, schools, universities, etc. along I-44
- Local elected-officials, city and county leaders, and regional planning partners along I-44
- Missouri Governor and Missouri State Legislators
- Oklahoma Governor and Oklahoma State Legislators
- Local partners and interest groups
- Faith-based institutions
- Community centers

- Libraries
- Healthcare and social service organizations
- Advocacy groups
- General public
- Media
- Individuals that requested to be informed about the F44 Study via the website or public meetings.

Email blasts, via the project website, were sent to the mailing list to inform the stakeholders of upcoming events, new website content, and reminders for closing comment periods.

7.1.3. Stakeholder Meetings

A total of three rounds of stakeholder meetings are anticipated for the F44 Study. The first two rounds were conducted virtually, via Zoom.

The first round of stakeholder meetings was held for each half of the corridor at the beginning of the study in the spring of 2024. **Table** 7-1 details the date, time, and number of attendees at each meeting.

Table 7-1. Stakeholder Meetings for Public Officials

Date	Time	Counties	# of Attendees
May 21, 2024	5:30-6:30 PM	Franklin, Crawford, Phelps, Pulaski	7
May 23, 2024	5:30-6:30 PM	Laclede, Webster, Green, Lawrence, Newton, Jasper	7

Invitations to the meeting were sent via email to county and municipal public officials on the study contact list. The same information was presented at each meeting. The Study Team led the attendees through a presentation of the purpose of the meeting, study goals, study schedule, and a question-and-answer session via Mentimeter. Meeting invitations, the meeting presentation, and a summary of each meeting with responses to the question-and-answer sessions are in **Appendix I.2**.

The second round of virtual stakeholder meetings were conducted on January 22, 2025, from 11:00-12:00 PM and 5:30-6:30 PM. The invite, emailed to potential attendees on January 7, 2025, detailed the meeting objectives, which are to describe the schedule, outcomes of the engagement efforts, detail the updated/validated purpose and need, and discuss next steps. The invite, meeting presentation, and a summary of the meeting discussion are in **Appendix I.2**.

The third, and final, round of stakeholder meetings is anticipated at the conclusion of the study in April of 2025.

7.1.4. Public Meetings

Five in-person public meetings were held during the F44 Study. **Table** 7-2 details the date, time, and location for each, as well as the number of people who attended.

Table 7-2. Public Meetings

Date	Time	Location	County(ies)	# of Attendees
July 17, 2024	4-7 PM	St. Clair City Hall, St. Clair	Franklin	30
July 18, 2024	5-7 PM	Rolla City Hall, Rolla	Phelps	28
July 23, 2024	4:30-6 PM	Joplin Public Library, Joplin	Jasper, Newton	31
July 25, 2024	4:30-6 PM	Crossway Baptist Church, Springfield	Greene	30
August 14, 2024	4-7 PM	Wallace Center, Lebanon	Laclede	30

The same information and format were presented and utilized at each meeting. Exhibit boards were used to present an overview of the F44 Study and the study area preliminary environmental resources, engineering, and traffic data findings. Additionally, a digital online map of the study area was available for meeting attendees to provide comments on a specific location of the corridor via GIS mapping. Public feedback was solicited via a comment form at the meeting and through an identical online survey. The public was afforded the opportunity to ask questions of the study team throughout the duration of each meeting. All meeting materials were developed in compliance with Section 508. Public notices and news releases for each meeting and copies of the meeting materials and handouts are in **Appendix I.3**.

A total of 16 handwritten comments were submitted at the five meetings, with most attendees submitting comments online via the F44 Study survey as discussed further in the following section. Responses are also summarized in the discussion of the F44 Study survey in the following section. All comments received are in **Appendix I.4**.

7.1.5. Other Public and Stakeholder Outreach

Additional public and stakeholder engagement included an online survey, available July 10, 2024 through August 21, 2024. The survey was developed and made available via the project website. The number of respondents totaled 1,644. Most respondents described themselves as I-44 residents. They answered questions about types of potential I-44 improvements, benefits improvements could provide, locations where they experienced issues, and environmental resources of greatest concern. Respondents could also use the survey to share other comments. Overall, safety, congestion, and freight traffic were respondents' top concerns. They also indicated that the same topics would be among the local or statewide benefits achieved via I-44 improvements. The types of problems survey respondents experienced were largely related to traffic. Other concerns included road conditions and traffic habits/control. Survey respondents also commented that most of the issues they saw were

located in Crawford, Franklin, and Phelps Counties. Rolla (Phelps County), Union/Highway 50 East (Franklin County), and the St. Clair rest stop (Franklin County) were also listed as areas of concern. Environmental resources of greatest concern included wildlife, waterways, and Historic Route 66. A detailed summary of survey responses is available in **Appendix I.4**. **Table** 7-3 summarizes the substantive survey comments received per major topic area, the relation of the comment to either the Purpose and Need of the F44 Study or future NEPA analyses, and the F44 Study team responses to substantive comments.

Table 7-3. F44 Study Survey Substantive Comment Summary and Responses

Comment Category	Substantive?		Response
	Purpose and Need	NEPA	
Add one lane in each direction, reduce congestion, and improve safety		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Improve interchanges/lengthen ramps		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Widen shoulders		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Speed enforcement for cars/trucks		Y	Speeding is an enforcement issue and should be addressed by enforcement officials.
Separate lanes for trucks only		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Add more truck climbing lanes		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
More truck parking/rest areas		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Multi-modal considerations		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Underpasses for wildlife		Y	Alternative design and modes will be considered as part of the alternatives development process during NEPA.
Share results of the study with the public	Y		All of the Purpose & Need study findings will be made public.
Environmental impacts	Y		The subsequent NEPA studies will consider alternatives, along with a detailed environmental analysis of impacts.

8. Next Steps

This study has been prepared to validate/update the transportation needs identified in the 2008 Study within the study area and evaluate the FSS to determine how to address the study's purpose and need, while balancing impacts to the natural and built environment, addressing traffic and safety concerns, and meeting engineering considerations, such as cost.

This section highlights additional requirements that would be necessary as transportation options within each FSS are advanced and implemented. This section also details potential delivery methods for future improvement projects along the corridor.

8.1. Scoping

Once a project is included in the State Transportation Improvement Program (STIP), funding requirements are confirmed for environmental (NEPA), ROW, utility, design, and construction needs. A project scoping meeting will be held to discuss the project delivery method, project objectives, funding sources, and schedule.

8.2. Alternatives and NEPA Study

A refined study area will be developed that encompasses the build alternatives of a project and detailed field investigations will be conducted to:

- Confirm, refine, and update the preliminary environmental resource information collected during the F44 Study; perform preliminary noise assessments (as applicable); assess potential impacts to groundwater resources; delineate streams, wetlands and floodplains; perform a Phase I environmental site assessment to identify potential hazardous waste sites; complete an agricultural resources evaluation; conduct archaeological and historic resource surveys; and assess potential effects on historic properties and districts.
- Develop preliminary engineering designs to minimize impacts to environmental resources, balance earthwork, address the need for local access along each alternative, generate a more precise footprint of the likely limits of disturbance, and establish preliminary ROW needs.
- Perform more detailed traffic analysis and modeling of each alternative including operational analysis of I-44 segments, interchanges, and intersections.
- Identify mitigation commitments to mitigate any unavoidable environmental impacts.

8.3. Delivery Methods

Projects are designed and built according to a project delivery method:

- *Design-Bid-Build*: — Includes survey, cost estimating, and preliminary and final design to confirm construction plans and specifications that are released for bid to construction contractors once design is complete.
- *Design-Build*: Plans are developed to 30 percent design to select a team of designers/contractors to complete the project. Factors used in team selection include qualifications, duration, price or value, and innovation.

As funding becomes available, MoDOT will select the best delivery method to advance individual projects within the F44 Study corridor for design and construction on a project-by-project basis.