



I-29, I-35, U.S. 169 Planning and Environmental Linkages Final Report

OCTOBER 2023



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- Appendix B** – I-29, I-35, U.S. 169 PEL Baseline Conditions Report
- Appendix C** – I-29, I-35, U.S. 169 PEL Draft Alternatives Development and Analysis Report
- Appendix D** – I-29, I-35, U.S. 169 PEL to NEPA Transition Report
- Appendix E** – I-29, I-35, U.S. 169 PEL Questionnaire

Acronyms

CAC	Community Advisory Committee
EJ	Environmental Justice
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transportation Authority
HDC	Historically Disadvantaged Community
I	Interstate
LEP	Limited English Proficiency
MARC	Mid-America Regional Council
MIS	Major Investment Study
MoDOT	Missouri Department of Transportation
NRHP	National Register of Historic Places
NEPA	National Environmental Policy Act
NW	Northwest
PEL	Planning and Environmental Linkages
PIP	Public Involvement Plan
STIP	State Transportation Improvement Program
TIP	Transportation Improvement Program
TIS	Traffic Impact Study
U.S.	U.S. Highway

1.0 Introduction

In April 2022, the Missouri Department of Transportation (MoDOT) began the Interstate (I)-29, I-35, U.S. Highway (U.S) 169 Planning and Environmental Linkages (PEL) Study to identify the Purpose and Need for improvements within the I-29, I-35, U.S. 169 study area and determine possible viable alternatives for a

long-term solution and recommendations that can be carried forward seamlessly into National Environmental Policy Act (NEPA) studies.

This document presents an overview of the I-29, I-35, U.S. 169 PEL Report, supplemented by appendices documenting the detailed analyses completed throughout the PEL process.

Appendix A The *I-29, I-35, U.S. 169 PEL Public Involvement Plan and Documentation Report*, which contains documentation of the robust agency and stakeholder coordination and public involvement efforts that have taken place since the inception of the I-29, I-35, U.S. 169 PEL Study.

Appendix B The *I-29, I-35, U.S. 169 PEL Baseline Conditions Report*, which includes the Purpose and Need statement, a history of previous studies in the corridor, and current traffic, safety, multimodal, engineering, and environmental conditions along the corridor.

- o Attachment A: Previous Studies
- o Attachment B: Data Collection Plan
- o Attachment C: Traffic Forecasting Memo
- o Attachment D: Socio-Economic Demographic Data Tables
- o Attachment E: Traffic Safety Analysis Memo

Appendix C The *I-29, I-35, U.S. 169 PEL Alternatives Analysis and Development Report*, which describes the process and key technical findings used to screen alternatives and define the PEL Recommendation(s). This report includes the following documents as attachments:

- o Attachment A: Alternative Screening Methodology
- o Attachment B: Universe of Alternatives
- o Attachment C: Level 1 Screening Results
- o Attachment D: Level 2 Screening Results
- o Attachment E: Interchange Concepts
- o Attachment F: Level 3 Screening Results
- o Attachment G: Engineering Cost Estimates
- o Attachment H: 2016 Existing, 2050 Future No-Build, and 2050 Future Build Peak Hour Traffic Volumes

Appendix D The *I-29, I-35, U.S. 169 PEL to NEPA Transition Report*, which documents recommendations, what was studied versus what remains to be studied during NEPA, and commitments to be carried forward through the NEPA phase of project development.

- o Attachment A: NEPA Classification Documentation
- o Attachment B: I-29, I-35, U.S. 169 PEL FHWA Approval Letter

Appendix E The *I-29, I-35, U.S. 169 PEL Questionnaire*, which will be utilized by the Federal Highway Administration (FHWA) to determine if an effective PEL process has been followed and if the I-29, I-35, U.S. 169 PEL Report can be used to inform future NEPA documentation during project-specific development. It includes the *I-29, I-35, U.S. 169 PEL Framework and Methodology Memo* as an attachment.

- o Attachment A: I-29, I-35, U.S. 169 PEL Framework and Methodology Memo
- o Attachment B: I-29, I-35, U.S. 169 PEL Study Team

2.0 What is a PEL Study?

A PEL Study represents an approach that fosters a collaborative and integrated transportation decision-making process. A PEL Study is generally executed early in the transportation planning process when decision-makers consider environmental, community, and economic goals. These goals are then carried through to the project development and environmental review process, and ultimately through design, construction, and maintenance. The goal of the PEL is to create a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delay from planning through project implementation.¹

PEL studies are generally more focused than regional planning efforts, but broader than traditional project-specific environmental analyses typically conducted during the NEPA process. The PEL studies, or corridor and subarea studies, can be used to produce a wide range of analyses or decisions for FHWA review, consideration, and possible adoption during the NEPA process for an individual transportation project, including:^{2, 3}

- ▶ Purpose and Need or goals and objective statement(s);
- ▶ General travel corridor and/or general mode(s) definition;
- ▶ Preliminary screening of alternatives and elimination of unreasonable alternatives;
- ▶ Basic description of the environmental setting; and/or
- ▶ Preliminary identification of environmental impacts and environmental mitigation

Why PEL?

PEL Studies foster a collaborative and integrated transportation decision-making process. The goal of the PEL is to create a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delay from planning through project implementation.

All corridor and subarea studies utilizing the PEL Study approach must adhere to certain standards and must include robust public involvement, stakeholder and agency coordination to advance to the NEPA process. The regulations for a PEL Study are formalized in the *Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule* (23 CFR 450), which details how results or decisions of transportation planning studies may be used as part of the overall project development process consistent with NEPA. *Appendix A to Part 450—Linking the Transportation Planning and NEPA Processes (23 USC 139)* describes how information, analysis, and products from transportation planning can be incorporated into and relied upon in NEPA documents under existing laws. Some of the key criteria that a federal agency must consider in deciding whether to adopt planning-level analyses or decisions in the NEPA process include:⁴

- ▶ Involvement of interested state, local, Tribal and Federal agencies;
- ▶ Public review;
- ▶ Reasonable opportunity to comment during the development of the corridor or subarea planning study;

¹ FHWA. 2008. *Planning and Environmental Linkages Implementation Resource Guide*.

² FHWA. 2011. *Guidance on Using Corridor and Subarea Planning to Inform NEPA*.

³ AASHTO. 2008. *Using the Transportation Planning Process to Support the NEPA Process*.

⁴ FHWA. 2008. *Planning and Environmental Linkages Implementation Resource Guide*.



I-29 and N Oak Trafficway. Source: Google Earth.

- ▶ Documentation of relevant decisions in a form that is identifiable and available for review during the NEPA scoping process and can be appended to or referenced in the NEPA document; and
- ▶ The review by FHWA and the Federal Transit Administration (FTA), as appropriate.

To help maximize the utility of the results from subarea or corridor plans to inform NEPA, FHWA has developed a PEL Questionnaire. The [I-29, I-35, U.S. 169 PEL Questionnaire \(Appendix E\)](#) provides a summary, in the format of questions and answers, describing the steps completed and the methodology utilized during the PEL process.

To further guide the PEL process, a Framework and Methodology Memo was developed at the initiation of the I-29, I-35, U.S. 169 PEL Study, serving to formalize the scope, schedule, and expectations for the study. Moreover, it was created to foster proactive working relationships among the FHWA, MoDOT, Mid-American Regional Council (MARC) and Kansas City, Missouri. A copy of the I-29, I-35, U.S. 169 PEL Framework and Methodology Memo is included as part of the [I-29, I-35, U.S. 169 PEL Questionnaire](#) (Appendix E).

3.0 Why a PEL Study for I-29, I-35 and U.S. 169?

MoDOT desires to develop both short-term and long-term alternatives and proposed actions for improving existing safety, reducing congestion, improving operational performance, addressing asset management, and positioning for future transportation needs along I-29, I-35, and U.S. 169.

The I-29, I-35, U.S. 169 PEL Study provides a tool for re-engaging the public and agencies in developing improvements within the study area to address these challenges. It creates a link between past, current, and future transportation decisions, thus potentially minimizing any duplication of effort and time lost between studies. Additionally, the I-29, I-35, U.S. 169 PEL Study will shorten the time needed to implement a project by allowing planning-level decisions to be carried into future, more detailed environmental studies. The PEL process facilitates early coordination, outreach, and resource evaluation, thereby enabling the identification of potential risks associated with the improvements as early as possible in project development.



The largest freight flows are on the I-35 corridor. Source: Google.

Ultimately, the goal of the I-29, I-35, U.S. 169 PEL Study is to identify a long-term transportation solution to meet the needs of the study area. To produce results that will be most useful to future NEPA studies, the I-29, I-35, U.S. 169 PEL Study:

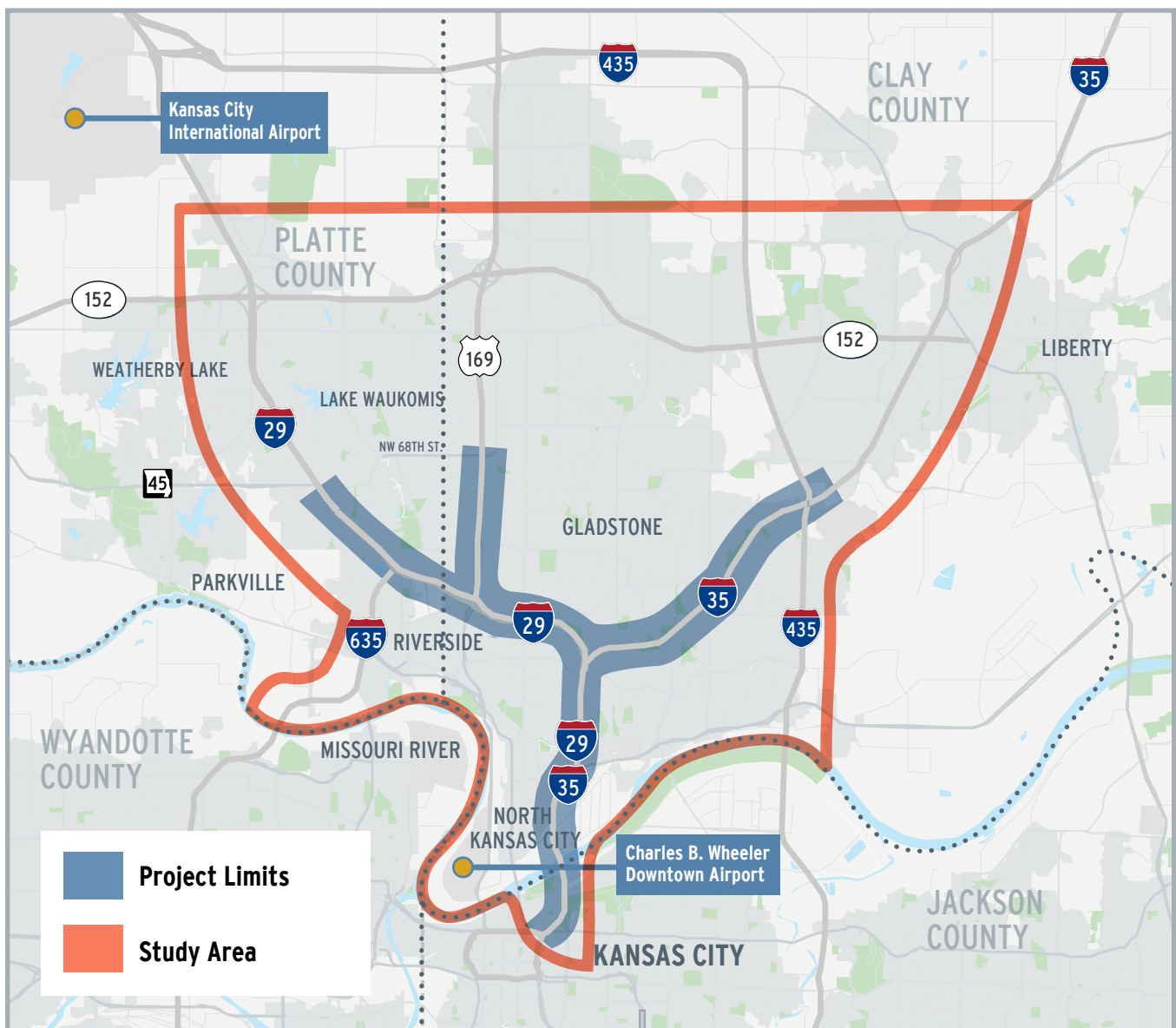
- ▶ Engaged stakeholders (public, stakeholders, agencies, etc.) early and often throughout the planning process;
- ▶ Identified the transportation needs and issues within the study area;
- ▶ Identified potential solutions to meet the identified needs, and evaluated them for their potential mobility and safety benefits and impacts;
- ▶ Recommended viable transportation solutions that can be carried forward into future environmental studies; and
- ▶ Documented all activities, coordination and results related to the I-29, I-35, U.S. 169 PEL Study.

4.0 What is the Study Area?

The I-29, I-35, U.S. 169 PEL Study area is depicted in **Figure 1** and extends through portions of Clay, Jackson and Platte Counties. The project limits extend along sections of I-29, I-35 and U.S. 169, as shown in blue. The project limits follow I-29 at Route 45 (Northwest (NW) 64th Street) southeast to the I-29/I-35 split and then continues south across the Missouri River up to the northeast corner of the downtown freeway loop. In addition, the

project limits follow I-35 at I-435 southwest to the I-29/I-35 split and U.S. 169 at NW 68th Street south to its merge with I-29. The study area fully encompasses the project limits and accounts for areas beyond those limits that are anticipated to influence parameters, such as traffic operations. The study area also encompasses a broad enough area to account for community and natural resources, and other potential environmental constraints.

Figure 1: I-29, I-35, U.S. 169 PEL Study Area



Source: Study Team.



Pedestrian and bicycle accessibility is important in the Northland. Source: Study Team.

The study area is located within an urban area and is generally comprised of commercial and residential properties. The Northland is expected to add 100,000 new residents and 60,000 new employees by 2050 according to MARC's Connected KC 2050 Regional Transportation

Plan. Employment growth can be attributed to new, non-residential projects being planned, provided by the Platte and Clay County Economic Development Corporations. **Figure 2** shows the location of the new non-residential projects and **Table 1** identifies each project.

Study Area Features

- ▶ 17.64 total mainline roadway miles
- ▶ Missouri River
- ▶ Charles B. Wheeler Downtown Airport
- ▶ 88 parks
- ▶ 10 cemeteries
- ▶ 102 schools
- ▶ 99 places of worship

Design elements of the study area include:



22 interchanges: Four system-to-system and 18 service interchanges.



Four underpasses/overpasses (not including interchanges).

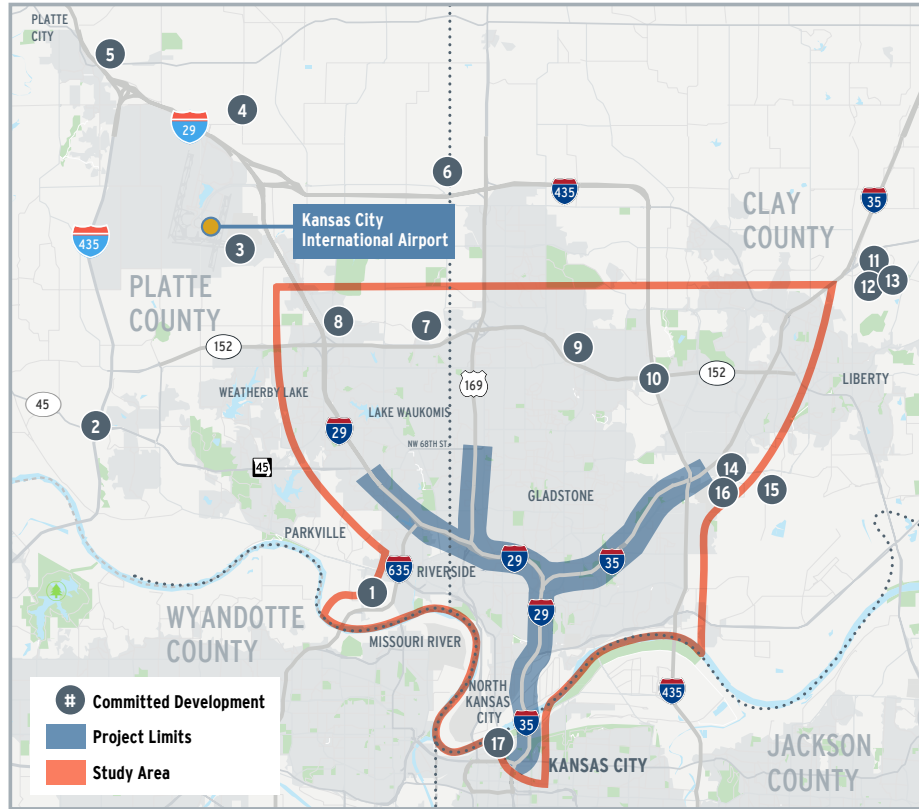


A variety of interchange types: fully directional, partial cloverleaf, diamond, split diamond, folded diamond and single-point diamond



Stop signs and signals used for traffic control at the end of entrance and exit ramps

Figure 2: New, Known, Large Non-Residential Projects

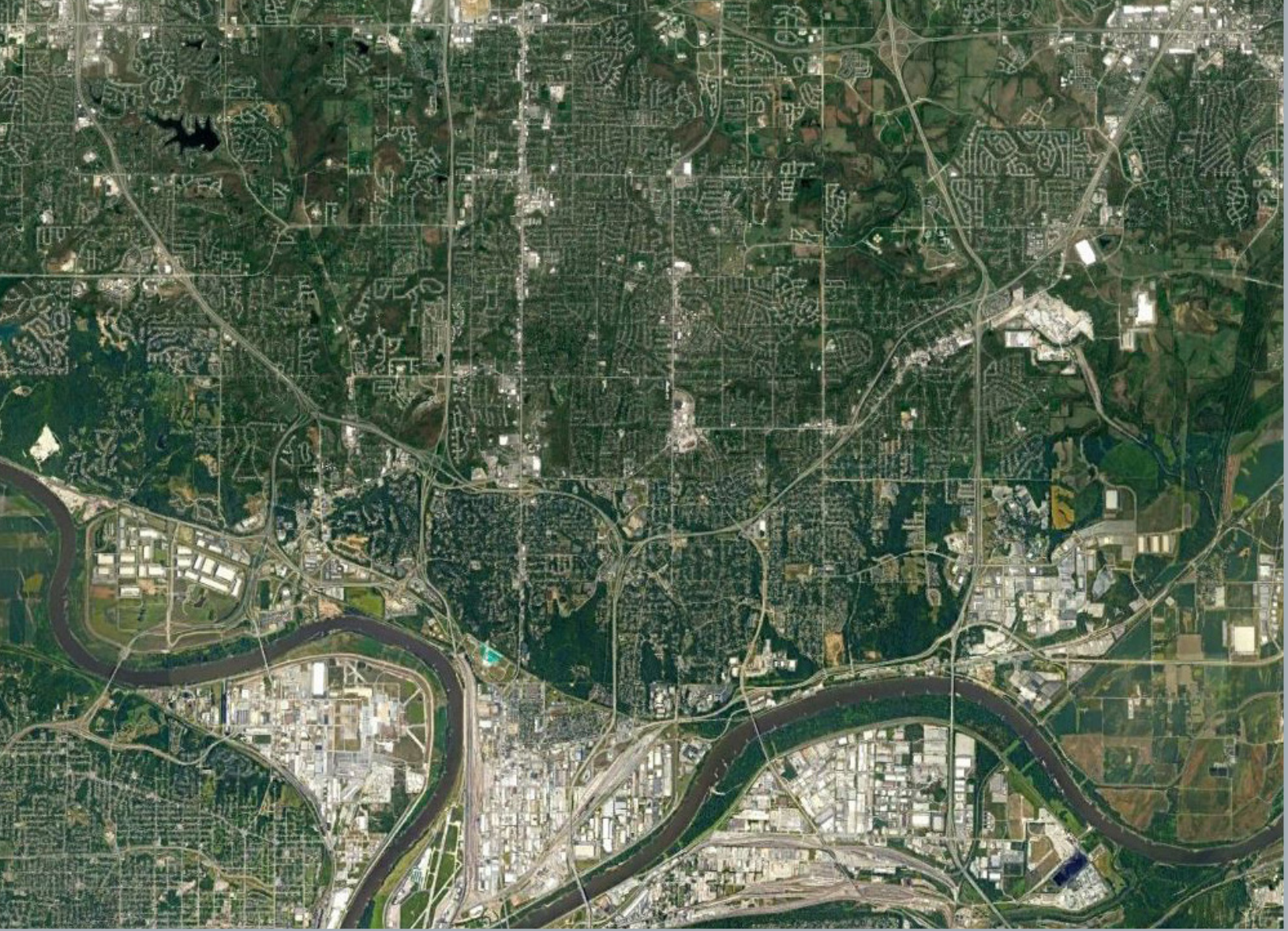


Source: Study Team.

Table 1: New, Known Large Non-Residential Projects

Platte County	Clay County	Jackson County
1. KC Current Soccer Training Facility	9. Staley Corners/ Marketplace 152	17. KC Riverfront
2. Creekside	10. 587 Project	
3. KCI Intermodal Business Centre	11. Heartland Cold Storage Logistics Center	
4. KCI 29 Logistics Park	12. Heartland Meadows Commerce Center	
5. Platte International Commerce Center	13. Liberty Heartland Logistics Center	
6. Golden Plains Technology Park	14. Liberty Parkway Plaza & Logistics Center	
7. Twin Creeks/ Platte Purchase	15. Liberty Commerce Center	
8. Tiffany Greens	16. Ford Plant	

Source: Study Team.



The I-29, I-35, U.S. 169 study area. Source: Google Earth.

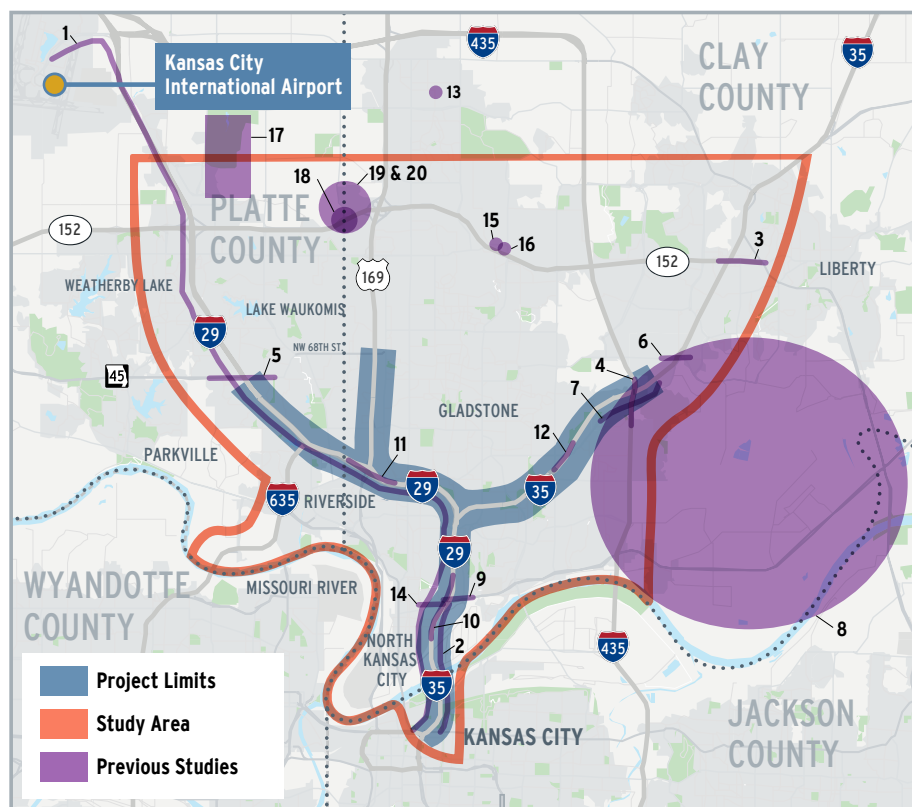
5.0 Has the Study Area Been Evaluated Before?

Previous studies within the study area were reviewed based on their relevance to the I-29, I-35, U.S. 169 PEL Study. The 20 studies and projects included in the review are numbered in the adjacent blue box, are shown in **Figure 3**, and are summarized in the *I-29, I-35, U.S. 169 Baseline Conditions Report* (**Appendix B**).

While there are likely other studies completed in the area, these 20 were considered to have

the greatest applicability to the I-29, I-35, U.S.169 PEL Study. It is not intended to be a complete list of projects in the study area. The previous studies also dealt with similar trends of growth and development in the Northland. Frequent recommendations in the studies included interchange reconfigurations, with roughly half analyzing an interchange with a goal to improve traffic operations. Most studies summarized the traffic flow, operational levels of service, accessibility and safety, and identified key areas for improvements. The purpose of each project was to improve the existing lane geometry/configuration to meet the expected future growth in each respective area.

Figure 3: Previous and Ongoing Projects Map



Source: Study Team.

Previous and Ongoing Related Projects

1. Northland Downtown Major Investment Study (MIS)
2. I-29/I-35 Paseo Bridge Final Environmental Impact Statement (FEIS)
3. Route 152/Kansas Street and I-35 Traffic Safety and Operations Report
4. I-435 Lane Balance Letter
5. Route 45 and I-29 Traffic Safety and Operations Report
6. I-35 and Pleasant Valley Road/US-69 AJR
7. US-69 & Pleasant Valley Road Corridor Sustainability Places Plan
8. Claycomo Area Transportation Study
9. I-29/35 & MO 210 Interchange J4P3095C
10. I-35 J4I3111
11. Southbound I-29 at US-169 Traffic and Safety Report
12. US-69 Loop Crashes
13. 2012-2018 Freeway Pedestrian Crash Figure
14. QuikTrip Traffic Impact Study (TIS)
15. Staley Corners TIS
16. Marketplace 152 TIS
17. Tiffany Greens TIS
18. MO 152 & N. Platte Purchase Drive Interchange Evaluation
19. Twin Creeks Village TIS
20. Twin Creeks Walkability Study

Numbers correspond with project locations shown in Figure 3. Study details provided in the *I-29, I-35, U.S. 169 Baseline Conditions Report* (Appendix B).

6.0 How Does the I-29, I-35, U.S. 169 PEL Study Fit Within the Planning Context for the Study Area?

MARC is responsible for long-range transportation planning for the Kansas City region. Connected KC 2050 is the long-range transportation plan (LRTP), which provides a policy framework for the investment of anticipated federal, state, and local funds based on anticipated needs and regional goals and objectives through the year 2050.

With the focus on growth and redevelopment in the region, the plan hopes to achieve greater access to opportunity, improved public health and safety, a healthier environment, more

transportation options, and economic vitality. Based off the LRTP [project map](#), the I-29, I-35, U.S.169 PEL Study has the opportunity to assist with the regional goals while filling in and focusing on areas where the current regional plan might not be considering. While the plan does have multimodal projects identified in the study area, there are no plans shown for the I-29, I-35, and U.S.169 study corridors.

The PEL Recommended Scenarios and projects will inform the next MoDOT State Transportation Improvement Program (STIP) (2025-2029). Likewise, and with a view toward achieving consistency with local and regional planning efforts, the PEL Recommended Scenarios and projects will be submitted to MARC to inform future updates/amendments to the LRTP and to the Transportation Improvement Program (TIP), consistent with the STIP.



Alternative Transportation options are critical to Northland mobility. Source: Google.

7.0 Why is the Study Needed?






Purpose and Need

A Purpose and Need statement was developed for the I-29, I-35, U.S. 169 PEL Study with agency, stakeholder, and public input. This statement was used to compare transportation alternatives and determine solutions that will

be evaluated further in subsequent stages of project development.

A summary of the Purpose and Need is shown in **Table 2**. The *I-29, I-35, U.S. 169 PEL Baseline Conditions Report* (Section 6.0) (**Appendix B**) contains a detailed description of the conditions within the study area and provides data to support the need for major transportation improvements.

Table 2: I-29, I-35, U.S. 169 PEL Purpose and Need

Needs (Problems)	Purpose (Solutions)
 Structural and Functional Roadway and Bridge Deficiencies	To address structural and functional roadway deficiencies, including pavement and bridge conditions
 Roadway Safety Issues	To improve safety for all users
 Traffic Congestion and Access Issues, Including Heavy Truck Traffic	To improve roadway capacity to meet future growth in the Northland and freight movement demands
 Growth in the Northland	To improve roadway capacity to meet future growth in the Northland and freight movement demands
 Lack of Transit and Other Multimodal Alternatives	To provide transit and multimodal alternatives

Source: Study Team.

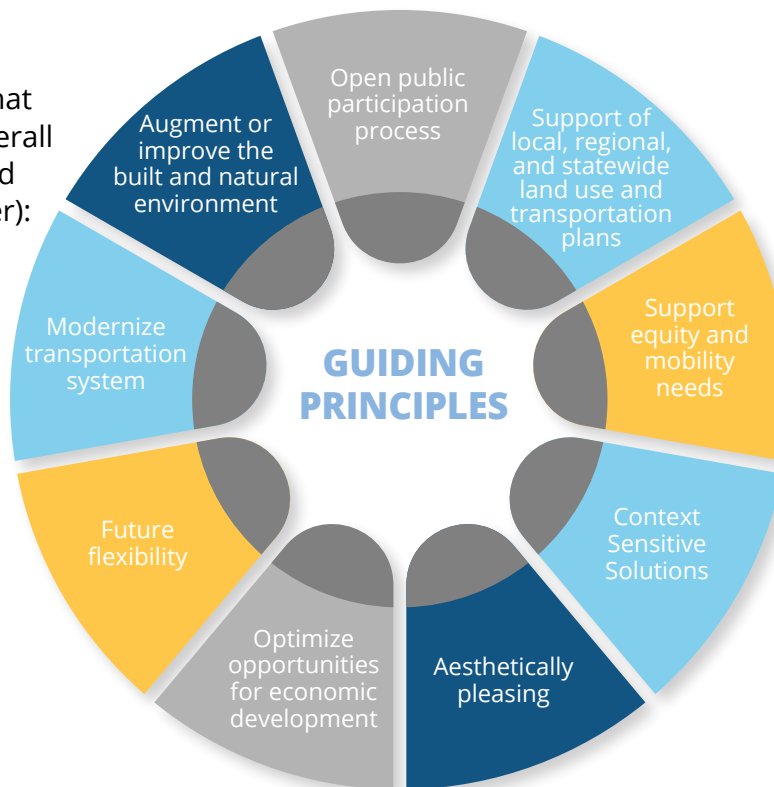
Study Goals

In addition to the Purpose and Need, other project elements were established to balance transportation and environmental goals and objectives. Input sought from agencies,

stakeholders and the public was incorporated to develop goals and guiding principles.⁵ The following study goals provided guidance for the alternatives development and analysis process (listed in no particular order):

- | | |
|---|---|
|  Avoid and/or minimize impacts to the human and natural environment |  Connect bicycle and pedestrian friendly facilities |
|  Sustain public and agency input and support for the project |  Accommodate existing transit, future transit and transit-oriented development |
|  Maximize cost efficiency |  Minimize roadway disruptions during construction |
|  Improve system reliability |  Improve safety |
|  Improve opportunity for regional connectivity |  Reduce congestion |
|  Improve local vehicle access to downtown Kansas City and other communities north of the river |  Accommodate freight movement |
|  Improve access to industrial and retail centers and neighborhoods |  Reduce maintenance |

Guiding principles that will influence the overall project include (listed in no particular order):



⁵ Agency (local, state and Federal) input gathered through a Community Advisory Committee (CAC); public input gathered through public meetings held on October 27, 2022, and April 12, 2023.

8.0 Have the Public and Agencies Been Involved in the Decision-Making Process?

Yes. The I-29, I-35, U.S. 169 PEL Study included a robust outreach plan, such that the public, agencies, and stakeholders were actively engaged throughout the entire PEL process. The *I-29, I-35, U.S. 169 PEL Public Involvement Plan (PIP)* is included in **Appendix A**. It was prepared prior to the initiation of the PEL Study and outlined the various avenues for agency, stakeholder, and public involvement, as described below.

Community Outreach

Community outreach was initiated at project inception and continued throughout the PEL Study. Early in the planning process, the Study Team (Consultants and MoDOT) established the Community Advisory Committee (CAC), which included members representing a range of community interests. Four CAC meetings were held at major study milestones. PEL analyses and documents were presented to the CAC during the meetings, and comments

were solicited in meeting notes. Responses to CAC comments were completed by the Study Team, as presented in the *I-29, I-35, U.S. 169 PEL Public Involvement Plan and Documentation Report (Appendix A)*.

Stakeholder Outreach

In addition to conducting meetings with the CAC, the Study Team also presented information about the study at community, civic, and neighborhood organizations to reach a broader audience and get feedback at various stages of the project. The Study Team also conducted one-on-one meetings with a number of key stakeholders.

Agency Outreach

Agency coordination meetings were held with local, state, and Federal staff to solicit technical input and expertise throughout the PEL Study and address agency jurisdictional concerns. Two agency coordination meetings were held at the following major milestones:

- ▶ Purpose and Need, study goals, and Universe of Alternatives
- ▶ Recommended Scenarios and study outcomes



A public meeting was held on October 27, 2022 at Northland Neighborhoods, Inc. Source: Study Team.

Surveys

Two surveys were distributed to CAC members, resource agencies, and community members to provide feedback and shape the decision-making process at the following milestones:

- ▶ Purpose and Need, study goals, and Universe of Alternatives.
- ▶ Recommended Scenarios and study outcomes.

Public Outreach

Two in-person, open house-style public meetings with online virtual opportunities were held to provide a forum where the public could provide feedback on transportation needs and possible solutions in the study area. These meetings are summarized as follows:

1 Public Meeting #1

Date: October 27, 2022 from 4 - 6 p.m.
Location: Northland Neighborhoods, Inc.
Attendance: 62 in-person and 214 online

The purpose of the public meeting was to gather input on the baseline conditions in the study area, identify areas of concern from area residents and highway users, and gather feedback on the draft Purpose and Need, Universe of Alternatives, and alternatives screening evaluation approach. In addition to the in-person meeting, an online public meeting was also offered for people to access the same information about the study at their convenience. The online public meeting had 214 people participate during the two weeks it was available.

2 Public Meeting #2

Date: April 12, 2023 from 4 - 6 p.m.
Location: Northland Neighborhoods, Inc.
Attendance: 35 in-person and 104 online

The purpose of the public meeting was to present the alternatives screening process, the seven Scenarios analyzed, the Level 3 Screening results, the preliminary PEL Recommendations and next steps for the PEL Study. Public input was also gathered from attendees on their thoughts on the preliminary PEL Recommendations and any additional comments or questions after seeing the recommendations.

100% of those
that responded
agreed with the
recommendation

Both public meetings included a 15-day official comment period from the day of the public meeting. The Study Team responded to all comments received and those comments are included in public meeting summaries. The public meeting summaries are included in the *I-29, I-35, U.S. 169 PEL Public Involvement Plan and Documentation Report (Appendix A)*.



A Community Advisory Committee Meeting was held on April 6, 2023. Source: Study Team.

Project Website

As a part of the Plan, a study website was created and hosted on MoDOT's website. The study website was designed to be a resource for information and updates. It was also used to promote important outreach opportunities,

such as public meetings, surveys, and virtual meetings. The I-29/I-35/U.S. 169 PEL study website can be found here: <https://www.modot.org/i-29i-35us-169-planning-and-environmental-linkages-pel-study>.

888 - ASK MODOT (275-6636) EMAIL / TEXT UPDATES CONTACT US TRANSLATE

Missouri Department of Transportation

Local Travelers Road Work Programs Motor Carriers News About Careers Doing Business With MoDOT

I-29/I-35/U.S. 169 PLANNING AND ENVIRONMENTAL LINKAGES (PEL) STUDY

Districts Impacted
KANSAS CITY

Counties Impacted
PLATTE CLAY

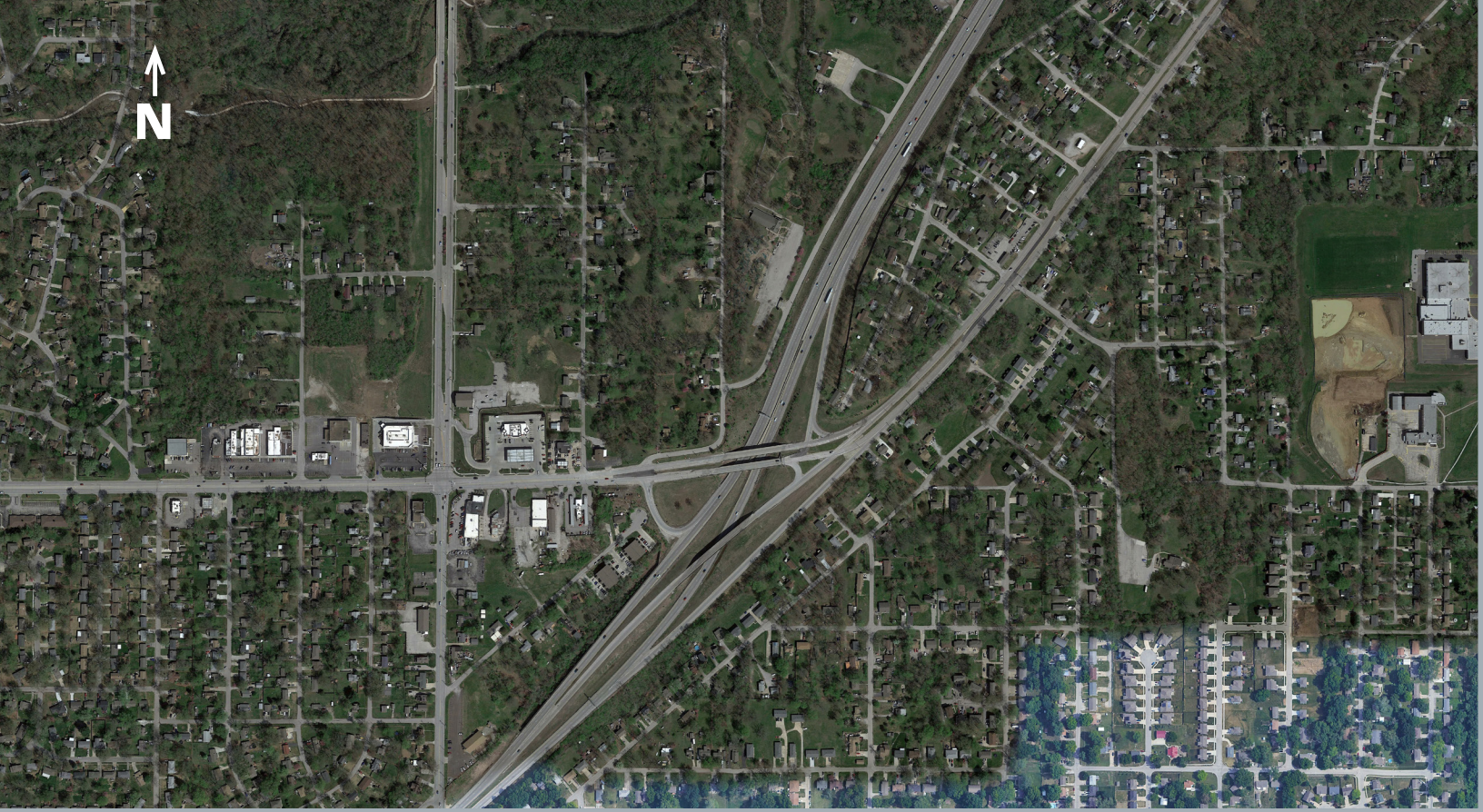
Project Status
PLANNING PHASE

Route Impacted
29 35 169

EXIT 8A Parvin Rd 1/2 MILE

EXIT ONLY

Source: Project website main page.



U.S. 69 and I-35 at Vivion Road. Source: Google Earth.

Additional Outreach

The public involvement process implemented a variety of tools and techniques to engage an expansive list of stakeholders, community members, and the public. Several promotional methods were used to advertise public meetings and other public engagement activities including media alerts, newspaper advertisements, social media posts, and email blasts to a list of more than 400 stakeholders. The Study Team also developed fact sheets to summarize key information, which were sent to those on the mailing list and made available at community locations. Additionally, stakeholders could correspond directly with the Study Team by emailing KC_I35_I29_Corridor@modot.mo.gov. The Public Involvement Management Application (PIMA) allowed the Study Team to respond to questions and comments and document all correspondence. The public outreach methods utilized in each engagement period encouraged significant public participation and input while working to achieve the goals of the Public Involvement Plan.

Disadvantaged Communities

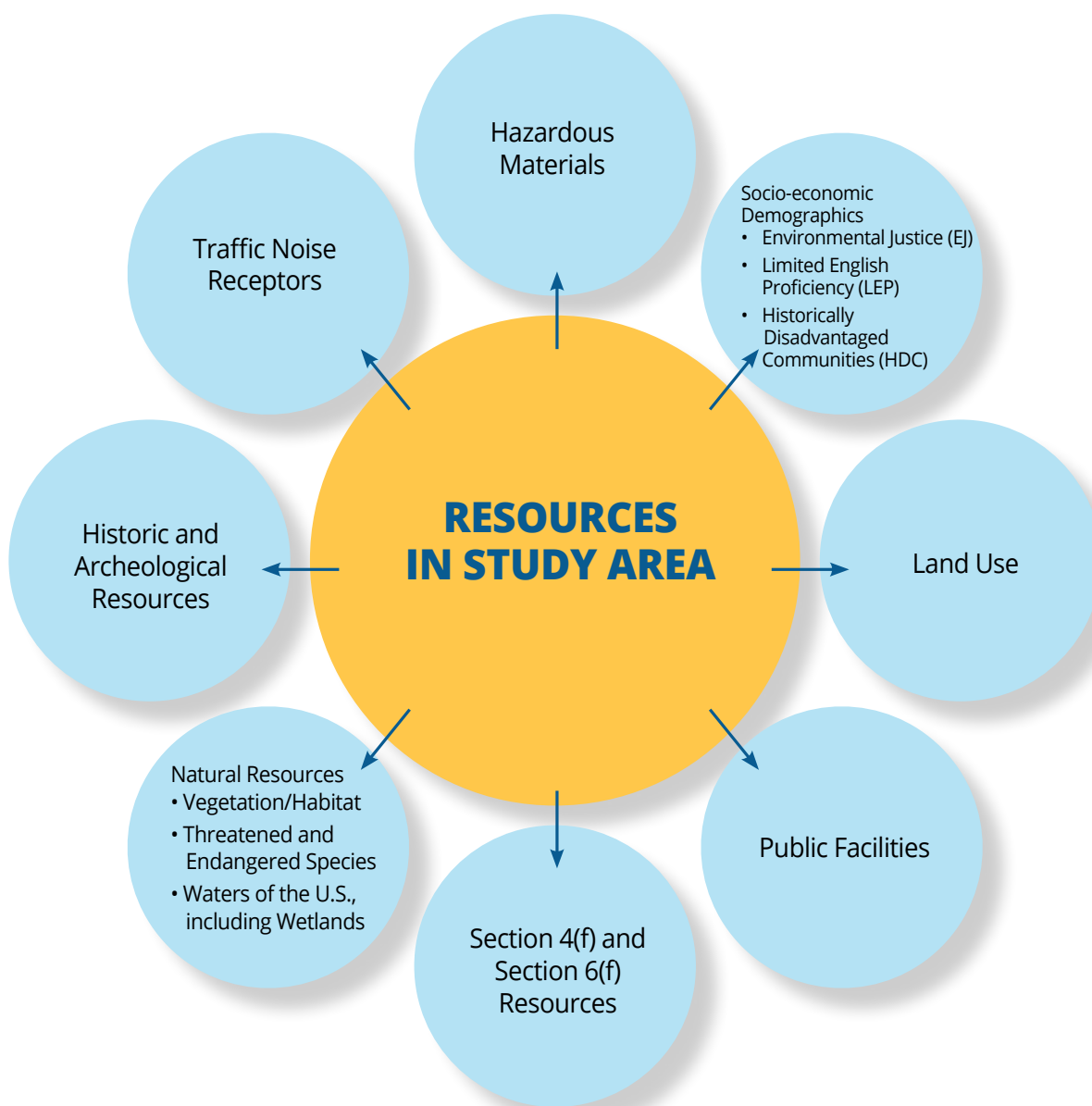
MoDOT worked to engage disadvantaged communities by providing study materials and meeting announcements at area libraries, churches, community centers and specific organizations working within the community. The Study Team offered presentations or drop-in centers to gather input among various groups. The Study Team provided information to Northland Neighborhoods, Inc., which works with nearly all the neighborhoods in the study area, to share with various communities. Public meeting advertisements were also posted in Spanish and a translator attended the public meetings to support Spanish speaking people.

9.0 What Resources are Present Within the Study Area?

Environmental resources were examined as part of the I-29, I-35, U.S. 169 PEL Study to establish a baseline context and generally describe the existing conditions within the study area. The resource information was also utilized during the alternatives screening

process to broadly assess the potential impacts associated with each of the alternatives.

The existing conditions for the following social, economic, and environmental resources located within the study area were analyzed and documented in the *I-29, I-35, U.S. 169 PEL Baseline Conditions Report* (Section 4.0) (**Appendix B**):

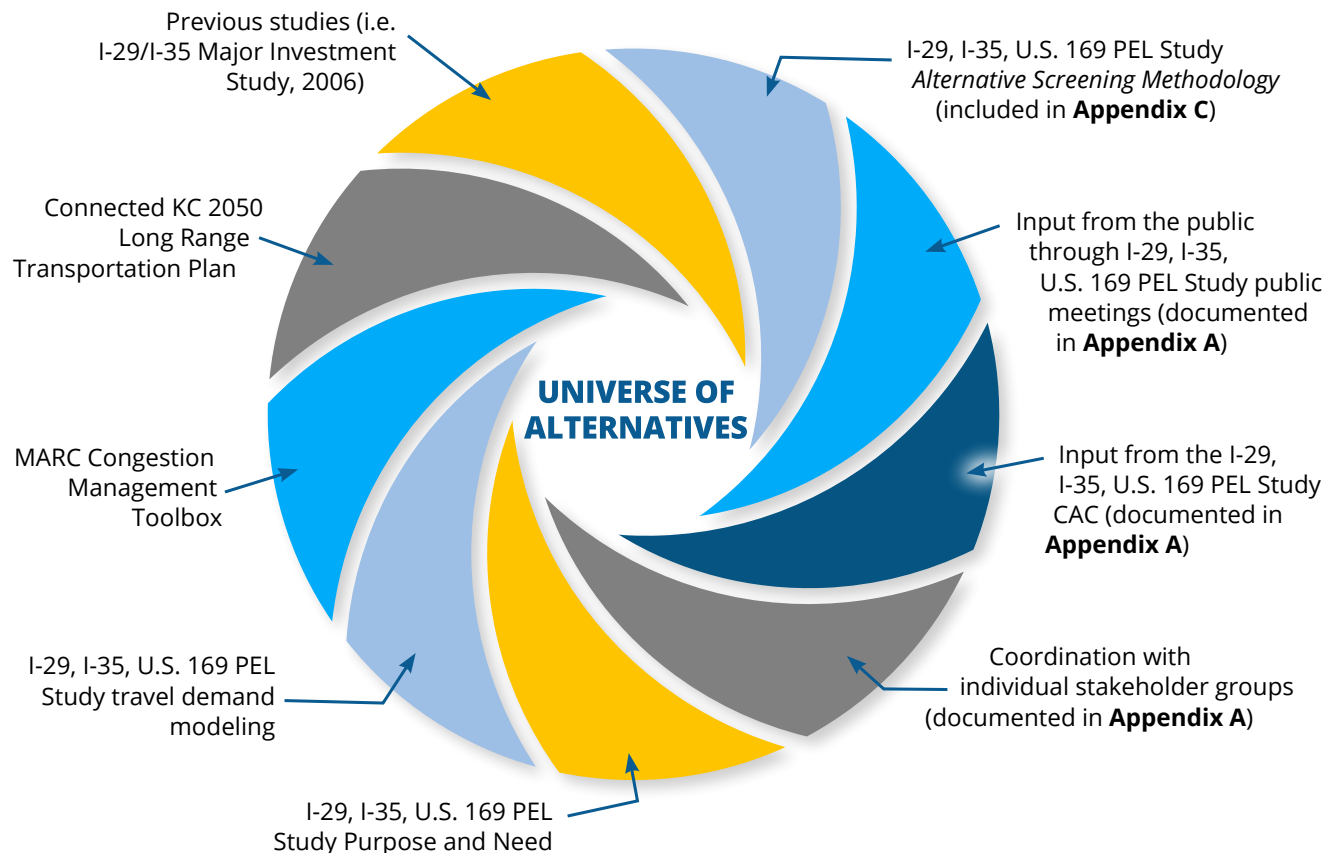


The information contained in the *I-29, I-35, U.S. 169 PEL Baseline Conditions Report* was used throughout the alternatives development and screening process.

10.0 How Were the Alternatives Developed?

The alternatives development process for the I-29, I-35, U.S. 169 PEL Study built upon previous studies and local, regional, state and Federal resources and incorporated

current technical analyses and input from the public, stakeholders and agencies. Previous planning efforts served as a starting point for developing the *Universe of Alternatives* (included in **Appendix C**) under consideration in the I-29, I-35, U.S. 169 PEL Study, including:



11.0 What Alternatives Were Screened?

The Universe of Alternatives for the I-29, I-35, U.S. 169 PEL Study included 69 potential Action Alternatives and a No-Action Alternative. Each of these alternatives is described in more detail within the *I-29, I-35, U.S. 169 PEL Universe of Alternatives*, which is included in the *Alternatives Development and Analysis Report* (**Appendix C**).

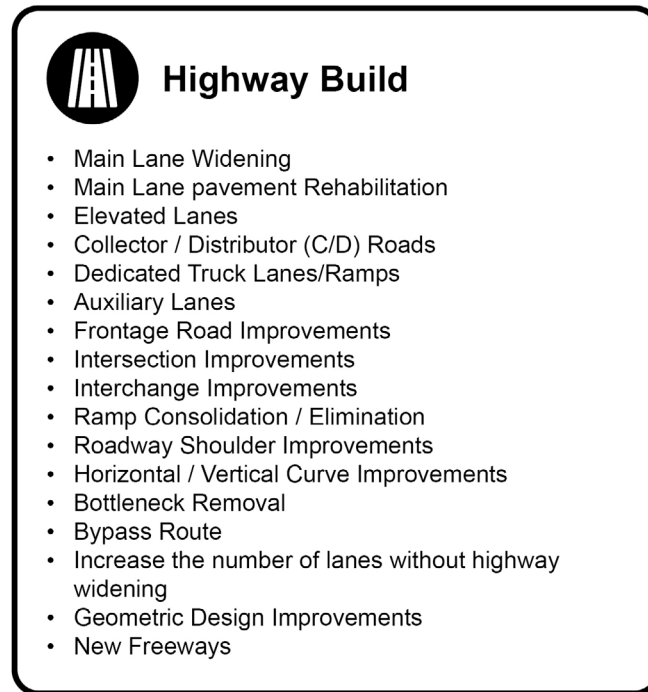
The 69 Action Alternatives were grouped into categories. A brief description of these alternative categories, as well as the No-Action Alternative, is summarized below and a complete listing is shown in **Figures 4** through **9**.

No-Action – Includes the preservation of the existing transportation network and any programmed transportation improvements that are reasonably expected to occur regardless of the outcome of the I-29, I-35, U.S. 169 PEL Study.

Action Alternatives – Action Alternatives were developed to address the needs identified in the study area (**Section 7**). The Action Alternative categories included the following:

- **Highway Build** (17 alternatives – **Figure 4**) – Capital improvements (permanent structural changes that enhance its value, increase its useful life, or allow for a new use) to the I-29, I-35 and U.S. 169 main lanes, associated ramps, and functional interchange areas. Also included new freeways and arterial streets.

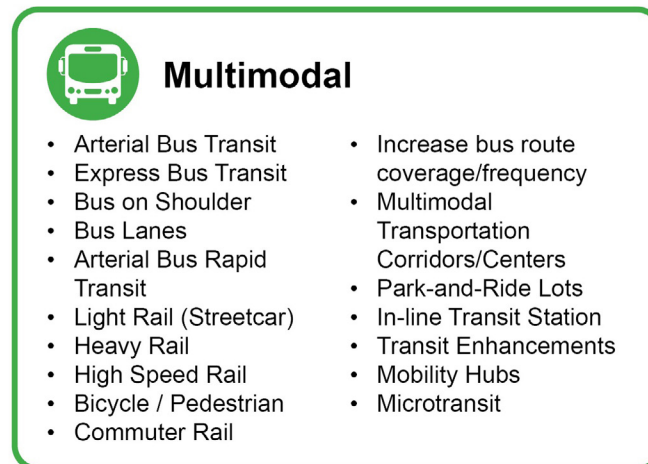
Figure 4: Highway Build Alternatives



Source: Study Team.

- **Multimodal** (17 alternatives – **Figure 5**) – Capital and operating improvements to non-highway modes including transit, rail, and bicycle and pedestrian.

Figure 5: Multimodal Alternatives



Source: Study Team.

- **Congestion Management** (13 alternatives – **Figure 6**) – Alternatives to general purpose highway lanes that focus on reducing congestion on I-29, I-35, and U.S. 169 by either adding capacity or reducing demand.

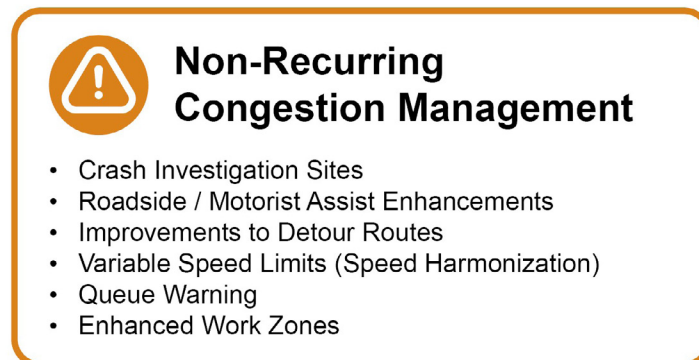
Figure 6: Congestion Management Alternatives



Source: Study Team.

- **Non-recurring Congestion** (6 alternatives – **Figure 7**) – Represents solutions to address traffic incidents, bad weather, work zones, and special events.

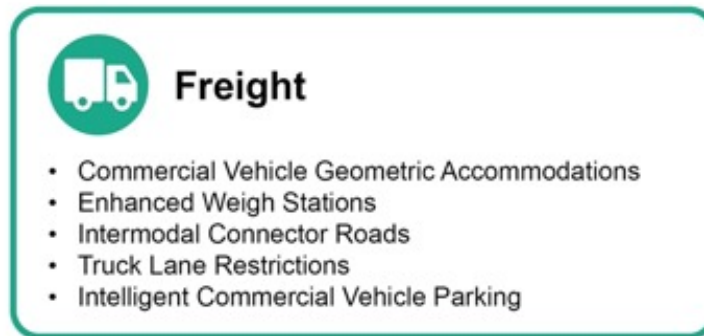
Figure 7: Non-recurring Congestion Management Alternatives



Source: Study Team.

- **Freight** (5 alternatives – **Figure 8**) – Solutions focused on large commercial vehicles that facilitate the movement of goods.

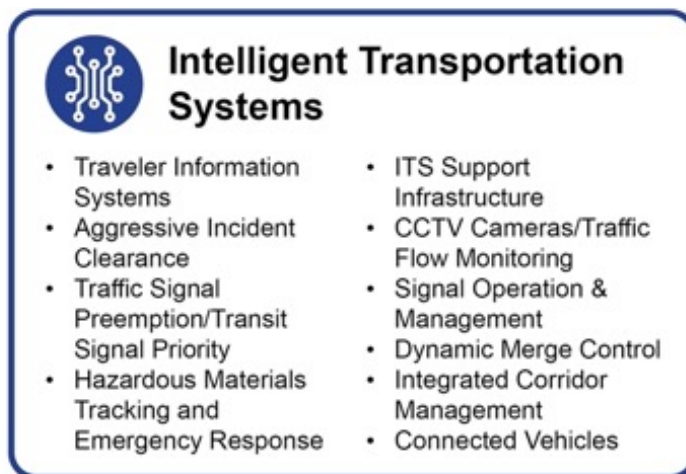
Figure 8: Freight Alternatives



Source: Study Team.

- **Intelligent Transportation Systems** (10 alternatives – **Figure 9**) – Use of technology to enhance the movement of goods and people.

Figure 9: Intelligent Transportation Systems Alternatives



Source: Study Team.

12.0 How Were the Alternatives Screened?

The alternative screening process is similar to a funnel with multiple levels of screening blending a varied group of strategies, corridor needs, and study goals into a set of refined transportation alternatives through an elaborate “filtering,” or evaluation, process. Definitions of the various screening stages follow below and are shown graphically in **Figure 10**.

Screening of alternatives and scenarios for the I-29, I-35, U.S. 169 PEL Study involved a three-level screening and evaluation process. Alternatives screened out in Levels 1, 2, and 3 were determined unreasonable; and those passing each level of screening were considered reasonable⁶. 23 C.F.R. 450 **Appendix A** (Question 11) was utilized to document alternatives screened from Level 2 and Level 3, which were decision points that further analyzed the reasonable alternatives to a greater level of detail after Level 1. The alternatives screening process used to determine which alternatives were unreasonable (did not meet purpose and need) and/or infeasible met the requirements of 23 C.F.R. § 450.318 and 23 U.S.C. 168.

1 Level 1- Initial Fatal Flaw Screening

This was a fatal flaw, pass/fail evaluation that screened alternatives against the Purpose and Need and assessed alternatives for practicality. For transportation projects, generally, an alternative is **practicable** if it:

- 1) Meets the Purpose and Need;
- 2) Is available and can be completed (i.e., it can be accomplished within the financial resources that could reasonably be made available, and it is feasible from the standpoint of technology and logistics); and
- 3) Will not create other unacceptable impacts, such as severe operation or safety problems or serious socioeconomic or environmental impacts.⁷

Alternatives that passed the fatal flaw screening were called Preliminary Alternatives.

2 Level 2 - Preliminary Identification of Primary and Complementary Alternatives

This level further analyzed the Preliminary Alternatives to a greater level of detail by qualitatively screening the alternatives against evaluation criteria established from the purpose and need and study goals to arrive at Scenarios (bundles of alternatives), made up of one or more Primary Alternatives and Complimentary Strategies. Primary Alternatives were those that could stand on their own in addressing the Purpose and Need and study goals. Complementary Alternatives could not stand on their own but were considered valuable solutions and would complement the Primary Alternatives.

3 Level 3 - Scenarios Refinement Process

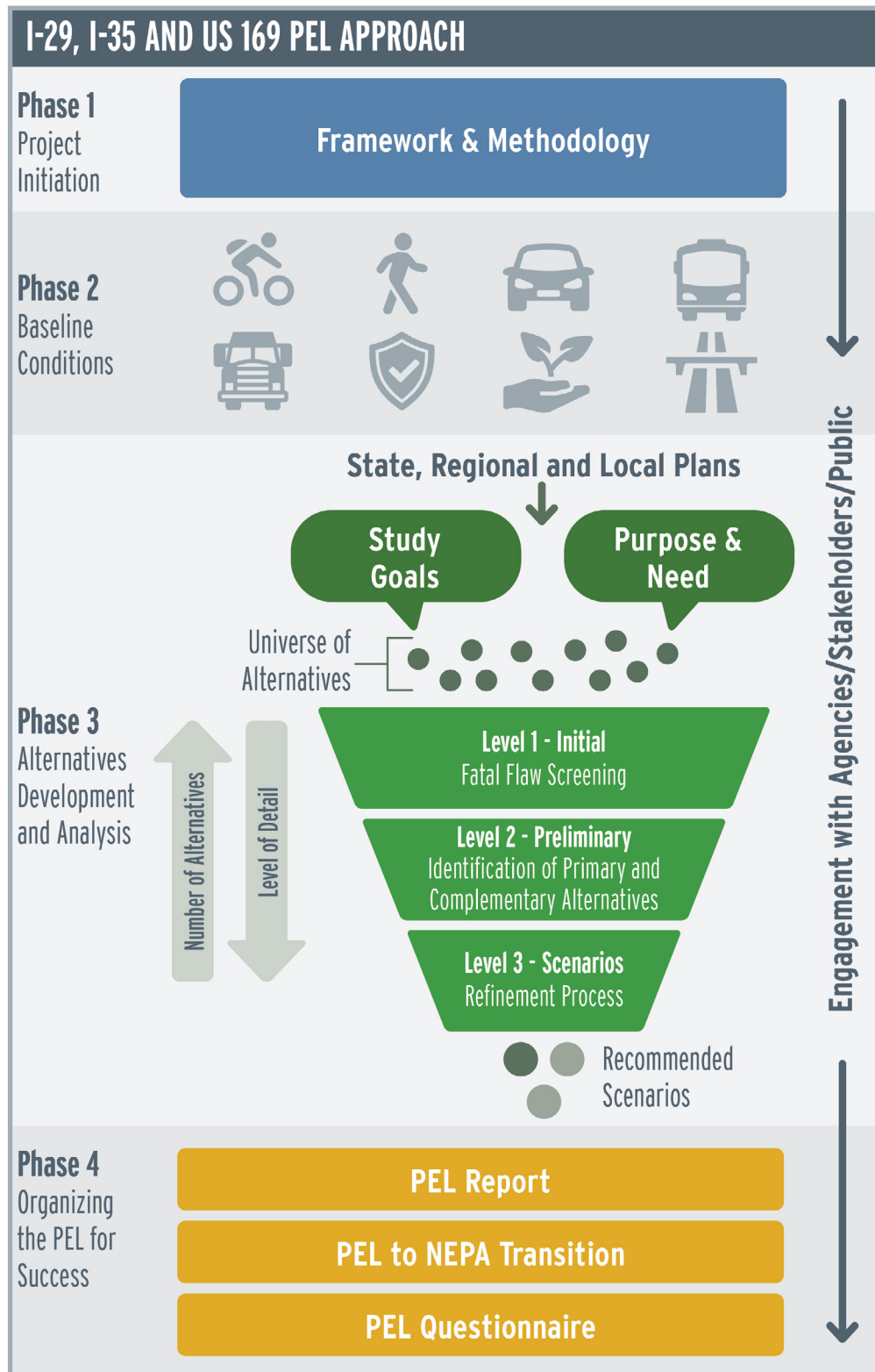
This level further analyzed the Scenarios to a greater level of detail by primarily quantitatively screening the Scenarios based on the purpose and need and study goals to arrive at the Recommended Scenarios.

This three-level screening process is summarized in **Table 3** and presented in greater detail in the *I-29, I-35, U.S. 169 PEL Alternatives Development and Analysis Report (Appendix C)*.

⁶ Reasonable alternatives (as defined in 40 CFR 1508.1(z)) are technically and economically feasible and meet the purpose and need for the proposed action.

⁷ The evaluation of alternatives must consider a reasonable range of options that could fulfill the project sponsor's Purpose and Need. Reasonable Alternatives include those that “are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant” (Council on Environmental Quality, 1981).

Figure 10: Alternatives Screening Process



Source: Study Team.

Table 3: I-29, I-35, U.S. 169 PEL Study Screening Process Summary

DESCRIPTION	LEVEL 1	LEVEL 2			LEVEL 3
Screening Type	Qualitative - Fatal Flaw	Primary Qualitative (some Quantitative)			Primarily Quantitative (some Qualitative)
Screening Criteria	Purpose and Need; Practicality	Purpose and Need and study goals			Purpose and Need and study goals
Screening Measures	See Alternatives Development and Analysis Report (Appendix C)	See Alternatives Development and Analysis Report (Appendix C)			See Alternatives Development and Analysis Report (Appendix C)
Rating System	Pass/Fail	Rating	Evaluation	Score	Quantification by unit of measure (and when qualitative, rating system from Level 2)
		++	Substantial positive effects	2	
		+	Some positive effects	1	
		0	Neutral effects	0	
		-	Some negative effects	-1	
		--	Substantial negative effects	-2	
Screening Process	<ul style="list-style-type: none"> Universe of Alternatives screened individually against purpose and need and practicality. Pass not required on all criteria for alternative advancement, but alternative needed to show an overall positive impact on the I-29, I-35, U.S. 169 facility and be determined practicable. Resulted in Preliminary Alternatives. See Alternatives Development and Analysis Report Appendix C for graphical representation of Level 1 Screening 	<ul style="list-style-type: none"> Preliminary Alternatives screened individually against Purpose and Need and study goals. Ratings based on engineering, safety, cost, and environmental assumptions identified by the Study Team subject matter experts. Resulted in Primary¹ or Complementary² Alternatives, and then grouped into Scenarios. See Alternatives Development and Analysis Report for graphical representation of Scenarios and Alternatives Development and Analysis Report Appendix D for graphical representation of the overall Level 2 Screening 			<ul style="list-style-type: none"> Scenarios screened against Purpose and Need and study goals Traffic model (Dynameq) for evaluating mobility and safety measures More detailed schematics for evaluating cost measures GIS spatial analysis of more detailed design plans for evaluating environmental measures See Alternatives Development and Analysis Report Appendix F for graphical representation of Level 3 Screening Resulted in Recommended Scenarios
Reasons for Alternatives Screened Out	<ul style="list-style-type: none"> Did not meet purpose and need Impractical based on cost or effectiveness 	<ul style="list-style-type: none"> Preliminary Alternatives did not adequately address study goals due to negative environmental impacts, costs, and/or difficulties from an engineering standpoint Alternatives scored less than zero were screened out 			<ul style="list-style-type: none"> Only the Scenarios that best addressed study goals from an overall standpoint (mobility, safety, cost, and environmental) were identified as Recommended Scenarios; other remaining scenarios were screened out.

Source: Study Team.

¹ Primary Alternatives – Considered to have the potential to substantially address the study goals as stand-alone alternatives.

² Complementary Alternatives – Alternatives that when combined with the Primary Alternatives, address the study goals.



I-29 and I-35 Split. Source: Google Earth.

13.0 What Were the Level 1 Screening Results?

The following alternatives from the Universe of Alternatives were screened out from further consideration because they did not meet the purpose and need of the project, or they were deemed impractical.

- ▶ **Elevated Lanes (Roadway)** – Deemed impractical and screened out because of the high construction cost and the difficulties associated with constructability.
- ▶ **Bypass Route** – Deemed impractical and screened out because of the high construction cost and the difficulties associated with constructability.
- ▶ **New Freeways** – Deemed impractical and screened out because of the high construction cost and the difficulties associated with constructability.
- ▶ **New Arterial Street** – Deemed impractical and screened out because of the high construction cost and the difficulties associated with constructability.

- ▶ **Heavy Rail** – Deemed impractical and screened out because of the high construction and operating cost.
- ▶ **Commuter Rail** – Deemed impractical and screened out because of the high construction and operating cost.
- ▶ **High Speed Rail** – Deemed impractical and screened out because of the high construction and operating cost.
- ▶ **Managed Lanes** – Deemed impractical and screened out due to tolling not having legislative authority in Missouri at the time the alternatives were screened.

The alternatives moving forward from the Level 1 Screening were called Preliminary Alternatives. This set of alternatives included 14 highway build alternatives, 14 multimodal alternatives, 12 congestion management alternatives, six non-recurring congestion alternatives, five freight alternatives and 10 intelligent transportation system alternatives.

More detailed information on the Level 1 Screening results is included in the [I-29, I-35, U.S. 169 PEL Alternatives Development and Analysis Report \(Appendix C\)](#).

14.0 What Were the Level 2 Screening Results?

Weighted measures were developed and applied based on the importance of study goals. Preliminary Alternatives that received a negative score were screened out from further study. Although the No-Action Alternative does not meet the Purpose and Need and received a negative score, the No-Action Alternative was carried through the analysis for comparison.

The following weighted alternatives were screened out from further consideration due to their negative scores in the Level 2 qualitative screening.

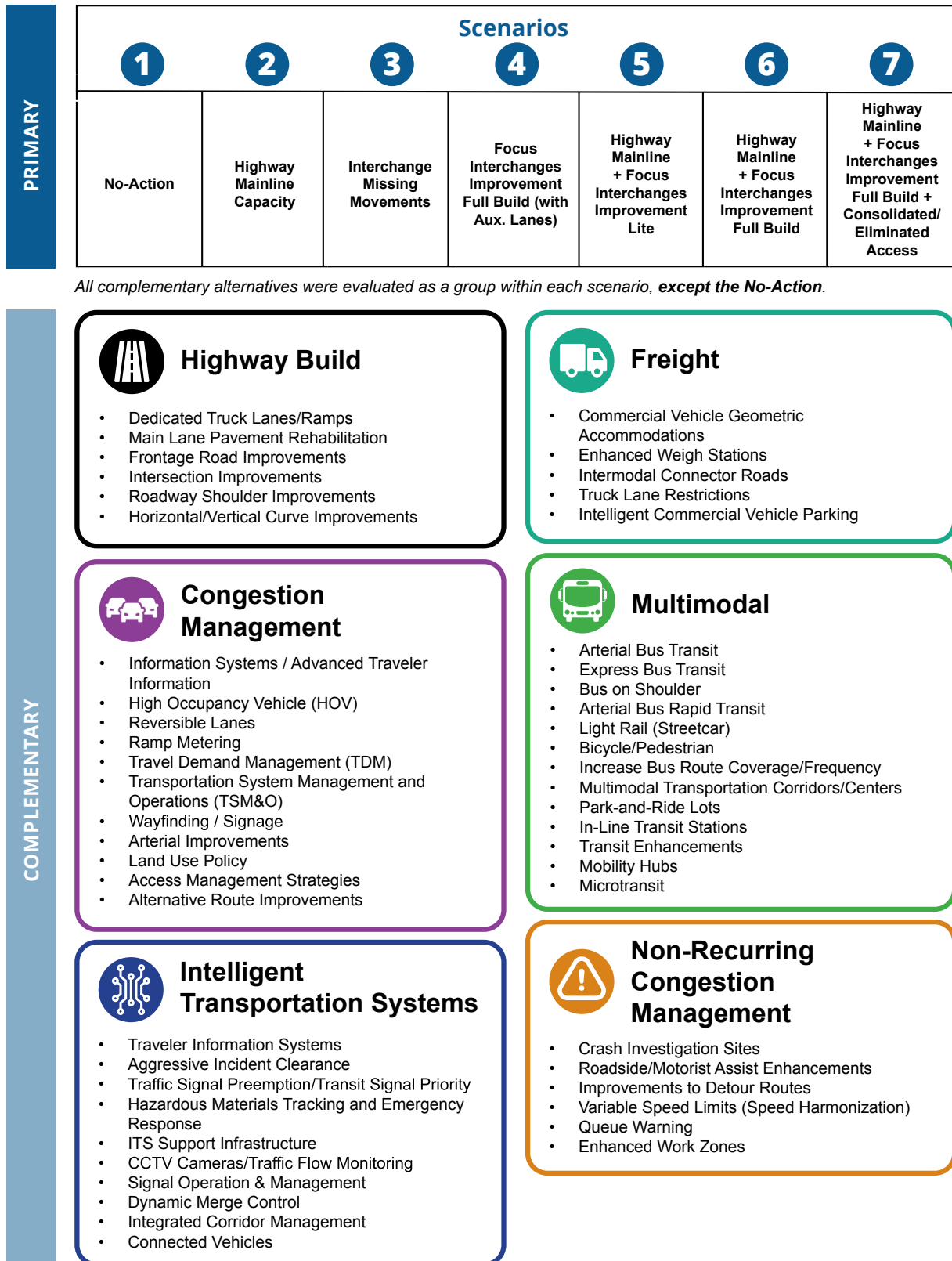
- ▶ **Hard Shoulder Running** – Hard shoulder running received a weighted score of -0.1 on a scale of positive 2 to negative 2. Study goals associated with hard shoulder running that received a negative score were safety, environment, and public input.
- ▶ **Arterial Bus Lanes** – Arterial Bus lanes received a weighted negative score of -0.1 on a scale of positive 2 to negative 2 due to vehicles operating in exclusive lanes for bus transit travel on arterial routes. Study goals that contributed to the overall negative score were cost, environment, and public input.

More detailed information regarding the results of the Level 2 Screening analysis is included in the *I-29, I-35, U.S. 169 Alternatives Development and Analysis Report* (**Appendix C**).

15.0 How Were Scenarios Developed?

Prior to the Level 3 screening, the Preliminary Alternatives that passed the Level 2 Screening were first categorized as either Primary or Complementary Alternatives, and then grouped into seven Scenarios (combinations of Alternatives) of improvements. As previously mentioned, Primary Alternatives were those that could stand on their own in addressing the Purpose and Need and Study Goals. Complementary Alternatives could not stand on their own but were considered valuable solutions and would complement the primary alternatives. The Primary Alternatives have the greatest ability to meet the Purpose and Need and Study Goals of the project, therefore, varying the specifics of the Primary Alternatives in the Scenarios provides the most insight into each scenario's overall performance. **Figure 11** illustrates the seven scenarios. More detailed information regarding the results of the Level 2 Screening analysis is included in the *I-29, I-35, U.S. 169 Alternatives Development and Analysis Report* (**Appendix C**).

Figure 11: Scenarios



Source: Study Team.

16.0 What Were the Level 3 Screening Results?

The following Scenarios were screened out during the Level 3 Screening:

Scenario **No-Action Alternative**

1

Screened out because it performed poorly on traffic and safety measures, as well as not meeting the purpose and need. There was also a lack of public support for this Scenario.

Scenario **Highway Mainline Capacity + Complementary Alternatives**

2

Screened out because, while performing better from a traffic perspective due to highway mainline capacity improvements, it performed poorly on safety measures, as there are no interchange or access improvements. There was also a lack of public support for this Scenario.

Scenario **Interchange Missing Movements + Complementary Alternatives**

3

Screened out because it performed poorly on most traffic measures, as it does not include highway mainline capacity improvements. Also performed poorly on safety from the perspective of not removing freeway conflict points. There was also a lack of public support for this Scenario.

Scenario **Focus Interchanges Improvement Full Build with Auxiliary Lanes + Complementary Alternatives**

4

Screened out because it performed poorly on most traffic measures, as it does not include highway mainline capacity improvements. Also performed poorly on safety due to a large number of arterial connection conflict points. There was also a lack of public support for this Scenario.

More detailed information regarding the results of the Level 3 Screening analysis is included in the *I-29, I-35, U.S. 169 PEL Alternatives Development and Analysis Report* (**Appendix C**).

17.0 Which Scenarios Should be Carried Forward Into NEPA?

Based on the results of the Level 3 Screening, Scenarios 5, 6, and 7 were identified as the Recommended Scenarios. The three Recommended Scenarios, outlined in **Table 4**, all provide a high level of traffic performance while addressing safety concerns. Although

Scenarios 2 through 7 include complementary multimodal improvements, Scenarios 5, 6, and 7 provide the greatest multimodal benefits.

The three Recommended Scenarios have more environmental impacts than Scenarios 1 through 4, however, these environmental impacts are likely to be avoided, minimized, and/or mitigated as individual projects are identified, and more detailed design and analysis progresses in the NEPA phase.

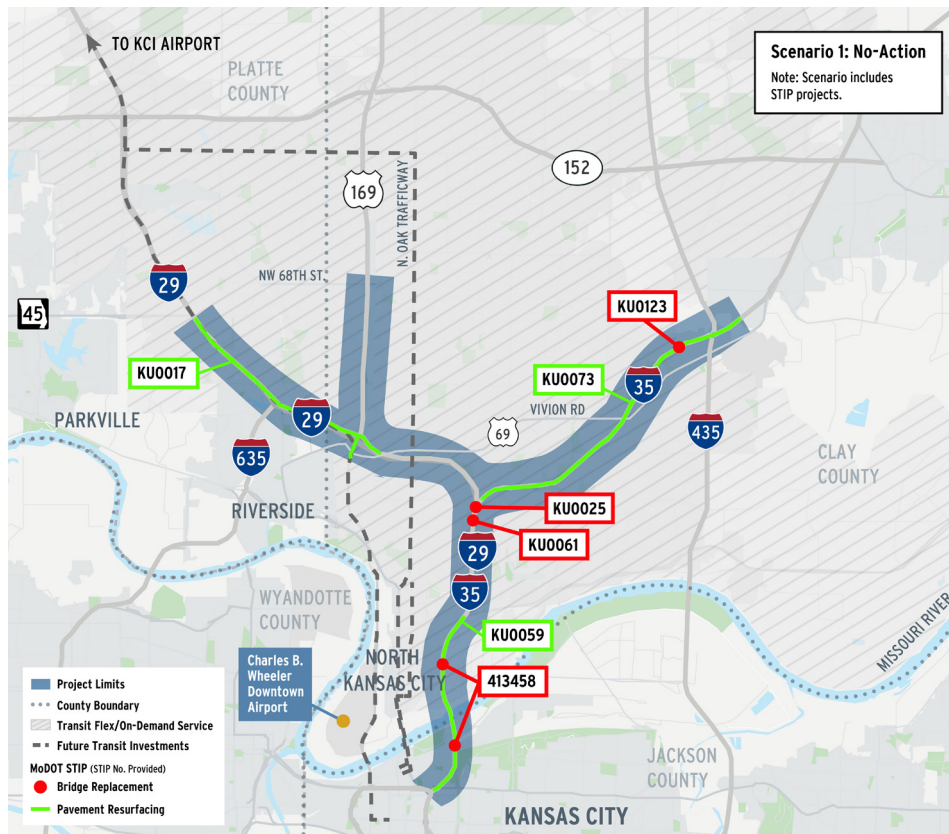
Table 4: Recommended Scenarios

Scenario 5	Scenario 6	Scenario 7
Highway Mainline Capacity + Focus Interchanges Improvement Lite + Complementary Alternatives	Highway Mainline Capacity + Focus Interchanges Improvement Full Build + Complementary Alternatives	Highway Mainline Capacity + Focus Interchanges Improvement Full Build + Consolidated/Eliminated Access + Complementary Alternatives
Specific corridor recommendations will be identified in the NEPA phase		

Source: Study Team.

The Recommended Scenarios are in addition to the 2024 – 2028 STIP projects. **Figure 12** illustrates the STIP projects that are slated to be completed along with the scenario chosen in the NEPA process. For a more detailed description of the STIP projects, see the *I-29, I-35, U.S. 169 PEL Alternatives Development and Analysis Report (Appendix C)*.

Figure 12: MoDOT STIP (2024-2028) Projects



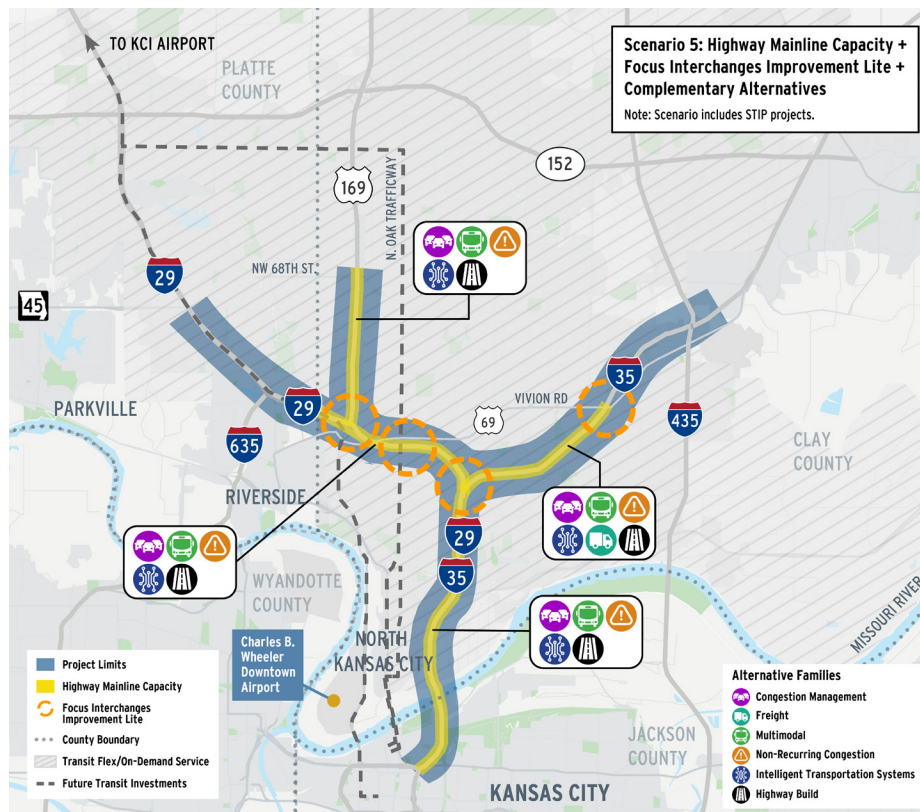
Source: MoDOT 2024-2028 STIP Projects.

Complementary alternatives were not analyzed in detail during the I-29, I-35, U.S. 169 PEL Study. In the NEPA phase, MoDOT would continue coordinating with local communities and the Kansas City Area Transportation Authority to better define the complementary alternatives in greater detail.

Figure 13, Figure 14 and Figure 15 are conceptual exhibits of the recommended scenarios.

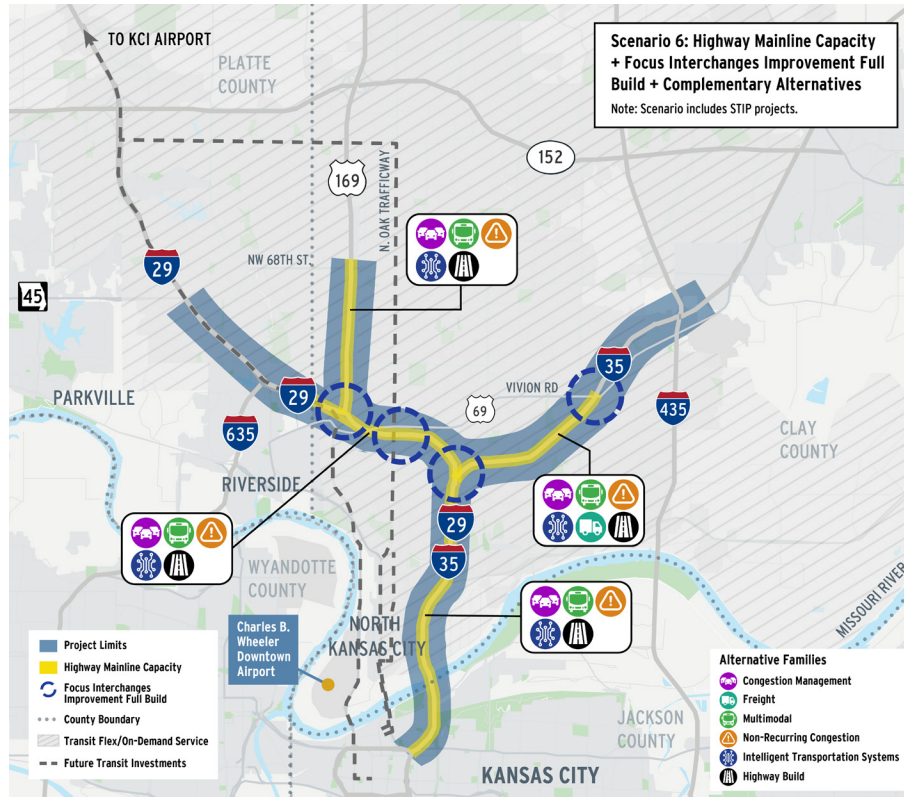
-  **Congestion Management**
-  **Freight**
-  **Multimodal**
-  **Non-Recurring Congestion**
-  **Intelligent Transportation Systems**

Figure 13: Scenario 5



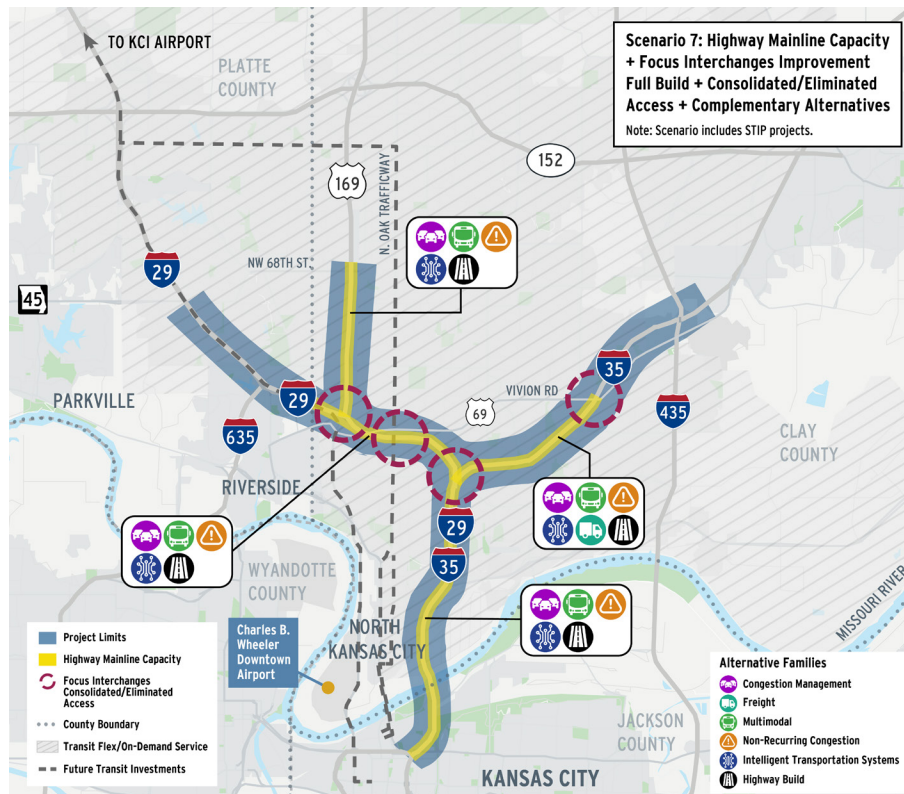
Source: Study Team.

Figure 14: Scenario 6



Source: Study Team.

Figure 15: Scenario 7



Source: Study Team.

Planning-level construction cost estimates were developed for each scenario. As shown in **Table 5**, the corridor was split into four zones, and cost estimates were developed for each zone.

Table 5: Planning-Recommended Scenarios

	Scenario 5	Scenario 6	Scenario 7
	Highway Mainline Capacity + Focus Interchanges Improvement Lite + Complementary Alternatives	Highway Mainline Capacity + Focus Interchanges Improvement Full Build + Complementary Alternatives	Highway Mainline Capacity + Focus Interchanges Improvement Full Build + Consolidated/ Eliminated Access + Complementary Alternatives
Zone 1: I-29 from I-29/35 Split to M-45 and U.S. 169 from I-29 to 68th Street	\$ 108,700,000	\$ 145,200,000	\$ 141,200,000
Zone 2: I-29/35 Split	\$ 55,600,000	\$ 80,000,000	\$ 52,500,000
Zone 3: I-35 from I-29/35 Split to I-435	\$ 40,500,000	\$ 44,200,000	\$ 40,600,000
Zone 4: I-29/35 Split to N.E. Corner of Downtown Loop	\$ 101,500,000	\$ 101,500,000	\$ 101,500,000
Total Construction Costs All Zones	\$ 306,300,000	\$ 370,900,000	\$ 335,800,000
Total Investment Required by Others (Transit, City, etc.)	\$\$	\$\$	\$\$

Source: Study Team.

Note: 2023 dollars.



The Christopher "Kit" Bond Bridge on I-29/I-35. Source: Study Team.

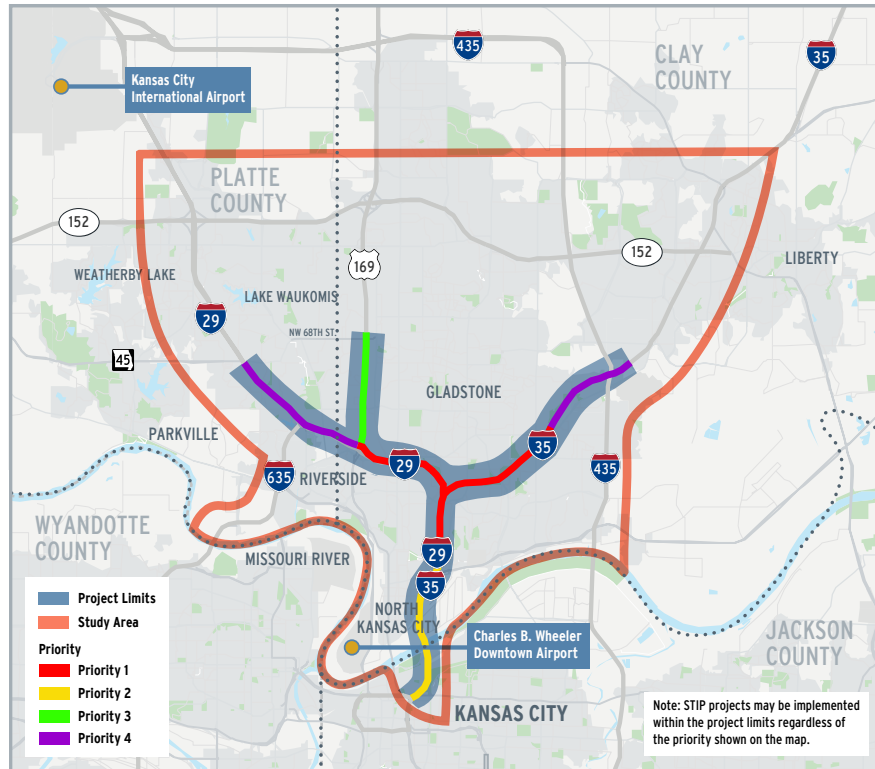
In addition to the Recommended Scenarios, projects were identified and prioritized into Priority 1, Priority 2, Priority 3, and Priority 4 designations. **Figure 16** shows these levels of prioritization for segments of the project limits. Priorities may change based on any major development(s) that could occur within the study area, such as the announcement for a new Royals Stadium.

Priority 1 refers to sections that should be improved first and prioritized within the project limits because they contain the greatest existing traffic congestion, safety concerns, and bridge needs. Priority 1 also had the highest support for improvement from the CAC, stakeholders and the public.

Because Priority 1 is considered to have the greatest needs, the sections included in Priority 2, 3, and 4 were not studied to the same level of detail regarding service and system interchanges. Priority areas 2,3, and 4 were studied for traffic, safety, and community impacts and, therefore, mainline capacity was recommended.

Priority 2 refers to sections within the project limits where additional study is needed to determine impacts to the downtown freeway loop but are expected to generate a high benefit to cost ratio. Priority 3 is also expected to provide significant benefits regarding anticipated growth in the Northland. Finally, Priority 4 sections would be expected to need improvements later in the planning horizon year and, thus, was prioritized last.

Figure 16: Project Prioritization



Source: Study Team.

Specific project recommendations are listed below and described in the *I-29, I-35, U.S. 169 PEL to NEPA Transition Report (Appendix D)*. STIP projects and complementary alternatives are included in each of the priority area projects.

Priority 1 Projects:

- ▶ I-35 at Vivion Road (U.S. 69) Interchange
- ▶ I-35 from west of Antioch Road Interchange to Vivion Road
- ▶ I-29/I-35 Split
- ▶ I-29 from north of the I-29 at Davidson Road Interchange to Waukomis Drive including N Oak Interchange and U.S.169 Interchange

Priority 2 Project:

- ▶ I-29/I-35 from north of I-29/I-35 at Armour Road Interchange to the NE corner of the Kansas City downtown loop (or Independence Avenue).

Priority 3 Projects:

- ▶ U.S. 169 from the I-29 at U.S. 169 interchange to the U.S. 169 at NW 68th Street interchange

Priority 4 Projects:

- ▶ I-29 at I-635 Interchange
- ▶ I-35 at Vivion Road (U.S. 69) Interchange north to I-435

Project-specific determinations regarding the roadway design, exact location of ramps and interchanges, and project funding would be analyzed and decided through the NEPA process. Issues/design features to be determined during NEPA are further detailed in the *I-29, I-35, U.S. 169 PEL to NEPA Transition Report (Appendix D)*.