

# US 60 and KY 286 Programming Study

Ballard and McCracken Counties, Kentucky  
**JANUARY 2026**



**TEAM  
KENTUCKY®**  
TRANSPORTATION  
CABINET

# Final Report

## US 60 & KY 286 Programming Study

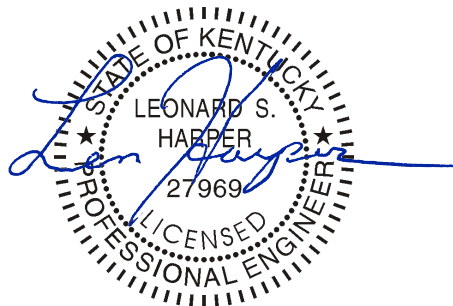


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In partnership with:



January 2026



## Executive Summary

### US 60 and KY 286 Programming Study

## Executive Summary

The Kentucky Transportation Cabinet (KYTC) initiated the *US 60 & KY 286 Programming Study* to assess the need for and scope of safety and mobility improvements between I-24 in Paducah (McCracken County) and US 51 in Wickliffe (Ballard County). The study focused on the existing two-lane portions of US 60 (15 miles) and KY 286 / US 62 (21 miles), as shown in **Figure ES-1**. East of MP 14.490, US 60 is either under construction or has already been improved to a four-lane divided roadway. There are multiple projects at different phases of work slated to reconstruct US 60 and KY 286. This study has been initiated to guide decision-making regarding which route(s) to focus improvement efforts – US 60, KY 286/US 62, or portions of both.

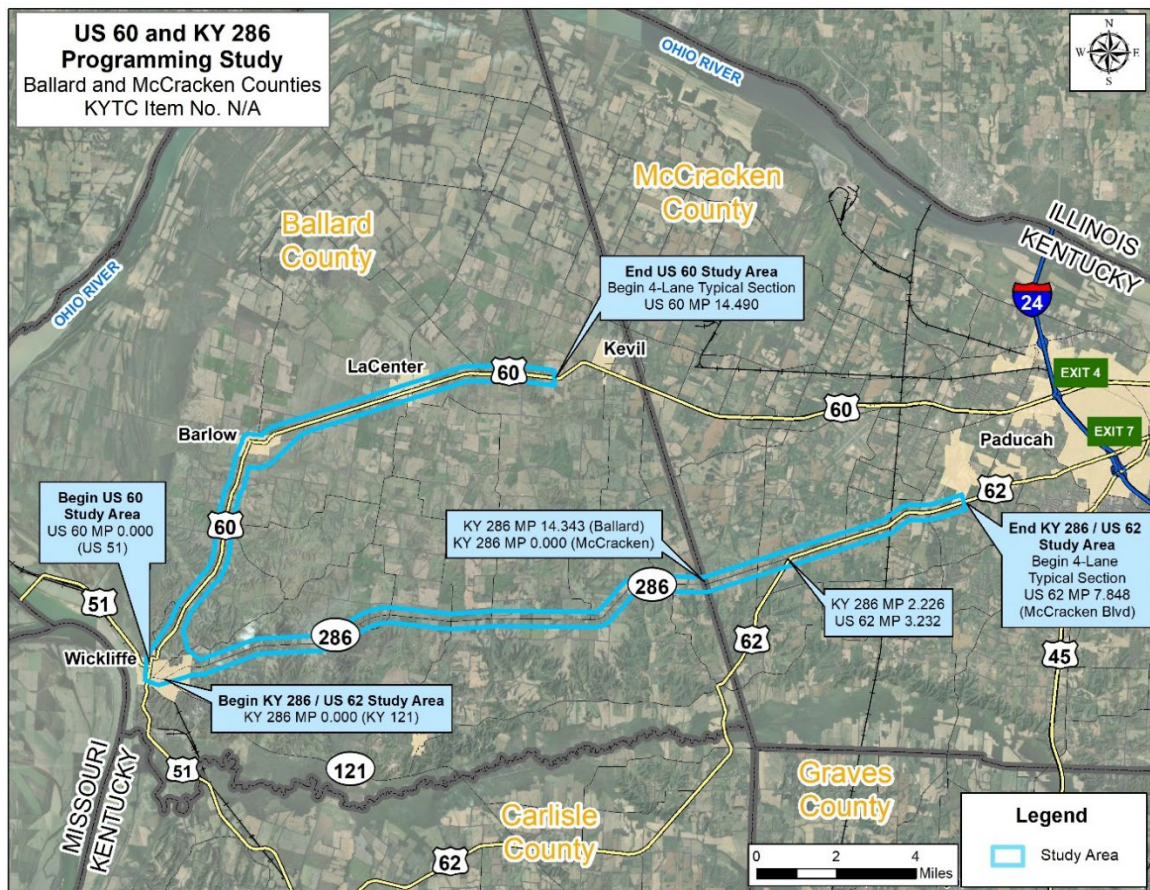


Figure ES-1: Study Area

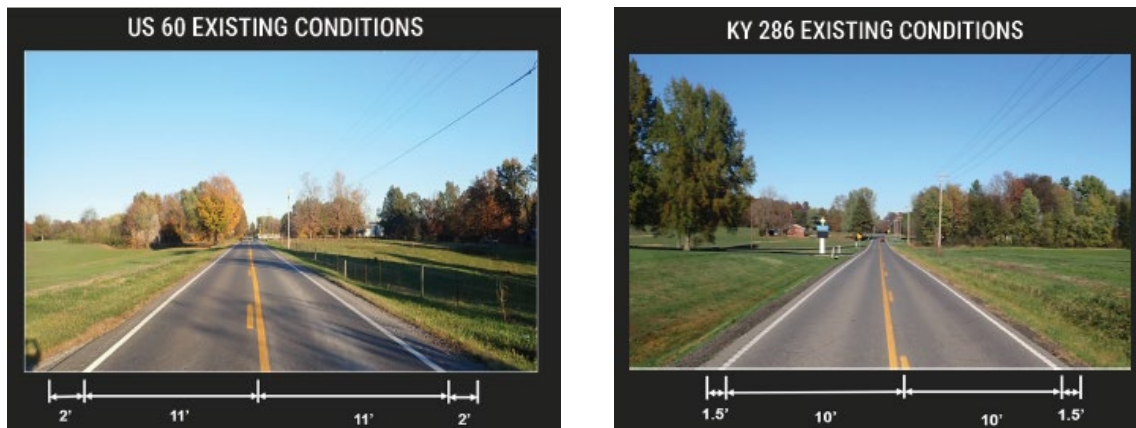
## Existing Conditions

US 60 and KY 286 / US 62 are parallel routes connecting Wickliffe and Paducah, but the travel time along KY 286 is approximately six minutes shorter. Origin-destination data was analyzed to understand travel patterns between Wickliffe and Paducah along the two study corridors. When examining through trips, or trips that span the entire distance between these two cities, approximately 80 percent of all vehicles utilize the KY 286 corridor. There are fewer destinations on KY 286, making through trips more common than on US 60, which provides access to the rural towns of Kevil, LaCenter, and Barlow.

## Executive Summary

### US 60 and KY 286 Programming Study

US 60 is classified as a two-lane rural principal arterial with mostly 11-foot lanes and two-foot paved shoulders, while KY 286 is classified as a rural minor arterial with mostly 10-foot lanes and 18-inch paved shoulders, as shown in **Figure ES-2**. KY 286 and US 62 have consistent 55 mile per hour (mph) speed limits while US 60 has reduced speed limits (35 mph) in Barlow, LaCenter, and Kevil. Neither corridor has dedicated passing lanes and the passing permitted striping zones tend to be short, making it difficult to pass slow moving vehicles.



**Figure ES-2: Existing Typical Sections**

Kentucky State Police Crash data collected from 2019 to 2023 revealed a disproportionate share of serious injury and fatal crashes on KY 286 and US 62 (14 crashes per mile) compared to US 60 (9 crashes per mile). **Table ES-1** illustrates the crash severity and density along each route.

**Table ES-1: Crash Summary**

Route	Corridor length	Total Crashes	Crashes per Mile	Fatal Crashes (% of total)	Injury Crashes (% of total)	PDO Crashes (% of total)
<b>US 60</b>	14.5 miles	126	8.7	2 (2%)	27 (21%)	97 (77%)
<b>KY 286 and US 62</b>	21.2 miles	294	13.9	8 (3%)	84 (29%)	198 (69%)

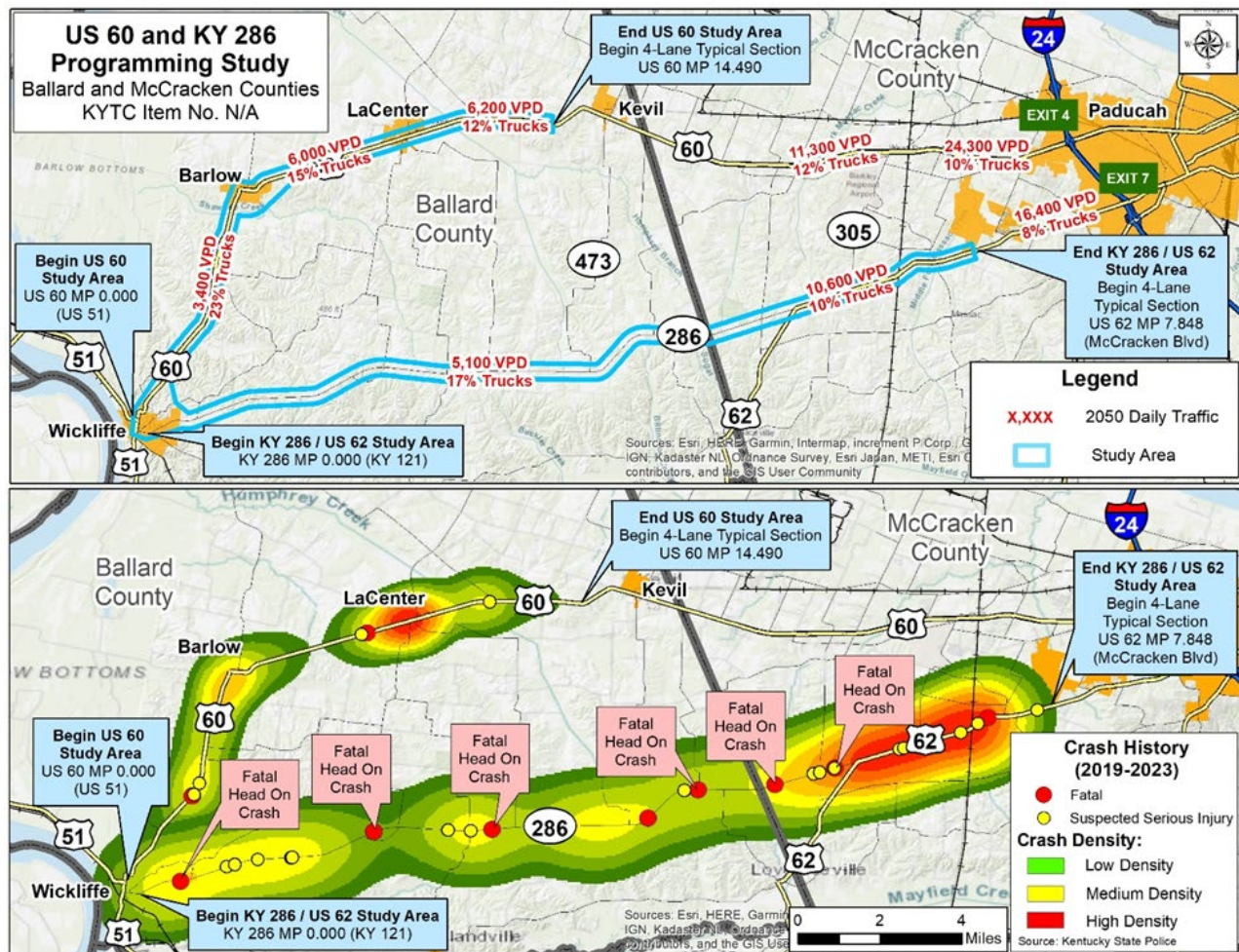
**Of the ten collisions that resulted in a fatality in the study area, nine involved a vehicle crossing the centerline and six of the fatal crashes on KY 286 were head on collisions as shown in Figure ES-3. Head on collisions made up five percent of the total crashes but were 60 percent of the fatal collisions (K) and 41 percent of the suspected serious injury collisions (A).**

Current daily traffic along US 60 is 3,200 vehicles per day (VPD) north of Wickliffe and gradually increases to 5,500 approaching Kevil. KY 286 carries 3,400 VPD east of Wickliffe and increases significantly east of the intersection with US 62 to 6,900 VPD. US 60 is designated as a state-authorized route on the National Truck Network and carries around 410 semi-trucks (660 total trucks) per day between Barlow and LaCenter. While KY 286 has no truck network designations and is signed for local traffic only, it has significant truck traffic with around 340 semi-trucks (580 total trucks) per day.

## Executive Summary

### US 60 and KY 286 Programming Study

Traffic forecasts were developed based on historical traffic patterns, population estimates and projections, and results from the Kentucky Statewide Travel Demand Model (KYSTM). Based on these sources, traffic on KY 286 is expected to grow at a faster rate, 1.5 percent per year, than US 60, which is only expected to grow 0.5 percent per year. Using these annual growth rates, 2050 daily traffic on US 60 is expected to range from 3,400 VPD between Wickliffe and Barlow to 6,200 VPD east of Kevil. KY 286 in Ballard County is expected to carry 5,100 VPD in 2050 with the study area portion of US 62 carrying up to 10,600 VPD, as shown in **Figure ES-3**.



**Figure ES-3: Study Area Traffic Forecasts and Crash History**

Level of service (LOS), a qualitative measure describing operational conditions, was used to evaluate the adequacy of the existing roadway. In rural areas, LOS C or better is desirable and in urban areas, LOS D or better is desirable. Using the assumption that a two-lane road with passing lanes operates with a LOS D at 16,000 VPD, **additional passing opportunities along each corridor will accommodate the future traffic demand.** Annual daily traffic on US 60 in Ballard County would need to grow between 3.5 and four percent per year over the next 25 years before additional through lanes would be warranted. Daily traffic on KY 286 would need to grow over five percent per year to reach LOS D by 2050, while daily traffic on US 62 would need to grow nearly three percent per year to reach the same level of service.

## Executive Summary

### US 60 and KY 286 Programming Study

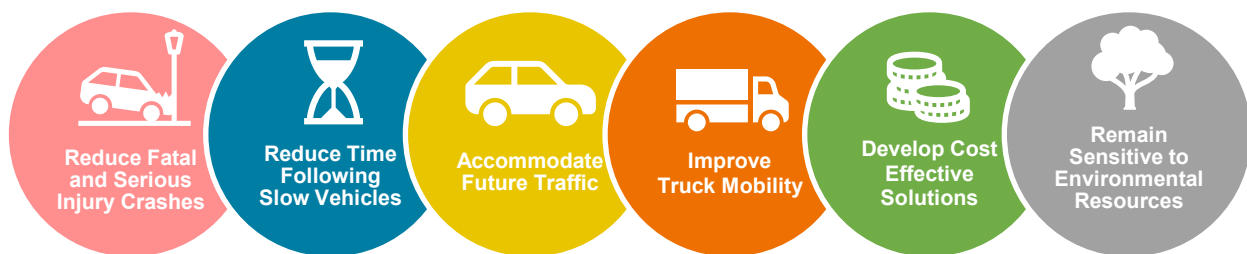
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#### Local Official / Stakeholder Outreach

An online StoryMap summarizing the study was developed and an online survey was conducted to solicit Local Official / Stakeholder feedback. When asked which route they would prioritize, most respondents favored splitting financial resources and advancing improvements along both corridors. Additional comments noted the existing narrow pavement widths and that many of the crashes were likely caused by tire drop-off and driver overcorrection.

#### Study Objectives

After analyzing existing conditions, future conditions, and reviewing Local Official / Stakeholder feedback, the project team developed six study objectives, as shown in **Figure ES-4**.



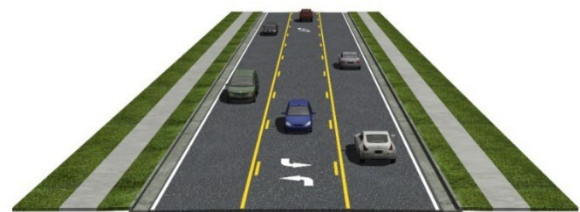
**Figure ES-4: Study Objectives**

#### Improvement Concepts

**Corridor Improvements:** Because additional passing opportunities along each corridor will accommodate the future traffic demand, the evaluation of improvement concepts focused on improving along the existing corridors to minimize costs and impacts on property owners and the environment. A 2+1 roadway concept improves traffic and safety by providing systematic passing opportunities to break up traffic platoons. Rather than having to cross the centerline and use the opposing traffic lane to pass, vehicles are able to safely pass using passing lanes. A 2+1 roadway is proposed in rural areas (**Figure ES-5**) where there is less traffic turning in-and-out of sidestreets. A center two-way left-turn lane (TWLTL) concept with sidewalks is proposed in urban and suburban locations where more entrances are present (**Figure ES-6**), which improves safety and traffic flow by allowing vehicles to turn left without blocking through traffic..



**Figure ES-5: 2+1 Concept**



**Figure ES-6: TWLTL Concept with Sidewalks**

## Executive Summary

### US 60 and KY 286 Programming Study

## Conclusions

Based on a combination of input from the project team, a review of existing conditions, the traffic and safety analyses, local officials / stakeholder input, the study objectives, results from the benefit-to-cost analysis (BCA), and field reconnaissance, the following improvements are recommended to move forward.

- **Prioritize KY 286/US 62 Improvements:** KY 286 and US 62 demonstrate the highest safety need and cost-effectiveness, with an overall benefit-cost ratio greater than one. Improvements include 2+1 widening, intersection upgrades, and TWLTL installations, implemented in a phased approach starting with KY 286 west of the McCracken County line and progressing east, as shown in **Figure ES-7**. The top priority, Concept A3 between Hershel Jones Road and the Ballard / McCracken County line, is split into three sections of independent utility due to the high construction cost. This improvement could be designed as one project but constructed in phases depending on funding availability.
- **Advance Committed US 60 Improvements:** Sections of US 60 between Barlow and the Kevil bypass have committed funding. Focus could begin with the easternmost section and progress westward, as shown in **Figure ES-7**.

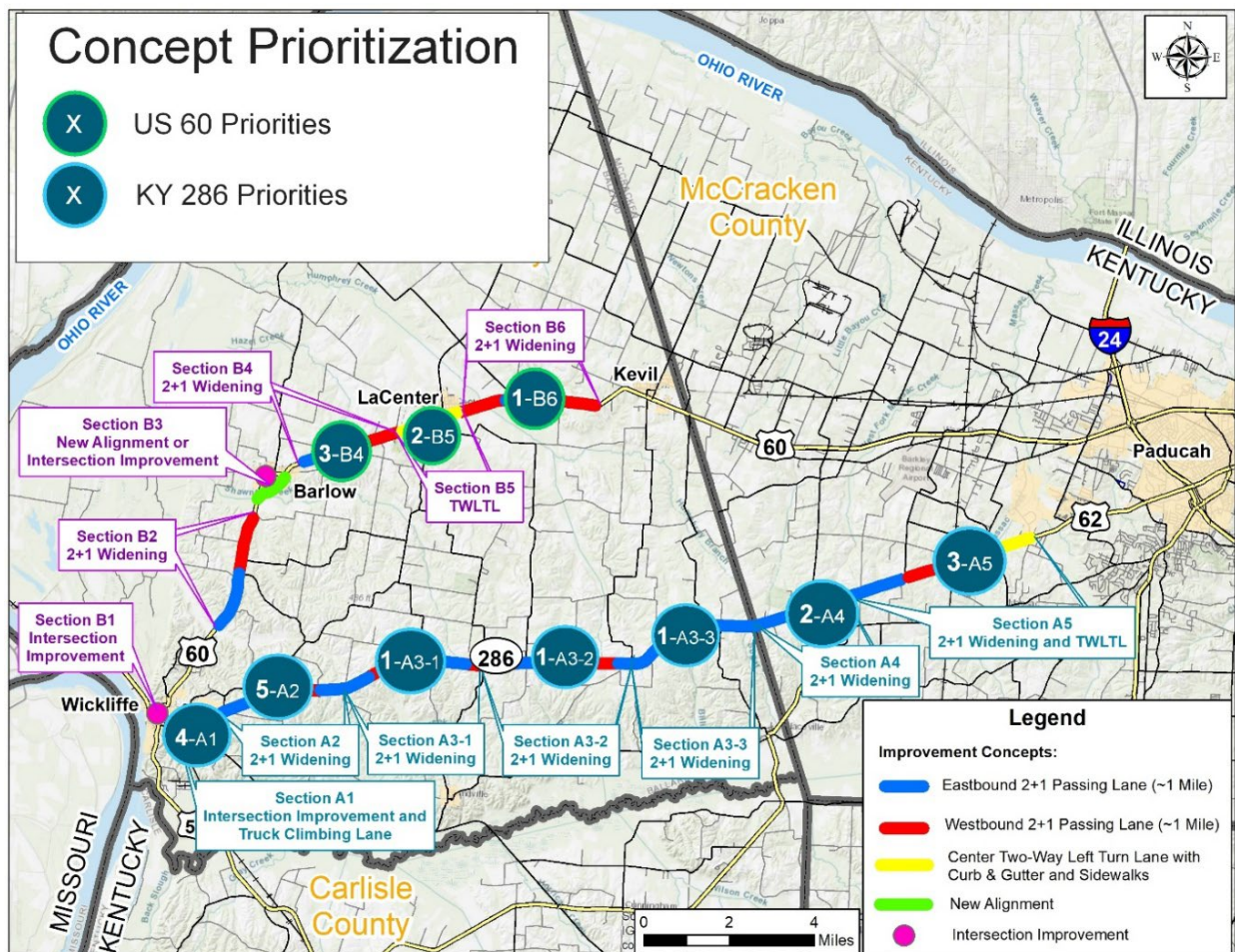


Figure ES-7: Concept Prioritization

## Executive Summary

### US 60 and KY 286 Programming Study

Cost estimates were developed for the recommended concepts, as shown in **Table ES-2**. These costs include contingencies to account for risks, including unexpected utility conflicts, geotechnical issues, and environmental mitigation. An additional “time” or management contingency was added to account for the lack of funding in the Highway Plan and includes additional costs of ten percent per phase per biennium.

A BCA was performed to compare the improvement concept costs (without the time contingencies), including design, right-of-way, utility, construction, and risk contingencies, to the safety benefits. A benefit-to-cost ratio (BCR) above 1.0 indicates the safety benefits outweigh the costs, as shown in **Table ES-2**. Results from the BCA indicate that two Improvement Concepts on KY 286, A3-3 and A4, have BCRs greater than 1.0. One Improvement Concept on US 60, B4, has a BCR greater than one.

**Table ES-2: 2025 Cost Estimates and Benefit-to-Cost Analysis**

Concept	Route	Improvement	Length (miles)	2025 Total Programming Cost*	BCR
A1	KY 286	Intersection Improvement and Truck Climbing Lane	0.7	\$11,100,000	0.24
A2		2+1 Wickliffe to Hershel Jones Road	2.9	\$37,000,000	0.15
A3-1		2+1 Hershel Jones Road to County line	3.4	\$32,000,000	0.91
A3-2		2+1 KY 802 to KY 473	3.5	\$32,100,000	0.93
A3-3		2+1 KY 473 to County line	3.2	\$29,200,000	1.86
A4		2+1 County line to US 62	2.2	\$26,700,000	2.28
A5	US 62	2+1 and TWLTL from KY 286 to McCracken Boulevard	4.6	\$57,900,000	0.80
<b>Total for KY 286 and US 62</b>				<b>\$226,000,000</b>	<b>1.04</b>
B4	US 60	2+1 Barlow to LaCenter	2.3	\$22,000,000	1.23
B5		TWLTL and sidewalks in LaCenter	1.6	\$23,000,000	0.01
B6		2+1 LaCenter to Kevil	3.2	\$30,000,000	0.02
<b>Total for US 60</b>				<b>\$75,000,000</b>	<b>0.35</b>

\*Includes cost associated with time delay risk.

## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 STUDY AREA .....	1
1.2 PLANNED AND COMMITTED PROJECTS .....	3
<b>2.0 EXISTING CONDITIONS .....</b>	<b>5</b>
2.1 FUNCTIONAL CLASSIFICATION .....	5
2.2 ROADWAY GEOMETRY.....	5
2.2.1 Typical Section .....	5
2.2.2 National Truck Network .....	8
2.2.3 Horizontal Curvature & Grades.....	8
2.2.4 Passing Opportunities .....	8
2.3 SPEED LIMIT.....	12
2.4 EXISTING TRAFFIC ANALYSIS .....	12
2.4.1 Existing Highway Capacity Software Analysis .....	15
2.4.2 Streetlight Origin-Destination Analysis .....	15
2.4.3 Travel Time Comparison .....	18
2.5 CRASH HISTORY .....	18
<b>3.0 ENVIRONMENTAL OVERVIEW .....</b>	<b>24</b>
3.1 NATURAL ENVIRONMENT.....	24
3.2 HUMAN ENVIRONMENT .....	26
3.3 SOCIOECONOMIC STUDY .....	28
<b>4.0 FUTURE TRAFFIC CONDITIONS .....</b>	<b>29</b>
4.1 POPULATION TRENDS.....	29
4.2 HISTORICAL TRAFFIC COUNTS .....	30
4.3 KENTUCKY STATEWIDE TRAVEL DEMAND MODEL (KYTSM) .....	32
4.4 2050 DAILY TRAFFIC FORECASTS .....	33
<b>5.0 STUDY OBJECTIVE.....</b>	<b>35</b>
<b>6.0 INITIAL STUDY OUTREACH .....</b>	<b>35</b>
6.1 PROJECT TEAM MEETING NO. 1 .....	35
<b>7.0 INTERSECTION CONTROL EVALUATION (ICE).....</b>	<b>36</b>
<b>8.0 PRELIMINARY IMPROVEMENT CONCEPTS .....</b>	<b>37</b>
8.1 US 60 CONCEPTS .....	37
8.1.1 Corridor Concept 1: US 60 2+1 Conversion .....	37
8.1.2 Corridor Concept 2: US 60 Southern Bypass around Barlow .....	38
8.1.3 Corridor Concept 3: US 60 Reconfiguration in LaCenter.....	38
8.1.4 Intersection Concept 1: US 60 at 4 <sup>th</sup> Street / Broadway Street in Barlow .....	39

**Final Report**

US 60 & KY 286 Programming Study

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8.1.5	Intersection Concept 2: US 60 at Olive Street in LaCenter.....	41
8.1.6	Intersection Concept 3: US 60 at US 51 in Wickliffe .....	42
8.2	KY 286 / US 62 CONCEPTS.....	43
8.2.1	Corridor Concept 1: KY 286 / US 62 2+1 Conversion & TWLTL.....	43
8.2.2	Intersection Concept 1: KY 286 at KY 121 in Wickliffe .....	44
8.2.3	Intersection Concept 2: KY 286 at US 62.....	45
<b>9.0</b>	<b>SECOND ROUND OF STUDY OUTREACH.....</b>	<b>45</b>
9.1	PROJECT TEAM NO. 2.....	45
<b>10.0</b>	<b>REVISED IMPROVEMENT CONCEPTS.....</b>	<b>46</b>
10.1	KY 286 / US 62 REVISED IMPROVEMENT CONCEPTS .....	48
10.2	US 60 REVISED IMPROVEMENT CONCEPTS.....	48
<b>11.0</b>	<b>FINAL STUDY OUTREACH.....</b>	<b>48</b>
11.1	LOCAL OFFICIALS / STAKEHOLDER MEETING .....	48
11.2	PROJECT TEAM MEETING NO. 3.....	52
<b>12.0</b>	<b>CONCLUSIONS.....</b>	<b>52</b>
12.1	COST ESTIMATES.....	52
12.2	BENEFIT-TO-COST ANALYSIS (BCA) .....	53
12.3	RECOMMENDATIONS .....	54
12.4	NEXT STEPS.....	56
<b>13.0</b>	<b>CONTACTS/ADDITIONAL INFORMATION.....</b>	<b>56</b>

**LIST OF TABLES**

Table ES-1: Crash Summary.....	ES-2
Table ES-2: 2025 Cost Estimates and Benefit-to-Cost Analysis .....	ES-6
Table 1: Travel Time Comparison.....	18
Table 2: Crash Summary.....	19
Table 3: Socioeconomic Summary .....	28
Table 4: Population Estimates and Projections.....	30
Table 5: KYTC Historical Traffic Counts (US 60) .....	31
Table 6: KYTC Historical Traffic Counts (KY 286 & US 62) .....	32
Table 7: KYSTM Growth Rates .....	33
Table 8: ICE Summary for KY 286 / KY 121 (Ballard County) .....	36
Table 9: 2025 Cost Estimates with Risk and Time Contingencies.....	53
Table 10: Benefit-to-Cost Analysis.....	54

**LIST OF FIGURES**

Figure ES-1: Study Area ..... ES-1

Figure ES-2: Existing Typical Sections ..... ES-2

Figure ES-3: Study Area Traffic Forecasts and Crash History ..... ES-3

Figure ES-4: Study Objectives..... ES-4

Figure ES-5: 2+1 Concept ..... ES-4

Figure ES-6: TWLTL Concept with Sidewalks ..... ES-4

Figure ES-7: Concept Prioritization ..... ES-5

Figure 1. Study Location within KYTC District 1..... 1

Figure 2: Study Area..... 2

Figure 3: Planned and Committed Projects ..... 4

Figure 4: Lanes and Lane Widths..... 6

Figure 5: Shoulder Width..... 7

Figure 6: Horizontal Curvature ..... 9

Figure 7: Grades.....10

Figure 8: Passing Zones ..... 11

Figure 9: Average Daily Speeds ..... 13

Figure 10: Annual Average Daily Traffic (AADT) ..... 14

Figure 11: Existing AM Peak Traffic Analysis.....16

Figure 12: Existing PM Peak Traffic Analysis ..... 17

Figure 13: Fatal and Injury Collisions ..... 20

Figure 14: Head-On and Sideswipe Collisions ..... 21

Figure 15: Excess Expected Crash (EEC) ..... 22

Figure 16: Passing Zones and Crash History ..... 23

Figure 17: Study Area Water Resources (Wickliffe) ..... 25

Figure 18: Human Environment (Wickliffe) ..... 27

Figure 19: Block Group Map ..... 29

Figure 20: Population Projections ..... 30

Figure 21: 2050 Daily Traffic Forecasts ..... 34

Figure 22: Proposed 2+1 Typical Section..... 37

Figure 23: Proposed Two-Way Left-Turn Lane (TWLTL)..... 38

Figure 24: US 60 at Broadway Street in Barlow - Realignment..... 39

Figure 25: US 60 at Broadway Street in Barlow - Mini Roundabout..... 40

Figure 26: US 60 at Broadway Street in Barlow - Single Lane Roundabout ..... 41

Figure 27: US 60 at Olive Street in LaCenter - Single Lane Roundabout ..... 42

Figure 28: US 60 at US 51 in Wickliffe - Single Lane Roundabout..... 43

Figure 29: KY 286 at KY 121 in Wickliffe - Single Lane Roundabout..... 44

Figure 30: KY 286 at US 62 in McCracken County - Green T Intersection ..... 45

Figure 31: Improvement Concepts Overview ..... 47

Figure 32: Local Officials Survey Results - KY 286 Weighted Prioritization ..... 49

Figure 33: Local Officials Survey Results - US 60 Weighted Prioritization ..... 50

Figure 34: Local Officials Survey Results - Barlow Concepts..... 51

Figure 35: Local Officials Survey Results - Corridor Preferences for Financial  
Resources..... 51

Figure 36: Concept Prioritization..... 55

**LIST OF APPENDICES**

APPENDIX A – CRASH HISTORY (2019 – 2023)

APPENDIX B – ENVIRONMENTAL OVERVIEW

APPENDIX C – SOCIOECONOMIC STUDY

APPENDIX D – TRAFFIC FORECASTING TECHNICAL MEMORANDUM

APPENDIX E – MEETING SUMMARIES

APPENDIX F – STAGE 1 INTERSECTION CONTROL EVALUATION (ICE)

APPENDIX G – COST ESTIMATES

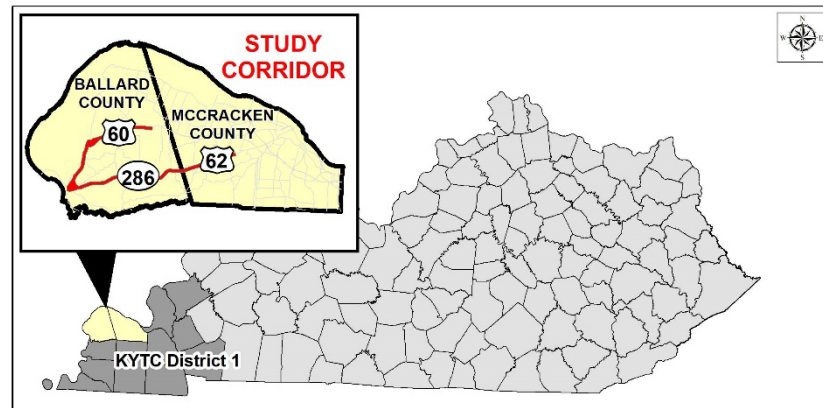
APPENDIX H – KY 286 / US 62 PROJECT SHEETS

## 1.0 INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) initiated the *US 60 & KY 286 Programming Study* to assess the need for and scope of safety and mobility improvements between I-24 in Paducah (McCracken County) and US 51 in Wickliffe (Ballard County). The focus of this study is primarily along the existing two-lane portions of US 60 and KY 286, as shown in **Figure 1**.

Currently, there are several projects for reconstructing US 60 that are scheduled or underway.

The most recent segment under design between LaCenter and Kevil (KYTC Item No. 1-118.00) had been designed for initial construction of two travel lanes, while reserving right-of-way and completing grading for future expansion to four lanes. In 2024, KYTC determined it would be beneficial to strategically reassess the long-term approach for improving US 60



**Figure 1. Study Location within KYTC District 1**

using modern safety data analysis and design techniques. In addition, with a limited amount of available funding, KYTC determined it would be worthwhile to also take a comprehensive examination at the heavily-traveled KY 286 / US 62 highway, which also runs between Wickliffe and Paducah. This study has been initiated to guide decision-making regarding which route(s) to focus improvement efforts – US 60, KY 286, or portions of both. The product of the study will be a list of recommendations, strategically prioritized based on data-driven needs and stakeholder feedback. This study is funded with Federal State Planning & Research (SPR) funds.

### 1.1 STUDY AREA

KYTC has steadily advanced the westward reconstruction of US 60 between Paducah and Wickliffe. The typical reconstructed section includes four travel lanes, a depressed median, and wide shoulders. To date, most of the reconstructed sections have followed a new alignment, separate from the existing US 60 corridor.

**Figure 2** shows the study area, outlined in blue, along the unimproved sections of each corridor. For US 60, the study area begins at milepoint (MP) 0.000 at the intersection of US 51 in Wickliffe in Ballard County. It heads northeast until MP 14.490 west of Kevil. For the KY 286 / US 62 corridor, it begins at MP 0.000 at the intersection of KY 121 in Wickliffe in Ballard County, heads eastward, joins US 62, and ends at US 62 MP 7.848 in McCracken County.

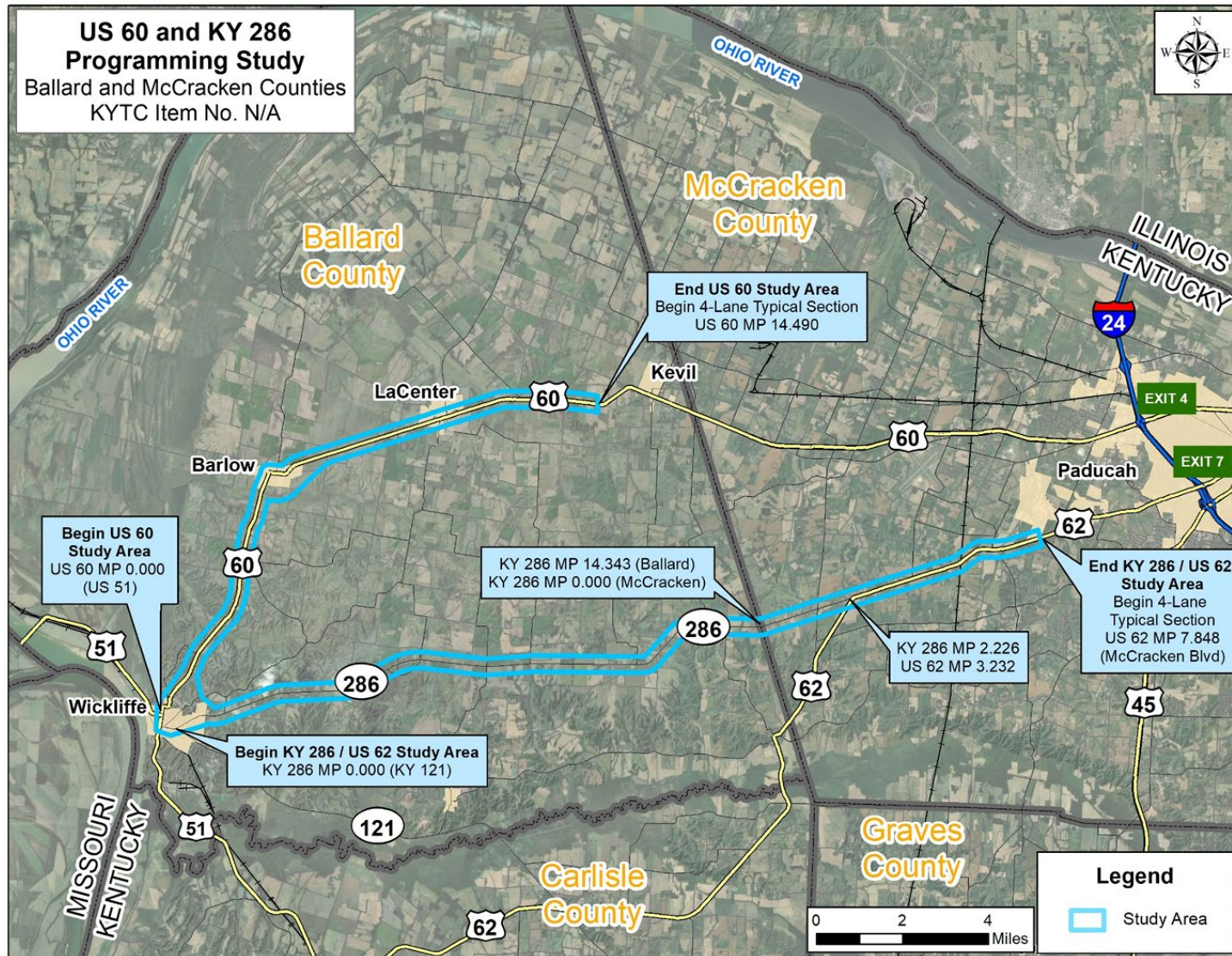


Figure 2: Study Area

## 1.2 PLANNED AND COMMITTED PROJECTS

Multiple active, planned, and committed transportation projects are located along the two study corridors. **Figure 3** illustrates the geographic distribution of these projects as identified in the [Kentucky's FY 2024–2030 Enacted Highway Plan](#). Projects highlighted in green represent those with a programmed phase within FY 2024 or the first (funded) biennium of the plan, indicating secured funding and a higher likelihood of near-term implementation. In contrast, projects shown in gray fall outside the current biennium and therefore lack confirmed funding. Their advancement will depend on future revisions to the Highway Plan, anticipated in 2026.

- **Item No. 1-115.10** – Improve US 60 from KY 1154 to Bethel Church Road. (C = \$3 million (2025)). This project is currently under construction.
- **Item No. 1-115.00** – Improve US 60 from Bethel Church Road to Stafford Road. (C = \$10 million (2024)). This project is currently under construction.
- **Item No. 1-118.00** – Improve US 60 from Humphrey Creek Bridge to 0.4 miles west of Hester Sullivan Lane. (U = \$10 million (2025), C = \$9.5 million (2027)). This project is currently in the right-of-way phase and has been paused until the completion of the US 60 & KY 286 Programming Study.
- **Item No. 1-1140.00** – Replace the US 51 Ohio River bridge and roadway approaches. This bridge serves as a significant connection to Cairo, Illinois an I-57. (C = \$12.6 million (2024)).
- **Item No. 1-80300.00** – Address condition, safety, congestion, and future capacity issues on US 60 through the City of LaCenter. (D = \$1.5 million (2025), R = \$2.75 million (2027), U = \$1.5 million (2027), C = \$27.84 million (2029)). This project's initiation was paused until the US 60 & KY 286 Programming Study is completed.
- **Item No. 1-80301.00** – Address condition, safety, congestion, and future capacity on US 60 from proposed Barlow Eastern Bypass to proposed LaCenter Southern Bypass. (D = \$2 million (2025), R = \$2.5 million (2027), U = \$3.25 million (2027), C = \$12 million (2029)).
- **Item No. 1-80321.00** - Address condition, safety, and congestion issues on US 60 through the City of Barlow. (P = \$250,000 (2027), D = \$1.5 million (2028), R = \$2.5 million (2029), U = \$1.05 million (2029), C = \$8.4 million (2030)).
- **Item No. 1-80322.00** - Improve geometric deficiencies, freight truck mobility, and improve safety on KY 286 from Hershel Jones Road to KY 473. (D = \$750,000 (2028), R = \$1 million (2029), U = \$500,000 (2029), C = \$2 million (2030)).

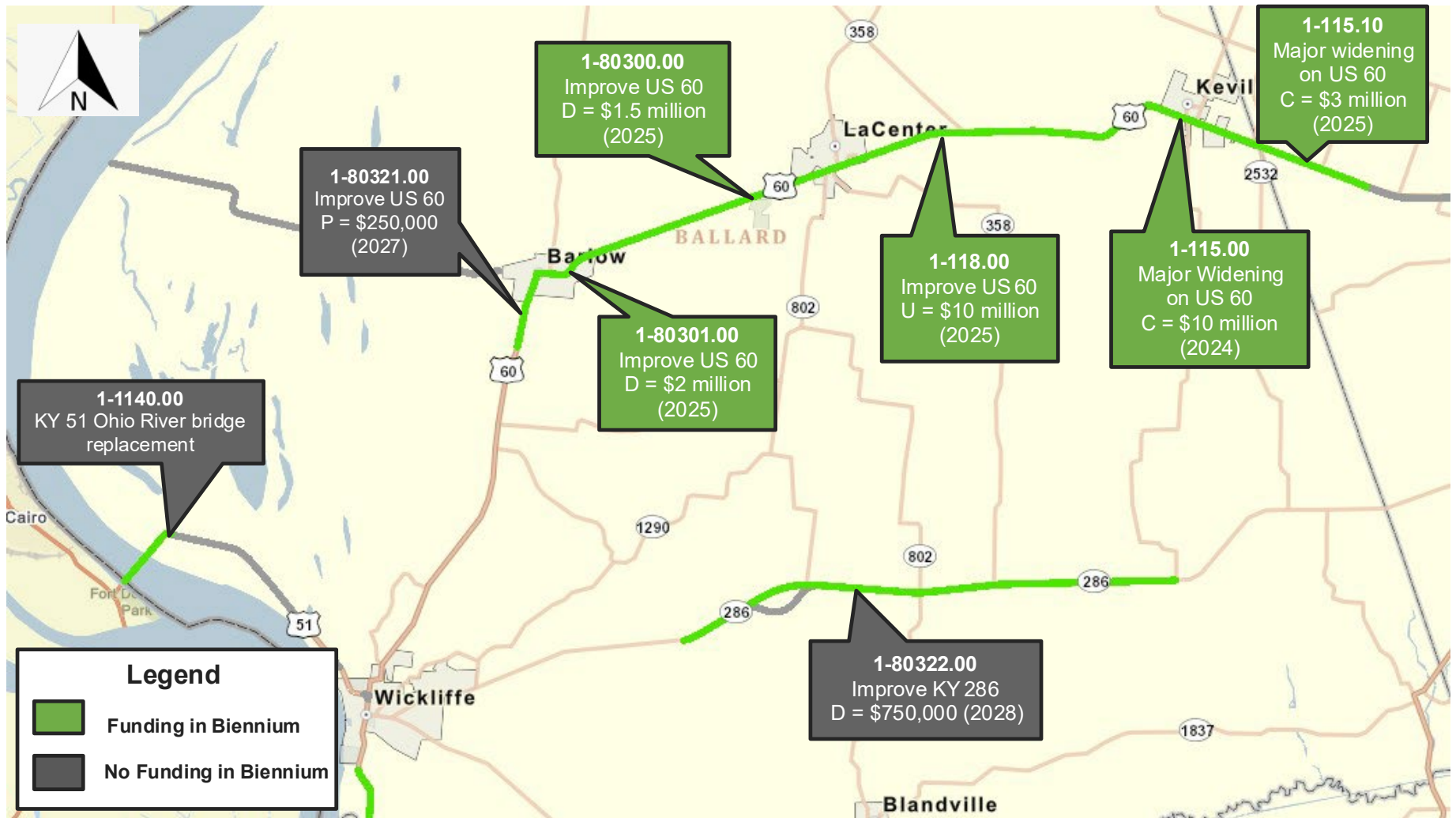


Figure 3: Planned and Committed Projects

## 2.0 EXISTING CONDITIONS

Conditions of the existing transportation network within the study area were examined and discussed in the following sections. The information compiled includes roadway characteristics, crash history, and traffic volumes within the study area. Data for this section was collected from KYTC's Highway Information System (HIS) database, KYTC's Traffic Count Reporting System, aerial photography, and field inspection.

### 2.1 FUNCTIONAL CLASSIFICATION

Functional classification is the process of grouping streets and highways according to the character of travel service they provide. US 60 is functionally classified as a rural principal arterial, providing a high level of mobility between urban areas. The adjacent land is mostly residential and farmland. It also passes through several small towns, including Kevil, LaCenter, and Barlow, where the land use becomes a rural town (residential and commercial), and access point density increases.

KY 286 and US 62 are functionally classified as rural minor arterials, serving trips of moderate length to smaller geographic areas with slightly lower mobility than principal arterials. Most of the land use is rural in nature with some access points to homes and farms. The sections at each end of the corridors in Wickliffe and Paducah contain more urban land uses and a higher access point density.

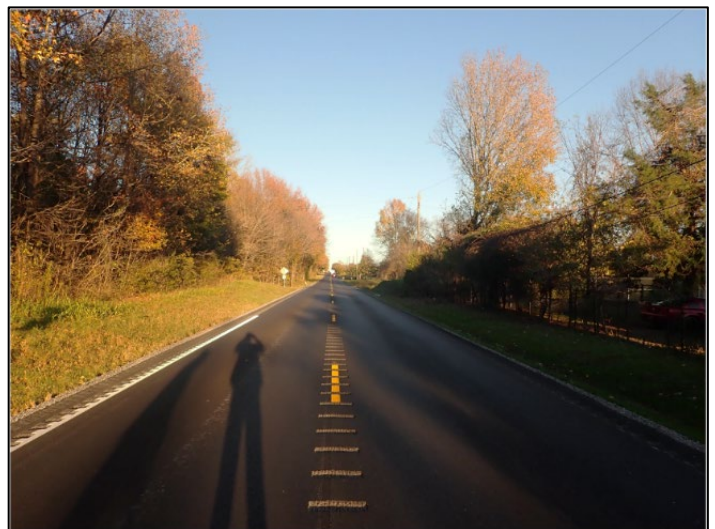
### 2.2 ROADWAY GEOMETRY

KYTC's HIS database was used to identify roadway geometry. The width of the roadway, number of lanes, curvature, grade, and superelevation were examined.

#### 2.2.1 Typical Section

Travel lanes on US 60 are generally 10 feet wide with two-foot shoulders between Wickliffe and LaCenter, as shown in **Figure 4** and **Figure 5**. Between LaCenter and Kevil, US 60 has 11-foot travel lanes with two-foot paved shoulders. There are no sidewalks with the exception of sections in Wickliffe and downtown Barlow.

Travel lanes on KY 286 are generally 10 feet wide with 18-inch-wide paved shoulders. There are no sidewalks with the exception of Court Street (KY 121) in Wickliffe.



**US 60 Between Wickliffe & Barlow**

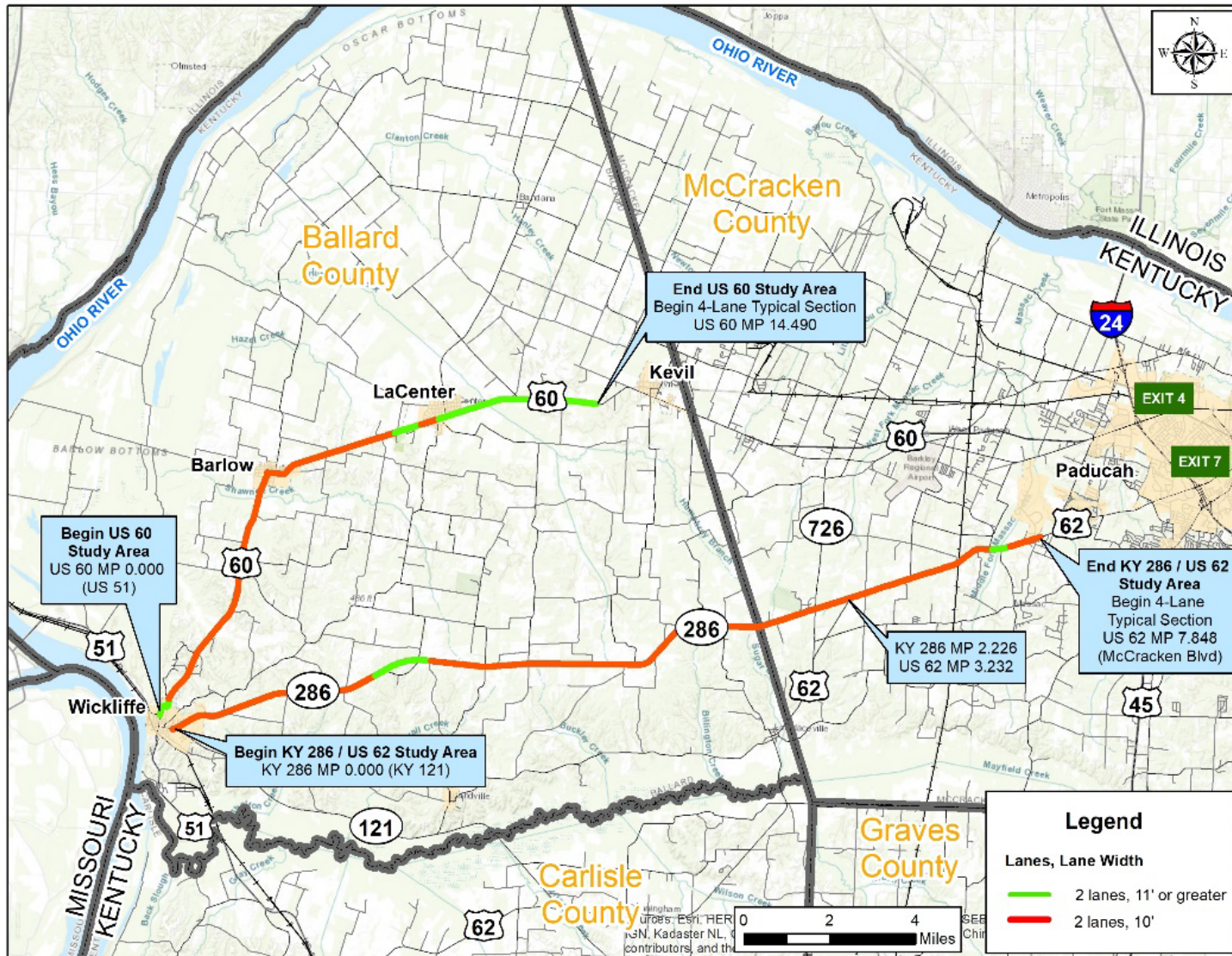


Figure 4: Lanes and Lane Widths

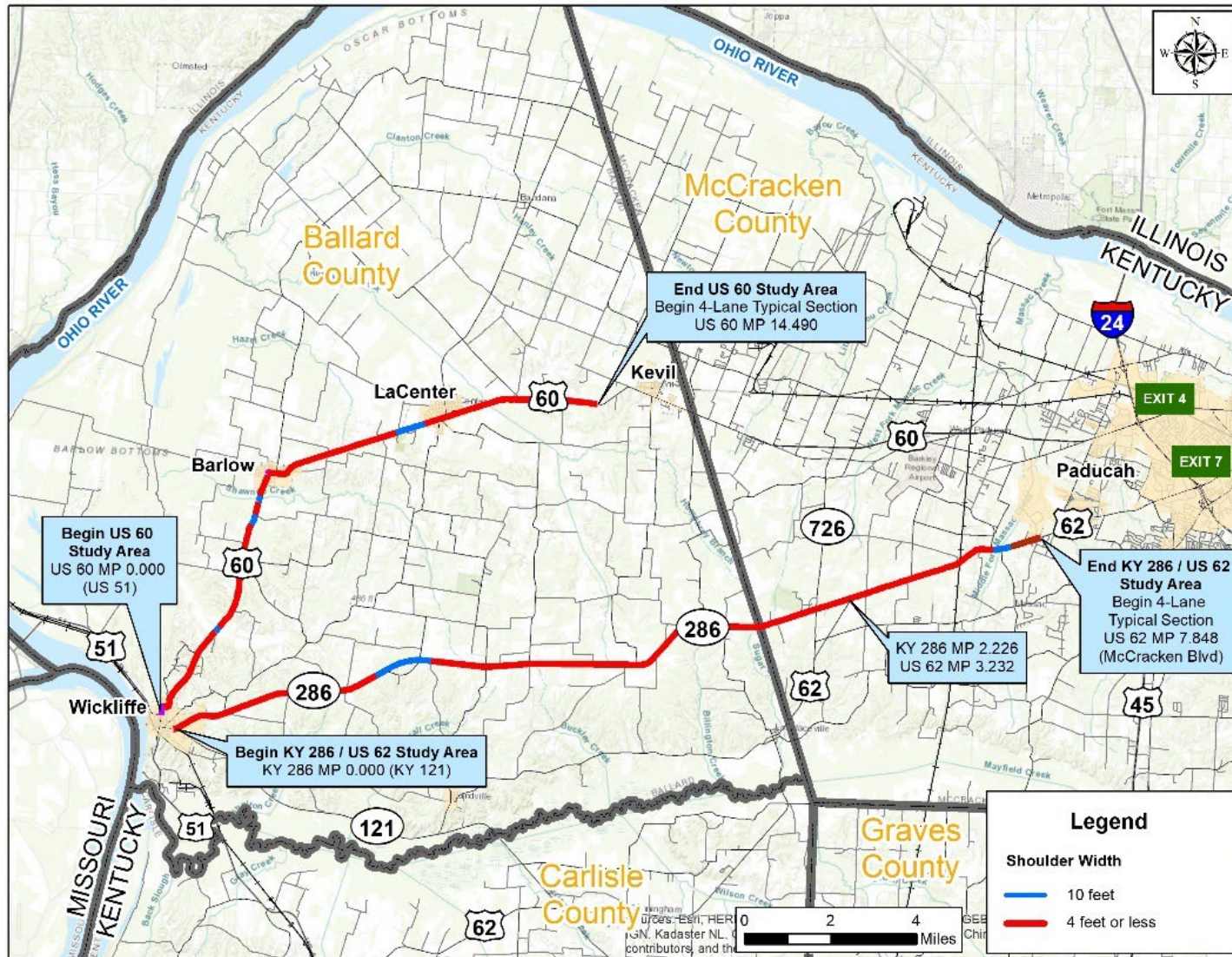


Figure 5: Shoulder Width

## 2.2.2 National Truck Network

US 60 is on the State-designated National Truck Network and is rated “AAA” on the Kentucky truck route classification, allowing total weights up to 80,000 pounds. Currently, about 410 semi-trucks (660 total trucks) per day use this route.

KY 286 is not on the National Truck Network but is rated “AAA” on the Kentucky truck route classification, allowing weights up to 80,000 pounds. Currently, about 340 semi-trucks (580 total trucks) per day use this route.

## 2.2.3 Horizontal Curvature & Grades

Most of the US 60 study corridor meets or exceeds a 55 mile per hour (mph) design speed for horizontal curvature, as shown in **Figure 6**. With the exception of one 45 mph curve north of Wickliffe, all lower speed curves are located within a more urban, lower-speed context.

KY 286 geometry also meets a 55-mph design speed with a lower speed curve in Wickliffe which has a 45-mph posted speed limit.

**Figure 7** presents the grades on US 60, KY 286, and US 62. Grades on US 60 are generally flat to mild (0 to 4.4 percent). Where grades are moderately steep (4.5 to 8.4 percent), the length tends to be only about a quarter to a third of a mile in length, having minimal effect on vehicle travel speeds. Where grades are considerably steep (greater than 8.5 percent), the length tends to be less than a quarter of a mile. These sections are mostly located near Wickliffe.

Grades are generally flat to mild (0 to 4.4 percent) through much of the KY 286 and US 62 corridors; however, there are moderately steep undulating grades, primarily in the first four miles near Wickliffe which can affect the travel speeds of trucks.

## 2.2.4 Passing Opportunities

Although there are no dedicated passing lanes on US 60, passing is allowed where there is a broken yellow center line, as shown in **Figure 8**. Fifty-five percent of the corridor has passing permitted striping, most tend to be short, not allowing enough distance for a driver to comfortably pass. Additionally, the narrow pavement width reduces the comfort level of many drivers to pass slower moving vehicles.

There are also no dedicated passing lanes on KY 286 and passing permitted striping is less frequent than on US 60. With less than 50 percent of the corridor marked to permit passing, the length of these passing zones tends to be short, not allowing enough distance for a driver to comfortably pass. Additionally, narrow pavement width and objects such as trees close to the roadway reduce the comfort level of many drivers to pass slower moving vehicles.

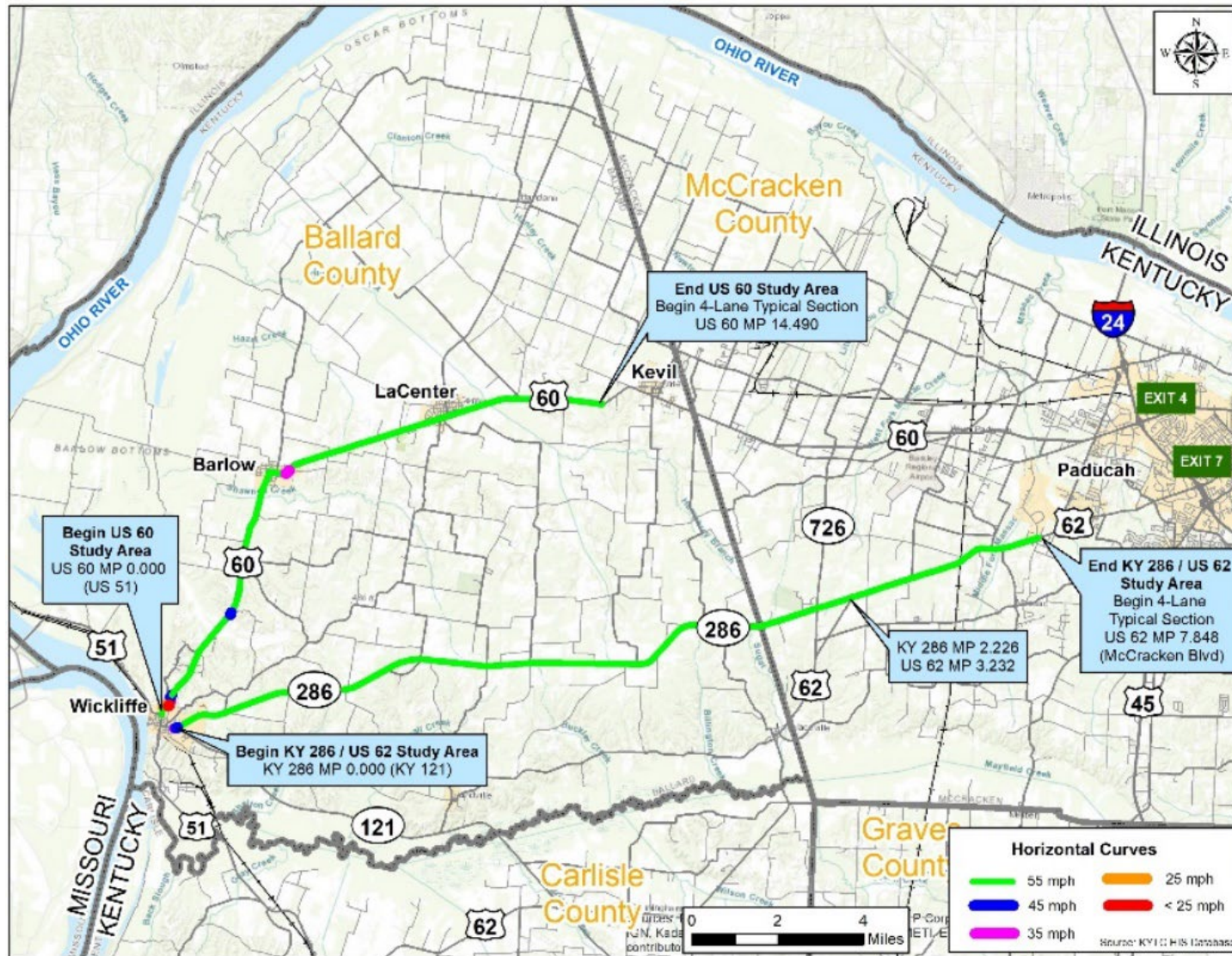


Figure 6: Horizontal Curvature

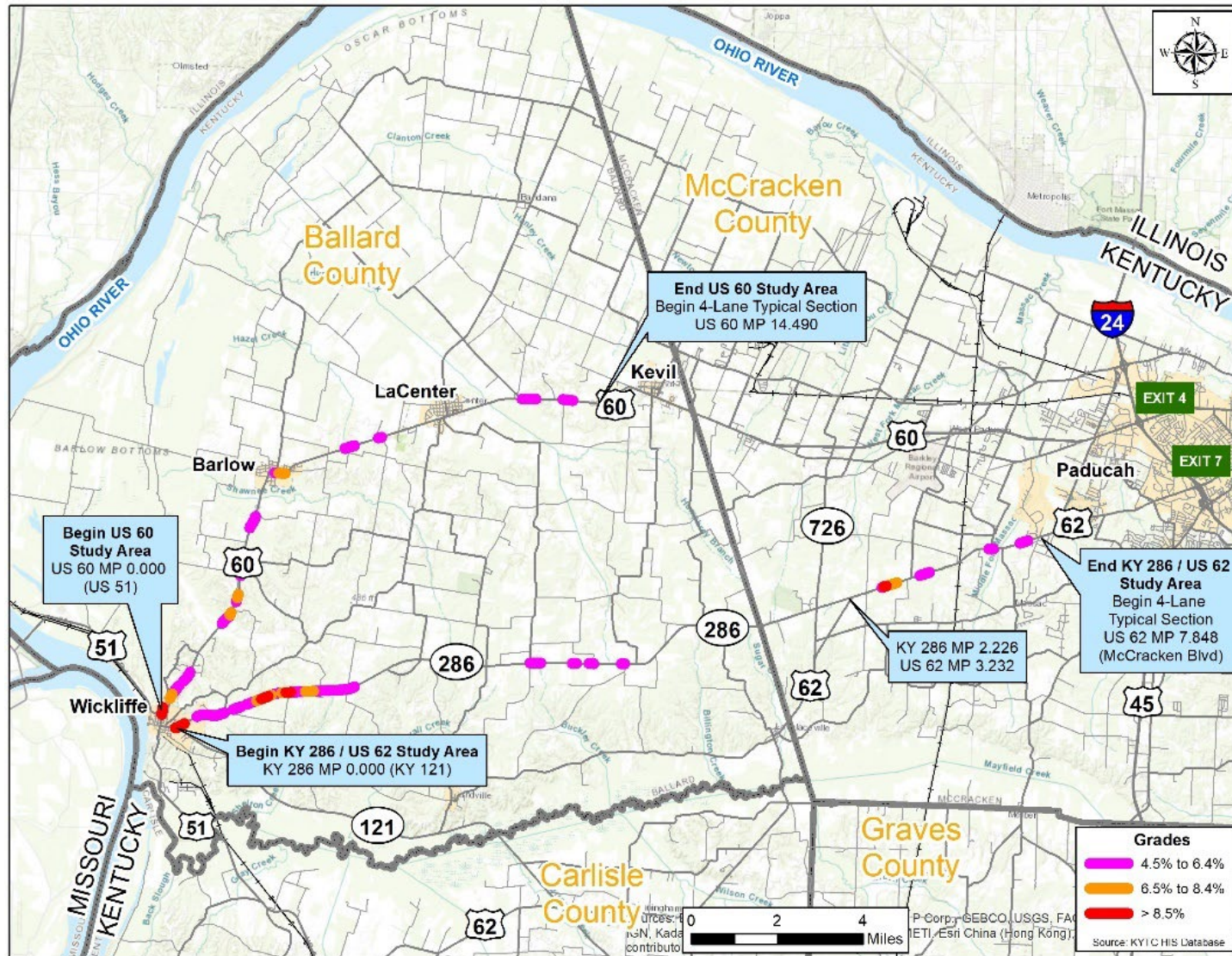


Figure 7: Grades

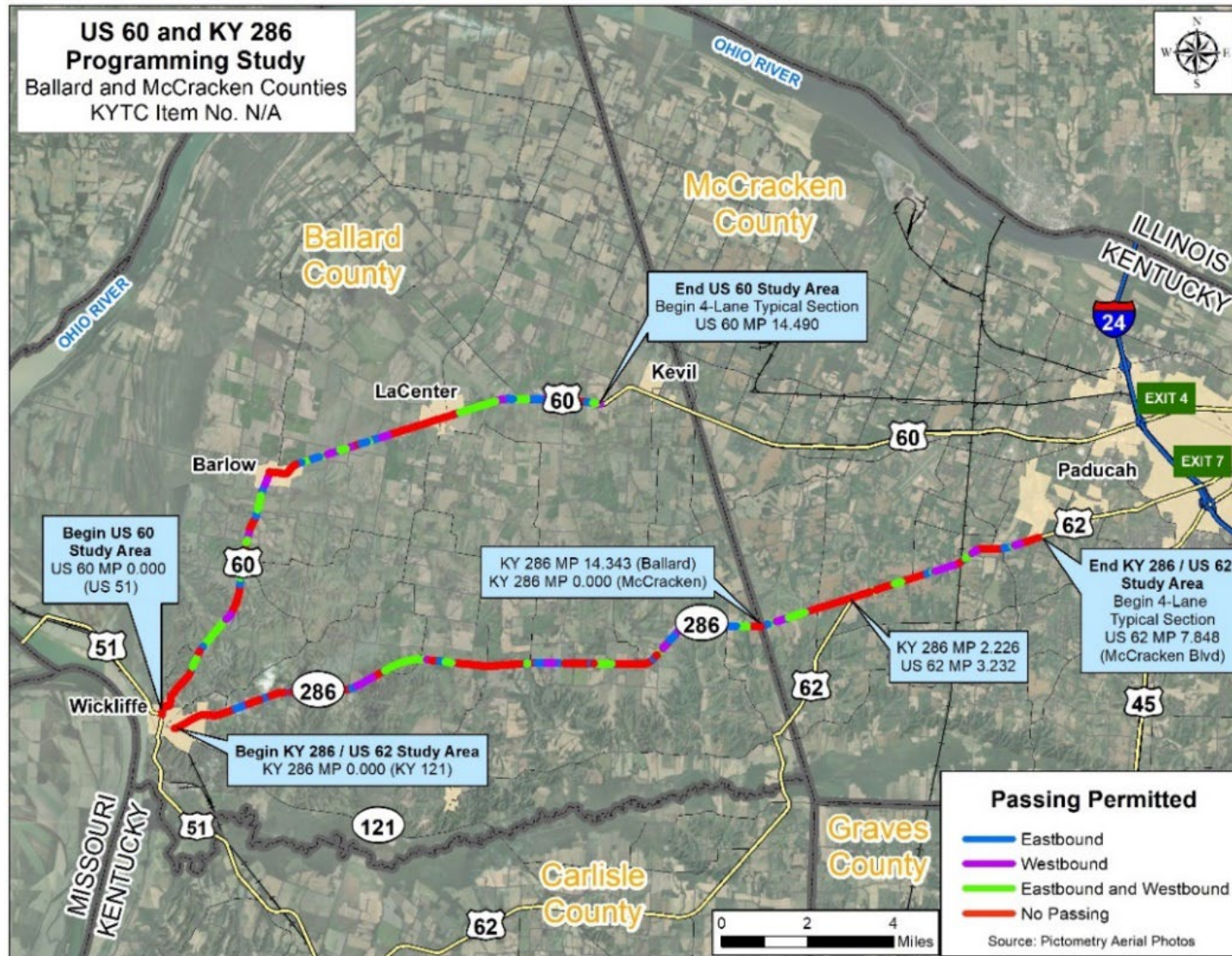


Figure 8: Passing Zones

## **2.3 SPEED LIMIT**

Most of the US 60 study corridor has a posted speed limit of 55 mph, with the exception of small sections in Wickliffe, Barlow, LaCenter, and Kevil. Within those towns, the posted speed limit is between 25 mph and 45 mph due to adjacent urban land uses and frequent intersecting roads and access points. The posted speed limit on KY 286 is 55 mph, with the exception of a small section in Wickliffe, which is signed at 35 mph.

Based on a review of 2022 – 2023 Streetlight data, the National Performance Management Research Data Set (NPMRDS), and a Speed Study conducted by KYTC District 1, average vehicles speeds on US 60 are less than the 55-mph posted speed limit as shown in **Figure 9**. On KY 286 in Ballard County, however, average speeds are closer to 60 mph. Closer to Wickliffe and the US 62 intersection, average speeds decrease to between 40 mph and 50 mph on KY 286.

## **2.4 EXISTING TRAFFIC ANALYSIS**

Traffic volumes and truck percentages vary across the study corridors, as shown in **Figure 10**. US 60 experiences a steady increase in Annual Average Daily Traffic (AADT) from west to east. The segment between Wickliffe and Barlow carries approximately 3,200 vehicles per day (VPD), with trucks comprising 23 percent of the traffic (approximately 740 trucks). As the corridor progresses eastward, volumes increase to 4,300 VPD between Barlow and LaCenter and 5,500 VPD between LaCenter and Kevil, both with a lower truck share of around 12 percent. East of Kevil, outside the study area, traffic volumes peak at 7,500 VPD, maintaining a 12 percent truck composition.

Between Wickliffe and US 62, KY 286 carries 3,400 VPD, with trucks making up 17 percent (approximately 580 trucks). US 62, from KY 286 to its four-lane section, carries about 6,900 VPD with a ten percent truck share (approximately 690 trucks). East of the study area, US 62 reaches its highest volume at 11,000 VPD; however, the truck percentage drops to 8 percent (approximately 880 trucks).

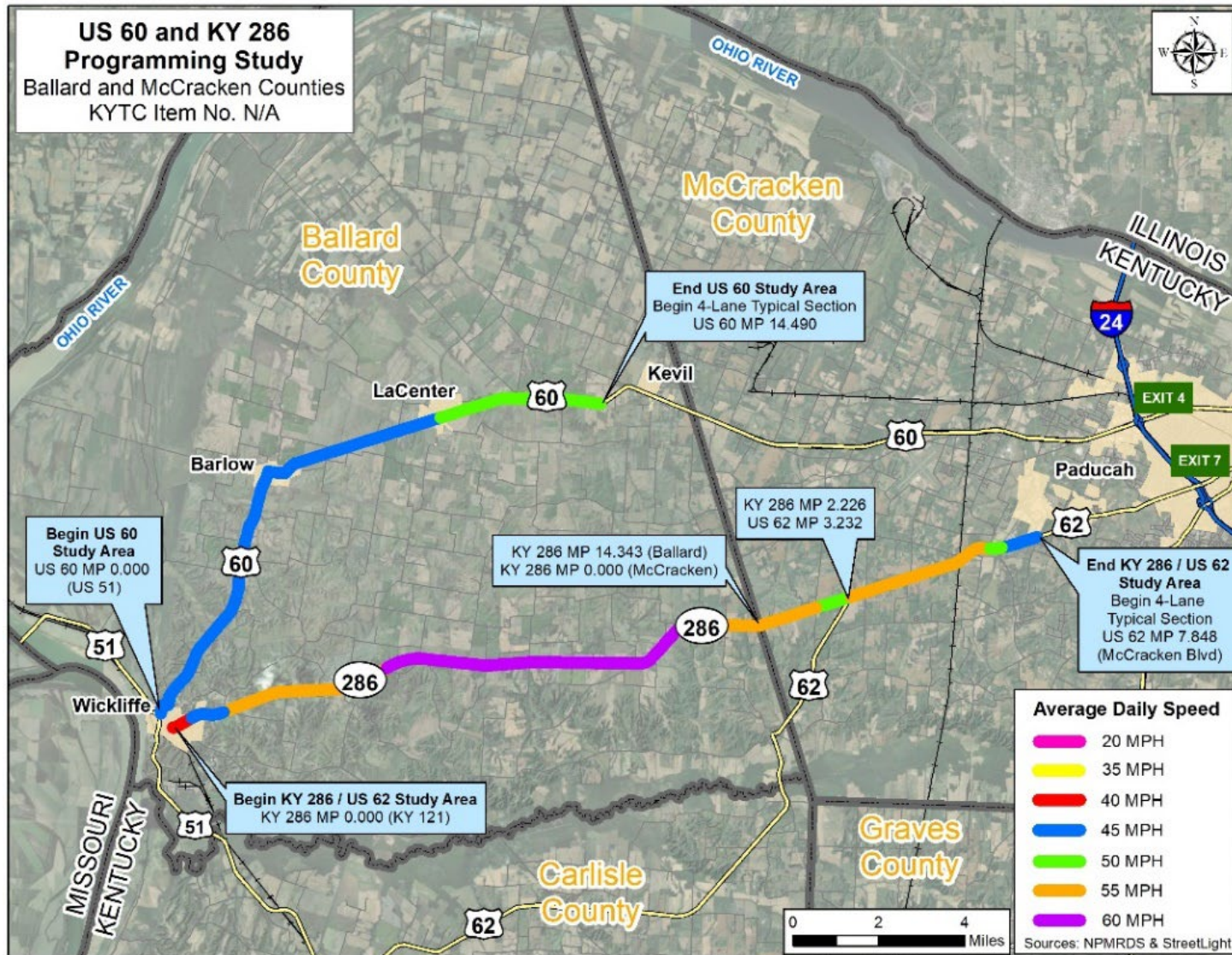


Figure 9: Average Daily Speeds

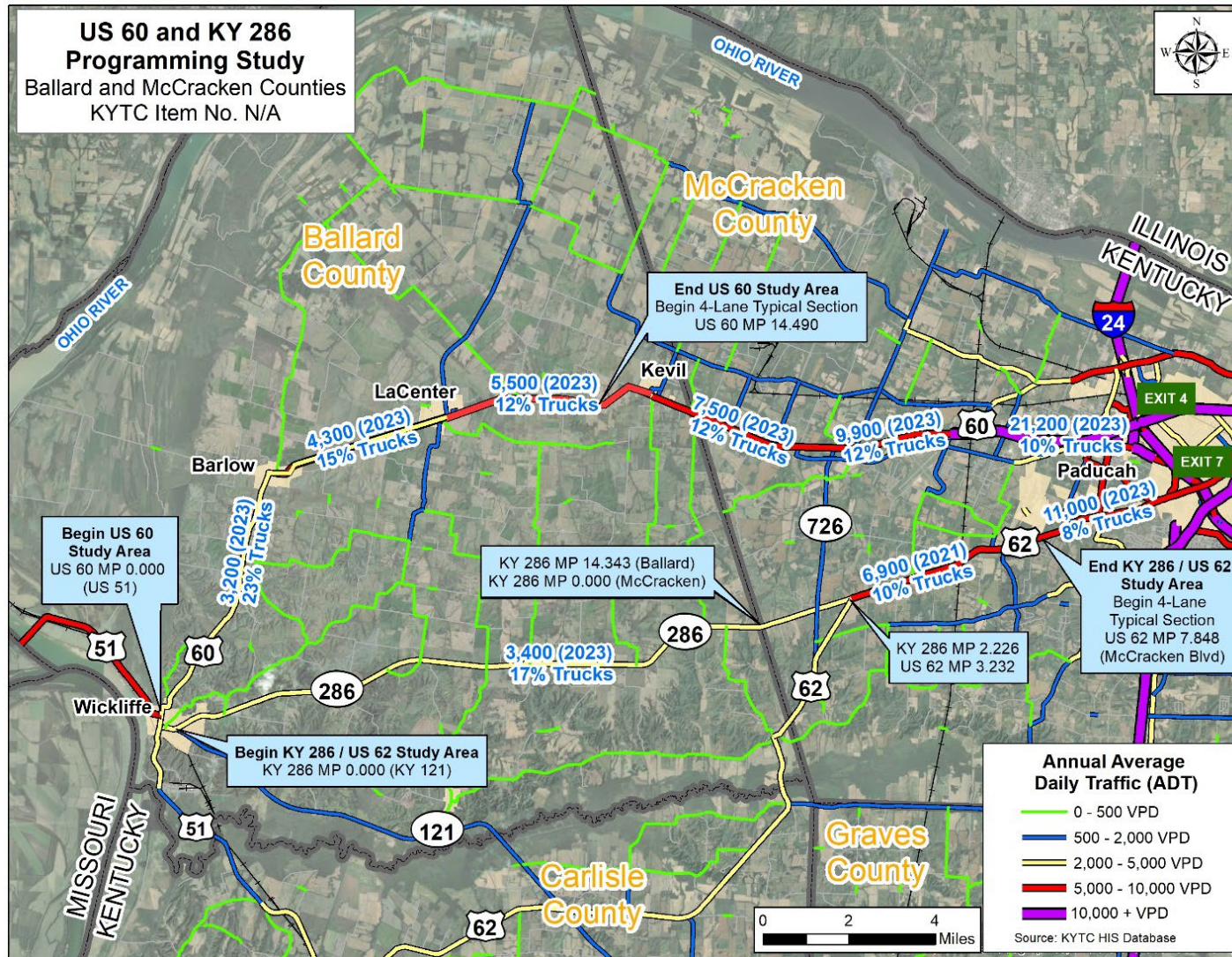


Figure 10: Annual Average Daily Traffic (AADT)

### 2.4.1 Existing Highway Capacity Software Analysis

Turning movement counts were collected at five intersections along the study corridors. The counts included the peak hours in the morning (6 a.m. to 9 a.m.) and afternoon (3 p.m. to 6 p.m.). Counts were collected at the following intersections:

- US 60 & US 51
- US 60 (4<sup>th</sup> Street & Broadway Street) in Barlow
- US 60 & Olive Street in LaCenter
- KY 286 & KY 121
- KY 286 & US 62

These counts were used to conduct an existing peak hour Highway Capacity Software (HCS) traffic analysis for US 60, KY 286, and US 62 segments and intersections. Level of service (LOS), a qualitative measure describing operational conditions, was used to evaluate the adequacy of the existing roadway. In rural areas, LOS C or better is desirable and in urban areas, LOS D or better is desirable. Results from the analysis are shown in **Figure 11** and **Figure 12**. While volume-to-capacity (V/C) ratios do not currently exceed 0.37, several segments operate at LOS D during the PM peak due to steep grades and lack of passing opportunities.

### 2.4.2 Streetlight Origin-Destination Analysis

Streetlight origin-destination data was analyzed to understand travel patterns between Wickliffe and Paducah along the two study corridors. When examining through trips, or trips that span the entire distance between these two cities, approximately 80 percent of all vehicles utilize the KY 286 corridor. KY 286 is the shorter route, and there are fewer destinations on KY 286, making through trips more common. Of the trips traveling to Paducah, nearly 75 percent continue eastbound on I-24.

A Streetlight origin-destination analysis was also performed for truck through trips. Results from the analysis showed that truck through trips are more likely to use US 60 than KY 286.

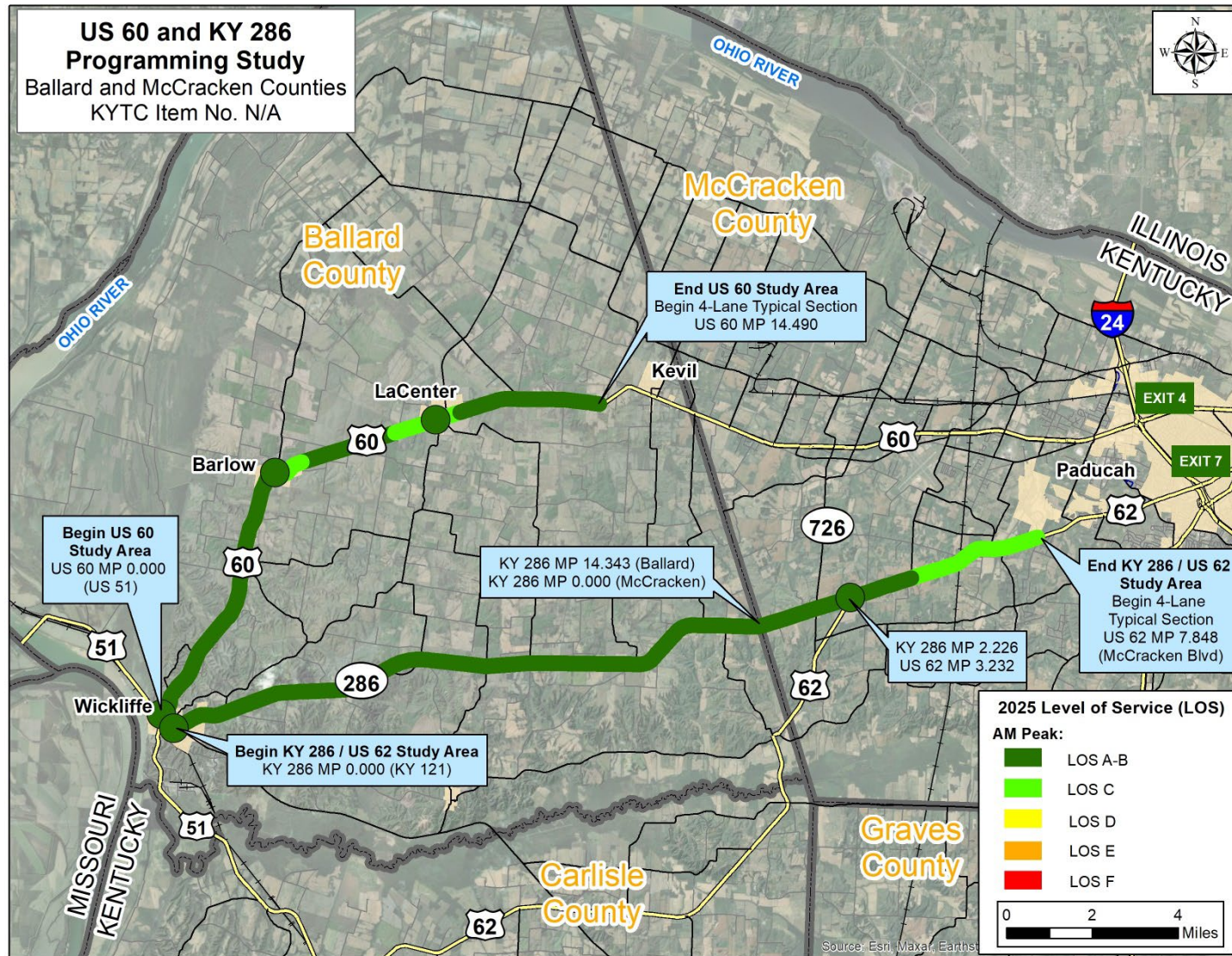


Figure 11: Existing AM Peak Traffic Analysis

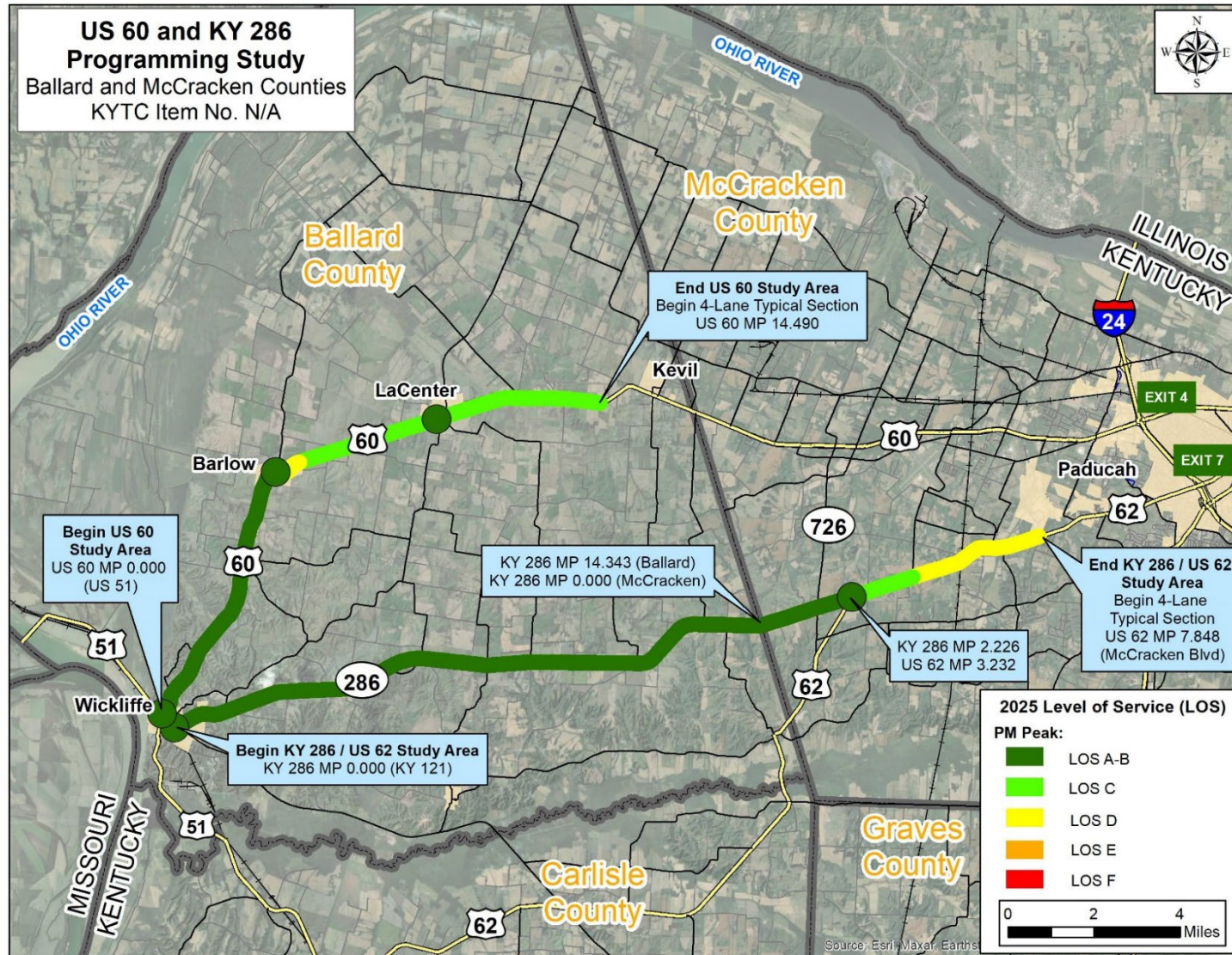


Figure 12: Existing PM Peak Traffic Analysis

### 2.4.3 Travel Time Comparison

Travel time analyses were conducted for two key origin points along I-24, west of Exit 4 and east of Exit 7, to evaluate the efficiency of travel via US 60 and KY 286 to US 51 in Wickliffe. The results show that KY 286 consistently offers shorter distance and shorter travel times, as represented in **Table 1**.

The difference in travel time is largely attributed to lower speed limits along US 60, particularly through towns like LaCenter and Barlow, which reduce average travel speeds. In contrast, KY 286 maintains more consistent speed limits and fewer urban slowdowns. As a result, GPS navigation systems often favor KY 286 for its faster travel times, reinforcing its role as the preferred corridor for through traffic.

**Table 1: Travel Time Comparison**

Beginning Point	End Point	Route	Distance	Travel Time
I-24 Between Exit 4 & Exit 7	US 51 in Wickliffe	US 60	28 miles	36 minutes
		KY 286 & US 62	26 miles	30 minutes

## 2.5 CRASH HISTORY

Crash data for both US 60 and KY 286 were analyzed over a five-year period between 2019 and 2023, with detailed records available in **Appendix A**. A total of 420 crashes were reported across the two corridors over the five-year period.

KY 286 and US 62 experienced significantly more crashes, with 294 incidents over 21.2 miles resulting in a crash density of 13.9 crashes per mile. In comparison, US 60 recorded 126 crashes over 14.5 miles, yielding a crash density of 8.7 crashes per mile. KY 286 and US 62 experienced a nearly 60 percent higher crash density than US 60.

**Table 2** illustrates the crash severity and density along each route. The KABCO crash scale was used to classify the severity of injuries resulting from the crashes.

- K – Fatal Injury,
- A – Suspected Serious Injury,
- B – Suspected Minor Injury,
- C – Possible Injury,
- O – No apparent Injury.

**Table 2: Crash Summary**

Route	Corridor Length	Total Crashes	Crashes per Mile	K (% of total)	ABC (% of total)	O (% of total)
<b>US 60</b>	14.5 miles	126	8.7	2 (2%)	27 (21%)	97 (77%)
<b>KY 286 and US 62</b>	21.2 miles	294	13.9	8 (3%)	84 (29%)	202 (69%)

**Figure 13** presents a map of the fatal and injury collisions reported over the five-year period. US 60 had a lower proportion of fatal and injury crashes, with two percent classified as fatal and 21 percent involving injuries. The majority (77 percent) were property damage only (PDO) crashes. On KY 286, three percent of crashes resulted in a fatality and 29 percent resulted in one or more injuries, indicating a higher rate of severe incidents. The lower severity on US 60 may be influenced by reduced travel speeds in urbanized segments such as LaCenter and Barlow, where PDO crashes are more common.

The most common crash type on both routes was single vehicle. These crashes are generally dispersed along both corridors without defined hotspots. Of the 55 single vehicle crashes on US 60, only 20 percent resulted in an injury or fatality, compared to 30 percent of the 137 single-vehicle crashes on KY 286. Contributing factors likely include narrow pavement widths and limited clear zone recovery areas combined with high speeds.

A total of 93 head-on and sideswipe collisions were recorded along the study corridors between 2019 and 2023, as shown in **Figure 14**. The narrow pavement width is likely a contributing factor to these crash types, particularly in areas with limited shoulder space and minimal separation between opposing traffic flows. Of the 93 crashes, 28 resulted in injury or fatality. Notably, six of the head-on collisions resulted in a fatality, all of which were on KY 286.

The Kentucky Transportation Center's (KTC) Crash Data Analysis Tool (CDAT) was used to conduct an Excess Expected Crashes (EEC) analysis. EEC measures crash frequency at a site compared to the expected number of crashes on a similar roadway with comparable characteristics (geometrics, traffic volumes, etc.). A positive EEC indicates more crashes are occurring than expected.

Although there were 420 total crashes, the EEC was positive for only three sections, as represented in **Figure 15**. The section of US 60 north of KY 51, KY 286 west of LaCenter Road, and US 62 east of the KY 286 intersection had positive EECs, indicating more crashes occurred than expected. The fatal and severe injury (KAB) EEC was highest on KY 286 in McCracken County at 0.5 crashes per year. This indicates that more fatal and severe injury collisions occurred on this section than anticipated.

Passing opportunities are limited and the length of most are fairly short. Shown in **Figure 16**, when comparing the density of crashes with locations where there is not a passing opportunity, there appears to be a correlation, as the density of crashes increases in the no passing zone segments.

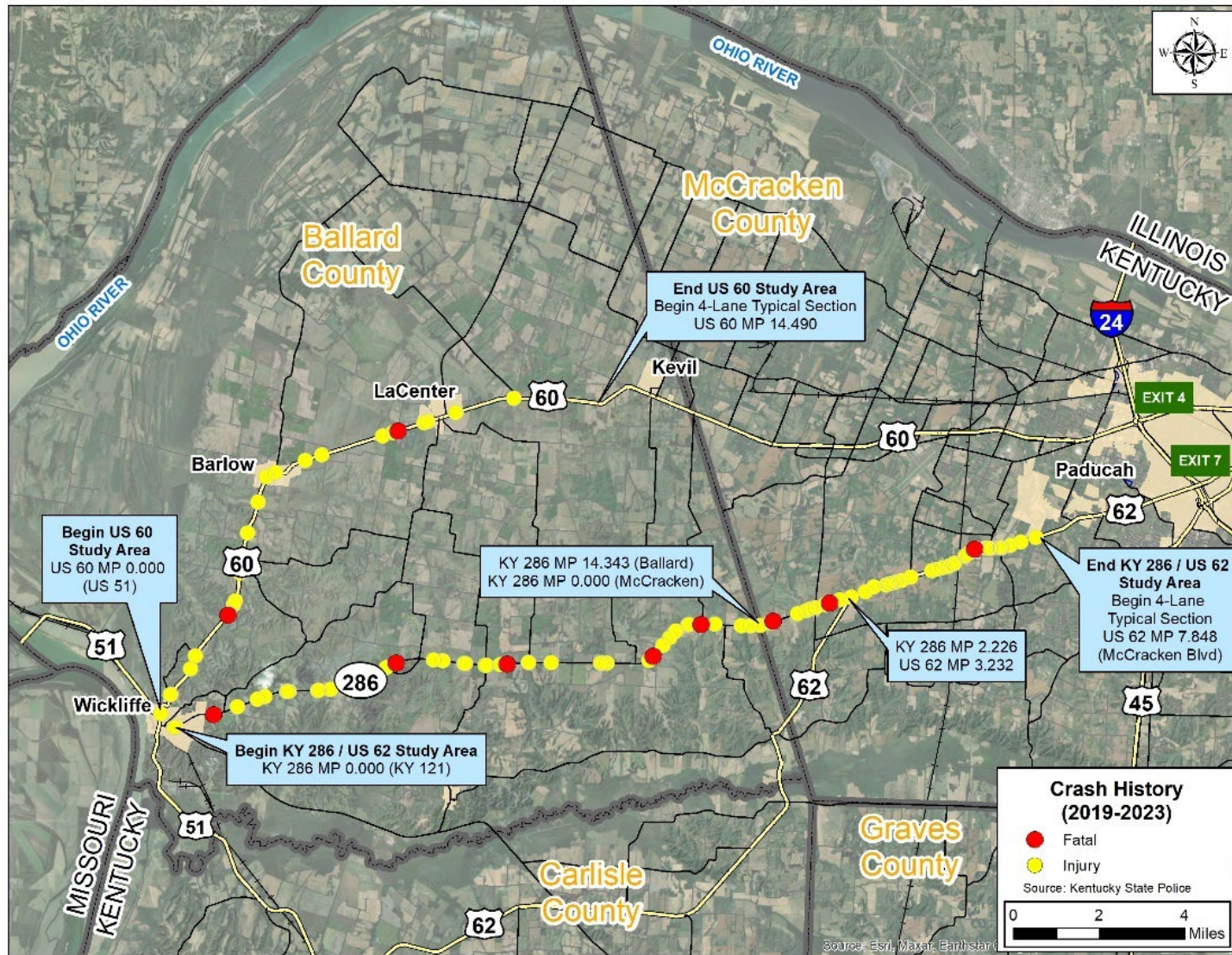


Figure 13: Fatal and Injury Collisions

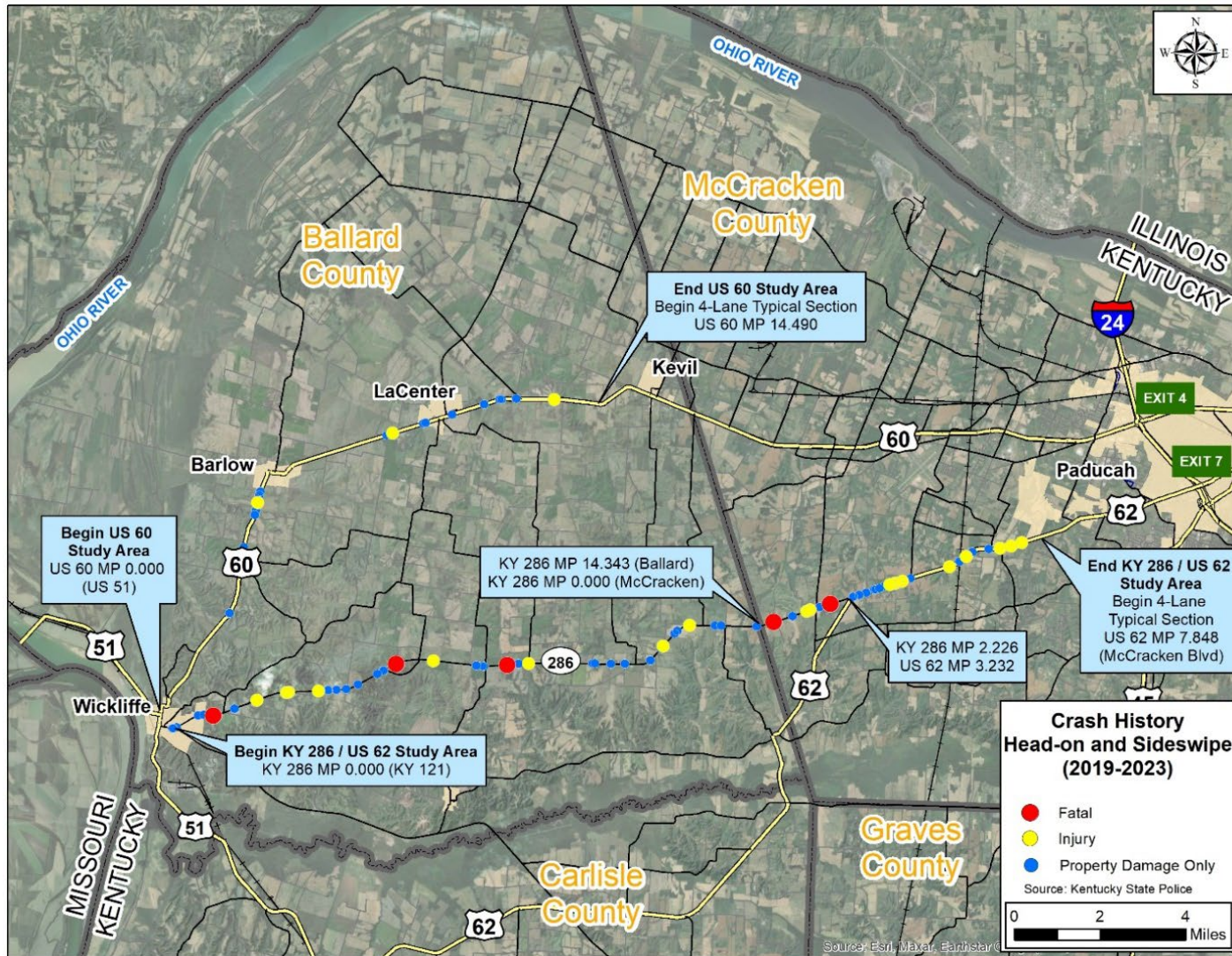


Figure 14: Head-On and Sideswipe Collisions

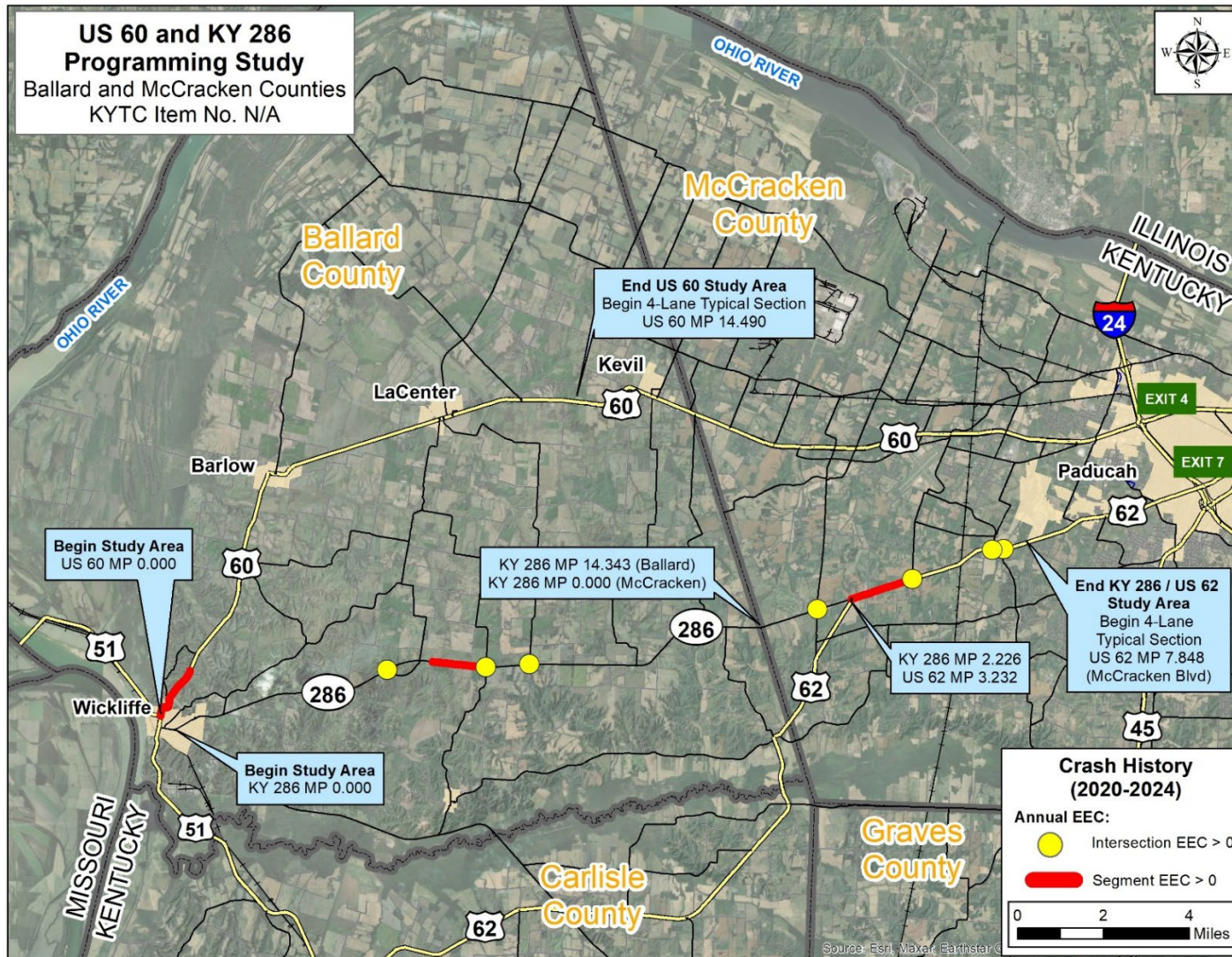


Figure 15: Excess Expected Crash (EEC)

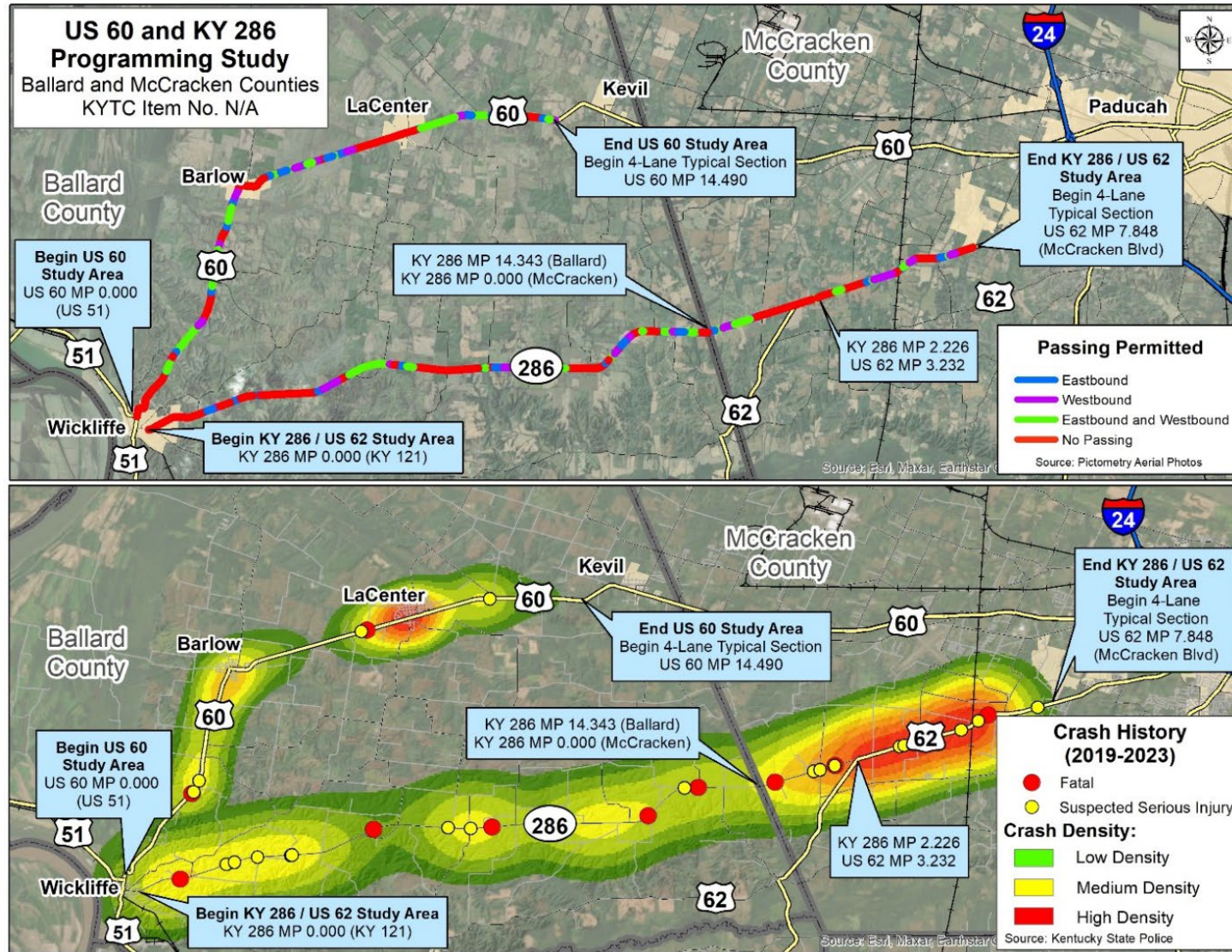


Figure 16: Passing Zones and Crash History

## 3.0 ENVIRONMENTAL OVERVIEW

An Environmental Overview (EO) was conducted to identify significant environmental resources, and potential jurisdictional features that should be considered during the development of improvement concepts within the study area. Understanding the location of these resources will help planners and designers create concepts that avoid or minimize impacts to sensitive areas. The EO study area consisted of 500 feet to each side of both study corridors. The complete EO document, including maps and analysis, is provided in **Appendix B**.

### 3.1 NATURAL ENVIRONMENT

**Water Resources:** There were 243 National Wetland Inventory (NWI) features (177 acres) and 351 streams (perennial, intermittent, and other) mapped within the study area. No federal or state outstanding water resources occur. A review of available groundwater data revealed 202 state-listed water wells occur within the study area, including 123 domestic wells, 52 monitoring wells, and nine agricultural wells. No springs and no wastewater treatment plant outfalls were identified. **Figure 17** presents the surface water resources in the study area around Wickliffe. A series of maps showing the water resources in the rest of the study area is shown in **Appendix B**.

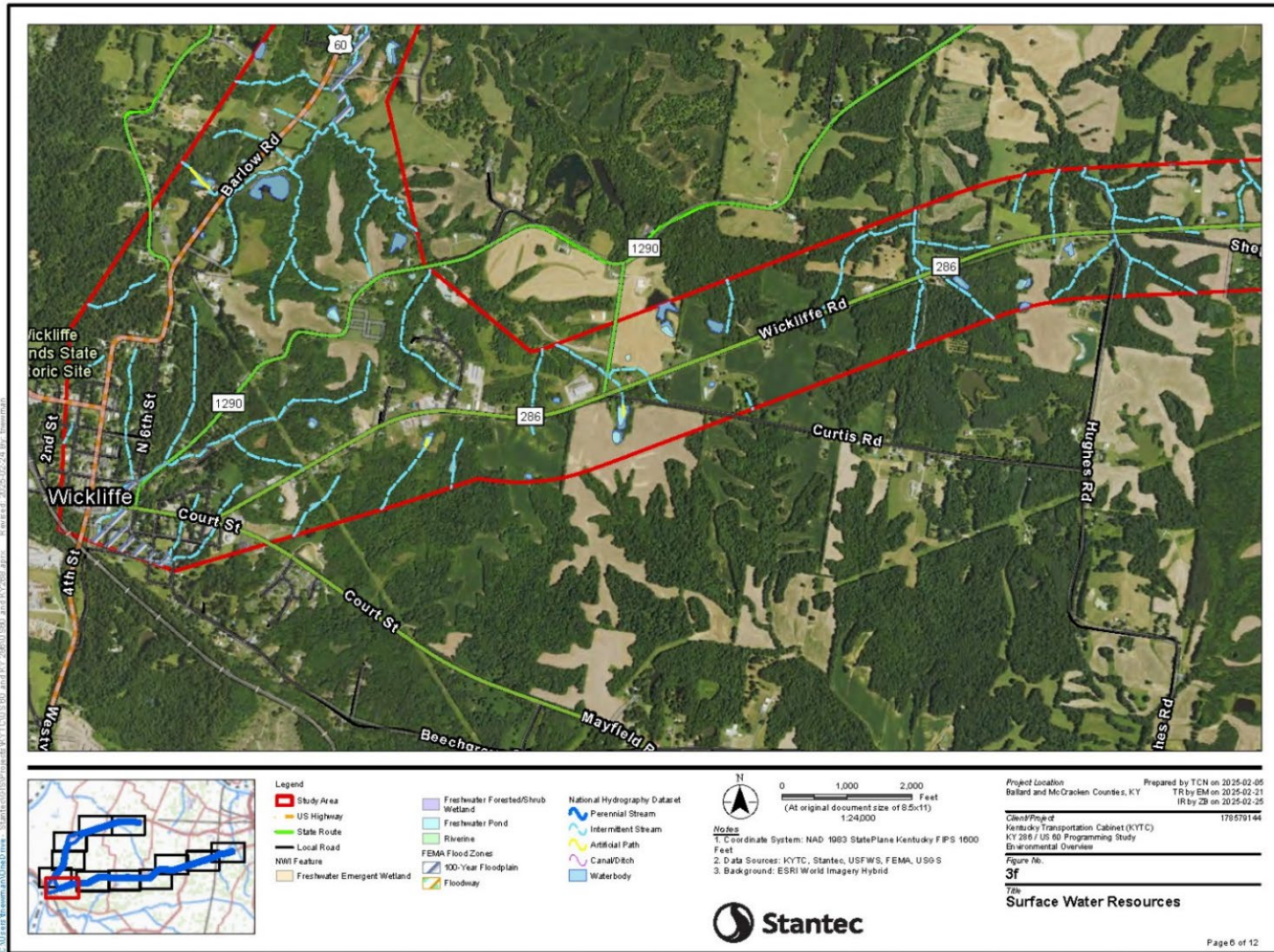
**Floodplains:** Approximately 525 acres in the study area are within a designated 100-year floodplain, with 23 acres within the FEMA floodway.

**Karst:** The study area is underlain by bedrock and has little to no potential for karst. No sinkholes or caves were identified within the study area.

**Endangered and Threatened Species:** According to the United State Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) resource list, there are

- ten federally listed endangered species,
- one federally listed proposed endangered species,
- two federally listed proposed threatened species, and
- one federally listed experimental population species.

Each of these have the potential to occur within the study area. No specific locations were identified at this time. They will be identified and studied in more detail when a project advances to a preliminary design phase.



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Figure 17: Study Area Water Resources (Wickliffe)

**Section 4(f) and Section 6(f) Resources:** There are two Section 4(f) resources identified which have Wetland Reserve Program easements. One is located along US 60 south of Barlow and the other is located along US 60 north of the KY 1186 intersection. These have GAP 2 status, which means that they are managed for biodiversity and considered protected landscapes.

There are two sites considered a 6(f) protected resource that have received funding through the Land and Water Conservation Fund Act. They include the Ballard County Soccer Field/Family Site and the Wickliffe Community/Riverfront Park (two grants.)

## **3.2 HUMAN ENVIRONMENT**

An overview of the human environment in and around the study area can be found in **Appendix B. Figure 18** presents a map of the human resources in the study area near Wickliffe.

**Historic Properties:** Based on a review of State Historic Preservation Office (SHPO) data, there are 87 previously recorded historic architectural properties within the study area. No data has been field checked as part of this study. From the available data, there are three properties that are listed in the National Register of Historic Places (NRHP). Three additional properties and one district (containing eight individual properties) have been recommended for listing in the NRHP.

**Cultural Archaeological Resources:** Records indicate 22 previous archaeological surveys covering only 5 percent (478 acres) of the study area. Three sites were identified; however, all were recommended to be not eligible for the NRHP. No additional study was conducted as part of this study.

**Prime Farmland:** Prime farmland is defined as land that contains the best attributes for producing food with nutrient rich soil producing high yields. Approximately 66 percent of the study area has a farmland designation because it contains soils of statewide importance or prime farmland soils. These locations are consistently located throughout the entire study area.

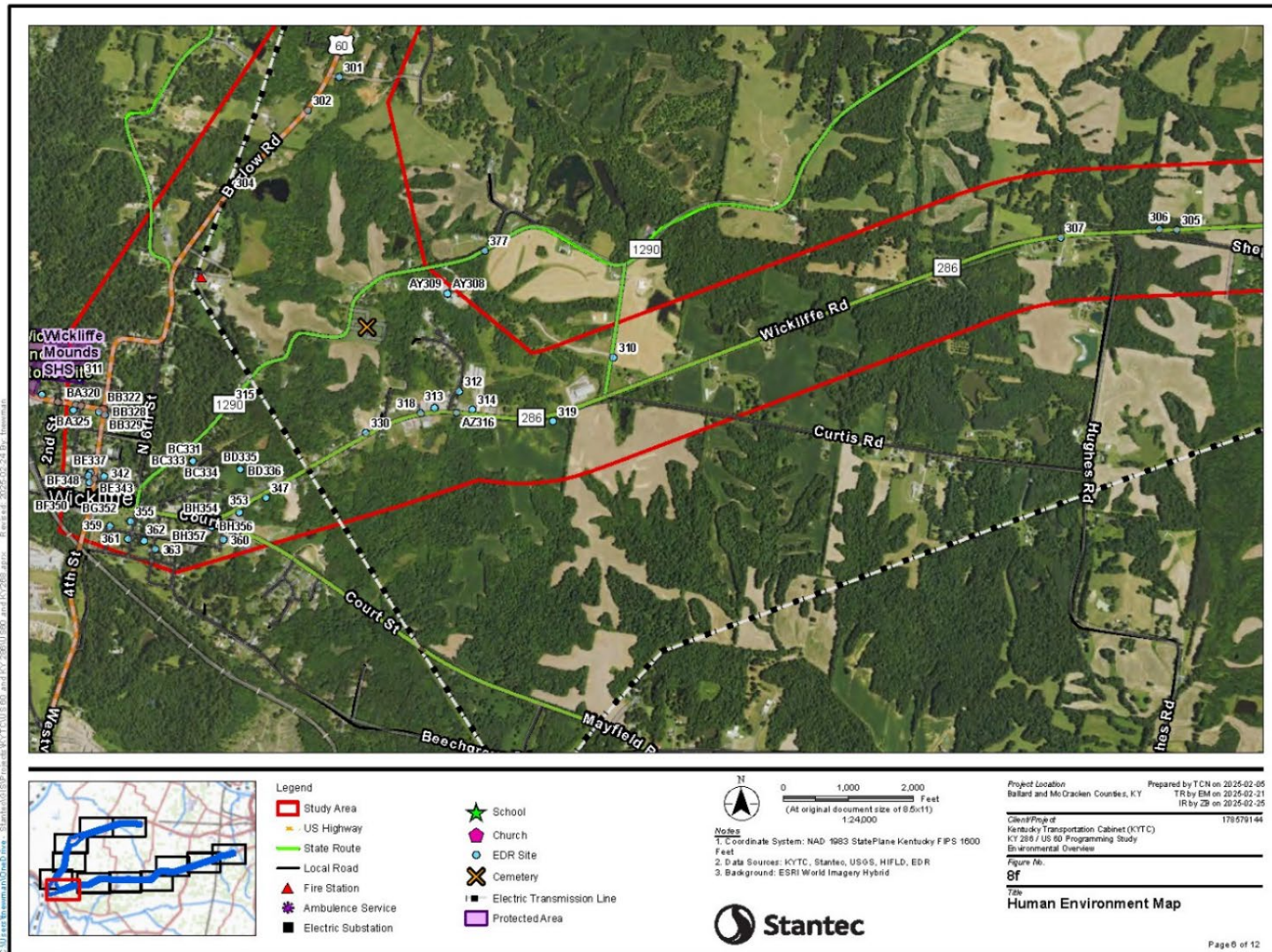
**Air Quality and Noise:** The study area is located in Attainment/Unclassifiable Areas for ozone and particulate matter (PM 2.5) standards.

Community resources and sensitive noise receptors in the study area include three schools, four houses of worship, and numerous houses and residential neighborhoods.

**Utilities:** There are 11 natural gas pipelines located within the study area. There are also ten overhead electric transmission lines and two electric substations.

**Oil & Gas Wells:** There are zero listed oil and gas wells reported within the study area.

**Cemeteries:** There are eight cemeteries that were identified within the study area using historic maps and other resources. Six are located along KY 286 and two along US 60.



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Figure 18: Human Environment (Wickliffe)

**Hazardous Materials:** The data search identified 117 sites. There are six active underground storage tanks and 30 locations where they are inactive. There are seven above ground storage tanks, seven historic auto sites, one historic landfill, and one brownfield site. Additional details and locations are included in the EO.

**Other Local Resources:** Maps in the EO show the locations of a host of community resources, including various businesses, radio stations, air navigation system, farms, jail, railroad, schools, and houses of worship.

### 3.3 SOCIOECONOMIC STUDY

A socioeconomic study was conducted by the Purchase Area Development District (PADD) to summarize the socioeconomic characteristics of the study area. The full study can be found in **Appendix C**. The information in this report outlines data from the 2019 – 2023 American Community Survey (ACS) statistics in the study area vicinity using tables, charts, and maps. The information is intended to aid KYTC in making informed and prudent transportation decisions in the study area. Statistics are provided for minority, poverty status, elderly, disabled populations, and limited English proficiency (LEP) for the nation, state, Ballard County, McCracken County, and 11 block groups within reasonable proximity of the study area, as shown in Table 3. Cells highlighted in blue indicate block groups with higher percentages than the county average. The locations of the block groups are shown in **Figure 19**.

**Table 3: Socioeconomic Summary**

Location	Total Population	Minority	Poverty	65 and Over	Disability	LEP
<b>United States</b>	<b>331,097,593</b>	<b>41.1%</b>	<b>12.5%</b>	<b>16.5%</b>	<b>15.4%</b>	<b>12.1%</b>
<b>Kentucky</b>	<b>4,502,935</b>	<b>16.8%</b>	<b>16.1%</b>	<b>17.0%</b>	<b>21.1%</b>	<b>3.4%</b>
<b>Ballard</b>	<b>7,742</b>	<b>9.2%</b>	<b>13.5%</b>	<b>22.0%</b>	<b>18.7%</b>	<b>1.0%</b>
CT 9501 BG 2	739	16.6%	17.7%	27.4%	20.3%	0.0%
CT 9501 BG 3	1,387	5.2%	14.0%	20.2%	22.0%	1.4%
CT 9501 BG 4	1,074	1.2%	1.4%	21.9%	10.7%	3.5%
CT 9502 BG 1	1,148	9.0%	18.1%	24.2%	15.7%	0.9%
CT 9503 BG 1	668	5.7%	10.5%	24.4%	17.2%	0.0%
CT 9503 BG 2	742	11.2%	8.2%	23.2%	13.0%	0.0%
CT 9503 BG 3	702	28.3%	30.5%	14.9%	31.8%	0.5%
<b>McCracken</b>	<b>67,584</b>	<b>22.7%</b>	<b>15.1%</b>	<b>20.1%</b>	<b>18.8%</b>	<b>0.7%</b>
CT 313.02 BG 2	1,957	4.6%	1.9%	26.0%	3.3%	0.0%
CT 315.02 BG 1	862	1.6%	0.0%	28.2%	22.6%	0.0%
CT 315.02 BG 2	2,956	8.3%	5.7%	20.7%	14.2%	6.0%
CT 316.02 BG 2	1,370	6.3%	10.9%	20.8%	20.5%	0.0%

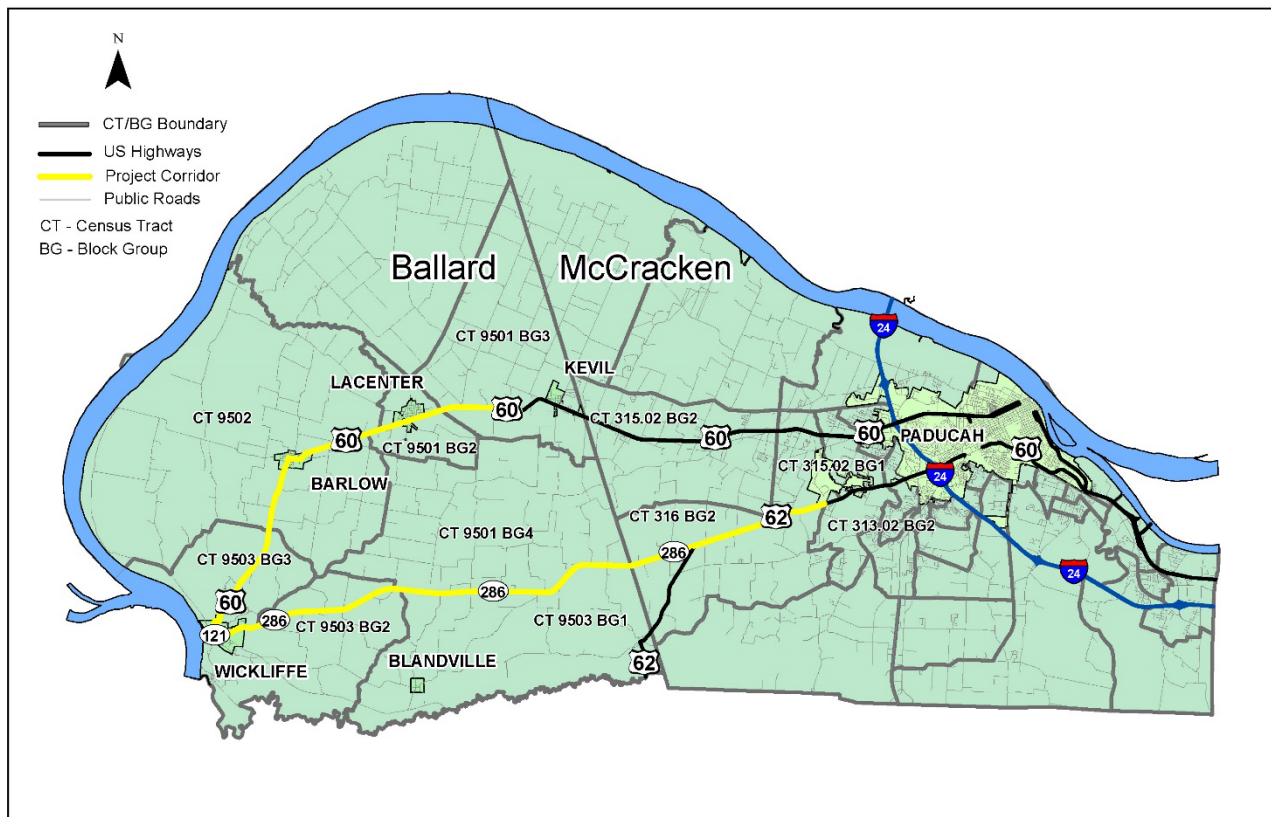


Figure 19: Block Group Map

## 4.0 FUTURE TRAFFIC CONDITIONS

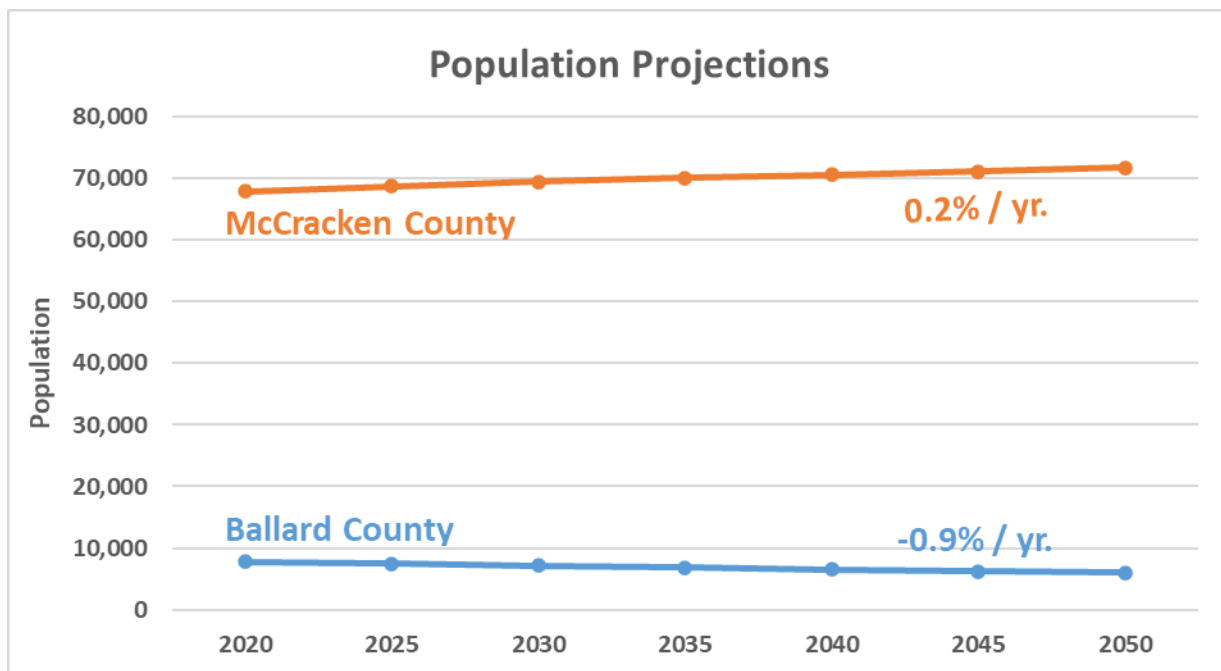
To determine the need for and purpose of potential transportation improvement options, it is necessary to estimate future traffic conditions. This chapter summarizes the anticipated future conditions within the study area. The Traffic Forecasting Technical Memorandum can be found in **Appendix D**.

### 4.1 POPULATION TRENDS

Population data, including data from the 2020 Census, were obtained from the Kentucky State Data Center (KSDC) at the University of Louisville, Kentucky's official clearinghouse for Census data. Between 2010 and 2020, population in Ballard County declined at 0.65 percent per year, as shown in **Table 4**. This decline in population is expected to continue to 2050. Reflective of that trend, the cities along US 60 in the study area (Wickliffe, Barlow, LaCenter and Kevil) have also lost population over the same time period. McCracken County has experienced population growth over the past 20 years and is expected to continue to grow to 2050, as shown in **Figure 20**.

**Table 4: Population Estimates and Projections**

Area	Census Estimates		Annual Growth	2050 Projection	Annual Growth
	2010	2020	2010-2020		2020-2050
Kentucky	4,339,367	4,505,836	0.38%	4,785,233	0.20%
Ballard County	8,249	7,728	-0.65%	5,979	-0.85%
McCracken County	65,565	67,875	0.35%	71,761	0.19%



**Figure 20: Population Projections**

## 4.2 HISTORICAL TRAFFIC COUNTS

Historical traffic count data on study area roadways were analyzed to determine traffic growth patterns. Compound annual growth rates (CAGR) for medium-term (around 10 years) and long-term (around 20 years) were calculated to determine historical growth trends for both corridors, with the counts used in the calculations shown in bold. Historical trends for the US 60 count stations in Ballard County between 2004 and 2024 are presented in **Table 5**. Over the past 20 years, daily traffic on US 60 has generally decreased around one to two percent per year. Daily traffic at Station 004506, between Wickliffe and Barlow, has been relatively stable over the past eight years.

The red text in Table 5 represents traffic counts from 2020, which may not be an accurate representation of recent traffic patterns due to COVID shutdowns. Therefore, these counts were not used in growth rate calculations. The bold numbers were used for the CAGR calculations.

**Final Report**

US 60 & KY 286 Programming Study

Growth trends on KY 286 and US 62 count stations are shown in **Table 6**. Over the past 20 years, daily traffic has increased on KY 286, with the highest rates just east of Wickliffe at 3.4 percent per year. More recently, traffic has increased on KY 286 between 1.6 and 3.4 percent per year while daily traffic on US 62 has increased 0.3 to 3.7 percent per year.

**Table 5: KYTC Historical Traffic Counts (US 60)**

Year	US 60 (Ballard County)					
	Sta. 004A03	Sta. 004506	Sta. 004252	Sta. 004251	Sta. 004331	Sta. 004313
	North of Wickliffe	Wickliffe to Barlow	Barlow to LaCenter	LaCenter	LaCenter to Kevil	Kevil
2004		<b>4,290</b>	<b>5,120</b>		<b>8,120</b>	
2005						
2006	<b>5,090</b>				7,100	
2007		3,960	6,510		7,070	
2008				<b>7,530</b>	6,610	<b>7,960</b>
2009	4,960					
2010		3,960	6,170			
2011				6,500	6,570	<b>7,740</b>
2012	4,213					
2013		3,562	6,400			
2014				<b>6,471</b>	<b>5,899</b>	
2015	<b>4,051</b>					
2016		<b>3,175</b>	<b>6,066</b>			
2017				5,795	5,839	<b>7,187</b>
2018	3,818					
2019		2,923	5,547			
2020				4,718	4,801	
2021	<b>3,794</b>					
2022			5,181			
2023		<b>3,185</b>	<b>4,313</b>	<b>5,514</b>	<b>5,418</b>	
2024						
Medium Term CAGR	-1.1%	0.04%	-4.8%	-0.8%	-1.2%	-1.2%
Long Term CAGR	-1.9%	-1.6%	-0.9%	-2.1%	-2.1%	-1.1%

**Table 6: KYTC Historical Traffic Counts (KY 286 & US 62)**

Year	KY 286			US 62		
	Sta. 004254	Sta. 004256	Sta. 073800	Sta. 073905	Sta. 073771	Sta. 073B24
	East of Wickliffe	KY 802 to KY 1367	KY 1367 to US 62	KY 286 to KY 305	KY 305 to KY 970	KY 970 to I-24
2004					<b>6,160</b>	<b>11,900</b>
2005			<b>3,100</b>			12,700
2006				<b>6,270</b>	7,430	13,300
2007					6,400	11,800
2008	<b>2,400</b>	<b>2,390</b>	3,040			
2009				6,060		10,800
2010					6,380	10,300
2011	1,970	2,040	2,920			10,900
2012				5,623		10,031
2013					5,720	9,058
2014		2,427	3,224			
2015	2,568			<b>6,114</b>		11,685
2016					<b>6,661</b>	<b>10,777</b>
2017		<b>3,011</b>	<b>3,292</b>			12,122
2018	<b>3,084</b>			6,047		11,131
2019					7,513	11,407
2020			<b>3,836</b>			<b>9,208</b>
2021	<b>3,609</b>			<b>6,858</b>		
2022					<b>8,304</b>	8,993
2023	<b>3,359</b>	<b>3,387</b>	<b>3,626</b>			<b>10,991</b>
2024						
Medium Term CAGR	3.4%	2.0%	1.6%	1.9%	3.7%	0.3%
Long Term CAGR	2.3%	2.4%	0.9%	0.6%	1.7%	-0.4%

### 4.3 KENTUCKY STATEWIDE TRAVEL DEMAND MODEL (KYTSM)

As a primary data source, the Kentucky Statewide Travel Demand Model (KYSTMv20) was reviewed. The future year 2050 network was updated to reflect US 60 widening projects currently in the utility and construction phases, including the KYTC Item No. 1-115 project which will continue the four-lane widening on US 60 west of Kevil.

Modifications were made to the model to update the network links to represent the existing road network and committed projects (E + C). Additional construction scenarios were also tested in the network to estimate expected growth.

**Table 7** presents the KYSTM annual growth rates on US 60 and KY 286 / US 62 between 2020 and 2050 under various scenarios of the roadway network. The scenarios are not meant to reflect the construction concepts considered for advancement but rather show a range of possibilities to understand potential traffic growth.

**Table 7: KYSTM Growth Rates**

Scenario		KYSTM Growth Rates (2020 - 2050)					
		US 60			KY 286		US 62
US 60	KY 286 / US 62	Wickliffe to Barlow	Barlow to LaCenter	LaCenter to Kevil	Ballard County	McCracken County	East of KY 286
E+C	E+C	0.3%	0.3%	0.5%	0.5%	0.4%	0.5%
E+C	2+1 Roadway	-2.0%	-2.0%	-1.4%	2.5%	2.3%	1.6%
4-Lanes Kevil to Wickliffe Bypass around Barlow	2+1 Roadway	0.4%	0.4%	0.4%	1.2%	1.2%	1.1%

#### 4.4 2050 DAILY TRAFFIC FORECASTS

Based on population trends, historical traffic, and the KYSTM, annual traffic growth rates were established for each corridor:

- US 60 = 0.5% per year
- KY 286/US 62 = 1.5% per year

These growth rates were then applied to the existing traffic volumes to forecast a traffic volume for each segment for the year 2050 shown in **Figure 21**. These volumes were used in analyzing the performance of concepts.

Using the assumption that a two-lane road with passing lanes operates with a LOS D at 16,000 VPD, additional passing opportunities along each corridor will accommodate the future traffic demand. Annual daily traffic on US 60 in Ballard County would need to grow between 3.5 and four percent per year over the next 25 years before additional through lanes would be warranted. Daily traffic on KY 286 would need to grow over five percent per year to reach LOS D by 2050, while daily traffic on US 62 would need to grow nearly three percent per year to reach the same level of service.

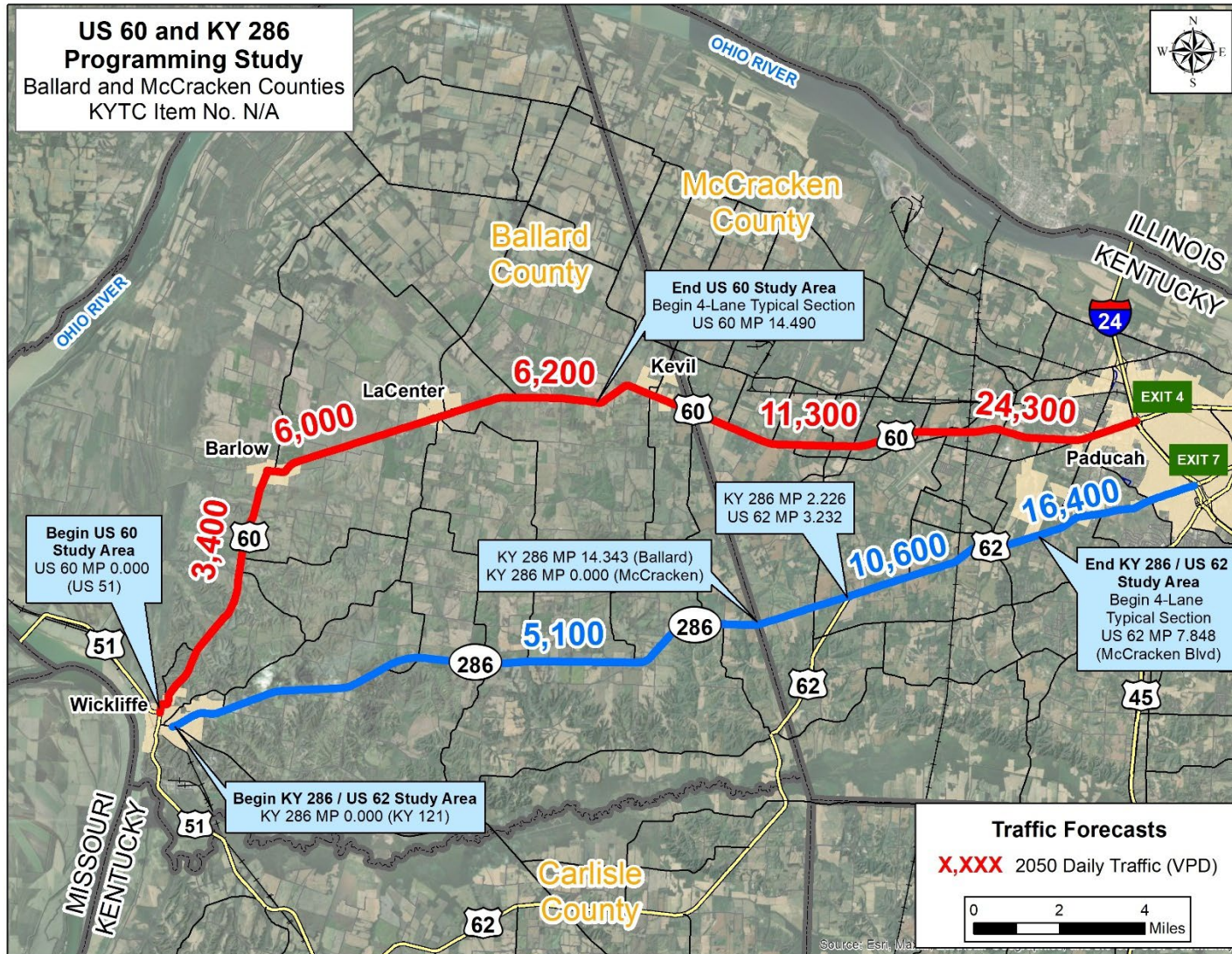


Figure 21: 2050 Daily Traffic Forecasts

## 5.0 STUDY OBJECTIVE

After analyzing existing and future conditions, reviewing the environmental overview, and reviewing nearby projects, a study objective statement was developed to guide any potential projects that were developed as part of this study.

A Study Objective provides the foundation for decision-making and the basis for evaluation and comparison of improvement concepts. Therefore, the project team developed a draft study objective prior to developing conceptual improvement options.

***The objective of the US 60 & KY 286 Programming Study is to assess the need for and scope of safety and mobility improvements between I-24 in Paducah and US 51 in Wickliffe.***

## 6.0 INITIAL STUDY OUTREACH

Over the course of the study, the project team met to coordinate on key issues. The project team included representatives from KYTC Central Office, KYTC District 1, Paducah-McCracken MPO, Purchase Area Development District (PADD), and the consultant, Stantec. Detailed summaries of each meeting are presented in **Appendix E**.

### 6.1 PROJECT TEAM MEETING NO. 1

The first Project Team Meeting for the subject project was held at the KYTC District 1 office and virtually via Microsoft Teams. The purpose of the meeting was to present the results from the existing conditions analysis and to get feedback from the project team on transportation issues in the study area and preliminary improvement concepts. Some additional items that were discussed include:

- It was noted that the crash analysis supports the need for safer passing opportunities on KY 286.
- Preliminary concepts were discussed. A typical section with a four-foot flush median will be considered to reduce the likelihood of head on collisions. This could be accomplished with minor widening.

## 7.0 INTERSECTION CONTROL EVALUATION (ICE)

KYTC utilizes the Intersection Control Evaluation (ICE) process as a data-driven, performance-based framework to guide intersection planning and design decisions. The ICE process is required for all intersections involving state-maintained roadways when substantive changes are proposed. It helps ensure that all appropriate intersection control types are considered, such as a roundabout, signal, or other innovative design, by evaluating safety, operational performance, cost-effectiveness, and environmental impacts. KYTC's ICE framework promotes consistent documentation and the consideration of innovative intersection types. Stage 1 ICE was performed for the following intersections:

- US 60 at US 51
- US 60 at Broadway Street
- US 60 at Olive Street
- KY 286 at KY 121
- KY 286 at US 62

Full results from the ICE analyses can be found in **Appendix F**. As an example, results for the KY 286 intersection with KY 121 in Wickliffe are shown in **Table 8**. The Stage 1 ICE analysis shows that a signalized intersection was determined to be unwarranted and was not advanced for further consideration. Two-way stop-control, all-way stop-control, and a single lane roundabout were moved forward for additional analysis.

**Table 8: ICE Summary for KY 286 / KY 121 (Ballard County)**

Intersection Control Alternative Screening									
Intersection or Interchange Alternative	a.) CAP-X v/c ratio *	b.) CAP-X Pedestrian Accommodation Score	c.) CAP-X Bicycle Score	d.) SSI Score **	e.) Practical to implement (considering cost, potential r/w and environmental impacts)?	f.) Meets the transportation purpose and need?	g.) Addresses the key system performance criteria (safety, all roadway users, operators, etc.)?	h.) Alternative is selected to advance to Stage 2 for further evaluation.	Justification:
Signalized Control	0.28	3.77	4.42	100	Yes	No	No	No	Not warranted
Two-Way Stop-Controlled	0.23	2.64	3.67	100	Yes	Yes	Yes	Yes	
All-Way Stop-Controlled	0.66	3.41	4.42	100	Yes	Yes	Yes	Yes	
Roundabout (1-lane)	0.3	5.54	4.54	100	Yes	Yes	Yes	Yes	

## 8.0 PRELIMINARY IMPROVEMENT CONCEPTS

Initial improvement concepts were developed based on a combination of input from the project team, review of existing conditions, ICE results, and the Study Objective. Corridor-wide and intersection improvements were developed for US 60 and KY 286 / US 62. Descriptions of the preliminary options are included in the following sections.

### 8.1 US 60 CONCEPTS

Three corridor concepts and two intersection concepts were developed along US 60 in Ballard County.

#### 8.1.1 Corridor Concept 1: US 60 2+1 Conversion

2+1 roadways improve traffic and safety by providing systematic passing opportunities to break up traffic platoons. Rather than having to cross the centerline and use the opposing traffic lane to pass, vehicles are able to safely pass using the passing lanes. 2+1 roadways reduce costs and environmental impacts compared to a four-lane configuration. Recommended passing lane lengths range from 0.5 to 2 miles, providing sufficient distance for safe overtaking while maintaining corridor efficiency. The proposed locations for 2+1 sections along US 60 include:

- Ballard County: MP 7.40 to MP 9.66 (KYTC Item No. 1-80301)
- Ballard County: MP 11.30 to MP 14.49 (KYTC Item No. 1-118)

The proposed typical section includes 11-foot travel lanes, eight-foot paved shoulders, two-foot earth shoulders, and a four-foot flush median, as shown in **Figure 22**. This configuration enhances safety by providing clear separation between directions of travel and adequate space for emergency maneuvers.



**Figure 22: Proposed 2+1 Typical Section**

### 8.1.2 Corridor Concept 2: US 60 Southern Bypass around Barlow

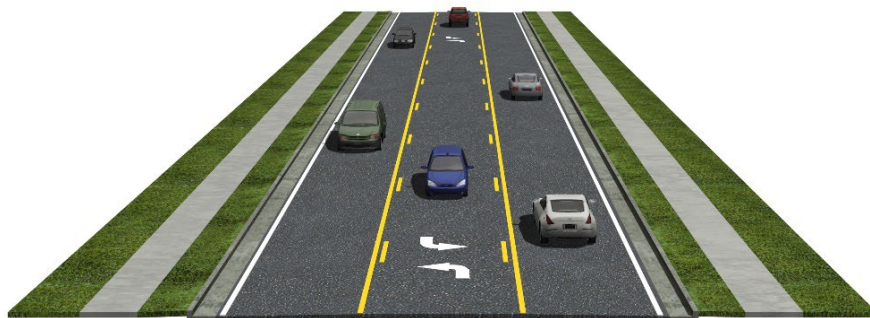
To improve safety and traffic flow through Barlow, a southern bypass is proposed to reroute through traffic on US 60. Currently, vehicles must make a sharp 90-degree turn at the all-way stop-controlled intersection with Broadway Street, where the posted speed limit drops to 25 mph. The bypass would allow traffic to maintain a 55-mph design speed, reducing delays and minimizing conflict points within the town. This concept aligns with KYTC Item No. 1-80321, which aims to improve US 60 through Barlow. Preliminary environmental review identified an open habitation site south of Barlow, which refers to a large, clear space where bats can easily live. However, it was deemed not eligible for listing on the NRHP, suggesting minimal cultural resource constraints for the proposed alignment.

### 8.1.3 Corridor Concept 3: US 60 Reconfiguration in LaCenter

As part of KYTC Item No. 1-80300, improvements are proposed for the segment of US 60 through LaCenter to enhance safety, mobility, and pedestrian accessibility. The concept design includes the addition of a center two-way left-turn lane (TWLTL) and sidewalks on both sides of the corridor, addressing both vehicular and pedestrian needs in this urbanized area. The proposed typical section includes (shown in **Figure 23**):

- 11-foot travel lanes
- A 13-foot TWLTL to facilitate safer turning movements and reduce rear-end collisions
- Curb and gutter for improved drainage
- A five-foot grass utility strip to buffer pedestrians from traffic
- Five-foot sidewalks on both sides to support walkability and Americans with Disabilities Act (ADA) compliance

These enhancements are designed to improve traffic operations and safety while supporting multimodal access through the town center. The inclusion of pedestrian infrastructure and dedicated turn lanes reflects a context-sensitive approach to corridor design, balancing local access with regional mobility.



**Figure 23: Proposed Two-Way Left-Turn Lane (TWLTL)**

### 8.1.4 Intersection Concept 1: US 60 at 4<sup>th</sup> Street / Broadway Street in Barlow

In downtown Barlow, US 60 intersects with Broadway Street and although the intersection operates at LOS A during peak hours and is expected to maintain that performance in the future, its geometry presents challenges for driver comfort and safety, particularly for larger vehicles and unfamiliar drivers. Over the past five years, two crashes have been reported at this location, including one injury-causing angle collision. One proposed improvement involves realigning US 60 to become the primary through movement at the intersection, as illustrated in **Figure 24**. This concept would eliminate the need for vehicles on US 60 to make the 90-degree turn, allowing vehicles to continue along US 60 without stopping. This realignment would simplify navigation, improve traffic flow, and reduce the likelihood of turning-related crashes. It would, however, require the relocation of the Kentucky Care Medical Clinic.



Figure 24: US 60 at Broadway Street in Barlow - Realignment

Another option is the installation of a roundabout, which would not require any relocations, and would provide continuous flow for low-speed traffic while reducing conflict points. A mini roundabout is shown in **Figure 25**, which would lower vehicle speeds and minimize the severity of potential collisions.

Another roundabout alternative is a single-lane roundabout, which offers greater capacity and accommodations for larger vehicles compared to a mini roundabout. This design, illustrated in **Figure 26**, would enhance intersection efficiency and safety while maintaining a relatively small footprint. This concept would require the relocation of the Kentucky Care Medical Clinic.

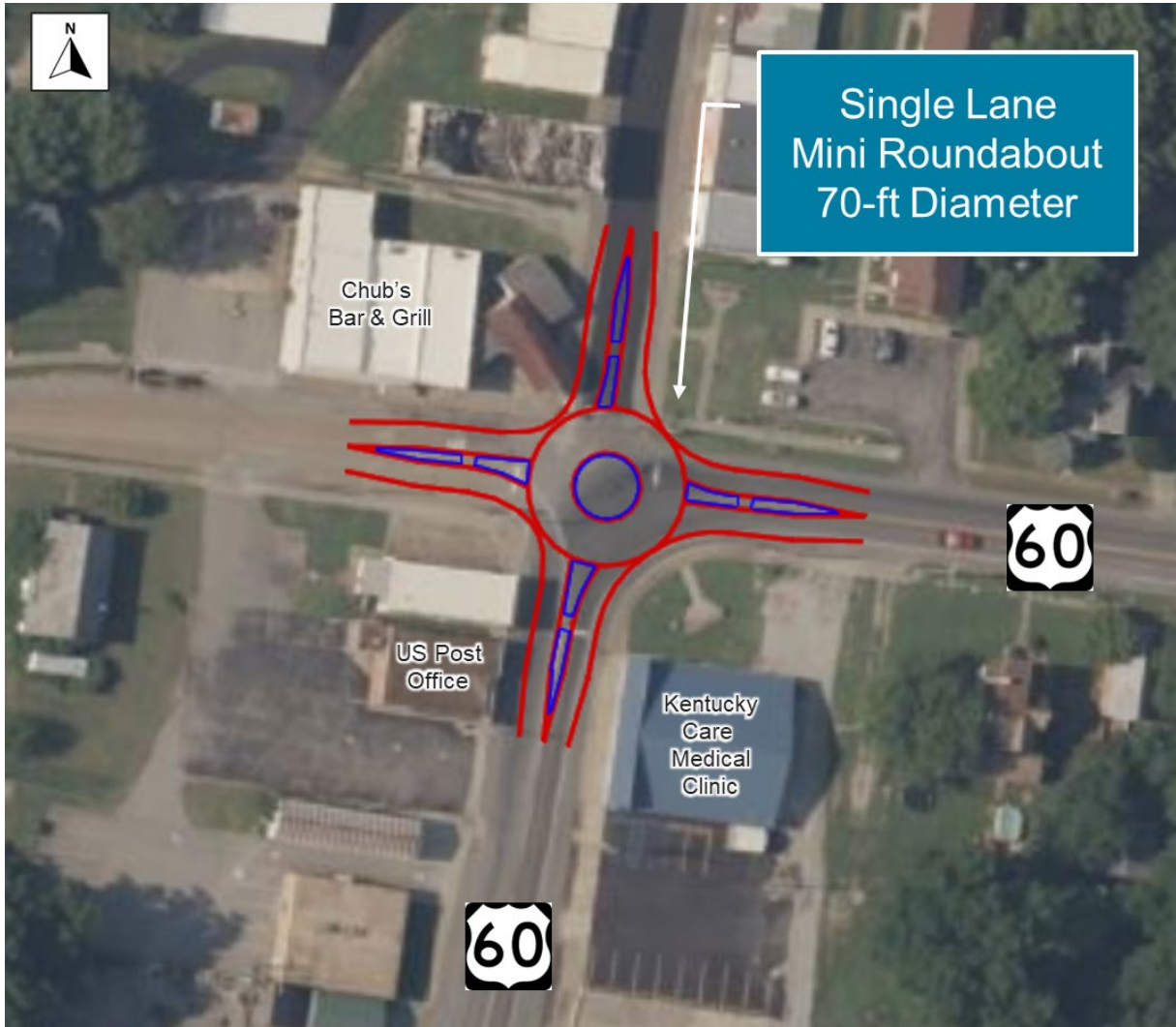


Figure 25: US 60 at Broadway Street in Barlow - Mini Roundabout

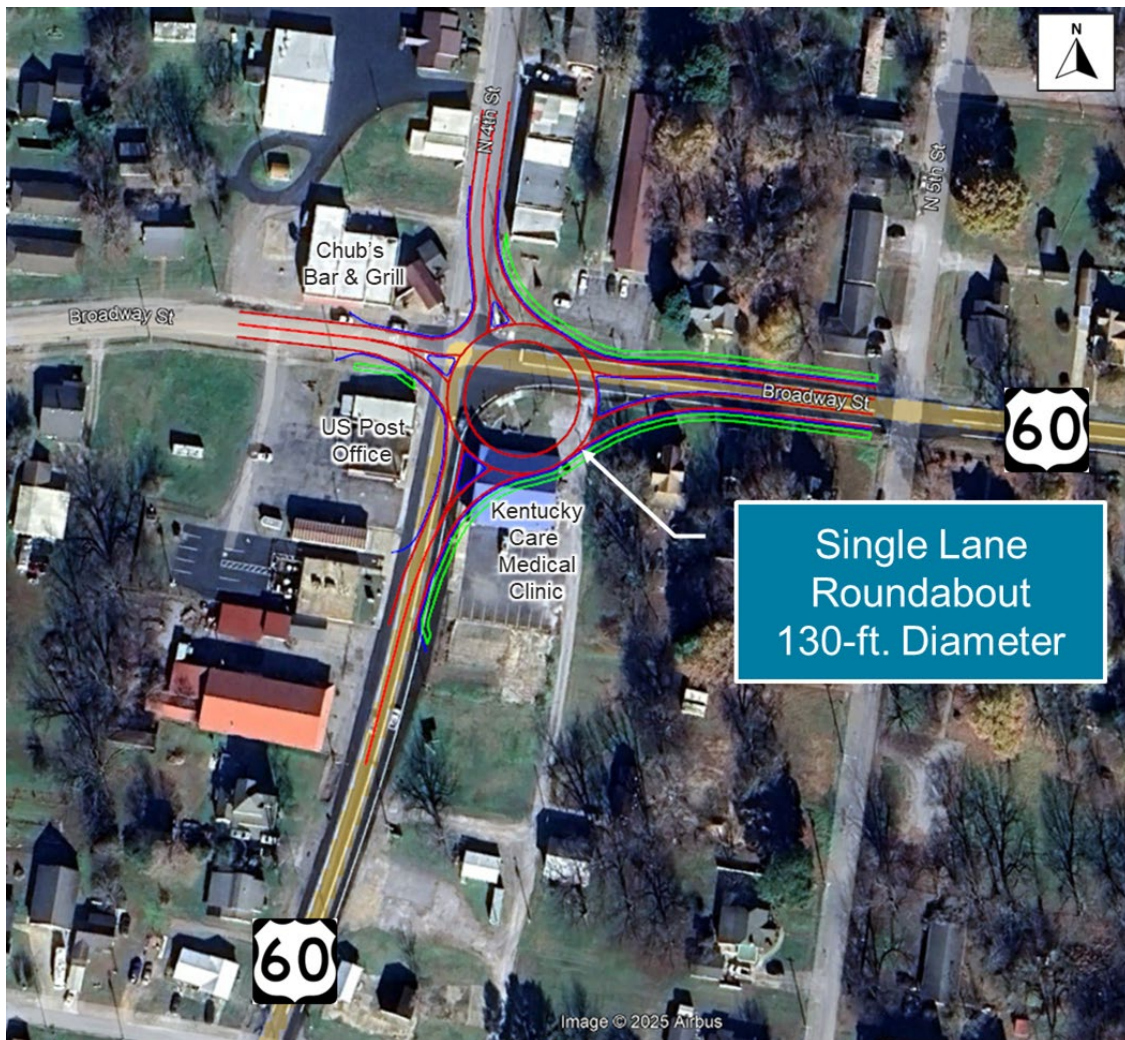


Figure 26: US 60 at Broadway Street in Barlow - Single Lane Roundabout

### 8.1.5 Intersection Concept 2: US 60 at Olive Street in LaCenter

Along US 60 through LaCenter, the posted speed limit is reduced from 55 mph to 35 mph to reflect the urban context, which includes numerous business entrances and frequent access points. At the intersection of US 60 and Olive Street, an operational change was implemented as part of a 90-day trial. The existing traffic signal was determined to be unwarranted based on peak-hour volumes and was replaced with a flashing all-way stop-controlled intersection. This configuration operated at LOS A, and forecasts suggest that by 2050, the intersection will continue to function efficiently with peak hour operations expected at LOS B. However, there was queuing on US 60 during school dismissal, so the signal was reinstated. Crash data from the past five years shows four reported incidents at this location, all of which resulted in property damage only. One proposed improvement is the construction of a single-lane roundabout, shown in **Figure 27**. This design would require the relocation of two businesses and provide continuous flow, reduce conflict points, reduce speeds on US 60, and enhance safety for all users.

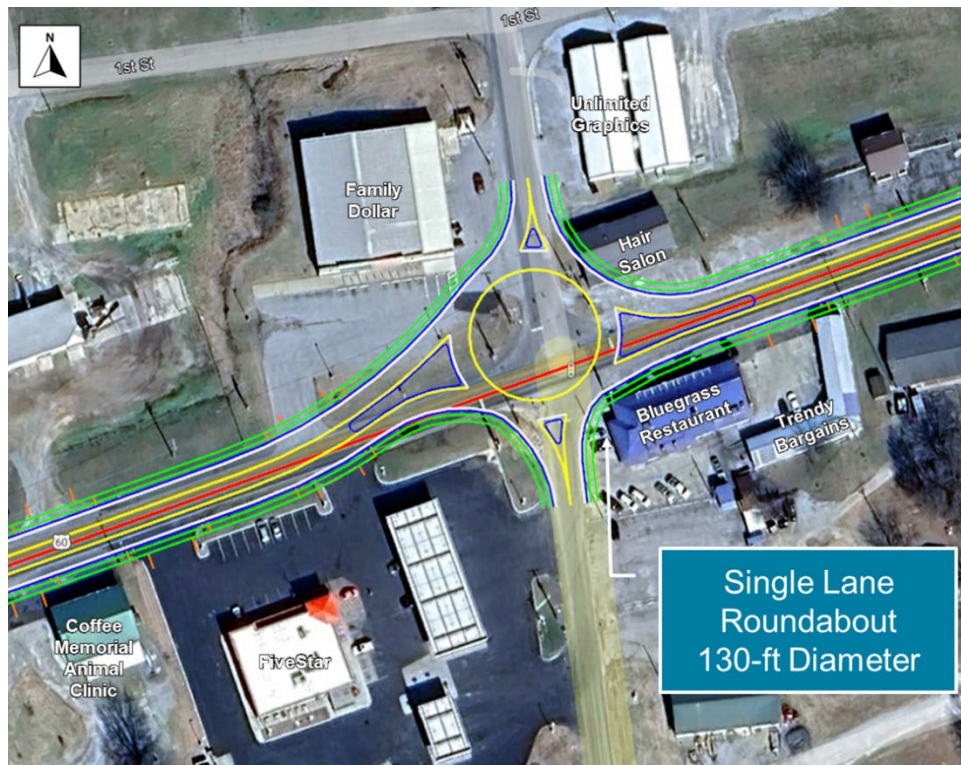
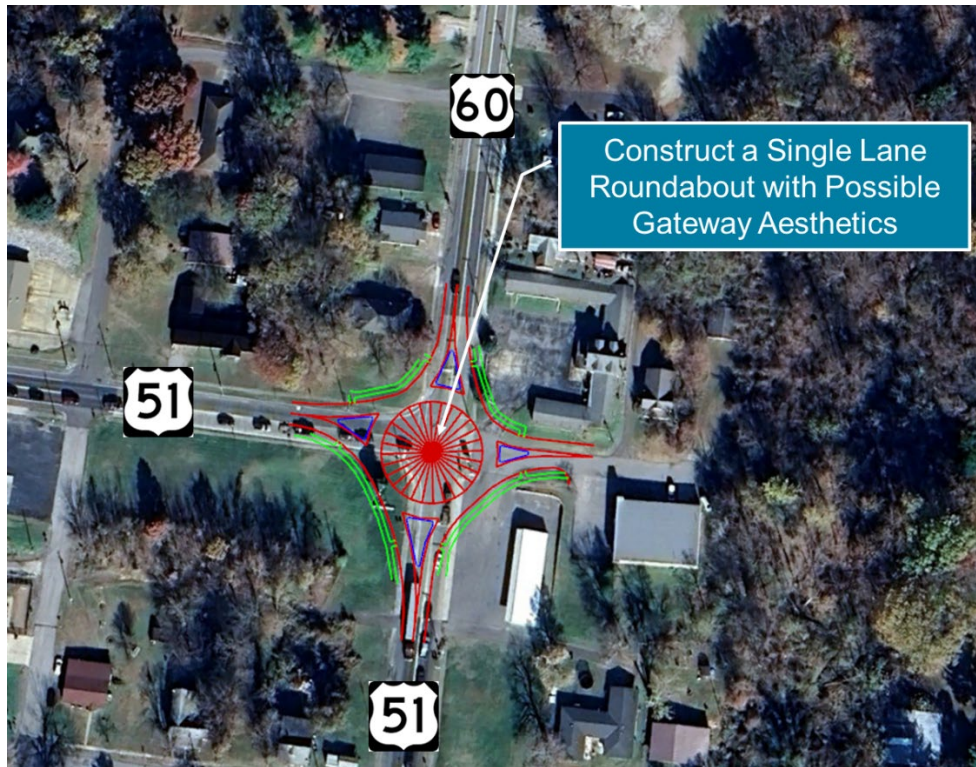


Figure 27: US 60 at Olive Street in LaCenter - Single Lane Roundabout

### 8.1.6 Intersection Concept 3: US 60 at US 51 in Wickliffe

In Wickliffe, the posted speed limit along US 60 is 25 mph, reflecting its urban setting with numerous business entrances and frequent access points. The existing configuration is an all-way stop. This configuration operates efficiently, achieving LOS A, and projections indicate that by 2050, peak-hour operations will remain effective at LOS A. Over the past five years, crash data has shown two reported incidents at this location, both resulting in injuries. To improve safety and traffic operations while reducing speeds and conflict points, a proposed solution is the construction of a single-lane roundabout, illustrated in **Figure 28**. Gateway improvements could also be considered as part of this concept for travelers entering Wickliffe, KY from the Cairo Ohio River Bridge. By 2050, this proposed configuration is expected to continue to operate at LOS A.



**Figure 28: US 60 at US 51 in Wickliffe - Single Lane Roundabout**

## **8.2 KY 286 / US 62 CONCEPTS**

One corridor concept and two intersection improvement concepts were developed for KY 286 / US 62 in Ballard and McCracken Counties.

### **8.2.1 Corridor Concept 1: KY 286 / US 62 2+1 Conversion & TWLTL**

A 2+1 Roadway configuration, along with a TWLTL on US 62 east of KY 786, was also proposed on KY 286 and US 62 to allow for passing opportunities at the following locations:

#### **KY 286**

- Ballard County: MP 1.25 to MP 14.34
- McCracken County: MP 0.00 to MP 2.23

#### **US 62**

- McCracken County: MP 3.23 to MP 7.85

### 8.2.2 Intersection Concept 1: KY 286 at KY 121 in Wickliffe

The intersection of KY 286 and KY 121 in Wickliffe is a skewed intersection with entrances to a gas station at the south approach. Over the past five years, there have been seven reported crashes at this intersection, two of which resulted in an injury – one single vehicle and one opposing left turn. The current intersection is stop-controlled for the westbound KY 121 approach only and operates at LOS B. Options to improve the intersection include conversion to all-way stop-control and a single-lane roundabout. The single-lane roundabout option is illustrated in **Figure 29**. Both options are expected to operate at LOS B or better in 2050.

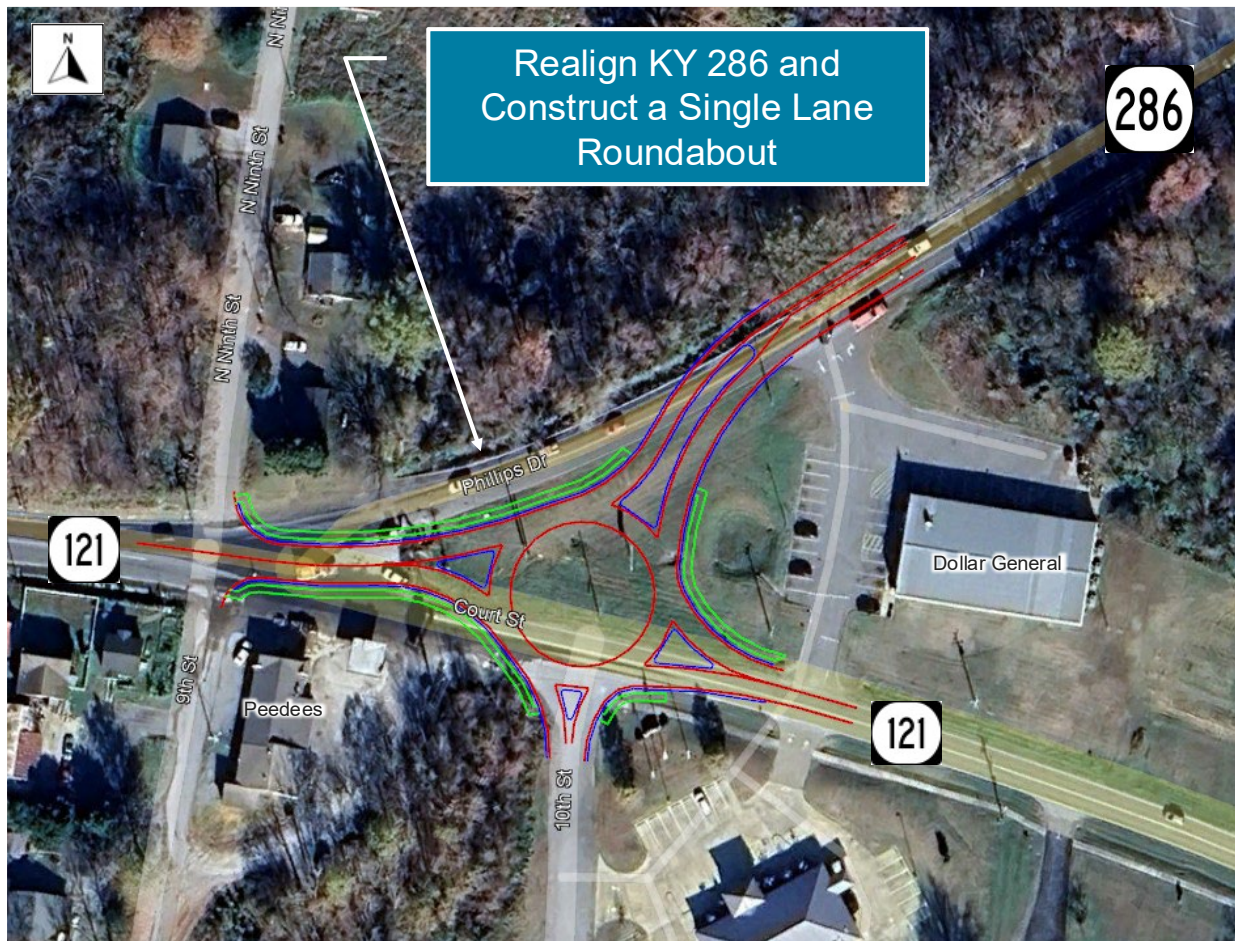


Figure 29: KY 286 at KY 121 in Wickliffe - Single Lane Roundabout

### 8.2.3 Intersection Concept 2: KY 286 at US 62

The intersection of KY 286 and US 62 in McCracken County is a three-legged intersection with the northbound US 62 approach stop-controlled. It currently operates at LOS B and is not expected to have capacity issues in the future. Over the past five years, there have been seven crashes reported at this intersection, one of which resulted in an injury. The most common crash type was sideswipe with three (43 percent). Improvement options include a roundabout and a Continuous Green T intersection with a raised median, which allows mainline through traffic to pass through the intersection without stopping while also eliminating conflicting vehicular movement, shown in **Figure 30**. This concept would control access around the gas station, including limiting access to the nearby driveways to right-out only.

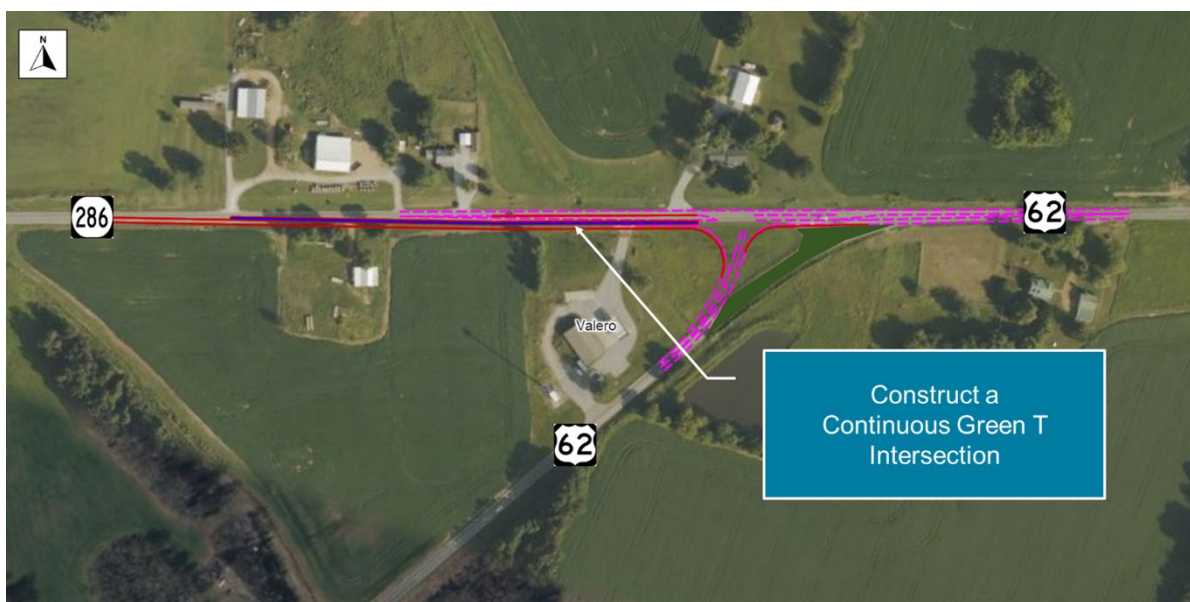


Figure 30: KY 286 at US 62 in McCracken County - Green T Intersection

## 9.0 SECOND ROUND OF STUDY OUTREACH

### 9.1 PROJECT TEAM NO. 2

The second Project Team Meeting for the subject study was held at the KYTC District 1 office and virtually via Microsoft Teams. The purpose of the meeting was to get feedback on the preliminary improvement concepts in the study area. Discussion topics included:

- There was a request to shift the bypass alternative in Barlow to the north to avoid impacts to potential developments.
- The 2+1 typical section was updated to include four-foot paved and four-foot graded shoulders.

- There are currently no 2+1 Roadways in District 1. Public outreach and education will be needed during the design phase.
- A "Super 2" will not be considered on KY 286. This type of improvement includes wider lanes and shoulders but would not provide passing opportunities.
- Trucks traveling eastbound on KY 286 have steep grades to climb when coming from the KY 121 intersection. An eastbound truck climbing lane will be added at the end of the proposed roundabout.
- The KY 286 intersection with US 62 was realigned in 2021. In the three years before the realignment, which included the construction of a westbound left-turn lane, there were eight crashes reported at this intersection, two of which resulted in one or more injuries. All of the crashes were concentrated along the westbound US 62 approach. Two of the crashes were angle, two rear end, two sideswipe, one single vehicle, and one opposing left turn. In the three years following the realignment, there were seven reported crashes, one of which resulted in an injury. There were two collisions reported on the westbound approach, four on the northbound approach, and one on the eastbound approach. Two of the crashes were backing, one was rear end, one sideswipe, one head on, one opposing left turn, and one single vehicle.
  - The roundabout and Green-T concepts at the KY 286 / US 62 intersection were removed from further consideration due to context and performance factors.
- Realignment of the US 60 intersection with US 51 was dismissed due to significant environmental and constructability challenges near Wickliffe Mounds. The single-lane roundabout concept will be advanced for further development.
- The mini roundabout concept at the US 60 intersection with Broadway Street was dismissed from further consideration due to the high number of trucks at this intersection.

## 10.0 REVISED IMPROVEMENT CONCEPTS

Improvement concepts were revised based on results from the traffic and safety analyses and feedback from the project team.

The revised strategy focuses on a phased implementation plan. For KY 286, the entire corridor will be improved using a prioritized sequence to maximize safety and operational benefits. Proposed improvements include 2+1 widening segments, intersection upgrades, and TWLTL installations. For US 60, improvements will concentrate on sections between Barlow and the Kevil bypass, where project development funding is already committed. These upgrades will begin with the easternmost section and progress westward as resources allow, as shown in **Figure 31**.

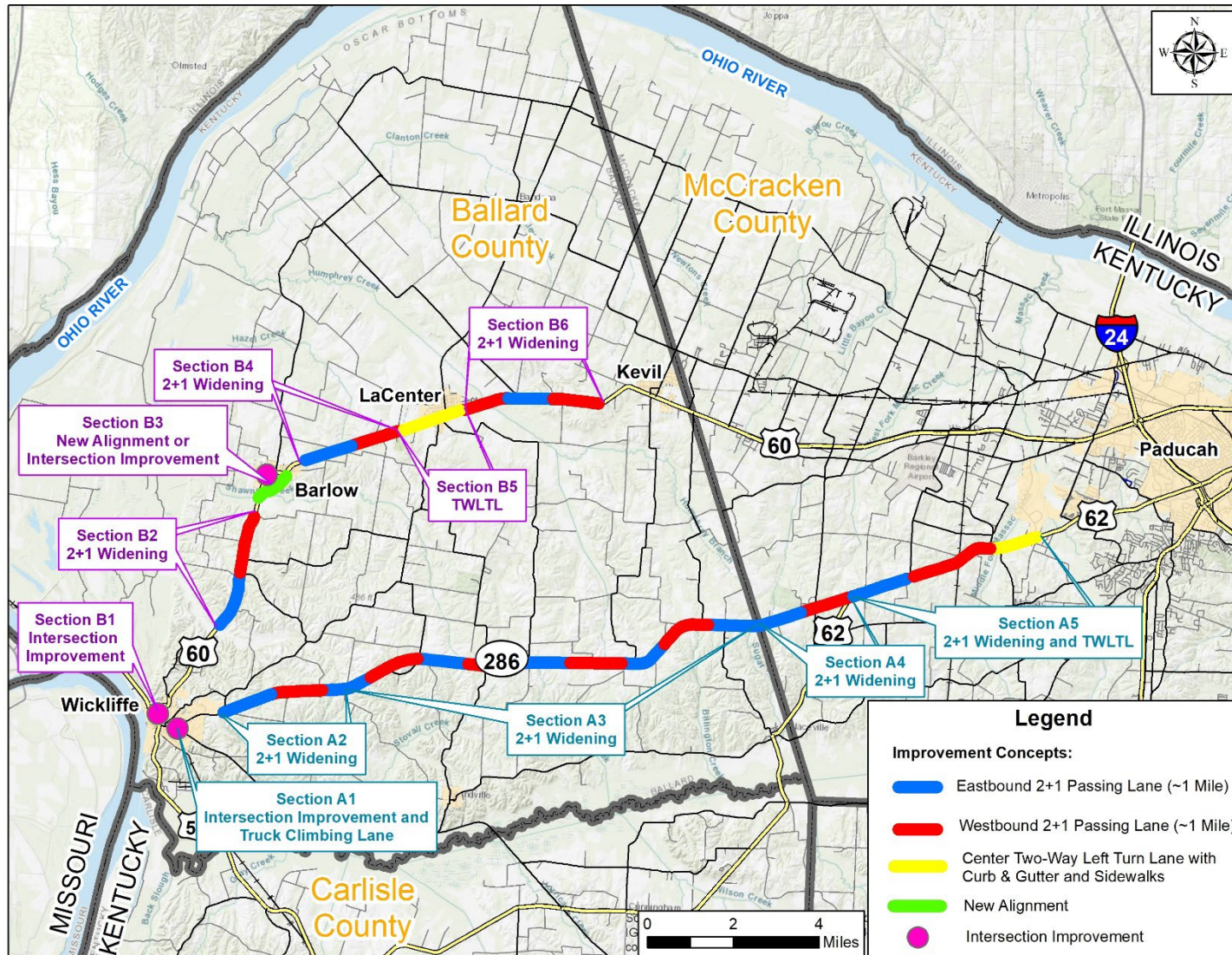


Figure 31: Improvement Concepts Overview

## **10.1 KY 286 / US 62 REVISED IMPROVEMENT CONCEPTS**

Revised improvement concepts along KY 286 and US 62 were renamed A1 – A5 based on location:

- **A1:** KY 286 at KY 121 Intersection improvements and truck climbing lane
- **A2:** 2+1 Roadway on KY 286 from Wickliffe to Hershel Jones Road
- **A3:** 2+1 Roadway on KY 286 from Hershel Jones Road to the McCracken County line
- **A4:** 2+1 Roadway on KY 286 from the Ballard County line to the US 62 intersection
- **A5:** 2+1 Roadway on US 62 and TWLTL from KY 286 to existing four-lane section

## **10.2 US 60 REVISED IMPROVEMENT CONCEPTS**

Revised improvement concepts along US 60 were renamed B1 – B6 based on location:

- **B1:** US 60 at KY 51 intersection improvements
- **B2:** 2+1 Roadway on US 60 from Wickliffe to Barlow
- **B3:** New US 60 alignment around Barlow
- **B3:** US 60 at Broadway Street intersection realignment
- **B3:** US 60 at Broadway Street roundabout
- **B4:** 2+1 Roadway on US 60 from Barlow to LaCenter
- **B5:** TWLTL and sidewalks on US 60 in LaCenter
- **B6:** 2+1 Roadway on US 60 from LaCenter to Kevil

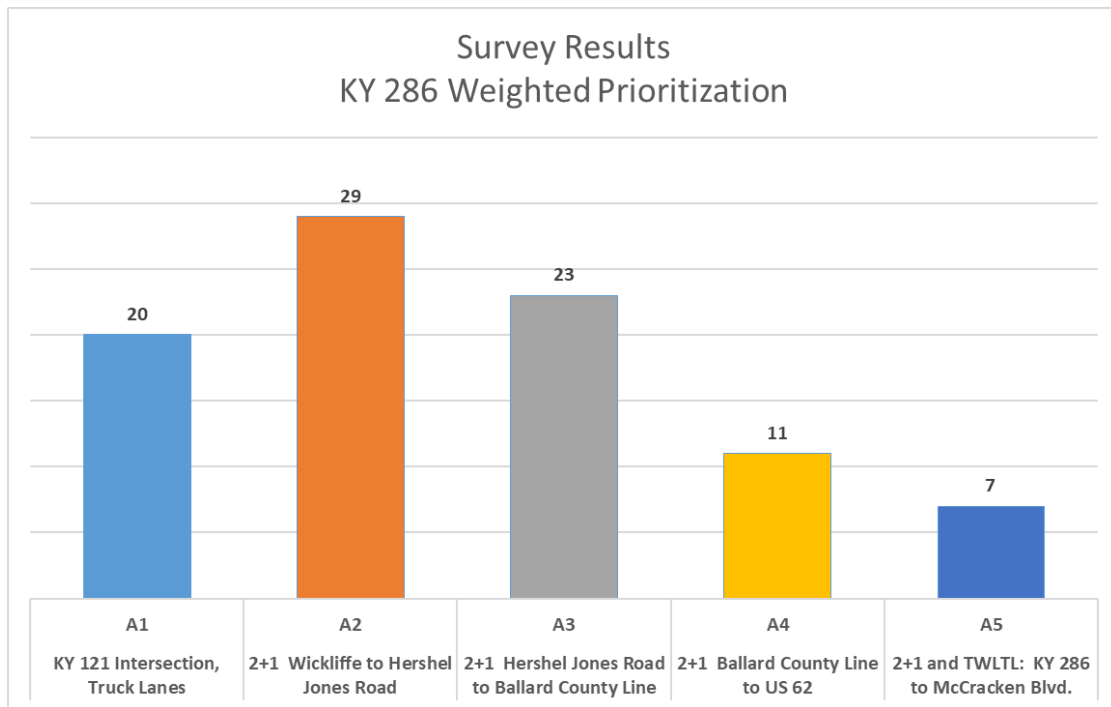
## **11.0 FINAL STUDY OUTREACH**

### **11.1 LOCAL OFFICIALS / STAKEHOLDER MEETING**

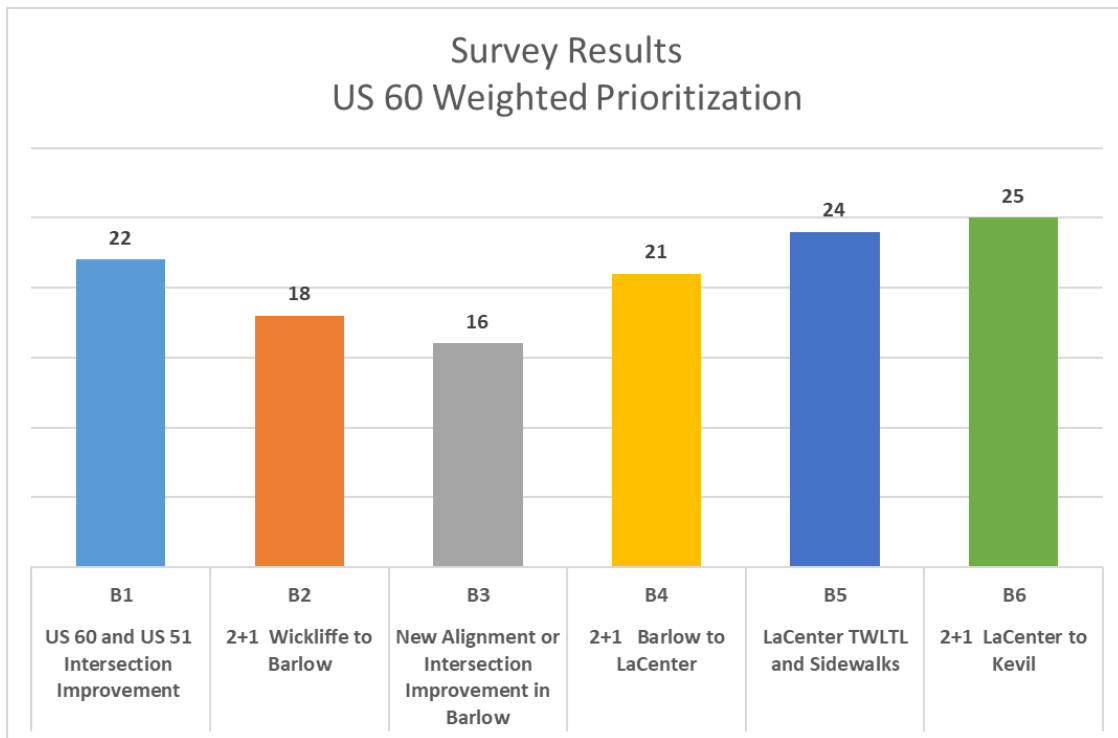
The first Local Officials / Stakeholder Meeting for the study was scheduled to be held at the Ballard County Judge Executive Office in June, 2025. The purpose of the meeting was to present the work completed to date and solicit feedback on preliminary improvement concepts. A survey was created to capture feedback of those in attendance. However, the meeting was cancelled due to an anticipated low level of attendance. The project team then opted to develop a StoryMap and online survey as a more effective method for gathering input. This approach allowed participants to review project information at their convenience and provide feedback electronically. A total of six responses were received through the survey.

The first two questions asked how often the respondents drive on US 60 and KY 286 between Paducah and Wickliffe. For US 60, the majority of respondents (four out of six) reported driving the route daily, while one drives it weekly and one rarely. For KY 286, usage is more varied: only one respondent drives it daily, one weekly, two monthly, and two rarely. Survey responses indicate that US 60 is used more frequently than KY 286 by participants. These results suggest that US 60 serves as the primary route for most respondents, while KY 286 is used less consistently, often on a monthly or occasional basis.

The survey then asked respondents to prioritize five sections of KY 286 in order of importance. A weighted scoring system was used with a #1 rank receiving five points, #2 rank receiving four points, and so on. As shown in **Figure 32**, Section A2 (Wickliffe to Hershel Jones Road) emerged as the top priority, followed by Section A3 (Hershel Jones Road to the Ballard County Line). Similarly, respondents were asked to rank the six sections of US 60. The two westernmost segments, B5 (LaCenter to Kevil) and B6 (TWLTL in LaCenter), identified as the highest priorities, as shown in **Figure 33**.



**Figure 32: Local Officials Survey Results - KY 286 Weighted Prioritization**



**Figure 33: Local Officials Survey Results - US 60 Weighted Prioritization**

Participants were also asked to indicate their preferred concept for improvements in Barlow. Responses were split among the three options, with a slight preference for corridor realignment, as shown in **Figure 34**. Finally, respondents were asked how financial resources should be allocated between the two corridors: all to US 60, all to KY 286, or split between both. The results are summarized in **Figure 35**. The majority favored splitting resources between the two corridors.

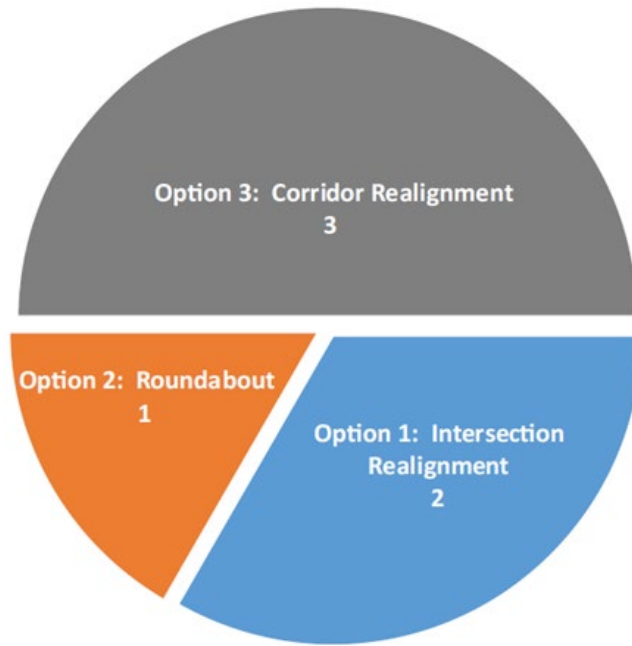


Figure 34: Local Officials Survey Results - Barlow Concepts

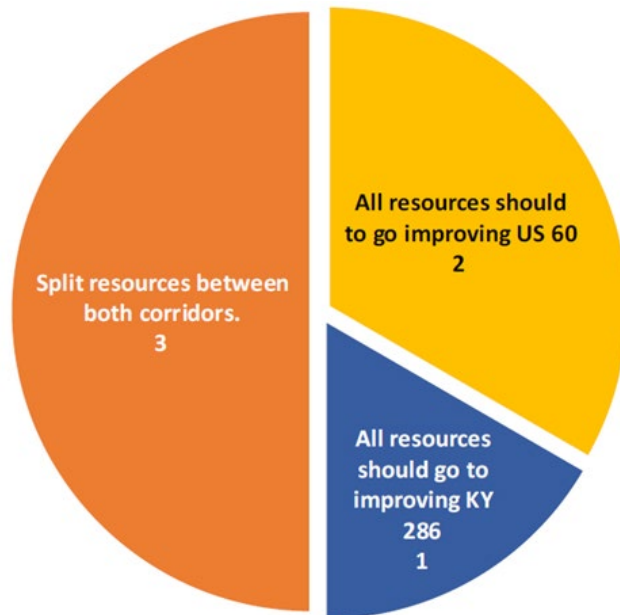


Figure 35: Local Officials Survey Results - Corridor Preferences for Financial Resources

Additional comments submitted by respondents included:

- Pavement widths on both corridors are too narrow.
- Many crashes are caused by tire drop-off and driver overcorrection.
- The US 51 intersection with US 60 experiences heavy traffic congestion.

## **11.2 PROJECT TEAM MEETING NO. 3**

The third and final Project Team Meeting for the subject project was held virtually via Microsoft Teams. The purpose of the meeting was to share the results of the Local Officials survey and to get feedback on the evaluation criteria, cost estimates, and draft recommendations. Discussion topics included:

- It was noted that KY 286 / US 62 demonstrates a higher safety need and greater potential for reducing fatal and serious injury crashes, as well as congestion, compared to US 60. This corridor also serves as the preferred route for travelers between Paducah and Wickliffe, primarily due to its shorter distance and faster travel time.
- Split KY 286 Concept A3 between Hershel Jones Road and the Ballard / McCracken County line into three sections of independent utility due to the high cost.
- Risk and time contingencies were added to the cost estimates.
- US 60 concepts between Wickliffe and Barlow (B1 – B3) were not moved forward as recommended improvement concepts due to the marginal safety and traffic impacts as well as low interest from local officials.

## **12.0 CONCLUSIONS**

The objective of the US 60 & KY 286 Programming Study was to assess the need for and scope of safety and mobility improvements between I-24 in Paducah and US 51 in Wickliffe. Improvement concepts were developed based on a combination of input from the project team, a review of existing conditions, local officials / stakeholder input, and field reconnaissance.

### **12.1 COST ESTIMATES**

2025 opinions of probable cost were developed to include design, right of way, utilities, and construction, and are summarized in **Table 9**. KY 286 Concept A3 between Hershel Jones Road and the Ballard / McCracken County line is split into three sections of independent utility due to the high cost. Detailed cost estimates can be found in **Appendix G**. These costs include contingencies to account for risks, including surprise utility conflicts, geotechnical issues, and environmental mitigation. An additional “time” contingency was added to account for the lack of funding in the Highway Plan and includes additional costs of 10 percent per phase per biennium.

**Table 9: 2025 Cost Estimates with Risk and Time Contingencies**

Concept	Route	Improvement	Length (miles)	2025 Bid-Based Cost Estimate with Risk and Time Contingencies				
				Design	ROW	Utility	Construction	Total
A1	KY 286	Intersection Improvements at KY 121 and Truck Climbing Lane	0.7	\$1,100,000	\$1,300,000	\$1,300,000	\$7,400,000	\$11,100,000
A2		2+1 Wickliffe to Hershel Jones Road	2.9	\$4,100,000	\$1,300,000	\$4,500,000	\$27,100,000	\$37,000,000
A3-1		2+1 Hershel Jones Road to KY 802	3.4	\$3,800,000	\$700,000	\$2,100,000	\$25,400,000	\$32,000,000
A3-2		2+1 KY 802 to KY 473	3.5	\$3,800,000	\$800,000	\$2,100,000	\$25,400,000	\$32,100,000
A3-3		2+1 KY 473 to County line	3.2	\$3,500,000	\$700,000	\$2,000,000	\$23,000,000	\$29,200,000
A4		2+1 County line to US 62	2.2	\$3,000,000	\$1,000,000	\$2,700,000	\$20,000,000	\$26,700,000
A5	US 62	2+1 and TWLTL from KY 286 to McCracken Boulevard	4.6	\$6,600,000	\$1,800,000	\$5,600,000	\$43,900,000	\$57,900,000
B4	US 60	2+1 Barlow to LaCenter	2.3	\$2,000,000	\$600,000	\$2,400,000	\$17,000,000	\$22,000,000
B5		TWLTL and sidewalks in LaCenter	1.6	\$2,100,000	\$2,000,000	\$2,300,000	\$16,600,000	\$23,000,000
B6		2+1 LaCenter to Kevil	3.2	\$3,200,000	\$1,000,000	\$2,100,000	\$23,700,000	\$30,000,000

## 12.2 BENEFIT-TO-COST ANALYSIS (BCA)

A benefit-to-cost analysis (BCA) was performed to compare the improvement concept costs (without the time contingencies), including design, right-of-way, utility, construction, and risk contingencies, to the safety and travel time benefits, as shown in **Table 10**. A benefit-to-cost ratio (BCR) above 1.0 indicates the safety benefits outweigh the costs.

Results from the BCA indicate that two concepts on KY 286, A3-3 and A4, have benefit-cost ratios (BCRs) greater than 1.0, indicating benefits outweigh costs. KY 286 Concepts A3-1 and A3-2 have BCRs approaching 1.0. One improvement concept on US 60, B4, has a BCR greater than one.

**Table 10: Benefit-to-Cost Analysis**

Concept	Route	Improvement	Length (miles)	2025 Total Cost *	Safety Benefit	BCR
A1	KY 286	Intersection Improvement and Truck Climbing Lane	0.7	\$7,400,000	\$1,800,000	0.24
A2		2+1 Wickliffe to Hershel Jones Road	2.9	\$24,000,000	\$3,700,000	0.15
A3-1		2+1 Hershel Jones Road to KY 802	3.4	\$24,700,000	\$22,400,000	0.91
A3-2		2+1 KY 802 to KY 473	3.5	\$24,800,000	\$23,000,000	0.93
A3-3		2+1 KY 473 to County line	3.2	\$22,600,000	\$42,000,000	1.86
A4		2+1 County line to US 62	2.2	\$19,200,000	\$43,700,000	2.28
A5	US 62	2+1 and TWLTL from KY 286 to McCracken Boulevard	4.6	\$40,100,000	\$32,100,000	0.80
<b>Total for KY 286 and US 62</b>				<b>\$162,800,000</b>	<b>\$168,700,000</b>	<b>1.04</b>
B4	US 60	2+1 Barlow to LaCenter	2.3	\$18,100,000	\$22,300,000	1.23
B5		TWLTL and sidewalks in LaCenter	1.6	\$19,700,000	\$200,000	0.01
B6		2+1 LaCenter to Kevil	3.2	\$27,700,000	\$600,000	0.02
<b>Total for US 60</b>				<b>\$65,500,000</b>	<b>\$23,100,000</b>	<b>0.35</b>

\*Does not include time contingencies

## 12.3 RECOMMENDATIONS

Based on a combination of input from the project team, a review of existing conditions, the traffic and safety analyses, local officials / stakeholder input, results from the BCA, and field reconnaissance, the following improvements are recommended to move forward:

- Prioritize KY 286/US 62 Improvements:** KY 286 and US 62 demonstrate the highest safety need and cost-effectiveness, with an overall benefit-cost ratio greater than one. Improvements include 2+1 widening, intersection upgrades, and TWLTL installation, implemented in a phased approach starting with Sections KY 286 west of the McCracken County line and progressing east, as shown in **Figure 36**. Project sheets for the KY 286 / US 62 improvements can be found in **Appendix H**. The top priority, Concept A3 between Hershel Jones Road and the Ballard / McCracken County line, is split into three sections of independent utility due to the high construction cost. This improvement could be designed as one project but constructed in phases depending on funding availability.
- Advance Committed US 60 Improvements:** Sections of US 60 between Barlow and the Kevil bypass have committed funding. Focus could begin with the easternmost section and progress westward.

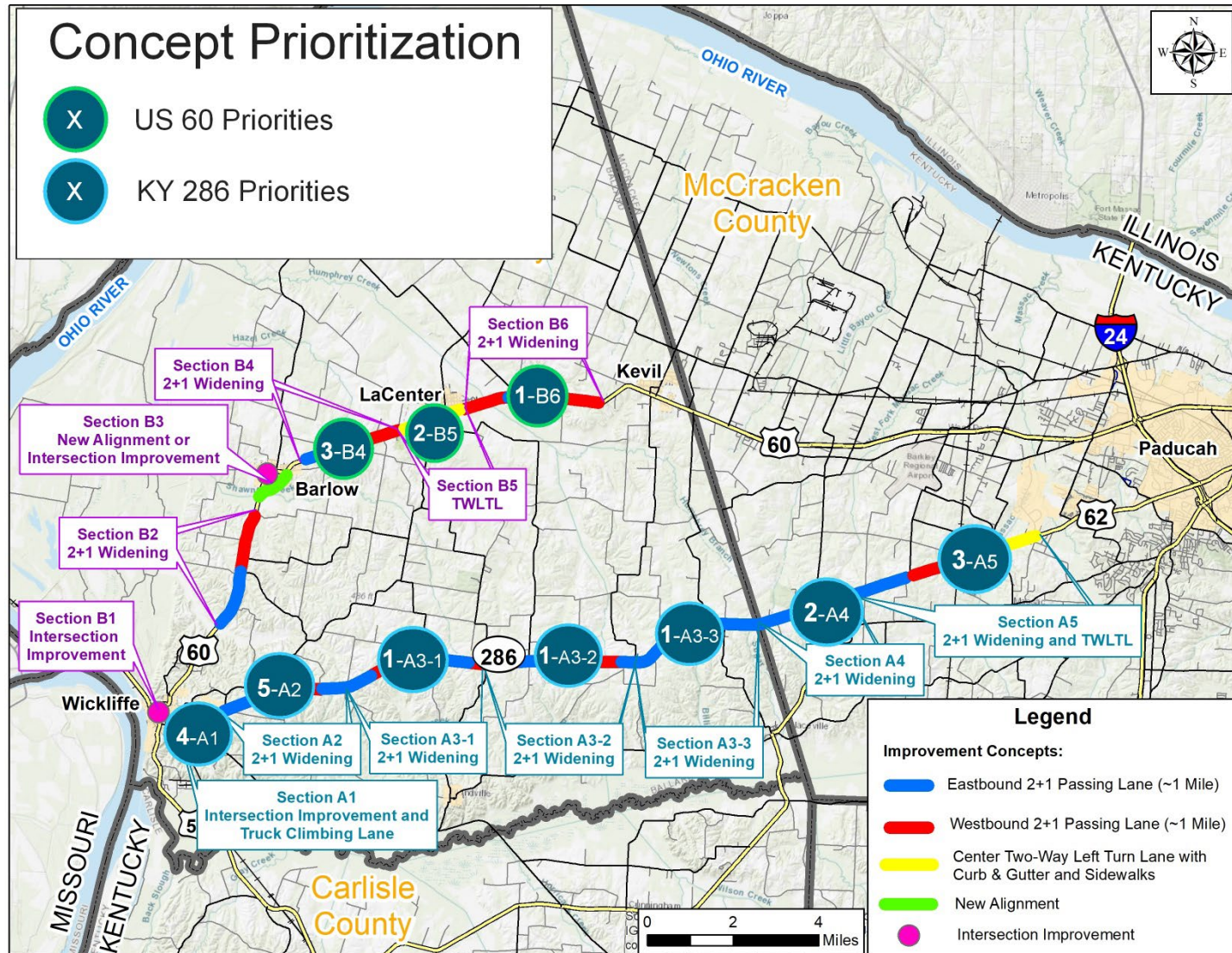


Figure 36: Concept Prioritization

## **12.4 NEXT STEPS**

The next step following this study for any potential improvements would be Phase 1 Design (Preliminary Engineering and Environmental Analysis.). Design of KY 286 between Hershel Jones Road and KY 286 in Ballard County (Item No. 1-80322.00) is listed in Kentucky's Highway Plan with design funding in 2028. Design of US 60 between Kevil and Barlow (Item Nos. 1-118.00, 1-80300.00, and 1-80301.00) are listed in Kentucky's Highway Plan with design funding in the Biennium.

## **13.0 CONTACTS/ADDITIONAL INFORMATION**

Written requests for additional information should be sent to Mikael Pelfrey, Director, KYTC Division of Planning, 200 Mero Street, Frankfort, KY 40622. Additional information regarding this study can also be obtained from the KYTC District 1 Project Manager, Austin Hart, at (270) 898- 2431 (email at [austin.hart@ky.gov](mailto:austin.hart@ky.gov)).