# STATEWIDE CORRIDOR PLAN

Linking Kentucky

Prepared for
Kentucky Transportation Cabinet

Prepared by
The Corradino Group

September 2021

# EXECUTIVE SUMMARY

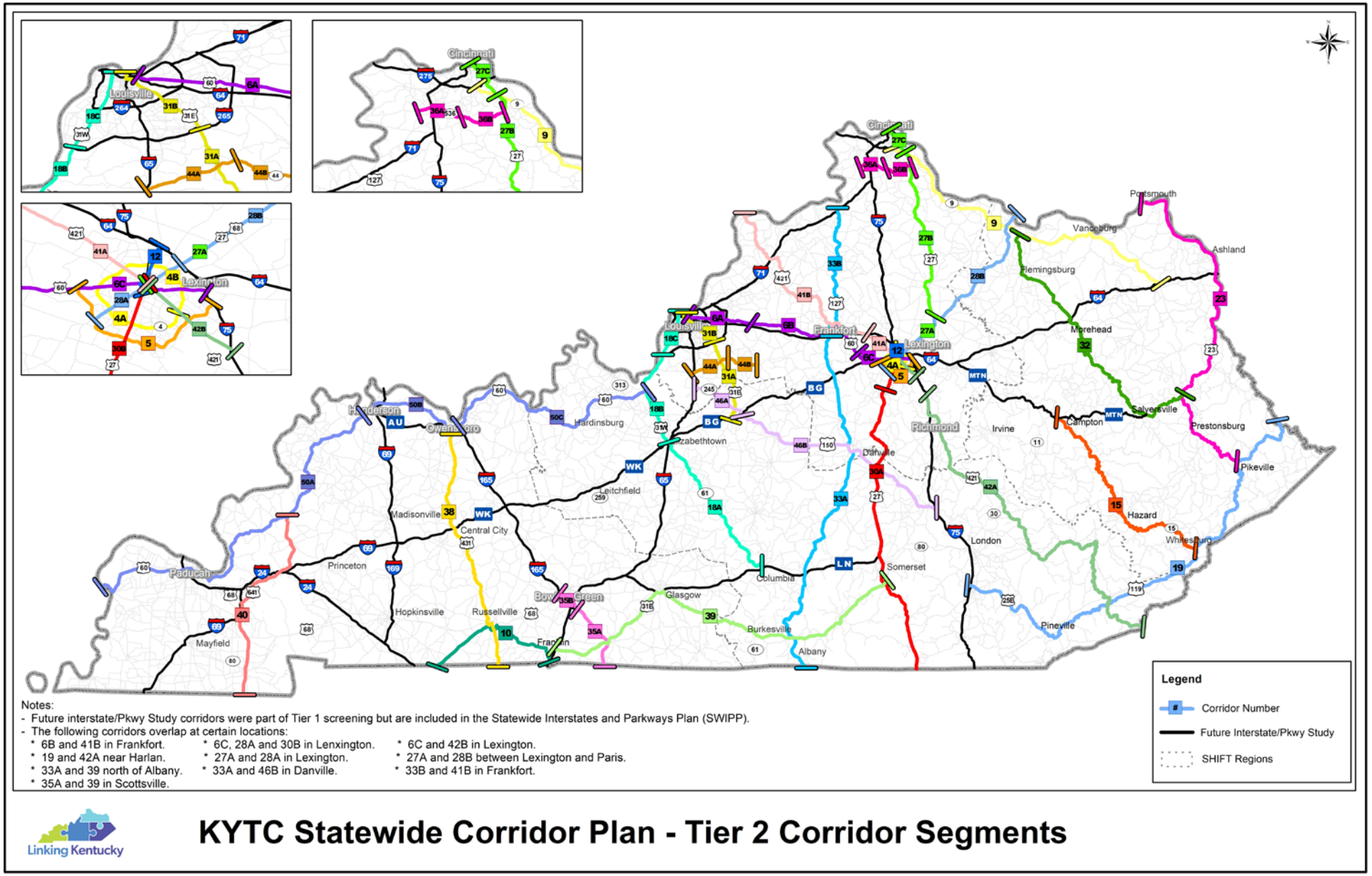
The Kentucky Transportation Cabinet (KYTC) strives to provide a safe and secure highway system, maintain and improve existing infrastructure, ensure dependable, effective and efficient facilities, improve connectivity and access, and integrate all appropriate modes of transportation. The Statewide Corridor Plan (SWCP), also known as "Linking Kentucky", used KYTC's planning and asset management tools to develop investment strategies for statewide and regional corridors through 2045.

The SWCP analysis utilized a tiered approach. Tier 1 analysis identified corridors that had the greatest needs to better connect Kentucky's regions and improve safety, mobility, and accessibility. The Tier 2 analysis delved into more detail, dividing 26 corridors that advanced after Tier 1 screening into 45 smaller segments, so specific investment in these segments could be analyzed and prioritized. Quantitative and qualitative factors, as well as input from stakeholders, were incorporated into the Tier 2 corridor analysis. **Figure ES.1** illustrates the Tier 2 segments studied. **Figure ES.2** summarizes the Tier 2 analysis. Each segment's rank is based on Tier 2 performance criteria such as safety, mobility, reliability, accessibility, infrastructure, economics, and multi-infrastructure opportunity. Information on benefit, cost, and project delivery time is also provided in **Figure ES.2**.

Priority segments were identified and advanced to the Visioning phase based on the Tier 2 analysis. **Figure ES.3** illustrates those 20 visioning segments. The visions outlined existing and future corridor issues and needs, possible improvements to address those needs, and implementation strategies. An interactive GIS Online Tool was also developed to assemble, display, and disseminate corridor visions to the general public and stakeholders. A one-page summary of the visions and general information for each of those 20 priority segments was also provided in this phase of the plan.

It is important to note that the Statewide Corridor Plan is a planning tool and is not a detailed alternative analysis. The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of the project development process.

Figure ES.1 – Tier 2 Segments




Notes:
- Future interstate/Pkwy Study corridors were part of Tier 1 screening but are included in the Statewide Interstates and Parkways Plan (SWIPP).
- The following corridors overlap at certain locations:
  - 6B and 41B in Frankfort.
  - 6C, 28A and 30B in Lexington.
  - 6C and 42B in Lexington.
  - 19 and 42A near Harlan.
  - 27A and 28A in Lexington.
  - 27A and 28B between Lexington and Paris.
  - 33A and 39 north of Albany.
  - 33A and 46B in Danville.
  - 33B and 41B in Frankfort.
  - 35A and 39 in Scottsville.

**KYTC Statewide Corridor Plan - Tier 2 Corridor Segments**

Figure ES.2 – Tier 2 Segments Performance Summary

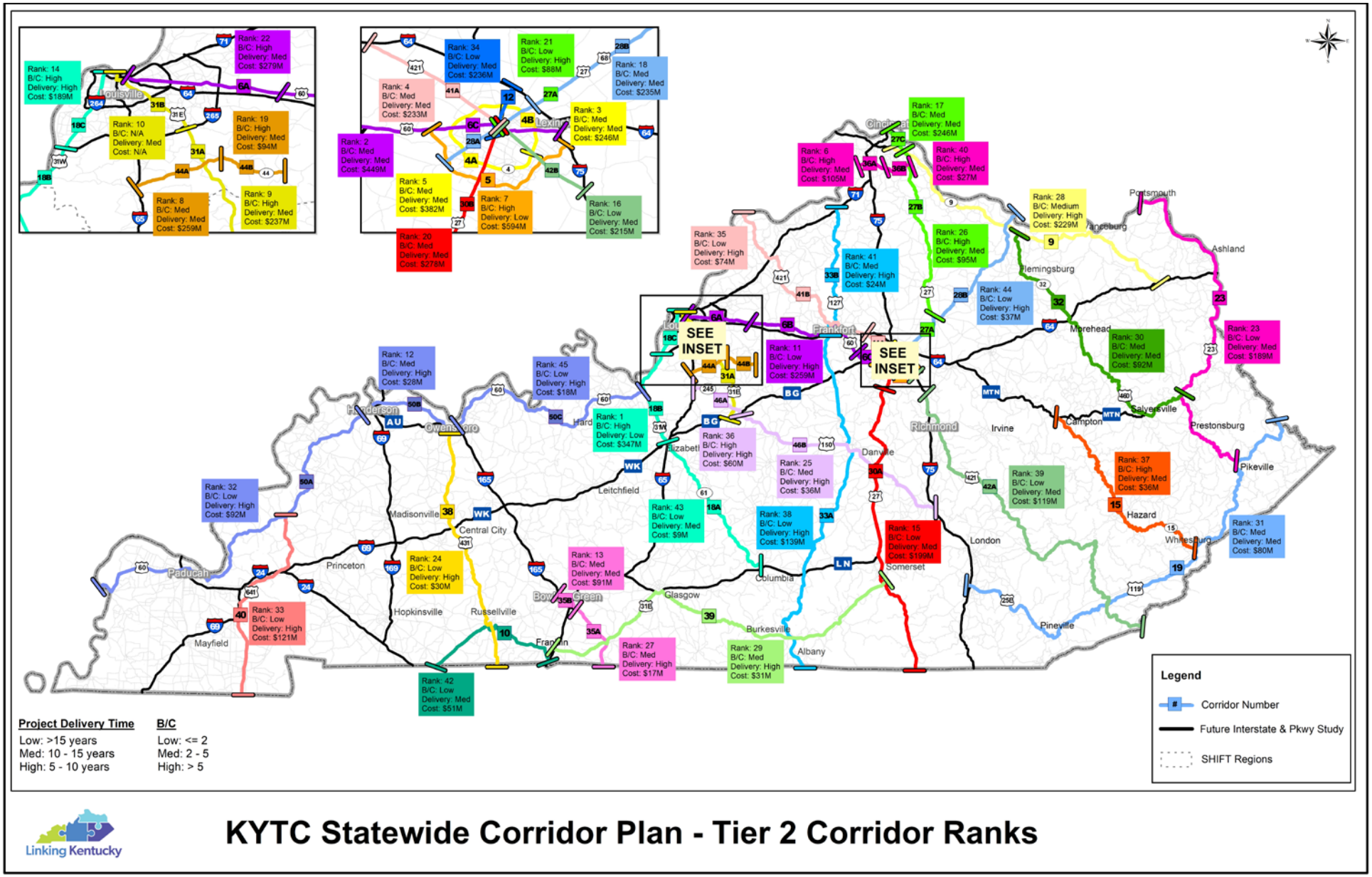
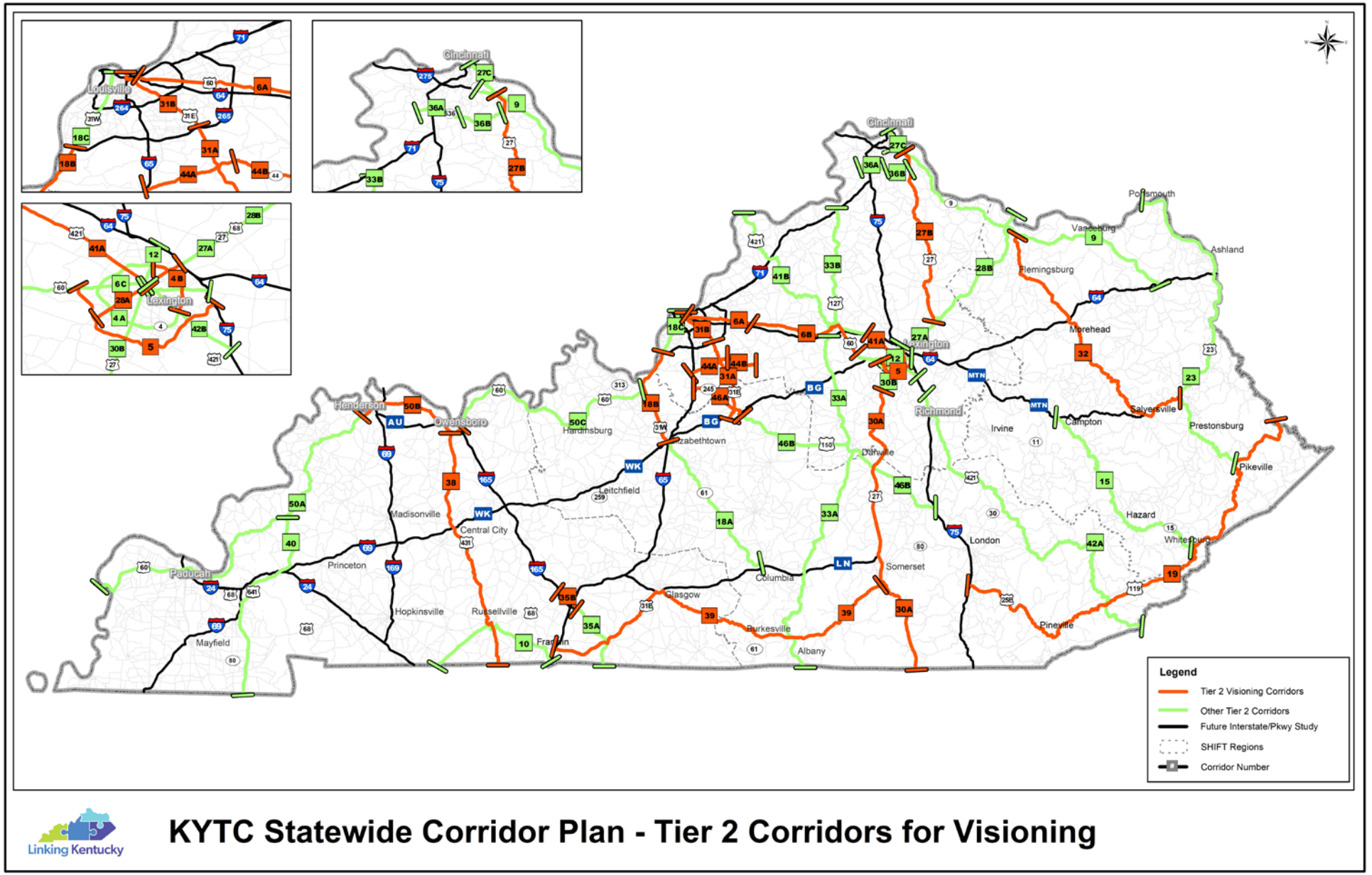


Figure ES.3 – Tier 2 Visioning Segments



## CORRIDOR 4B — KY 4 FROM NEWTOWN PIKE TO US 25 (RICHMOND ROAD)

### CORRIDOR OVERVIEW

Corridor 4B on New Circle Road begins as a major arterial at the New Circle Road/Newtown Pike interchange in Fayette County and circulates around the east side of Lexington until it reaches US 25 (Richmond Road), where it becomes corridor 4A. The corridor is approximately 6 miles long and currently contains one interchange. The entirety of this corridor is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

7

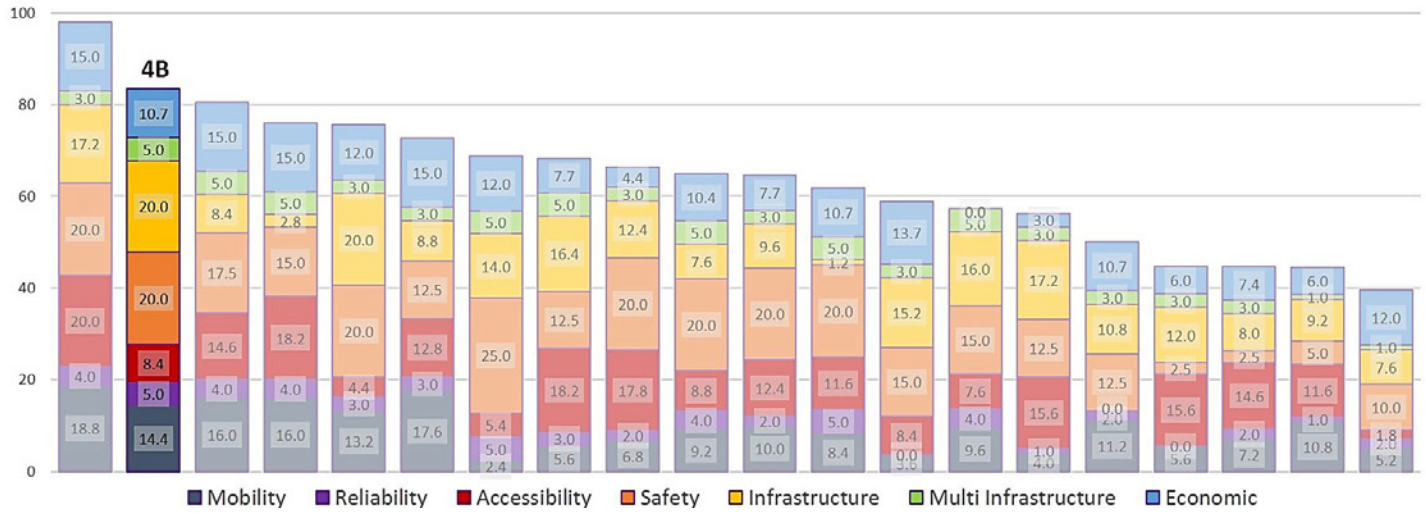
### ADD(s)

Bluegrass

### MPO(s)

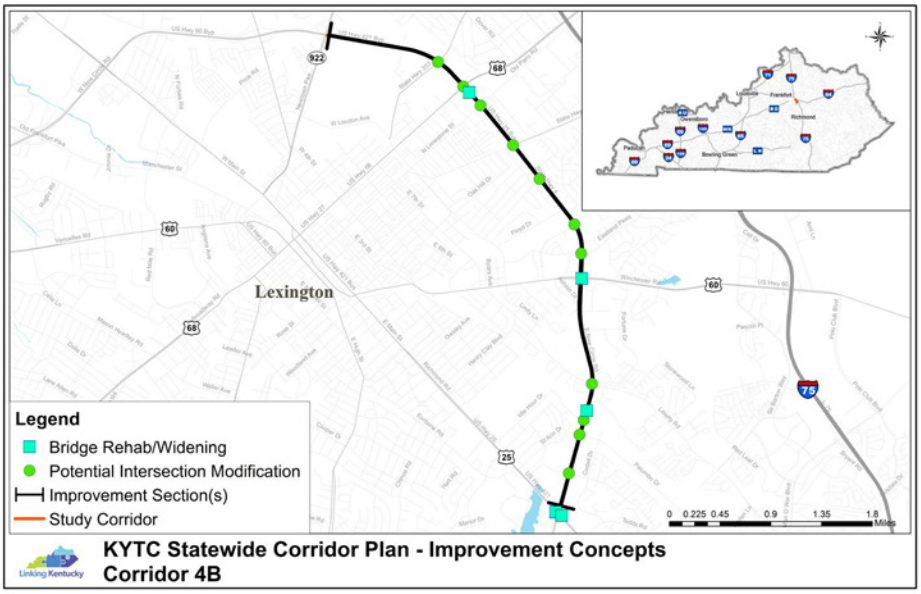
LAMPO

## TIER 2 OVERALL SCORE = 83.5, RANK = 2




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS



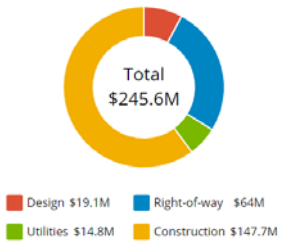

### Potential Improvement Section(s)

**Entire corridor:** Widen to a 6-lane divided arterial (5.5 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 11 |
| **Bridge Rehab/Widening:** | 5 |

**Cost Estimate (in 2020 Dollars)**




NOTE: Complete corridor data is available in the GIS Online Tool.

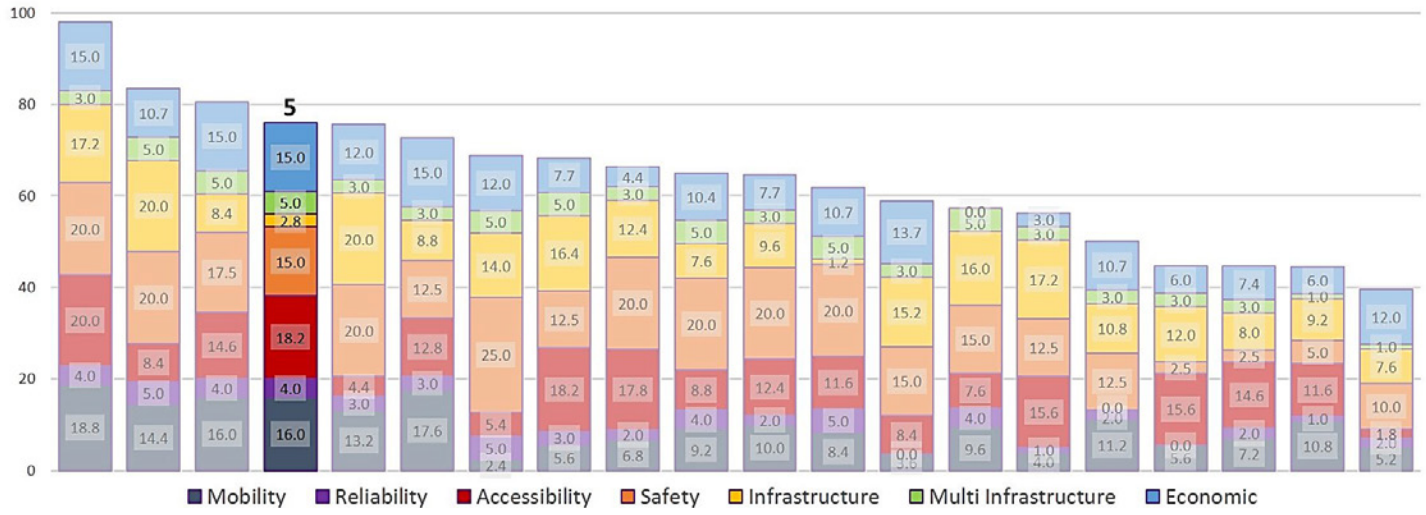
## CORRIDOR 5 MAN O' WAR BOULEVARD FROM US 60 (WEST) TO I-75 IN LEXINGTON

### CORRIDOR OVERVIEW

Corridor 5 on Man O' War Boulevard begins at the Man O' War Boulevard/US 60 intersection in Fayette County and extends south toward US 68 and US 27. Man O' War continues east towards Tates Creek Road, Alumni Drive, and US 25, ending at the I-75 interchange in Fayette County. The corridor is approximately 16 miles long and currently contains one interchange at I-75. The entirety of this corridor is part of the National Highway System (NHS).

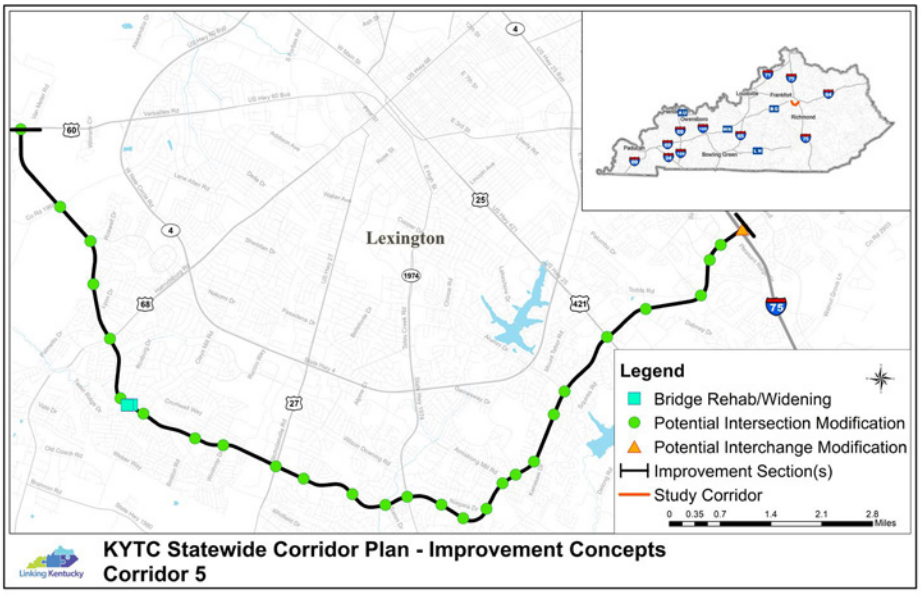
| HIGHWAY DISTRICT(s) |
|---|
| 7 |
| **ADD(s)** |
| Bluegrass |
| **MPO(s)** |
| LAMPO |

### TIER 2 OVERALL SCORE = 76.0, RANK = 7



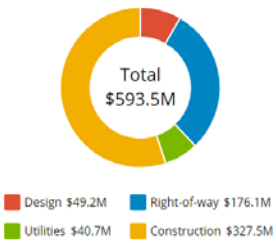

Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) |
|---|
| **Entire corridor:** Alt 1: Widen to a 6-lane divided arterial (15 miles). Alt 2: Right-In, Right-Out at non-signalized intersections. |
| **Potential Interchange Modification** |
| **@ I-75** |
| **Other Improvement(s)** |
| **Potential Intersection Modification:** 27 |
| **Bridge Rehab/Widening:** 2 |

**Cost Estimate (in 2020 Dollars)**




**NOTE: Complete corridor data is available in the GIS Online Tool.**

## CORRIDOR 6A — US 60 FROM I-64 IN LOUISVILLE TO KY 1848 IN SIMPSONVILLE

### CORRIDOR OVERVIEW

Corridor 6A on US 60 begins at the I-64 ramps in Jefferson County and extends east to Simpsonville in Shelby County. The corridor is approximately 21 miles long and currently contains two interchanges at I-264 and I-265. This corridor from I-64 to I-265 in Louisville is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

5

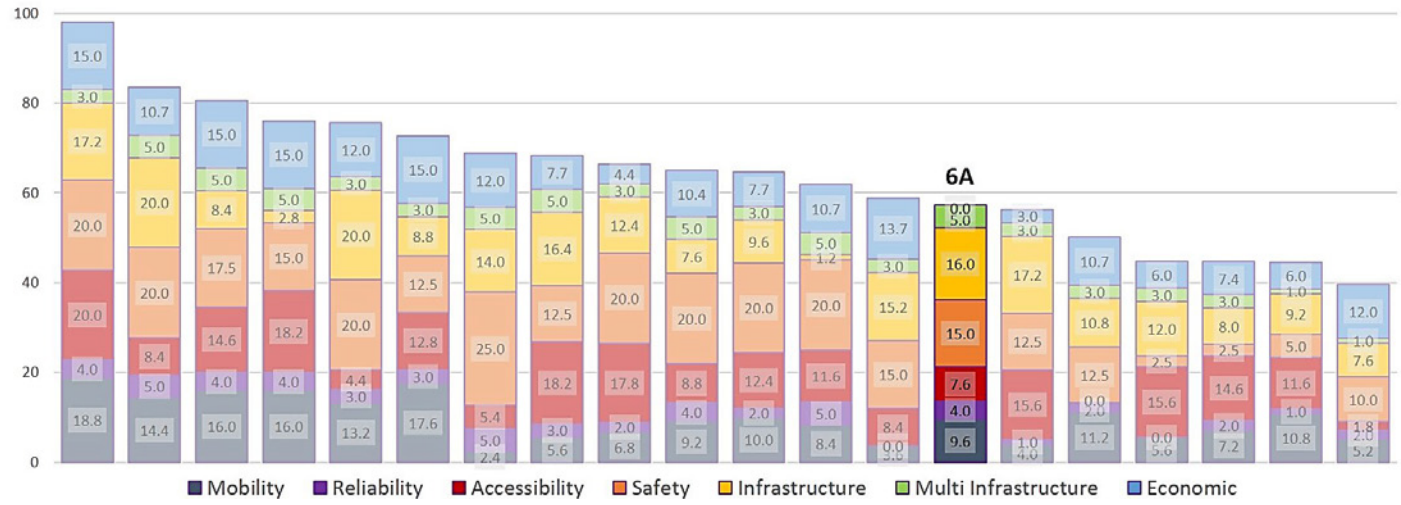
### ADD(s)

KIPDA

### MPO(s)

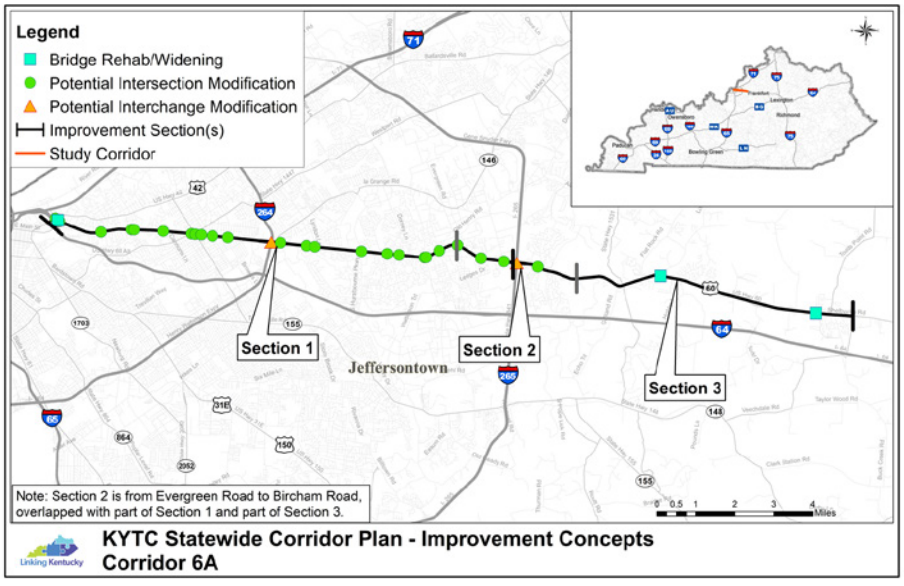
KIPDA

## TIER 2 OVERALL SCORE = 57.2, RANK = 22




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Complete streets and access management (12 miles).
**Section 2:** Widen to a 6-lane arterial (3 miles).
**Section 3:** Spot safety improvements (9 miles).

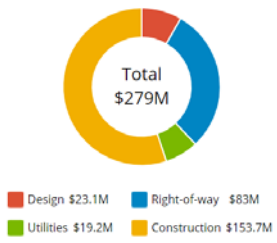
### Potential Interchange Modification

**@ I-264, @ I-265**

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 24 |
| **Bridge Rehab/Widening:** | 3 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

## CORRIDOR 6B — US 60 FROM KY 1848 IN SIMPSONVILLE TO US 62 IN VERSAILLES

### CORRIDOR OVERVIEW

Corridor 6B on US 60 begins at KY 1848 in Simpsonville in Shelby County. It runs parallel to I-64 through Shelbyville and Frankfort (in Franklin County) and ends at US 62 in Versailles (in Woodford County). The corridor is approximately 41 miles long and contains two interchanges at KY 676 and I-64. This corridor from the E Main St/Wilkinson Blvd intersection in Frankfort to US 62 in Versailles is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

5, 7

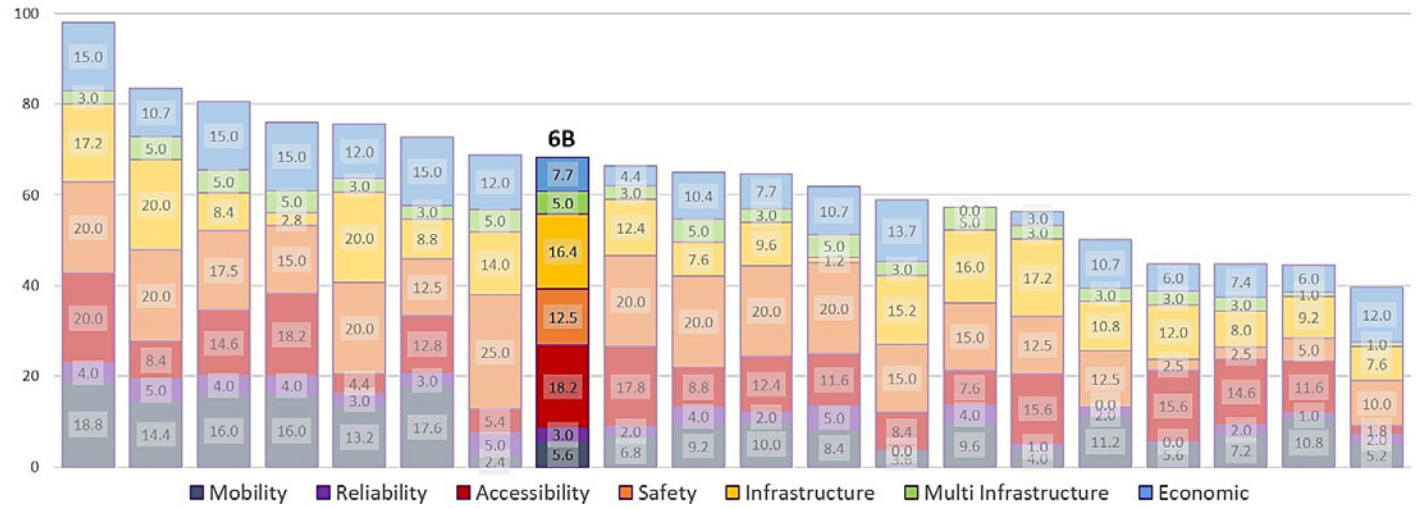
### ADD(s)

KIPDA, Bluegrass

### MPO(s)

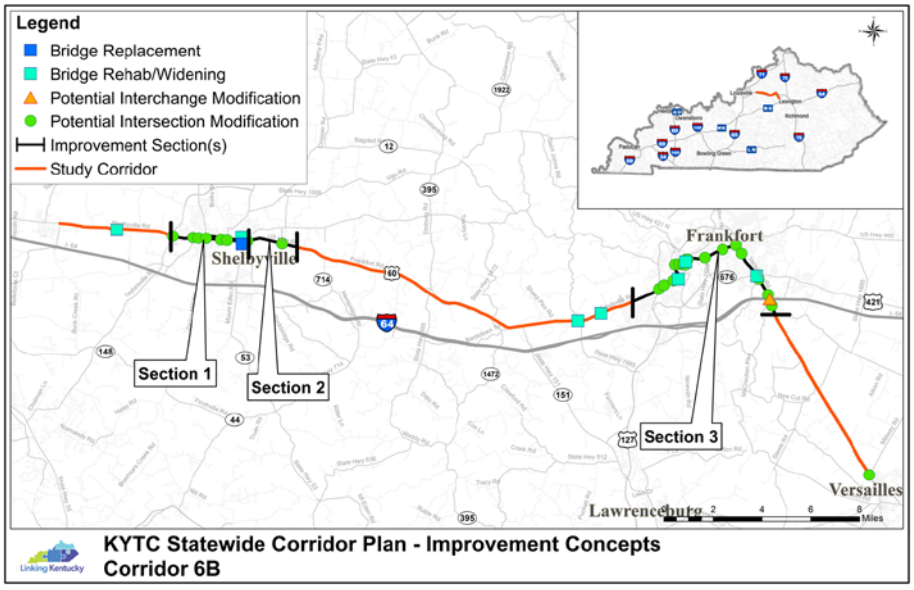
None

## TIER 2 OVERALL SCORE = 68.4, RANK = 11




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Intersection improvements (3 miles).

**Section 2:** Widen to a 5-lane arterial (2 miles).

**Section 3:** Intersection improvements and access management (9 miles).

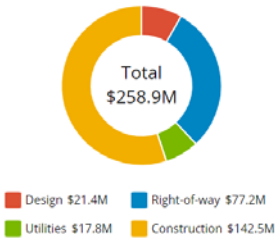
### Potential Interchange Modification

**@ I-64**

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 25 |
| **Bridge Rehab/Widening:** | 7 |
| **Bridge Replacement** | 1 |

### Cost Estimate (in 2020 Dollars)




NOTE: Complete corridor data is available in the GIS Online Tool.

# STATEWIDE CORRIDOR PLAN

## CORRIDOR 18B — US 31 W FROM I-65 TO I-265

### CORRIDOR OVERVIEW

Corridor 18B on US 31 W begins at the US 31 W/I-65 interchange in Hardin County and extends north through Meade County to I-265 in Jefferson County. The corridor is approximately 29 miles long and currently contains eight interchanges. The entirety of this corridor is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

4, 5

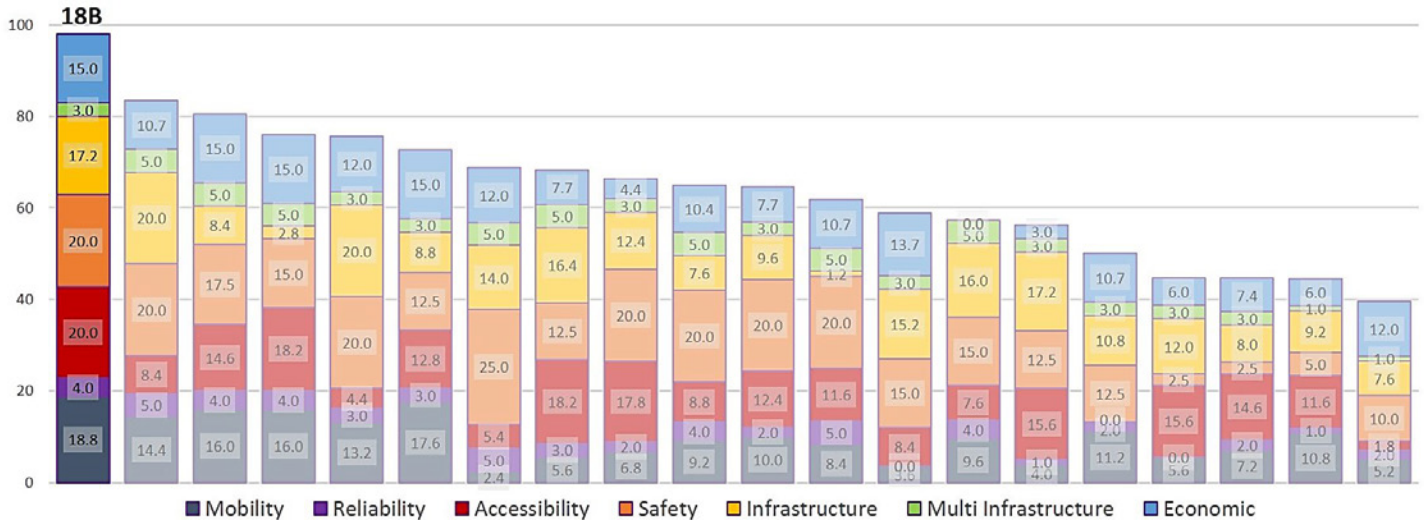
### ADD(s)

Lincoln Trail, KIPDA

### MPO(s)

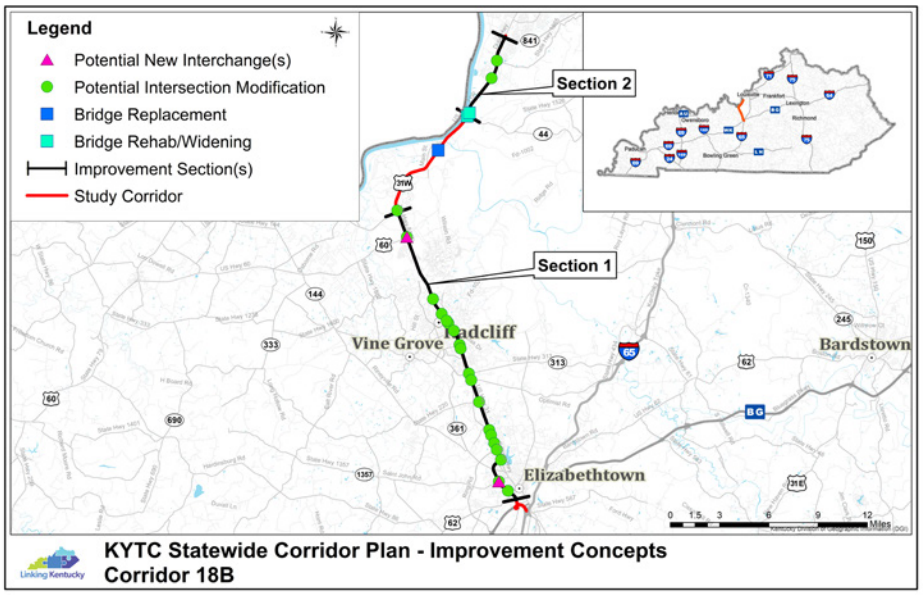
Radcliff - Elizabethtown MPO, KIPDA

## TIER 2 OVERALL SCORE = 98.0, RANK = 1




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Add Auxiliary Lane (20 miles).
**Section 2:** Widen to a 6-lane divided arterial (6 miles).

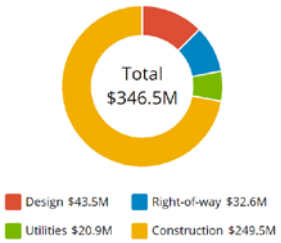
### Potential New Interchange(s)

**@ KY 1357, @ US 60**

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 21 |
| **Bridge Replacement:** | 1 |
| **Bridge Rehab/Widening:** | 2 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

# STATEWIDE CORRIDOR PLAN

Linking Kentucky

## CORRIDOR 19 — US 25 & US 119 FROM I-75 TO WEST VIRGINIA STATE LINE

### CORRIDOR OVERVIEW

Corridor 19 on US 25 E begins at the US 25 E/I-75 interchange in Laurel County and extends south through Knot County to US 119 in Bell County. In Bell County, the corridor extends north through Harlan County to US 23 in Letcher County. The corridor runs north until turning east and becoming US 119 again in Pike County, where it eventually ends at the West Virginia state line. The corridor is approximately 174 miles long and currently contains seven interchanges. The entirety of this corridor is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

11, 12

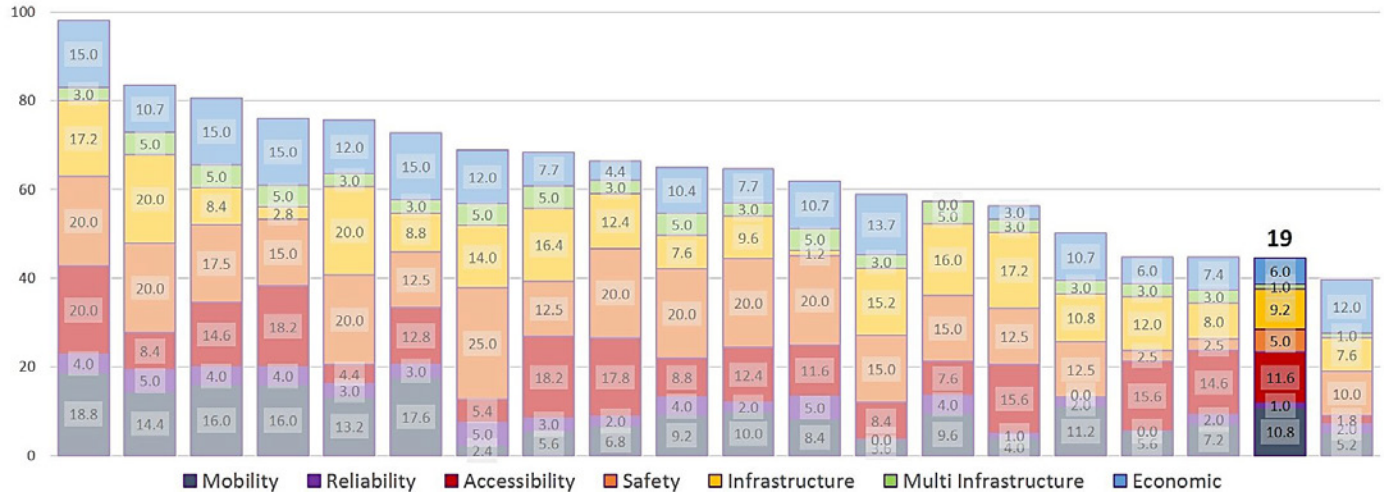
### ADD(s)

Cumberland Valley, Kentucky River, Big Sandy

### MPO(s)

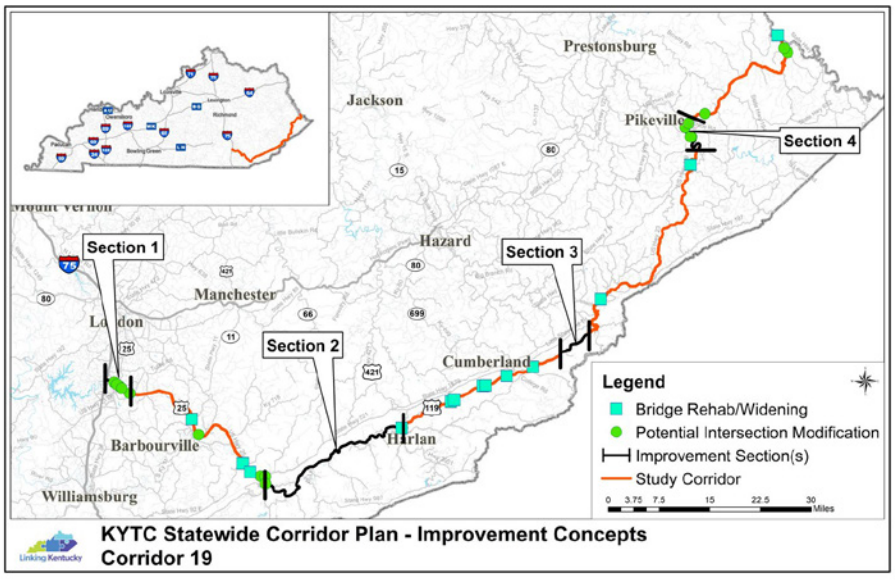
None

## TIER 2 OVERALL SCORE = 44.6, RANK = 31




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Intersection improvements and access management (4 miles).

**Section 2:** Improve shoulders and widen lanes (29 miles).

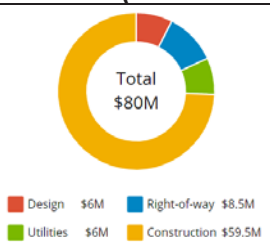
**Section 3:** Intersection improvements (5 miles).

**Section 4:** Intersection improvements and access management (7 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 17 |
| **Bridge Rehab/Widening:** | 13 |

### Cost Estimate (in 2020 Dollars)




NOTE: Complete corridor data is available in the GIS Online Tool.

## CORRIDOR 27B

## US 27 FROM US 27/ US 68 SPLIT IN PARIS TO KY 9 (AA HIGHWAY) IN CAMPBELL COUNTY

### CORRIDOR OVERVIEW

Corridor 27B on US 27 begins at the US 27/US 68 split in Bourbon County and extends north through Harrison and Pendleton Counties to KY 9 (AA Highway) in Campbell County. The corridor is approximately 63 miles long and currently contains one interchange at the AA Highway. This corridor is not part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

6, 7

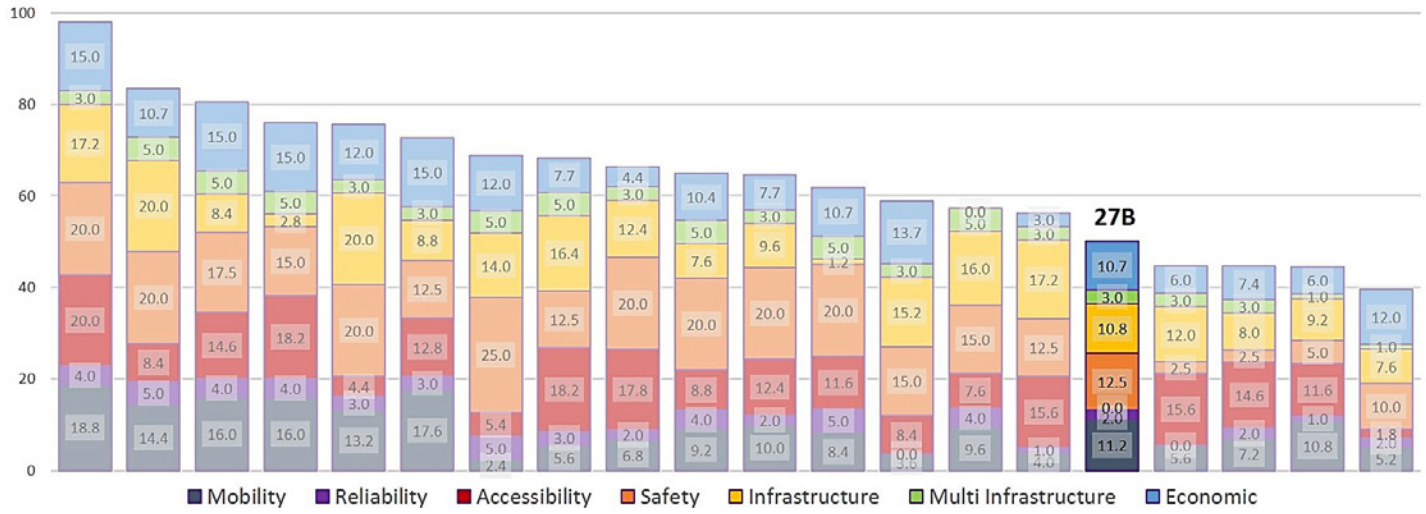
### ADD(s)

Bluegrass, Northern Kentucky

### MPO(s)

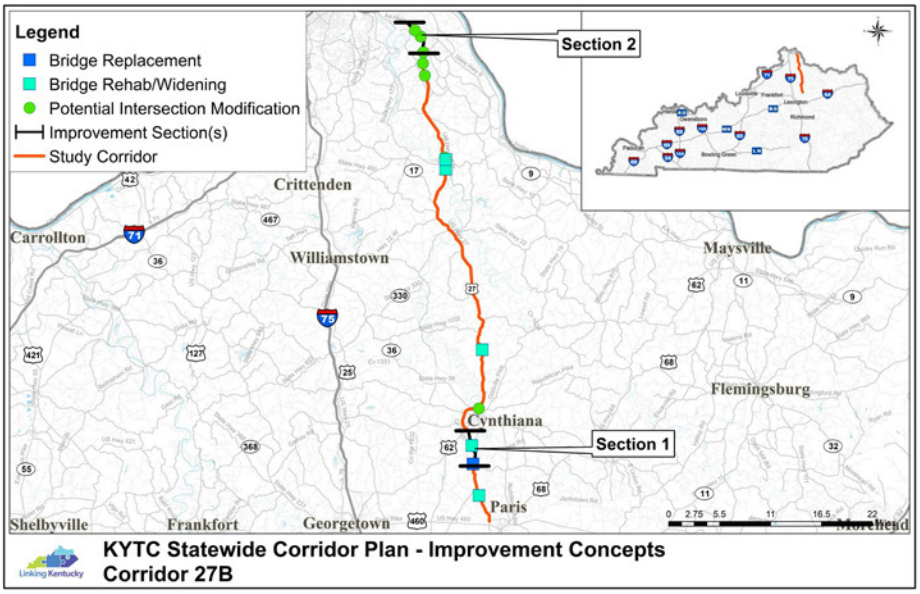
OKI

## TIER 2 OVERALL SCORE = 50.2, RANK = 26




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS



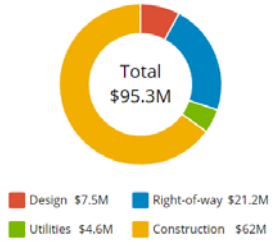

### Potential Improvement Section(s)

**Section 1:** Improve shoulders (4 miles).
**Section 2:** Widen to a 6-lane divided arterial (4 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 7 |
| **Bridge Rehab/Widening:** | 5 |
| **Bridge Replacement:** | 1 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

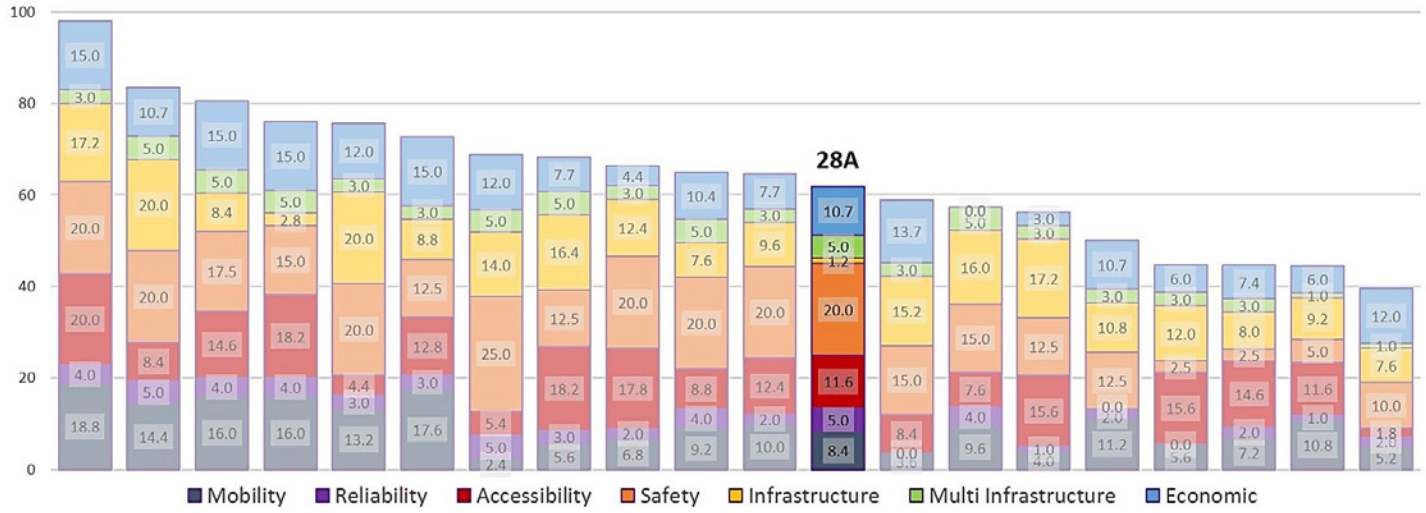
## CORRIDOR 28A — US 68 FROM MAN O' WAR BLVD TO I-64/I-75 INTERCHANGE

### CORRIDOR OVERVIEW

Corridor 28A on US 68 begins at the US 68/Man O' War Blvd intersection and ends at the I-64/I-75 interchange in Fayette County. The corridor is approximately 8 miles long and currently contains two interchanges at New Circle Road and I-64/I-75. The entirety of this corridor is part of the National Highway System (NHS).

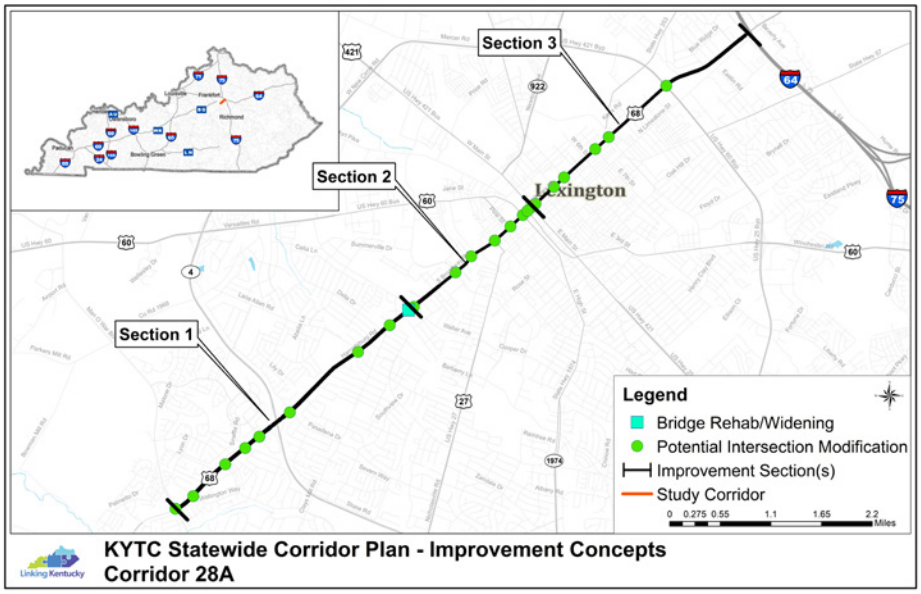
| HIGHWAY DISTRICT(s) |
|---|
| 7 |
| **ADD(s)** |
| Bluegrass |
| **MPO(s)** |
| LAMPO |

### TIER 2 OVERALL SCORE = 61.9, RANK = 18




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

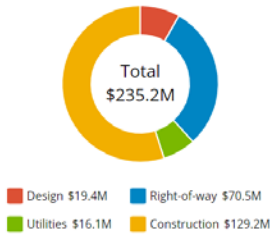
### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) |
|---|
| **Section 1:** Widen to a 6-lane divided arterial (3 miles). |
| **Section 2:** Improve access management (2 miles). |
| **Section 3:** Complete street and access management (3 miles). |

| Other Improvement(s) | |
|---|---|
| **Potential Intersection Modification:** | 22 |
| **Bridge Rehab/Widening:** | 1 |

**Cost Estimate (in 2020 Dollars)**




**NOTE: Complete corridor data is available in the GIS Online Tool.**

# STATEWIDE CORRIDOR PLAN

## CORRIDOR 30A US 27 FROM TENNESSEE STATE LINE TO US 27 BYPASS NEAR NICHOLASVILLE

### CORRIDOR OVERVIEW

Corridor 30A on US 27 begins at the Tennessee state line in McCreary County and extends north through Pulaski, Lincoln, and Garrard Counties to the end of the US 27 Bypass in Jessamine County. The corridor is approximately 103 miles long and currently contains three interchanges. The entirety of this corridor is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

7, 8

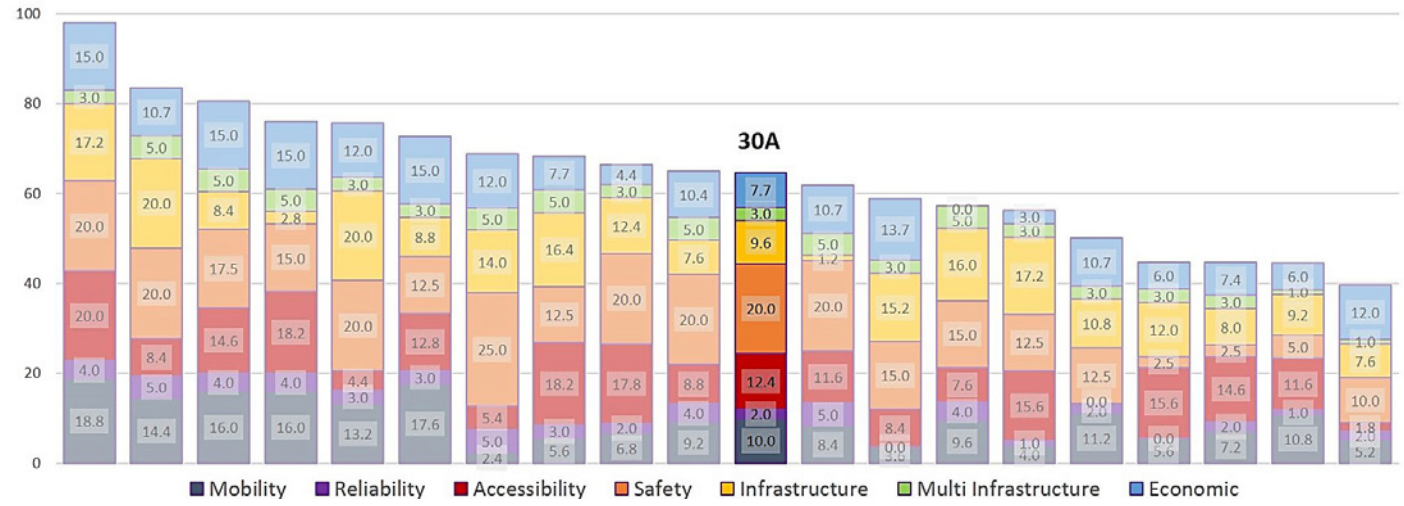
### ADD(s)

Lake Cumberland, Bluegrass

### MPO(s)

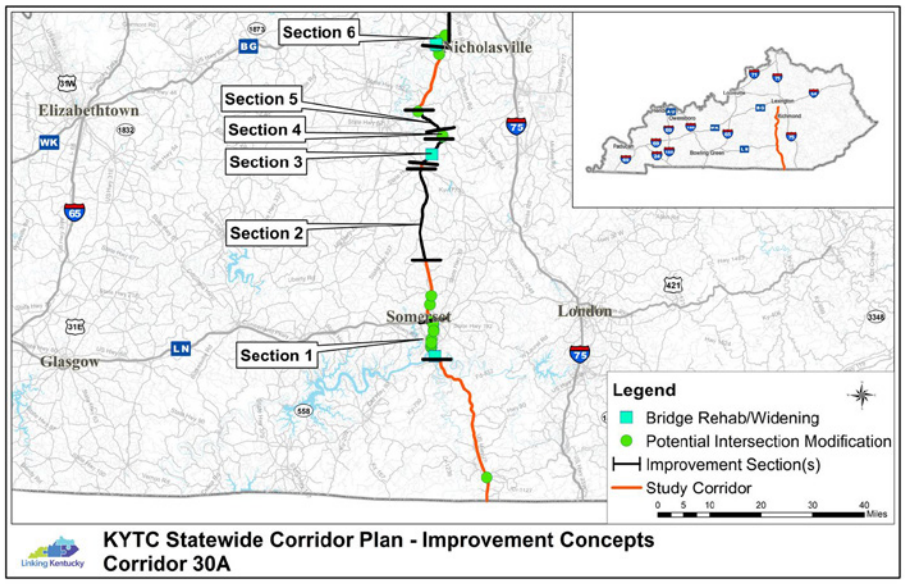
LAMPO

## TIER 2 OVERALL SCORE = 64.7, RANK = 15




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS



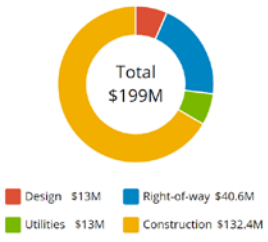

### Potential Improvement Section(s)

**Section 1:** Intersection improvements (8 miles).
**Section 2:** Improve shoulders (18 miles).
**Section 3:** Improve shoulders (6 miles).
**Section 4:** Concept 1: Access management; Concept 2: Bypass around Lancaster (1 mile).
**Section 5**: Improve shoulders and add turn lanes (7 miles).
**Section 6:** Widen to a 6-lane divided arterial (3 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 22 |
| **Bridge Rehab/Widening:** | 3 |

### Cost Estimate (in 2020 Dollars)




NOTE: Complete corridor data is available in the GIS Online Tool.

## CORRIDOR 31A — US 31 E/US 150 FROM BLUEGRASS PKWY TO I-265 IN LOUISVILLE

### CORRIDOR OVERVIEW

Corridor 31A on US 31 E/US 150 begins at the US 31 E/Bluegrass Parkway interchange in Nelson County and extends north through Bullitt and Spencer Counties to I-265 in Jefferson County. The corridor is approximately 28 miles long and currently contains two interchanges at Bluegrass Parkway and I-265. This corridor is not part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

4, 5

### ADD(s)

Lincoln Trail, KIPDA

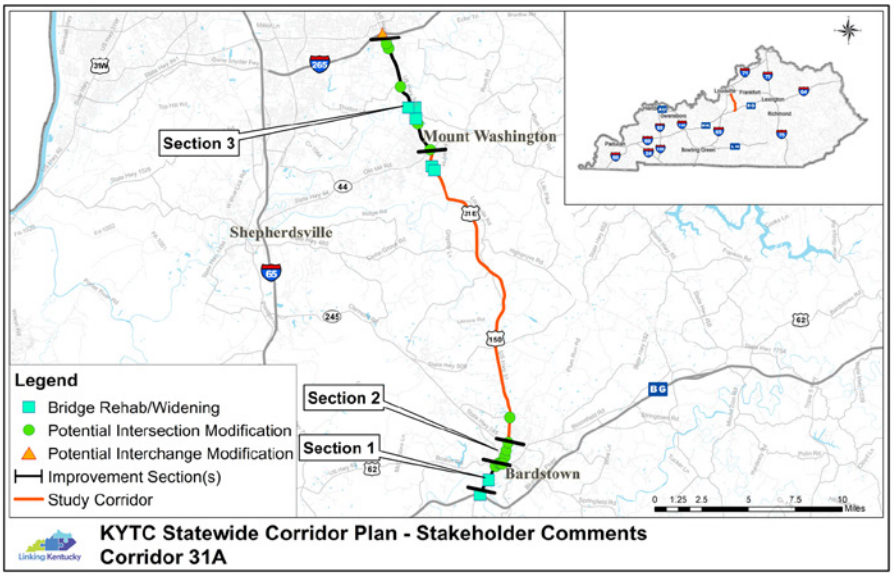
### MPO(s)

KIPDA

### TIER 2 OVERALL SCORE = 72.7, RANK = 9


Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Concept 1: Widen to a 4-lane undivided arterial; Concept 2: Convert to a 3-lane facility (2 miles).
**Section 2:** Intersection Improvements (2 miles).
**Section 3:** Widen to a 6-lane divided arterial (7 miles).

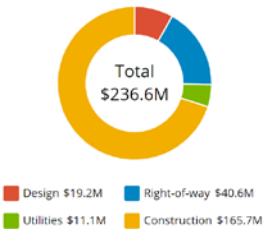
### Potential Interchange Modification

**@I-265**

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 13 |
| **Bridge Rehab/Widening:** | 7 |

**Cost Estimate (in 2020 Dollars)**




NOTE: Complete corridor data is available in the GIS Online Tool.

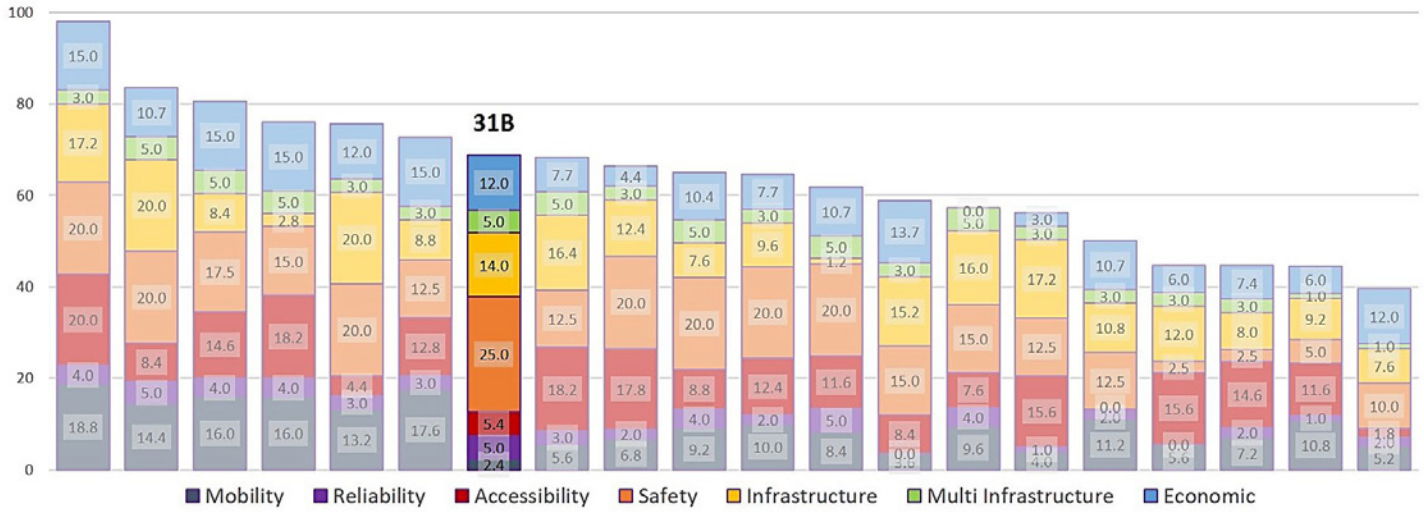
## CORRIDOR 31B — US 31 E/US 150 FROM I-265 IN LOUISVILLE TO INDIANA STATE LINE

### CORRIDOR OVERVIEW

Corridor 31B on US 31 E/US 150 begins at the US 31 E/I-265 interchange in Jefferson County and extends northwest to the Indiana state line in Jefferson County. The corridor is approximately 14 miles long and currently contains two interchanges at I-265 and I-264. The entirety of this corridor is part of the National Highway System (NHS).

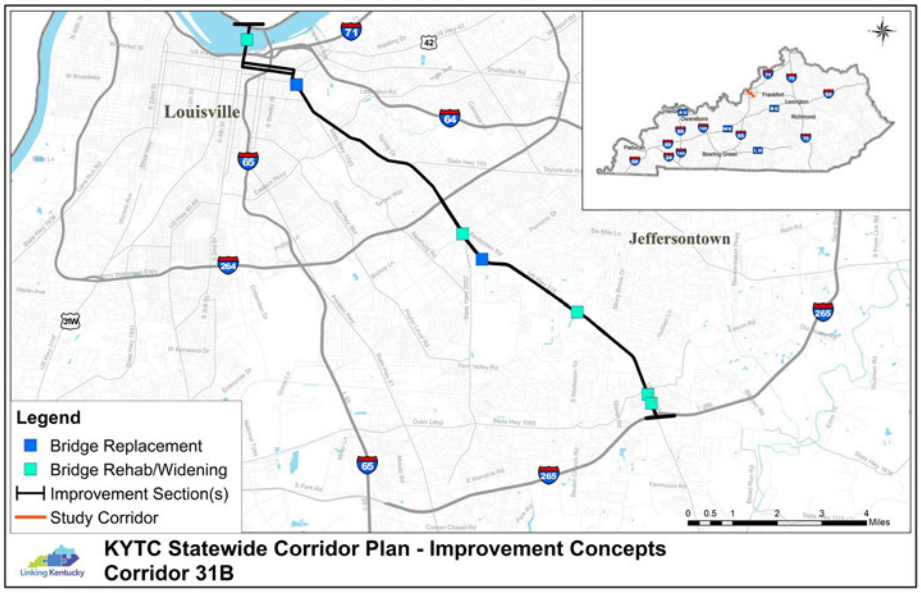
| HIGHWAY DISTRICT(s) |
|---|
| 5 |
| **ADD(s)** |
| KIPDA |
| **MPO(s)** |
| KIPDA |

### TIER 2 OVERALL SCORE = 68.8, RANK = 10




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) |
|---|
| **Entire Corridor:** Complete streets and access management where feasible (14 miles). |

| Other Improvement(s) | |
|---|---|
| **Bridge Rehab/Widening:** | 5 |
| **Bridge Replacement:** | 2 |

**Cost Estimate (in 2020 Dollars)**

Specific plans on complete streets and access management were not developed for this highly challenging corridor as part of this study. Further study is recommended for detailed improvement strategies and cost estimate.

**NOTE: Complete corridor data is available in the GIS Online Tool.**

## CORRIDOR 32 — KY 11/KY 32/US 460 FROM AA HIGHWAY TO US 23 IN PAINTSVILLE

### CORRIDOR OVERVIEW

Corridor 32 on KY 11 begins at the KY 11/KY 9 intersection in Mason County and extends south through Fleming County, where it becomes KY 32. From Fleming County, KY 32 extends south to Rowan County, shifting into US 60, then KY 519 in Morehead. KY 519 extends further south to Morgan County, where it becomes KY 7. From Morgan County, KY 7 turns into US 460, where it travels through Magoffin County, eventually ending in Johnson County at US 23 near Paintsville. The corridor is approximately 104 miles long and currently contains two interchanges at I-64 and US 23. This corridor from Mountain Parkway in Salyersville to US 23 near Paintsville is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

9, 10, 12

### ADD(s)

Big Sandy, Gateway, Buffalo Trace

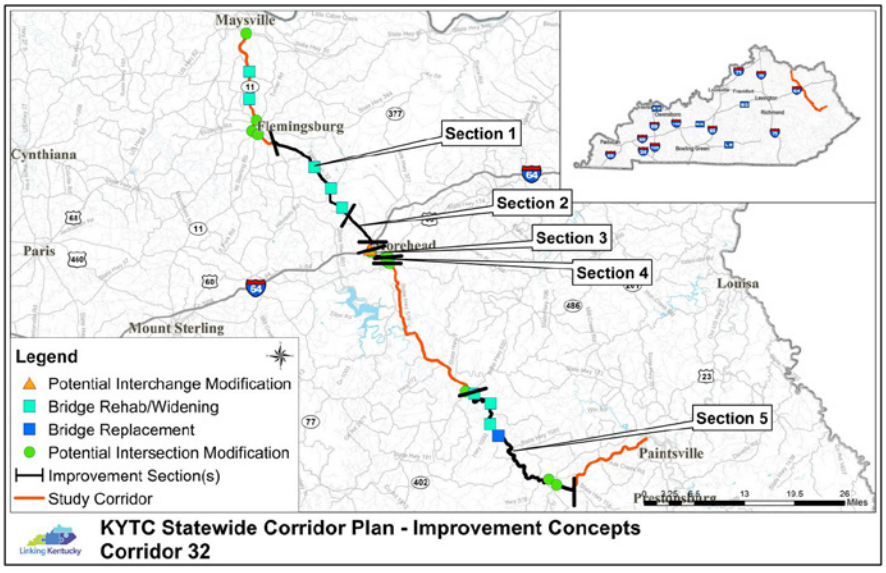
### MPO(s)

None

### TIER 2 OVERALL SCORE = 44.7, RANK = 30


Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

**Section 1:** Improve shoulders (15 miles).
**Section 2:** Improve shoulders and access management (5 miles).
**Section 3:** Widen to a 6-lane arterial and access management (3 miles).
**Section 4:** Widen to a 4-lane divided arterial (0.5 mile).
**Section 5:** Improve shoulders (24 miles).

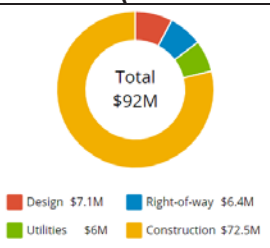
### Potential Interchange Modification

@ I-64

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification:** | 13 |
| **Bridge Rehab/Widening:** | 8 |
| **Bridge Replacement:** | 1 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

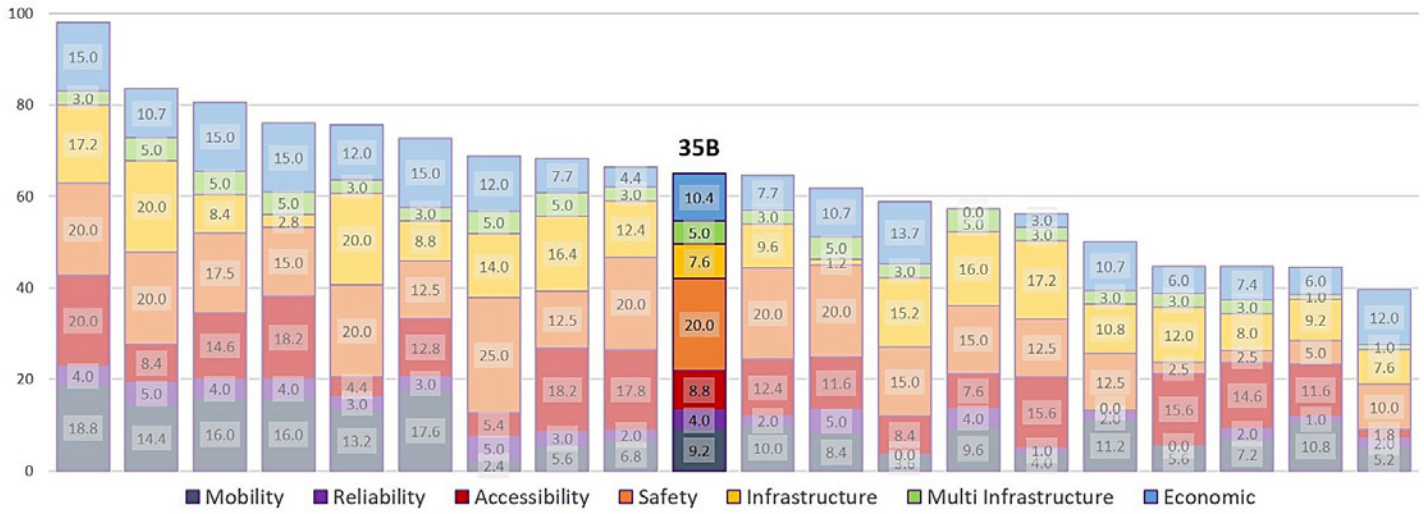
## CORRIDOR 35B — US 231 FROM NATCHER PKWY (SOUTH OF BOWLING GREEN) TO US 68 IN BOWLING GREEN

### CORRIDOR OVERVIEW

Corridor 35B on US 231 begins at Natcher Parkway in Warren County and extends northwest to US 68 in Warren County. The corridor is approximately 7 miles long and currently contains one interchange at I-65. The entirety of this corridor is part of the National Highway System (NHS).

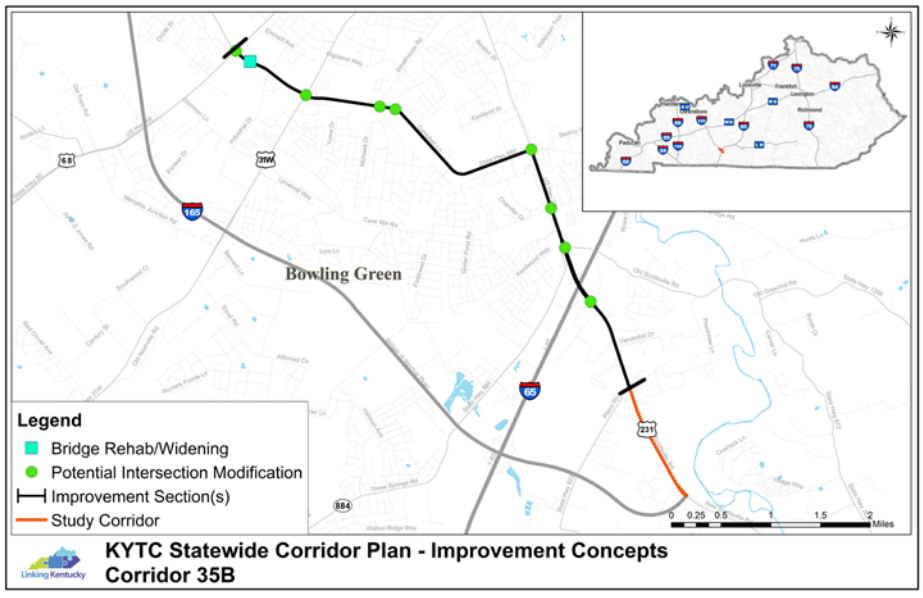
| HIGHWAY DISTRICT(s) |
|---|
| 3 |
| **ADD(s)** |
| Barren River |
| **MPO(s)** |
| Bowling Green MPO |

### TIER 2 OVERALL SCORE = 65.0, RANK = 13



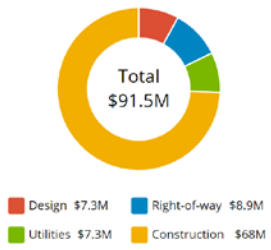

Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) | |
|---|---|
| Widen to a 6-lane divided arterial (6 miles). | |
| **Other Improvement(s)** | |
| **Potential Intersection Modification:** | 8 |
| **Bridge Rehab/Widening:** | 1 |

**Cost Estimate (in 2020 Dollars)**




NOTE: Complete corridor data is available in the GIS Online Tool.

# STATEWIDE CORRIDOR PLAN

## CORRIDOR 38 — US 431 FROM TENNESSEE STATE LINE TO US 60 IN OWENSBORO

### CORRIDOR OVERVIEW

Corridor 38 on US 431 begins at the Tennessee state line in Logan County and extends north through Muhlenberg County and McLean County to US 60 in Daviess County. The corridor is approximately 84 miles long and currently contains two interchanges at Western Kentucky Parkway and US 60. This corridor includes one bypass: US 68/US 431 Bypass in the City of Russellville. This corridor from Clarksville Rd to US 68 Bypass (north) in Russellville is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

2, 3

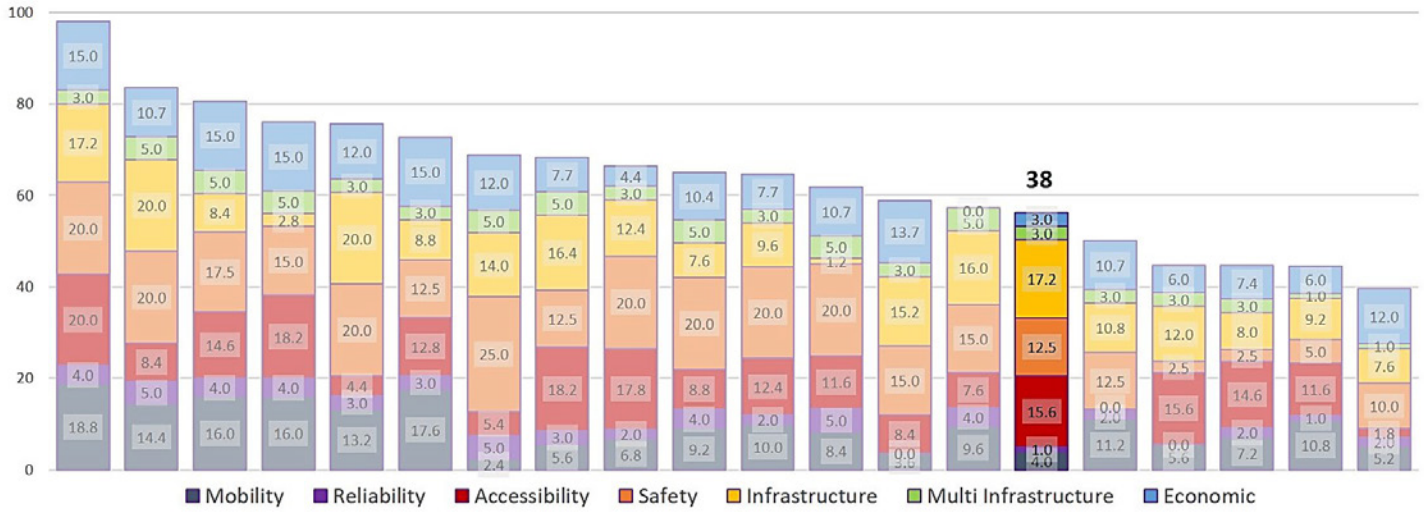
### ADD(s)

Barren River, Pennyrile, Green River

### MPO(s)

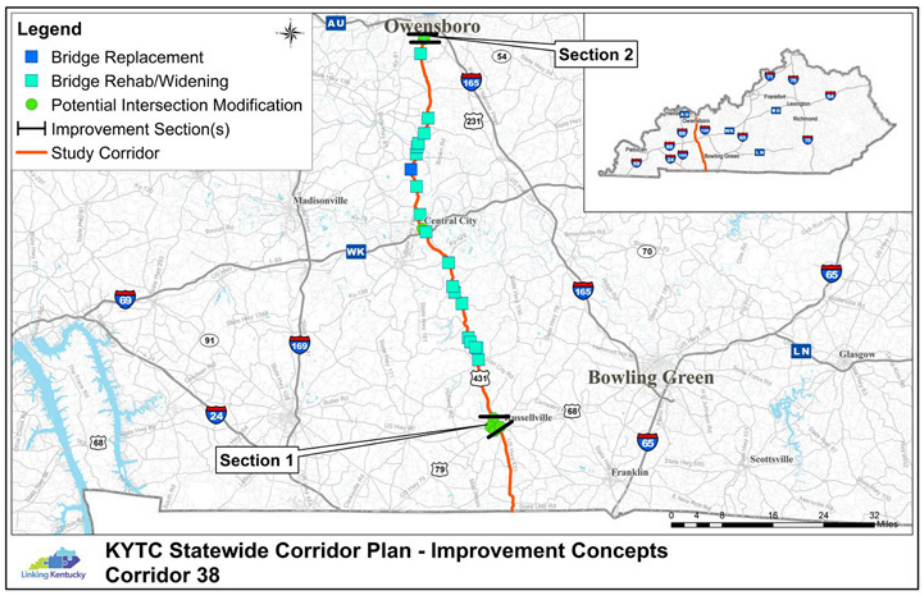
Owensboro-Daviess County MPO

## TIER 2 OVERALL SCORE = 56.3, RANK = 24




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

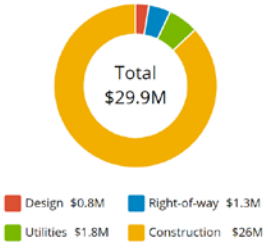
**Section 1:** Intersection Improvements (4 miles).

**Section 2:** Intersection Improvements (1 mile).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification** | 8 |
| **Bridge Rehab/Widening:** | 18 |
| **Bridge Replacement:** | 1 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

# STATEWIDE CORRIDOR PLAN

Linking Kentucky

## CORRIDOR 39 — KY 100/US 31E/KY 90 FROM I-65 EXIT 6 TO US 27 NEAR SOMERSET

### CORRIDOR OVERVIEW

Corridor 39 on KY 100/US 31E/KY 90 begins at the I-65 Exit 6 in Simpson County and extends east through multiple counties to US 27 in Pulaski County. The corridor is approximately 134 miles long and currently contains four interchanges at I-65, Cumberland Expressway (west), Cumberland Expressway (east), and US 27. This corridor from US 31 E (Sccottsville Rd) to E Main St in Glasgow is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

3, 8

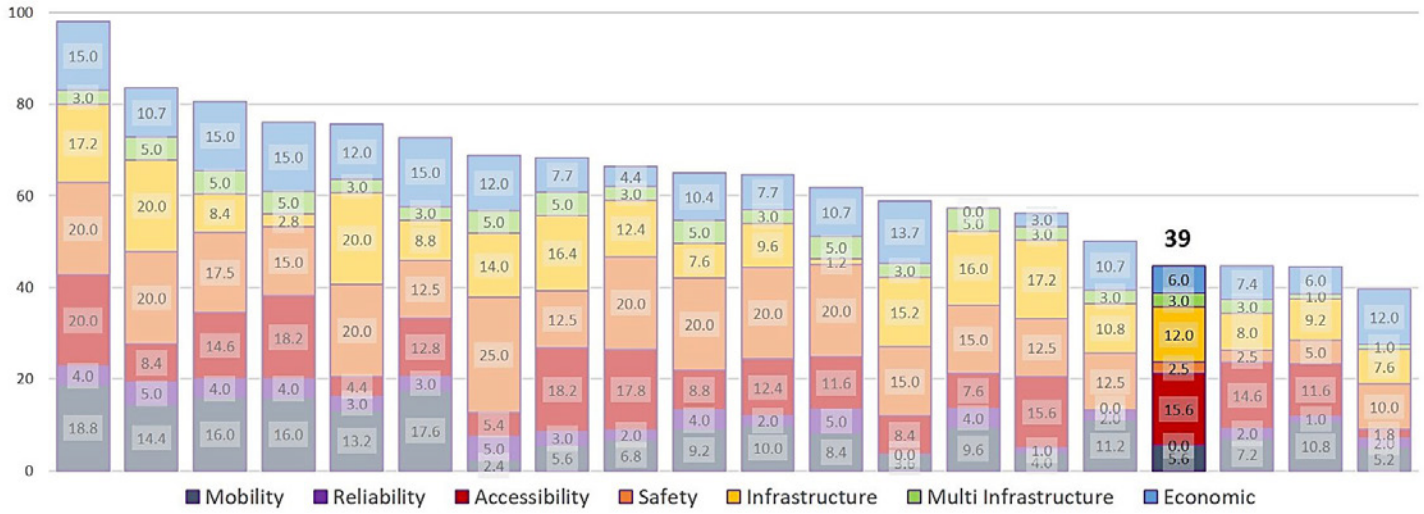
### ADD(s)

Barren River, Lake Cumberland

### MPO(s)

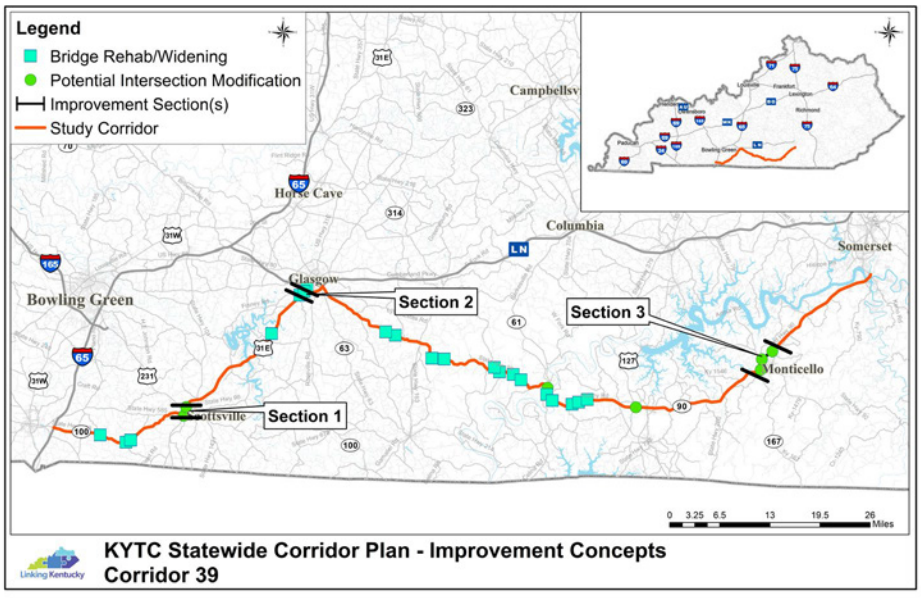
None

## TIER 2 OVERALL SCORE = 44.7, RANK = 29




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS



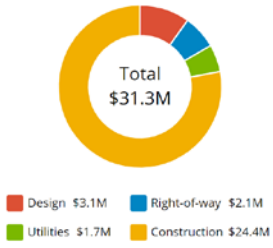

### Potential Improvement Section(s)

**Section 1:** Convert to a 2+1 facility (1 mile).
**Section 2:** Widen to a 4-lane divided arterial (1 mile).
**Section 3**: Intersection improvements (5 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification** | 8 |
| **Bridge Rehab/Widening:** | 20 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

# STATEWIDE CORRIDOR PLAN

## CORRIDOR 41A — US 421 FROM US 27 IN LEXINGTON TO KY 341 (I-64 EXIT 65)

### CORRIDOR OVERVIEW

Corridor 41A on US 421 begins at US 27 in Fayette County and extends northwest through Scott County to KY 341 (I-64 Exit 65) in Woodford County. The corridor is approximately 12 miles long and currently contains one interchange at KY 4 (New Circle Rd). This corridor from US 27 to KY 4 (New Circle Rd) in Lexington is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

7

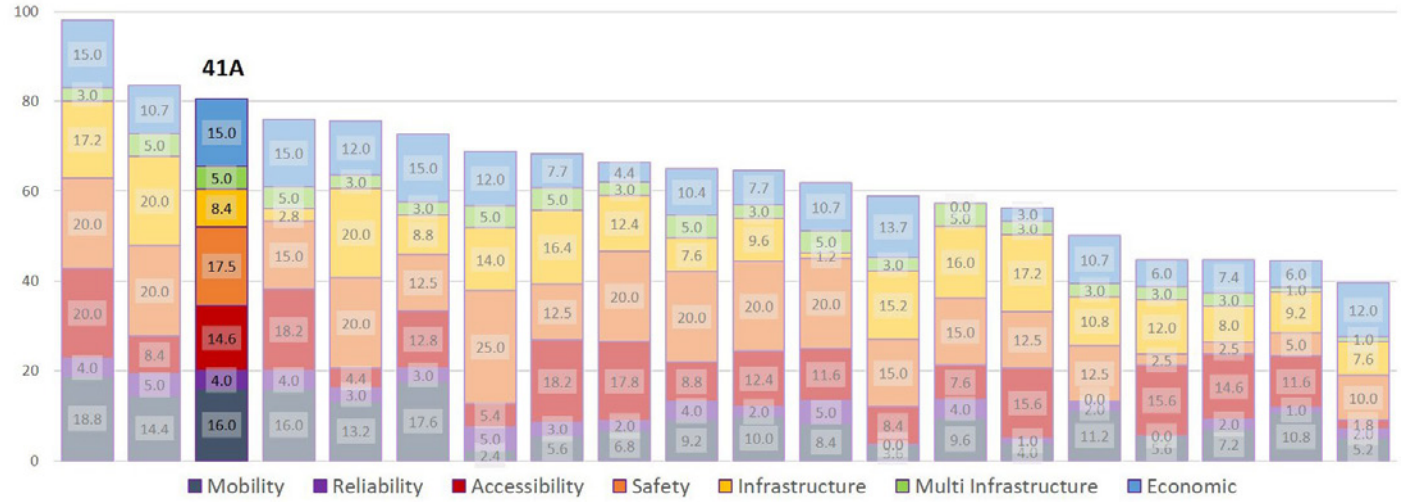
### ADD(s)

Bluegrass

### MPO(s)

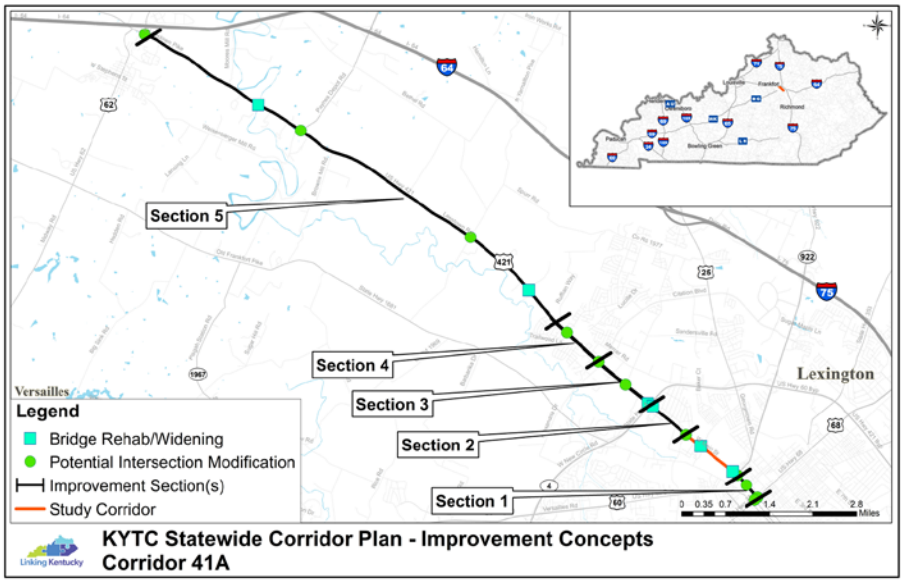
LAMPO

## TIER 2 OVERALL SCORE = 80.5, RANK = 4




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS



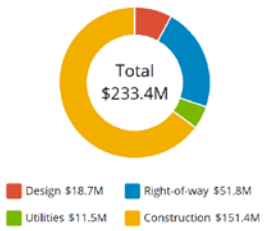

### Potential Improvement Section(s)

**Section 1:** Intersection Improvements (0.5 mile).
**Section 2:** Widen to a 4-lane undivided arterial (0.7 mile).
**Section 3:** Widen to a 6-lane divided arterial (1 mile).
**Section 4:** Widen to a 6-lane divided arterial (1 mile).
**Section 5:** Widen to a 4-lane divided arterial (8 miles).

### Other Improvement(s)

| | |
|---|---|
| **Potential Intersection Modification** | 10 |
| **Bridge Rehab/Widening:** | 6 |

### Cost Estimate (in 2020 Dollars)




NOTE: Complete corridor data is available in the GIS Online Tool.

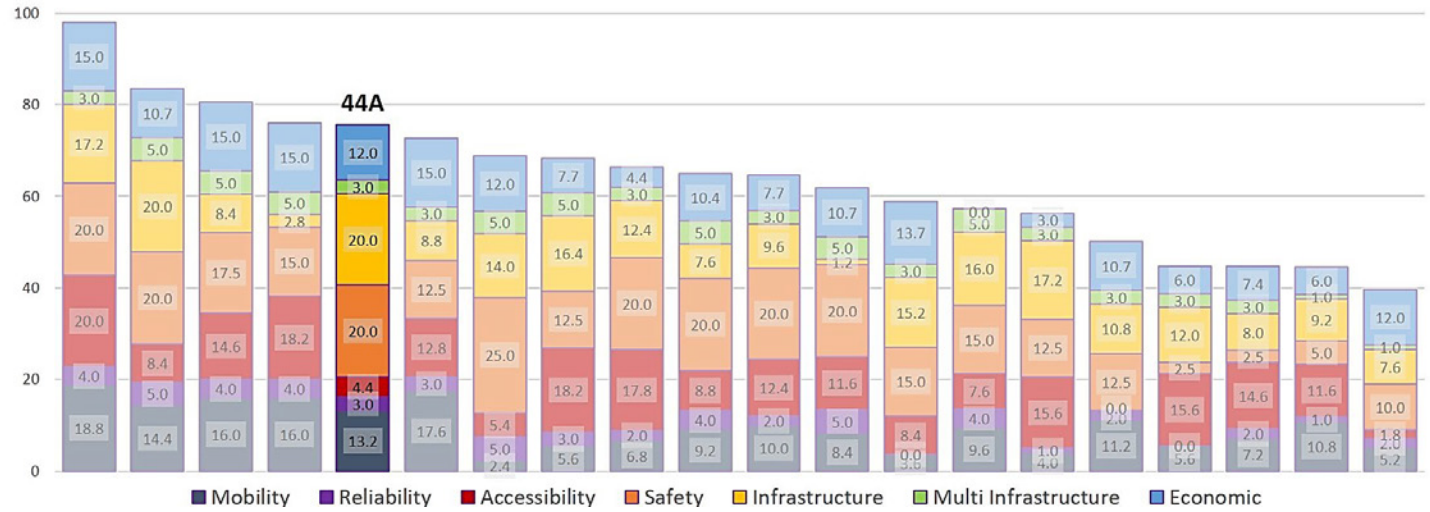
## CORRIDOR 44A — KY 44 FROM I-65 TO KY 1319

### CORRIDOR OVERVIEW

Corridor 44A on KY 44 begins at I-65 in Bullitt County and extends east to KY 1319 in Bullitt County. The corridor is approximately 12 miles long and currently contains one interchange at I-65. This corridor is not part of the National Highway System (NHS).

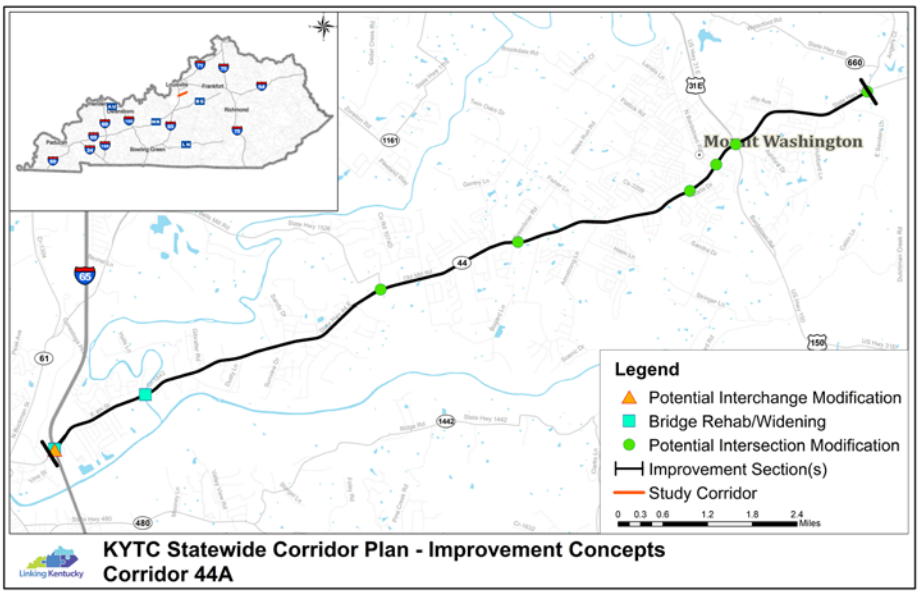
| HIGHWAY DISTRICT(s) |
|---|
| 5 |
| **ADD(s)** |
| KIPDA |
| **MPO(s)** |
| KIPDA |

### TIER 2 OVERALL SCORE = 75.6, RANK = 8



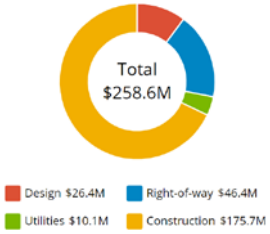

Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) |
|---|
| **Entire Corridor:** Upgrade to a 3-lane arterial and construct a new 4-lane divided connector west of Mt. Washington (12 miles). |
| **Potential Interchange Modification** |
| @ I-65 |
| **Other Improvement(s)** |
| **Potential Intersection Modification** 6 |
| **Bridge Rehab/Widening:** 2 |

**Cost Estimate (in 2020 Dollars)**




**NOTE: Complete corridor data is available in the GIS Online Tool.**

# STATEWIDE CORRIDOR PLAN

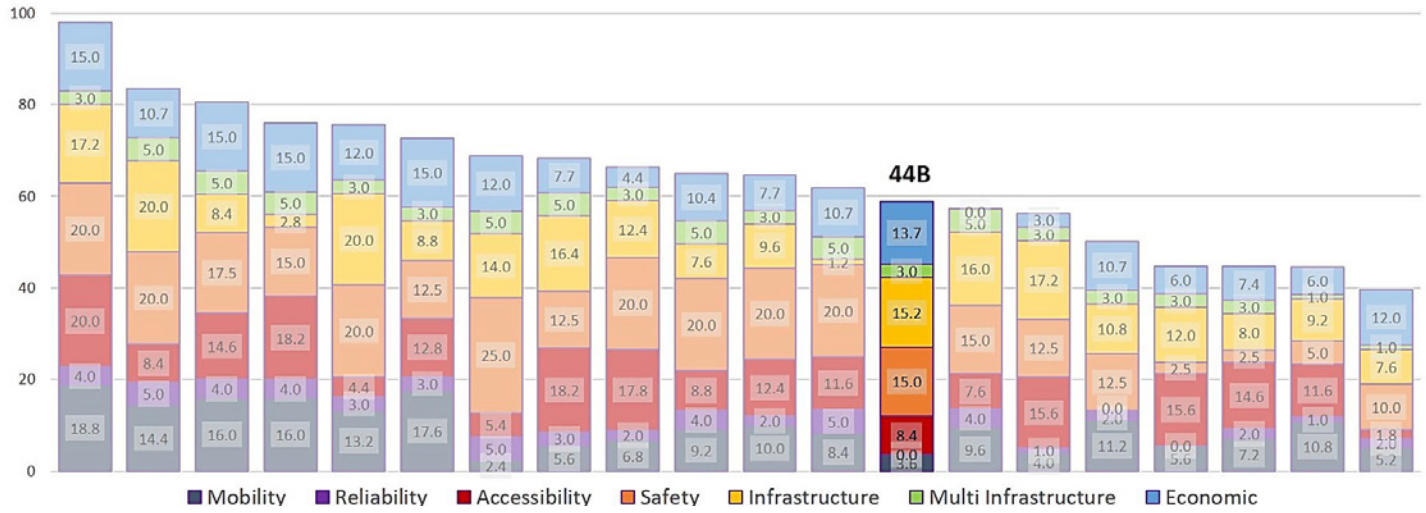
## CORRIDOR 44B — KY 44 FROM KY 1319 TO KY 55

### CORRIDOR OVERVIEW

Corridor 44B on KY 44 begins at KY 1319 in Bullitt County and extends east to KY 55 in Spencer County. The corridor is approximately 10 miles long and currently contains no interchange. This corridor is not part of the National Highway System (NHS).

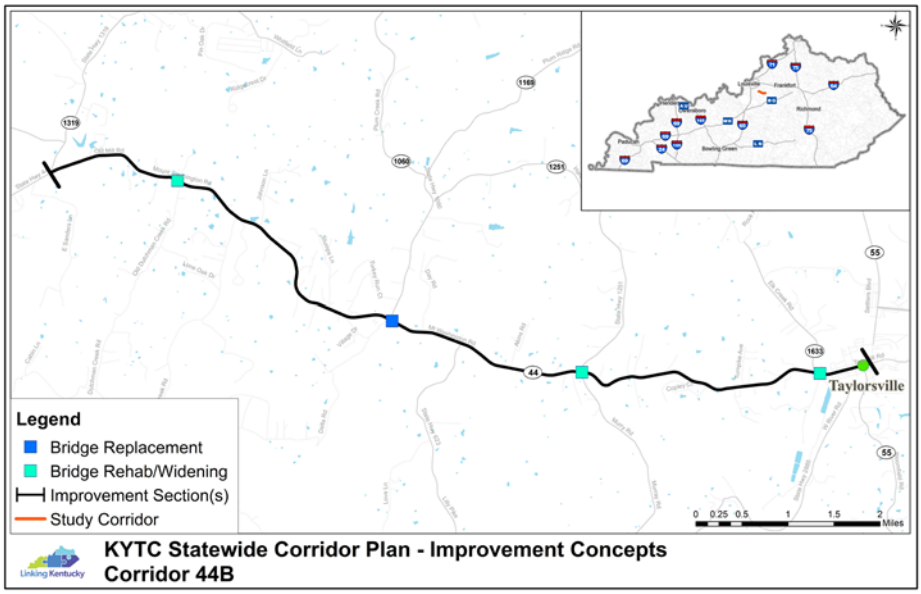
| HIGHWAY DISTRICT(s) |
|---|
| 5 |
| **ADD(s)** |
| KIPDA |
| **MPO(s)** |
| KIPDA |

### TIER 2 OVERALL SCORE = 58.9, RANK = 19



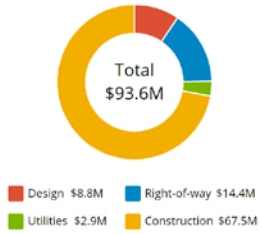

Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) | |
|---|---|
| **Entire Corridor:** Construct a new 4-lane divided arterial connector (10 miles). | |
| **Other Improvement(s)** | |
| **Potential Intersection Modification** | 1 |
| **Bridge Rehab/Widening:** | 3 |
| **Bridge Replacement:** | 1 |

**Cost Estimate (in 2020 Dollars)**




**NOTE: Complete corridor data is available in the GIS Online Tool.**

## CORRIDOR 46A — KY 245 FROM I-65 IN CLERMONT TO BLUEGRASS PARKWAY

### CORRIDOR OVERVIEW

Corridor 46A on KY 245 begins at I-65 in Bullitt County and extends southeast to Bluegrass Parkway in Nelson County. The corridor is approximately 19 miles long and currently contains two interchanges at I-65 and Bluegrass Parkway. This corridor is not part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

4, 5

### ADD(s)

Lincoln Trail, KIPDA

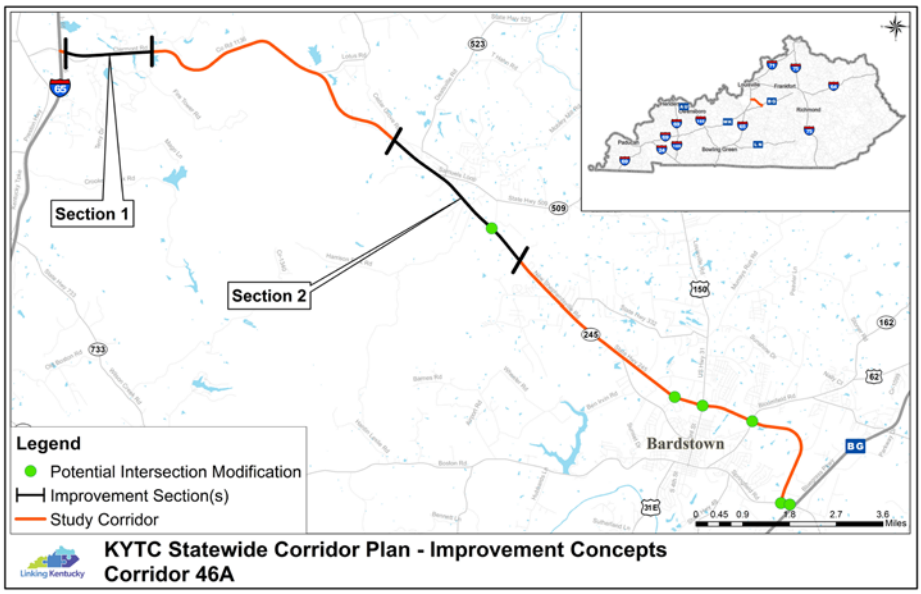
### MPO(s)

KIPDA

## TIER 2 OVERALL SCORE = 39.6, RANK = 36


Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

## IMPROVEMENT CONCEPTS




### Potential Improvement Section(s)

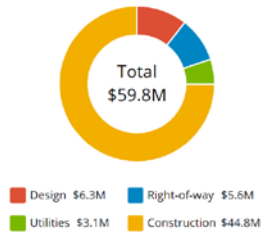
**Section 1:** Widen to a 3-lane facility (2 miles).

**Section 2:** Widen to a 3-lane facility (3 miles).

### Other Improvement(s)

| | |
|---|---|
| Potential Intersection Modification | 6 |

### Cost Estimate (in 2020 Dollars)




**NOTE: Complete corridor data is available in the GIS Online Tool.**

## CORRIDOR 50B — US 60 FROM KY 425 BYP IN HENDERSON TO I-165 (FORMERLY NATCHER PARKWAY) IN OWENSBORO

### CORRIDOR OVERVIEW

Corridor 50B on US 60 begins at the KY 425 BYP in Henderson County and extends east to I-165 (Formerly Natcher Parkway) in Daviess County. The corridor is approximately 38 miles long and currently contains seven interchanges at US 41 in Henderson, Audubon Parkway, KY 81 (West Parrish Ave), Carter Rd, US 431 (Frederica St), US 231 (New Hartford Rd), and I-165 in Owensboro. This corridor from KY 425 to US 41 in Henderson and from KY 331 to I-165 in Owensboro is part of the National Highway System (NHS).

### HIGHWAY DISTRICT(s)

2

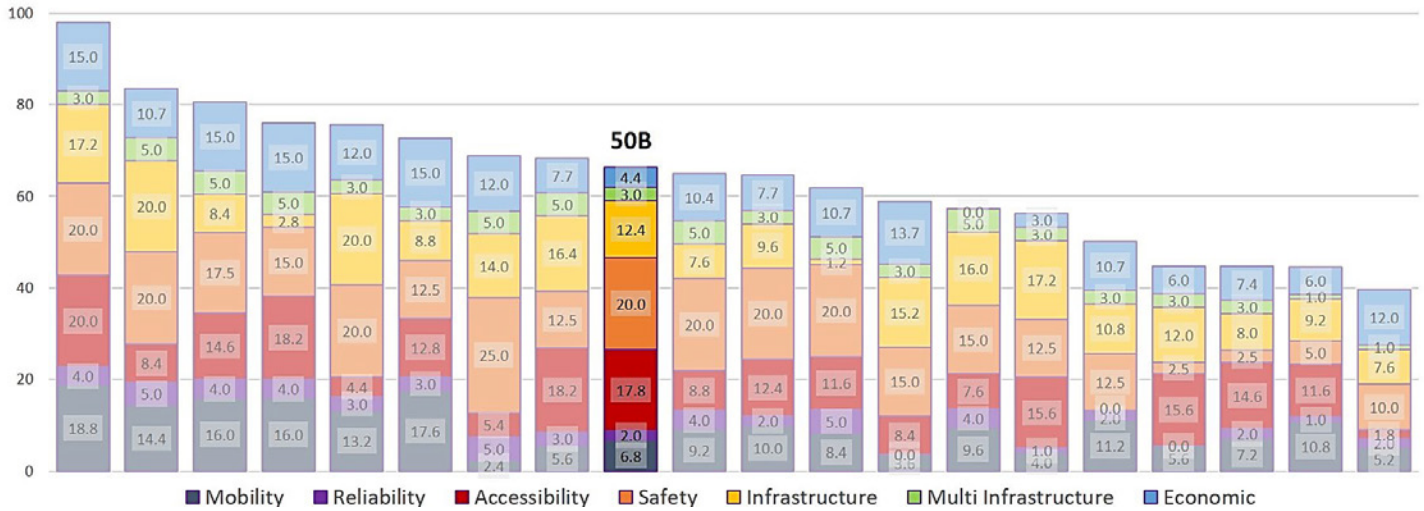
### ADD(s)

Green River

### MPO(s)

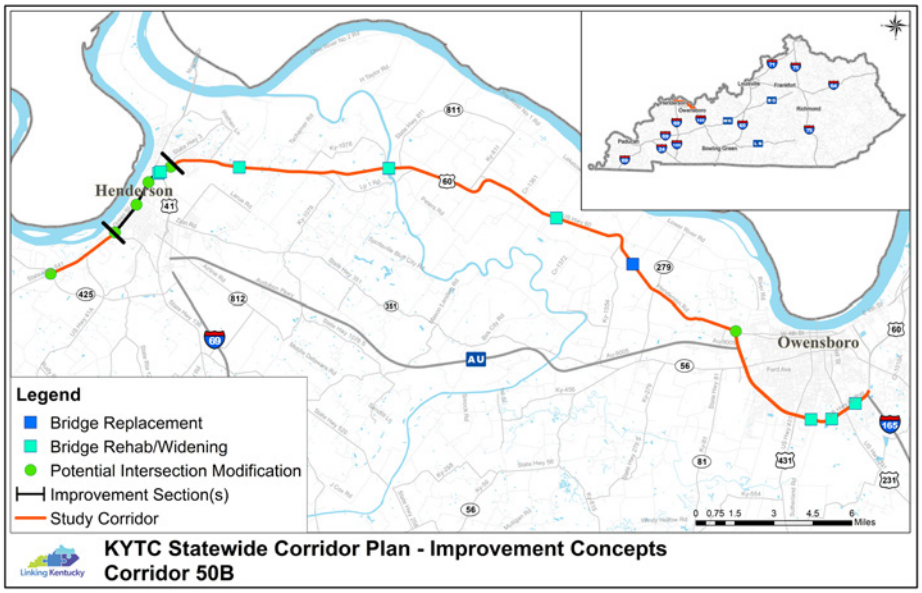
Evansville - Henderson MPO
Owensboro MPO

### TIER 2 OVERALL SCORE = 66.4, RANK = 12




Note: In general, a higher score means there is a greater need of improvement for the corridor and greater statewide/regional benefits are expected from the corridor improvement.

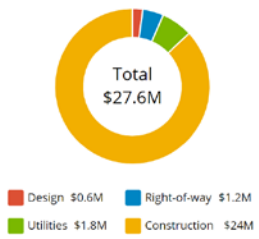
### IMPROVEMENT CONCEPTS




| Potential Improvement Section(s) |
|---|
| Intersection improvements (3 miles). |

| Other Improvement(s) | |
|---|---|
| Potential Intersection Modification | 6 |
| Bridge Rehab/Widening: | 8 |
| Bridge Replacement | 1 |

**Cost Estimate (in 2020 Dollars)**




**NOTE: Complete corridor data is available in the GIS Online Tool.**

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# APPENDICES

# CHAPTER 1: INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) initiated a study to build on the success of the Strategic Highway Investment Formula for Tomorrow (SHIFT) and begin meaningful long-term planning that would support the next Long-Range State Transportation Plan (LRSTP) and future Six-Year Highway Plans. As a result, the Kentucky Statewide Corridor Plan (SWCP), also known as *Linking Kentucky*, kicked-off in the fall of 2019. *Linking Kentucky* identified current and future statewide mobility, accessibility, and safety needs for transportation corridors. It also prioritized those statewide and regional corridors which have the greatest potential for improved safety, reduced travel time, improved system reliability, and economic benefits to Kentucky through better transportation service to people and goods. These are vital transportation corridors that drive the state's economy, connect citizens to jobs, and attract businesses as well as investment.

Using a data-driven approach, *Linking Kentucky* was unrolled in two tiers to identify the most impactful corridors based on existing (2015), intermediate (2030), and long-term (2045) transportation needs. Tier 1 started with 52 long corridors (aka Statewide Corridor Network) and narrowed them to 26 corridors that had the greatest potential to better link Kentucky's regions and improve safety, mobility and accessibility. Tier 2 subdivided the 26 corridors into 45 segments for more detailed analysis and then selected 20 priority segments by accounting for comprehensive, quantitative, and qualitative factors as well as input from stakeholders. Then, practical visions were developed for those 20 priority corridor segments, outlining possible improvements to address the needs and also propose possible implementation strategies. An interactive GIS Online Tool was also developed to assemble, display, and disseminate corridor visions to the general public and stakeholders.

A three-level hierarchy of target stakeholders was established at the beginning of *Linking Kentucky* to provide guidance and input throughout the study. **Table 1.1** summarizes the targeted stakeholders and their roles. **Appendix A** provides details of the extensive stakeholder communication efforts that were made in the lifecycle of Linking Kentucky.

The *Linking Kentucky* plan was accomplished by following a detailed work program consisting of the following activities:

- Develop study goals and objectives.
- Collect and analyze a variety of data, including land use, roadway facilities, traffic counts/forecasts, freight, speed/travel time, infrastructure conditions (e.g., pavement, bridge), crashes, environmental concerns, transit routes, bike/pedestrian facilities, Intelligent Transportation Systems (ITS), costs, etc.
- Develop methodology for identifying needs, including mobility, accessibility, and safety.
- Identify statewide needs, including "gaps" where new roadway connections may be needed.
- Develop Communication Plan and provide visuals/materials to support plan messaging.
- Engage state legislators, FHWA, KYTC Central Office and Highway Districts, planning partners (MPOs and ADDs), public agencies, and grasstops (e.g., state legislators, Chambers of Commerce, county judge/executives, mayors and city managers, sheriff/police/fire/EMS).
- Develop evaluation criteria and rating systems for identifying and prioritizing corridors with greatest potential for impact.
- Perform planning-level corridor scoping to summarize corridor conditions and issues, and recommend potential improvement concepts.
- Prioritize statewide and regional corridors with greatest potential for impactful improvements.
- Conduct a planning-level fiscal analysis to ensure reasonable recommendations.
- Develop practical corridor visions, including intermediate and long-term improvement strategies, potential impacts, and planning-level cost estimates.

- Develop a GIS Online Tool to interactively integrate corridor visioning data, and present background and history of the study.

**Table 1.1 – Target Stakeholders in Linking Kentucky**

| TARGET STAKEHOLDERS | GROUPS INCLUDED [1] | PROJECT PHASE ENGAGED |
|---|---|---|
| Project Team | • KYTC Central Office<br>• KYTC Highway District Office (HDO) Planning representatives<br>• MPO/ADD representatives | • Study Goals<br>• Statewide Corridor Network<br>• Tier 1<br>• Tier 2<br>• Visioning |
| Planning Partners | • All other MPO/ADD leaders<br>• All other HDO Chief District Engineers (CDEs), Transportation Engineering Branch Managers (TEBMs) for Project Development, and Planners | • Statewide Corridor Network<br>• Tier 1<br>• Tier 2<br>• Visioning |
| Key Stakeholders ("grasstops") | • State Legislators<br>• Chambers of Commerce<br>• County Judge/Executives<br>• Mayors and City Managers<br>• Sheriff/Police/Fire/EMS | • Tier 1<br>• Tier 2<br>• Visioning |

[1] *See Appendix A – Communication Plan for details.*

The remainder of the report is organized by the following chapters.

- **Chapter 2: Study Goals.** Overview of the development of study goals.
- **Chapter 3: Statewide Corridor Network.** Overview of the procedure used to establish the Statewide Corridor Network, as well as "flagged" and "gap" corridors. The "flagged" corridors include parkways that have recently upgraded to interstate, are in progress of being upgraded, or are being studied to be upgraded, and the Ohio River Bridge mega-projects. The "gap" corridors represent potential major gaps in the statewide roadway network.
- **Chapter 4: Study Approach.** Description of the tiered analysis approach and KYTC tools and systems used for data collection and analysis.
- **Chapter 5: Tier 1 Corridor Screening.** Tier 1 corridors analyzed, explanation of Tier 1 performance criteria and rating system, and summary of Tier 1 scores and corridor selection.
- **Chapter 6: Tier 2 Corridor Prioritization.** Segmentation of Tier 2 corridors to shorter segments, explanation of Tier 2 performance criteria and rating system, Tier 2 corridor scoping, and summary of Tier 2 scores and visioning corridor selection.
- **Chapter 7: Corridor Visions.** Overview of corridor visioning elements and description of the development of GIS Online Tool.

The report also includes appendices which provide detailed information of activities and results that were completed as part of the study.

# CHAPTER 2: STUDY GOALS

A set of goals were developed to guide *Linking Kentucky* through a collaborative process between the KYTC Project Management team (KYTC), KYTC Central Office, KYTC Highway Districts, and representatives from MPOs and ADDs (Project Team), and the consultants. These goals support the Kentucky Transportation Cabinet's mission, performance targets, current and future Long Range Statewide Transportation Plan (LRSTP), and future Six-Year Highway Plans.

Four draft goals were developed by KYTC and the consultants to comply with general long-range planning requirements and procedures as well as KYTC expectations of the study. Then, an on-line survey was used to effectively distribute the draft goals to the Project Team and solicit their input and feedback. All 38 members of the Project Team completed the initial survey. The survey indicated the Project Team strongly supported the draft goals in general, which provided a solid foundation for continuous and productive discussion amongst the Project Team. **Appendix B** shows details of the survey. A series of Project Team Meetings were held to review, revise, and finalize the study goals.

KYTC adjusted the study goals, taking into consideration input from the online survey. The final study goals are:

*The Statewide Corridor Plan will support KYTC's mission, performance targets, current and future long-range transportation plans, and future six-year highway plans. The development of this plan will be consistent with general long-range planning requirements and procedures.*

***Goal 1.*** *To identify current and future statewide needs regarding corridor performance, including safety, mobility, accessibility, and system preservation.*

***Goal 2.*** *To prioritize statewide and regional corridors with the greatest potential to improve safety, reduce travel time, improve system reliability, improve system linkage, and promote economic development.*

***Goal 3.*** *To develop practical visions for the most impactful corridors. These visions will identify intermediate (2030) and long-term (2045) transportation performance and preservation needs, possible improvement types that address the needs, logical construction sections, as appropriate, and improvement strategies for staged implementation (intermediate and long-term) based on expected corridor performance.*

***Goal 4.*** *To gather and utilize input from key stakeholders, and planning partners.*

***Goal 5.*** *To present study goals, methods, and findings throughout the planning process in a straight-forward manner.*

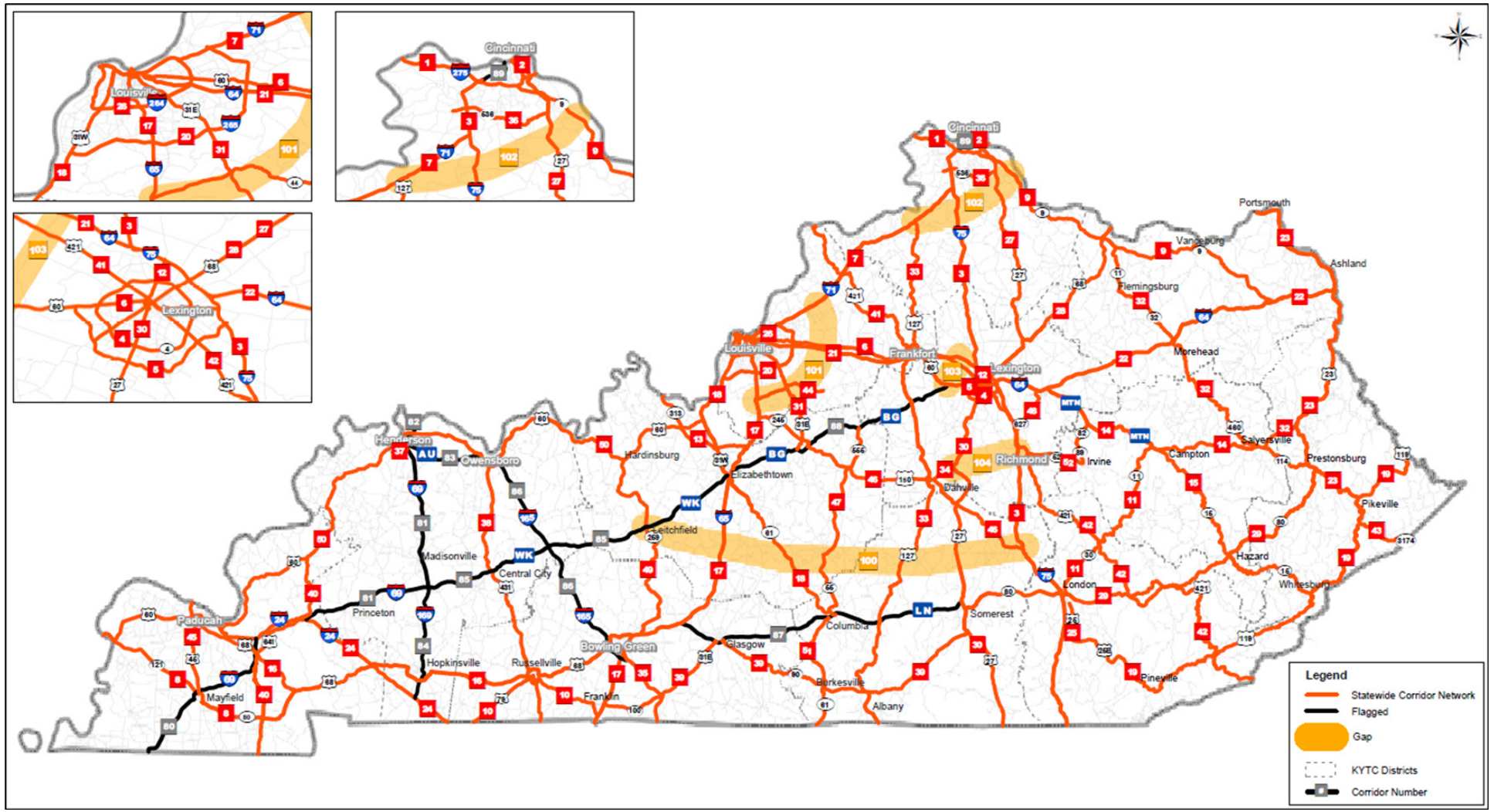
# CHAPTER 3: STATEWIDE CORRIDOR NETWORK

The Statewide Corridor Network represents a strategic highway network that is the target of potential investment in Kentucky. It is one of the most important elements of *Linking Kentucky* and provides a foundation for subsequent Tier 1 screening, Tier 2 prioritization, as well as corridor visioning in the SWCP. Along with the development of the Statewide Corridor Network, the Project Team also identified separate "flagged" corridors and "gap" corridors throughout the state. These study corridors are briefly described below and shown in **Figure 3.1**.

- **Statewide Corridor Network** (52 corridors). These corridors have statewide significance and will be analyzed to identify those with the greatest potential to improve mobility, accessibility, and safety.
- **Flagged** (10 corridors). These corridors include parkways that have recently been upgraded to interstates, are in progress of being upgraded, or are being studied to be upgraded, and two Ohio River Bridge mega-projects (Brent Spence Bridge and I-69 ORX). Their importance is acknowledged and they are briefly summarized in the study documentation, but not included in Tier 1 and Tier 2 analysis, or visioning.
- **Gaps** (5 corridors). These corridors represent major gaps in the statewide roadway network. Traffic forecasts were made for these corridors, but they were not analyzed or prioritized in the same way as the Statewide Corridor Network.

The following sections explain the procedure used to identify the Statewide Corridor Network, "flagged" corridors, and "gap" corridors.

**Figure 3.1 – SWCP Study Corridors**



## 3.1 STATEWIDE CORRIDOR NETWORK

The Project Team established the following initial criteria to identify major corridors with statewide and regional significance in Kentucky, which form the backbone of the Statewide Corridor Network.

- Functional Classification of Principal Arterial or higher;
- Listed on the National Highway System (NHS);
- 2015 Annual Average Daily Traffic (AADT) > 20,000 using 2015 base year data from the Kentucky Statewide Traffic Model (5961 zone v8_KYSTMv18); and
- Listed on the Primary Highway Freight System (PHFS) and other Interstate portions not on PHFS.

During the process, some adjoining major corridors were combined to create longer, continuous corridors. Other critical roadways (e.g., relatively low-volume but regionally significant highways) were added to the list of corridors to provide important connections and balance statewide coverage. These activities led to a draft Statewide Corridor Network.

The Project Team shared the draft Statewide Corridor Network with the Planning Partners and solicited their comments. A final Statewide Corridor Network was established by incorporating select new corridors with regional significance, using input from the Planning Partners. The final Statewide Corridor Network (see **Figure 3.1**) is composed of 52 corridors with approximately 3,900 centerline miles in total. These corridors were evaluated in Tier 1 screening. **Table 3.1** lists the corridors, their beginning and ending points, and a Corridor ID, used throughout the study.

**Table 3.1 – Statewide Corridor Network**

| CORRIDOR ID | CORRIDOR NAME | FROM | TO |
|---|---|---|---|
| 1 | I-275 | Ohio River (West) | Ohio River (East) |
| 2 | I-471 | I-275 | Ohio River |
| 3 | I-75 | TN state line | I-275 |
| 4 | KY 4 (New Circle Road) | N/A | N/A |
| 5 | Man O War Boulevard | US 60 (West) in Lexington | I-75 in Lexington |
| 6 | US 60 | I-64 in Louisville | I-75 in Lexington |
| 7 | I-71 | I-64 | I-75 |
| 8 | KY 80 & KY 121 | US 51 near Wickliffe | US 68 near Aurora |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson |
| 10 | KY 100/US 79 | TN state line | I-65 near Franklin |
| 11 | KY 11/KY 30/KY 715 | Mountain Parkway | London |
| 12 | KY 922 | US 68 in Lexington | I-75/64 |
| 13 | KY 313 | I-65 | IN state line |
| 14 | Mountain Parkway/KY 114 | I-64 | US 23 in Prestonsburg |
| 15 | KY 15 | Campton | Whitesburg |
| 16 | US 68 | Paducah | I-65 |
| 17 | I-65 | TN state line | IN state line |
| 18 | US 31W & KY 61 | I-64 in Louisville | Columbia |

| CORRIDOR ID | CORRIDOR NAME | FROM | TO |
|---|---|---|---|
| 19 | US 25 & US 119 | I-75 | WV state line |
| 20 | I-265/KY 841 (Gene Snyder Freeway) | US 31 W in Louisville | I-71 |
| 21 | I-64 | IN state line | I-75 (North Split) in Lexington |
| 22 | I-64 | I-75 (South Split) in Lexington | WV state line |
| 23 | US 23 | OH state line | US 119 near Pikeville |
| 24 | I-24 | Ohio River | TN state line |
| 25 | US 25 | KY 192 in London | US 25E in Corbin |
| 26 | I-264 (Watterson Exptersway) | I-64 (West) | I-71 |
| 27 | US 27 | OH state line | US 421 in Lexington |
| 28 | US 68 | OH state line | Man o' War Boulevard in Lexington |
| 29 | Hal Rogers Parkway & KY 80 | US 27 at Somerset | US 23 at Prestonsburg |
| 30 | US 27 | US 421 in Lexington | TN state line |
| 31 | US 31 E | IN state line | Bluegrass Parkway |
| 32 | KY 11/KY 32/US 460 | AA Highway in Maysville | US 23 in Paintsville |
| 33 | US 127 | I-71 | TN state line |
| 34 | KY 34 | US 27 NE of Danville | US 127 in Danville |
| 35 | US 231 | US 68 in Bowling Green | TN state line |
| 36 | KY 536 | US 42 in Union | US 27 near Alexandria |
| 37 | KY 425 | US 60 in Henderson | I-69 |
| 38 | US 431 | US 60 in Owensboro | TN state line |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset |
| 40 | US 641 | US 60 in Marion | TN state line |
| 41 | US 421 | IN state line | US 27 in Lexington |
| 42 | US 421 | US 27 in Lexington | TN state line |
| 43 | KY 3174 (future US 460) | US 23 in Robinson Creek | VA state line |
| 44 | KY 44 | I-65 | KY 55 |
| 45 | US 45 | Mayfield | Paducah |
| 46 | KY 245/US 150 | I-65 in Clermont | I-75 at Mt. Vernon |
| 47 | KY 55/KY 555 | Bluegrass Parkway | Cumberland Parkway |
| 48 | KY 627/KY 1958 | I-75 | I-64 |
| 49 | KY 259 | US 60 near Hardinsburg | I-65 near Smith Grove |
| 50 | US 60 | IL state line | US 31 W near Radcliff |
| 51 | KY 61 | TN state line | Cumberland Parkway |
| 52 | US 25/KY 52/KY 82/KY 89 | I-75 in Richmond | Mountain Parkway in Clay City |

## 3.2 FLAGGED CORRIDORS

The Project Team set aside ten "flagged" corridors (see **Figure 3.1**), which include parkways that have recently been upgraded to interstates, are in progress of being upgraded, or are being studied to be upgraded, and the Ohio River Bridge mega-projects. **Table 3.2** provides details of the "flagged" corridors. These corridors were not included in Tier 1 screening, Tier 2 prioritization, or visioning. Nevertheless, they were acknowledged and summarized in **Appendix C** based on available information. The "flagged" corridors will be incorporated into a separate Statewide Interstate and Parkway Plan (SWIPP) for detailed analysis. By eliminating these ten corridors, the SWCP could focus on the Statewide Corridor Network, conserve resources by not re-studying corridors, and minimize conflicts with the existing and ongoing studies and plans.

**Table 3.2 – Flagged Corridors**

| CORRIDOR ID | CORRIDOR NAME | FROM | TO |
|---|---|---|---|
| 80 | Purchase Parkway | TN state line | I-24 in Marshall County |
| 81 | I-69 | I-24 near Eddyville | Henderson Bypass |
| 82 | I-69 ORX | Henderson Bypass (KY 425) | Ohio River |
| 83 | Audubon Parkway (future I-369) | US 41 in Henderson | US 60 in Owensboro |
| 84 | Pennyrile Parkway (future I-169) | I-24 in Christian County | I-69 in Hopkins County |
| 85 | Western KY Parkway | I-69 in Hopkins County | Elizabethtown |
| 86 | Natcher Parkway (I-165) | US 231 in Bowling Green | US 60 in Owensboro |
| 87 | Cumberland Parkway | I-65 near Glasgow | US 27 near Somerset |
| 88 | Bluegrass Parkway | I-65 near Elizabethtown | US 60 near Lexington |
| 89 | I-75 | I-275 | Ohio River |

## 3.3 GAP CORRIDORS

Based on the comments collected through the extensive efforts of Planning Partner engagement, the Project Team developed five new conceptual corridors (see **Figure 3.1**) that are likely to fill potential major gaps in the statewide roadway network or meet the need of new connections identified by the Planning Partners. **Table 3.3** provides details of the "gap" corridors. As part of the SWCP, study of the "gap" corridors was limited to a 2045 future year traffic forecast. **Appendix D** summarizes analysis results. Gap corridors were not included in Tier 1 screening, Tier 2 prioritization, or visioning.

**Table 3.3 – Gap Corridors**

| CORRIDOR ID | CORRIDOR NAME | FROM | TO |
|---|---|---|---|
| 100 | Coal Fields Connector | Western Kentucky Parkway | I-75, Mt. Vernon |
| 101 | 65-71 Regional Connector | I-65, Bullitt County | I-71, Oldham County |
| 102 | Northern Kentucky Outer Loop | I-71, Gallatin County | AA Highway, Campbell County |
| 103 | Kentucky Parkway Network Connector | Bluegrass Parkway/US 60 | I-64 |
| 104 | Danville-Richmond Connector | Danville | Richmond |

# CHAPTER 4: STUDY APPROACH

## 4.1 TIERED APPROACH

A two-tier, data-driven approach was utilized for corridor analysis in the Statewide Corridor Plan (SWCP). The Tier 1 screening methodology, analysis, and results are discussed in detail in **Chapter 5**, while Tier 2 prioritization is covered in **Chapter 6**.

The primary goal of the Tier 1 analysis was to identify corridors that have potential to improve safety, mobility, and accessibility through the planning horizon year of 2045. As funding is always a challenge, it is necessary to develop a sound investment strategy to identify and prioritize smaller segments within each of the Tier 1 corridors to maximize benefits for the entire state of Kentucky. Therefore, the corridors identified as highest priority through Tier 1 were carried forward into Tier 2, where each corridor was split into shorter segments for more detailed analysis. The Tier 2 analysis aimed to prioritize individual segments expected to maximize statewide and regional benefits from the proposed improvement concepts. The anticipated benefits were evaluated in terms of comprehensive quantitative measures (e.g., safety, mobility, accessibility, reliability, infrastructure condition, economic vitality, and multi-modal opportunity) and qualitative factors (e.g., project delivery time, economic feasibility, and cost). Improvement concepts were developed for each corridor segment through a planning-level corridor scoping process as part of Tier 2 analysis.

20 priority segments selected through Tier 2 analysis advanced to corridor visioning. The corridor visions identified intermediate (2030) and long-term (2045) transportation needs and practical improvement strategies. Data, tools and methodologies for developing corridor visions were described in **Chapter 7**. Details of the visioning corridors are illustrated in a GIS Online Tool (see **Appendix J**).

## 4.2 DATA & TOOLS

KYTC has a variety of databases, tools, and asset management systems in place utilized to accomplish the aforementioned Tier 1 and Tier 2 analyses. KYTC tools and systems usually serve as stand-alone entities, providing useful information for a single function or division within KYTC. One of the SWCP's goals is to set up a system to pull information from various places within KYTC, and to use the integrated information to support the decision-making process. This allows future corridors to be analyzed in a similar fashion to quickly determine where they should fit within KYTC's overall priorities.

One of KYTC's most powerful and valuable planning tools, the Kentucky Statewide Traffic Model (KYSTM), provides information regarding roadway capacities, traffic flows, future growth patterns, socio-economic benefits of proposed corridor improvements, etc. The KYSTM was used in tandem with KYTC's asset management systems, such as Highway Information System (HIS), Pavement Management System (PMS), Bridge Data Miner System, and Strategic Highway Investment Formula for Tomorrow (SHIFT), to provide well-rounded and consistent information for decision making in the SWCP. Supporting data collected from supplemental sources such as MPOs, ADDs, and Kentucky Geography Network (https://kygeonet.ky.gov) were also used in corridor analysis. The subsections below provide a brief description of the major tools and systems used in the SWCP. A relatively detailed description of the KYSTM is provided due to its complex nature.

### 4.2.1 KYSTM Overview

The Kentucky Statewide Traffic Model (KYSTM) has its roots in mainframe computer software dating from the early 1970's. The current TransCAD-based model stems from a version developed in 2005. Since that time, it has been modified and enhanced extensively. The KYSTM has been used to support a wide variety of statewide transportation studies.

To meet the needs of SWCP, the KYSTM was updated to a new base year of 2015 and a new future year of 2045 with 5,961 traffic analysis zones (TAZs), running in TransCAD version 8. KYTC named this new version 5961 zone v8_KYSTMv18 (aka v8_KYSTMv18). This model updated zonal socioeconomic data (e.g., population, households, employment, etc.) and the highway network to represent 2015 and 2045 conditions. All traffic volume estimates, speeds, and congestion levels were based on traffic counts and model traffic assignments.

The v8_KYSTMv18 uses zonal data for the base (2015) and future (2045) years and uses linear interpolation to estimate data for interim forecast years. Important features of the model are:

- The model covers the continental US and includes centroid connectors that extend into Canada and Mexico, comprising 5,961 traffic analysis zones (TAZs). Zones in Kentucky are at a detailed level. There is a ring of zones around Kentucky within about 100 miles of the state line, with intermediate detail. Zones outside of this ring are large. The zonal system also contains a set of special generators inside Kentucky. **Figure 4.1** and **Figure 4.2** illustrate the v8_KYSTMv18 TAZs and network respectively.
- The model calculates the free-flow speeds and capacities of all roadway links, following the methodologies described in 2010 Highway Capacity Manual.
- Zonal data include estimates of population, households, and employment for all zones (2015 and 2045).
- The model produces daily, capacity-restrained assignments (auto, light trucks, heavy trucks), with congested travel times and speeds for all links. Separate estimates are made for autos and trucks. Person trips are estimated for autos, and occupancy factors are applied to estimate vehicle trip tables.
- The model uses seed trip tables for:
  - Long-distance trips (more than 50 miles) based on the 1995 American Travel Survey.
  - Work trips based on 2000 Census Journey-to-Work data.
  - Trucks (light and heavy) based on TRANSEARCH, and later enhanced using classified traffic counts and the OD Matrix Estimation (ODME) technique.
- Traditional trip generation methods and a gravity model are used to estimate short-distance non-work trips. Growth factor models (also known as Fratar models) are used to factor the seed trip tables for other purposes. A gravity model is used to supplement the home-based work (HBW) and long-distance trips for TAZs that were empty in the base year.
- The model supports selected link assignments. In most cases, the selected links are composed of long study corridors. This feature was used extensively in this study.
- The model has a set of routines that can be used to create Transportation Economic Development Impact System (TREDIS – see Section 4.2.8) inputs for economic analysis. This feature was used extensively in this study. The model produces a set of extensive evaluation metrics with every run.
- The model is set up to extract a subarea, which is useful for estimating external traffic for regional models (not used in this study).

**Figure 4.1 – v8_KYSTMv18 TAZ**

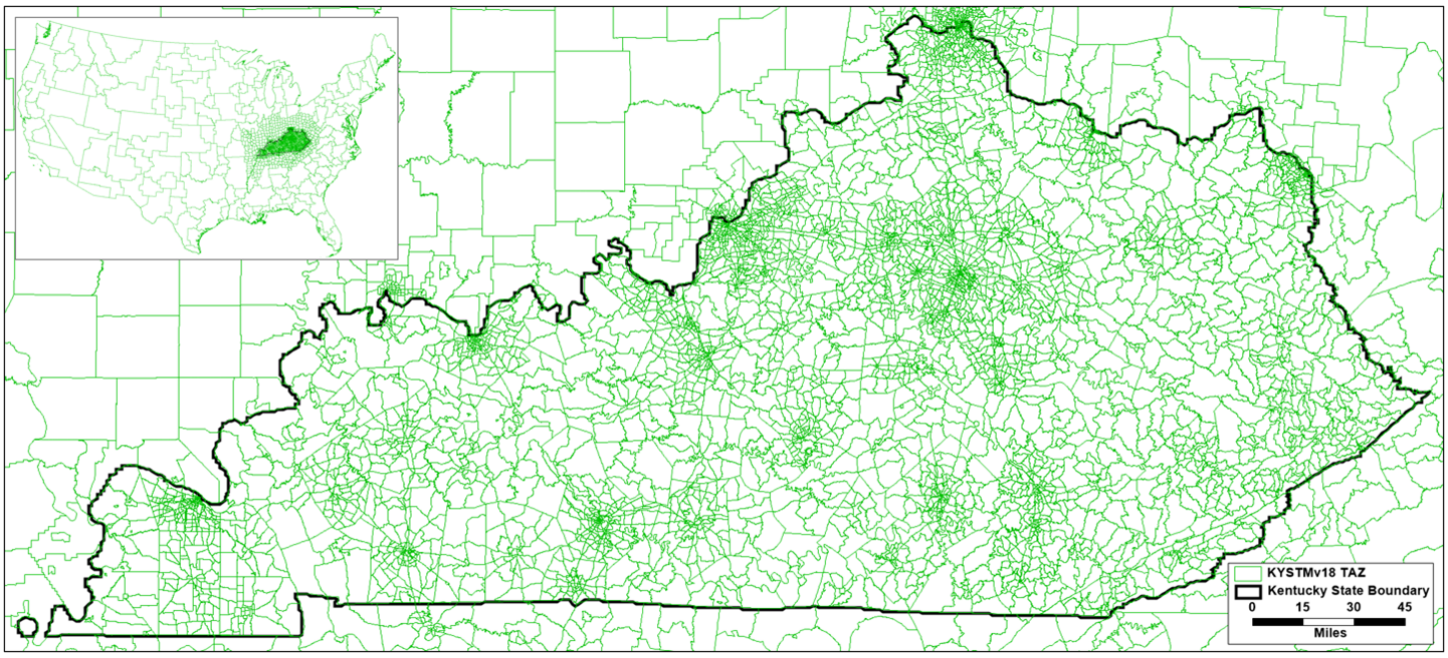
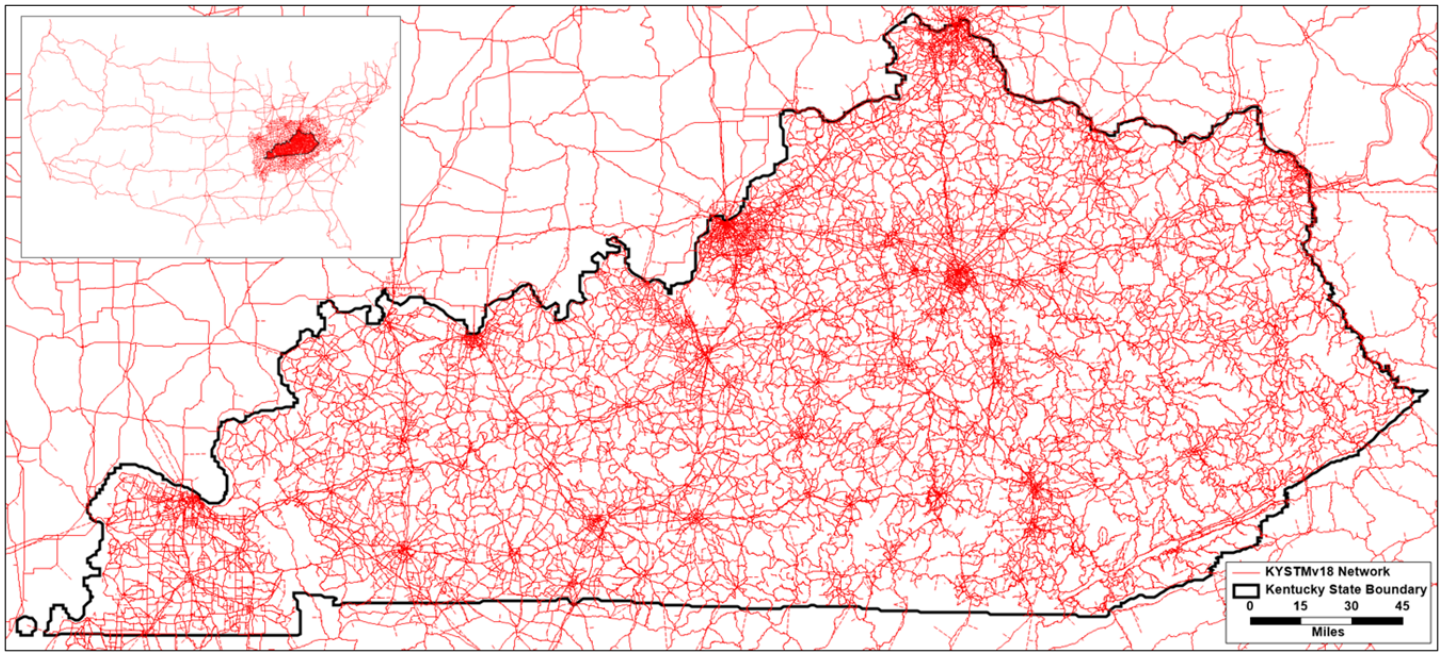



**Figure 4.2 – v8_KYSTMv18 Network**




During the development of 2030 and 2045 models in the study, KYTC identified a list of the existing and committed (E+C) projects with major roadway capacity improvements. These projects were properly coded into 2030 and 2045 model networks based on their anticipated completion timeline. **Table 4.1** summarizes these E+C projects.

**Table 4.1 – Major Existing and Committed (E+C) Projects**

| DISTRICT ITEM NO. | DISTRICT | COUNTY | PROJECT TYPE | PROJECT DESCRIPTION | MODEL SCENARIO YEAR |
|---|---|---|---|---|---|
| 5-483.30 | 5 | Oldham | New Interchange | Oldham County interchange between KY 393 and KY 53. | 2030 & 2045 |
| 4-142.20 | 4 | Taylor | New Route | Heartland Parkway: improve mobility and connectivity via new Campbellsville Bypass from KY 55 south of Campbellsville to KY 70. Section 1. | 2030 & 2045 |
| 11-14.80 | 11 | Whitley | Major Widening | Widen I-75 to 8 lanes from MP 20.2 in Whitley County to MP 28.85, US 25 E north of Corbin. | 2030 & 2045 |
| 5-483 | 5 | Jefferson & Oldham | Major Widening | 6 lane priority section of I-71 between I-265 and KY 329. (I-MOVE Kentucky). | 2030 & 2045 |
| 5-537 | 5 | Jefferson | Major Widening | 6 lane priority section of I-265 between Taylorsville Road and I-71. (I-MOVE Kentucky). | 2030 & 2045 |
| 6-78 | 6 | Boone | Major Widening | Improve freight mobility at I-275 and Graves Road. (Continuation of 6-8953: Interchange Justification Study on I-275/Graves Road). | 2030 & 2045 |
| 2-1088 | 2 | Henderson | New Route | Ohio River Crossing (ORX): includes bridge and approach/connector. | 2045 |

### 4.2.2 Highway Information System (HIS)

KYTC maintains the road centerline network and a Highway Information System (HIS) for Kentucky's state highways and local roads system. The HIS covers comprehensive roadway inventory data in GIS and tabular formats, including the following major categories.

- Highway System (e.g., functional class, National Highway System, National Highway Freight Network, truck network)
- Roadway Information (e.g., access control, speed limit)
- Roadway Features (e.g., number of lanes, shoulders, medians, bike/pedestrian facilities, horizontal/vertical curves)
- Traffic Counts
- Route Log
- Non-Highway Modes

### 4.2.3 Pavement Management System

KYTC utilizes its Pavement Management System (PMS) to identify preservation, repair, rehabilitation, and replacement actions that will sustain a state of good repair over the lifecycle of the pavements. Pavement data includes automated pavement distress, rutting, cross slope, International Roughness Index (IRI), faulting, curve and grade, GPS data, and roadway images. To meet the study needs, KYTC provided the Pavement Distress Index (PDI), year of next treatment, and year of the Six-Year Plan for all roadway sections of study corridors.

### 4.2.4 Bridge Management System

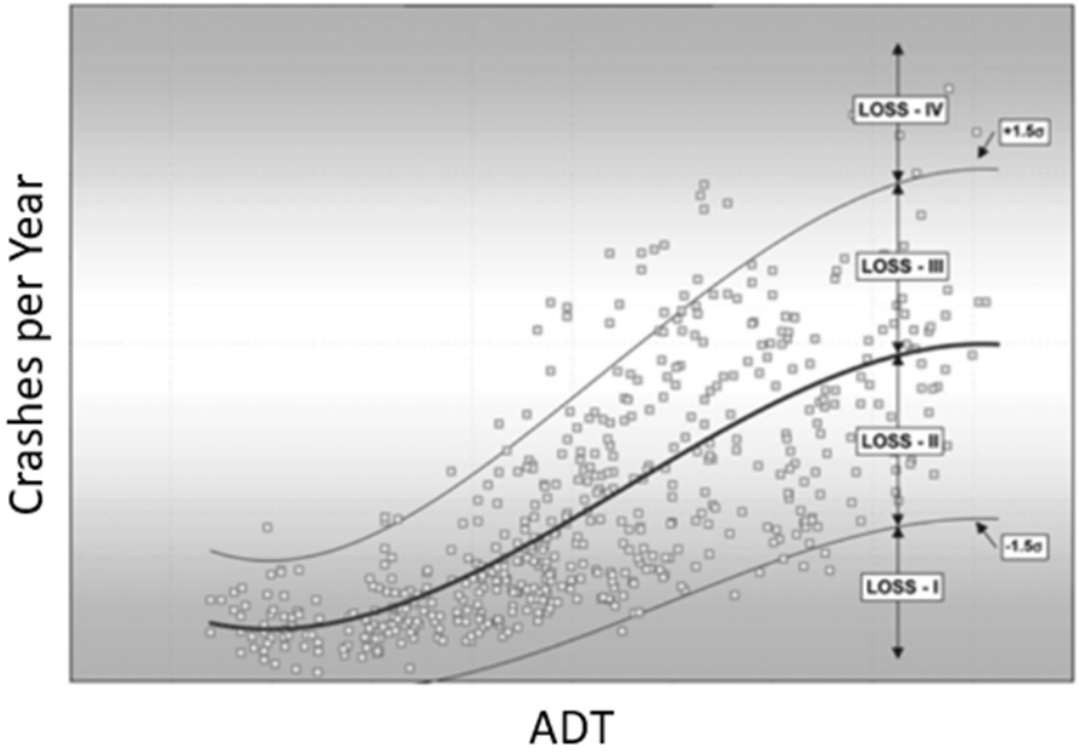
KYTC inventories and inspects over 14,000 bridges in accordance with the National Bridge Inspection Standards (NBIS). Over 250 data items are collected and maintained on each bridge. The data is managed through KYTC's Bridge Data Miner system. To meet the study needs, KYTC provided a complete list of bridges and culverts throughout the state along with key attributes such as structure ID, NBIS classification (poor/fair/good), sufficiency rating, substructure rating, superstructure rating, deck rating, vertical/horizontal clearance, etc. The file contains latitude/longitude of each structure, so the bridges/culverts can be geocoded and attached to each study corridor.

### 4.2.5 Crash Data

KYTC provided statewide crash data in a GIS format to support safety analysis in the study. The dataset includes critical rate factor (CRF), excess expected crashes (EEC), and level of service of safety (LOSS) based on 2014-2018 crash data in Kentucky. Definitions of CRF, EEC, and LOSS are provided below.

- **CRF.** KYTC uses a systematic procedure to identify locations having high crash rates. The actual number of crashes, as obtained from the Kentucky's Open Portal Solution (KYOPS) database, occurring within a roadway segment is used to calculate the Actual Crash Rate using the number of crashes, roadway length, AADT, and the number of years for which crash data is being examined. Using an analysis procedure from the Kentucky Transportation Center and referenced in *The Analysis of Traffic Crash Data in Kentucky (2014-2018)*, Actual Crash Rates are compared to the Critical Crash Rate for similar types of Kentucky roadways. The Critical Crash Rate is the rate which is greater statistically than the average crash rate for similar roadways and represents a rate above which crashes may be occurring in a non-random fashion. This ratio of Actual Crash Rate to the Critical Crash Rate is the Critical Crash Rate Factor (CRF). Thus, a CRF greater than 1.0 indicates crashes may be occurring more often than can be attributed to random occurrence. This procedure is used as a screening technique indicating locations where further analysis may be needed. It is not a definitive statement of a crash problem, nor a measurement of a crash problem.
- **EEC and LOSS.** KYTC uses AASHTO's 2010 Highway Safety Manual (HSM) methodologies to measure the safety performance of roadways allowing for more informed decisions during the project development process. The Excess Expected Crashes (EEC) is a measurement which estimates the number of crashes above what is predicted by a crash prediction model of roadways or intersections of similar type, length, and characteristics in Kentucky. A negative EEC means the roadway or intersection is experiencing fewer crashes than is predicted by the models. EECs are then grouped into one of four categories, identified as the Level of Service of Safety (LOSS). Summarized graphically in **Figure 4.3**, LOSS categories I and II represent sites with fewer than anticipated crashes, up to category IV which has more than 1.5 standard deviations more crashes than expected. Because LOSS-IV sites experience such elevated crash rates, there is a higher probability that safety countermeasures at these locations will result in larger improvements.

**Figure 4.3 – Level of Service of Safety (LOSS)**



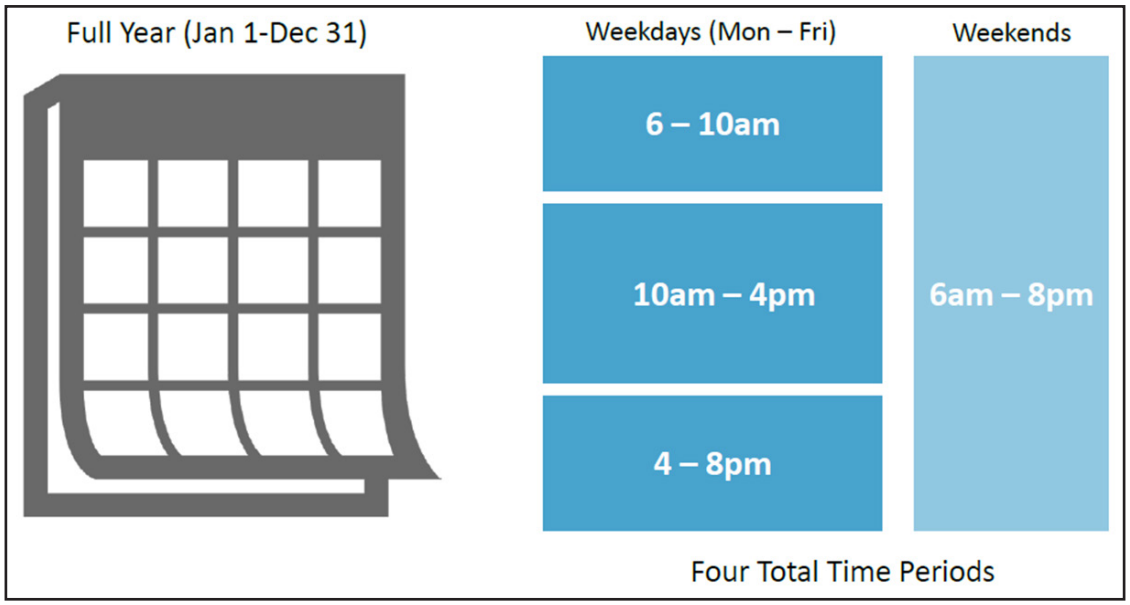

### 4.2.6 SHIFT

The Strategic Highway Investment Formula for Tomorrow (SHIFT) is KYTC's data-driven, objective approach to compare capital improvement projects and prioritize limited transportation funds. SHIFT allows policy makers to see just how far down the priority list the limited funds will go and which other projects could be funded if additional funds were generated. Based on five key attributes (i.e., safety, asset management, congestion, economic growth, and benefit/cost), SHIFT uses measurable data to assess the need for and benefits of planned projects and compares them to each other. The SHIFT formulas were obtained from KYTC and reviewed by the Project Team to ensure consistent performance measures were used for corridor analysis in the study.

### 4.2.7 Speed Data & LOTTR

KYTC provided directional speed data for SWCP corridors, based on HERE's 2015-2017 speed data. The dataset also includes the Level of Travel Time Reliability (LOTTR) values derived by KYTC. As part of the FHWA's System Performance Measure Final Rule, LOTTR is a required measurement of travel time reliability on the interstate and non-interstate National Highway System (NHS). According to FHWA's Transportation Performance Management (TPM) framework, LOTTR is defined as the ratio of the longer travel times (80th percentile) to a "normal" travel time (50th percentile), using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent (e.g., INRIX, HERE). Data are collected in 15-minute segments during all time periods between 6am and 8pm local time (see **Figure 4.4**). The reporting corridor segment is considered reliable when LOTTR is less than 1.50 for all time periods, otherwise it is classified as unreliable.

**Figure 4.4 – Data Requirements for Travel Time Reliability**




*Source: FHWA TPM*

The KYTC speed dataset also provides v8_KYSTMv18 network link IDs corresponding to each Traffic Message Channel (TMC) record for which HERE speed and LOTTR data are available, so the speed data and LOTTR values can be efficiently attached to each section of all study corridors.

### 4.2.8 TREDIS

KYTC has purchased access to the Transportation Economic Development Impact System (TREDIS) for Kentucky. TREDIS is a predictive impact model. It uses information about future travel patterns, market access, and construction spending to estimate the costs, benefits, and economic impacts that flow from them. As such, results are based on comparisons between two alternative futures. In most cases, TREDIS results are shown as differences in benefits, costs, and economic activity between the "no-build" and "build" scenarios in a given year. TREDIS is dependent upon certain outputs from KYTC's transportation demand models (e.g., KYSTM):

- Scenarios ("no-build" and "build") and years (current and future)
- Mode type (freight, auto, others)
- Geographic extent (TREDIS only allows analysis at the level of single or multiple counties. Partial county analysis is not possible.)
- Total vehicle miles traveled (VMT) by mode type, scenario, and year
- Total vehicle hours traveled (VHT) by mode type, scenario, and year

Once the information is fed into TREDIS, the model can run and results can be analyzed. Example results from TREDIS are the estimated totals of net societal benefit of a project (including user benefits, logistics benefits, indirect benefits) and the number of jobs that a project is estimated to create over the lifetime of the project. It should be noted that TREDIS shows benefits that are based on travel time savings and VMT savings from KYSTM, which provides a very general level of analysis for economic benefits. If the project does not significantly change any of the conditions, then TREDIS may not show a significant economic impact or benefits from a transportation project alone.

### 4.2.9 Bicycle, Pedestrian & Transit Data

KYTC provided GIS data of statewide bicycle and pedestrian facilities including sidewalks, crosswalks, separated/shared bike lanes, bike paths, multi-use paths, etc. The Project Team also requested GIS data of existing transit routes and stops from the nine MPOs and 15 ADDs in the state of Kentucky. Most MPOs and ADDs provided geospatial data for their respective boundaries. As generally expected, with such a large-scale data collection process, not all requested information was available and some gaps within data still exist.

### 4.2.10 Kentucky Geography Network

The Kentucky Geography Network (https://kygeonet.ky.gov) is the Geospatial Data Clearinghouse for the Commonwealth of Kentucky. A variety of datasets can be located and downloaded, static map products can be reviewed, and many web mapping applications and services are easily accessible. Using the powerful search capabilities offered by the Kentucky Geoportal in the Kentucky Geography Network, various GIS point layers were collected for colleges/universities, industrial sites, hospitals, etc. These layers were used to identify major special generators and support corridor accessibility analysis in the study.

## 4.3 PREVIOUS STUDIES

KYTC's current planning documents, such as Kentucky's Long-Range Statewide Transportation Plan (2014-2035), the Kentucky Freight Plan (2017), and the Transportation Asset Management Plan (2019), were reviewed and used to gather base-line information for the SWCP study.

Kentucky's FY 2020 – FY 2026 Highway Plan became available while the SWCP study was under way. The Project Team reviewed the document and available GIS data of project listings while corridor improvement concepts were developed. In addition, information from the following recent studies provided by KYTC was reviewed and used to support developing improvement concepts for relevant study corridors.

- 65-71 Regional Corridor Study (KYTC Item No: 5-564.00)
- Traffic Analysis for US 27 in Newport KY (KYTC Item No: 6-451)
- US 231 Scottsville Road Scoping and Traffic Operations Study (KYTC Item No: 3-8702.00)
- Frankfort Small Area (SUA) Study
- AA Highway Improvement Study
- BUILD Grant Application, KY 536 Priority Section 1, Boone and Kenton County
- TIGER FY 2015 Discretionary Grant, Transforming Dixie Highway, Louisville Metro Government

# CHAPTER 5: TIER 1 CORRIDOR SCREENING

As described in Chapter 3, 52 corridors from the Statewide Corridor Network were included in the data-driven Tier 1 corridor screening. The Tier 1 analysis uses quantitative performance measures to score each corridor and identify the 26 corridors where improvements would have the greatest potential to improve mobility, accessibility, and safety. Tier 1 score ranges from 0 to 100, with 100 being the highest possible score for a corridor to advance to the Tier 2 analysis.

## 5.1 PERFORMANCE CRITERIA AND RATING SYSTEM

Early in this task, the Project Team developed a draft performance-based decision-making process to support the Tier 1 screening. Based on discussions within the Project Team, it was decided to restrict the Tier 1 performance measures to Mobility, Accessibility, and Safety. An on-line survey was also conducted to gather input from Project Team, Planning Partners, and key stakeholders on the importance of each of the three performance measures. The Tier 1 survey was live for four weeks from March 2 through March 27, 2020. Detailed data gathered from the survey are shown in **Appendix E**. A Tier 1 rating system was developed using weights derived from survey results.

The three Tier 1 corridor level performance measures were used for Tier 1 analysis and screening to determine which corridors would advance to more detailed analysis in Tier 2. They are listed in **Table 5.1**. Each performance index is assigned a value ranging from 0 to 5 points, with the latter indicating the highest need or deficiency for the corresponding performance measure. The mobility, accessibility, and safety scores are combined to create an overall score that ranges from 0 to 100. A higher score indicates greater need of improvement for the corridor and greater statewide/regional benefits expected from the corridor improvement.

**Table 5.1 – Tier 1 Performance Measures**

| SCORING FACTOR NUMBER | TIER 1 CORRIDOR PERFORMANCE MEASURES | SCORE RANGE | SCORE WEIGHT | MAX. POSSIBLE WEIGHTED SCORE |
|---|---|---|---|---|
| #1 | Mobility Index | 0 – 5 | 6 | 30 |
| #2 | Accessibility Index | 0 – 5 | 6 | 30 |
| #3 | Safety Index | 0 – 5 | 8 | 40 |
| | | | | **Sum = 100** |

Each of the three performance indices were derived from unique criteria and weights, based on the Project Team's discussion and the survey results as mentioned above. A detailed description of each performance index follows.

## 5.2 MOBILITY

The mobility index measures each corridor's overall congestion and network connectivity to modal hubs. **Table 5.2** summarizes the mobility index and its performance criteria. The weight of each criterion was determined from data collected from the Tier 1 on-line survey. The mobility score was weighted as 35% for existing delay, 50% for future delay, and 15% for a direct connection to a modal hub.

- **Existing Vehicle Hour Delay (Year 2015).** This measures the level of congestion along a corridor in the base year 2015. Link-level vehicle hour delay was calculated as the link traffic volume multiplied by the delay (i.e., free-flow time – congested time) from a 2015 model run of the 5961 zone v8_KYSTMv18 (aka v8_KYSTMv18). The total delay of a corridor is a sum of all link-level delays in the corridor.
- **Future Vehicle Hour Delay (Year 2045).** This forecasts the level of congestion along a corridor in the future year 2045. It was calculated in the same way as the existing vehicle hour delay mentioned above but used results from a 2045 model run of the 5961 zone v8_KYSTMv18.
- **Direct Connection to Modal Hub.** This indicates if there is an adjacent modal hub within a 30-minute travel distance from a corridor. Based on discussions with the Project Team, the modal hubs were identified as the primary commercial service airports (i.e., Cincinnati (CVG), Lexington (LEX), Louisville (SDF), Owensboro (OWB), Paducah (PAH), Huntington (HTS), and Evansville (EVV)) and riverports within or in states directly adjacent to Kentucky.

**Table 5.2 – Mobility Index**

| MOBILITY INDEX | | | | | |
|---|---|---|---|---|---|
| **Existing Vehicle Hour Delay (Year 2015) - $X_1$** | **% of Score 35%** | **Future Vehicle Hour Delay (Year 2045) - $X_2$** | **% of Score 50%** | **Direct Connection to Modal Hub - $X_3$** | **% of Score 15%** |
| $X_1 < 400$ | 0 | $X_2 < 400$ | 0 | Yes | 5 |
| $400 <= X_1 < 1{,}500$ | 1 | $400 <= X_2 < 1{,}500$ | 1 | No | 0 |
| $1{,}500 <= X_1 < 3{,}500$ | 2 | $1{,}500 <= X_2 < 3{,}500$ | 2 | | |
| $3{,}500 <= X_1 < 8{,}000$ | 3 | $3{,}500 <= X_2 < 8{,}000$ | 3 | | |
| $8{,}000 <= X_1 < 15{,}000$ | 4 | $8{,}000 <= X_2 < 15{,}000$ | 4 | | |
| $X_1 >= 15{,}000$ | 5 | $X_2 >= 15{,}000$ | 5 | | |
| *Mobility Score* $= 0.35X_1 + 0.50X_2 + 0.15X_3$ | | | | | |
| *Final Score Weight = 30%, Multiplier = 6* | | | | | |

**Table 5.3** summarizes the Tier 1 mobility scores. Corridors passing through or near urban or developed areas tend to have higher scores, because most delays are caused by greater congestion in these areas. Easy connections to modal hubs also contribute to mobility scores. I-75, US 60 (between Louisville and Lexington), and I-65 have the highest mobility scores, due to large delays in the metropolitan areas of Louisville, Lexington, and northern Kentucky. Other corridors with high mobility scores include I-275, I-71, I-265/KY 841 (Gene Snyder Freeway), I-64 (between Louisville and Lexington), I-264 (Watterson Expressway), US 27 (between Lexington and Tennessee state line), and US 31 E (between Louisville and the Bluegrass Parkway).

**Table 5.3 – Mobility Scoring**

| Corridor ID | Corridor Name | From | To | Vehicle Hour Delay 2015 | Vehicle Hour Delay 2045 | Direct Connection to Modal Hub | Tier 1 Mobility Score |
|---|---|---|---|---|---|---|---|
| 1 | I-275 | Ohio River (West) | Ohio River (East) | 8,549 | 29,073 | Yes | 27.9 |
| 2 | I-471 | I-275 | Ohio River | 1,271 | 2,591 | Yes | 12.6 |
| 3 | I-75 | TN state line | I-275 | 19,535 | 69,951 | Yes | 30.0 |
| 4 | KY 4 (New Circle Road) | N/A | N/A | 7,556 | 29,773 | Yes | 25.8 |
| 5 | Man O War Blvd | US 60 (West) in Lexington | I-75 in Lexington | 3,766 | 13,465 | Yes | 22.8 |
| 6 | US 60 | I-64 in Louisville | I-75 in Lexington | 16,481 | 39,293 | Yes | 30.0 |
| 7 | I-71 | I-64 | I-75 | 8,036 | 21,290 | Yes | 27.9 |
| 8 | KY 80 & KY 121 | US 51 near Wickliffe | US 68 near Aurora | 82 | 145 | Yes | 4.5 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 4,576 | 5,856 | Yes | 19.8 |
| 10 | KY 100/US 79 | TN state line | I-65 near Franklin | 758 | 1,518 | No | 8.1 |
| 11 | KY 11/KY 30/KY 715 | Mountain Pkwy | London | 68 | 102 | No | 0.0 |
| 12 | KY 922 | US 68 in Lexington | I-75/64 | 2,999 | 8,764 | Yes | 20.7 |
| 13 | KY 313 | I-65 | IN state line | 376 | 1,296 | Yes | 7.5 |
| 14 | Mountain Pkwy/ KY 114 | I-64 | US 23 in Prestonsburg | 282 | 402 | No | 3.0 |
| 15 | KY 15 | Campton | Whitesburg | 1,465 | 3,238 | No | 8.1 |
| 16 | US 68 | Paducah | I-65 | 2,367 | 7,265 | Yes | 17.7 |
| 17 | I-65 | TN state line | IN state line | 25,184 | 82,670 | Yes | 30.0 |
| 18 | US 31W & KY 61 | I-64 in Louisville | Columbia | 8,959 | 19,778 | Yes | 27.9 |
| 19 | US 25 & US 119 | I-75 | WV state line | 3,760 | 6,020 | No | 15.3 |
| 20 | I-265/KY 841 (Gene Snyder Frwy) | US 31 W in Louisville | I-71 | 8,409 | 21,503 | Yes | 27.9 |
| 21 | I-64 | IN state line | I-75 (North Split) in Lexington | 13,812 | 38,604 | Yes | 27.9 |
| 22 | I-64 | I-75 (South Split) in Lexington | WV state line | 1,391 | 3,022 | Yes | 12.6 |
| 23 | US 23 | OH state line | US 119 near Pikeville | 4,813 | 6,458 | Yes | 19.8 |
| 24 | I-24 | Ohio River | TN state line | 4,799 | 23,927 | Yes | 25.8 |
| 25 | US 25 | KY 192 in London | US 25E in Corbin | 62 | 111 | No | 0.0 |
| 26 | I-264 (Watterson Expwy) | I-64 (West) | I-71 | 10,375 | 24,058 | Yes | 27.9 |

| Corridor ID | Corridor Name | From | To | Vehicle Hour Delay 2015 | Vehicle Hour Delay 2045 | Direct Connection to Modal Hub | Tier 1 Mobility Score |
|---|---|---|---|---|---|---|---|
| 27 | US 27 | OH state line | US 421 in Lexington | 8,143 | 14,235 | Yes | 24.9 |
| 28 | US 68 | OH state line | Man o' War Blvd | 5,632 | 14,550 | Yes | 22.8 |
| 29 | Hal Rogers Pkwy & KY 80 | US 27 at Somerset | US 23 at Prestonsburg | 1,455 | 2,722 | No | 8.1 |
| 30 | US 27 | US 421 in Lexington | TN state line | 11,789 | 24,915 | Yes | 27.9 |
| 31 | US 31 E | IN state line | Bluegrass Pkwy | 9,979 | 21,452 | Yes | 27.9 |
| 32 | KY 11 / KY 32 / US 460 | AA Highway in Maysville | US 23 in Paintsville | 1,018 | 1,662 | Yes | 12.6 |
| 33 | US 127 | I-71 | TN state line | 1,875 | 3,012 | Yes | 14.7 |
| 34 | KY 34 | US 27 NE of Danville | US 127 in Danville | 273 | 437 | No | 3.0 |
| 35 | US 231 | US 68 in Bowling Green | TN state line | 1,470 | 4,714 | No | 11.1 |
| 36 | KY 536 | US 42 in Union | US 27 near Alexandria | 7,579 | 11,892 | Yes | 22.8 |
| 37 | KY 425 | US 60 in Henderson | I-69 | 27 | 59 | Yes | 4.5 |
| 38 | US 431 | US 60 in Owensboro | TN state line | 884 | 1,221 | Yes | 9.6 |
| 39 | KY 100/US 31E/ KY 90 | I-65 Exit 6 | US 27 near Somerset | 1,209 | 2,927 | No | 8.1 |
| 40 | US 641 | US 60 in Marion | TN state line | 443 | 829 | Yes | 9.6 |
| 41 | US 421 | IN state line | US 27 in Lexington | 2,955 | 10,094 | Yes | 20.7 |
| 42 | US 421 | US 27 in Lexington | TN state line | 4,823 | 13,060 | Yes | 22.8 |
| 43 | KY 3174 (future US 460) | US 23 in Robinson Creek | VA state line | 11 | 19 | No | 0.0 |
| 44 | KY 44 | I-65 | KY 55 | 1,838 | 5,552 | Yes | 17.7 |
| 45 | US 45 | Mayfield | Paducah | 726 | 854 | Yes | 9.6 |
| 46 | KY 245/US 150 | I-65 in Clermont | I-75 at Mt. Vernon | 1,534 | 3,745 | Yes | 17.7 |
| 47 | KY 55/KY 555 (Heartland Parkway) | Bluegrass Pkwy | Cumberland Expwy | 288 | 595 | No | 3.0 |
| 48 | KY 627/KY 1958 | I-75 | I-64 | 303 | 686 | No | 3.0 |
| 49 | KY 259 | US 60 near Hardinsburg | I-65 near Smith Grove | 202 | 368 | No | 0.0 |
| 50 | US 60 | IL state line | US 31 W near Radcliff | 4,022 | 5,055 | Yes | 19.8 |
| 51 | KY 61 | TN state line | Cumberland Expwy | 89 | 139 | No | 0.0 |
| 52 | US 25/KY 52/KY 82/ KY 89 | I-75 in Richmond | Mountain Pkwy in Clay City | 654 | 1,117 | No | 5.1 |

## 5.3 ACCESSIBILITY

The accessibility index measures the market (total trips) served by a corridor and corridor utilization (vehicle hours traveled (VHT) spent on corridor) when trips access the special generators identified by the Project Team. Special generators include hospitals or trauma centers, colleges or universities (campus/main campus only), and non-retail job centers (v8_KYSTMv18 zones with more than 200 non-retail employment in 2015). Several trauma centers and large college/university campuses in neighboring states and adjacent to the Kentucky state line were also included in the analysis. Figure **5.1** illustrates the special generators.

**Figure 5.1 – Special Generators**

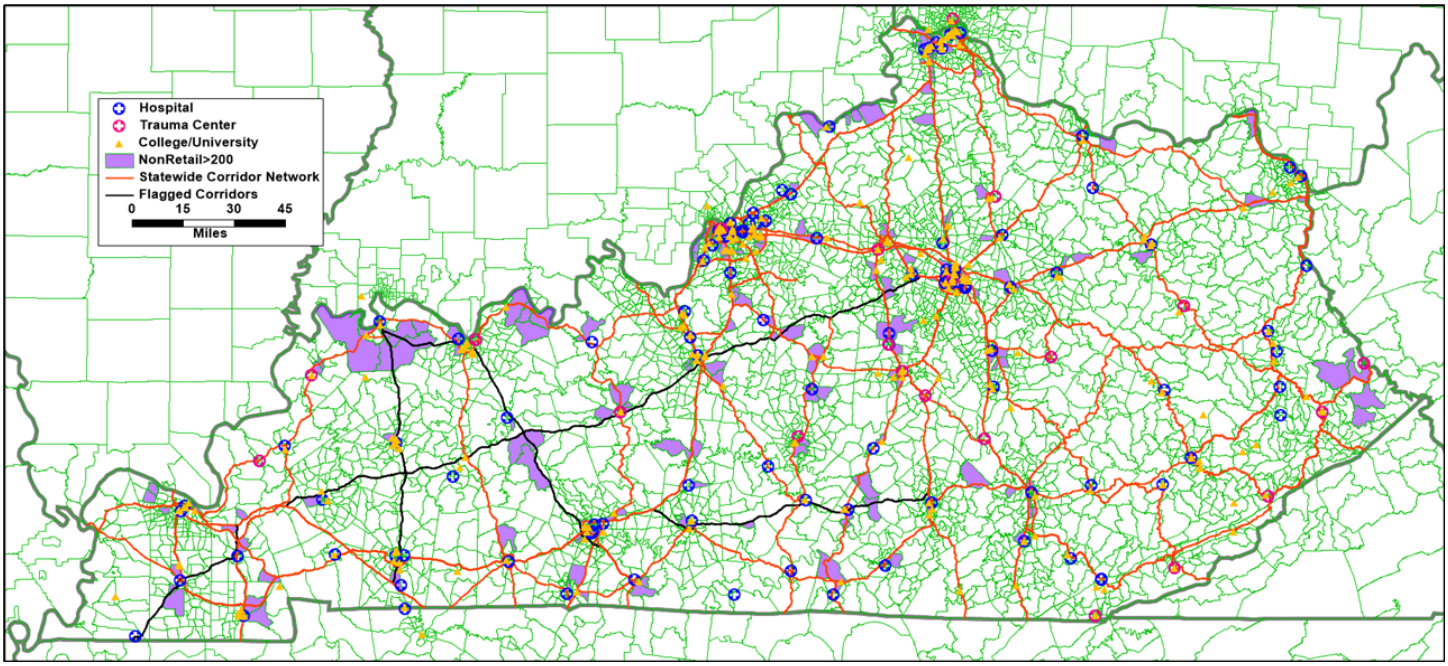



**Table 5.4** summarizes the accessibility index and its performance criteria. The weight of each criterion was determined based on data collected from the Tier 1 on-line survey mentioned above. The number of trips served is 35% of the Index, while corridor travel time is 65% of the Index.

- **Total Trips Served by Corridor (Year 2015).** This measures the magnitude of the market accessible to all special generators via a corridor using 2015 data from v8_KYSTMv18. The larger the market served by a corridor, the higher the score awarded to the corridor.
- **VHT Spent on Corridor (Year 2015).** This measures the utilization of a corridor when trips travel to the closest special generator, using 2015 data from v8_KYSTMv18. It is calculated as the corridor travel time multiplied by origin-destination (OD) trips served by the corridor. The longer the time spent on a corridor or the higher the volume of traffic traveling on a corridor, the more important the corridor is to providing access to special generators, and the higher the score is awarded to the corridor.

**Table 5.4 – Accessibility Index**

| ACCESSIBILITY INDEX | | | |
|---|---|---|---|
| Total Trips Served by Corridor (Year 2015) - $X_1$ | % of Score 35% | VHT Spent on Corridor (Year 2015) - $X_2$ | % of Score 65% |
| $X_1 < 10{,}000$ | 0 | $X_2 < 80$ | 0 |
| $10{,}000 <= X_1 < 20{,}000$ | 1 | $80 <= X_2 < 150$ | 1 |
| $20{,}000 <= X_1 < 35{,}000$ | 2 | $150 <= X_2 < 250$ | 2 |
| $35{,}000 <= X_1 < 60{,}000$ | 3 | $250 <= X_2 < 500$ | 3 |
| $60{,}000 <= X_1 < 125{,}000$ | 4 | $500 <= X_2 < 1{,}000$ | 4 |
| $X_1 >= 125{,}000$ | 5 | $X_2 >= 1{,}000$ | 5 |
| *Accessibility Score* $= 0.35X_1 + 0.65X_2$ | | | |
| *Final Score Weight = 30%, Multiplier = 6* | | | |

**Table 5.5** summarizes the Tier 1 accessibility scores. Rural corridors tend to have higher scores as they have better geometrics and wider typical sections than other competing routes in rural regions (usually narrower local roads with lower posted speeds), which provides easier and faster access to destinations and leads to a larger share of traffic received. High-volume corridors also tend to receive higher scores.

**Table 5.5 – Accessibility Score**

| Corridor ID | Corridor Name | From | To | Total Trips Served by Corridor 2015 | VHT Spent on Corridor 2015 | Tier 1 Accessibility Score |
|---|---|---|---|---|---|---|
| 1 | I-275 | Ohio River (West) | Ohio River (East) | 109,484 | 203 | 16.2 |
| 2 | I-471 | I-275 | Ohio River | 48,359 | 35 | 6.3 |
| 3 | I-75 | TN state line | I-275 | 187,413 | 825 | 26.1 |
| 4 | KY 4 (New Circle Road) | N/A | N/A | 108,377 | 47 | 8.4 |
| 5 | Man O War Blvd | US 60 (West) in Lexington | I-75 in Lexington | 57,282 | 150 | 10.2 |
| 6 | US 60 | I-64 in Louisville | I-75 in Lexington | 317,828 | 1,299 | 30 |
| 7 | I-71 | I-64 | I-75 | 57,990 | 166 | 14.1 |
| 8 | KY 80 & KY 121 | US 51 near Wickliffe | US 68 near Aurora | 3,669 | 53 | 0 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 29,578 | 509 | 19.8 |
| 10 | KY 100/US 79 | TN state line | I-65 near Franklin | 10,195 | 177 | 9.9 |
| 11 | KY 11/KY 30/KY 715 | Mountain Pkwy | London | 1,376 | 67 | 0 |
| 12 | KY 922 | US 68 in Lexington | I-75/64 | 55,774 | 15 | 6.3 |
| 13 | KY 313 | I-65 | IN state line | 8,532 | 101 | 3.9 |
| 14 | Mountain Pkwy/KY 114 | I-64 | US 23 in Prestonsburg | 7,723 | 98 | 3.9 |
| 15 | KY 15 | Campton | Whitesburg | 19,009 | 936 | 17.7 |
| 16 | US 68 | Paducah | I-65 | 56,414 | 454 | 18 |
| 17 | I-65 | TN state line | IN state line | 183,960 | 228 | 18.3 |

| Corridor ID | Corridor Name | From | To | Total Trips Served by Corridor 2015 | VHT Spent on Corridor 2015 | Tier 1 Accessibility Score |
|---|---|---|---|---|---|---|
| 18 | US 31W & KY 61 | I-64 in Louisville | Columbia | 133,054 | 916 | 26.1 |
| 19 | US 25 & US 119 | I-75 | WV state line | 48,298 | 2,975 | 25.8 |
| 20 | I-265/KY 841 (Gene Snyder Frwy) | US 31 W in Louisville | I-71 | 110,169 | 261 | 20.1 |
| 21 | I-64 | IN state line | I-75 (North Split) in Lexington | 168,278 | 335 | 22.2 |
| 22 | I-64 | I-75 (South Split) in Lexington | WV state line | 36,626 | 225 | 14.1 |
| 23 | US 23 | OH state line | US 119 near Pikeville | 42,732 | 1,780 | 25.8 |
| 24 | I-24 | Ohio River | TN state line | 22,366 | 146 | 8.1 |
| 25 | US 25 | KY 192 in London | US 25E in Corbin | 2,734 | 13 | 0 |
| 26 | I-264 (Watterson Expwy) | I-64 (West) | I-71 | 205,626 | 37 | 10.5 |
| 27 | US 27 | OH state line | US 421 in Lexington | 87,011 | 582 | 24 |
| 28 | US 68 | OH state line | Man o' War Blvd in Lexington | 99,843 | 307 | 20.1 |
| 29 | Hal Rogers Pkwy & KY 80 | US 27 at Somerset | US 23 at Prestonsburg | 19,381 | 547 | 17.7 |
| 30 | US 27 | US 421 in Lexington | TN state line | 151,668 | 1,187 | 30 |
| 31 | US 31 E | IN state line | Bluegrass Pkwy | 151,537 | 239 | 18.3 |
| 32 | KY 11/KY 32/US 460 | AA Highway in Maysville | US 23 in Paintsville | 18,833 | 707 | 17.7 |
| 33 | US 127 | I-71 | TN state line | 76,316 | 1,556 | 27.9 |
| 34 | KY 34 | US 27 NE of Danville | US 127 in Danville | 5,098 | 87 | 3.9 |
| 35 | US 231 | US 68 in Bowling Green | TN state line | 36,192 | 400 | 18 |
| 36 | KY 536 | US 42 in Union | US 27 near Alexandria | 23,451 | 189 | 12 |
| 37 | KY 425 | US 60 in Henderson | I-69 | 2,352 | 1 | 0 |
| 38 | US 431 | US 60 in Owensboro | TN state line | 30,590 | 464 | 15.9 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 32,181 | 667 | 19.8 |
| 40 | US 641 | US 60 in Marion | TN state line | 32,312 | 803 | 19.8 |
| 41 | US 421 | IN state line | US 27 in Lexington | 68,212 | 258 | 20.1 |
| 42 | US 421 | US 27 in Lexington | TN state line | 122,177 | 1,238 | 27.9 |
| 43 | KY 3174 (future US 460) | US 23 in Robinson Creek | VA state line | 594 | 78 | 0 |
| 44 | KY 44 | I-65 | KY 55 | 8,637 | 84 | 3.9 |
| 45 | US 45 | Mayfield | Paducah | 17,559 | 197 | 9.9 |
| 46 | KY 245/US 150 | I-65 in Clermont | I-75 at Mt. Vernon | 50,614 | 700 | 21.9 |
| 47 | KY 55/KY 555 (Heartland Parkway) | Bluegrass Pkwy | Cumberland Expwy | 24,268 | 270 | 15.9 |
| 48 | KY 627/KY 1958 | I-75 | I-64 | 23,330 | 131 | 8.1 |
| 49 | KY 259 | US 60 near Hardinsburg | I-65 near Smith Grove | 21,533 | 291 | 15.9 |
| 50 | US 60 | IL state line | US 31 W near Radcliff | 128,799 | 3,389 | 30 |
| 51 | KY 61 | TN state line | Cumberland Expwy | 3,847 | 227 | 7.8 |
| 52 | US 25/KY 52/KY 82/ KY 89 | I-75 in Richmond | Mountain Pkwy in Clay City | 13,877 | 571 | 17.7 |

## 5.4 SAFETY

The safety index measures the existing safety performance along each corridor, by using Critical Rate Factor (CRF) and Excess Expected Crashes (EEC). The CRF represents a ratio of the crash rate of a segment in comparison to the Critical Crash Rate (CCR) for similar roadways, as determined by KYTC. A CRF greater than one indicates that the crash rate of the segment is greater than should be expected. The EEC value represents the number of additional crashes over the expected number of crashes for similar roadways. An EEC value greater than zero indicates that there are more crashes on the segment than should be expected. KYTC provided 2014-2018 safety data in GIS format which contained CRFs, EECs, Level of Service of Safety (LOSS), and KABCO (Fatality (K), Disabling Injury (A), Evident Injury (B), Possible Injury (C), and Property Damage Only (O)) counts. The CRF and EEC data were then processed and assigned to corresponding statewide corridors for analysis.

**Table 5.6** summarizes the safety index and its performance criteria. Note that the weights of the safety criteria (CRF and EEC) were not directly weighted by the survey. They were assigned 50% each based on discussion with the Project Team.

- **% Corridor VMT with CRF > 1.** This measures the existing percentage of corridor vehicle miles traveled (VMT) that has safety issues (CRF > 1). It is a ratio of the summation of VMT for all sections with CRF > 1 to the total VMT of the corridor. VMT was calculated by v8_KYSTMv18 model data for base year 2015.
- **% Corridor VMT with EEC > 0.** This measures the existing percentage of corridor VMT that has safety issues (EEC >0). It was calculated using the same approach as above and used EEC for each section.

**Table 5.6 – Safety Index**

| SAFETY INDEX | | | |
|---|---|---|---|
| T% Corridor VMT with CRF > 1 - $X_1$ | % of Score 50% | % Corridor VMT with EEC > 0 - $X_2$ | % of Score 50% |
| $X_1$ < 20% | 0 | $X_2$ < 15% | 0 |
| 20% <= $X_1$ < 30% | 1 | 15% <= $X_2$ < 25% | 1 |
| 30% <= $X_1$ < 35% | 2 | 125% <= $X_2$ < 30% | 2 |
| 35% <= $X_1$ < 50% | 3 | 30% <= $X_2$< 35% | 3 |
| 50% <= $X_1$ < 60% | 4 | 35% <= $X_2$ < 40% | 4 |
| $X_1$ >= 60% | 5 | $X_2$ >= 40% | 5 |
| *Safety Score = $0.5X_1 + 0.5X_2$* | | | |
| *Final Score Weight = 40%, Multiplier = 8* | | | |

**Table 5.7** summarizes the Tier 1 safety scores. Five interstates in the Louisville, Lexington, and Northern Kentucky areas have the highest scores, including I-275, I-471, I-71, I-64, and I-264 (Watterson Expressway). Rural corridors tend to have lower safety scores. It was noted that each of the highest scoring interstate corridors has recent, current, or planned projects that will likely improve safety.

**Table 5.7 – Safety Scoring**

| Corridor ID | Corridor Name | From | To | % Corridor VMT with CRF >1 | % Corridor VMT with EEC >0 | Tier 1 Safety Score |
|---|---|---|---|---|---|---|
| 1 | I-275 | Ohio River (West) | Ohio River (East) | 87% | 50% | 40 |
| 2 | I-471 | I-275 | Ohio River | 99% | 62% | 40 |
| 3 | I-75 | TN state line | I-275 | 42% | 38% | 28 |
| 4 | KY 4 (New Circle Road) | N/A | N/A | 35% | 47% | 32 |
| 5 | Man O War Blvd | US 60 (West) in Lexington | I-75 in Lexington | 65% | 6% | 20 |
| 6 | US 60 | I-64 in Louisville | I-75 in Lexington | 52% | 27% | 24 |
| 7 | I-71 | I-64 | I-75 | 52% | 55% | 36 |
| 8 | KY 80 & KY 121 | US 51 near Wickliffe | US 68 near Aurora | 48% | 28% | 20 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 28% | 16% | 8 |
| 10 | KY 100/US 79 | TN state line | I-65 near Franklin | 30% | 43% | 24 |
| 11 | KY 11/KY 30/KY 715 | Mountain Pkwy | London | 32% | 37% | 24 |
| 12 | KY 922 | US 68 in Lexington | I-75/64 | 77% | 18% | 24 |
| 13 | KY 313 | I-65 | IN state line | 53% | 9% | 16 |
| 14 | Mountain Pkwy / KY 114 | I-64 | US 23 in Prestonsburg | 13% | 35% | 12 |
| 15 | KY 15 | Campton | Whitesburg | 44% | 27% | 20 |
| 16 | US 68 | Paducah | I-65 | 19% | 24% | 4 |
| 17 | I-65 | TN state line | IN state line | 60% | 38% | 32 |
| 18 | US 31W & KY 61 | I-64 in Louisville | Columbia | 37% | 28% | 20 |
| 19 | US 25 & US 119 | I-75 | WV state line | 25% | 20% | 8 |
| 20 | I-265/KY 841 (Gene Snyder Frwy) | US 31 W in Louisville | I-71 | 69% | 18% | 24 |
| 21 | I-64 | IN state line | I-75 (North Split) in Lexington | 59% | 50% | 36 |
| 22 | I-64 | I-75 (South Split) in Lexington | WV state line | 33% | 27% | 16 |
| 23 | US 23 | OH state line | US 119 near Pikeville | 37% | 14% | 12 |
| 24 | I-24 | Ohio River | TN state line | 52% | 27% | 24 |
| 25 | US 25 | KY 192 in London | US 25E in Corbin | 53% | 14% | 16 |
| 26 | I-264 (Watterson Expwy) | I-64 (West) | I-71 | 88% | 37% | 36 |
| 27 | US 27 | OH state line | US 421 in Lexington | 45% | 30% | 24 |
| 28 | US 68 | OH state line | Man o' War Blvd in Lexington | 34% | 32% | 20 |
| 29 | Hal Rogers Pkwy & KY 80 | US 27 at Somerset | US 23 at Prestonsburg | 9% | 18% | 4 |
| 30 | US 27 | US 421 in Lexington | TN state line | 56% | 26% | 24 |
| 31 | US 31 E | IN state line | Bluegrass Pkwy | 33% | 31% | 20 |

| Corridor ID | Corridor Name | From | To | % Corridor VMT with CRF >1 | % Corridor VMT with EEC >0 | Tier 1 Safety Score |
|---|---|---|---|---|---|---|
| 32 | KY 11/KY 32/US 460 | AA Highway in Maysville | US 23 in Paintsville | 32% | 31% | 20 |
| 33 | US 127 | I-71 | TN state line | 26% | 28% | 12 |
| 34 | KY 34 | US 27 NE of Danville | US 127 in Danville | 48% | 20% | 16 |
| 35 | US 231 | US 68 in Bowling Green | TN state line | 47% | 43% | 32 |
| 36 | KY 536 | US 42 in Union | US 27 near Alexandria | 31% | 26% | 16 |
| 37 | KY 425 | US 60 in Henderson | I-69 | 0% | 29% | 8 |
| 38 | US 431 | US 60 in Owensboro | TN state line | 64% | 34% | 32 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 20% | 32% | 12 |
| 40 | US 641 | US 60 in Marion | TN state line | 33% | 40% | 24 |
| 41 | US 421 | IN state line | US 27 in Lexington | 19% | 31% | 12 |
| 42 | US 421 | US 27 in Lexington | TN state line | 19% | 23% | 4 |
| 43 | KY 3174 (future US 460) | US 23 in Robinson Creek | VA state line | 0% | 0% | 0 |
| 44 | KY 44 | I-65 | KY 55 | 48% | 29% | 20 |
| 45 | US 45 | Mayfield | Paducah | 10% | 30% | 8 |
| 46 | KY 245/US 150 | I-65 in Clermont | I-75 at Mt. Vernon | 25% | 31% | 16 |
| 47 | KY 55/KY 555 (Heartland Parkway) | Bluegrass Pkwy | Cumberland Expwy | 25% | 33% | 16 |
| 48 | KY 627/KY 1958 | I-75 | I-64 | 50% | 25% | 24 |
| 49 | KY 259 | US 60 near Hardinsburg | I-65 near Smith Grove | 19% | 32% | 12 |
| 50 | US 60 | IL state line | US 31 W near Radcliff | 19% | 37% | 16 |
| 51 | KY 61 | TN state line | Cumberland Expwy | 0% | 13% | 0 |
| 52 | US 25/KY 52/KY 82/KY 89 | I-75 in Richmond | Mountain Pkwy in Clay City | 25% | 30% | 12 |

## 5.5 TIER 1 FINDINGS AND RECOMMENDATIONS

### 5.5.1 Screening Process and Recommendations

The Tier 1 overall scores and rankings were determined by combining the mobility, accessibility, and safety scores on 100-point scales with allocated weights (mobility – 30%, accessibility – 30%, and safety – 40%) outlined in Section 5.1. **Table 5.8** lists Tier 1 corridors in descending order of the overall score. The table also provides mobility, accessibility and safety scores and recommendations for each corridor.

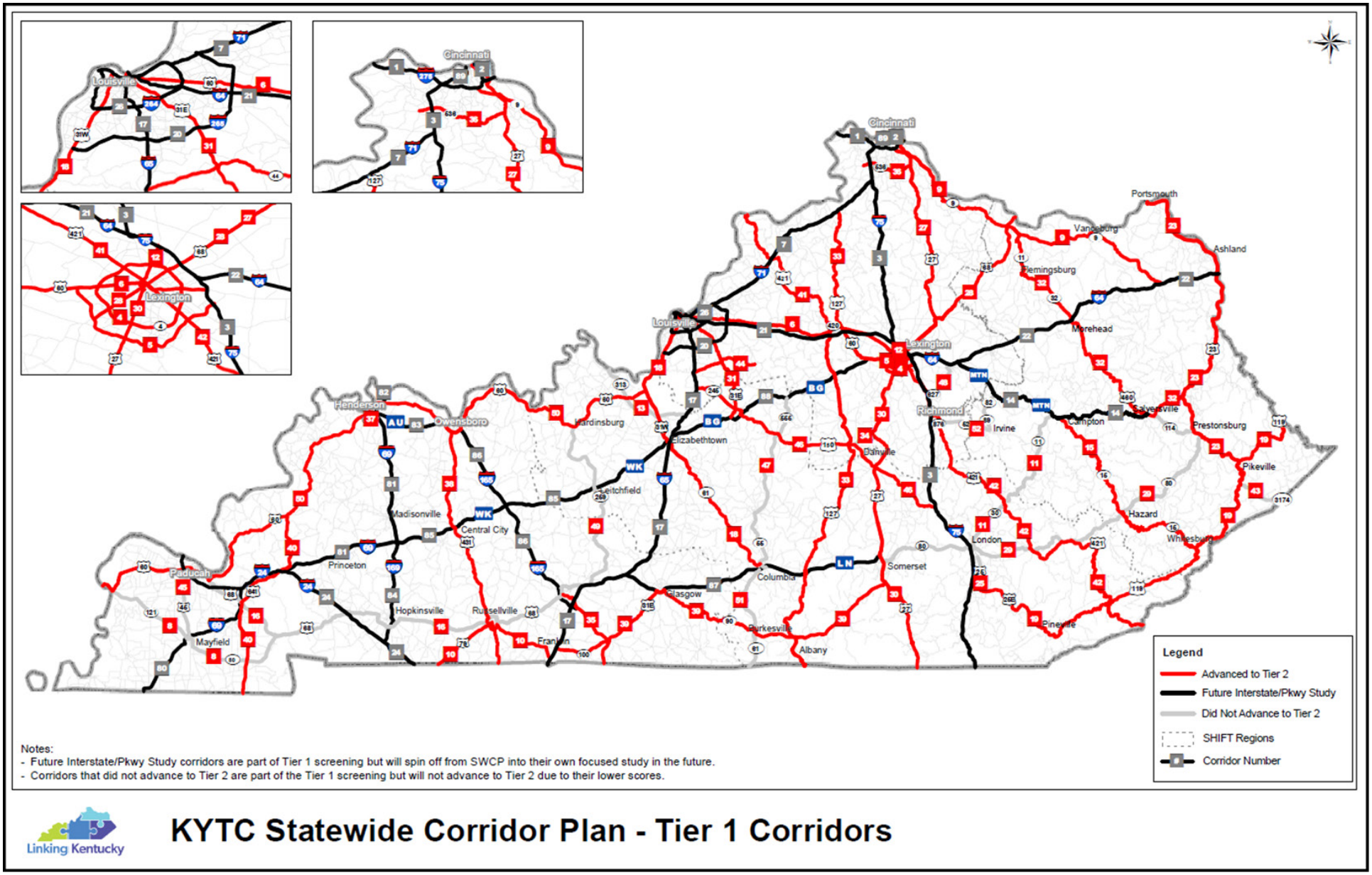
As **Table 5.8** shows, most interstate corridors have higher overall scores and ranks, because they carry heavy traffic and experience more safety issues. The top 10 corridors are concentrated in the Louisville, Lexington, Northern Kentucky region, and also central Kentucky. As a result, there are fewer rural corridors on the top of the list, especially for the eastern and southern regions of Kentucky. Based on discussions with the Project Team, it was decided to remove interstates and parkways from the SWCP and include them in a separate future study of interstates and parkways. The 26 arterial corridors with the highest Tier 1 overall scores, which have a balanced geographical distribution throughout the state, were selected to advance to Tier 2 analysis. **Figure 5.2** illustrates recommendations of Tier 1 corridors.

**Table 5.8 – Tier 1 Scoring**

| Corridor ID | Corridor Name | From | To | Mobility | Accessibility | Safety | Tier 1 Score | Recommendation |
|---|---|---|---|---|---|---|---|---|
| 21 | I-64 | IN state line | I-75 (North Split) in Lexington | 27.9 | 22.2 | 36.0 | 86.1 | Future Study |
| 1 | I-275 | Ohio River (West) | Ohio River (East) | 27.9 | 16.2 | 40.0 | 84.1 | Future Study |
| 3 | I-75 | TN state line | I-275 | 30.0 | 26.1 | 28.0 | 84.1 | Future Study |
| 6 | US 60 | I-64 in Louisville | I-75 in Lexington | 30.0 | 30.0 | 24.0 | 84.0 | Advance to Tier 2 |
| 30 | US 27 | US 421 in Lexington | TN state line | 27.9 | 30.0 | 24.0 | 81.9 | Advance to Tier 2 |
| 17 | I-65 | TN state line | IN state line | 30.0 | 18.3 | 32.0 | 80.3 | Future Study |
| 7 | I-71 | I-64 | I-75 | 27.9 | 14.1 | 36.0 | 78.0 | Future Study |
| 26 | I-264 (Watterson Expy) | I-64 (West) | I-71 | 27.9 | 10.5 | 36.0 | 74.4 | Future Study |
| 18 | US 31W & KY 61 | I-64 in Louisville | Columbia | 27.9 | 26.1 | 20.0 | 74.0 | Advance to Tier 2 |
| 27 | US 27 | OH state line | US 421 in Lexington | 24.9 | 24.0 | 24.0 | 72.9 | Advance to Tier 2 |
| 20 | I-265/KY 841 (Gene Snyder Fwy) | US 31 W in Louisville | I-71 | 27.9 | 20.1 | 24.0 | 72.0 | Future Study |
| 31 | US 31 E | IN state line | Bluegrass Pkwy | 27.9 | 18.3 | 20.0 | 66.2 | Advance to Tier 2 |
| 4 | KY 4 (New Circle Road) | | | 25.8 | 8.4 | 32.0 | 66.2 | Advance to Tier 2 |
| 50 | US 60 | IL state line | US 31 W near Radcliff | 19.8 | 30.0 | 16.0 | 65.8 | Advance to Tier 2 |
| 28 | US 68 | OH state line | Man o' War Blvd in Lexington | 22.8 | 20.1 | 20.0 | 62.9 | Advance to Tier 2 |
| 35 | US 231 | US 68 in Bowling Green | TN state line | 11.1 | 18.0 | 32.0 | 61.1 | Advance to Tier 2 |
| 2 | I-471 | I-275 | Ohio River | 12.6 | 6.3 | 40.0 | 58.9 | Future Study |
| 24 | I-24 | Ohio River | TN state line | 25.8 | 8.1 | 24.0 | 57.9 | Future Study |
| 23 | US 23 | OH state line | US 119 near Pikeville | 19.8 | 25.8 | 12.0 | 57.6 | Advance to Tier 2 |
| 38 | US 431 | US 60 in Owensboro | TN state line | 9.6 | 15.9 | 32.0 | 57.5 | Advance to Tier 2 |
| 46 | KY 245/US 150 | I-65 in Clermont | I-75 at Mt. Vernon | 17.7 | 21.9 | 16.0 | 55.6 | Advance to Tier 2 |
| 42 | US 421 | US 27 in Lexington | TN state line | 22.8 | 27.9 | 4.0 | 54.7 | Advance to Tier 2 |
| 33 | US 127 | I-71 | TN state line | 14.7 | 27.9 | 12.0 | 54.6 | Advance to Tier 2 |
| 40 | US 641 | US 60 in Marion | TN state line | 9.6 | 19.8 | 24.0 | 53.4 | Advance to Tier 2 |
| 5 | Man O War Blvd | US 60 (West) in Lexington | I-75 in Lexington | 22.8 | 10.2 | 20.0 | 53.0 | Advance to Tier 2 |
| 41 | US 421 | IN state line | US 27 in Lexington | 20.7 | 20.1 | 12.0 | 52.8 | Advance to Tier 2 |
| 12 | KY 922 | US 68 in Lexington | I-75/64 | 20.7 | 6.3 | 24.0 | 51.0 | Advance to Tier 2 |

| Corridor ID | Corridor Name | From | To | Mobility | Accessibility | Safety | Tier 1 Score | Recommendation |
|---|---|---|---|---|---|---|---|---|
| 36 | KY 536 | US 42 in Union | US 27 near Alexandria | 22.8 | 12.0 | 16.0 | 50.8 | Advance to Tier 2 |
| 32 | KY 11/KY 32/US 460 | AA Highway in Maysville | US 23 in Paintsville | 12.6 | 17.7 | 20.0 | 50.3 | Advance to Tier 2 |
| 19 | US 25 & US 119 | I-75 | WV state line | 15.3 | 25.8 | 8.0 | 49.1 | Advance to Tier 2 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 19.8 | 19.8 | 8.0 | 47.6 | Advance to Tier 2 |
| 15 | KY 15 | Campton | Whitesburg | 8.1 | 17.7 | 20.0 | 45.8 | Advance to Tier 2 |
| 22 | I-64 | I-75 (South Split) in Lexington | WV state line | 12.6 | 14.1 | 16.0 | 42.7 | Future Study |
| 10 | KY 100/US 79 | TN state line | I-65 near Franklin | 8.1 | 9.9 | 24.0 | 42.0 | Advance to Tier 2 |
| 44 | KY 44 | I-65 | KY 55 | 17.7 | 3.9 | 20.0 | 41.6 | Advance to Tier 2 |
| 39 | KY 100/US 31E/ KY 90 | I-65 Exit 6 | US 27 near Somerset | 8.1 | 19.8 | 12.0 | 39.9 | Advance to Tier 2 |
| 16 | US 68 | Paducah | I-65 | 17.7 | 18.0 | 4.0 | 39.7 | Dismiss |
| 48 | KY 627/KY 1958 | I-75 | I-64 | 3.0 | 8.1 | 24.0 | 35.1 | Dismiss |
| 47 | KY 55/KY 555 (Heartland Parkway) | Bluegrass Pkwy | Cumberland Expwy | 3.0 | 15.9 | 16.0 | 34.9 | Dismiss |
| 52 | US 25/KY 52/KY 82/KY 89 | I-75 in Richmond | Mountain Pkwy in Clay City | 5.1 | 17.7 | 12.0 | 34.8 | Dismiss |
| 29 | Hal Rogers Pkwy & KY 80 | US 27 at Somerset | US 23 at Prestonsburg | 8.1 | 17.7 | 4.0 | 29.8 | Dismiss |
| 49 | KY 259 | US 60 near Hardinsburg | I-65 near Smith Grove | 0.0 | 15.9 | 12.0 | 27.9 | Dismiss |
| 45 | US 45 | Mayfield | Paducah | 9.6 | 9.9 | 8.0 | 27.5 | Dismiss |
| 13 | KY 313 | I-65 | IN state line | 7.5 | 3.9 | 16.0 | 27.4 | Dismiss |
| 8 | KY 80 & KY 121 | US 51 near Wickliffe | US 68 near Aurora | 4.5 | 0.0 | 20.0 | 24.5 | Dismiss |
| 11 | KY 11/KY 30/ KY 715 | Mountain Pkwy | London | 0.0 | 0.0 | 24.0 | 24.0 | Dismiss |
| 34 | KY 34 | US 27 NE of Danville | US 127 in Danville | 3.0 | 3.9 | 16.0 | 22.9 | Dismiss |
| 14 | Mountain Pkwy /KY 114 | I-64 | US 23 in Prestonsburg | 3.0 | 3.9 | 12.0 | 18.9 | Dismiss |
| 25 | US 25 | KY 192 in London | US 25E in Corbin | 0.0 | 0.0 | 16.0 | 16.0 | Dismiss |
| 37 | KY 425 | US 60 in Henderson | I-69 | 4.5 | 0.0 | 8.0 | 12.5 | Dismiss |
| 51 | KY 61 | TN state line | Cumberland Expwy | 0.0 | 7.8 | 0.0 | 7.8 | Dismiss |
| 43 | KY 3174 (future US 460) | US 23 in Robinson Creek | VA state line | 0.0 | 0.0 | 0.0 | 0.0 | Dismiss |

Figure 5.2 – Tier 1 Corridors Recommendations



### 5.5.2 Tier 1 Corridors Not Carried Forward to Tier 2

As mentioned above, the Tier 1 interstate corridors did not advance to Tier 2 analysis. Per KYTC's guidance, they will be included with the previously identified "flagged" corridors (other interstates and parkways) in a dedicated Statewide Interstate and Parkway Plan (SWIPP) study in the future. This decision was based on several factors:

- Interstates are more straightforward and are already a known priority for improvement.
- Interstates have either clear-cut improvement options or would benefit from out-of-the box thinking, which is different from most other highways.
- Most interstates have had studies completed on them in the past 10 years.
- This approach allows more attention to be given to geographically diverse arterials in the SWCP.

With regard to the arterial corridors that are not being carried forward from Tier 1 to Tier 2 for further analysis, it is important to note that it does not mean that a particular corridor improvement would not be beneficial. Spot improvements on these corridors might provide significant local benefits, but the needs do not rise to the corridor level, and the benefits of the improvements might not be as significant statewide as other Tier 1 corridors. Additional study of some of the corridors not being carried forward for Tier 2 analysis might be warranted.

# CHAPTER 6: TIER 2 CORRIDOR PRIORITIZATION

The Tier 2 analysis follows an overall similar approach to that of Tier 1. However, Tier 2 analyzes individual segments within each corridor instead of the entire corridor. Tier 2 incorporates refined quantitative factors, new qualitative indicators, and stakeholders' input to evaluate benefits of proposed corridor improvements, while avoiding potential conflicts with KYTC's previous or ongoing efforts. The 20 priority segments identified by Tier 2 analysis were carried forward to Corridor Visioning.

## 6.1 BREAKING CORRIDORS INTO SEGMENTS

At the beginning of Tier 2 analysis, the 26 corridors identified by Tier 1 screening were divided into 45 segments of logical termini and independent utilities (e.g., volume changes, functional class, major junctions, etc.) based on consensus of the Project Team. The shorter segment length allowed more specific corridor scoping and improvement concept development, as well as more detailed analysis of corridor performance. **Figure 6.1** illustrates the Tier 2 segments and **Table 6.1** lists the Tier 2 segments and limits of each segment.

## 6.2 TIER 2 CORRIDOR SCOPING

A comprehensive corridor scoping was conducted for each Tier 2 segment at planning level. The major goal of the Tier 2 corridor scoping was to develop practical corridor improvement concepts based on a thorough review of each segment's existing conditions, issues and needs. Extensive efforts were made to coordinate with the Project Team to develop the improvement recommendations. For each Tier 2 segment, the recommended improvement concept was coded into the 5961 zone v8_KYSTMv18 (aka v8_KYSTMv8) network for the Build model run and corridor performance analysis. For some corridor segments, multiple improvement concepts were recommended at the same location, and only the largest-scale improvement concept was coded at those locations in the model to fully estimate corridor benefits in Tier 2 analysis.

**Appendix G** includes complete scoping reports for all Tier 2 segments.

**Figure 6.1 – Tier 2 Segments**

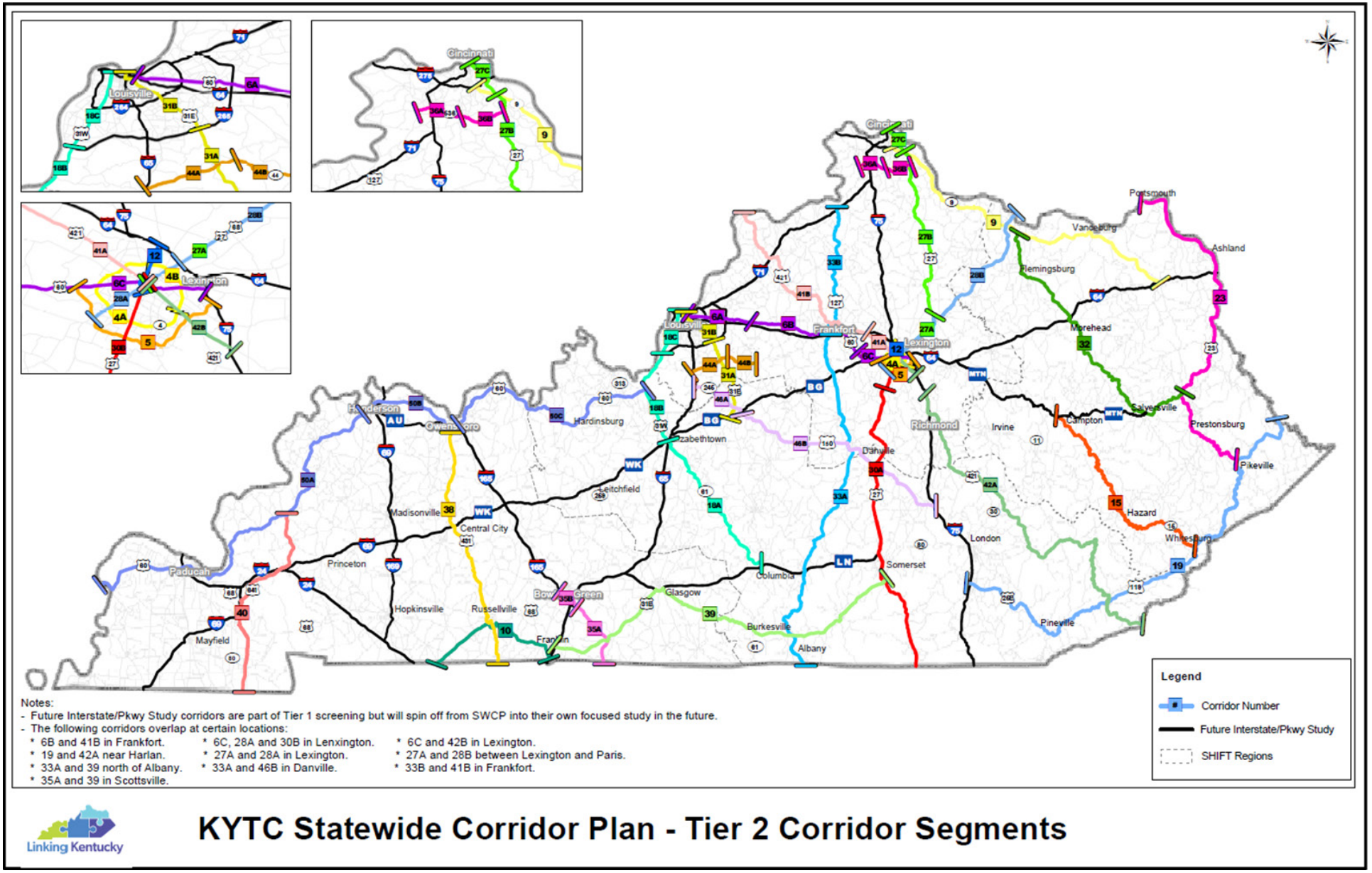


**Table 6.1 – Tier 2 Segments**

| SEGMENT ID | SEGMENT NAME | FROM | TO |
|---|---|---|---|
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 |
| 15 | KY 15 | Campton | Whitesburg |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville |
| 19 | US 25 & US 119 | I-75 | WV State Line |
| 23 | US 23 | OH State Line | US 119 near Pikeville |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 |
| 28B | US 68 | I-64/I-75 | OH State Line |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville |
| 33A | US 127 | TN State Line | I-64 near Frankfort |
| 33B | US 127 | I-64 near Frankfort | I-71 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence |
| 36B | KY 536 | KY 17 | US 27 near Alexandria |
| 38 | US 431 | US 60 in Owensboro | TN State Line |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset |
| 40 | US 641 | TN State Line | US 60 in Marion |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line |
| 42A | US 421 | VA State Line | I-75 (Exit 97) |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington |

| SEGMENT ID | SEGMENT NAME | FROM | TO |
|---|---|---|---|
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff |

## 6.3 TIER 2 PERFORMANCE CRITERIA & SCORING

Building upon the corridor scoring and screening in Tier 1, additional and more detailed performance measures were added to Tier 2 quantitative performance criteria based on discussion within the Project Team. An additional on-line survey was conducted to gather input from Project Team, Planning Partners, and key stakeholders on the Tier 2 performance criteria and weights. The Tier 2 survey was live for two weeks from July 21 through August 4, 2020. Detailed data gathered from the survey are shown in **Appendix F**. A Tier 2 rating system was developed using weights derived from survey results and slightly adjusted by the Project Team.

Six quantitative performance criteria were developed in Tier 2 to assess benefits of corridor improvements and determine which segments would advance to Corridor Visioning. Table **6.2** lists the performance criteria and their weights. Each performance criteria was assigned a value ranging from 0 to 5 points, with the latter indicating the highest need or benefit for the corresponding performance measure. The mobility performance criteria includes a 5-point bonus factor based on a segment's "travel time reliability", described later in this chapter. The Tier 2 performance criteria also include a 5-point Multi-Infrastructure bonus score representing the feasibility of alternative infrastructure strategies as a potential corridor improvement. All Tier 2 performance criteria scores are converted to weighted scores and combined to create an overall weighted score that ranges from 0 to 110. A higher score generally indicates a greater benefit potential from the proposed corridor improvement. A detailed description of each performance criteria and the scoring results follows.

**Table 6.2 – Tier 2 Performance Measures**

| SCORING FACTOR NUMBER | TIER 2 CORRIDOR PERFORMANCE MEASURES | SCORE RANGE | SCORE WEIGHT | MAX. POSSIBLE WEIGHTED SCORE |
|---|---|---|---|---|
| #1 | Mobility Index | 0 – 5 | 4 | 20 |
| | Reliability Bonus | 0 – 5 | 1 | +5 |
| #2 | Accessibility Index | 0 – 5 | 4 | 20 |
| #3 | Safety Index | 0 – 5 | 5 | 25 |
| #4 | Infrastructure Index | 0 – 5 | 4 | 20 |
| #5 | Economic Index | 0 – 5 | 3 | 15 |
| #6 | Multi-Infrastructure Bonus | 1 – 5 | 1 | +5 |
| | | | | **Sum = 110** |

### 6.3.1 Mobility

The Tier 2 mobility criteria are composed of two parts: mobility index and reliability bonus. **Table 6.3** summarizes the mobility criteria. The mobility index evaluates the improvement concepts impact on congestions at corridor and systemwide levels in future year (2045), as well as estimated truck volumes on corridors in future year (2045). According to data collected from the Tier 2 on-line survey mentioned above, the score of mobility index was weighted as 40% for corridor delay reduction, 30% for systemwide delay reduction, and 30% for corridor truck volumes. In overall Tier 2 scoring, the mobility index contributes a maximum of 20 points. The reliability bonus factor measures the existing condition of travel time reliability along corridors, with a maximum of 5 points towards the final total score.

- **Mobility Index**
  - **Corridor Delay Reduction (2045).** This forecasts the reduction of vehicle hour delays along a corridor in the future year 2045, which would result from the recommended improvement for the corridor. For each corridor segment, the improvement concept recommended by Tier 2 corridor scoping was coded into v8_KYSTMv18 network for a 2045 "Build" model run. The corridor delay reduction is the difference of the vehicle hour delays for the corridor segment between 2045 "No Build" and 2045 "Build".
  - **Systemwide Delay Reduction (2045).** This forecasts the reduction of vehicle hour delays at system level in the future year 2045, which would result from the recommended improvement for the corridor. It was calculated in the same way as the corridor delay reduction mentioned above, except for including all roadways in the v8_KYSTMv18 network.
  - **Corridor Truck Volumes (2045).** This was calculated as the corridor-level average daily truck volumes along a corridor in 2045 "No Build". Corridors carrying higher truck flows play an important role in the freight/logistics industry in support of the state's economy and are expected to gain more benefit from the recommended improvements.
- **Reliability Bonus**
  - **% Corridor Vehicle Mile Traveled (VMT) Unreliable.** This measures the level of travel time reliability along a corridor based on analysis of v8_KYSTMv18 and observed speed data. Unreliable locations were determined by a combination of bottlenecks identified by v8_KYSTMv18 (2015 volume/capacity ratio > 0.6) and the Level of Travel Time Reliability (LOTTR) value greater than 1.5. A higher percentage of unreliable corridor VMT indicates the existing mobility has higher variability of operation speeds, which may be caused by capacity constraint, incidents, weather, maintenance or short-term construction, and is more likely to benefit from the recommended improvements.

**Table 6.3 – Tier 2 Mobility Index and Reliability Bonus**

| MOBILITY INDEX | | | | | | | RELIABILITY BONUS (+5 PTS) | |
|---|---|---|---|---|---|---|---|---|
| Corridor Delay Reduction (Year 2045) - $X_1$ | Score | Systemwide Delay (Year 2045) - $X_2$ | Score | Corridor Truck Volumes (Year 2045) - $X_3$ | Score | + | % Corridor VMT Unreliable - X | Score |
| $X_1 < 0$ | 0 | $X_2 < 0$ | 0 | $X_3 < 1{,}000$ | 0 | | X < 5% | 0 |
| $0 <= X_1 < 100$ | 1 | $0 <= X_2 < 500$ | 1 | $1{,}000 <= X_3 < 1{,}500$ | 1 | | 5% <= X < 15% | 1 |
| $100 <= X_1 < 400$ | 2 | $500 <= X_2 < 1{,}500$ | 2 | $1{,}500 <= X_3 < 2{,}000$ | 2 | | 15% <= X < 30% | 2 |
| $400 <= X_1 < 1{,}000$ | 3 | $1{,}500 <= X_2 < 3{,}500$ | 3 | $2{,}000 <= X_3 < 2{,}500$ | 3 | | 30% <= X < 65% | 3 |
| $1{,}000 <= X_1 < 2{,}000$ | 4 | $3{,}500 <= X_2 < 6{,}500$ | 4 | $2{,}500 <= X_3 < 4{,}000$ | 4 | | 65% <= X < 85% | 4 |
| $X_1 >= 2{,}000$ | 5 | $X_2 >= 6{,}500$ | 5 | $X_3 >= 4{,}000$ | 5 | | X >= 55% | 5 |
| *Mobility Score = $0.4X_1 + 0.3X_2 + 0.3X_3$* | | | | | | | | |
| *Final Score Weight = 20%, Multiplier = 4* | | | | | | | | |

**Table 6.4** summarizes the Tier 2 mobility scores for each segment. Unsurprisingly, the congested high-volume arterials in major metropolitan areas, including Segment 4B (New Circle Road (KY 4)), Segment 12 (KY 922) and Segment 42B (US 421) in Lexington, Segment 18B (US 31 W) and Segment 31B (US 31 E) in Louisville, Segment 36A (KY 536 (from US 42 to KY 17)) in northern Kentucky, are at the high end of the mobility and reliability scores. This is because the recommended roadway widening and spot improvements at major interchanges or intersections provide a significant amount of additional capacity and improve traffic operations. In addition, these major arterials carry relatively high truck volumes, which provides benefit in the scoring.

**Table 6.4 – Tier 2 Mobility Scoring**

| Segment ID | Segment Name | From | To | MOBILITY INDEX | | | | RELIABILITY BONUS | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Corridor Delay Reduction (2045) | Systemwide Delay Reduction (2045) | Truck Volumes (2045) | Score | % Corridor VMT Unreliable | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 3,504 | 6,759 | 6,269 | 20.0 | 63.9% | 3 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 993 | 3,446 | 6,247 | 14.4 | 96.9% | 5 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 1,404 | 8,453 | 2,319 | 16.0 | 83.4% | 4 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | -750 | 5,869 | 3,355 | 9.6 | 84.8% | 4 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 361 | 381 | 1,088 | 5.6 | 39.7% | 3 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 41 | 11,531 | 5,408 | 13.6 | 81.8% | 4 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 3,782 | 5,615 | 1,547 | 15.2 | 30.4% | 3 |

| Segment ID | Segment Name | From | To | MOBILITY INDEX | | | | RELIABILITY BONUS | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Corridor Delay Reduction (2045) | Systemwide Delay Reduction (2045) | Truck Volumes (2045) | Score | % Corridor VMT Unreliable | Score |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin | -315 | -913 | 986 | 0.0 | 9.6% | 1 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | -380 | 1,720 | 6,073 | 9.6 | 95.8% | 5 |
| 15 | KY 15 | Campton | Whitesburg | 357 | -109 | 1,906 | 5.6 | 5.6% | 1 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 24 | -210 | 918 | 1.6 | 3.1% | 0 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 5,734 | 15,013 | 3,733 | 18.8 | 68.7% | 4 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | -1,239 | 1,267 | 2,338 | 6.0 | 82.7% | 4 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 613 | 752 | 2,474 | 10.8 | 14.0% | 1 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 1,705 | 1,588 | 3,370 | 14.8 | 15.3% | 2 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | -1,262 | -327 | 2,010 | 3.6 | 44.2% | 3 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 1,272 | 1,572 | 1,063 | 11.2 | 23.2% | 2 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 1,818 | 3,894 | 3,614 | 16.0 | 82.5% | 4 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | -3,212 | 3,393 | 2,749 | 8.4 | 100.0% | 5 |
| 28B | US 68 | I-64/I-75 | OH State Line | 85 | -205 | 920 | 1.6 | 4.2% | 0 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 1,141 | 473 | 1,646 | 10.0 | 19.3% | 2 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | -1,108 | 2,717 | 7,265 | 9.6 | 82.4% | 4 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 4,866 | 6,738 | 2,117 | 17.6 | 47.7% | 3 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | -3,210 | -982 | 1,523 | 2.4 | 99.4% | 5 |
| 32 | KY 11/KY 32/ US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 920 | 553 | 929 | 7.2 | 22.4% | 2 |
| 33A | US 127 | TN State Line | I-64 near Frankfort | -371 | 1,350 | 934 | 2.4 | 7.1% | 1 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 168 | -376 | 773 | 3.2 | 27.2% | 2 |

| Segment ID | Segment Name | From | To | MOBILITY INDEX | | | | RELIABILITY BONUS | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Corridor Delay Reduction (2045) | Systemwide Delay Reduction (2045) | Truck Volumes (2045) | Score | % Corridor VMT Unreliable | Score |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 80 | -420 | 2,423 | 5.2 | 3.9% | 0 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 208 | 1,232 | 2,179 | 9.2 | 81.4% | 4 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 8,292 | 11,732 | 5,448 | 20.0 | 81.9% | 4 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | -3 | -42 | 422 | 0.0 | 5.8% | 1 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 69 | 222 | 1,123 | 4.0 | 7.6% | 1 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 398 | -261 | 1,625 | 5.6 | 3.6% | 0 |
| 40 | US 641 | TN State Line | US 60 in Marion | 54 | -816 | 1,418 | 2.8 | 8.3% | 1 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 1,110 | 6,169 | 2,617 | 16.0 | 72.9% | 4 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | -173 | 47 | 446 | 1.2 | 21.6% | 2 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | -240 | -139 | 581 | 0.0 | 12.1% | 1 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | -1,183 | 3,403 | 4,452 | 9.6 | 86.4% | 5 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 665 | 2,406 | 3,575 | 13.2 | 40.7% | 3 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | -7 | -202 | 2,085 | 3.6 | 1.3% | 0 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 35 | -641 | 2,230 | 5.2 | 22.5% | 2 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | -388 | 46 | 1,097 | 2.4 | 4.8% | 0 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 7 | -637 | 1,232 | 2.8 | 13.3% | 1 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 330 | 402 | 1,532 | 6.8 | 29.2% | 2 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | -2 | -508 | 1,532 | 2.4 | 1.7% | 0 |

### 6.3.2 Accessibility

The Tier 2 accessibility index measures the corridor's importance to statewide/regional accessibility by serving long-distance trips and the percent of travel time saved when accessing the closest special generators due to corridor improvements, in the future year of 2045. **Table 6.5** summarizes the accessibility index. The weight of each performance measure was determined based on data collected from the Tier 2 on-line survey mentioned above. The long-distance trips served by corridor is 45% of the index, while the percent travel time savings is 55% of the index. In overall Tier 2 scoring, the accessibility index contributes a maximum of 20 points. The Tier 2 analysis used the same special generators (i.e., hospital/trauma centers, colleges/universities, non-retail job centers) identified in Tier 1.

- **Long-Distance Trips Served by Corridor (2045).** This measures the number of long-distance trips (greater than 50 miles) that fully or partially use the corridor to reach special generators, using 2045 "No Build" ODs and congested travel time skims from v8_KYSTMv18. The statewide/regional major corridors are intended to provide efficient long-distance connectivity between regions and major special generators across Kentucky. Long-distance trip makers usually have little knowledge of local roadway networks and alternative routes, so they tend to stay on the corridor during their journey even though unfavorable traffic conditions exist. Therefore, the improvement concepts would provide greater benefits to those corridors carrying more long-distance trips. The more long-distance trips served by a corridor, the higher the score awarded to the corridor.
- **% Travel Time Savings to the Closest Generators (2045).** This measures the percent travel time savings from all trips that use some part of the corridor to access the closest special generators, due to recommended corridor improvements. For all Origin-Destination (OD) pairs that include the corridor in their path to access the closest special generators (by three types: hospital/trauma centers, colleges/universities, non-retail job centers), improved travel times were estimated using the v8_KYSTMv18 2045 "Build" model and aggregated to an average travel time under 2045 "Build". Then, the 2045 "Build" travel times were compared to 2045 "No Build" travel times to get the percent travel time savings. The greater the percent travel time savings achieved by a corridor, the more benefit the corridor improvement provides, the higher the score awarded to the corridor.

**Table 6.5 – Tier 2 Accessibility Index**

| ACCESSIBILITY INDEX | | | | |
|---|---|---|---|---|
| **Long-Distance Trips Served by Corridor (Year 2045) - $X_1$** | **Score** | | **% Travel Time Savings to Closest Generators (Year 2045) - $X_2$** | **Score** |
| $X_1 < 1{,}000$ | 0 | | $X_2 < 0.5\%$ | 0 |
| $1{,}000 <= X_1 < 2{,}000$ | 1 | | $0.5\% <= X_2 < 1\%$ | 1 |
| $2{,}000 <= X_1 < 2{,}500$ | 2 | | $1\% <= X_2 < 2\%$ | 2 |
| $2{,}500 <= X_1 < 3{,}000$ | 3 | | $2\% <= X_2 < 3\%$ | 3 |
| $3{,}000 <= X_1 < 4{,}000$ | 4 | | $3\% <= X_2 < 5\%$ | 4 |
| $X_1 >= 4{,}000$ | 5 | | $X_2 >= 5\%$ | 5 |
| *Accessibility Score = $0.45X_1 + 0.55X_2$* | | | | |
| *Final Score Weight = 20%, Multiplier = 4* | | | | |

**Table 6.6** summarizes Tier 2 accessibility scores. Segment 6B (US 60 (between Simpsonville and Versailles)), Segment 6C (US 60 (between Versailles and Lexington)), Segment 18B (US 31 W (between Elizabethtown and I-265)), Segment 5 (Man O War Boulevard), and Segment 50B (US 60 (between Henderson and Owensboro)) received the top scores, because they serve larger numbers of long-distance trips between major cities or have greater potential of travel time savings to access special generators. It is also noted that a few rural corridors (e.g., Segment 32 - KY 11/KY 32/US 460 in eastern Kentucky, Segment 38 - US 431 in western Kentucky, Segment 39 - KY 100/US 31 E/KY 90 in southern Kentucky) score higher due to their role of providing primary access to major destinations in their regions.

**Table 6.6 – Tier 2 Accessibility Scoring**

| Segment ID | Segment Name | From | To | ACCESSIBILITY INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Long-Distance Trips Served by Corridor (2045) | % Travel Time Savings to Closest Generators (2045) | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 2,584 | 0.9% | 7.6 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 1,530 | 2.5% | 8.4 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 3,106 | 5.5% | 18.2 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 2,714 | 0.9% | 7.6 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 3,599 | 5.2% | 18.2 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 7,328 | 5.8% | 20.0 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 1,729 | 4.0% | 10.6 |
| 10 | KY 100 / US 79 | TN State Line | I-65 near Franklin | 3,327 | 0.7% | 9.4 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 3,628 | 1.7% | 11.6 |
| 15 | KY 15 | Campton | Whitesburg | 1,446 | 3.7% | 10.6 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 3,832 | 0.2% | 7.2 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 8,334 | 8.4% | 20.0 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 1,399 | 1.3% | 6.2 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 3,827 | 1.2% | 11.6 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 4,153 | 1.7% | 13.4 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 2,815 | 2.7% | 12.0 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 587 | -0.3% | 0.0 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 443 | 3.1% | 8.8 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 3,119 | 1.6% | 11.6 |
| 28B | US 68 | I-64/I-75 | OH State Line | 2,847 | 1.1% | 9.8 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 2,427 | 4.5% | 12.4 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 2,760 | 3.5% | 14.2 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 1,915 | 5.2% | 12.8 |

| Segment ID | Segment Name | From | To | ACCESSIBILITY INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Long-Distance Trips Served by Corridor (2045) | % Travel Time Savings to Closest Generators (2045) | Score |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | 2,936 | -0.1% | 5.4 |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 2,490 | 8.3% | 14.6 |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 7,552 | 1.2% | 13.4 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 1,032 | 0.8% | 4.0 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 1,642 | 1.1% | 6.2 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 869 | 4.7% | 8.8 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 2,434 | 5.6% | 14.6 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 339 | -2.3% | 0.0 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 4,782 | 2.2% | 15.6 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 7,261 | 2.2% | 15.6 |
| 40 | US 641 | TN State Line | US 60 in Marion | 4,290 | 0.8% | 11.2 |
| 41A | US 421 | Boradway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 2,162 | 14.8% | 14.6 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 2,510 | 1.4% | 9.8 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 2,186 | 2.8% | 10.2 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 1,489 | 4.8% | 10.6 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 242 | 1.5% | 4.4 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 1,410 | 2.0% | 8.4 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 1,601 | 0.4% | 1.8 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 3,239 | 1.6% | 11.6 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 3,831 | 0.4% | 7.2 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 5,044 | 3.0% | 17.8 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 5,136 | 0.1% | 9.0 |

### 6.3.3 Safety

The Tier 2 safety index measures the overall crash severity of a corridor segment based on the same safety data from KYTC used in Tier 1 analysis. Each corridor segment is broken down into sections by mile point from the KYTC safety data. Each section has an associated VMT, KABCO crash counts, and number of Excess Expected Crashes. **Table 6.7** summarizes the safety index and performance measures. Note that the weights of the safety criteria (KA crashes per mile and % of Excess Expected Crashes) were not directly scored by the survey. They were assigned 50% each based on discussion within the Project Team. In overall Tier 2 scoring, the safety index contributes a maximum of 25 points.

- **KA Crashes per Mile.** This evaluates the worst outcomes from a corridor's crashes by focusing on fatality crashes (K) and disabling injury crashes (A). The total number of "K" and "A" crashes along a corridor segment was divided by segment's mileage. Higher KA crashes per mile result in higher score.
- **% of Excess Expected Crashes.** This measures the average percentage of Excess Expected Crashes along a corridor segment, weighted by VMT of each section. Higher percentage of Excess Expected Crashes are associated with poorer safety performance and result in higher score.

**Table 6.7 – Tier 2 Safety Index**

| SAFETY INDEX | | | | |
|---|---|---|---|---|
| KA Crashes per Mile - $X_1$ | Score | | % of Excess Expected Crashes - $X_2$ | Score |
| $X_1 < 0.5$ | 0 | | $X_2 < 97\%$ | 0 |
| $0.5 <= X_1 < 0.75$ | 1 | | $97\% <= X_2 < 98.5\%$ | 1 |
| $0.75 <= X_1 < 1$ | 2 | | $98.5\% <= X_2 < 100.5\%$ | 2 |
| $1 <= X_1 < 1.5$ | 3 | | $100.5\% <= X_2 < 101.5\%$ | 3 |
| $1.5 <= X_1 < 2.5$ | 4 | | $101.5\% <= X_2 < 103\%$ | 4 |
| $X_1 >= 2.5$ | 5 | | $X_2 >= 103\%$ | 5 |
| *Safety Score = $0.5X_1 + 0.5X_2$* | | | | |
| *Final Score Weight = 25%, Multiplier = 5* | | | | |

**Table 6.8** summarizes Tier 2 safety scores. Corridor segments that carry heavier traffic and have more safety issues in urban or suburban areas generally scored higher, including US 31 E and US 31 W (Segments 18B, 18C and 31B) in Louisville and US 421/KY 418 (Segment 42B) in Lexington. Greater benefits would be expected for these segments if the recommended improvements were made. Rural corridors in eastern, southern, and western Kentucky tended to have lower safety scores.

**Table 6.8 – Tier 2 Safety Scoring**

| Segment ID | Segment Name | From | To | SAFETY INDEX | | |
|---|---|---|---|---|---|---|
| | | | | KA Crashes Per Mile | % of Excess Expected Crashes | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 1.5 | 100.7% | 17.5 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 5.0 | 100.7% | 20.0 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 1.6 | 100.1% | 15.0 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 2.1 | 100.2% | 15.0 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 1.1 | 99.5% | 12.5 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 3.5 | 99.1% | 17.5 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 0.7 | 93.4% | 2.5 |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin | 0.8 | 96.4% | 5.0 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 0.9 | 95.2% | 5.0 |

| Segment ID | Segment Name | From | To | SAFETY INDEX | | |
|---|---|---|---|---|---|---|
| | | | | KA Crashes Per Mile | % of Excess Expected Crashes | Score |
| 15 | KY 15 | Campton | Whitesburg | 0.8 | 96.4% | 5.0 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 0.4 | 97.1% | 2.5 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 4.6 | 101.1% | 20.0 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 2.1 | 106.7% | 22.5 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 0.8 | 93.5% | 5.0 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 0.9 | 92.4% | 5.0 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 2.8 | 101.2% | 20.0 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 0.7 | 101.9% | 12.5 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 1.4 | 98.7% | 12.5 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 3.5 | 101.2% | 20.0 |
| 28B | US 68 | I-64/I-75 | OH State Line | 0.4 | 97.4% | 2.5 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 4.1 | 101.3% | 20.0 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 1.2 | 99.5% | 12.5 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 1.4 | 99.6% | 12.5 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | 3.5 | 103.0% | 25.0 |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 0.4 | 97.4% | 2.5 |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 0.7 | 98.0% | 5.0 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 0.5 | 98.5% | 7.5 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 0.5 | 105.9% | 12.5 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 1.9 | 101.6% | 20.0 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 0.8 | 102.6% | 15.0 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 0.7 | 105.4% | 15.0 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 0.6 | 102.0% | 12.5 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 0.5 | 97.2% | 2.5 |
| 40 | US 641 | TN State Line | US 60 in Marion | 0.7 | 102.2% | 12.5 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 1.7 | 101.1% | 17.5 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 0.5 | 101.1% | 7.5 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 0.6 | 97.3% | 5.0 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 4.9 | 107.7% | 25.0 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 1.9 | 102.3% | 20.0 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 0.6 | 108.7% | 15.0 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 1.2 | 97.9% | 10.0 |

| Segment ID | Segment Name | From | To | SAFETY INDEX | | |
|---|---|---|---|---|---|---|
| | | | | KA Crashes Per Mile | % of Excess Expected Crashes | Score |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 1.0 | 112.5% | 20.0 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 0.8 | 101.5% | 15.0 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 1.0 | 105.1% | 20.0 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 0.7 | 97.9% | 5.0 |

### 6.3.4 Infrastructure

The Tier 2 infrastructure index evaluates the pavement and bridge conditions along the corridor segments. **Table 6.9** summarizes the infrastructure index. Note that the pavement conditions and bridge conditions were assigned a weight of 30% and 70% respectively, based on the Project Team consensus. In overall Tier 2 scoring, the infrastructure index contributes a maximum of 20 points.

- **Pavement Condition.** The pavement condition was broken down by pavement distress index (PDI), year of next treatment (YearNT), and year of six-year improvement plan (YearSYP), weighted by length of sections for a corridor segment. This factor (X1) was calculated using the same formula used in KYTC's Strategic Highway Investment Formula for Tomorrow (SHIFT) program, as shown below:

  $X_1 = [(1 - 0.688/PDI) + (10/(YearNT – YearSYP + 1))]$

- **Bridge Condition.** Bridge condition scores were based on the National Bridge Inspection Standards (NBIS) ratings of the deck, superstructure, and substructure, weighted by the deck area of each bridge within a corridor segment. If all three items are rated 6 or above, the bridge is in good condition and is given a score of one. A deck rating of less than six (while substructure and superstructure are a six or higher) indicates that only deck rehabilitation is needed and is given a score of 2. A superstructure rating of five (while the deck and substructures score six or above) indicates the need for superstructure rehabilitation and is given a score of 3. A substructure rating of five necessitates a substructure rehabilitation and is given a score of 4. A superstructure or substructure rating of less than five requires a bridge replacement and receives a score of 5. The bridge condition factor (X2) that is a part of the Infrastructure Score equation is shown below:

  $X_2$ = [(If Deck, Super, Sub >= 6, 1), (If Deck<6, Super, Sub >= 6, 2), (If Super=5, Deck, Sub >= 6, 3), (If Sub = 5, Deck, Super >= 6, 4), (If Sub, Super =< 4, 5)]

**Table 6.9 – Tier 2 Infrastructure Index**

| INFRASTRUCTURE INDEX | | | |
|---|---|---|---|
| Pavement Condition – $X_1$ | Score | Bridge Condition - $X_2$ | Score |
| $X_1 < 1.4$ | 0 | $X_2 < 1$ | 0 |
| $1.4 <= X_1 < 1.55$ | 1 | $1 <= X_2 < 1.1$ | 1 |
| $1.55 <= X_1 < 1.65$ | 2 | $1.1 <= X_2 < 1.4$ | 2 |
| $1.65 <= X_1 < 1.75$ | 3 | $1.4 <= X_2 < 1.8$ | 3 |
| $1.75 <= X_1 < 1.95$ | 4 | $1.8 <= X_2 < 3$ | 4 |
| $X_1 >= 1.95$ | 5 | $X_2 >= 3$ | 5 |
| *Infrastructure Score = $0.3X_1 + 0.7X_2$* | | | |
| *Final Score Weight = 15%, Multiplier = 3* | | | |

**Table 6.10** summarizes the infrastructure scores for all 45 segments. Infrastructure scoring is not dependent on the type of facility but is more related to the age of the facility or repeated exposure to challenging weather conditions. It is noted that corridor segments in eastern Kentucky have lower infrastructure scores, indicating better pavement and bridge conditions.

**Table 6.10 – Tier 2 Infrastructure Scoring**

| Segment ID | Segment Name | From | To | INFRASTRUCTURE INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Pavement Condition | Bridge Condition | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 1.64 | 3.56 | 16.4 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 2.30 | 4.50 | 20.0 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 1.11 | 1.00 | 2.8 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 1.94 | 2.13 | 16.0 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 1.64 | 3.73 | 16.4 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 1.55 | 3.03 | 15.2 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 1.51 | 1.02 | 4.0 |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin | 1.58 | 3.36 | 16.4 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 1.27 | 1.00 | 2.8 |
| 15 | KY 15 | Campton | Whitesburg | 1.47 | 1.33 | 6.8 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 1.78 | 1.93 | 16.0 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 2.26 | 2.04 | 17.2 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 3.32 | 0.00 | 6.0 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 1.68 | 1.26 | 9.2 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 1.46 | 1.45 | 9.6 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 1.37 | 1.69 | 8.4 |

| Segment ID | Segment Name | From | To | INFRASTRUCTURE INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Pavement Condition | Bridge Condition | Score |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 1.55 | 1.72 | 10.8 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 1.66 | 1.00 | 6.4 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 1.54 | 0.00 | 1.2 |
| 28B | US 68 | I-64/I-75 | OH State Line | 1.32 | 1.69 | 8.4 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 1.40 | 1.41 | 9.6 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 1.16 | 1.00 | 2.8 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 1.98 | 1.00 | 8.8 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | 1.33 | 5.00 | 14.0 |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 1.62 | 1.26 | 8.0 |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 1.57 | 1.47 | 10.8 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 1.67 | 1.57 | 12.0 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 2.31 | 3.02 | 20.0 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 1.83 | 1.00 | 7.6 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 1.68 | 1.00 | 6.4 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 1.84 | 1.00 | 7.6 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 2.17 | 2.80 | 17.2 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 1.72 | 1.52 | 12.0 |
| 40 | US 641 | TN State Line | US 60 in Marion | 1.93 | 1.38 | 10.4 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 1.19 | 1.43 | 8.4 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 1.76 | 1.30 | 10.4 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 1.68 | 1.15 | 9.2 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 1.81 | 1.00 | 7.6 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 1.97 | 3.74 | 20.0 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 1.41 | 5.00 | 15.2 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 1.88 | 1.00 | 7.6 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 1.68 | 1.14 | 9.2 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 1.38 | 1.85 | 11.2 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 1.50 | 2.37 | 12.4 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 1.35 | 1.00 | 2.8 |

### 6.3.5 Economy

The Tier 2 economic index measures the economic benefits expected from the recommended corridor segment improvements. For the purpose of economic modeling, all corridor segments are assumed to start construction in 2025, complete construction in 2030, and operate over the next 15 years (2031 – 2045), so the economic benefits can be estimated and compared across all segments in a consistent way. For each corridor segment, v8_KYSTMv18 was used to generate 2025, 2030, 2045 "No Build" and "Build" model data, including VMT and VHT by trip purpose, vehicle type, and internal-internal/external-internal/internal-external trip patterns, etc. The model data was entered into the Transportation Economic Development Impact System (TREDIS) software for economic benefit analysis.

**Table 6.11** summarizes the economic index and its performance measures: the cumulative number of new jobs and the percent change of Gross Regional Product (GRP). These two performance measures use the same factors from the SHIFT statewide economic competitiveness measure (ECM). The weight of each performance measure was determined based on data collected from the Tier 2 on-line survey mentioned earlier. The cumulative number of new jobs is 55% of the index, while the percent change of GRP is 45% of the index. In overall Tier 2 scoring, the economic index contributes a maximum of 15 points.

- **Cumulative # of Jobs (2030-2045).** This factor (X1) evaluates the relative magnitude of total new jobs created over a 15-year period (2031 – 2045). This is based upon the assumption of completing improvement projects for each corridor segment. As the formula shows below, the cumulative number of new jobs was derived by using TREDIS outputs (e.g., #_Jobs – estimated new jobs in the last year of operation (2045)), then scaled to a value of 0 to 100 by calculating its percentile rank among all Tier 2 segments.

  $X_1$ = #_Jobs x 15 years x 0.5 (scaled by percentile rank)

- **% Change of GRP (2030-2045).** This factor (X2) uses TREDIS outputs to calculate the percent change in GRP over a 15-year period (2031 – 2045). This is based upon the assumption of completing improvement projects for each corridor segment, then scaled to a value of 0 to 100 by calculating its percentile rank among all Tier 2 segments.

**Table 6.11 – Tier 2 Economic Index**

| ECONOMIC INDEX | | | |
|---|---|---|---|
| Cumulative # of Jobs (2030-2045) - $X_1$ | Score | % Change of GRP (2030-2045) - $X_2$ | Score |
| $X_1 < 10$ | 0 | $X_2 < 10$ | 0 |
| $10 <= X_1 < 30$ | 1 | $10 <= X_2 < 30$ | 1 |
| $30 <= X_1 < 50$ | 2 | $30 <= X_2 < 50$ | 2 |
| $50 <= X_1 < 65$ | 3 | $50 <= X_2 < 65$ | 3 |
| $65 <= X_1 < 85$ | 4 | $65 <= X_2 < 85$ | 4 |
| $X_1 >= 85$ | 5 | $X_2 >= 85$ | 5 |
| *Economic Score* = $0.55X_1 + 0.45X_2$ | | | |
| *Final Score Weight = 15%, Multiplier = 3* | | | |

**Table 6.12** summarizes economic scores. As anticipated, the congested urban corridors in Louisville, Lexington and northern Kentucky tend to score higher for the economic criteria, because they usually connect economic centers and the recommended projects will effectively promote the regional economy by improving safety, mobility, accessibility, etc.

**Table 6.12 – Tier 2 Economic Scoring**

| Segment ID | Segment Name | From | To | ECONOMIC INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Cumulative # of Job-Years (2030-2045), Scaled | % Change of GRP (2030-2045), Scaled | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 75.0 | 63.6 | 10.7 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 70.4 | 54.5 | 10.7 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 100.0 | 100.0 | 15.0 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 0.0 | 0.0 | 0.0 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 63.6 | 47.7 | 7.7 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 90.9 | 90.9 | 15.0 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 61.3 | 84.0 | 10.4 |
| 10 | KY 100 / US 79 | TN State Line | I-65 near Franklin | 6.8 | 2.2 | 0.0 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 4.5 | 20.4 | 1.4 |
| 15 | KY 15 | Campton | Whitesburg | 43.1 | 77.2 | 8.7 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 11.3 | 6.8 | 1.7 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 97.7 | 93.1 | 15.0 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 95.4 | 86.3 | 15.0 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 34.0 | 40.9 | 6.0 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 47.7 | 65.9 | 8.7 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 56.8 | 18.1 | 6.3 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 65.9 | 50.0 | 10.7 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 59.0 | 68.1 | 10.4 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 72.7 | 52.2 | 10.7 |
| 28B | US 68 | I-64/I-75 | OH State Line | 45.4 | 15.9 | 4.7 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 52.2 | 45.4 | 7.7 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 77.2 | 61.3 | 10.7 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 93.1 | 88.6 | 15.0 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | 84.0 | 72.7 | 12.0 |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 38.6 | 59.0 | 7.4 |

| Segment ID | Segment Name | From | To | ECONOMIC INDEX | | |
|---|---|---|---|---|---|---|
| | | | | Cumulative # of Job-Years (2030-2045), Scaled | % Change of GRP (2030-2045), Scaled | Score |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 27.2 | 29.5 | 3.0 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 22.7 | 25.0 | 3.0 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 18.1 | 27.2 | 3.0 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 50.0 | 75.0 | 10.4 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 68.1 | 97.7 | 13.4 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 54.5 | 56.8 | 9.0 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 20.4 | 22.7 | 3.0 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 40.9 | 36.3 | 6.0 |
| 40 | US 641 | TN State Line | US 60 in Marion | 15.9 | 13.6 | 3.0 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 88.6 | 95.4 | 15.0 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 25.0 | 34.0 | 4.4 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 31.8 | 43.1 | 6.0 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 2.2 | 11.3 | 1.4 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 79.5 | 70.4 | 12.0 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 86.3 | 81.8 | 13.7 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 81.8 | 79.5 | 12.0 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 36.3 | 31.8 | 6.0 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 9.0 | 4.5 | 0.0 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 29.5 | 38.6 | 4.4 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 13.6 | 9.0 | 1.7 |

### 6.3.6 Multi-Infrastructure Bonus

The multi-infrastructure bonus factor evaluates alternative infrastructure opportunities that may be feasible to improve the corridor segment. Based on discussion within the Project Team, five types of alternative strategies, including transit, bike/pedestrian, complete street, Intelligent Transportation system (ITS), and connected/autonomous vehicles (CAV), were considered for locations where issues are identified and improvements are needed. The alternative strategies bring multi-modal planning benefits and innovative technologies to improve problematic locations, especially when it would be challenging to implement traditional capacity improvement solutions due to various limitations. For each corridor segment, the feasibility of each alternative infrastructure strategy was determined at a high planning level, as described below.

- The transit opportunity is generally considered if it is warranted by the following typical conditions:
  - For improvement locations where there are existing transit facilities, it could be a good opportunity to upgrade or enhance the existing transit service along with the proposed corridor improvements.

  - For improvement locations where no transit service exists but it is determined as a gap based on a review of available facilities in the proximity of the corridor and an assessment of access to other adjacent facilities which may connect to the broader regional networks, it could be a good opportunity to propose new transit services.
- Bike/pedestrian opportunities are generally considered if it is warranted by the following typical conditions:
  - In urban and suburban areas, bike/pedestrian facilities are generally recommended as warranted, except for full-access controlled roadway facilities.
  - In rural areas, bike/pedestrian facilities are generally recommended if the improvement locations are in or near small towns or communities.
- Complete Street concepts are generally recommended for locations in urban settings where there are gaps on bike/pedestrian facilities or limited transit service to promote safety and accessibility to activity centers.
- ITS is considered a solution in isolation to address an identified safety issue. All Tier 2 segments have opportunities to deploy the ITS technology.
- CAV technology is considered feasible if there is significant transit service and coordinated traffic signals along the corridor. CAV is not recommended in rural areas, areas with no significant transit service, or if no coordinated traffic signal system exists along the corridor.

**Table 6.13** summarizes the rating structure of the multi-infrastructure bonus factor, depending on how many alternative strategies are determined feasible for a given corridor segment. The multi-infrastructure bonus has a maximum of 5 points towards the Tier 2 final total score.

**Table 6.13 – Tier 2 Multi-Infrastructure Bonus**

| MULTI-INFRASTRUCTURE BONUS (+5 PTS) | |
|---|---|
| **# of Alternative Infrastructure Opportunities (e.g., Transit, Bike/Ped, Complete St, ITS, CAV)** | **Score** |
| 0 or 1 | 1 |
| 2 or 3 | 3 |
| 4 or more | 5 |

**Table 6.14** summarizes multi-infrastructure bonus scores. Unsurprisingly, most of the corridors that had high scores are in major urbanized areas including Louisville, Lexington, northern Kentucky, and Bowling Green. Several corridors that run through cities in southern and western Kentucky also received higher scores.

**Table 6.14 – Tier 2 Multi-Infrastructure Bonus Scoring**

| Segment ID | Segment Name | From | To | MULTI-INFRASTRUCTURE BONUS (+5 PTS) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Transit | Bike & Ped | Complete Street | ITS | CAV | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | Unlikely | Unlikely | Unlikely | Likely | Likely | 3 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | Likely | Likely | Likely | Likely | Likely | 5 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | Likely | Likely | Likely | Likely | Likely | 5 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | Likely | Unlikely | Unlikely | Likely | Unlikely | 3 |
| 10 | KY 100 / US 79 | TN State Line | I-65 near Franklin | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 15 | KY 15 | Campton | Whitesburg | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | Likely | Likely | Likely | Likely | Likely | 5 |
| 19 | US 25 & US 119 | I-75 | WV State Line | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | Likely | Likely | Likely | Likely | Likely | 5 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | Likely | Likely | Likely | Likely | Likely | 5 |
| 28B | US 68 | I-64/I-75 | OH State Line | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | Likely | Likely | Likely | Likely | Likely | 5 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | Likely | Likely | Likely | Likely | Likely | 5 |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | Likely | Likely | Unlikely | Likely | Unlikely | 3 |

| Segment ID | Segment Name | From | To | MULTI-INFRASTRUCTURE BONUS (+5 PTS) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Transit | Bike & Ped | Complete Street | ITS | CAV | Score |
| 33A | US 127 | TN State Line | I-64 near Frankfort | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 33B | US 127 | I-64 near Frankfort | I-71 | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | Unlikely | Likely | Unlikely | Likely | Unlikely | 3 |
| 39 | KY 100/US 31E/ KY 90 | I-65 Exit 6 | US 27 near Somerset | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 40 | US 641 | TN State Line | US 60 in Marion | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | Unlikely | Likely | Unlikely | Likely | Unlikely | 3 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | Unlikely | Unlikely | Unlikely | Likely | Unlikely | 1 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | Likely | Likely | Unlikely | Likely | Unlikely | 3 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | Likely | Likely | Unlikely | Likely | Likely | 5 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | Unlikely | Likely | Unlikely | Likely | Likely | 3 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | Unlikely | Unlikely | Unlikely | Likely | Likely | 3 |

## 6.4 TIER 2 PERFORMANCE INDICATORS

The Tier 2 quantitative performance criteria only tell a portion of the story. There are “intangible” performance indicators such as project delivery timeline, planning-level project cost estimation, and economic feasibility (calculation of a planning level Benefit/Cost (B/C) ratio) that are part of the decision-making process as well to support Tier 2 corridor prioritization and selection. Brief descriptions for these performance indicators follow.

### 6.4.1 Project Delivery Timeline

**Table 6.15** shows a project deliver timeline indicator based on the amount of time estimated to develop the improvement concepts and get them constructed. Concepts which are anticipated to have a faster delivery receive a higher score.

**Table 6.15 – Project Delivery Timeline**

| PROJECT DELIVERY TIMELINE | |
|---|---|
| **Duration** | **Score** |
| > 15 Years | Very Low (0) |
| 10 - 15 Years | Low (L) |
| 5 - 10 Years | Medium (M) |
| < 5 Years | High (H) |

In general, the complexity of project (and sometimes length) will control delivery time, not necessarily cost. The project delivery timeline was determined at a high planning level based on a guideline provided by KYTC, as described below:

- < 5 Years
  - Spot improvements with no right of way or utilities (cost ballpark around $500,000).
  - Basic signal work, optimization, ITS deployments.
  - Bridge rehabilitation with no associated environmental concerns or roadway improvements (otherwise roadway improvements control timeline).
  - Minor intersection improvements (adding a turn lane where there's currently a median, etc.).
  - Anything that would require minimal environmental documentation such as a Categorical Exclusion (CE) for Minor Projects (CEMP), CE 1, or CE 2.
  - Completing an original 2 lane initial/4 lane ultimate where the right-of-way (ROW) for other lanes have been bought, cleared and graded.
  - Freeway widening (in median) and rehabilitation between adjacent interchanges (unless there's significant bridge work; if bridge work involved then it would increase to the next level of 5-10 years).
- 5-10 Years
  - Select longer (7-15 mile) segments with no ROW or utilities (e.g., adding a couple feet of shoulder on existing ROW).
  - Shorter segments (less than approximately 7 miles) with minimal/low ROW, utility impacts.
  - Bridge replacement with no associated environmental concerns or roadway improvements (otherwise roadway will control).
  - Rural interchange modifications (i.e., parkway tollbooth interchange to simple diamond).
  - Major intersection improvements requiring ROW, utility relocation.
  - Anything requiring a CE 3.
- 10-15 Years
  - Long segments (> 15 miles) with no ROW or utilities.
  - Short segments (< 15 miles) with significant ROW, utility impacts (basically any new 2- to 4-lane

widening).
  - New rural service interchange.
  - Urban interchange modification.
  - Anything that gets to an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI).
- > 15 Years
  - Long segments (> 15 miles) with significant ROW, utility impacts.
  - New system interchange or system interchange modification.
  - New urban interchange.
  - > 500-ft span bridge replacement.
  - Anything that gets to an Environmental Impact Statement (EIS) and a Record of Decision (ROD).

**Table 6.16** summarizes project delivery timeline scores for all Tier 2 segments. It is noted that if there are various types of recommended improvement concepts along a segment, the most time-consuming project controls; if more than one improvement concept is proposed at the same location, the larger-scale project controls. All segments have anticipated delivery timeline greater than five years.

**Table 6.16 – Project Delivery Timeline Scoring**

| Segment ID | Segment Name | From | To | PROJECT DELIVERY TIMELINE | |
|---|---|---|---|---|---|
| | | | | Years | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 10 - 15 | L |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 10 - 15 | L |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | > 15 | 0 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 10 - 15 | L |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 5 - 10 | M |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 10 - 15 | L |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 5 - 10 | M |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin | 10 - 15 | L |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 10 - 15 | L |
| 15 | KY 15 | Campton | Whitesburg | 10 - 15 | L |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 10 - 15 | L |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | > 15 | 0 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 5 - 10 | M |
| 19 | US 25 & US 119 | I-75 | WV State Line | 10 - 15 | L |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 10 - 15 | L |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 5 - 10 | M |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 10 - 15 | L |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 10 - 15 | L |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 10 - 15 | L |
| 28B | US 68 | I-64/I-75 | OH State Line | 5 - 10 | M |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 10 - 15 | L |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 10 - 15 | L |

| Segment ID | Segment Name | From | To | PROJECT DELIVERY TIMELINE | |
|---|---|---|---|---|---|
| | | | | Years | Score |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 10 - 15 | L |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | 10 - 15 | L |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 10 - 15 | L |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 5 - 10 | M |
| 33B | US 127 | I-64 near Frankfort | I-71 | 5 - 10 | M |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 5 - 10 | M |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 10 - 15 | L |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 10 - 15 | L |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 10 - 15 | L |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 5 - 10 | M |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 5 - 10 | M |
| 40 | US 641 | TN State Line | US 60 in Marion | 5 - 10 | M |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 10 - 15 | L |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 5 - 10 | M |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 10 - 15 | L |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 10 - 15 | L |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 10 - 15 | L |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 10 - 15 | L |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 5 - 10 | M |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 5 - 10 | M |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 5 - 10 | M |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 5 - 10 | M |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 5 - 10 | M |

## 6.4.2 Cost

Preliminary cost estimates (in 2020 dollars) were prepared for the improvement concepts through Tier 2 corridor scoping. The detail of the cost estimate was on a high level such as “typical cost per mile”, “typical cost per interchange”, “typical cost per intersection”, or “typical cost per sq ft (bridge deck area)”, in terms of improvement categories identified by the Project Team.

**Table 6.17** shows itemized unit cost (design, ROW, utility and construction) by improvement category and KYTC district. The unit costs were originally provided by KYTC Districts 6, 8 and 10. The same unit costs were applied to other KYTC districts that are geographically similar and tend to have consistent cost estimates based on an arrangement recommended by KYTC:

- Rolling Settings (D8): D1, D2, D3, D4, D8, D9
- Populous Urban (D6): D5, D6, D7
- Mountainous Settings (D10): D10, D11, D12

The following guidelines were also used in cost estimations to meet project needs:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the cost was estimated. Further investigation is recommended in future phases/studies.
2. Cost estimation was based on 2020 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number as a rule of thumb.
3. The widening of a 2-lane facility to a 3-lane facility (with TWLTL or alternating passing lane) is considered as "Minor Widening (Undivided Road) - 2 Lane to 4 Lane".
4. The cost estimation does not include bridges outside of the bottleneck locations, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
5. Cost estimation does not account for existing KYTC projects that are included in the proposed improvement concepts and are already under construction.
6. Shoulder widening is not included in the cost estimation, as it is a relatively minor cost.
7. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.
8. For several segments that require railroad widening, the costs were estimated based on research of similar projects.

**Table 6.18** lists the total cost (D+R+U+C) of the improvement concept for each Tier 2 segment. Note that the cost was not estimated for corridor 31B (US 31 E from I-265 to Indiana state line in Louisville), because it is a highly challenging corridor with various constraints limiting improvement opportunities and no specific improvement projects were proposed as part of this study. Future study is recommended for corridor 31B.

**Appendix H** includes complete cost estimation sheets for all Tier 2 segments.

## Table 6.17 – Unit Cost by Improvement Category & District

| IMPROVEMENTS CATEGORY | UNIT COST | D5, D6, D7 | | | | D1, D2, D3, D4, D8, D9 | | | | D10, D11, D12 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **New Roadways** | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| New 4 Lane Expressway | Per Mile | $1,500,000 | $2,000,000 | $400,000 | $10,000,000 | $1,200,000 | $1,600,000 | $1,200,000 | $13,000,000 | $1,000,000 | $850,000 | $500,000 | $10,000,000 |
| New Super 2 Highway | Per Mile | $1,500,000 | $2,000,000 | $400,000 | $10,000,000 | $500,000 | $1,300,000 | $1,100,000 | $6,000,000 | $650,000 | $625,000 | $275,000 | $6,000,000 |
| New 2 Lane Highway | Per Mile | $1,125,000 | $1,500,000 | $300,000 | $7,500,000 | $500,000 | $1,200,000 | $1,100,000 | $4,000,000 | $650,000 | $625,000 | $275,000 | $6,000,000 |
| **Major Widening (Divided Road)** | | **D** | **R** | **U** | **C** | **C** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| 4 Lane to 6 Lane (Rural) | Per Mile | $1,000,000 | $2,000,000 | $400,000 | $10,000,000 | $1,500,000 | $600,000 | $500,000 | $4,000,000 | $1,000,000 | $700,000 | $500,000 | $12,500,000 |
| 4 Lane to 6 Lane (Urban) | Per Mile | $1,800,000 | $6,500,000 | $1,500,000 | $12,000,000 | $1,000,000 | $1,200,000 | $800,000 | $5,200,000 | $2,000,000 | $3,500,000 | $1,500,000 | $25,000,000 |
| 2 Lane to 4 Lane (Rural) | Per Mile | $1,000,000 | $2,000,000 | $400,000 | $10,000,000 | $1,100,000 | $600,000 | $500,000 | $4,000,000 | $1,000,000 | $700,000 | $500,000 | $12,500,000 |
| 2 Lane to 4 Lane (Urban) | Per Mile | $1,800,000 | $6,500,000 | $1,500,000 | $12,000,000 | $1,000,000 | $1,200,000 | $800,000 | $5,200,000 | $2,000,000 | $3,500,000 | $1,500,000 | $25,000,000 |
| Minor Widening (Undivided Road) | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| 2 Lane to 4 Lane (Rural) | Per Mile | $1,200,000 | $1,600,000 | $320,000 | $8,000,000 | $1,100,000 | $600,000 | $400,000 | $4,000,000 | $600,000 | $420,000 | $300,000 | $7,500,000 |
| 2 Lane to 4 Lane (Urban) | Per Mile | $1,800,000 | $6,500,000 | $1,500,000 | $12,000,000 | $1,500,000 | $1,200,000 | $700,000 | $5,200,000 | $1,200,000 | $2,100,000 | $900,000 | $15,000,000 |
| **Arterial Upgrade to Pkwy/Expwy** | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| Upgrade with Pavement Reconstruction | Per Mile | n/a | n/a | n/a | n/a | $1,000,000 | $750,000 | $1,200,000 | $8,000,000 | $2,000,000 | $3,500,000 | $1,500,000 | $15,000,000 |
| Upgrade with Pavement Rehab | Per Mile | n/a | n/a | n/a | n/a | $500,000 | $200,000 | $100,000 | $1,000,000 | $1,000,000 | $700,000 | $500,000 | $12,500,000 |

## Table 6.17 – Unit Cost by Improvement Category & District (Continued)

| IMPROVEMENTS CATEGORY | UNIT COST | D5, D6, D7 | | | | D1, D2, D3, D4, D8, D9 | | | | D10, D11, D12 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grade Separation/ Interchange** | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| New Service Interchange (Rural) | Per Interchange | $1,500,000 | $3,000,000 | $600,000 | $15,000,000 | $1,400,000 | $1,000,000 | $800,000 | $8,500,000 | $1,250,000 | $1,000,000 | $350,000 | $12,500,000 |
| New Service Interchange (Urban) | Per Interchange | $3,000,000 | $10,000,000 | $2,500,000 | $20,000,000 | $1,500,000 | $1,600,000 | $1,500,000 | $10,000,000 | $1,500,000 | $1,250,000 | $500,000 | $17,500,000 |
| Interchange Modification (Rural) | Per Interchange | $3,000,000 | $10,000,000 | $2,500,000 | $20,000,000 | $600,000 | $1,200,000 | $300,000 | $7,200,000 | $700,000 | $400,000 | $200,000 | $9,000,000 |
| Interchange Modification (Urban) | Per Interchange | $3,750,000 | $12,500,000 | $3,125,000 | $25,000,000 | $1,200,000 | $2,400,000 | $1,000,000 | $10,500,000 | n/a | n/a | n/a | n/a |
| Grade Separation Only | Per Grade Separation | $300,000 | $600,000 | $250,000 | $2,000,000 | $500,000 | $700,000 | $500,000 | $3,500,000 | $625,000 | $500,000 | $175,000 | $6,250,000 |
| **Major Intersection Improvement** | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| >= 4 lanes in both directions | Per Intersection | $600,000 | $2,200,000 | $500,000 | $4,000,000 | $100,000 | $200,000 | $300,000 | $4,000,000 | $350,000 | $500,000 | $350,000 | $3,500,000 |
| < 4 lanes in both directions | Per Intersection | $375,000 | $1,375,000 | $312,500 | $2,500,000 | $100,000 | $100,000 | $100,000 | $2,000,000 | $250,000 | $350,000 | $250,000 | $2,000,000 |
| **Major Structure** | | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** | **D** | **R** | **U** | **C** |
| Bridge Replacement | Per Sq Ft (Deck Area) | $50 | $125 | $50 | $300 | $50 | $1 | $1 | $325 | $125 | $75 | $30 | $300 |
| Bridge Rehab | Per Sq Ft (Deck Area) | $50 | $25 | $10 | $300 | $25 | $0 | $0 | $300 | $300 | $8 | $5 | $200 |

**Table 6.18 – Cost of Tier 2 Improvement Concepts**

| Segment ID | Segment Name | From | To | D+R+U+C Cost ($M in 2020 Dollars) |
|---|---|---|---|---|
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 381.7 |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 245.6 |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 593.5 |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 278.9 |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 258.9 |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 448.9 |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 229.0 |
| 10 | KY 100/US 79 | TN State Line | I-65 near Franklin | 50.5 |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 236.3 |
| 15 | KY 15 | Campton | Whitesburg | 35.8 |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | 9.2 |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 346.5 |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 188.9 |
| 19 | US 25 & US 119 | I-75 | WV State Line | 79.9 |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 188.7 |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 87.6 |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 95.2 |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 245.7 |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 235.2 |
| 28B | US 68 | I-64/I-75 | OH State Line | 36.5 |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | 199.0 |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 278.4 |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 236.6 |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | n/a |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 92.0 |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 138.8 |
| 33B | US 127 | I-64 near Frankfort | I-71 | 23.7 |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 16.5 |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 91.4 |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 104.9 |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 27.0 |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 29.9 |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 31.3 |
| 40 | US 641 | TN State Line | US 60 in Marion | 120.9 |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 233.4 |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 73.9 |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 119.2 |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | 215.0 |

| Segment ID | Segment Name | From | To | D+R+U+C Cost ($M in 2020 Dollars) |
|---|---|---|---|---|
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 258.7 |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 93.6 |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 59.7 |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 35.7 |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 92.0 |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 27.6 |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 18.4 |

### 6.4.3 Economic Feasibility

This economic feasibility indicator evaluates the effectiveness of corridor concepts to improve the transportation efficiency which promotes Kentucky's economy. A benefit/cost (B/C) ratio was derived from the total societal benefit estimated by TREDIS and the cost of corridor concepts described in Section 6.4.2. In TREDIS, the total societal benefit accounts for all user benefits (in travel time, expense, and safety), logistics benefits, and indirect benefits (e.g., air quality, water quality, noise impacts) in 2020 dollars. As Table 6.19 shows, the economic feasibility score (Low, Medium, High) was determined based on the anticipated B/C ratio of improvement concepts.

**Table 6.19 – Tier 2 Economic Feasibility**

| ECONOMIC FEASIBILITY | |
|---|---|
| B/C Ratio | Score |
| < 2 | Low (L) |
| 2 - 5 | Medium (M) |
| > 5 | High (H) |

**Table 6.20** summarizes Tier 2 economic feasibility scores. In general, urban corridor segments in Louisville, Lexington, and northern Kentucky as well as KY 15 in eastern Kentucky received higher scores (higher B/C ratios), indicating that improvements on these corridors are more efficient in promoting the economy of Kentucky. Several segments have negative B/C ratios, because TREDIS estimates negative total societal benefits over the 15-year analysis period (2030-2045). Segment 31B has no B/C ratio because its cost is not available due to the reason described in Section 6.4.2.

**Table 6.20 – Tier 2 Economic Feasibility Scoring**

| Segment ID | Segment Name | From | To | ECONOMIC FEASIBILITY | |
|---|---|---|---|---|---|
| | | | | B/C Ratio | Score |
| 4A | KY 4 (New Circle Road) | Richmond Rd (US 25/421) | Newtown Pike (KY 922) | 2.6 | M |
| 4B | KY 4 (New Circle Road) | Newtown Pike (KY 922) | Richmond Rd (US 25/421) | 2.9 | M |
| 5 | Man O War Blvd | Versailles Rd (US 60) in Lexington | I-75 in Lexington | 5.2 | H |
| 6A | US 60 | I-64 in Louisville | KY 1848 in Simpsonville | 9.8 | H |
| 6B | US 60 | KY 1848 in Simpsonville | US 62 in Versailles | 1.9 | L |
| 6C | US 60 | US 62 in Versailles | I-75 in Lexington | 4.5 | M |
| 9 | KY 9 (AA Highway) | I-275 | I-64 near Grayson | 4.1 | M |

| Segment ID | Segment Name | From | To | ECONOMIC FEASIBILITY | |
|---|---|---|---|---|---|
| | | | | B/C Ratio | Score |
| 10 | KY 100 / US 79 | TN State Line | I-65 near Franklin | -1.0 | L |
| 12 | KY 922 | Broadway (US 68) in Lexington | I-64/I-75 | 1.2 | L |
| 15 | KY 15 | Campton | Whitesburg | 6.1 | H |
| 18A | US 31W & KY 61 | Columbia | I-65 in Elizabethtown | -0.8 | L |
| 18B | US 31W & KY 61 | I-65 in Elizabethtown | I-265 in Louisville | 13.0 | H |
| 18C | US 31W & KY 61 | Snyder Frwy (I-265) in Louisville | I-64 in Louisville | 10.1 | H |
| 19 | US 25 & US 119 | I-75 | WV State Line | 2.3 | M |
| 23 | US 23 | OH State Line | US 119 near Pikeville | 1.9 | L |
| 27A | US 27 | Main St (US 421) in Lexington | US 27/US 68 Split in Paris | 0.8 | L |
| 27B | US 27 | US 27/US 68 Split in Paris | KY 9 (AA Highway) | 5.1 | H |
| 27C | US 27 | KY 9 (AA Highway) | OH State Line | 3.7 | M |
| 28A | US 68 | Man O War Blvd in Lexington | I-64/I-75 | 2.9 | M |
| 28B | US 68 | I-64/I-75 | OH State Line | 1.0 | L |
| 30A | US 27 | TN State Line | US 27 BYP (North of Nicholasville) | -6.2 | L |
| 30B | US 27 | US 27 BYP (North of Nicholasville) | US 421 in Lexington | 3.1 | M |
| 31A | US 31 E | Bluegrass Pkwy south of Bardstown | Snyder Frwy (I-265) in Louisville | 12.1 | H |
| 31B | US 31 E | Snyder Frwy (I-265) in Louisville | Clark Bridge (IN State Line) | n/a | n/a |
| 32 | KY 11/KY 32/US 460 | KY 9 (AA Highway) in Maysville | US 23 in Paintsville | 2.2 | M |
| 33A | US 127 | TN State Line | I-64 near Frankfort | 1.2 | L |
| 33B | US 127 | I-64 near Frankfort | I-71 | 2.6 | M |
| 35A | US 231 | TN State Line | Natcher Pkwy (South of Bowling Green) | 2.6 | M |
| 35B | US 231 | Natcher Pkwy (South of Bowling Green) | US 68 in Bowling Green | 3.7 | M |
| 36A | KY 536 | US 42 in Union | KY 17 in Independence | 34.4 | H |
| 36B | KY 536 | KY 17 | US 27 near Alexandria | 10.5 | H |
| 38 | US 431 | US 60 in Owensboro | TN State Line | 1.6 | L |
| 39 | KY 100/US 31E/KY 90 | I-65 Exit 6 | US 27 near Somerset | 3.3 | M |
| 40 | US 641 | TN State Line | US 60 in Marion | 1.0 | L |
| 41A | US 421 | Broadway (US 27) in Lexington | KY 341 (I-64 Exit 65) near Midway | 4.4 | M |
| 41B | US 421 | KY 341 (I-64 Exit 65) | IN State Line | 1.9 | L |
| 42A | US 421 | VA State Line | I-75 (Exit 97) | 1.5 | L |
| 42B | US 421/KY 418 | I-75 (Exit 104) | US 27 in Lexington | -2.6 | L |
| 44A | KY 44 | I-65 in Shepherdsville | KY 1319 East of Mt. Washington | 3.4 | M |
| 44B | KY 44 | KY 1319 East of Mt. Washington | Taylorsville Rd (KY 55) | 8.5 | H |
| 46A | KY 245/US 150 | I-65 in Clermont | Bluegrass Pkwy | 10.1 | H |
| 46B | KY 245/US 150 | Bluegrass Pkwy near Bardstown | I-75 at Mt. Vernon | 2.5 | M |
| 50A | US 60 | IL State Line | KY 425 BYP in Henderson | 0.7 | L |
| 50B | US 60 | KY 425 BYP in Henderson | Natcher Pkwy in Owensboro | 4.6 | M |
| 50C | US 60 | Natcher Pkwy in Owensboro | US 31 W near Radcliff | 0.3 | L |

## 6.5 TIER 2 CORRIDOR SCORING AND RECOMMENDATIONS

### 6.5.1 Tier 2 Quantitative Scores

The Tier 2 quantitative analysis results are shown below based on the performance criteria and scoring methodology described in Section 6.3. The scores from the various performance criteria have been combined into a single corridor segment score as shown in **Table 6.21**. Tier 2 corridor segments were sorted by the single quantitative score, in descending order, with the highest score on top. **Figure 6.2** illustrates the segment ranking based on the single quantitative score. **Table 6.22** lists the corridor segments in the same descending order of Tier 2 quantitative performance score, but also summarizes the intangible performance indicators to the right of each score.

**Table 6.21 – Tier 2 Quantitative Scores & Ranks**

| Segment ID | Segment Name | Mobility Index | Reliability Bonus | Accessibility Index | Safety Index | Infrastructure Index | Economic Index | Multi-Infrastructure Bonus | Tier 2 (Quantitative) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 20% | +5 points | 20% | 25% | 20% | 15% | +5 points | Score (0-110) | Rank |
| 18B | US 31W & KY 61 | 18.8 | 4.0 | 20.0 | 20.0 | 17.2 | 15.0 | 3.0 | 98.0 | 1 |
| 6C | US 60 | 13.6 | 4.0 | 20.0 | 17.5 | 15.2 | 15.0 | 5.0 | 90.3 | 2 |
| 4B | KY 4 (New Circle Road) | 14.4 | 5.0 | 8.4 | 20.0 | 20.0 | 10.7 | 5.0 | 83.5 | 3 |
| 41A | US 421 | 16.0 | 4.0 | 14.6 | 17.5 | 8.4 | 15.0 | 5.0 | 80.5 | 4 |
| 4A | KY 4 (New Circle Road) | 20.0 | 3.0 | 7.6 | 17.5 | 16.4 | 10.7 | 3.0 | 78.2 | 5 |
| 36A | KY 536 | 20.0 | 4.0 | 14.6 | 15.0 | 6.4 | 13.4 | 3.0 | 76.4 | 6 |
| 5 | Man O War Blvd | 16.0 | 4.0 | 18.2 | 15.0 | 2.8 | 15.0 | 5.0 | 76.0 | 7 |
| 44A | KY 44 | 13.2 | 3.0 | 4.4 | 20.0 | 20.0 | 12.0 | 3.0 | 75.6 | 8 |
| 31A | US 31 E | 17.6 | 3.0 | 12.8 | 12.5 | 8.8 | 15.0 | 3.0 | 72.7 | 9 |
| 31B | US 31 E | 2.4 | 5.0 | 5.4 | 25.0 | 14.0 | 12.0 | 5.0 | 68.8 | 10 |
| 6B | US 60 | 5.6 | 3.0 | 18.2 | 12.5 | 16.4 | 7.7 | 5.0 | 68.4 | 11 |
| 50B | US 60 | 6.8 | 2.0 | 17.8 | 20.0 | 12.4 | 4.4 | 3.0 | 66.4 | 12 |
| 35B | US 231 | 9.2 | 4.0 | 8.8 | 20.0 | 7.6 | 10.4 | 5.0 | 65.0 | 13 |
| 18C | US 31W & KY 61 | 6.0 | 4.0 | 6.2 | 22.5 | 6.0 | 15.0 | 5.0 | 64.7 | 14 |
| 30A | US 27 | 10.0 | 2.0 | 12.4 | 20.0 | 9.6 | 7.7 | 3.0 | 64.7 | 15 |
| 42B | US 421/KY 418 | 9.6 | 5.0 | 10.6 | 25.0 | 7.6 | 1.4 | 5.0 | 64.2 | 16 |
| 27C | US 27 | 16.0 | 4.0 | 8.8 | 12.5 | 6.4 | 10.4 | 5.0 | 63.1 | 17 |
| 28A | US 68 | 8.4 | 5.0 | 11.6 | 20.0 | 1.2 | 10.7 | 5.0 | 61.9 | 18 |
| 44B | KY 44 | 3.6 | 0.0 | 8.4 | 15.0 | 15.2 | 13.7 | 3.0 | 58.9 | 19 |
| 30B | US 27 | 9.6 | 4.0 | 14.2 | 12.5 | 2.8 | 10.7 | 5.0 | 58.8 | 20 |
| 27A | US 27 | 3.6 | 3.0 | 12.0 | 20.0 | 8.4 | 6.3 | 5.0 | 58.3 | 21 |

| Segment ID | Segment Name | Mobility Index | Reliability Bonus | Accessibility Index | Safety Index | Infrastructure Index | Economic Index | Multi-Infrastructure Bonus | Tier 2 (Quantitative) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 20% | +5 points | 20% | 25% | 20% | 15% | +5 points | Score (0-110) | Rank |
| 6A | US 60 | 9.6 | 4.0 | 7.6 | 15.0 | 16.0 | 0.0 | 5.0 | 57.2 | 22 |
| 23 | US 23 | 14.8 | 2.0 | 13.4 | 5.0 | 9.6 | 8.7 | 3.0 | 56.5 | 23 |
| 38 | US 431 | 4.0 | 1.0 | 15.6 | 12.5 | 17.2 | 3.0 | 3.0 | 56.3 | 24 |
| 46B | KY 245/US 150 | 2.4 | 0.0 | 11.6 | 20.0 | 9.2 | 6.0 | 3.0 | 52.2 | 25 |
| 27B | US 27 | 11.2 | 2.0 | 0.0 | 12.5 | 10.8 | 10.7 | 3.0 | 50.2 | 26 |
| 35A | US 231 | 5.2 | 0.0 | 6.2 | 12.5 | 20.0 | 3.0 | 3.0 | 49.9 | 27 |
| 9 | KY 9 (AA Highway) | 15.2 | 3.0 | 10.6 | 2.5 | 4.0 | 10.4 | 3.0 | 48.7 | 28 |
| 39 | KY 100/US 31E/KY 90 | 5.6 | 0.0 | 15.6 | 2.5 | 12.0 | 6.0 | 3.0 | 44.7 | 29 |
| 32 | KY 11/KY 32/US 460 | 7.2 | 2.0 | 14.6 | 2.5 | 8.0 | 7.4 | 3.0 | 44.7 | 30 |
| 19 | US 25 & US 119 | 10.8 | 1.0 | 11.6 | 5.0 | 9.2 | 6.0 | 1.0 | 44.6 | 31 |
| 50A | US 60 | 2.8 | 1.0 | 7.2 | 15.0 | 11.2 | 0.0 | 5.0 | 42.2 | 32 |
| 40 | US 641 | 2.8 | 1.0 | 11.2 | 12.5 | 10.4 | 3.0 | 1.0 | 41.9 | 33 |
| 12 | KY 922 | 9.6 | 5.0 | 11.6 | 5.0 | 2.8 | 1.4 | 5.0 | 40.4 | 34 |
| 41B | US 421 | 1.2 | 2.0 | 9.8 | 7.5 | 10.4 | 4.4 | 5.0 | 40.3 | 35 |
| 46A | KY 245/US 150 | 5.2 | 2.0 | 1.8 | 10.0 | 7.6 | 12.0 | 1.0 | 39.6 | 36 |
| 15 | KY 15 | 5.6 | 1.0 | 10.6 | 5.0 | 6.8 | 8.7 | 1.0 | 38.7 | 37 |
| 33A | US 127 | 2.4 | 1.0 | 13.4 | 5.0 | 10.8 | 3.0 | 3.0 | 38.6 | 38 |
| 42A | US 421 | 0.0 | 1.0 | 10.2 | 5.0 | 9.2 | 6.0 | 5.0 | 36.4 | 39 |
| 36B | KY 536 | 0.0 | 1.0 | 0.0 | 15.0 | 7.6 | 9.0 | 3.0 | 35.6 | 40 |
| 33B | US 127 | 3.2 | 2.0 | 4.0 | 7.5 | 12.0 | 3.0 | 3.0 | 34.7 | 41 |
| 10 | KY 100 / US 79 | 0.0 | 1.0 | 9.4 | 5.0 | 16.4 | 0.0 | 1.0 | 32.8 | 42 |
| 18A | US 31W & KY 61 | 1.6 | 0.0 | 7.2 | 2.5 | 16.0 | 1.7 | 1.0 | 30.0 | 43 |
| 28B | US 68 | 1.6 | 0.0 | 9.8 | 2.5 | 8.4 | 4.7 | 1.0 | 28.0 | 44 |
| 50C | US 60 | 2.4 | 0.0 | 9.0 | 5.0 | 2.8 | 1.7 | 3.0 | 23.9 | 45 |

Figure 6.2 – Tier 2 Quantitative Ranks

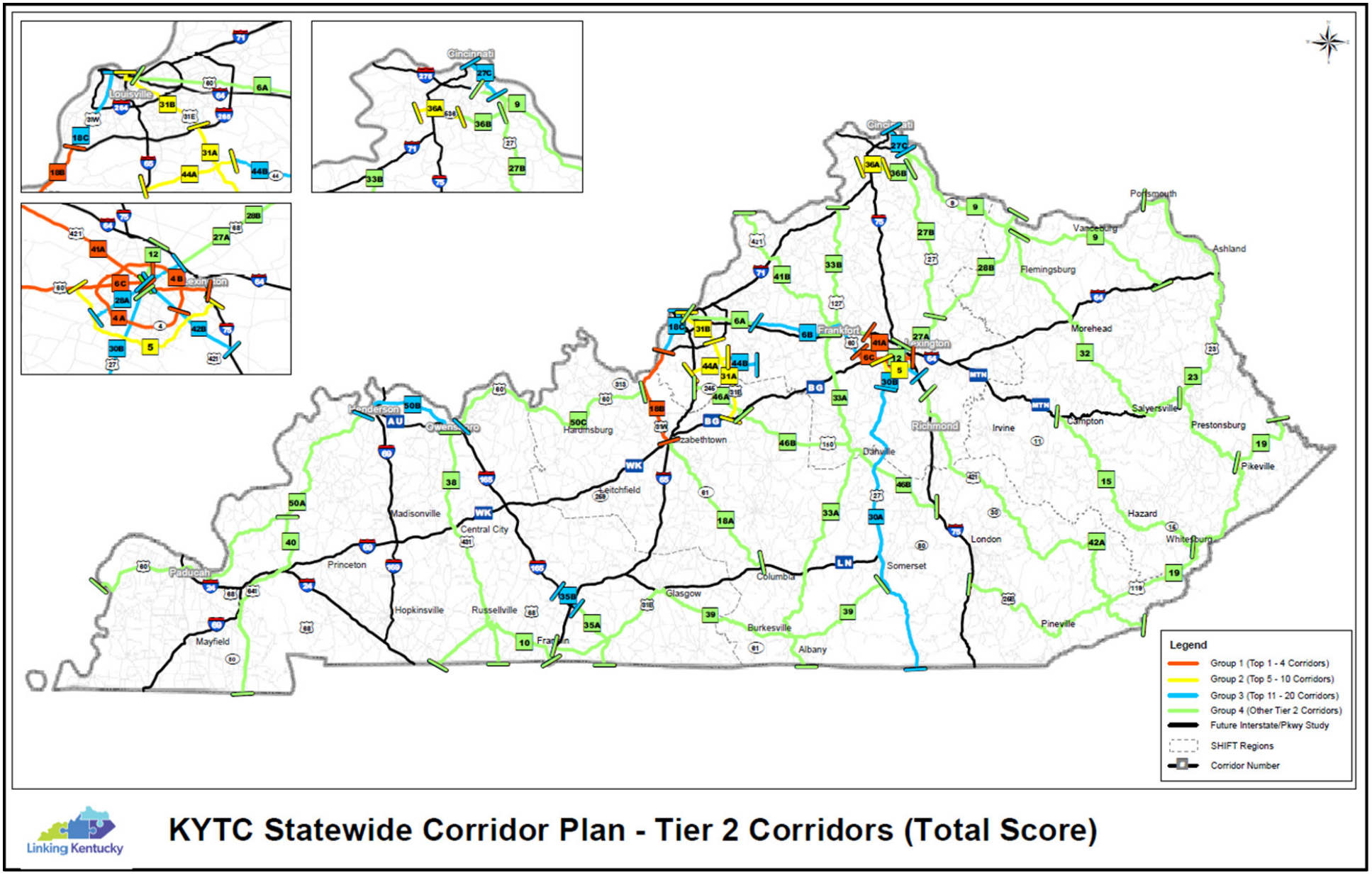


**Table 6.22 – Tier 2 Quantitative Scores, Ranks & Qualitative Indicators**

| Segment ID | Segment Name | Tier 2 (Quantitative) | | Tier 2 (Qualitative) | | |
|---|---|---|---|---|---|---|
| | | Score | Rank | Project Delivery Timeline | B/C Ratio | D+R+U+C Cost ($M) |
| 18B | US 31W & KY 61 | 98.0 | 1 | 0 | 13.0 | 346.5 |
| 6C | US 60 | 90.3 | 2 | L | 4.5 | 448.9 |
| 4B | KY 4 (Lexington BYP) | 83.5 | 3 | L | 2.9 | 245.6 |
| 41A | US 421 | 80.5 | 4 | L | 4.4 | 233.4 |
| 4A | KY 4 (Lexington BYP) | 78.2 | 5 | L | 2.6 | 381.7 |
| 36A | KY 536 | 76.4 | 6 | L | 34.4 | 104.9 |
| 5 | Man O War Blvd | 76.0 | 7 | 0 | 5.2 | 593.5 |
| 44A | KY 44 | 75.6 | 8 | L | 3.4 | 258.7 |
| 31A | US 31 E | 72.7 | 9 | L | 12.1 | 236.6 |
| 31B | US 31 E | 68.8 | 10 | L | n/a | n/a |
| 6B | US 60 | 68.4 | 11 | M | 1.9 | 258.9 |
| 50B | US 60 | 66.4 | 12 | M | 4.6 | 27.6 |
| 35B | US 231 | 65.0 | 13 | L | 3.7 | 91.4 |
| 18C | US 31W & KY 61 | 64.7 | 14 | M | 10.1 | 188.9 |
| 30A | US 27 | 64.7 | 15 | L | -6.2 | 199.0 |
| 42B | US 421/KY 418 | 64.2 | 16 | L | -2.6 | 215.0 |
| 27C | US 27 | 63.1 | 17 | L | 3.7 | 245.7 |
| 28A | US 68 | 61.9 | 18 | L | 2.9 | 235.2 |
| 44B | KY 44 | 58.9 | 19 | L | 8.5 | 93.6 |
| 30B | US 27 | 58.8 | 20 | L | 3.1 | 278.4 |
| 27A | US 27 | 58.3 | 21 | M | 0.8 | 87.6 |
| 6A | US 60 | 57.2 | 22 | L | 9.8 | 278.9 |
| 23 | US 23 | 56.5 | 23 | L | 1.9 | 188.7 |
| 38 | US 431 | 56.3 | 24 | M | 1.6 | 29.9 |
| 46B | KY 245/US 150 | 52.2 | 25 | M | 2.5 | 35.7 |
| 27B | US 27 | 50.2 | 26 | L | 5.1 | 95.2 |
| 35A | US 231 | 49.9 | 27 | M | 2.6 | 16.5 |
| 9 | KY 9 (AA Highway) | 48.7 | 28 | M | 4.1 | 229.0 |
| 39 | KY 100/US 31E/KY 90 | 44.7 | 29 | M | 3.3 | 31.3 |
| 32 | KY 11/KY 32/US 460 | 44.7 | 30 | L | 2.2 | 92.0 |
| 19 | US 25 & US 119 | 44.6 | 31 | L | 2.3 | 79.9 |
| 50A | US 60 | 42.2 | 32 | M | 0.7 | 92.0 |
| 40 | US 641 | 41.9 | 33 | M | 1.0 | 120.9 |
| 12 | KY 922 | 40.4 | 34 | L | 1.2 | 236.3 |
| 41B | US 421 | 40.3 | 35 | M | 1.9 | 73.9 |
| 46A | KY 245/US 150 | 39.6 | 36 | M | 10.1 | 59.7 |
| 15 | KY 15 | 38.7 | 37 | L | 6.1 | 35.8 |
| 33A | US 127 | 38.6 | 38 | M | 1.2 | 138.8 |
| 42A | US 421 | 36.4 | 39 | L | 1.5 | 119.2 |
| 36B | KY 536 | 35.6 | 40 | L | 10.5 | 27.0 |

| Segment ID | Segment Name | Tier 2 (Quantitative) | | Tier 2 (Qualitative) | | |
|---|---|---|---|---|---|---|
| | | Score | Rank | Project Delivery Timeline | B/C Ratio | D+R+U+C Cost ($M) |
| 33B | US 127 | 34.7 | 41 | M | 2.6 | 23.7 |
| 10 | KY 100 / US 79 | 32.8 | 42 | L | -1.0 | 50.5 |
| 18A | US 31W & KY 61 | 30.0 | 43 | L | -0.8 | 9.2 |
| 28B | US 68 | 28.0 | 44 | M | 1.0 | 36.5 |
| 50C | US 60 | 23.9 | 45 | M | 0.3 | 18.4 |

## 6.5.2 Tier 2 Composite Scores and Corridor Selection for Visioning

The Tier 2 quantitative scores (see **Table 6.21** and **Figure 6.2**) show most of the top 20 segments are in the Louisville and Lexington areas. While these segments may be locations of great need, it is not feasible to expect all of them to be funded to completion during KYTC's planning horizon (2045) in this study.

To finalize the 20 segments chosen to be moved forward into the visioning process and balance regional and overall needs, a ballot was taken based on the Tier 2 analysis data to solicit Project Team and Planning Partners' input on how the 20 segments should be selected. The ballot was open for one week from December 15 through December 23, 2020. A total of 44 surveys were completed by stakeholders. The ballot confirmed many of the Tier 2 analysis results:

- 13 of the top 20 corridors in the ballot ranked among the top 20 based on the Tier 2 quantitative scores.
- 19 of the top 20 corridors in the ballot ranked among the top 30 based on Tier 2 quantitative scores.

Based on discussion within the Project Team, a composite scoring approach was used to aid in selecting the 20 visioning segments using all available data. **Table 6.23** shows the structure of the composite score. The composite score is calculated by multiplying the normalized rank of each factor among all 45 segments by assigned weight, resulting a summed value of 0 to 100.

**Table 6.23 – Structure of Composite Score**

| COMPOSITE FACTORS | WEIGHT |
|---|---|
| Tier 2 Quantitative Score | 50 |
| Ballot Votes | 30 |
| Project Delivery Timeline | 5 |
| B/C Ratio | 10 |
| Cost | 5 |
| **Sum** | **100** |

The composite scoring results were reviewed with KYTC Districts and MPOs to avoid duplicating effort or conflicting with active projects in the corridor selection process. This effort resulted in the following findings:

- 13 segments from the top 20 (composite score) would benefit from corridor visioning.
- 7 segments from the top 20 (composite score) would be redundant for corridor visioning based on previous or ongoing work.
- 7 segments among the "best of the rest" (composite score) would benefit from corridor visioning.

- The remaining 18 segments were not recommended for corridor visioning, due to lower composite scores, redundant effort, or other reasons.

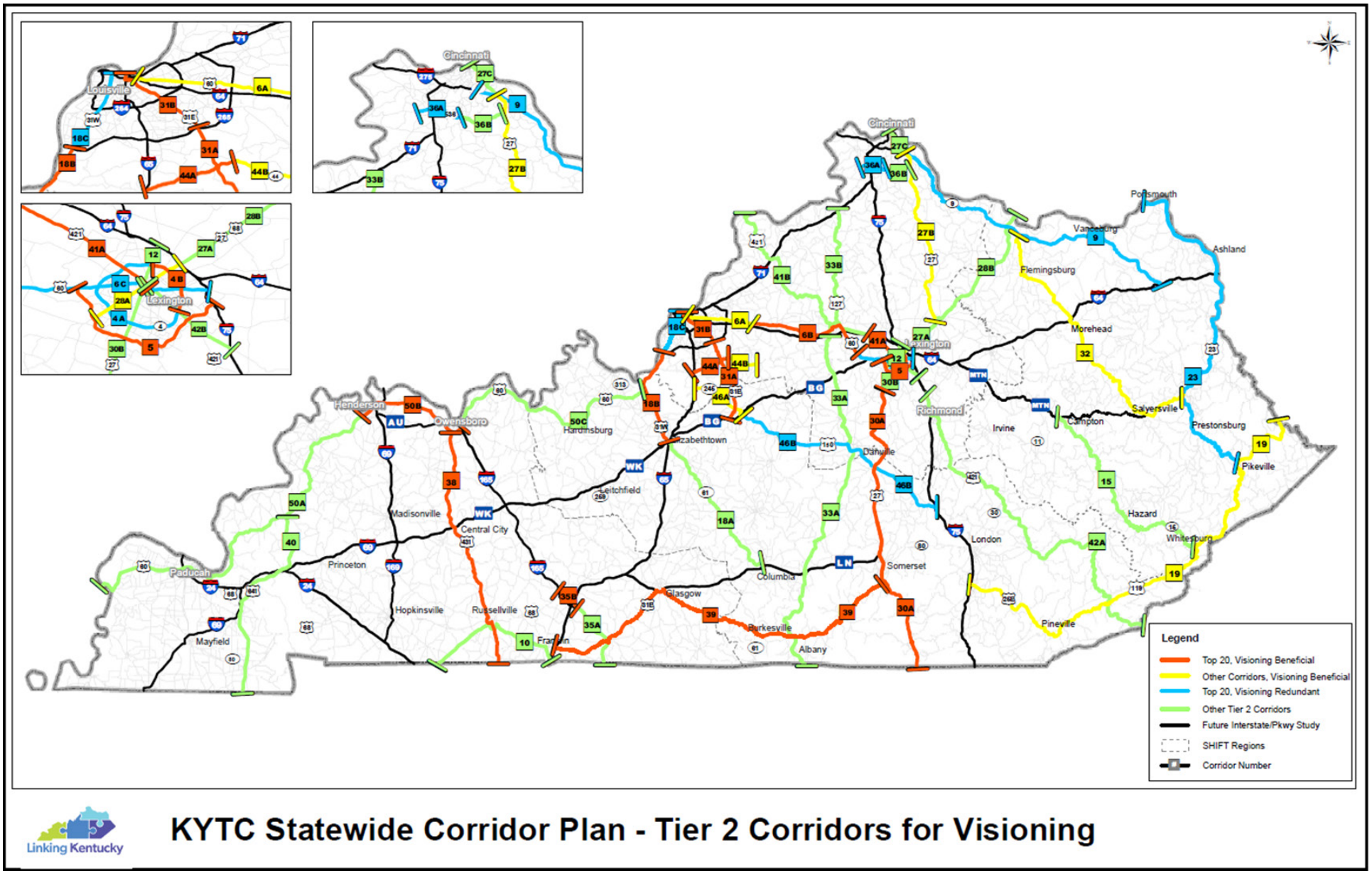
**Table 6.24** summarizes the corridor selection process. Tier 2 corridor segments were sorted by the single composite score, in descending order, with the highest score on top. The table also includes Tier 2 quantitative and qualitative scores, ranks, ballot survey votes, and identifies segments that were recommended for visioning. It is noted that a segment being selected for visioning does not affect its Tier 2 quantitative ranking or priority. **Figure 6.3** illustrates the corridor selection in graphical format.

**Table 6.24 – Tier 2 Composite Scoring & Recommendations - Visioning Corridors**

| Segment ID | Segment Name | Tier 2 (Quantitative) | | Tier 2 (Qualitative) | | | Ballot Votes | Tier 2 (Composite) | | Advance to Visioning | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Score | Rank | Project Delivery Timeline | B/C Ratio | D+R+U+C Cost ($M) | | Score | Rank | | |
| 18B | US 31W & KY 61 | 98.0 | 1 | 0 | 13.0 | 346.5 | 32 | 83.9 | 1 | Y | Top 20, Visioning Beneficial |
| 6C | US 60 | 90.3 | 2 | L | 4.5 | 448.9 | 29 | 74.7 | 2 | | Top 20, Visioning Redundant |
| 4B | KY 4 (New Circle Road) | 83.5 | 3 | L | 2.9 | 245.6 | 30 | 71.7 | 3 | Y | Top 20, Visioning Beneficial |
| 36A | KY 536 | 76.4 | 6 | L | 34.4 | 104.9 | 22 | 70.0 | 4 | | Top 20, Visioning Redundant |
| 31A | US 31 E | 72.7 | 9 | L | 12.1 | 236.6 | 27 | 66.1 | 5 | Y | Top 20, Visioning Beneficial |
| 4A | KY 4 (New Circle Road) | 78.2 | 5 | L | 2.6 | 381.7 | 27 | 66.1 | 6 | | Top 20, Visioning Redundant |
| 41A | US 421 | 80.5 | 4 | L | 4.4 | 233.4 | 20 | 61.3 | 7 | Y | Top 20, Visioning Beneficial |
| 44A | KY 44 | 75.6 | 8 | L | 3.4 | 258.7 | 22 | 60.4 | 8 | Y | Top 20, Visioning Beneficial |
| 5 | Man O War Blvd | 76.0 | 7 | 0 | 5.2 | 593.5 | 21 | 60.1 | 9 | Y | Top 20, Visioning Beneficial |
| 50B | US 60 | 66.4 | 12 | M | 4.6 | 27.6 | 21 | 59.0 | 10 | Y | Top 20, Visioning Beneficial |
| 35B | US 231 | 65.0 | 13 | L | 3.7 | 91.4 | 24 | 57.2 | 11 | Y | Top 20, Visioning Beneficial |
| 30A | US 27 | 64.7 | 15 | L | -6.2 | 199.0 | 23 | 54.8 | 12 | Y | Top 20, Visioning Beneficial |
| 46B | KY 245/US 150 | 52.2 | 25 | M | 2.5 | 35.7 | 24 | 53.6 | 13 | | Top 20, Visioning Redundant |
| 31B | US 31 E | 68.8 | 10 | L | n/a | n/a | 18 | 52.0 | 14 | Y | Top 20, Visioning Beneficial |
| 18C | US 31W & KY 61 | 64.7 | 14 | M | 10.1 | 188.9 | 14 | 51.8 | 15 | | Top 20, Visioning Redundant |
| 6B | US 60 | 68.4 | 11 | M | 1.9 | 258.9 | 14 | 51.2 | 16 | Y | Top 20, Visioning Beneficial |
| 23 | US 23 | 56.5 | 23 | L | 1.9 | 188.7 | 22 | 50.3 | 17 | | Top 20, Visioning Redundant |

| Segment ID | Segment Name | Tier 2 (Quantitative) | | Tier 2 (Qualitative) | | | Ballot Votes | Tier 2 (Composite) | | Advance to Visioning | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Score | Rank | Project Delivery Timeline | B/C Ratio | D+R+U+C Cost ($M) | | Score | Rank | | |
| 38 | US 431 | 56.3 | 24 | M | 1.6 | 29.9 | 17 | 49.2 | 18 | Y | Top 20, Visioning Beneficial |
| 9 | KY 9 (AA Highway) | 48.7 | 28 | M | 4.1 | 229.0 | 21 | 48.4 | 19 | | Top 20, Visioning Redundant |
| 39 | KY 100/US 31E/KY 90 | 44.7 | 29 | M | 3.3 | 31.3 | 18 | 44.6 | 20 | Y | Top 20, Visioning Beneficial |
| 35A | US 231 | 49.9 | 27 | M | 2.6 | 16.5 | 14 | 44.6 | 21 | | Other Tier 2 Corridors |
| 6A | US 60 | 57.2 | 22 | L | 9.8 | 278.9 | 12 | 43.4 | 22 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 30B | US 27 | 58.8 | 20 | L | 3.1 | 278.4 | 13 | 43.2 | 23 | | Other Tier 2 Corridors |
| 27C | US 27 | 63.1 | 17 | L | 3.7 | 245.7 | 9 | 41.9 | 24 | | Other Tier 2 Corridors |
| 46A | KY 245/US 150 | 39.6 | 36 | M | 10.1 | 59.7 | 16 | 41.4 | 25 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 32 | KY 11/KY 32/US 460 | 44.7 | 30 | L | 2.2 | 92.0 | 18 | 40.8 | 26 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 44B | KY 44 | 58.9 | 19 | L | 8.5 | 93.6 | 7 | 39.5 | 27 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 28A | US 68 | 61.9 | 18 | L | 2.9 | 235.2 | 7 | 39.2 | 28 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 42B | US 421/KY 418 | 64.2 | 16 | L | -2.6 | 215.0 | 6 | 38.6 | 29 | | Other Tier 2 Corridors |
| 19 | US 25 & US 119 | 44.6 | 31 | L | 2.3 | 79.9 | 14 | 37.1 | 30 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 27A | US 27 | 58.3 | 21 | M | 0.8 | 87.6 | 3 | 35.8 | 31 | | Other Tier 2 Corridors |
| 27B | US 27 | 50.2 | 26 | L | 5.1 | 95.2 | 8 | 35.0 | 32 | Y | Other Tier 2 Corridors, Visioning Beneficial |
| 50A | US 60 | 42.2 | 32 | M | 0.7 | 92.0 | 7 | 31.3 | 33 | | Other Tier 2 Corridors |
| 15 | KY 15 | 38.7 | 37 | L | 6.1 | 35.8 | 9 | 31.2 | 34 | | Other Tier 2 Corridors |
| 33B | US 127 | 34.7 | 41 | M | 2.6 | 23.7 | 6 | 28.5 | 35 | | Other Tier 2 Corridors |
| 33A | US 127 | 38.6 | 38 | M | 1.2 | 138.8 | 6 | 28.5 | 36 | | Other Tier 2 Corridors |
| 41B | US 421 | 40.3 | 35 | M | 1.9 | 73.9 | 4 | 28.0 | 37 | | Other Tier 2 Corridors |
| 18A | US 31W & KY 61 | 30.0 | 43 | L | -0.8 | 9.2 | 8 | 27.8 | 38 | | Other Tier 2 Corridors |
| 36B | KY 536 | 35.6 | 40 | L | 10.5 | 27.0 | 5 | 27.6 | 39 | | Other Tier 2 Corridors |
| 40 | US 641 | 41.9 | 33 | M | 1.0 | 120.9 | 3 | 27.3 | 40 | | Other Tier 2 Corridors |
| 42A | US 421 | 36.4 | 39 | L | 1.5 | 119.2 | 8 | 26.9 | 41 | | Other Tier 2 Corridors |
| 12 | KY 922 | 40.4 | 34 | L | 1.2 | 236.3 | 4 | 24.9 | 42 | | Other Tier 2 Corridors |
| 50C | US 60 | 23.9 | 45 | M | 0.3 | 18.4 | 7 | 23.8 | 43 | | Other Tier 2 Corridors |
| 10 | KY 100 / US 79 | 32.8 | 42 | L | -1.0 | 50.5 | 5 | 22.3 | 44 | | Other Tier 2 Corridors |
| 28B | US 68 | 28.0 | 44 | M | 1.0 | 36.5 | 4 | 22.1 | 45 | | Other Tier 2 Corridors |

Figure 6.3 – Tier 2 Corridor Selection for Visioning



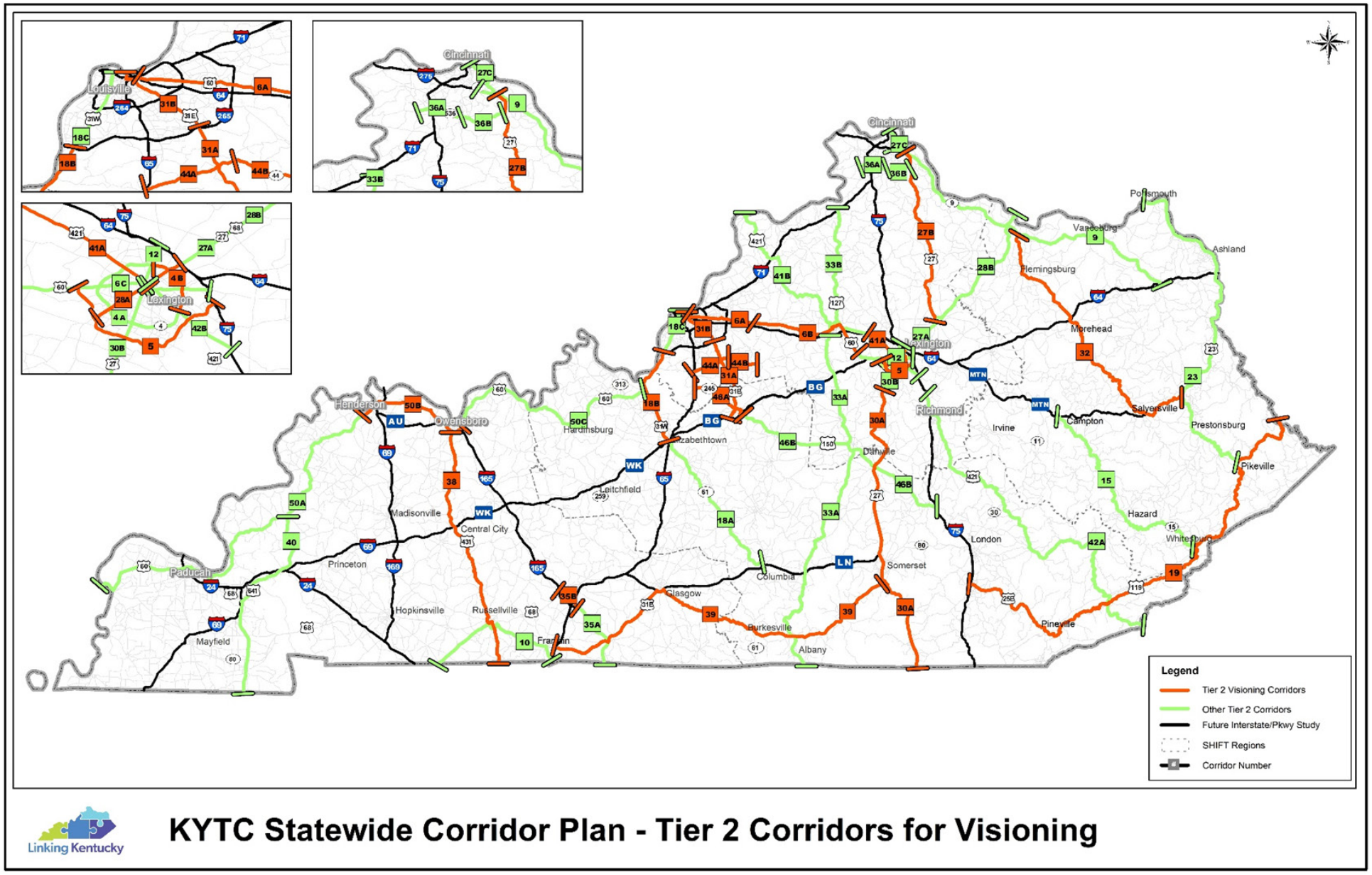
# CHAPTER 7: CORRIDOR VISIONS

As part of the Statewide Corridor Plan (SWCP), corridor visions were developed for the 20 corridor segments identified by the Tier 2 analysis (see **Figure 7.1**). These visions identify intermediate (2030) and long-term (2045) transportation needs and practical improvement strategies. The Project Team established a common visioning evaluation matrix to ensure that the most important topics and issues along each corridor segment were evaluated consistently. The visioning matrix covers broad aspects of corridor performance of interest to KYTC, including an overview of corridor's basic information (name, mileage and terminus, highway district, etc.), traffic and growth, issues and concerns, other modes of transportation within and immediately adjacent to the corridor, improvement concepts, stakeholder inputs, and a preliminary scoping report (see **Appendix G** for scoping reports).

The development of corridor visions and related analyses relied heavily on existing tools and available data sources from KYTC. Additional data was also collected from open sources (e.g., Google maps, Kentucky Geography Network, etc.) to support and meet project needs. All analysis approaches were based on a consensus reached among the Project Team and were consistently applied to each visioning corridor segment.

This chapter describes data, tools and methodologies used for corridor analysis in developing corridor visions. Details of the 20 visioning corridors are illustrated in the GIS Online Tool (see **Appendix J**).

Figure 7.1 – Tier 2 Visioning Corridors

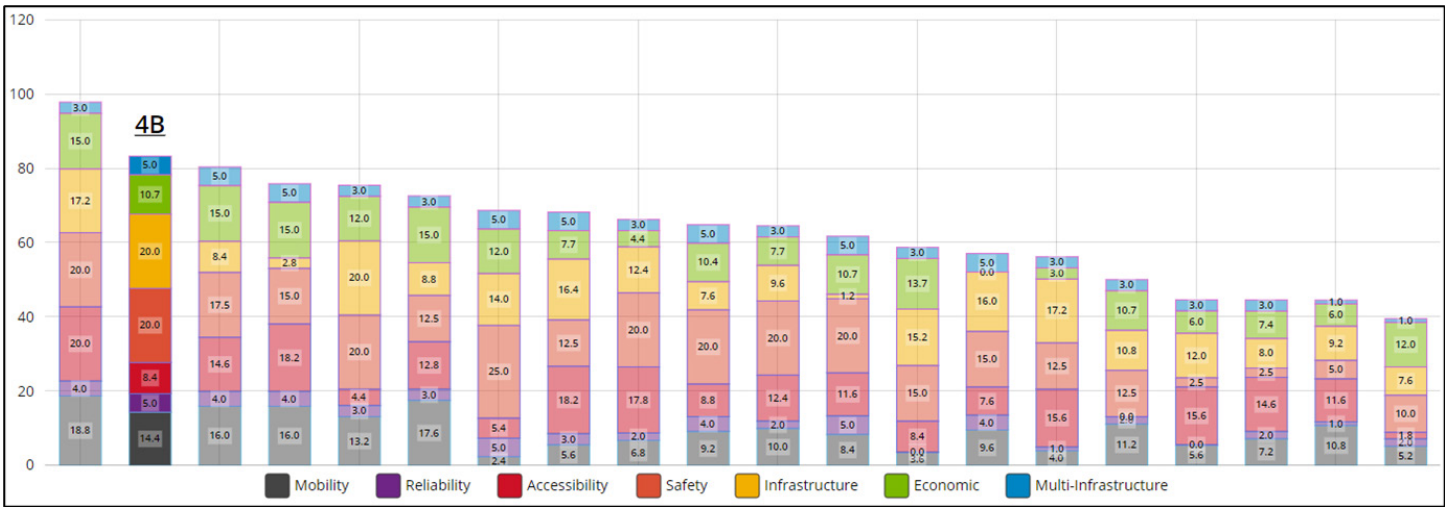


## 7.1 CORRIDOR OVERVIEW

The corridor overview includes a brief description, a key map showing corridor location, and the following basic information of each visioning corridor:

- Corridor Name and ID
- Mileage and Terminus
- Functional Classification
- National Highway System (Y/N)
- KYTC Highway District(s)
- County(s)
- Major City(s)
- MPO(s)
- Area Development Districts (ADDs)
- Tier 2 Score. The score is illustrated as an interactive stacked column chart by Tier 2 quantitative scores in the GIS Online Tool. The chart shows all 20 visioning corridors by Tier 2 ranks in a descending order and highlights the corridor of interest (see **Figure 7.2**).

**Figure 7.2 – Tier 2 Score Chart**




The overview also outlines the following typical attributes of the existing corridor by sub-segment with logical termini. The GIS Online Tool includes interactive map layers showing lanes, shoulder, median and posted speed limit.

- Functional Classification
- Number of lanes and Lane Width
- Shoulder and Width
- Median Type and Width
- Proposed Speed Limit

## 7.2 TRAFFIC AND GROWTH

### 7.2.1 Traffic Flow

The SWCP corridors are relatively high-speed, high-volume arterial corridors that provide mobility within regions and across the entire state of Kentucky. Assessing existing condition and future trends is a means to identifying future transportation needs that continue to influence transportation decision-making. Existing traffic flow and future forecasts were evaluated for all Tier 2 corridors using data from the 5961 zone v8_KYSTMv18 (aka v8_KYSTMv18). Based on a consensus among the Project Team, the length-weighted averages of daily total traffic and daily truck traffic were calculated for each corridor for 2015, 2030 and 2045. The averages are a meaningful measure of corridor-level traffic flow carried by each corridor segment. The corridor vision also specifies corridor sections that are part of National Highway Freight Network (NHFN).

### 7.2.2 Traffic Growth

Annual total and truck traffic growth rates were derived separately using 2015 and 2045 corridor-level traffic data. **Table 7.1** shows results of a quartile analysis of traffic growth for all 45 Tier 2 corridor segments. Note that truck traffic grows faster than total traffic, which is consistent with state and national trends. In addition, the Tier 2 corridors tend to have higher truck growth rates than the statewide overall average. This is because all Tier 2 corridors are major arterials carrying more truck traffic and are likely to grow faster than minor or local roadways.

**Table 7.1 – Quartile Analysis of Traffic Growth**

| QUARTILE/PERCENTILE | ANNUAL GROWTH RATES | |
|---|---|---|
| | DAILY TOTAL TRAFFIC | DAILY TRUCK TRAFFIC |
| **Minimum** | -0.06% | 0.75% |
| **1st Quartile (25th Percentile)** | 0.55% | 1.20% |
| **Median (50th Percentile)** | 0.83% | 1.36% |
| **Mean** | 0.84% | 1.38% |
| **3rd Quartile (75th Percentile)** | 1.15% | 1.58% |
| **Maximum** | 2.12% | 2.15% |

The Project Team reviewed corridor-level annual growth rates and decided to use three categories (low, medium, and high) to generally classify corridor traffic growth patterns by using thresholds specified in **Table 7.2**. Note that the thresholds generally agree with the 25th and 75th percentiles of annual growth rates based on analysis of all 45 Tier 2 corridors instead of only 20 visioning corridors, providing a relatively large sample size. The low, medium and high categories are a relative measure among all Tier 2 corridors.

**Table 7.2 – Traffic Growth Categories**

| TRAFFIC GROWTH CATEGORY | THRESHOLDS OF ANNUAL GROWTH RATES | |
|---|---|---|
| | DAILY TOTAL TRAFFIC | DAILY TRUCK TRAFFIC |
| **Low** | < 0.55% | < 1.20% |
| **Medium** | 0.55% - 1.15% | 1.20% - 1.50% |
| **High** | > 1.15% | > 1.50% |

**Figure 7.3** and **Figure 7.4** demonstrate traffic growth along 20 visioning corridors for daily total traffic and daily truck traffic respectively.

Figure 7.3 – Visioning Corridor Daily Total Traffic Growth

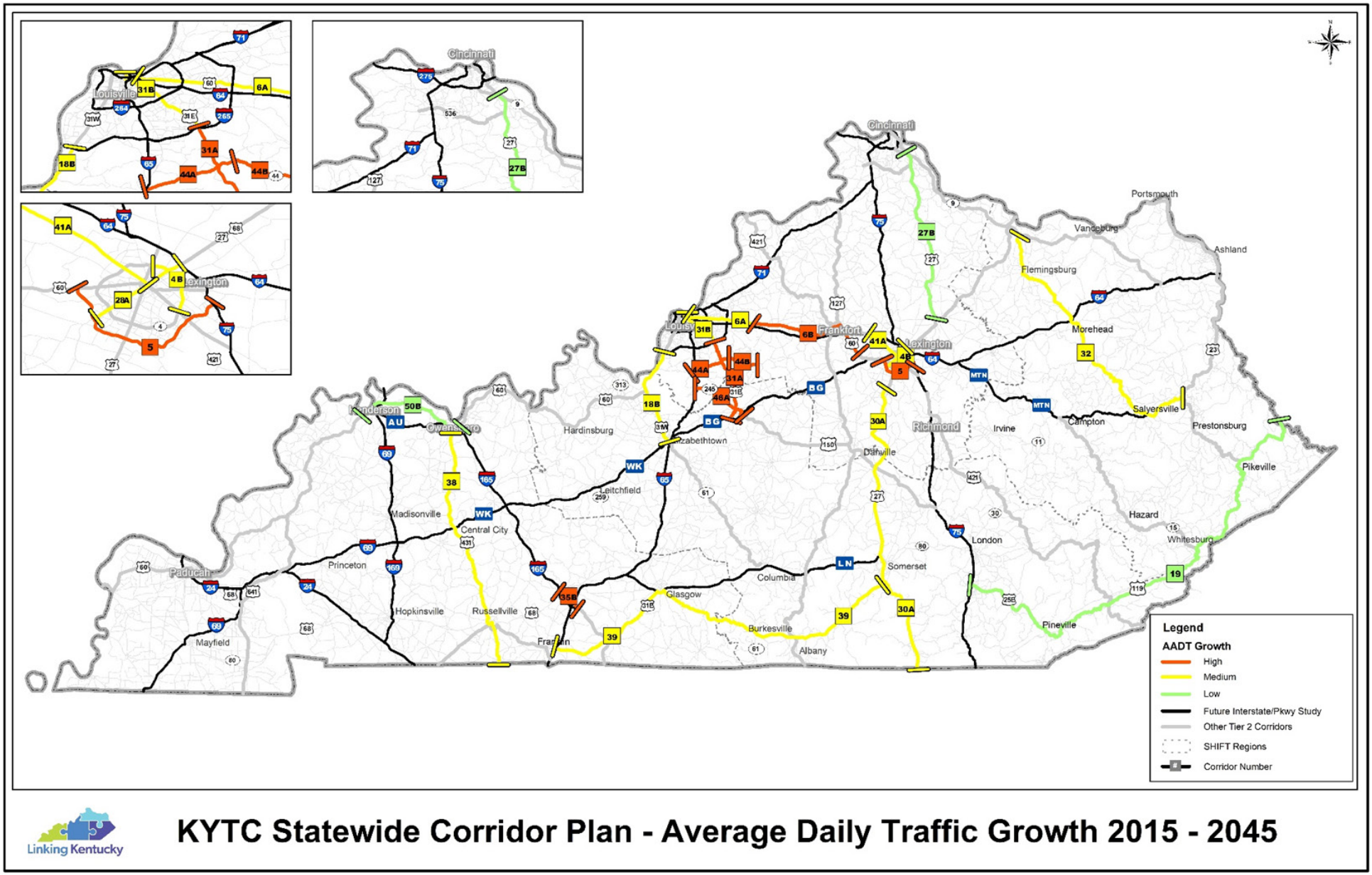
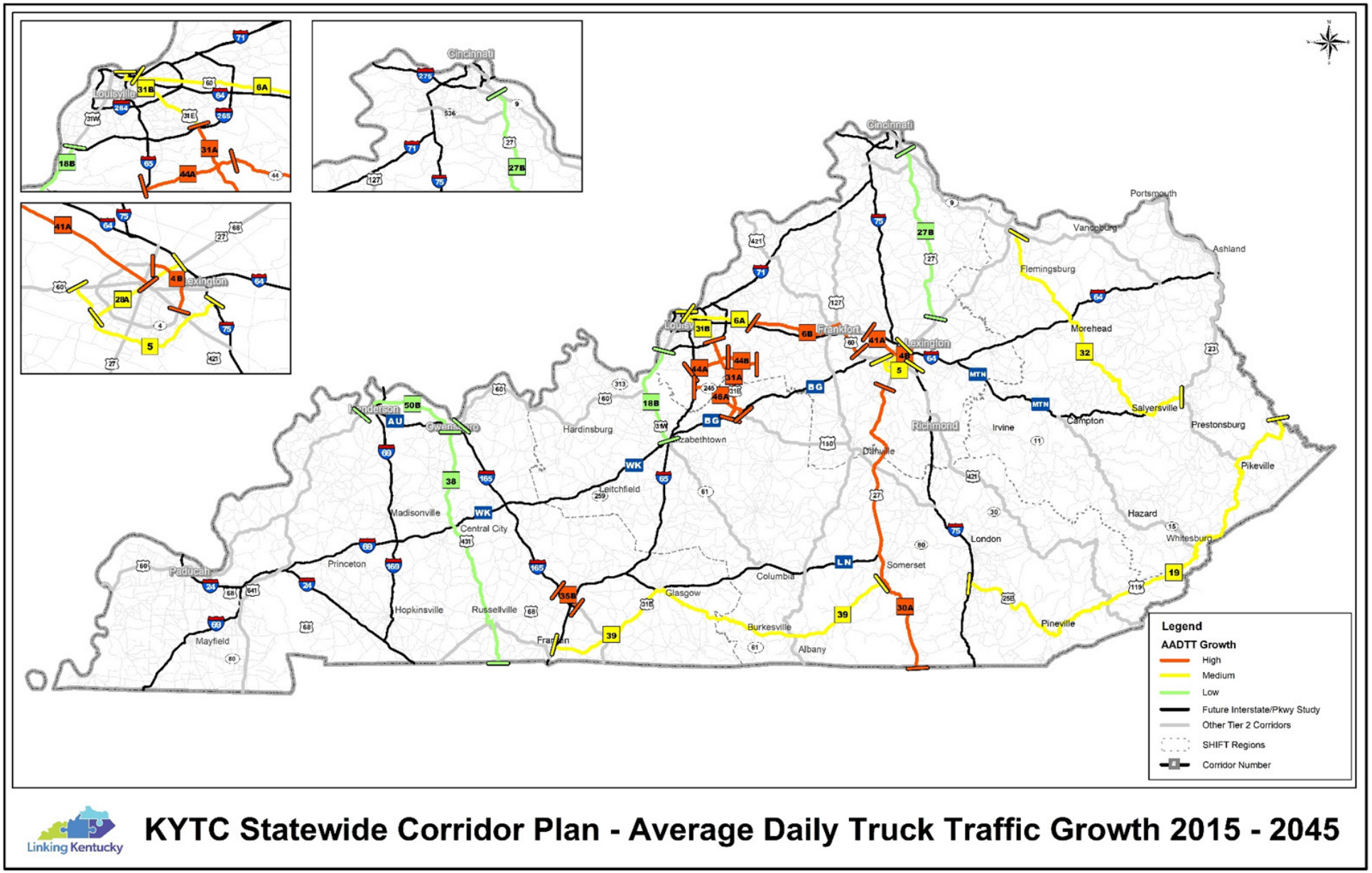


Figure 7.4 – Visioning Corridor Daily Truck Traffic Growth



### 7.2.3 Land Use Growth

There is a clear link between land use development and transportation. Land use growth drives transportation needs and improvements and, vice versa, transportation improvements can spawn development.

The v8_KYSTMv18 data indicates that the state's population will grow from 4.4 million in 2015 to 5.0 million in 2045, an increase of 12.5 percent. Based on the net population growth rate, Kentucky's population would increase at a pace slower than the fastest growing areas of the country (e.g., the South and the West). Increased population can create congestion and capacity issues, especially in urban and suburban areas. The population of rural areas is expected to continue increasing at a low annual growth rate of 0.11 percent through 2045. In comparison, suburban (including towns) and urban populations are expected to increase at a greater annual growth rate of 0.6 percent and 0.56 percent, respectively, through the year 2045. This may lead to longer trip lengths, extending peak commuting times, between suburban and urban areas.

According to v8_KYSTMv18 data, total employment in Kentucky is expected to increase from 1.8 million in 2015 to 2.1 million in 2045. Suburban employment (including towns) is estimated to increase at an annual growth rate of 0.63 percent, while urban and rural employment are expected to increase at 0.53 percent and 0.39 percent, respectively. With a greater increase in suburban employment, it may be possible that employers could relocate closer to the suburban workforce, altering regional travel patterns and levels. In general, employment growth would likely increase trip lengths and generate more trips, resulting in longer work trips, increased traffic, and congestion, as has been the national trend for many years. As such, the existing transportation system would need to adapt to continuing demographic changes.

For each Tier 2 corridor, land use impact was based on anticipated population and employment growth near the corridors. This analysis focused on the direct influence of the local economy on study corridors. A 3-mile buffer around corridors was used for analysis, based on discussion within the Project Team. 2015 and 2045 v8_KYSTMv18 TAZ data was used to derive annual population and employment growth rates respectively, within the 3-mile buffer. **Table 7.3** shows population and employment growth statistics for all 45 Tier 2 corridor segments.

**Table 7.3 – Quartile Analysis of Population and Employment Growth**

| QUARTILE/PERCENTILE | ANNUAL GROWTH RATES | |
|---|---|---|
| | POPULATION | EMPLOYMENT |
| **Minimum** | -0.94% | -0.97% |
| **1st Quartile (25th Percentile)** | 0.13% | 0.25% |
| **Median (50th Percentile)** | 0.48% | 0.67% |
| **Mean** | 0.51% | 0.62% |
| **3rd Quartile (75th Percentile)** | 0.99% | 1.08% |
| **Maximum** | 1.63% | 1.61% |

The Project Team reviewed analysis results and decided to use three categories (low, medium, and high) to generally classify land use growth, using thresholds specified in **Table 7.4**. Like the traffic growth analysis, the thresholds of land use growth categories used the refined 25th and 75th percentiles of data from all 45 Tier 2 corridors. The low, medium and high categories provide a relative measure among all Tier 2 corridors.

**Table 7.4 – Population and Employment Growth Categories**

| LAND USE GROWTH CATEGORY | THRESHOLDS OF ANNUAL GROWTH RATES | |
|---|---|---|
| | POPULATION | EMPLOYMENT |
| **Low** | < 0.15% | < 0.25% |
| **Medium** | 0.15% - 1.00% | 0.25% - 1.00% |
| **High** | > 1.00% | > 1.00% |

## 7.3 ISSUES AND CONCERNS

### 7.3.1 Congestion

Traffic bottlenecks were identified for each visioning corridor. A traffic bottleneck is a localized section of highway that experiences reduced speeds and greater delays due to a recurring operational influence or a nonrecurring event, according to the definition of FHWA's Localized Bottleneck Reduction (LBR) Program. General characteristics of bottlenecks are:

1. Limited physical capacity
2. Poorly functioning traffic signals
3. Traffic incidents
4. Work zones
5. Bad weather
6. Special events

Only the first and second sources contribute to recurring congestion. They are measurable in design and function and are therefore candidates for remediation. The remaining sources of bottlenecks are nonrecurring and random. In addition, high traffic volumes approaching capacity, maintenance or short-term construction (e.g., work zone), incidents or weather, are typical causes for poor reliability that trigger high variability in operating speeds and travel times. KYTC's 2035 Long Range Statewide Transportation Plan (LRSTP) requires ensuring dependable, effective and efficient facilities. Therefore, it is important to reduce bottlenecks to improve the mobility and reliability of movements, leading to less congestion, fewer infrastructure repairs, and lower emissions.

The SWCP used the following criteria to identify potential bottlenecks for each visioning corridor and included them in an interactive map layer in the GIS Online Tool:

- **Daily Volume/Capacity (V/C) Ratio.** V/C ratio is one of the most frequently used indices for assessing roadway traffic congestion at the planning level. 2045 daily traffic volumes and roadway capacities were extracted from the v8_KYSTMv18, and the 2045 daily V/C ratio was calculated. Based on discussions within the Project Team, links with a V/C ratio of 0.6 or more were considered to be bottlenecks. As the v8_KYSTMv18 is a daily model and does not estimate peak-period/peak-hour traffic condition, a relatively low daily V/C ratio threshold such as 0.6 avoids overlooking bottlenecks that are congested during peak period or peak hour (high V/C ratio values), even if their overall daily V/C ratio is not high. The V/C ratio provides insight into future levels of congestion due to capacity constraints, after accounting for existing and programmed project improvements. Figure 7.5 shows potential bottlenecks on visioning corridors. These locations were candidates for more detailed traffic capacity analysis leading to SWCP improvement strategies.

- **Level of Travel Time Reliability (LOTTR).** FHWA defines travel time reliability as consistency or dependability in travel times, as measured from day to day or across different times of day. Personal and business travelers value reliability because it allows them to make better use of their time. Measurement of travel time reliability on the interstate and non-interstate National Highway System (NHS) using the Level of Travel Time Reliability (LOTTR) is part of FHWA's final rulemaking to implement the Transportation Performance Management (TPM) framework established by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act. LOTTR is defined as the ratio of the longer travel times (80th percentile) to a "normal" travel time (50th percentile), using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent. Data are collected in 15-minute intervals during all time periods between 6am and 8pm. The reporting corridor segment is considered reliable when LOTTR is less than 1.50 for all time periods, otherwise unreliable. KYTC provided LOTTR values based on HERE's 2015-2017 speed data. The LOTTR values were attached to SWCP corridor network, so that all unreliable locations (LOTTR >= 1.5 for any time period) were also identified as potential bottlenecks. **Figure 7.6** shows the unreliable locations on visioning corridors.

The level of congestion was further evaluated at potential bottlenecks described above for 2015, 2030 and 2045. The Project Team reached consensus on adopting the "Acceptable" and "Unacceptable" categories in the SWCP to indicate potential roadway deficiencies at the planning level and to ease the understanding and dissemination of the analysis results to stakeholders and the public. If the V/C ratio is less than 0.85 in urban areas or less than 0.7 in rural areas, the roadway is considered to be "Acceptable"; otherwise, it was considered "Unacceptable". An "Unacceptable" segment does not necessarily mean traffic operational failure; rather, it is an indicator of potential deficiencies that require attention in future planning activities and a more detailed engineering level capacity analysis may be warranted.

Figure 7.5 – Potential Bottlenecks (Capacity Constraints)

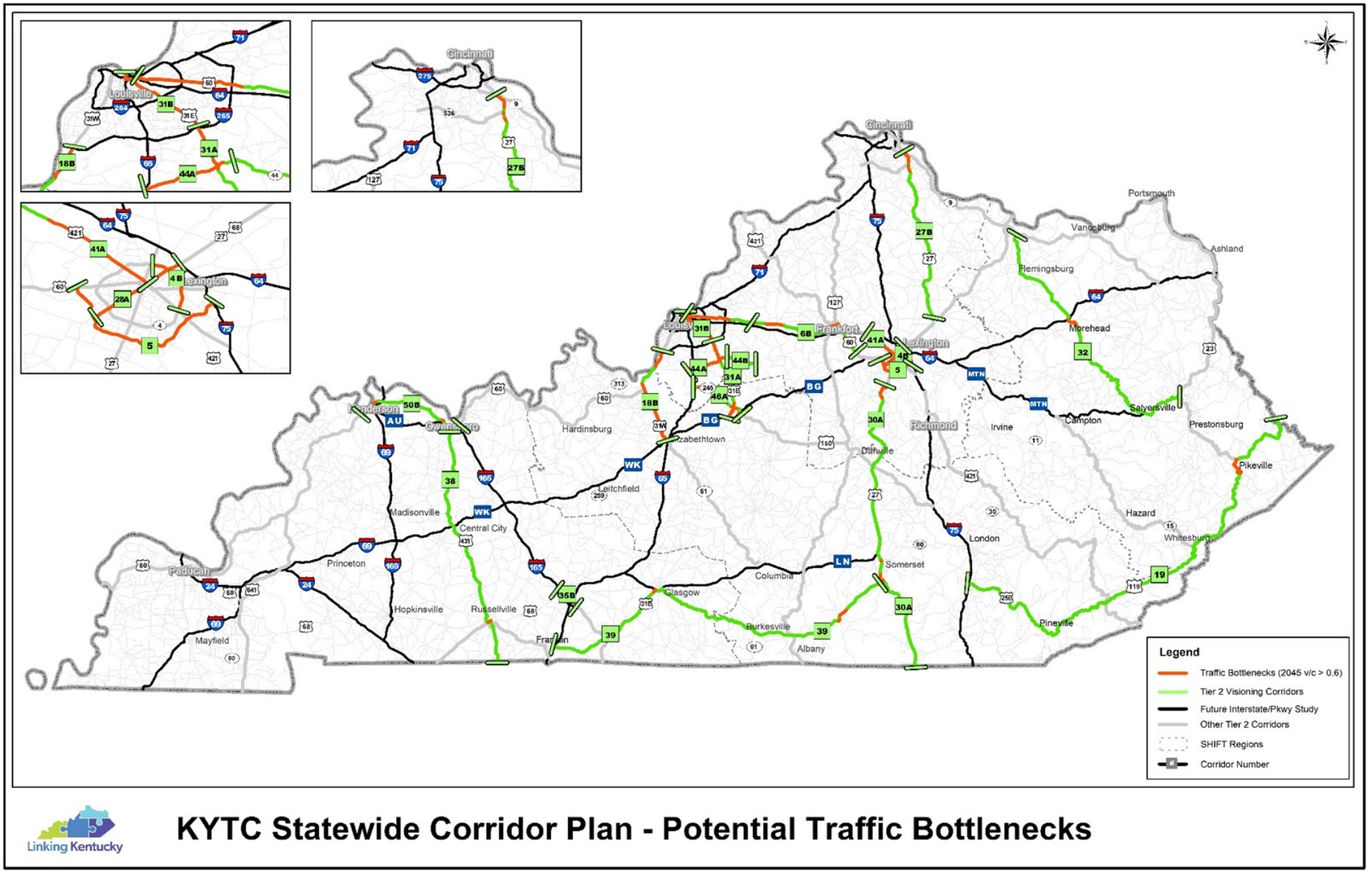
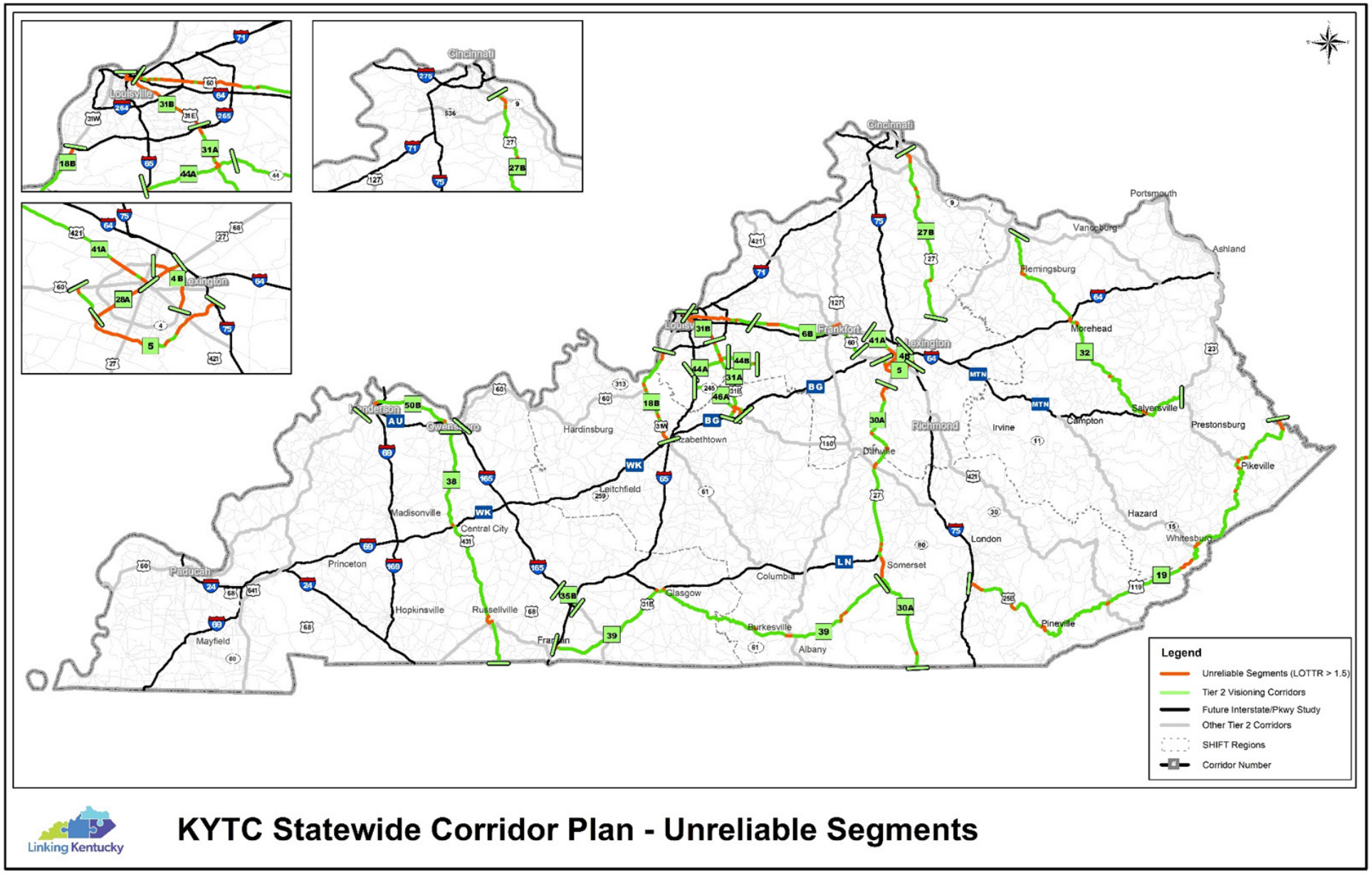


Figure 7.6 – Potential Bottlenecks (Unreliable Segments)



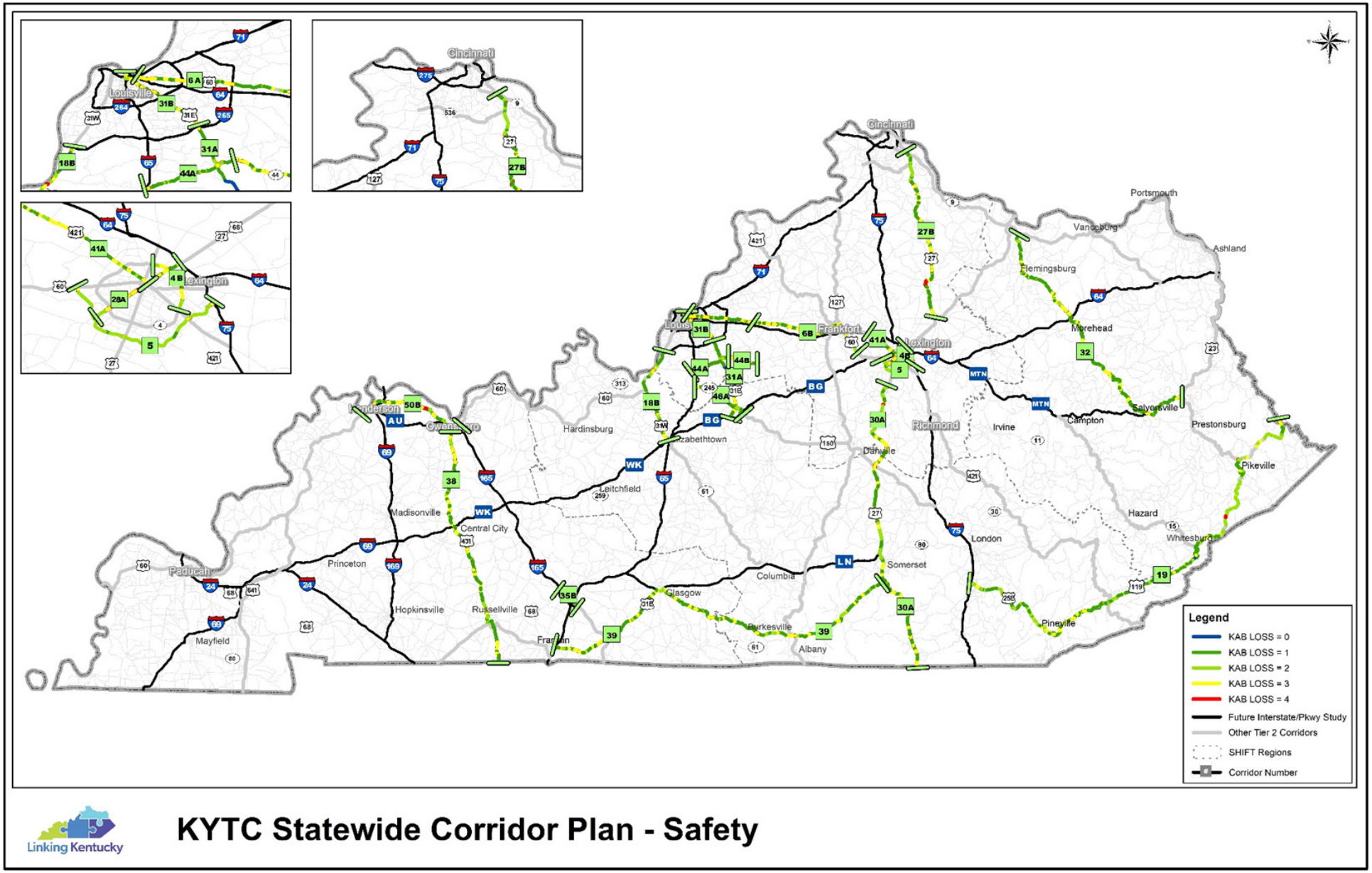
### 7.3.2 Safety

Safety is one of the most important factors to be considered in transportation planning. According to MAP-21 and FAST Act, a national goal is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. KYTC's current 2035 LRSTP has a goal to provide a safe and secure system.

KYTC provided 2014-2018 statewide safety data in a GIS format which contains critical rate factor (CRF), excess expected crashes (EEC), and level of service of safety (LOSS). Based on the concept of Safety Performance Functions (SPF), LOSS quantifies the magnitude of the safety problem using four categories (I, II, III, IV) with LOSS-I indicating low potential for crash reduction while LOSS-IV indicates high potential for crash reduction. The LOSS data was split into subcategories of KAB (Fatality (K), Disabling Injury (A), and Evident Injury (B)) crashes and CO (Possible Injury (C) and Property Damage Only (O)) crashes. The safety data was processed and attached to corresponding SWCP corridors for analysis.

Based on the discussion within the Project Team, a percentage of the corridor mileage that had a LOSS-IV was calculated for each visioning corridor. It provided a corridor-level assessment of the highest potential to decrease crashes. As the fatality (K), Disabling Injury (A), and Evident Injury (B) crashes are the worst outcomes from a crash and usually need more attention in regard to safety improvements, an interactive GIS layer of KAB LOSS data was also developed for all visioning corridors and included in the GIS Online Tool (see **Figure 7.7**).

Figure 7.7 – Level of Service of Safety (LOSS) - KAB



### 7.3.3 Infrastructure

The pavement analysis was performed using the Pavement Distress Index (PDI) data provided by KYTC. KYTC criteria was used to determine pavement conditions (see **Table 7.5**). Pavement conditions for all visioning corridors are included in an interactive layer of the GIS Online Tool and are also shown in **Figure 7.8**.

**Table 7.5 – KYTC Criteria on Pavement Conditions**

| PAVEMENT CONDITION | PAVEMENT DISTRESS INDEX (PDI) |
|---|---|
| **Good** | 0.00 – 0.35 |
| **Fair** | 0.36 – 0.65 |
| **Poor** | 0.66 – 0.99 |

KYTC provided a complete list of bridges and culverts throughout the state along with key attributes such as structure ID, National Bridge Inspection Standards (NBIS) classification, sufficiency rating, substructure rating, superstructure rating, deck rating, vertical/horizontal clearance, etc. The file contains latitude/longitude of each structure, so the bridges and culverts were geocoded and attached to each study corridor. Bridge conditions were determined by NBIS classification (poor, fair, good) and are included in an interactive layer of the GIS Online Tool. **Figure 7.9** shows all bridges associated with visioning corridors and their NBIS classifications.

All at-grade railroad crossing along the visioning corridors were identified, as they are usually the spots with more mobility and safety issues. Structures crossing over the corridors were also summarized, including structure ID, facility carried, under clearance, and horizontal clearance. The structure's under clearance could impact vehicles passing through, especially heavy trucks, while the horizontal clearance impacts the maximum number of lanes carried by the study corridor and could be a constraint if congestion exists and roadway widening is needed. All these features are included in interactive layers of the GIS Online Tool.

Figure 7.8 – Pavement Conditions

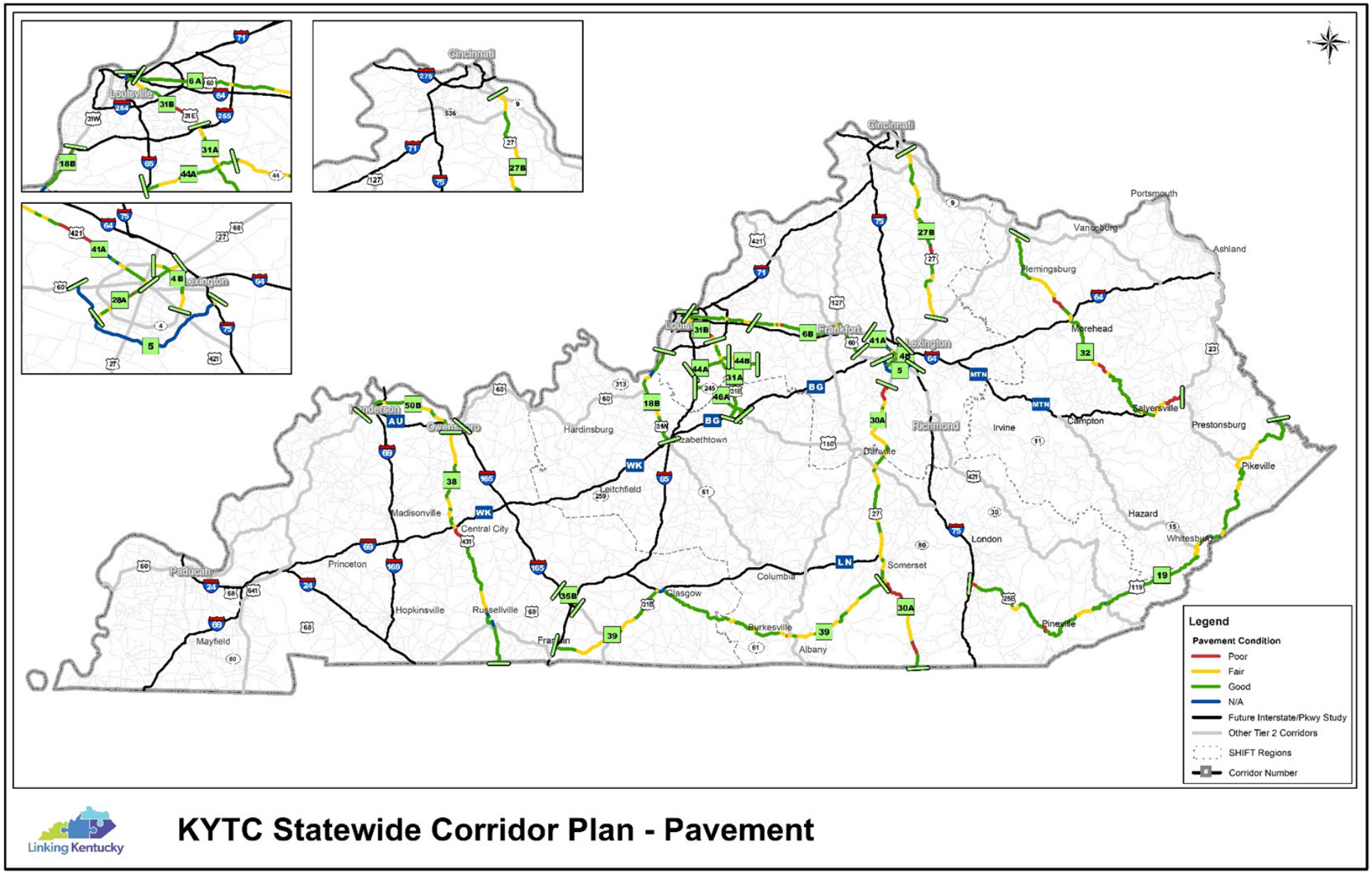
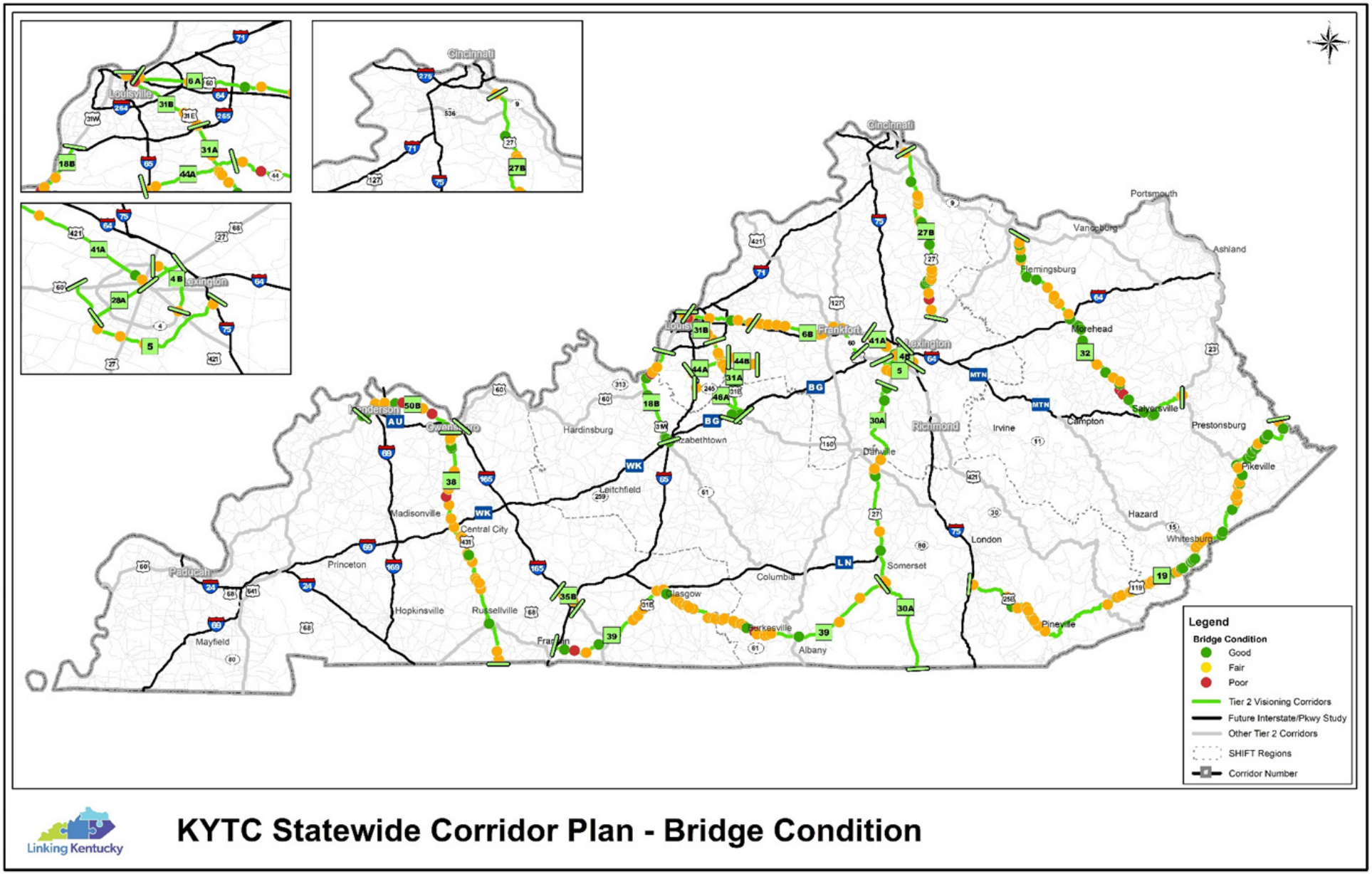


Figure 7.9 – Bridge Conditions



### 7.3.4 Environmental Concerns

The Project Team utilized readily available GIS environmental data sources to identify potential red flag environmental issues for each visioning corridor. The purpose of this analysis was to assemble preliminary environmental information at high planning level to facilitate more detailed and specific corridor studies in the future to meet KYTC's needs. This work was preliminary and did not constitute a red flag survey.

**Table 7.6** summarizes the red flag resources that were examined during the visioning analysis, based on consensus within the Project Team. The table also includes 15 major red flag items that the Project Team identified to review during the preceding Tier 2 corridor scoping efforts. The 15 major items were identified because they often have bigger consequences which could potentially add significant time and cost to a project. It was beneficial to review potential environmental impacts from these major items early in the development of improvement concepts.

**Table 7.6 – Red Flag Resources Analyzed in Corridor Vision**

| CATEGORY | RED FLAG RESOURCES | MAJOR ITEMS INCLUDED IN TIER 2 SCOPING REPORT |
|---|---|---|
| **Water Resources** | Floodplain | |
| | Streams | |
| | NWI Wetland Features | |
| | Water Wells | |
| | Groundwater Wells | |
| | Wellhead Protection Areas | |
| | Springs (KGS) | |
| | Groundwater Springs | |
| | 303(d) Listed Streams | |
| | 305(b) Listed Streams | |
| | Special Waters[1] | ✓ |
| **Threatened & Endangered Species Habitat** | Forested Areas | ✓ |
| | NLEB Habitat Priority | ✓ |
| | IB Habitat Priority Area | ✓ |
| | Quarries | |
| | Karst (Sinkholes) | |
| | Permitted Mine Boundaries | |
| | Mined-Out Areas | |

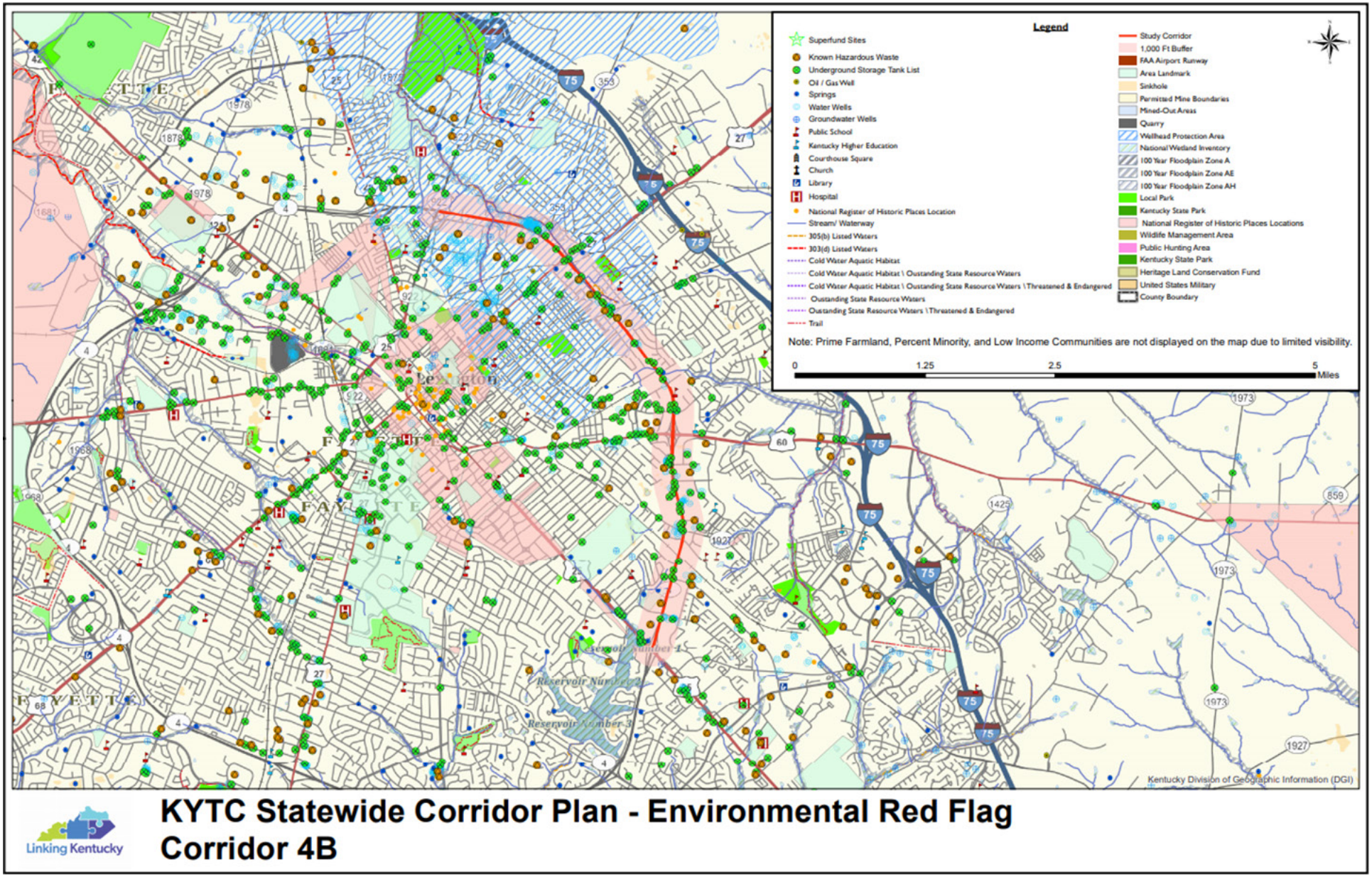
| CATEGORY | RED FLAG RESOURCES | MAJOR ITEMS INCLUDED IN TIER 2 SCOPING REPORT |
|---|---|---|
| Land Use/Community Resources | Libraries | |
| | Schools | |
| | Kentucky Higher Education | |
| | Hospitals | |
| | FAA Airport Runways | ✓ |
| | Local Parks | ✓ |
| | Public Hunting Areas | ✓ |
| | Wildlife Management Areas | ✓ |
| | State/National Parks | ✓ |
| | Kentucky Heritage Land Conservation Fund | ✓ |
| | Area Landmarks | ✓ |
| | Point Landmarks | ✓ |
| | US Military Installations | |
| | National Register of Historic Places Location (Point) | ✓ |
| | National Register of Historic Places Location (Polygon)[2] | ✓ |
| Socioeconomic Data | Percent Minority | |
| | Low Income Community | |
| Hazardous Materials | Oil and Gas Wells (KGS) | |
| | Kentucky UST List | |
| | Kentucky Hazardous Waste List | |
| | Superfunds | ✓ |

[1] *Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild/Scenic Rivers.*

[2] *The NRHP polygon files were downloaded from the National Park Service's online GIS database. This data has potential data accuracy issue.*

For each visioning corridor, a brief narrative was provided to summarize the findings of potential environmental constraints based on the GIS environmental data. Maps were also created to illustrate red flag resources within a 1,000-foot buffer of the corridor. It is noted that some red flag resources may not be included in the map to avoid an overwhelmed content, however, they are generally described in the narrative summary. **Figure 7.10** shows an example map of environmental red flag resources.

**Figure 7.10 – Example Red Flag Environmental Analysis**



## 7.4 OTHER MODES

It is KYTC's goal to include all appropriate modes of transportation within a fully-integrated system, according to KYTC's current 2035 LRSTP. To ensure that walkability and multi-modal access would be considered for incorporation into the long-term corridor vision, the Project Team assessed all existing bicycle, pedestrian, and transit facilities within and immediately adjacent to visioning corridors. The assessment was generally broad, focusing almost exclusively on the absence or presence of a facility dedicated to the corridor by mode. If there were facilities present, the assessment also noted whether the existing facility connected to the local and regional networks.

### 7.4.1 Transit

To begin the assessment of transit facilities, the Project Team requested baseline GIS files for transit routes and stops from the nine Metropolitan Planning Organizations (MPOs) and 15 Area Development Districts (ADDs). The data generally included shapefiles for transit routes and stops. Most MPOs and ADDs provided geospatial data for their respective boundaries; however, as generally expected with a data collection process of this scale, not all information was available, and some gaps within data still existed.

A review of existing transit facilities was then conducted within the visioning corridors. This generally involved a cross-comparison of the available GIS data with Google Earth to verify the availability of facilities within and along the corridor, as well as to understand the availability and connectivity with other adjacent facilities which may connect to the broader regional network. The following logic was generally applied to assess the level of transit connectivity (low, medium, and high) for each visioning corridor:

- **Low Connectivity –** Corridor has no connections to either Amtrak or any regional/local transit services or is not within the boundary of a transit service provider.
- **Medium Connectivity –** Corridor has connection to either Amtrak or regional/local transit services, but generally not both.
- **High Connectivity –** Corridor has connections to both Amtrak and regional/local transit service and is generally within the boundary of a transit service provider.

A transit sketch GIS planning tool was also applied to visualize transit demands and supplies, assess transit connectivity, and identify potential gaps in the proximity of each visioning corridor. The process of transit demand estimation is described below:

- **Production:** A transit propensity index was estimated at census block level by considering race, gender, income, and auto ownership. The factors and weights are based on Federal Transit Administration (FTA)'s *Transit Cooperative Research Program (TCRP) Report 27 – Building Transit Ridership and Report 28 – Transit Markets of the Future.*

  Transit Propensity Index = 10*WDen + 18*MinDen + 51*Veh0 + 10*Age65 + 11*PvDen

  Where:

  WDen = number of women per acre;

  MinDen = minority population per acre;

  Veh0 = zero vehicle households per acre;

  Age65 = number of persons 65 and older per acre;

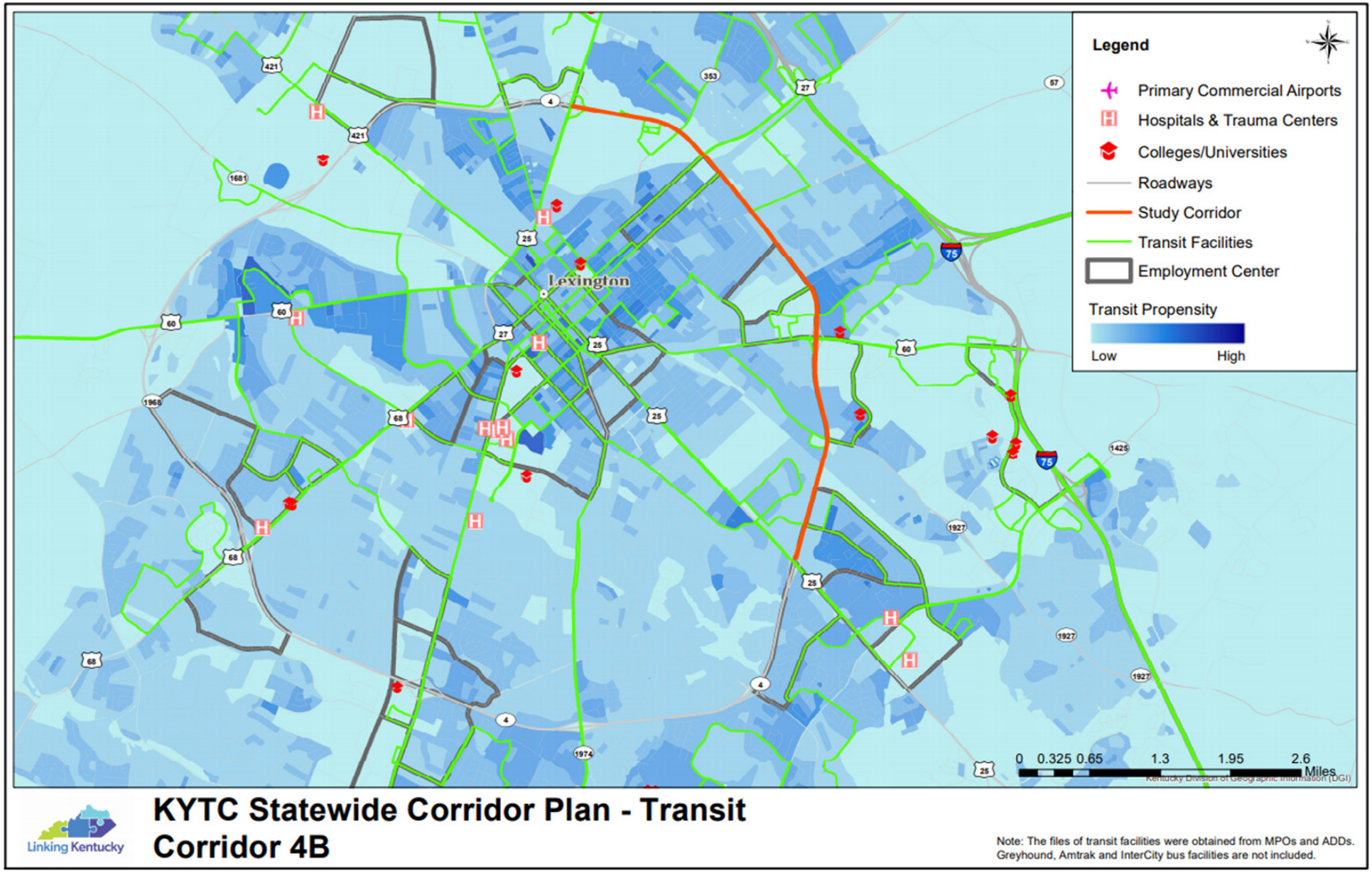
  PvDen – number of households with income below $20K per acre.

  In general, a higher transit propensity index indicates a higher likelihood of using transit for trip making.

- **Attractions:** Based on consensus within the Project Team, the following major activity centers were identified and overlaid in the map, because they are usually major destinations of transit trips.
  - Employment Center Zones. These were determined if total employment > 400, and density > 10 jobs per acre (for urban and second city) or density > 5 jobs per acre (for suburban, town, and rural), based on v8_KYSTMv18 2015 zonal data.
  - Hospitals and Trauma Centers. These are the same special generators used in Tier 1 and Tier 2 analysis.
  - College and Universities (main campus). These are the same special generators used in Tier 1 and Tier 2 analysis.
  - Primary Commercial Airports. These are the same modal hubs used in Tier 1 analysis.

For each visioning corridor, a GIS map was created to overlay the transit demand markets (production and attractions) with transit supplies (existing transit facilities). The GIS tool can be used to effectively assess the connectivity and accessibility of the transit service in the region and identify potential gaps, therefore it usually fits the needs of a high-level planning study like SWCP. **Figure 7.11** shows an example corridor with mapped transit propensity, transit activity centers, and existing transit facilities.

Figure 7.11 – Example of Transit Service and Propensity



### 7.4.2 Bike and Pedestrian

KYTC provided GIS files for the statewide bike and pedestrian facilities. The data generally included shapefiles for sidewalks, crosswalks, bike lanes, shared bike lanes, separate bike path, multi-use path, etc. This dataset does not include detailed local bike/pedestrian infrastructure.

The review of existing bike/pedestrian facilities was similar to the process for transit analysis. The following logic was generally applied to assess the level of connectivity (low, medium, and high) of bike/pedestrian facilities along each visioning corridor:

- **Low Connectivity –** Corridor has few existing facilities and/or few connections to existing facilities.
- **Medium Connectivity –** Corridor has some existing facilities and/or several connections with existing facilities.
- **High Connectivity –** Corridor has many existing facilities and/or good connections to existing facilities.

A 5-Dimension (5D) livability analysis tool was used to facilitate the smart-growth oriented planning activity and identifies locations that are suitable for walking and biking modes. Previous research efforts indicate a "5D" concept is relevant to reduced reliance on auto travel. The v8_KYSTMv18 was a primary data source for this analysis because it has most of the required data (e.g., population, employment, roadway network, facility type, posted speed limit, etc.). The five key factors were considered in the 5D concept.

- **Density.** The density variables are used to measure the intensity of activity within a certain geographic space. Areas with higher levels of density and intensity are likely to make vehicular travel more expensive (time and parking cost) and more conducive to transit or non-motorized travel. Typical variables used to measure this quantity of an area are:
  - Population density ($d_1$)
  - Employment density ($d_2$)
- **Diversity.** The diversity variable measures the degree to which land uses are segregated. Urban design elements which promote the mixing of residential and employment are known to contribute to shorter and potentially fewer vehicular trips. The diversity variable (d3) is expressed as: $d_3 = 1-|(d_1-d_2)/(d_1+d_2)|$.
- **Design.** The design variables describe the degree to which the urban network is interconnected, grid-like, and more conducive or inviting to walking/biking. The 5D tool incorporates three design variables:
  - Walkability ($d_4$). It is defined as the percentage of streets within a zone that are walkable. Walkable links are typically a selection of low functional class, low speed, low volume roads. For the SWCP visioning analysis, walkable links include urban streets (HCMType = 5) with posted speed limit less than 35 mph.
  - Blockface ($d_5$). It is a geometric measure of the average blockface size within a zone. Average blockface is a good measure of how grid-like the street network is. A tight urban street grid pattern typically yields low blockface value, while a more open and less connected street pattern has much higher blockface values. The more connected the network, the more efficient walk or bike trips could be. This same arrangement has the opposite effect on vehicular travel by adding intersection delays, so it serves as a deterrent to auto travel. For a given zone, the blockface variable is expressed as

    $d_5$=1-(Roadway Centerline Mileage)/(Number of Links).
  - Street Density (d6). This is another geometric measure that is simply the centerline miles of streets within a given zone divided by the land area of the zone in square miles. The street density variable complements the other two design variables.
- **Destination.** The destination variables describe the level of regional vibrancy. Mixed land used patterns are frequently observed in prosperous areas where many trip purposes (e.g., work, shopping, or entertainment)

can usually be accomplished without auto trips. In the SWCP, destinations are measured using two variables:

- Number of service jobs within a 10-minute walk (about 1/6 mile) – $d_7$
- Number of retail jobs within a 10-minute walk (about 1/6 mile) – $d_8$

- **Distance to Transit.** The distance to transit variable ($d_9$) describes how easy to access transit service by walking from a zone. In the SWCP visioning analysis, a dummy variable of walk access to transit (0 or 1) was used if a zone is within a 0.5-mile buffer of existing transit routes. A 0.5-mile is the walk shed recommended by the *FTA Manual on Pedestrian and Bicycle Connections to Transit (Report No. 0111)*. While more accurate analysis of transit access can usually be achieved based on transit stops, the transit routes were used in this study because transit stop GIS files are not available in some areas throughout the state. These data should be supplemented in the future when missing transit stop data becomes available.

A comprehensive 5D livability score can be derived for a given zone based on the 5D variables described above. In the SWCP, the 5D livability score was calculated by the equation below:

$$\text{5D Livability Score} = (d_1 + d_2) + 0.3*d_3 + (d_4 + 0.3*d_5 + d_6) + (d_7 + d_8) + 0.5*d_9$$

Where,

$d_1$ = population density;

$d_2$ = employment density;

$d_3$ = diversity variable;

$d_4$ = walkability;

$d_5$ = average blockface;

$d_6$ = street density;

$d_7$ = number of service jobs within 10-minute walking distance;

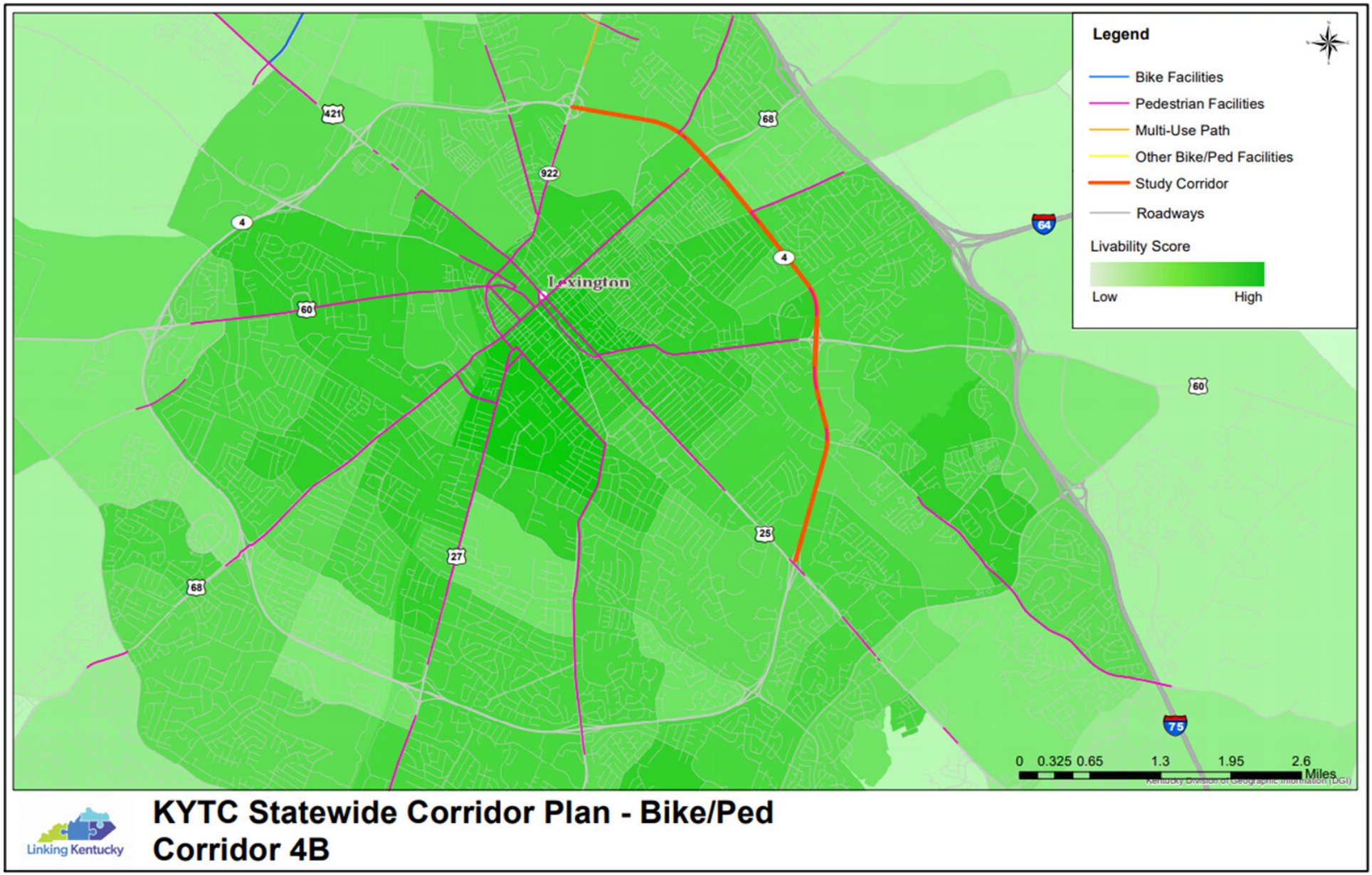
$d_8$ = number of retail jobs within 10-minute walking distance;

$d_9$ = walk access to transit;

The 5D livability scores were then scaled for all v8_KYSTMv18 zones using the maximum absolute value. The more likely a zone follows principles of smart growth that advocate walking and biking, the higher its final score. Note that all 5D variables have a weight of 1, except for $d_3$ (diversity variable), $d_5$ (average blockface) and $d_9$ (walk access to transit) with adjusted lower weights. This is because v8_KYSTMv18 has a coarse zone structure and might not accurately represent the details of zonal diversity and blockfaces, especially in urban areas. The 0.5-mile buffer around transit routes is not as accurate a measure of access to transit service as a buffer around transit stops. Therefore, lower weights were used for these variables to minimize the possibility of getting misleading results.

This 5D livability analysis approach can be used to facilitate the scenario-based planning process to evaluate various strategies of smart growth and livability. For example, area size, population, and employment covered by smart growth zones in a region using an established score threshold can be compared between various scenarios in terms of land use development, roadway network design, availability of bike and pedestrian facilities, transit service, etc. As the 5D concept accounts for both production and attraction characteristics of non-auto trips, the scaled 5D livability score can also be overlayed with existing bike and pedestrian facilities to help identify potential gaps. **Figure 7.12** shows an example corridor with mapped transit propensity, transit activity centers, and existing transit facilities.

Figure 7.12 – Example of Bike & Pedestrian Facilities and Scaled 5D Livability Score



## 7.5 IMPROVEMENT CONCEPTS

### 7.5.1 Potential Improvements

The potential improvements rely heavily on the Tier 2 corridor scoping efforts, with slight adjustments made by the Project Team during the corridor visioning phase. The Project Team developed a list of general improvement categories and strategies to meet the needs of the SWCP at a high planning level (see **Table 7.7**). The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of the project development process.

**Table 7.7 – Improvement Categories and Strategies**

| IMPROVEMENT CATEGORIES | IMPROVEMENTS STRATEGIES |
|---|---|
| **New Roadways** | New 4 Lane Expressway |
| | New Super 2 Highway |
| | New 2 Lane Highway |
| **Major Widening (Divided Road)** | 4 Lane to 6 Lane - Rural |
| | 4 Lane to 6 Lane - Urban |
| | 2 Lane to 4 Lane - Rural |
| | 2 Lane to 4 Lane - Urban |
| **Minor Widening (Undivided Road)** | 2 Lane to 4 Lane - Rural |
| | 2 Lane to 4 Lane - Urban |
| **Arterial Upgrade to Parkway/ Expressway** | Upgrade with Pavement Reconstruction |
| | Upgrade with Pavement Rehab |
| **Grade Separation/Interchange** | New Service Interchange - Rural |
| | New Service Interchange - Urban |
| | Interchange Modification - Rural |
| | Interchange Modification - Urban |
| | Grade Separation Only |
| **Major Intersection Improvement** | >= 4 lanes in both directions |
| | < 4 lanes in both directions |
| **Major Structure** | Bridge Replacement |
| | Bridge Rehab |

#### 7.5.1.1 Bottleneck Improvements

Based on discussions within the Project Team, it made more sense to apply improvements on a location specific basis, instead of the entire length of the corridor. The improvement concepts were recommended for bottlenecks. They are expected to maintain an overall acceptable traffic condition through 2045 (V/C < 0.85 in urban areas and V/C < 0.7 in rural areas) and address safety issues at bottlenecks. Details of proposed improvement concepts, such as bottleneck location and terminus, improvement strategies, improved typical section and reason for improvement, were provided and included in an interactive layer of the GIS Online Tool. It is noted that a non-project specific approach was used in in developing improvement concepts. For example, if more than one improvement were proposed for a bottleneck by considering issues, needs and constraints in vicinity of the

location, they were all included in corridor visions without being prioritized. This approach allows for flexibility in strategies and opportunities over time that may better fit continuing changes in transportation demand, technology, and conditions. The proposed improvement concepts were coordinated with KYTC's on-going projects and were reviewed and approved by KYTC Division of Planning and Highway Districts. The GIS Online Tool also includes an interactive layer for the KYTC 2020 Highway Plan along visioning corridors as a reference.

### 7.5.1.2 Interchange and Intersection Improvements

Potential new interchanges and/or interchange modifications were recommended based on thorough review of existing and future traffic volumes, V/C ratios, LOTTR data, crash data, adjacent environmental constraints, available right-of-way (ROW), as well as discussions within the Project Team. A similar approach was used to develop spot improvement strategies at major intersections (i.e., crossroads have the functional class of collector or above) along the corridor. Common intersection improvements include adding turn lanes, channelization, innovative design and coordinated signal time, etc. More detailed engineering capacity analysis will be needed in future specific studies to meet KYTC's needs. Potential new interchanges, interchange modifications, and proposed major intersection modifications were summarized and included in separate interactive layers of the GIS Online Tool.

### 7.5.1.3 Bridge Improvements

Bridge improvement recommendations were based on ratings of substructure, superstructure and deck using a methodology developed by the Project Team, as shown in **Table 7.8**.

**Table 7.8 – Methodology for Structure Replacement/Rehab Recommendation**

| STRUCTURES | SUBSTRUCTURE RATING | SUPERSTRUCTURE RATING | DECK RATING | CULVERT RATING | RECOMMENDATIONS |
|---|---|---|---|---|---|
| **Bridges** | <=4 | Any | Any | / | Replacement |
| | =5 | Any | Any | / | Rehabilitation |
| | >=6 | <=5 | Any | / | Rehabilitation |
| | >=6 | Any | <=5 | / | Rehabilitation |
| | >=6 | >=6 | >=6 | / | None[1] |
| **Culverts** | / | / | / | <=4 | Replacement |
| | / | / | / | 5 or 6 | Rehabilitation |
| | / | / | / | >=7 | None |

[1] *If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.*

It is worthy to note that:

- If the bridge is in good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.
- If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.
- Bridges for replacement and rehabilitation/widening along the visioning corridors were identified and included in separate interactive layers of the GIS Online Tool.

#### 7.5.1.4 Phasing

According to proposed improvement concepts, preliminary phasing plans were recommended for each visioning corridor at a high planning level, by generally following the guidelines described below:

- Only spot improvements are proposed.
  a) If there are only a few locations for improvement (e.g., no more than six intersections), it is recommended to improve them at the same time. This is because the study corridors are long, so dividing them into individual phases for individual spot improvements seemed to be unrealistically detailed.
  b) If there are many intersections (e.g., more than six), and if the improvements are significant or in a complex urban setting, it would make sense to phase them geographically. However, if these are not large intersection improvements, i.e., signalizing intersections or adding right run lanes, more than six intersections could be grouped in the same phase.
- If all intersections proposed for improvements are located within the widening section, the intersection improvements will be constructed as part of and at the same time as the widening project. However, there might be a case where the widening is too expensive and not high enough priority such that it would not be built in a foreseeable future, then it would be recommended to improve the intersection in Phase 1 and widen the roadway in a future phase.
- Interchange modifications and spot improvements (multiple intersections) are proposed. If an urban interchange modification is required, a separate phase would be recommended because of the longer time required to develop the project. Rural interchange modifications have a similar timeline as major intersection improvements (ROW needed), so it might be appropriate to propose one phase for both if the interchanges and intersections are close together; otherwise, they could be phased separately.

### 7.5.2 Safety

In the SWCP, the safety improvements were recommended at locations with LOSS = IV. To effectively make safety improvement recommendations, the locations with a LOSS value of IV were grouped into two categories:

- **Category 1.** These are clusters in areas where the SWCP already recommends corridor improvements for mobility reasons. For this category, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements.
- **Category 2.** These are major clusters not located in areas previously recommended for corridor mobility improvements. This category is intended to identify corridor sections that may warrant improvement solely for safety, even though improvements might not be needed for mobility. These sections were grouped as needed if they are close to each other.

For categories 1 and 2, the clusters were further broken down by urban and rural designation (based on v8_KYSTMv18 data) because urban and rural roadways tend to have unique typical crash causes and countermeasures. The corridor visions summarize locations, possible causes, and recommendations for locations with safety concerns identified in categories 1 and 2.

There might be isolated links with LOSS value of IV which are not included in corridor visions. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations were not addressed in this planning study.

### 7.5.3 ITS & CAV Opportunities

Intelligent Transportation Systems (ITS) and Connected and Autonomous Vehicles (CAV) are becoming a more common and important component of the infrastructure system, as ITS devices and CAVs can improve safety, mobility, and maintenance of the current roadway system. Each of the visioning corridors was evaluated for existing ITS devices and access to fiber, as well as the potential for ITS devices and CAV considerations. The *Kentucky Wired* fiber network was reviewed to assess the coverage of and/or connectivity with the SWCP corridors for the potential application of ITS or CAV technology.

In the SWCP, ITS was considered a solution in isolation to address an identified safety issue. All visioning corridors have opportunities to deploy the ITS technology, including arterial dynamic message signs (DMS), curve warning signs, intersection warning signs, and speed warnings, etc. CAV technology was considered feasible if there is significant transit service and coordinated traffic signals along the corridors. CAV was not recommended in rural areas, where there is no significant transit service, or where the corridor does not have a coordinated traffic signal system.

### 7.5.4 Cost

Preliminary costs of the proposed improvement concepts were estimated (in 2020 dollars) through the Tier 2 analysis. See the detailed methodology in **Section 6.4.2** and the complete cost estimation sheets in **Appendix H**.

### 7.5.5 Economic Feasibility

The economic feasibility analysis incorporates the following two components based on data generated in the Tier 2 analysis:

- **Project Delivery Timeline.** It is an indicator of developing the improvement concepts to market delivery. The delivery timeline was categorized by 5-10 years, 10-15 years, and > 15 years, based on the complexity of project. See detailed methodology in **Section 6.4.1**.
- **Benefit/Cost (B/C) Ratio.** It is an indicator of the effectiveness of improvement concepts to improve the transportation efficiency and promote Kentucky's economy. The B/C ratio was categorized by low (B/C < 2), medium (2< B/C <5), and high (B/C > 5). See detailed methodology in **Section 6.4.3**.

## 7.6 STAKEHOLDER INPUTS

The Project Team used an innovative map-based online survey tool to collect location-specific comments from approximately 1,400 stakeholders (including KYTC Central Office, Districts, MPOs, ADDs, elected local officials, etc.) regarding corridor issues, needs and improvements during the development of corridor visions. The on-line survey was powered by VeraVoice© which uses the emerging crowdsource outreach technology. The survey has the following attractive features:

- Allow users to leave a "pin" to identify a specific location where a concern/issue might exist.
- Collect comments (by customized categories), responses, and votes.
- Allow others to see and support comments submitted.
- Provide a mobile-friendly application.
- Use Google map as background for familiarity.
- Save comment's coordinates for other GIS map applications.
- Adopt a two-level managing structure to allow the Project Team's review/approval prior to posting comments.

The survey was open for stakeholders from January 19, 2021 to March 15, 2021. The survey successfully collected a total of 204 comments throughout the state, which cover all 12 Highway Districts and include 91 comments for visioning corridors, 75 comments for other Tier 2 corridors, and 38 comments for non-SWCP corridors. **Figure 7.13** shows all collected comments. The collected comments help identify important concerns and issues on study corridors. **Appendix I** shows details of the collected comments.

## 7.7 SCOPING REPORT

A scoping report (see **Appendix G**) was developed for each Tier 2 corridor at the planning level as part of the Tier 2 analysis effort. The major goal of the Tier 2 corridor scoping was to develop practical corridor improvement concepts based a preliminary review of each corridor's existing conditions, issues, and needs. The contents of the scoping report generally mirror the aspects of corridor visions but are less detailed in some topics than corridor visions. The Project Team decided to include the scoping reports in the corridor visions and in the GIS Online Tool. The GIS Online Tool also displays other Tier 2 corridors not selected for visioning and provides a link to the scoping reports.

Figure 7.13 – Stakeholder Comments Collected by VeraVoice©