

KENTUCKY TRANSPORTATION CABINET (KYTC)

KY 44 TRAFFIC FORECAST REPORT

KY 44 CORRIDOR STUDY

SEPTEMBER 12, 2022

[CLICK HERE TO ENTER TEXT.](#)





KY 44 TRAFFIC FORECAST REPORT

KY 44 CORRIDOR STUDY

KYTC

TYPE OF DOCUMENT (DRAFT)
CONFIDENTIAL

PROJECT NO.: 9-80101.00
DATE: SEPTEMBER 2022

WSP
1792 ALYSHEBA WAY, STE 230
LEXINGTON, KY 40509

PHONE: +1 859-272-5400
FAX: +1 859-272-6556
WSP.COM



TABLE OF CONTENTS

1	INTRODUCTION AND STUDY AREA.....	1
1.1	Traffic Forecast Type.....	1
2	BASE TRAFFIC DATA.....	2
2.1	Base Corridor Volume	3
3	TRAFFIC GROWTH RATES.....	7
3.1	Historical Traffic Count Trends.....	7
3.2	Travel Demand Model Results	8
3.3	Study Area Pemits/Developments and previous Studies, forecasts, and Projects.....	9
3.4	Population Growth	13
3.5	Selected Growth Rates	13
3.6	Proposed Growth Rates.....	19
4	2045 TRAFFIC VOLUMES	20
4.1	Design Year	20
4.2	2045 Forecast Volume.....	20

TABLES

TABLE 1: STUDY AREA COUNT STATIONS	2
TABLE 2: 2022 BASE CORRIDOR VOLUME	3
TABLE 3: INTERSECTION SCREENING RESULTS	5
TABLE 4: STUDY AREA INTERSECTION COUNT SOURCES	5
TABLE 5: KIPDA MODEL RESULTS AND STUDY COMPARISON	9
TABLE 6: PREVIOUS STUDIES ALONG NETWORK STUDY AREA	10
TABLE 7: PREVIOUS PROJECTS ALONG STUDY AREA	11
TABLE 8: STUDY AREA GROWTH RATE SUMMARY	12
TABLE 9: KENTUCKY AND BULLITT COUNTY POPULATION DATA	13
TABLE 10: FORECAST GROWTH RATES	19
TABLE 11: 2045 NO-BUILD SEGMENT FORECAST	21
TABLE 12: 2045 BUILD SEGMENT FORECAST	21

FIGURES

FIGURE 1: STUDY AREA BASE MAP	1
FIGURE 2: STUDY AREA SECTION BREAKS	3
FIGURE 3: KY 44 BASE SEGMENT AND INTERSECTION VOLUME	6
FIGURE 4: HISTORICAL GROWTH BY COUNT STATION	7
FIGURE 5: KY 44 PAST AND CURRENT PROJECTS MAP	11
FIGURE 6: SECTION 1 SELECTED GROWTH RATE VS PLANNING SOURCES	14
FIGURE 7: SECTION 2 SELECTED GROWTH RATE VS PLANNING SOURCES	16
FIGURE 8: SECTION 3 SELECTED GROWTH RATE VS PLANNING SOURCES	18
FIGURE 9: KY 44 2045 NO-BUILD SEGMENT AND INTERSECTION FORECAST	22
FIGURE 10: 2045 BUILD SEGMENT AND INTERSECTION FORECAST	23

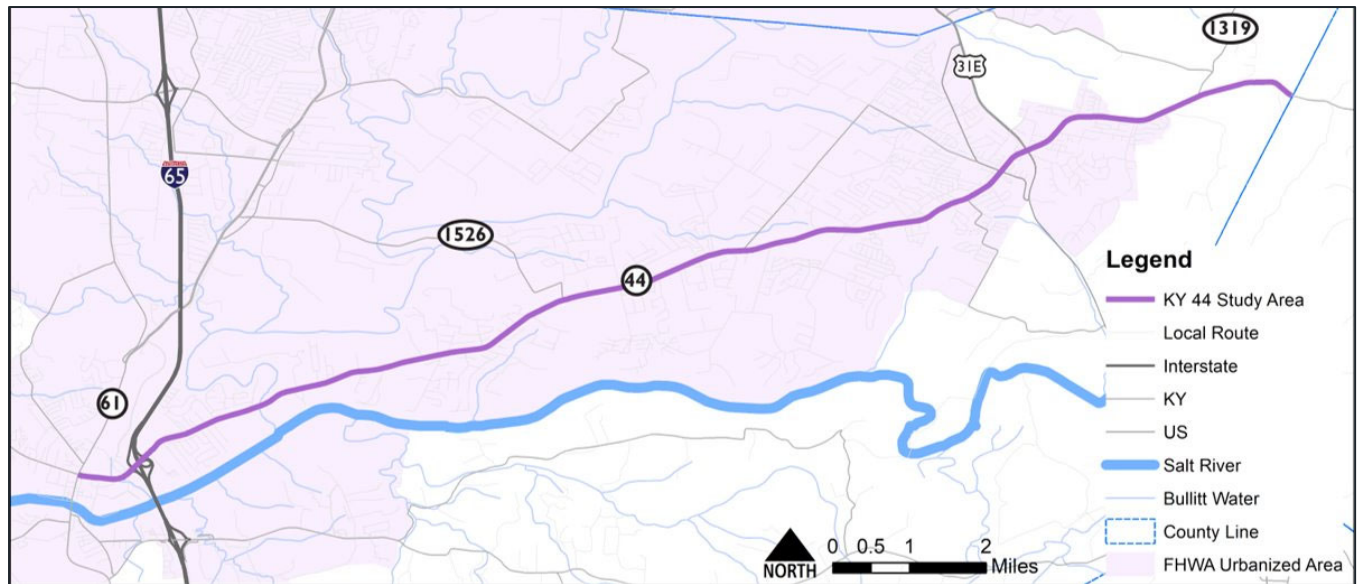
APPENDICES

APPENDIX A	COUNT STATION DATA
APPENDIX B	PREVIOUS STUDY INTERSECTION TURNING MOVEMENT COUNTS
APPENDIX C	KIPDA MODEL NETWORK ASSUMPTIONS

1 INTRODUCTION AND STUDY AREA

The Kentucky Transportation Cabinet (KYTC) initiated a study to evaluate KY 44 between KY 61 (milepost 12.263) and the Spencer County line (milepost 25.440), a distance of approximately 13.2 miles, shown in **Figure 1**. The objective of this study is to review existing projects, validate design assumptions, investigate new ways to optimize performance through TSMO and PBFS concepts, and develop a project priority programming scheme for the corridor. This report summarized the methodology used to develop the KY 44 Programming Study traffic forecasts.

Figure 1: Study Area Base Map



1.1 TRAFFIC FORECAST TYPE

The traffic forecasts developed for the KY 44 corridor addressed total vehicular volume as well as truck volumes for both 2022 and 2045. The forecast results include:

- 2022 and 2045 AADT and DHV volumes
- 2022 and 2045 Truck AADT and DHV volumes

2 BASE TRAFFIC DATA

KYTC provided historical count data for each count station, as well as 48-hour traffic count data for the year 2022. **Table 1** highlights the study area traffic count station details. Traffic data collected includes previous permits / developments, studies, traffic forecasts, and projects from the study area. Peak period intersection turning movement counts were obtained from previous studies where available. The project team utilized turning movement volumes estimated from Streetlight Data for intersections where counts were not already available.

Table 1: Study Area Count Stations

Count Station	Segment	Beginning Description	Ending Description	Begin MP	End MP
A03	A	KY 61	I-65	12.215	12.94
A02	B	I-65	Melwood Drive	12.94	13.592
A43	C	Melwood Drive	KY 1526	13.592	17.915
35	D	KY 1526	KY 2706	17.915	19.895
C34	E	KY 2706	KY 2674	19.895	22.354
C28	F	KY 2674	US 31 EX	22.354	22.865
C03	G	US 31 EX	US 31 EX	22.865	23.255
002	H	US 31 EX	KY 1319	23.255	25.276
767	I	KY 1319	Spencer Co. Line	25.276	26.286

The study area extends approximately 13 miles; therefore, study area characteristics change throughout the corridor, and potential for future development changes considerably by location. Due to the nature of the study area, the project team determined that the most accurate approach to the forecast would be to determine a growth rate for three separate sections of the corridor:

1. KY 61 to I-65
2. I-65 to US 31E
3. US 31E to Spencer County Line

The growth rates apply to the corresponding count station segments within each section. **Figure 2** highlights the study area sections to be used for the forecast.

Figure 2: Study Area Section Breaks



2.1 BASE CORRIDOR VOLUME

2.1.1 SEGMENT VOLUMES

Base year, 2022 counts were used as the base AADT for the segment evaluation. The project team then calculated the AM and PM K-Factors of each segment to gain peak hour DHV values. **Table 2** shows the base year corridor volume. **Appendix A** contains the counts received from KYTC.

Table 2: 2022 Base Corridor Volume

Count Station	SEGMENT	BEGINNING DESCRIPTION	ENDING DESCRIPTION	2022 Base Volume	2022 Truck % ADT	2022 Trucks (Daily)	2022 AM K Factor	2022 AM DHV	2022 AM TDHV	2022 PM K Factor	2022 PM DHV	2022 PM TDHV
A03	A	KY 61	I-65	13,700	6.8%	930	6.8%	930	65	7.7%	1,055	70
A02	B	I-65	Melwood Drive	21,300	6.8%	1,450	7.6%	1,620	110	9.0%	1,915	130
A43	C	Melwood Drive	KY 1526	11,400	6.8%	775	7.6%	865	60	8.4%	960	65
035	D	KY 1526	KY 2706	17,700	6.8%	1,205	8.1%	1,435	100	9.2%	1,630	110
C34	E	KY 2706	KY 2674	18,400	6.8%	1,250	6.2%	1,140	80	8.6%	1,580	110
C28	F	KY 2674	US 31EX	23,700	6.8%	1,610	6.1%	1,445	100	8.1%	1,920	130
C03	G	US 31EX	US 31E	20,200	6.8%	1,375	6.5%	1,315	90	7.2%	1,455	100
002	H	US 31E	KY 1319	11,800	9.4%	1,110	8.4%	990	95	8.4%	990	95
767	I	KY 1319	Spencer Co. Line	4,400	9.4%	415	7.8%	345	30	9.9%	435	40

2.1.2 INTERSECTION VOLUMES

The project team chose 12 study area intersections to evaluate based on safety issues, potential development, and operational impact to the corridor. Intersection crash rates were evaluated and screened with the Crash Data Access Tool (CDAT). The combination of the intersection crash rate and Level of Service of Safety (LOSS) were considered when determining which intersections would be studied, as well as whether the intersection is likely to impact corridor operations, and if it has been studied as part of a recent project or study. **Table 3** shows the intersections considered and highlights the those selected for evaluation. The project team chose not to include the below intersections with high crash rates for the following reasons:

- Highland Court was left out of the study due to low volumes and the insignificant nature of the intersection on network operations and connectivity.
- KY 61 was recently reconstructed when KY 61 was widened from KY 1526 to KY 44.
- Carpenter St had very few crashes occurring at the intersection, rather, they typically occurred near the railroad tracks as rear end crashes or at access point to commercial development.
- Adam Shepherd Parkway is part of an ongoing Shepherdsville Project and therefore will have recommendations.

Intersections that were selected to be a part of the study but do not have high crash rates were chosen because of their significance to corridor operations.

Intersection turning movement counts were collected from previous forecasts and studies where available. Seven intersection counts (I-65 SB Ramps, I-65 NB Ramps, Lakeview Drive, KY 1526, Lloyd Lane, Fisher Lane, and KY 1319) were pulled from these sources, and data included base year traffic ranging from 2007-2021. Two of the selected intersections (Oakbrooke Drive and US 31E) had peak hour turning movement counts obtained as part of the 5-347.5 traffic forecast, with base year volume of 2022. The remaining three intersections (Bethel Church Road, KY 2706, and US 31EX) with no existing or past studied counts; these were collected from Streetlight with base year 2021. Sources of the listed counts are shown in **Table 4** and the figures from those studies are collected in **Appendix B**.

All non-2022 base year turning movement counts were forecasted to the year 2022 using the study area average historical growth rate (1.21%). Volumes were not adjusted to balance between intersection exits/entrances, however general volume trends between intersections, particularly those that are close to one another, were examined, and turning movement volumes were adjusted to avoid large fluctuations in volume where it would not make sense. In general, more emphasis was placed on using actual counts rather than Streetlight data, however, the AM and PM DHVs were also used as a data point to determine where turning movement counts may have been high or low. As such, volumes were adjusted to be in line with the AM and PM DHVs, as well as the most recent turning movement counts. Tables in **Appendix B** show the progression from raw counts to 2022 rounded volumes, to the adjustments made to smooth large volume fluctuations, to the 2045 No-Build and Build intersection forecasts.

Figure 3 summarizes base (2022) intersection and corridor volume used for this study.

Table 3: Intersection Screening Results

NewID	Intersection Name	Intersection Crash Rate ^{1, 2}		Intersection LOSS	Recommend for KY 44 Study
1	KY 44 at KY 61	2.64	Top 5%	*	No
2	KY 44 at Carpenter Street	1.74	Near Top 5%	LOSS-KAB 4	No
3	KY 44 at Adam Shepherd Parkway	4.44	Int Crash Rate > 4 Very High, Top 0.3%	*	No
4	KY 44 at I-65 SB Ramps	5.39	Int Crash Rate > 4 Very High, Top 0.3%	LOSS-KAB 4	Yes
5	KY 44 at I-65 NB Ramps	1.78	Near Top 5%	*	Yes
6	KY 44 at S Lakeview Drive	1.13		LOSS-KAB 4	Yes
7	KY 44 at Bullitt Central High School	0.14		*	No
8	KY 44 at Highland Court	1.28		LOSS-KAB 4	No
9	KY 44 at Lees Valley Road	0.88		LOSS-KAB 4	No
10	KY 44 at Boardwalk Avenue	0.79		LOSS-KAB 4	No
11	KY 44 at Dennis Drive / Sunview Drive	0.35		*	No
12	KY 44 at KY 1526 (Bells Mill Road)	0.57		LOSS-KAB 3	Yes
13	KY 44 at Lloyd Lane / Bogard Lane	1.11		LOSS-KAB 4	Yes
14	KY 44 at Bethel Church Road	1.01		LOSS-KAB 4	Yes
15	KY 44 at KY 2706 (Greenbriar Road)	0.66		*	Yes
16	KY 44 at Fisher Lane	1.27		LOSS-KAB 3	Yes
17	KY 44 at US 31EX	2.97	Top 5%	LOSS-KAB 4	Yes
18	KY 44 at US 31E	1.41		*	Yes
19	KY 44 at KY 1319 (Kings Church Road)	0.87		*	Yes
21	KY 44 at Tollview Drive	0.97		LOSS-KAB 4	No
30	KY 44 at Highland Springs Drive	0.68		LOSS-KAB 4	No
35	KY 44 at Woodlake Drive	0.40		LOSS-KAB 4	No
37	KY 44 at Stringer Lane	0.42		LOSS-KAB 4	No
42	KY 44 at Oakbrooke Drive	1.02		LOSS-KAB 4	Yes

¹ In million entering vehicles

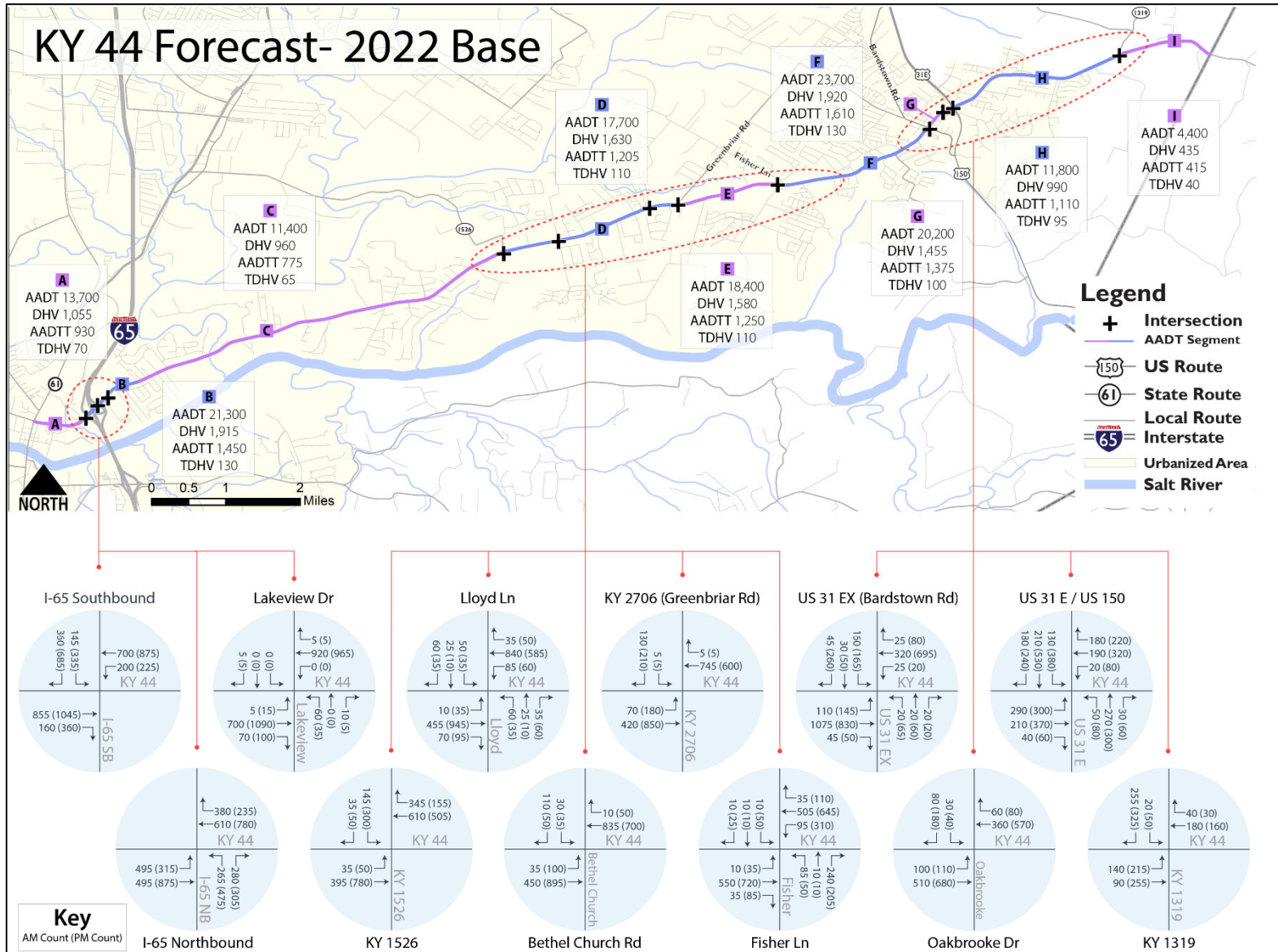
² Percents shown are top statewide intersection statistics

* LOSS value in CDAT less than 3

Table 4: Study Area Intersection Count Sources

Intersection #	Intersection	Count Year	Source
1	KY 44 @ I-65 SB	2016	Shepherdsville Transportation Study
2	KY 44 @ I-65 NB	2021	Lakeview TIS
3	KY 44 @ Lakeview Dr	2021	Lakeview TIS
4	KY 44 @ KY 1526	2007	5-150.1
5	KY 44 @ Lloyd/Bogard	2007	5-150.2
6	KY 44 @ Bethel Church Rd	2021	Streetlight
7	KY 44 @ KY 2706	2021	Streetlight
8	KY 44 @ Fisher/Armstrong	2007	5-150.3
9	KY 44 @ Bardstown Road/US 31EX	2021	Streetlight
10	KY 44 @ Oakbrooke Dr	2022	5-347.5
11	KY 44 @ US 31E	2022	5-347.5
12	KY 44 @ KY 1319	2021	5-347.1

Figure 3: KY 44 Base Segment and Intersection Volume



3 TRAFFIC GROWTH RATES

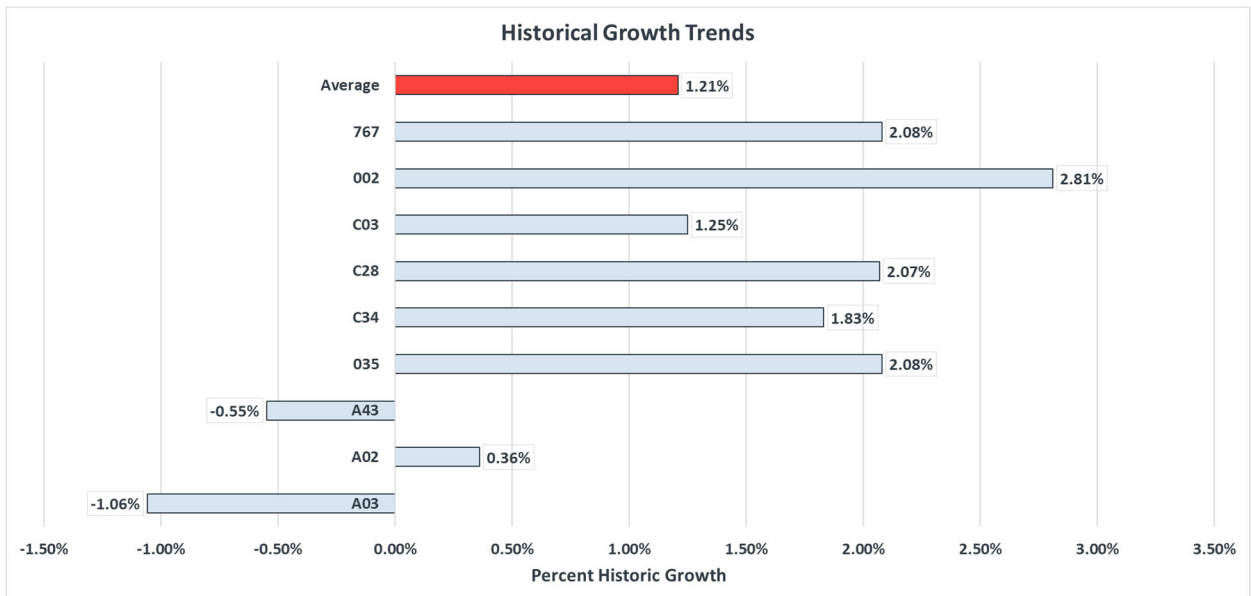
2022 was selected as the baseline year for analysis, with a forecast year of 2045. Growth rates were determined for each section and for two scenarios, No-Build and Build. The growth rates for the study area were determined by comparing the results from multiple independent assessments:

1. Historical traffic counts for growth trends
2. Results from travel demand models
3. Recent permits/developments and previous studies, forecasts, and projects
4. Expected population growth in Bullitt County

3.1 HISTORICAL TRAFFIC COUNT TRENDS

Current and historical AADT information was obtained from KYTC for count stations in the corridor study area. The data included traffic volumes as well as supporting information such as heavy vehicle percentages, directional distribution, design hour factor (K Factor), and 2022 48-hour count data. Traffic counts that were collected during the year 2020 (Count Station A03, A02, and C28) were initially evaluated in the historical growth trends. Due to the COVID-19 pandemic, 2020 counts were lower than expected based on trends from data collected in previous years. Count data from the year 2020 was excluded from the evaluation of historic data to prevent skewing of growth rates. **Figure 4** highlights the calculated historical growth of each count station in the study area.

Figure 4: Historical Growth by Count Station



3.2 TRAVEL DEMAND MODEL RESULTS

The project team utilized a combination of the Kentuckiana Regional Planning & Development Agency (KIPDA) Traffic Demand Model, Kentucky Statewide Travel Demand Model (KYSTMv17), and Hardin-Meade Travel Demand Model in the network forecast. The KIPDA model was the primary model used for the determination of the proposed growth rates, while the other two models were used as another datapoint to compare to. No adjustments were made to the KYSTMv17 or Hardin-Meade models, but the team worked closely with KIPDA to determine appropriate land-use and roadway network assumptions, available in **Appendix C**.

The KIPDA model was run using four scenarios. A 2040 Base model with updates to the land use but no changes to the existing network was used as the base forecast. The KIPDA scenario results are outlined in **Table 5**, along with complimentary results for comparison from the KYSTM model, Hardin-Meade model and previous studies completed along the corridor. The KIPDA model scenarios were discussed and are described below:

- 2040 Base Model – this is KIPDA’s base 2040 model with land use and socioeconomic changes that were agreed upon by the project team in a previous meeting.
- 2040 Scenario 1 (No-Build) – this is the Base Model but keeps KY 44 as it currently exists from a geometric standpoint (two-lanes throughout).
- 2040 Scenario 2 (Build) – this has KY 44 widened to four-lanes (per existing Phase 1 design recommendations) along with select MTP projects that the project team determined would be likely to be built by 2040.
- 2040 Scenario 3 (Sensitivity Test) – this includes the widened KY 44 along with other MTP projects, such as the I-65 widening. This scenario was run with the intention of determining if the KIPDA model is performing as would logically be expected (less KY 44 traffic if alternate routes are improved or built).

Table 5: KIPDA Model Results and Study Comparison

Segment	KIPDA Model (Base Year 2020)			KYSTM (Base Year 2018)	Hardin-Meade Model (Base Year 2017)	
	2040	Scenario 1 (2040)	Scenario 2 (2040)	Scenario 3 (2040)	2045 Model	2045 Model
KY-61 to I-65	-0.84%	0.21%	0.26%	-0.70%	1.15%	0.35%
I-65 to US 31E	1.13%	0.81%	1.94%	1.68%	1.47%	0.65%
US 31E to Spencer County Line	2.37%	2.24%	2.66%	2.57%	3.27%	-0.69%
KY 61 to Spencer County Line	1.30%	1.10%	2.00%	1.74%	1.88%	0.24%

3.3 STUDY AREA PERMITS/DEVELOPMENTS AND PREVIOUS STUDIES, FORECASTS, AND PROJECTS

3.3.1 PERMITS/DEVELOPMENTS

Past permits and development projects were examined to help gain an understanding of future development, as well as to identify land use/socioeconomic inputs to the KIPDA Travel Demand Model. The turning movement counts used in the permits and developments were also extracted and examined for the comparison of existing and projected traffic. The following permits/developments along KY 44 were evaluated:

- Shepherdsville First Care Clinic
- Signal Modification at Adam Shepherd Pkwy
- Adam Shepherd Pkwy Roundabout
- Lakeview Drive Warehouse site in Shepherdsville
- Gollar Subdivision in Shepherdsville
- Harvest Point Subdivision in Mount Washington
- Mount Washington Coffee Shop at Brookeway Drive
- Jim’s Express Car Wash in Mount Washington
- CVS Pharmacy

- Twin Eagles Subdivision in Mount Washington
- Bluegrass Meadows Subdivision in Mount Washington
- Helm Property Subdivision in Mount Washington
- Trilogy Village Center

3.3.2 PREVIOUS STUDIES

Previous studies, published as far back as 2005, were collected and evaluated to help determine the final growth rates selected for this study. The project team noted base and future year volumes, growth rates, and forecast assumptions when available from each study. **Table 6** highlights the previous studies along the study area corridor that were evaluated for this study.

Table 6: Previous Studies Along Network Study Area

Item Number / Name	Begin	End	Agency	Primary Route	Year
5-150.00	I-65	US 31E	KYTC	KY 44	2005
Go Bullitt County	-	-	Bullitt Co. / KIDPA	Countywide	2010
5-396.00	US 31E	In Spencer Co.	KYTC	KY 44	2012
5-8710.00	KY 2706	US 31E	KYTC	New	2013
5-8709.00	KY44	KY 480	KYTC	New	2014
Bullitt Co. Comp. Plan	-	-	Bullitt Co.	Countywide	2015
Shepherdsville Transportation Plan	KY 61	I-65	Shepherdsville	KY 44	2016
5-550.00	I-265	KY 61	KYTC	I-65	2020
5-564.00	I-65	I-71	KYTC	New / KY 44	2020

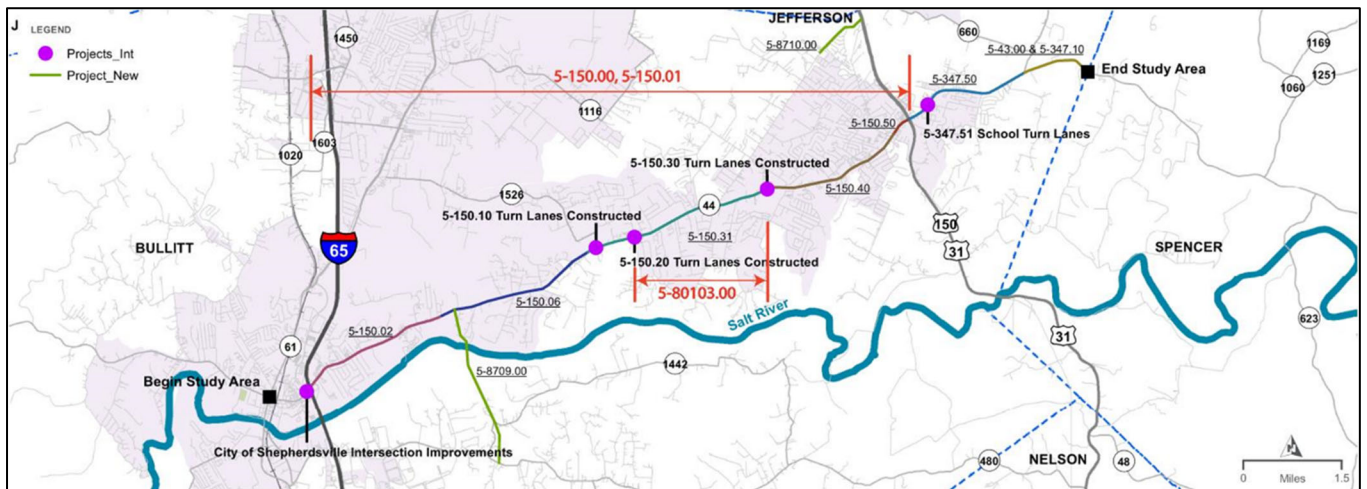
3.3.3 PREVIOUS PROJECTS/PHASE 1 DESIGN

Previous Phase 1 Design projects with relevant forecasted traffic data / reports were also collected. These projects consisted of intersection and corridor improvements, new route builds, and widening along KY 44. **Table 7** outlines the projects along KY 44 that were evaluated for this study, **Figure 5** shows the location of the projects listed in the table.

Table 7: Previous Projects Along Study Area

Item Number / Name	Begin	End	Traffic Forecast Report	Traffic Projections	Year Published
5-150.00	I-65	US 31E		X	2005
5-150.10	KY 44 @ Bells Mill		X		2007
5-150.20	KY 44 @ Bogard Ln.		X		2007
5-150.30	KY 44 @ Armstrong Ln.		X		2007
5-347.50	US 31E	KY 1319	X		2008
Go Bullitt County	-	-		X	2010
5-396.00	US 31E	In Spencer Co.	X	X	2012
5-8710.00	KY 2706	US 31E		X	2013
5-8709.00	KY44	KY 480	X		2014
5-550.00	I-265	KY 61	X		2019
5-564.00	I-65	I-71	X		2020
5-347.10	KY 1319	Spencer County Line	X		2022
5-347.50	US31E	KY 1319	X		Under Development

Figure 5: KY 44 Past and Current Projects Map



3.3.4 PREVIOUS TRAFFIC FORECASTS

Previous forecast projects were collected and sorted by the study area sections. These projects consisted of intersection and corridor improvements, new route builds, and widening along KY 44. **Table 7** highlights the KY 44 projects that have a forecast report completed.

3.3.5 SUMMARY OF EVALUATED GROWTH RATES

Table 8 summarizes the full evaluation of growth rates in Section 3.3 in the context of the study area segments of this forecast.

Table 8: Study Area Growth Rate Summary

Segment	KIPDA Model (Base Year 2020)				KYSTM (Base Year 2018)	Hardin-Meade Model (Base Year 2017)	Historical Growth (KYTC)	Previous Traffic Forecasts									
	2040	Scenario 1 (2040)	Scenario 2 (2040)	Scenario 3 (2040)				2045 Model	2045 Model		5-150.00	5-150.01	5-150.10, .20 & .30	Bullitt Co. Transportation Study	5-8709.00	5-8710.00	5-396.00
KY-61 to I-65	-0.84%	0.21%	0.26%	-0.70%	1.15%	0.35%	-2.08%	1.80%				1.46%					
I-65 to US 31E	1.13%	0.81%	1.94%	1.68%	1.47%	0.65%	0.17% - 2.21%	1.80%	1.72% - 2.83%	3.70%	1.46% - 2.94%	2.40%	1.63% - 5.44%	2.50%			
US 31E to Spencer County Line	2.37%	2.24%	2.66%	2.57%	3.27%	-0.69%	1.74%-4.81%	1.80%	1.47%		1.39%			3.50% - 4.00%	1.70%	3.50%	
KY 61 to Spencer County Line	1.30%	1.10%	2.00%	1.74%	1.88%	0.24%	1.28%										

3.4 POPULATION GROWTH

Historical census data and population projections for Bullitt County were examined to assess the past and expected future population growth in the area, see **Table 9**. The data was obtained from the University of Louisville State Data Center. The average annual population growth for Bullitt County from 2010 to 2020 was approximately 1.0%. For the 2020 to 2045 projected time period, population growth in the county is expected to be approximately 0.9% per year.

Table 9: Kentucky and Bullitt County Population Data

Location	Census		Projections				Extrapolation	Annual Growth		Total Growth
	2010	2020	2025	2030	2035	2040	2045	2010 to 2020	2020 to 2045	2020 to 2045
Kentucky	4,339,367	4,505,836	4,634,415	4,726,382	4,808,682	4,886,381	4,973,515	0.4%	0.4%	10.4%
Bullitt County	74,319	82,217	87,470	91,527	95,170	98,245	102,095	1.0%	0.9%	24.2%

3.5 SELECTED GROWTH RATES

This section highlights the selected growth rates per section compared to studies, historic growth rates, and recent model growth rates in those same sections.

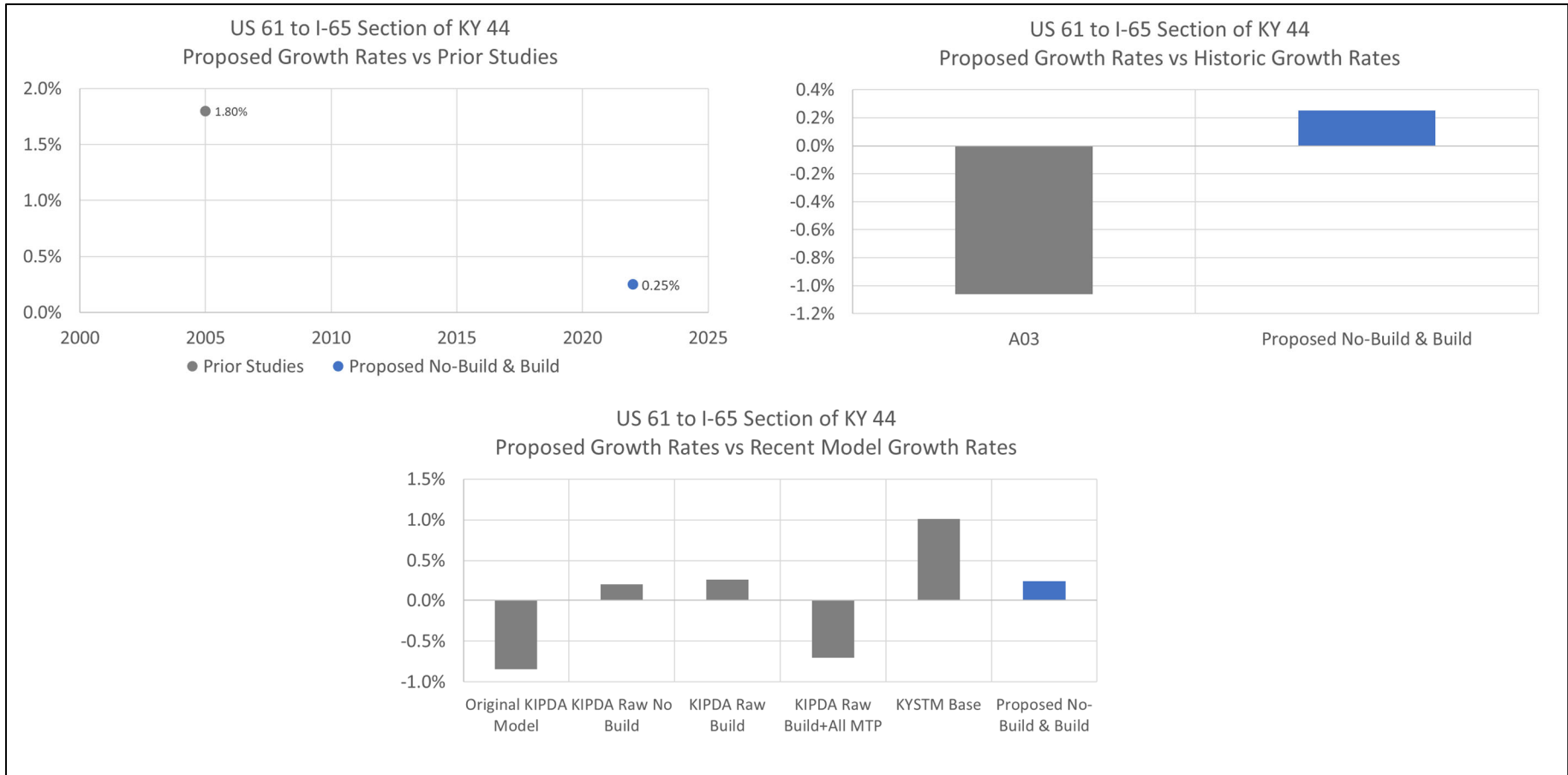
The project team held a growth rate discussion meeting on August 1st, 2022. The information from Sections 3.1-3.4 was discussed during this meeting.

3.5.1 SECTION 1 GROWTH RATES

The team began the growth rate conversation with Section 1, KY 61 to I-65. Historical growth shows negative growth, the KIPDA model scenarios resulted in small positive growth (0.21% and 0.26%), and previous studies were above 1%. The project team discussed the differences in these results, pointing to the span of the study corridors, year conducted, and potential development. The project team determined there is less availability for further development in this section, but consistent population growth contributed to the decision to choose a small, positive growth rate that is the same for both the No-Build and Build scenarios.

Figure 6 outlines the comparison of the proposed 0.25% growth rate to the various sources evaluated. The project team determined a negative growth rate in Section 1 (based on historical counts) would not be truly reflective of the expected growth in the project area. Bullitt County population is expected to grow approximately 1% per year from 2022 to 2045, leading the project team to believe that the historical ADT trends along this section of KY 44 will moderately increase in the coming years. Due to the existing build out of this section, though, the project team determined a small, positive growth rate for both the No-Build and Build scenarios would be the most appropriate choice.

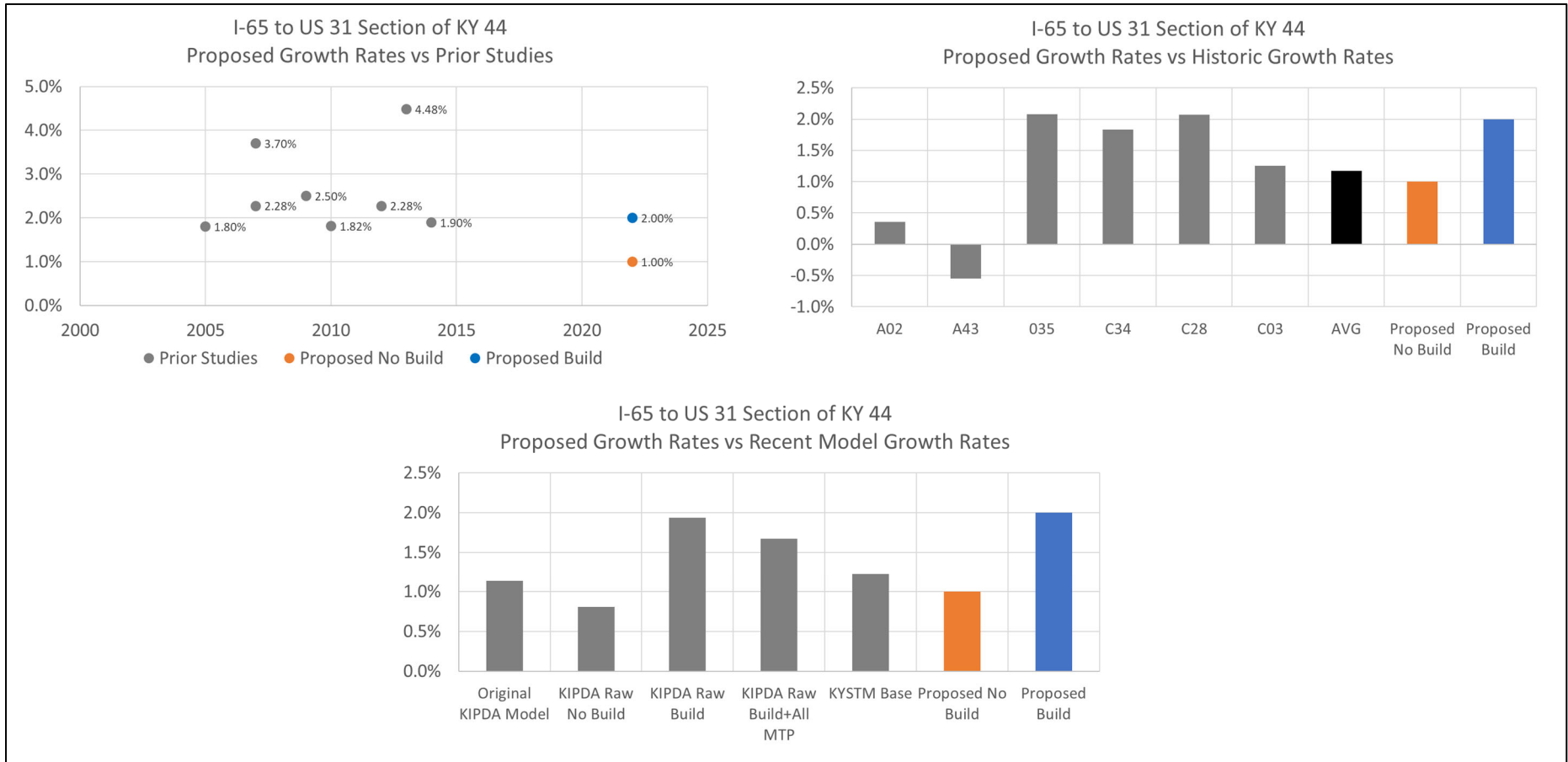
Figure 6: Section 1 Selected Growth Rate vs Planning Sources



3.5.2 SECTION 2 GROWTH RATES

Section 2, I-65 to US 31E, showed consistent positive growth across studies, models, and historic counts. These comparisons are shown in **Figure 7**. The KIPDA model results showed that this section of KY 44 is constrained by roadway capacity, as there is a significant difference in model output volumes between the No-Build and Build scenario. Widening this portion of KY 44 would draw more traffic volume into the corridor. The proposed No-Build growth rate is essentially equal to the annual population growth of Bullitt County, 1.0%, as traffic would be constrained by capacity. This growth rate falls just on the conservative side of the average of the count stations. The proposed Build growth rate is 2.0%, accounting for the additional volume that would use the corridor if capacity was increased through widening.

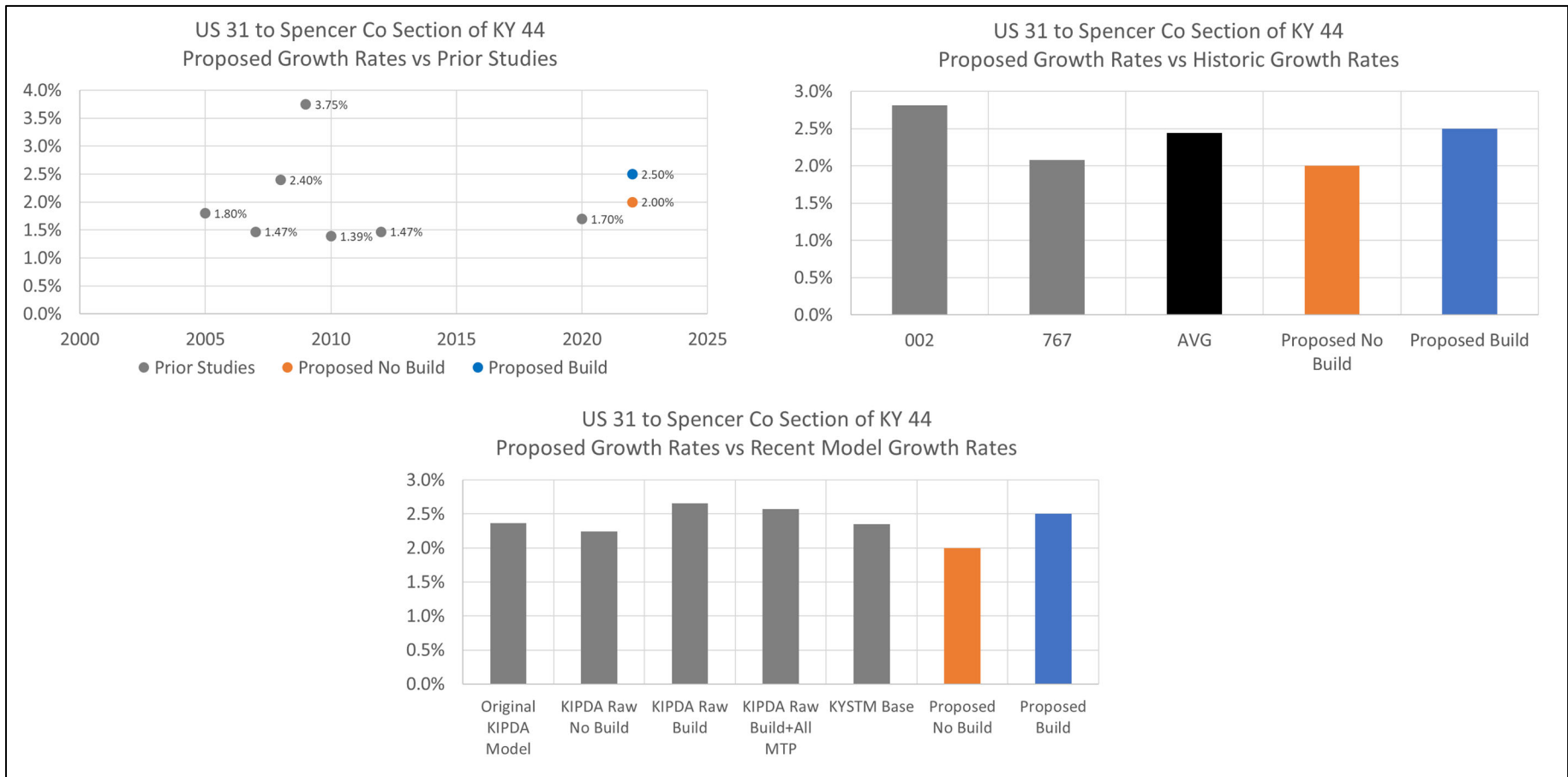
Figure 7: Section 2 Selected Growth Rate vs Planning Sources



3.5.3 SECTION 3 GROWTH RATES

Section 3, US 31E to the Spencer Co. Line, shows the highest growth rates from historical counts, model results and previous studies. Comparisons of the various data available are shown in **Figure 8**. Previous study growth rates in this area have been as high as 4%, and historical growth rates range from 1.74% to 4.81%. Growth rates from all models are above 2.0%. A No-Build growth rate of 2.0% and Build growth rate of 2.5% were proposed for this section. The No-Build growth rate is on the conservative side of many compared growth sources, while prior studies, historical counts, and each traffic demand model evaluated all suggest a Build growth rate of 2.5% is within the realm of possibility for this section. Growth rates for this section were coordinated with the ongoing 5-347.5 forecast.

Figure 8: Section 3 Selected Growth Rate vs Planning Sources



3.6 PROPOSED GROWTH RATES

Based on the evaluation of each of the three sources detailed, the following No-Build and Build growth rates in **Table 10** for each section were agreed upon.

Table 10: Forecast Growth Rates

	Segment	No-Build	Build
Section 1	KY 61 to I-65	0.25%	0.25%
Section 2	I-65 to US 31E	1.0%	2.0%
Section 3	US 31E to Spencer Co. Line	2.0%	2.5%

4 2045 TRAFFIC VOLUMES

4.1 DESIGN YEAR

AASHTO's *A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)* recommends that the design for new construction or improvements to existing roadways consider future traffic volumes expected to use the facility, with these future traffic volumes typically being at least 20 years into the future.

The project team forecasted the 2022 segment and intersection volumes to design year 2045 under No-Build and Build conditions using the proposed growth rates.

4.2 2045 FORECAST VOLUME

4.2.1 2045 SEGMENT VOLUMES

Table 11 highlights the 2045 No-Build ADT, Average Annual Daily Truck Traffic (AADTT), DHV, and Truck DHV (TDHV). **Table 12** shows the Build forecast. K-factor values were assumed to be the same in 2045 as in 2022 for both scenarios.

A review of the Kentucky Transportation Center report on truck data for calculating ESALs¹ shows a 0.17% annual growth in truck traffic for Functional Class 16 (FC 16), Urban Minor Arterials. KY 44 is classified as FC 16 for Segments A-H of this forecast study area. Zero truck traffic growth is projected for rural minor arterial type facilities (FC 06); therefore, the 2022 truck percentage was used for 2045 Segment I. Truck AADTT and DHV is rounded to nearest 5 vph. The 2045 DHVs were estimated by applying the K-factor to the calculated 2045 AADTs.

¹ [Microsoft Word - KTC-15-26 ESAL Update & Documentation.docx \(uky.edu\)](#)

Table 11: 2045 No-Build Segment Forecast

Count Station	SEGMENT	BEGINNING DESCRIPTION	ENDING DESCRIPTION	2022 Base Volume	2022 AM DHV	2022 PM DHV	No-Build Growth Rate	2045 ADT	2045 Truck % ADT	2045 Trucks (Daily)	2045 AM DHV	2045 AM TDHV	2045 PM DHV	2045 PM TDHV
A03	A	KY 61	I-65	13,700	930	1,055	0.25%	14,500	10.7%	1,550	985	105	1,115	120
A02	B	I-65	Melwood Drive	21,300	1,620	1,915	1.00%	26,800	10.7%	2,860	2,035	215	2,410	255
A43	C	Melwood Drive	KY 1526	11,400	865	960	1.00%	14,350	10.7%	1,530	1,090	115	1,205	130
035	D	KY 1526	KY 2706	17,700	1,435	1,630	1.00%	22,250	10.7%	2,375	1,800	190	2,045	220
C34	E	KY 2706	KY 2674	18,400	1,140	1,580	1.00%	23,150	10.7%	2,470	1,435	155	1,990	210
C28	F	KY 2674	US 31EX	23,700	1,445	1,920	1.00%	29,800	10.7%	3,180	1,820	195	2,415	260
C03	G	US 31EX	US 31E	20,200	1,315	1,455	1.00%	25,400	10.7%	2,710	1,650	175	1,830	195
002	H	US 31E	KY 1319	11,800	990	990	2.00%	18,600	13.3%	2,470	1,560	205	1,560	205
767	I	KY 1319	Spencer Co. Line	4,400	345	435	2.00%	6,950	9.4%	655	540	50	690	65

Table 12: 2045 Build Segment Forecast

Count Station	SEGMENT	BEGINNING DESCRIPTION	ENDING DESCRIPTION	2022 Base Volume	2022 AM DHV	2022 PM DHV	Build Growth Rate	2045 ADT	2045 Truck % ADT	2045 Trucks (Daily)	2045 AM DHV	2045 AM TDHV	2045 PM DHV	2045 PM TDHV
A03	A	KY 61	I-65	13,700	930	1,055	0.25%	14,500	10.7%	1,550	985	105	1,115	120
A02	B	I-65	Melwood Drive	21,300	1,620	1,915	2.00%	33,600	10.7%	3,585	2,555	270	3,025	325
A43	C	Melwood Drive	KY 1526	11,400	865	960	2.00%	18,000	10.7%	1,920	1,370	145	1,510	160
035	D	KY 1526	KY 2706	17,700	1,435	1,630	2.00%	27,900	10.7%	2,980	2,260	240	2,565	275
C34	E	KY 2706	KY 2674	18,400	1,140	1,580	2.00%	29,000	10.7%	3,095	1,800	190	2,495	265
C28	F	KY 2674	US 31EX	23,700	1,445	1,920	2.00%	37,350	10.7%	3,985	2,280	245	3,025	325
C03	G	US 31EX	US 31E	20,200	1,315	1,455	2.00%	31,850	10.7%	3,400	2,070	220	2,295	245
002	H	US 31E	KY 1319	11,800	990	990	2.50%	20,800	13.3%	2,760	1,745	230	1,745	230
767	I	KY 1319	Spencer Co. Line	4,400	345	435	2.50%	7,750	9.4%	730	605	55	765	70

4.2.2 2045 INTERSECTION VOLUMES

The No-Build and Build scenario intersection forecasts, along with segment summaries, are shown in **Figures 9** and **10**. The intersections shown in the figures used the same growth rate as the section they are in. From I-65 Southbound to US 31E, the Section 2 growth rates were applied, while KY 1319 was forecasted by the Section 3 growth rates.

Figure 9: KY 44 2045 No-Build Segment and Intersection Forecast

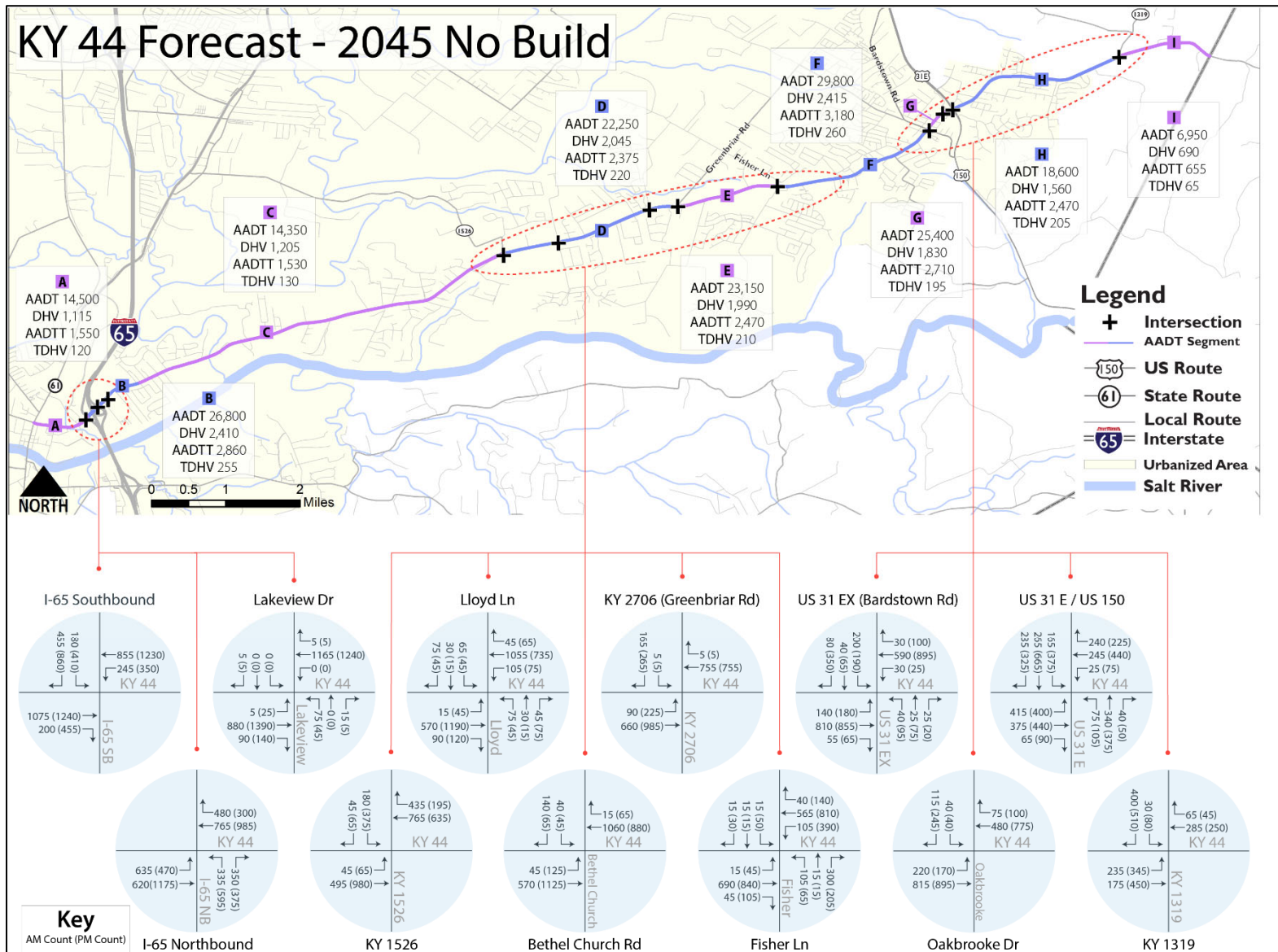
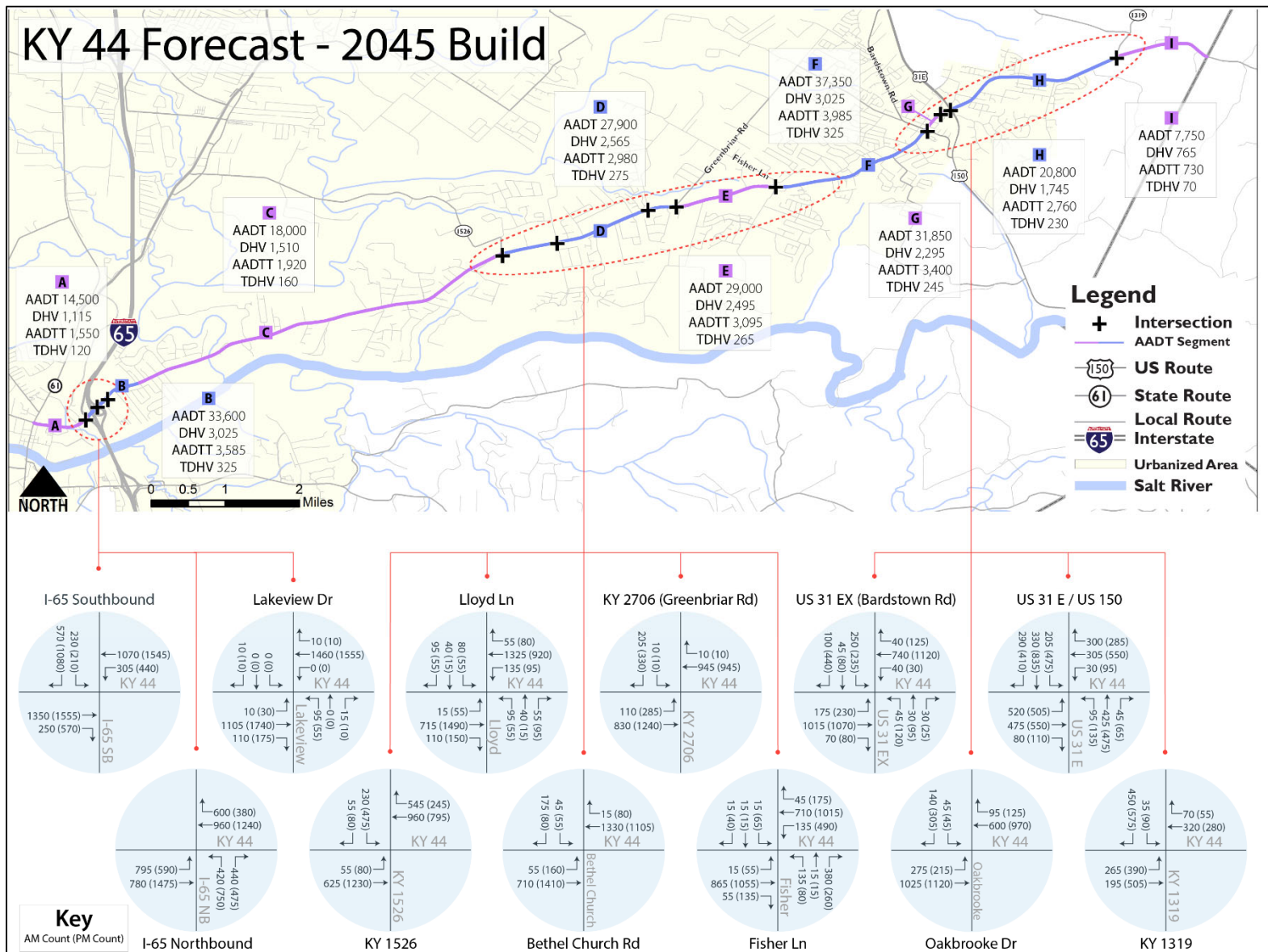


Figure 10: 2045 Build Segment and Intersection Forecast



APPENDIX

A COUNT STATION DATA

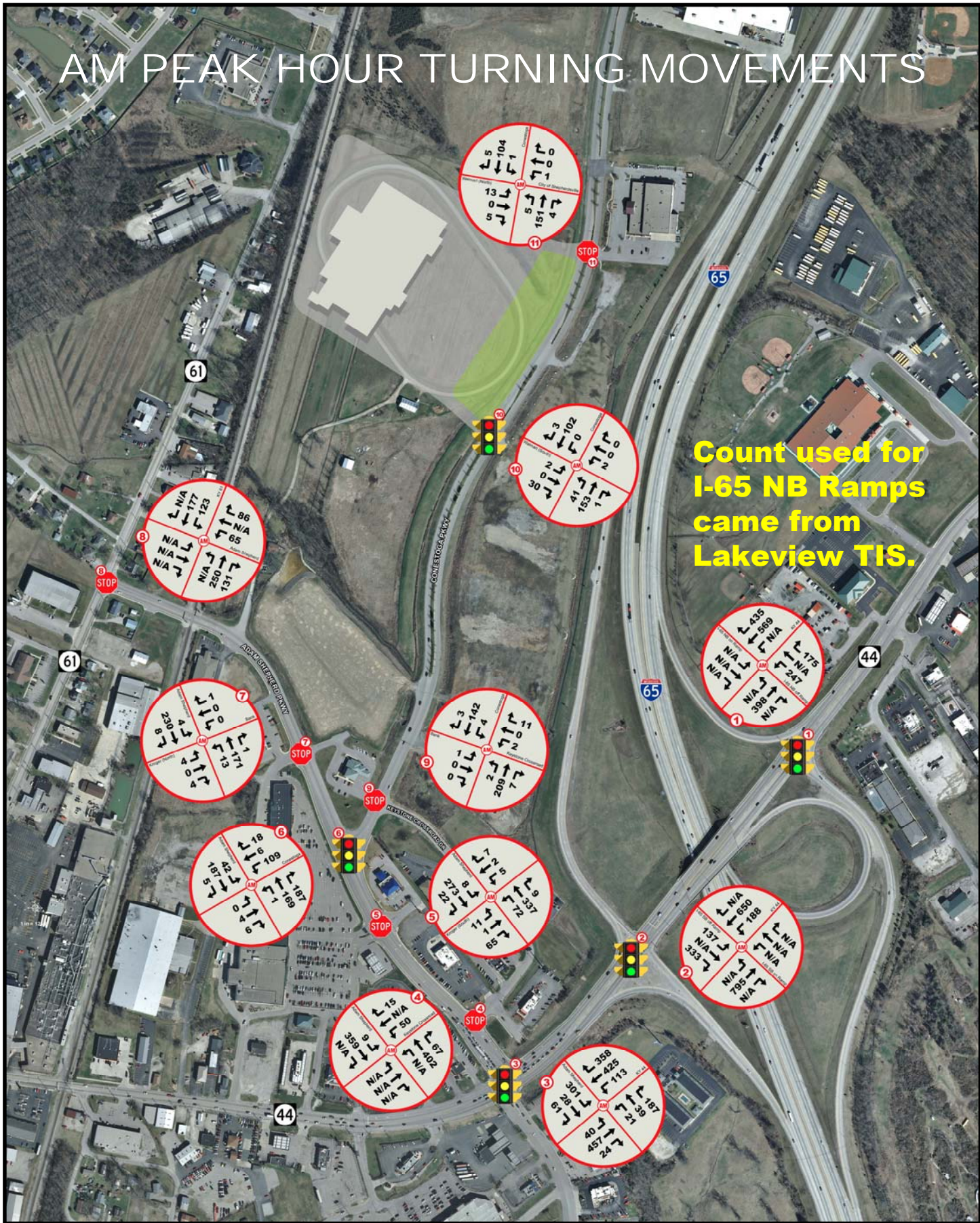


APPENDIX

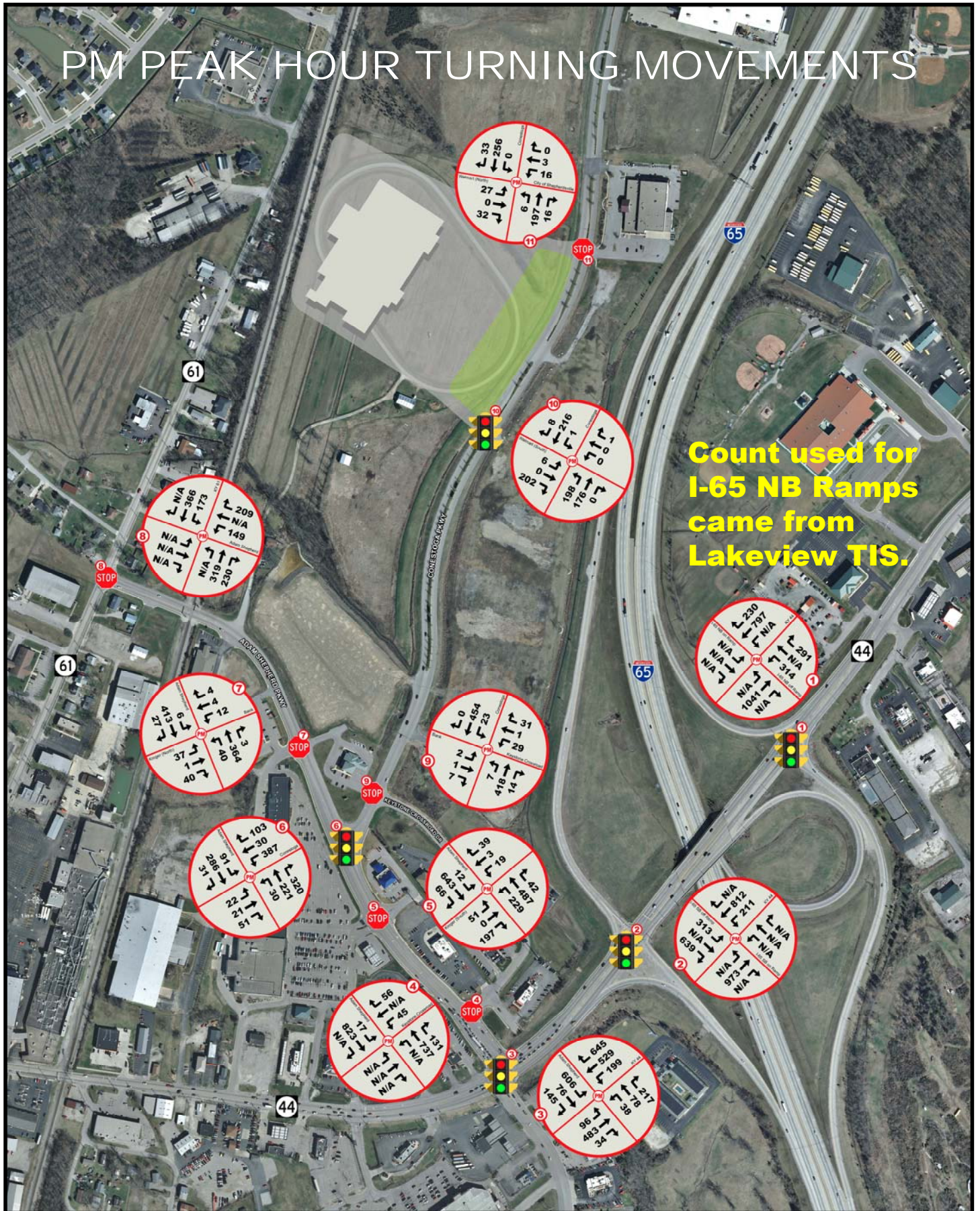
B

PREVIOUS STUDY INTERSECTION TURNING MOVEMENT COUNTS

AM PEAK HOUR TURNING MOVEMENTS



PM PEAK HOUR TURNING MOVEMENTS



Peak hour traffic count for the intersections were obtained on Tuesday, August 17, 2021. **Figure 2** illustrates the 2021 a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data.

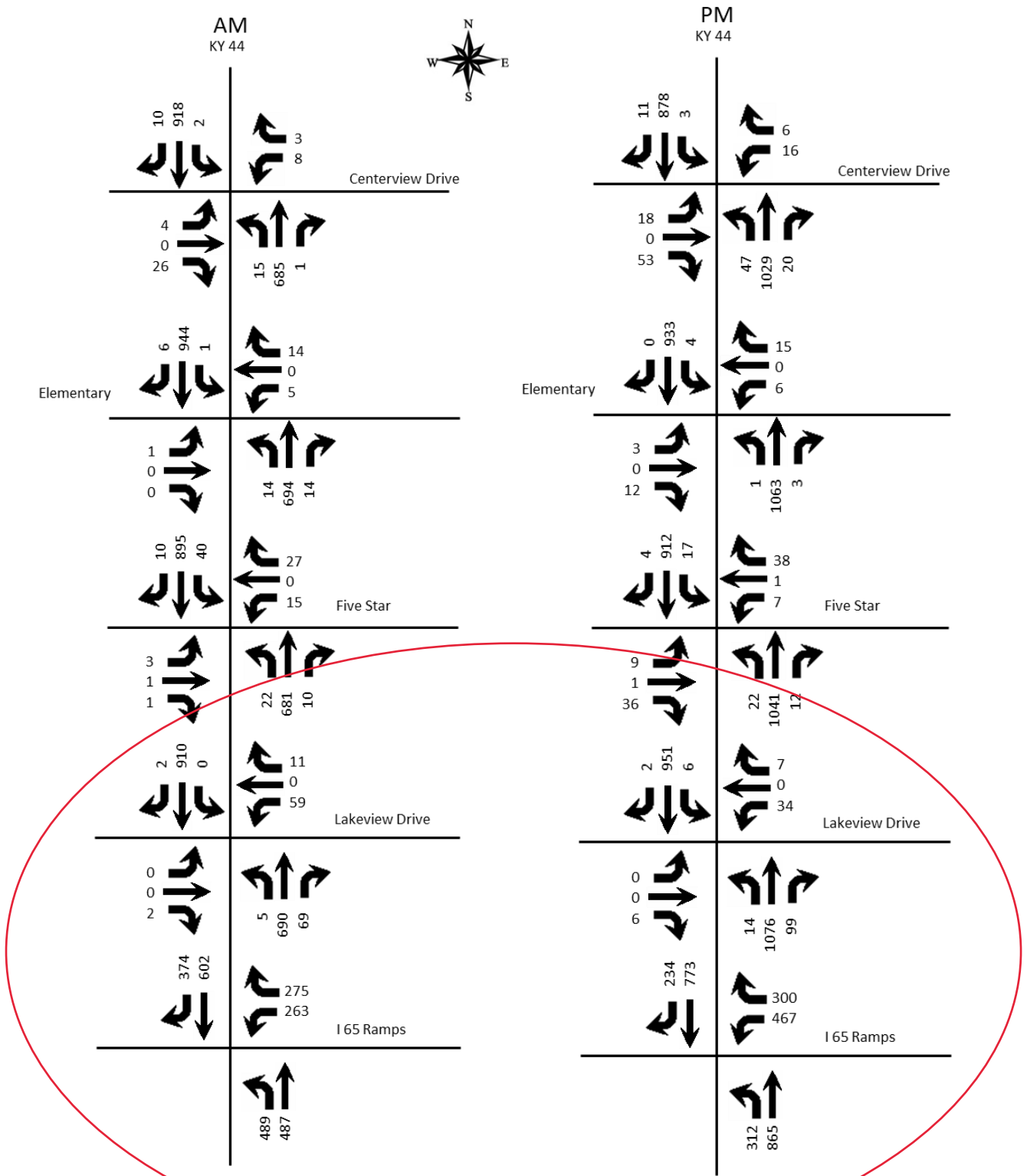


Figure 2. Existing Peak Hour Volumes

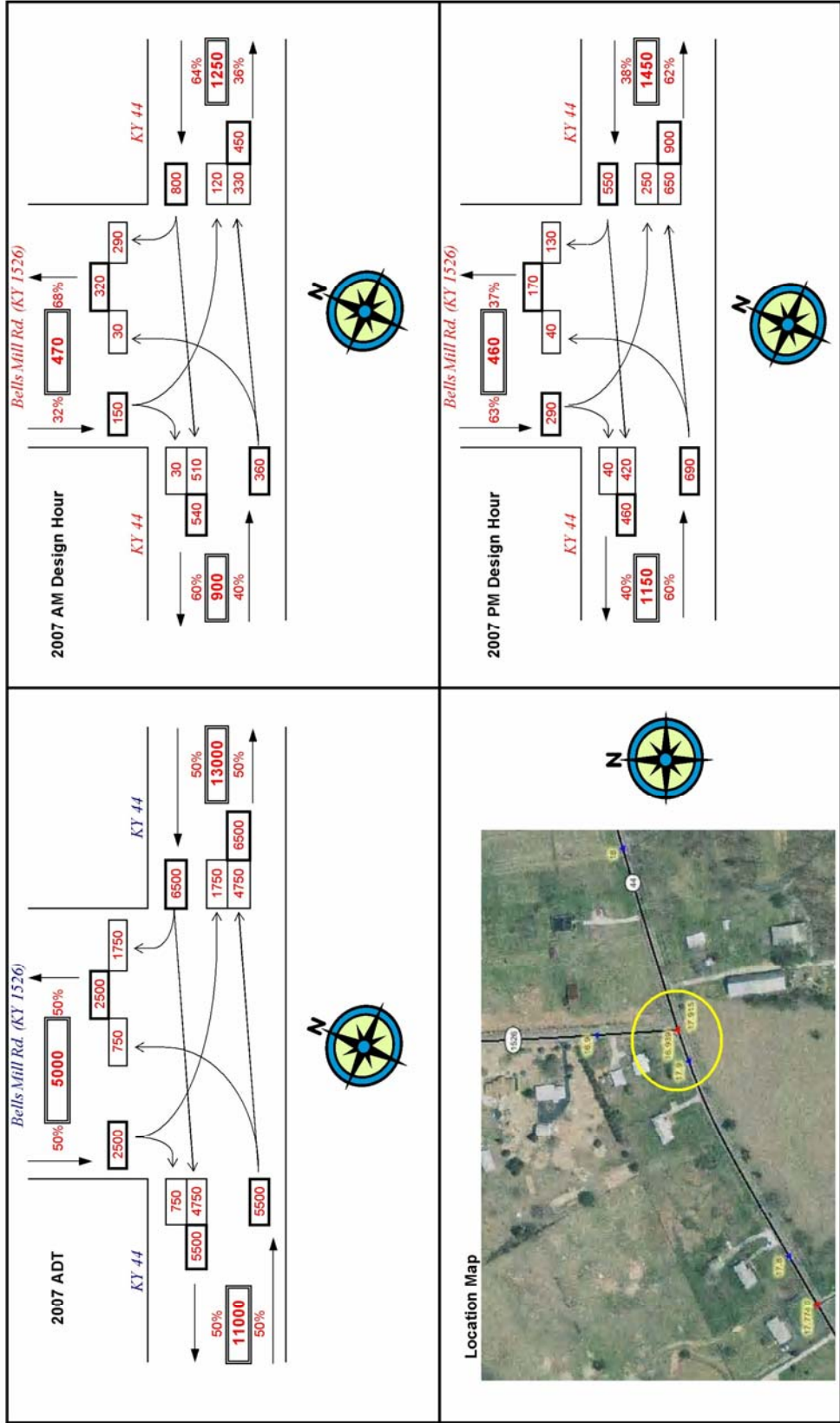
Traffic Forecast Technical Report
Bullitt County: Intersection Reconstruction on KY 44 at Bells Mill Rd. (KY 1526)
Item No. 5-150.1

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2007 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

	Peak Hour Factors			Thru			Right			Left		
	AM	PM		AM	PM		AM	PM		AM	PM	
Southbound	0.89	0.95	N/A	N/A	0.72	0.65	0.86	0.92				
Westbound	0.88	0.94	0.86	0.86	0.93	0.88	N/A	N/A				
Eastbound	0.88	0.92	0.86	0.93	N/A	N/A	0.55	0.61				

* Arrows indicate approach direction, PHF given by approach and approach movement

PROJECT: Intersection Reconstruction on KY 44 at Bells Mill Rd.
 ITEM NUMBER: 5-150.1
 MARS NUMBER: 73354 01 D
 REQUEST DATE: 8/15/2007
 ANALYST: D. Hulker
 SCENARIO: 2007 Current ADT and Design Hour Volumes
 INTERSECTION: KY 44 at Bells Mill Rd. (KY 1526)



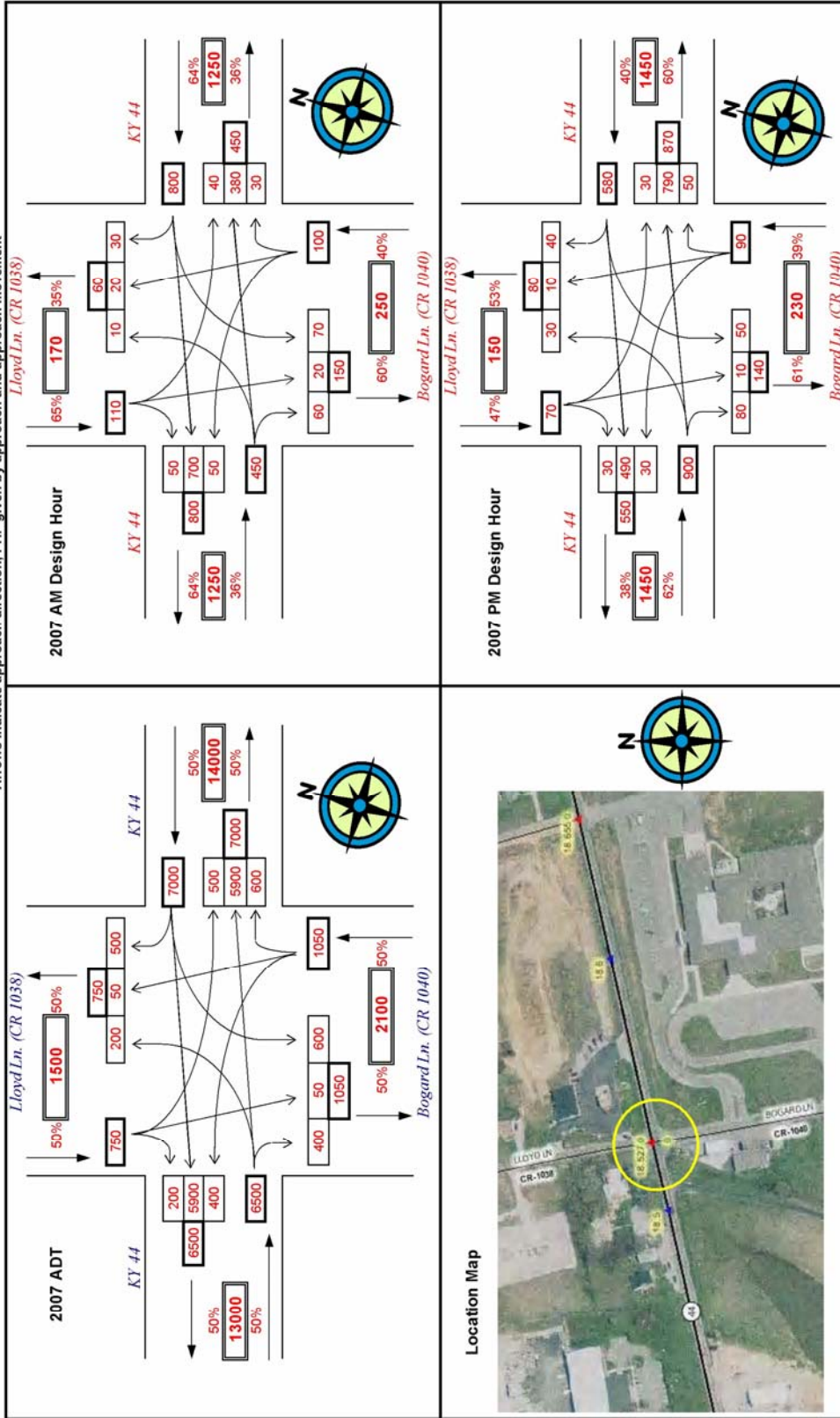
Traffic Forecast Technical Report
Bullitt County: Intersection Reconstruction on KY 44 at Bogard Ln. (CR 1040) and Lloyd Ln. (CR 1038) Item No. 5-150.2

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2007 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

PROJECT: Reconstruct KY 44 intersection at Lloyd Ln and Bogard Ln
 ITEM NUMBER: 5-150.2
 MARS NUMBER: 73354 02 D
 REQUEST DATE: 8/15/2007
 ANALYST: D. Hulker
 SCENARIO: 2007 Current ADT and Design Hour Volume:
 INTERSECTION: KY 44 at Bogard Ln (CR 1040) and Lloyd Ln (CR 1038)

	Peak Hour Factors			Thru			Right			Left		
	AM	PM		AM	PM		AM	PM		AM	PM	
Southbound	0.95	0.89		0.71	0.44		0.78	0.45		0.75	0.70	
Northbound	0.76	0.88		0.44	0.44		0.73	0.77		0.64	0.75	
Westbound	0.87	0.94		0.90	0.89		0.78	0.90		0.60	0.49	
Eastbound	0.88	0.94		0.88	0.92		0.69	0.74		0.65	0.80	

* Arrows indicate approach direction, PHF given by approach and approach movement



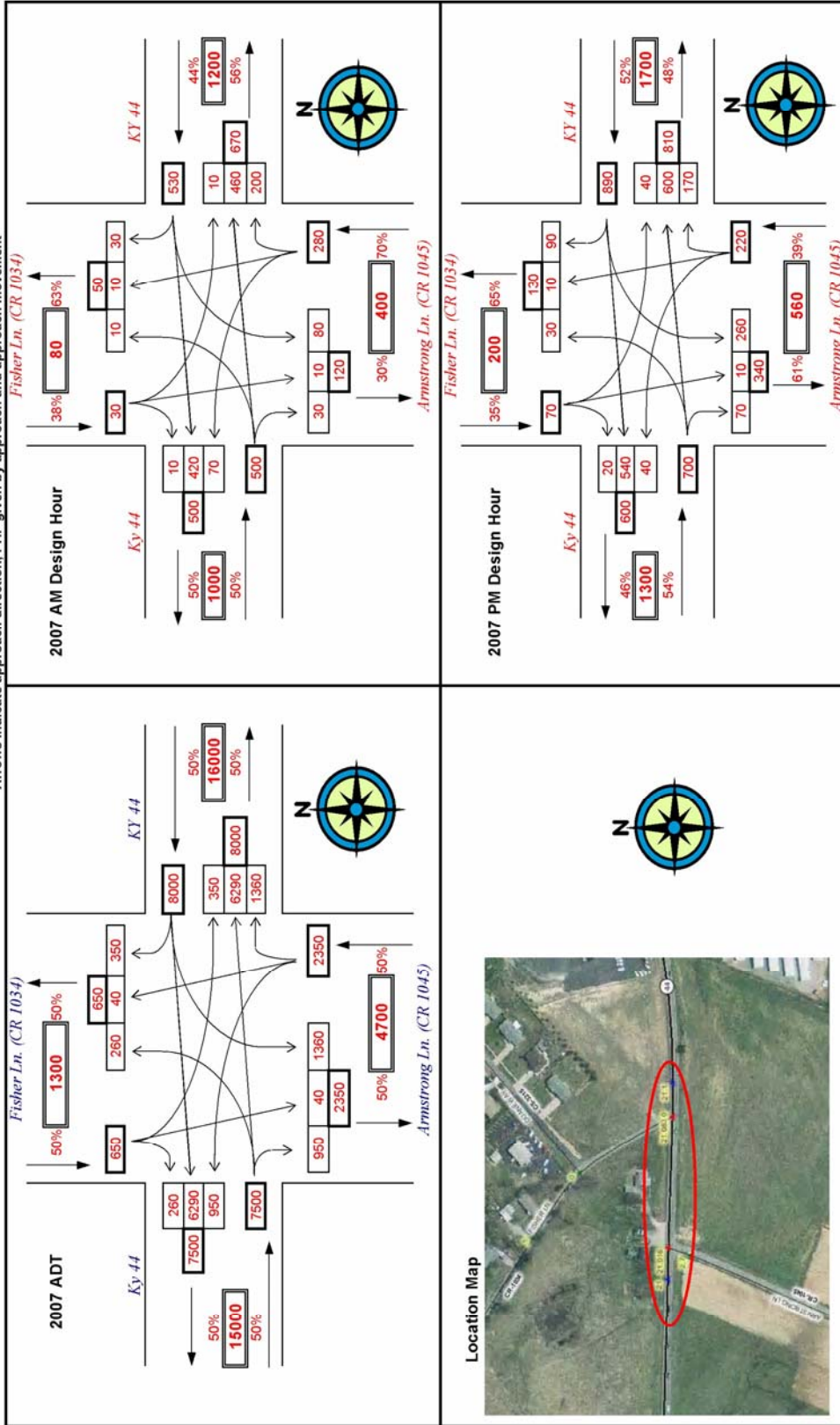
Traffic Forecast Technical Report
Bullitt County: Intersection Reconstruction on KY 44 at Armstrong Ln. (CR 1045) and
Fisher Ln. (CR 1034). Item No. 5-150.3

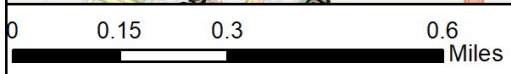
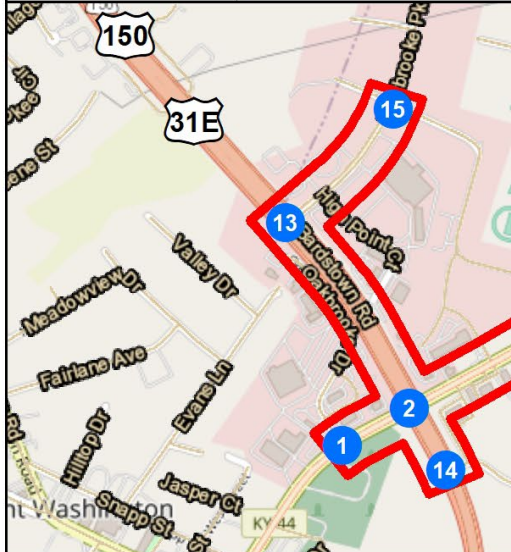
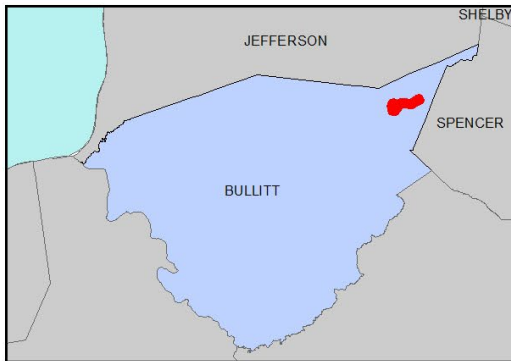
NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2007 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

PROJECT: Intersection Reconstruction on KY 44 at Armstrong & Fisher Ln
 ITEM NUMBER: 5-150.3
 MARS NUMBER: 73354 03 D
 REQUEST DATE: 8/15/2007
 ANALYST: D. Hulker
 SCENARIO: 2007 Current ADT and Design Hour Volume:
 INTERSECTION: KY 44 at Armstrong Ln (CR 1045) and Fisher Ln (CR 1034)

	Peak Hour Factors			Thru			Right			Left		
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	PM	
Southbound	0.72	0.77	0.50	0.45	0.69	0.79	0.69	0.63				
Northbound	0.88	0.87	N/A	0.33	0.87	0.85	0.63	0.75				
Westbound	0.97	0.96	0.90	0.87	0.73	0.81	0.69	0.92				
Eastbound	0.91	0.91	0.85	0.93	0.58	0.74	0.58	0.59				

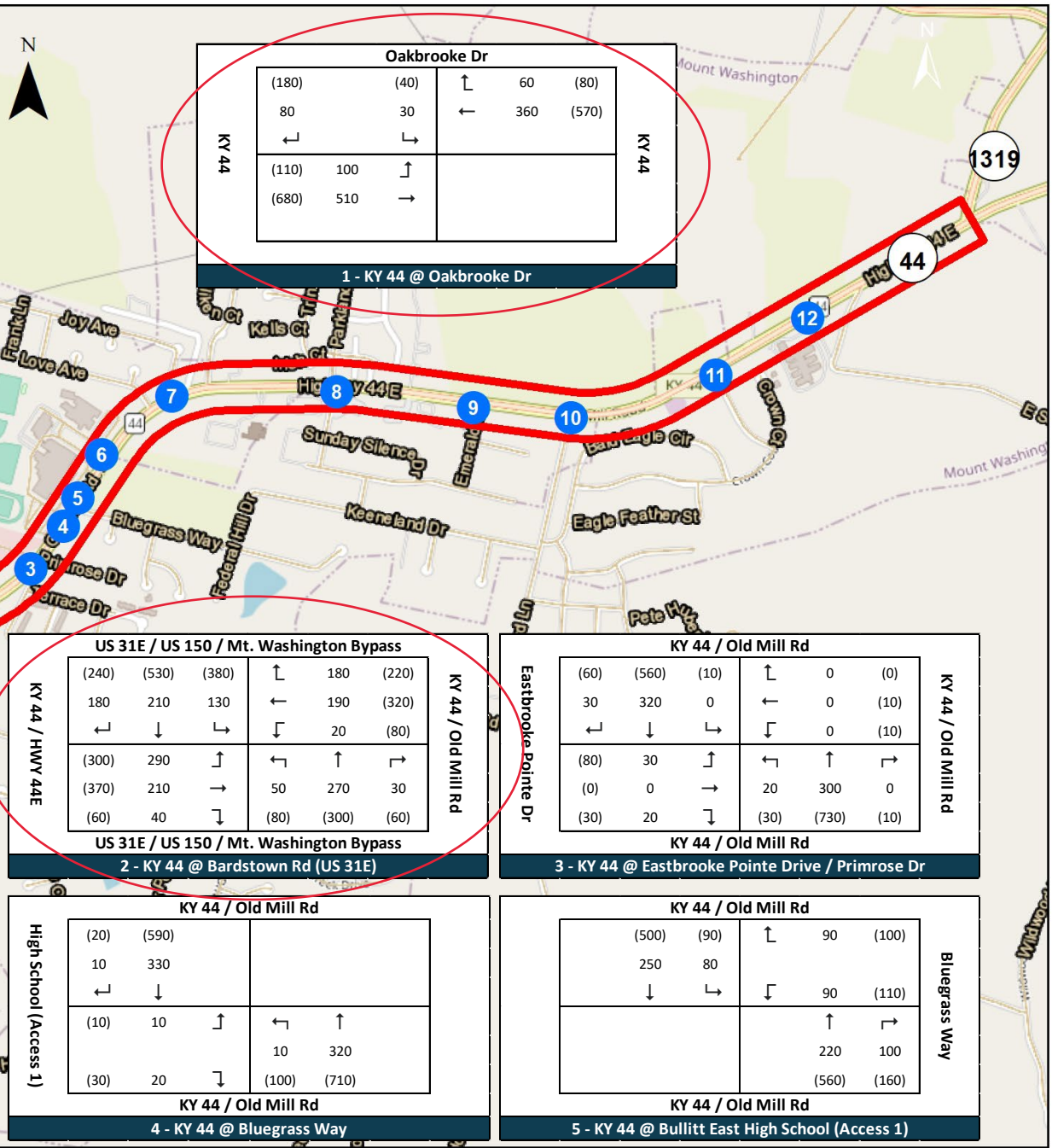
* Arrows indicate approach direction. PHF given by approach and approach movement
 Fisher Ln. (CR 1034)
 Armstrong Ln. (CR 1045)

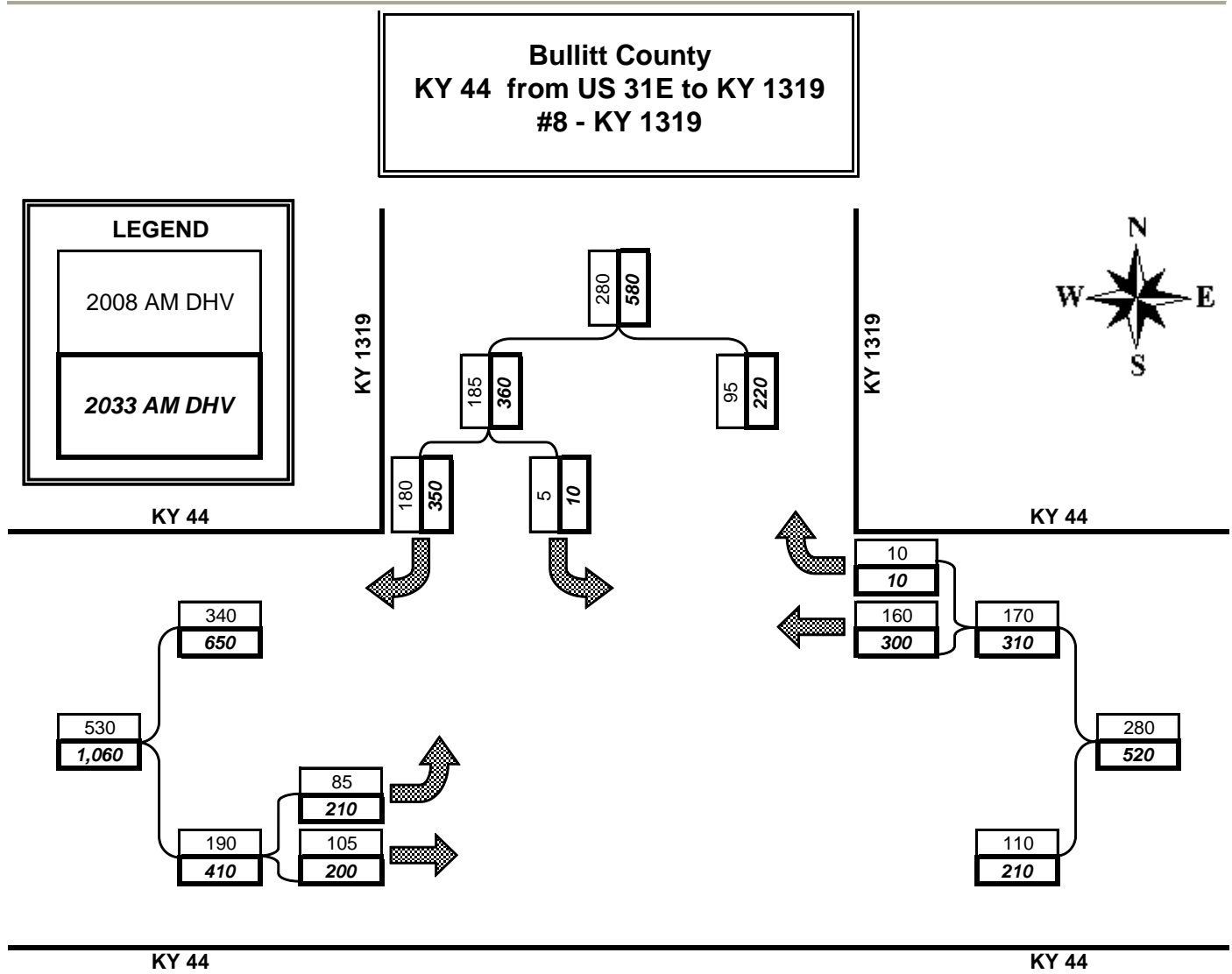




KY 44 Reconstruction Traffic Forecast
Item No. 5-347.50
 Turning Movement Counts - Existing

— KY 44 Forecast Area
● Study Area Intersections
 AM Volume (PM Volume)





PREPARED BY: D. Zimmerman DATE PREPARED: 18-Aug-08	Notes:
---	--------

Streetlight Data - 2022

Weekday

Bethel Church N (Southbound)

In	Total	Out
423	817	394
Right		Left
303		120
↙		↘

KY 44 W (Eastbo und)	Out	3088	Left	272	↗	↖	122	Right	2907	In	KY 44 E (Westbo und)																														
	Total	6113	Through	2753	→							←	In	3025											2785	Through	5780	Total											2873	Out	
	In	3025																																							
							2785	Through	5780	Total																															
									2873	Out																															

Weekday - 7am-9am

Bethel Church N (Southbound)

In	Total	Out
234	312	78
Right		Left
190		44
↙		↘

KY 44 W (Eastbo und)	Out	1458	Left	53	↗	↖	25	Right	1293	In	KY 44 E (Westbo und)																														
	Total	2244	Through	733	→							←	In	786											1268	Through	2070	Total											777	Out	
	In	786																																							
							1268	Through	2070	Total																															
									777	Out																															

Weekday - 4pm-6pm

Bethel Church N (Southbound)

In	Total	Out
149	456	307
Right		Left
88		61
↙		↘

KY 44 W (Eastbo und)	Out	1463	Left	212	↗	↖	95	Right	1470	In	KY 44 E (Westbo und)																														
	Total	3546	Through	1871	→							←	In	2083											1375	Through	3402	Total											1932	Out	
	In	2083																																							
							1375	Through	3402	Total																															
									1932	Out																															

Weekday - Peak Hour 6:45am - 7:45am

Bethel Church N (Southbound)

In	Total	Out
139	184	45
Right		Left
108		31
↙		↘

KY 44 W (Eastbo und)	Out	933	Left	33	↗	↖	12	Right	837	In	KY 44 E (Westbo und)																														
	Total	1410	Through	444	→							←	In	477											825	Through	1312	Total											475	Out	
	In	477																																							
							825	Through	1312	Total																															
									475	Out																															

Weekday - Peak Hour 4:45pm - 5:45pm

Bethel Church N (Southbound)

In	Total	Out
79	244	165
Right		Left
47		32
↙		↘

KY 44 W (Eastbo und)	Out	766	Left	114	↗	↖	51	Right	770	In	KY 44 E (Westbo und)																														
	Total	1873	Through	993	→							←	In	1107											719	Through	1795	Total											1025	Out	
	In	1107																																							
							719	Through	1795	Total																															
									1025	Out																															

Weekday

KY 2706 N (Southbound)

In Total Out
 619 1116 497
 Right Left
 601 18
 ↙ ↘

KY 44 W (Eastbo und)	Out	3004	Left	483	↗	↖	14	Right	2417	In	KY 44 E
	Total	5902	Through	2415	→						
	In	2898							2433	Out	

Weekday - 7am-9am

KY 2706 N (Southbound)

In Total Out
 216 336 120
 Right Left
 210 6
 ↙ ↘

KY 44 W (Eastbo und)	Out	1320	Left	117	↗	↖	3	Right	1113	In	KY 44 E
	Total	2121	Through	684	→						
	In	801							690	Out	

Weekday - 4pm-6pm

KY 2706 N (Southbound)

In Total Out
 383 737 354
 Right Left
 371 12
 ↙ ↘

KY 44 W (Eastbo und)	Out	1538	Left	343	↗	↖	11	Right	1178	In	KY 44 E
	Total	3468	Through	1587	→						
	In	1930							1599	Out	

Weekday - Peak Hour 6:45am - 7:45am

KY 2706 N (Southbound)

In Total Out
 130 201 71
 Right Left
 129 1
 ↙ ↘

KY 44 W (Eastbo und)	Out	864	Left	69	↗	↖	2	Right	737	In	KY 44 E
	Total	1349	Through	416	→						
	In	485							417	Out	

Weekday - Peak Hour 4:45pm - 5:45pm

KY 2706 N (Southbound)

In Total Out
 214 399 185
 Right Left
 208 6
 ↙ ↘

KY 44 W (Eastbo und)	Out	801	Left	180	↗	↖	5	Right	598	In	KY 44 E
	Total	1822	Through	841	→						
	In	1021							847	Out	

Weekday - 4pm-6pm

					US 31EX N (Southbound)									
					In	Total	Out							
					911	1434	523							
					Right	Through	Left							
					503	97	311							
					↙	↓	↘							
KY 44 W (Eastbo und)	Out	1885	Left	278	↗				↖	151	Right	1454	In	KY 44 E (Westbo und)
	Total	3796	Through	1532	→				←	1267	Through	3337	Total	
	In	1911	Right	101	↘				↙	36	Left	1883	Out	
					↖	↑	↗							
					115	94	40							
					Left	Through	Right							
					234	483	249							
					Out	Total	In							
					US 31EX S (Northbound)									

Weekday - Peak Hour 6:30am - 7:30am

					US 31EX N (Southbound)									
					In	Total	Out							
					230	386	156							
					Right	Through	Left							
					46	28	156							
					↙	↓	↘							
KY 44 W (Eastbo und)	Out	379	Left	109	↗				↖	27	Right	364	In	KY 44 E (Westbo und)
	Total	1595	Through	1063	→				←	314	Through	1601	Total	
	In	1216	Right	44	↘				↙	23	Left	1237	Out	
					↖	↑	↗							
					19	20	18							
					Left	Through	Right							
					95	152	57							
					Out	Total	In							
					US 31EX S (Northbound)									

Weekday - Peak Hour 5:15pm - 6:15pm

					US 31EX N (Southbound)									
					In	Total	Out							
					470	748	278							
					Right	Through	Left							
					258	49	163							
					↙	↓	↘							
KY 44 W (Eastbo und)	Out	1010	Left	141	↗				↖	79	Right	786	In	KY 44 E (Westbo und)
	Total	2021	Through	819	→				←	688	Through	1787	Total	
	In	1011	Right	51	↘				↙	19	Left	1001	Out	
					↖	↑	↗							
					64	58	19							
					Left	Through	Right							
					119	260	141							
					Out	Total	In							
					US 31EX S (Northbound)									

APPENDIX

C

KIPDA MODEL NETWORK ASSUMPTIONS

Travel Demand Modeling Methodology Memorandum

KY 44 Programming Study

Bullitt County, Kentucky
August 26, 2022

Table of Contents

Introduction	1
Roles and Responsibilities	1
Land Use / Employment Input Data.....	2
Network Model.....	4
KIPDA Model Runs	1
KYSTM and Hardin-Meade Model Runs	2
Growth Rates.....	6

List of Figures

Figure 1 Study Area	1
Figure 2 2015 Employment Data.....	2
Figure 3 Updated 2040 Employment Data	3
Figure 4 KY 44 Annual Growth Rate	7

List of Tables

Table 1 TAZ Employment Data	3
Table 2 Network Model Scenarios.....	1
Table 3 KIPDA Model Results.....	1
Table 4 KYSTM Model Results	2
Table 5 Hardin-Meade Model Results	4
Table 6 KY 44 Annual Growth Rate	7

Introduction

The Kentucky Transportation Cabinet (KYTC) initiated a programming study that will evaluate an approximately 14-mile section of the KY 44 corridor in Bullitt County from MP 12.263 (KY 61) to MP 26.286 (Bullitt and Spencer Counties boundary line). KY 44 in the project area is located south of Louisville and is classified as a rural minor arterial. This memorandum discusses the travel demand modeling methodology to support the selection of a growth rate for the KY 44 corridor. The KY 44 project area is shown in **Figure 1**.

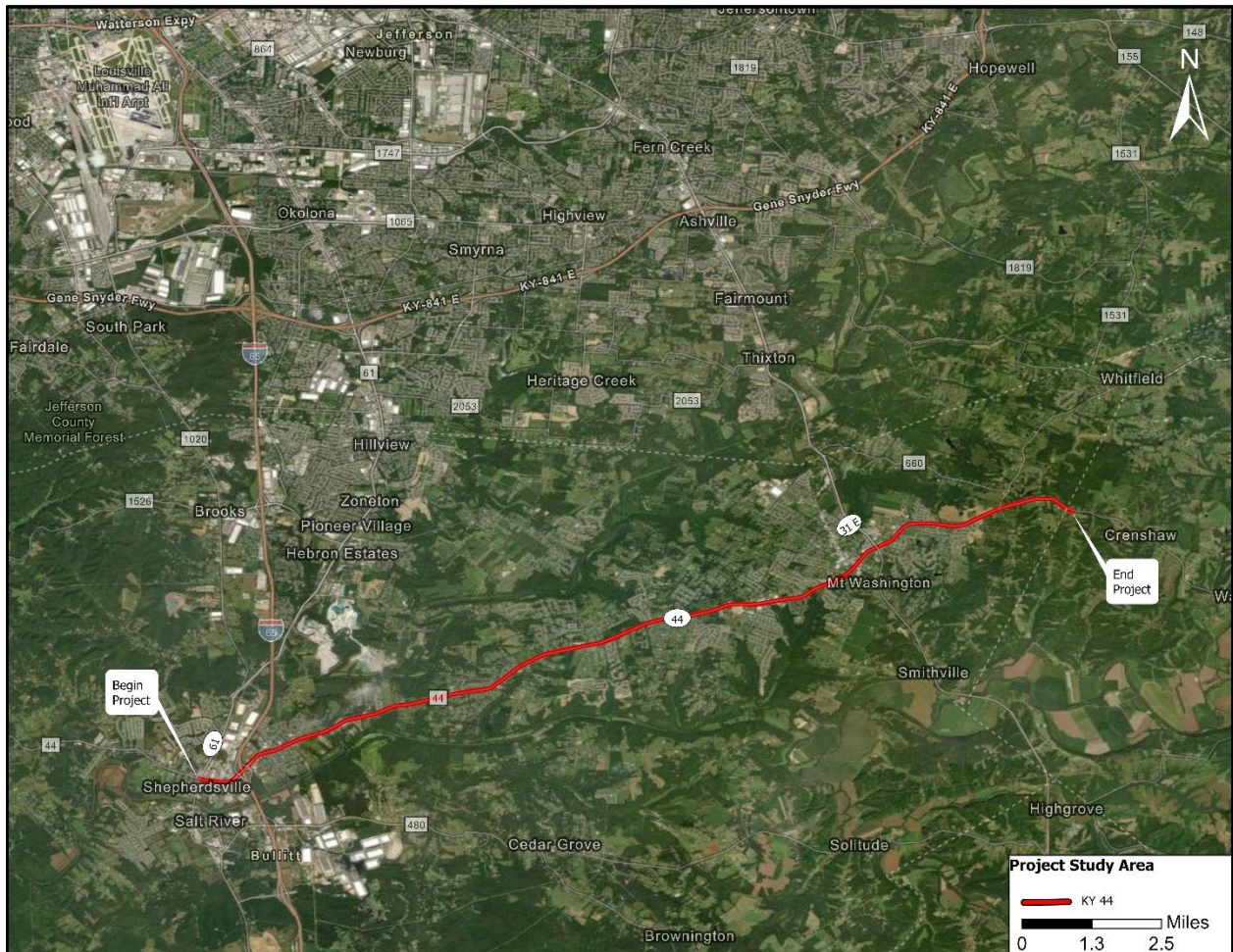


Figure 1 Study Area

Roles and Responsibilities

The following travel demand models were used to establish a growth rate for the KY 44 corridor:

- KIPDA Model: 2020 and 2040 model runs
- Kentucky Statewide Travel Demand Model (KYSTM Build 5976): 2018 & 2045 model runs
- KYTC Hardin-Meade Model: 2017 and 2045 model runs

KIPDA provided initial model runs to the project team. The team reviewed the model and provided recommended land use and network updates. KIPDA completed the final model runs for the KY

44 programming study. KYTC provided KYSTM runs and Hardin-Meade Model runs to compare to the KIPDA model results.

Land Use / Employment Input Data

The project team reviewed the future land use in the KIPDA model and worked with WSP, KYTC, and KIPDA to estimate realistic future land-use assumptions. Only employment data was adjusted. The proposed changes were reviewed by all agencies involved in the project. **Figure 2** and **Figure 3** show the 2015 and updated 2040 employment data, respectively. **Table 1** presents changes for each Traffic Analysis Zone (TAZ) in Bullitt County.

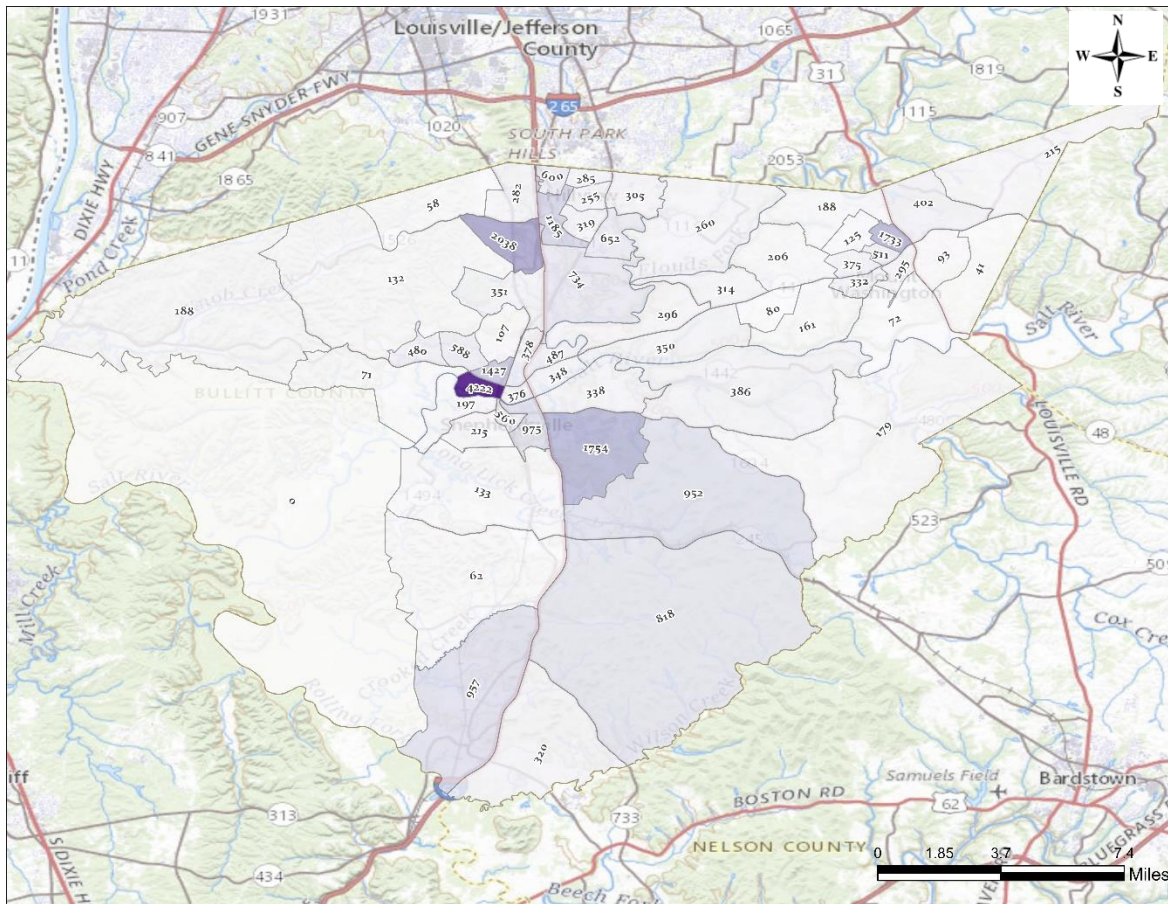


Figure 2 2015 Employment Data

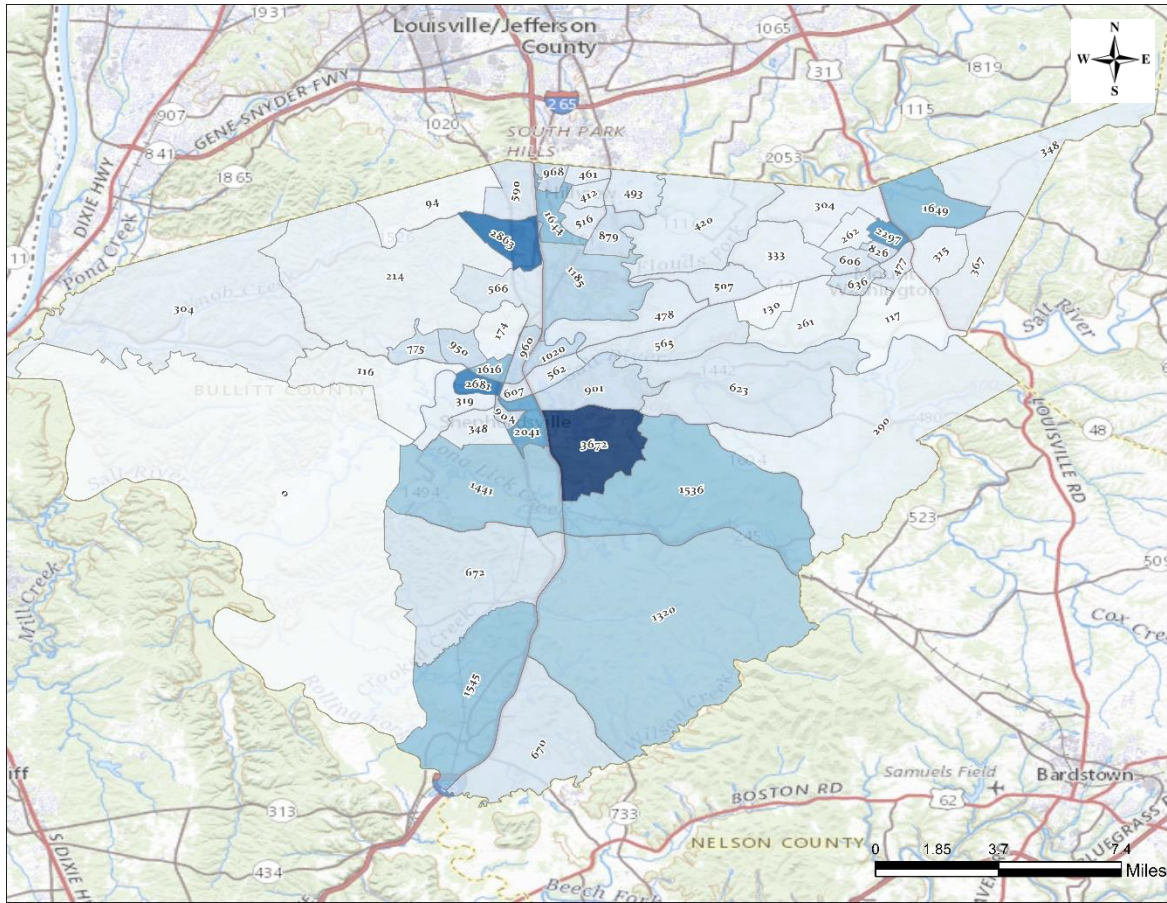


Figure 3 Updated 2040 Employment Data

Table 1 TAZ Employment Data

TAZ ID	Original Employment Data				Updated Employment Data		
	2015	2040	2040-2015	Annual Growth Rate	2040	2040-2015	Annual Growth Rate
737	0	0	0	-	0	0	-
736	957	1,545	588	1.9%	1,545	588	1.9%
735	320	8,000	7,680	13.7%	670	350	3.0%
734	818	1,320	502	1.9%	1,320	502	1.9%
733	62	3,000	2,938	16.8%	672	610	10.0%
732	133	216	83	2.0%	1,441	1,308	10.0%
731	1754	14,000	12,246	8.7%	3672	1918	3.0%
730	952	1,536	584	1.9%	1,536	584	1.9%
729	179	290	111	1.9%	290	111	1.9%
728	386	623	237	1.9%	623	237	1.9%
727	72	117	45	2.0%	117	45	2.0%
726	41	67	26	2.0%	367	326	9.16%
725	93	2,000	1,907	13.1%	315	222	5.0%
724	295	477	182	1.9%	477	182	1.9%
723	332	536	204	1.9%	636	304	2.6%
722	215	348	133	1.9%	348	133	1.9%
721	402	649	247	1.9%	1,649	1,247	5.8%
720	1733	2,797	1,064	1.9%	2,297	564	1.1%
719	511	826	315	1.9%	826	315	1.9%
718	375	606	231	1.9%	606	231	1.9%

TAZ ID	Original Employment Data				Updated Employment Data		
	2015	2040	2040-2015	Annual Growth Rate	2040	2040-2015	Annual Growth Rate
717	125	2,000	1,875	11.7%	262	137	3.0%
716	188	304	116	1.9%	304	116	1.9%
715	161	261	100	2.0%	261	100	2.0%
714	206	333	127	1.9%	333	127	1.9%
713	80	130	50	2.0%	130	50	2.0%
712	350	565	215	1.9%	565	215	1.9%
711	314	507	193	1.9%	507	193	1.9%
710	260	420	160	1.9%	420	160	1.9%
709	338	4,500	4,162	10.9%	901	563	4.0%
708	975	4,500	3,525	6.3%	2041	1066	3.0%
707	560	904	344	1.9%	904	344	1.9%
706	215	348	133	1.9%	348	133	1.9%
705	197	319	122	1.9%	319	122	1.9%
704	348	562	214	1.9%	562	214	1.9%
703	376	607	231	1.9%	607	231	1.9%
702	4222	3,000	-1,222	-1.4%	2,681	-1,541	-1.8%
701	296	478	182	1.9%	478	182	1.9%
700	487	3,000	2,513	7.5%	1020	533	3.0%
699	378	4,000	3,622	9.9%	960	582	3.8%
698	71	116	45	2.0%	116	45	2.0%
697	188	304	116	1.9%	304	116	1.9%
696	132	214	82	2.0%	214	82	2.0%
695	58	94	36	2.0%	94	36	2.0%
694	480	775	295	1.9%	775	295	1.9%
693	588	950	362	1.9%	950	362	1.9%
692	1427	2,303	876	1.9%	1,616	189	0.5%
691	107	174	67	2.0%	174	67	2.0%
690	351	566	215	1.9%	566	215	1.9%
689	734	1,185	451	1.9%	1,185	451	1.9%
688	2038	4,000	1,962	2.7%	2,863	825	1.4%
687	652	1,052	400	1.9%	879	227	1.2%
686	305	493	188	1.9%	493	188	1.9%
685	319	516	197	1.9%	516	197	1.9%
684	1185	2,500	1,315	3.0%	1,644	459	1.3%
683	255	412	157	1.9%	412	157	1.9%
682	285	461	176	1.9%	461	176	1.9%
681	600	968	368	1.9%	968	368	1.9%
680	282	4,000	3,718	11.2%	590	308	3.0%
Total	29,763	86,774	57,011	4.4%	47,831	18,068	1.9%

Network Model

The project team examined the future model network, including the Metropolitan Transportation Plan (MTP) projects included (and not included) in the current KIPDA model. The MTP projects in Bullitt County were used to create the following scenarios:

- **2040 Base Model** –KIPDA’s Base 2040 model with updated employment data changes
- **2040 No-Build: Scenario 1 (S1)** –Base Model but keeps KY 44 as it currently exists from a geometric standpoint (two-lanes throughout).
- **2040 Build: Scenario 2 (S2)** –KY 44 widened to four-lanes (per existing Phase 1 design recommendations) along with select MTP projects that the project team determined would be likely to be built by 2040 (see **Table 2**).

- **2040 Sensitivity Test: Scenario 3 (S3)** –Widened KY 44 along with other MTP projects, such as the I-65 widening. This scenario was run to assess the traffic impact on KY 44 if alternate routes are improved (i.e. higher or lower than Scenario 1 and 2) .

Table 2 presents projects in each scenario and changes for each link. The proposed changes for each scenario were reviewed by all agencies involved in the project.

Table 2 Network Model Scenarios

ID	Project Name	Location	Description	Scenario*			Link ID (2040 Model)	Number of Lanes in Each Direction			
				1	2	3		Base 2040 Model	S1	S2	S3
1	I-65	KY 61 in Lebanon Junction to I-265	6YP DESC: Widen I-65 from 6 to 8 lanes from KY 61 (Preston Highway) in Lebanon Junction to I-265 (Gene Snyder Freeway). CHAF DESC: Reduce congestion and improve mobility on I-65 from KY 61 (Preston Highway) in Lebanon Junction (Bullitt County) to I-265 (Gene Snyder Freeway) in Jefferson County. CHAF ID: IP20170064.			X	9478	4	3	3	4
							1959	4	3	3	4
							9477	4	3	3	4
							1968	4	3	3	4
							1922	4	3	3	4
							1923	4	3	3	4
							1950	4	3	3	4
							1943	4	3	3	4
							1937	4	3	3	4
							1932	4	3	3	4
							12812	4	3	3	4
							127	4	3	3	4
							12815	4	3	3	4
							12813	4	3	3	4
							122	4	3	3	4
							12814	4	3	3	4
							1830	4	3	3	4
							1869	4	3	3	4
							1836	4	3	3	4
							1851	4	3	3	4
							1850	4	3	3	4
							1863	4	3	3	4
							1860	4	3	3	4
							12866	4	3	3	4
							1861	4	3	3	4
							1803	4	3	3	4
							12867	4	3	3	4
							12869	4	3	3	4
1804	4	3	3	4							
12868	4	3	3	4							
1816	4	3	3	4							
1818	4	3	3	4							
1787	4	3	3	4							
1786	4	3	3	4							

ID	Project Name	Location	Description	Scenario*			Link ID (2040 Model)	Number of Lanes in Each Direction			
				1	2	3		Base 2040 Model	S1	S2	S3
2	I-65 / KY 1526	KY 1020 to KY 1450	Improve safety and reduce congestion at the I-65/KY 1526 (Brooks Hill Road - John Harper Highway) interchange, including improvements to KY 1526 from KY 1020 (Coral Ridge Road) to KY 1450 (Blue Lick Road). I-65 MP 121.20 to MP 122.00. Design may consider addition of dedicated turn lanes along length of KY 1526 where appropriate and adding turn lane capacity to interstate ramps. CHAF IP20190078.	X	X	X	NA	NA	N A	N A	N A
3	KY 245	I-65 to Bernheim Forest	Widen KY 245 from Bernheim Forest to the Community College. (08CCN)(10CCR)(14CCR)(16CCR) From MP 4.425 to MP 6.415. CHAF ID IP20150316. Additional Considerations: Four lanes, plus turn bays are assumed from the SB I-65 Ramps to a point approximately 1.7 miles E of the I-65 Interchange.	X	X	X	1822	2	2	2	2
							1815	2	2	2	2
4	KY 1450	KY 1450 to Old Preston Hwy	Improve safety and reduce congestion at the intersection of KY 1450 and KY 1526 east of the I-65/KY 1526 interchange. IP20130131.	X	X	X	NA	NA	N A	N A	N A
5	KY 1450 Blue Lick Road Widening	CR 1512A to Jefferson Co	Widen KY 1450 (Blue Lick Road) from 2 to 4 lanes from Bullitt/Jefferson County line to CR 1512A (Jeffie Lane).	X	X	X	1973	2	2	2	2
							11653	2	2	2	2
							1974	2	2	2	2
							11655	2	2	2	2
6	KY 1450 Blue Lick Road Widening	KY 1526 to CR 1512A	Improve safety and reduce congestion on KY 1450 (blue lick rd.) Between the intersections with KY 1526 (john harper highway) and CR 1512a (Jeffie lane) (2020ccn)				NA	NA	N A	N A	N A
7	KY 480	Cedar Grove School to Valley View Dr	Widen Cedar Grove Road (KY 480) from Cedar Grove Elementary School to Valley View Drive. (12CCR) (14CCR) (See 5-391.3 for interchange improvements). From: MP 2.01 to MP 2.84.	X	X	X	1873	2	2	2	2
							5097	2	2	2	2
8	I-65 Interchange	Between KY 480 and KY 245	Construct a new I-65 interchange between KY 480 and KY 245. Project length is 1.5 miles. Includes 3-lane connector road between KY 61 and Alpha Way.	X	X	X	12873	1	1	1	1
							12870	1	1	1	1
							12871	1	1	1	1
							12872	1	1	1	1
							12861	1	1	1	1
							12864	1	1	1	1
							12865	1	1	1	1
9	Northwest Mt. Washington Con	US 31E to KY 2706 (Flatlick Rd)	New route northwest of Mt. Washington from US 31E to KY 2706. (12CCN)(14CCN). IP20150164.			X	12908	1	0	0	1
							13051	1	0	0	1
							13054	1	0	0	1

ID	Project Name	Location	Description	Scenario*			Link ID (2040 Model)	Number of Lanes in Each Direction			
				1	2	3		Base 2040 Model	S1	S2	S3
10	I-65 / KY 480	I-65 / KY 480 Interchange	Improve operational performance of the I-65/KY480 interchange including ramp improvements and turning lanes. From MP 0.80 to MP 1.30. CHAF ID: IP20160218	X	X	X	NA	NA	N A	N A	N A
11	I-65 / KY 61	New I-65 Interchange	Construct a new interchange at I-65 and KY 61 (Preston Highway)			X	12816	1	0	0	1
							12817	1	0	0	1
							12819	1	0	0	1
							12818	1	0	0	1
12	KY 44	I-65 to Spencer Co Line	For no-build, the model will remain coded with 1 lane in each direction.	x			NA	NA	N A	N A	N A
13	KY 44	US 31W to KY 61	Reconstruct KY 44 from US 31W (Dixie Highway) to KY 61 (Preston Highway) in Shepherdsville. Project design will consider 3 lane section with two way left turn lane. CHAF IP20170066.			x	NA	NA	N A	N A	N A
14	KY 44	US 61 to I-65	Improve safety and reduce congestion on KY 44 between the I-65 interchange and the KY 61 intersection. Consider access management, pedestrian facilities and grade-separated rail crossing. IP20130129.		x	x	NA	NA	N A	N A	N A
15	KY 44	I-65 to Chimney Rock Dr	CHAF: Section 1 -1 from I-65 to Chimney Rock Drive (06CNN). CHAF ID: IP20150318. Additional Considerations: Propose 2 added lanes per CHAF database.		x	x	1867	2	1	2	2
							5061	2	1	2	2
							5060	2	1	2	2
							11712	2	1	2	2
							1823	2	1	2	2
							11728	2	1	2	2
							9424	2	1	2	2
16	KY 44	Chimney Rock Rd to Bogard	No project in MTP, need to define build condition. 2 lanes in each direction per 5-150.01 DES		x	x	12911	1	1	2	2
							125	1	1	2	2
							2026	1	1	2	2
							2023	1	1	2	2
							11730	1	1	2	2
							2031	1	1	2	2
17	KY 44	Bogard Lane to Armstrong Lane	Reconstruct KY 44 from Bogard Lane to Armstrong Lane (2020CCN). Improvements may include additional travel lanes and a continuous center turn lane.		x	x	5133	2	1	2	2
							11732	2	1	2	2
							1912	2	1	2	2
							2633	2	1	2	2
							5134	2	1	2	2
							11734	2	1	2	2
18	KY 44	Armstrong to US 31EX	No project in MTP, need to define build condition. 2 lanes in each direction per 5-150.01 DES		x	x	5146	1	1	2	2
							2628	1	1	2	2

ID	Project Name	Location	Description	Scenario*			Link ID (2040 Model)	Number of Lanes in Each Direction			
				1	2	3		Base 2040 Model	S1	S2	S3
							2643	1	1	2	2
							11741	1	1	2	2
							11744	1	1	2	2
							2642	1	1	2	2
							2638	1	1	2	2
							5161	1	1	2	2
19	KY 44	US 31EX to US 31E Bypass	Section 5 - From US 31EX to US 31E Bypass. (2008BOPC). The project length is 0.45 miles. IP20150201. One lane in each direction with the addition of a TWTL and/or dedicated turning lanes		x	x	2646	1	1	2	2
20	KY 44	US 31E to Spencer County	Widen KY 44 from 2 to 4 lanes from US 31E to Kings Church Road and a 3-lane section from Kings Church Road to Spencer County line. Updated to "Widen KY 44 from 2 to 4 lanes from US 31E to Winning Colors Drive/Love Ave"		x	x	5159	2	1	2	2
							11752	2	1	2	2
							2640	2	1	2	2
21	KY 44	Project at High School	Turn lane project now under design	x	x	x	NA	NA	N A	N A	N A

*Scenario 1: 2040 No-Build. Scenario 2: 2040 Build. Scenario 3: 2040 Sensitivity Test.

KIPDA Model Runs

The results of the KIPDA model runs are presented in **Table 3**. The following annual growth rates were calculated for the base model and the three scenarios:

- 2040 Base Model 1.30%
- 2040 No-Build: Scenario 1 (S1): 1.10%
- 2040 Build: Scenario 2 (S2): 2.00%
- 2040 Sensitivity Test: Scenario 3 (S3): 1.74%

Table 3 KIPDA Model Results

Link ID (2040 Model)	Length	Volume					Annual Growth (Base Model=2020)			
		2020	2040	S1	S2	S3	2040	S1	S2	S3
1794	0.14	7836	6473	7216	7107	6642	-0.95%	-0.41%	-0.49%	-0.82%
10533	0.18	7836	6473	7216	7107	6642	-0.95%	-0.41%	-0.49%	-0.82%
1787	0.04	7836	6473	7216	7107	6642	-0.95%	-0.41%	-0.49%	-0.82%
4977	0.12	9274	8574	9116	8988	8744	-0.39%	-0.09%	-0.16%	-0.29%
1796	0.16	19681	11662	22840	22992	11941	-2.58%	0.75%	0.78%	-2.47%
1797	0.04	18983	18369	21486	22763	19214	-0.16%	0.62%	0.91%	0.06%
1783	0.15	15468	17869	19869	21709	18715	0.72%	1.26%	1.71%	0.96%
1779	0.28	19895	26502	23648	27261	27581	1.44%	0.87%	1.59%	1.65%
4976	0.13	16888	22119	19311	22927	23217	1.36%	0.67%	1.54%	1.60%
4975	0.44	13085	17588	14843	18454	18716	1.49%	0.63%	1.73%	1.81%
1873	0.06	13365	18022	15319	18932	19168	1.51%	0.68%	1.76%	1.82%
1757	0.40	13820	18554	15910	19518	19730	1.48%	0.71%	1.74%	1.80%
1998	0.48	13820	18554	15910	19518	19730	1.48%	0.71%	1.74%	1.80%
6626	0.28	11677	14895	13970	16302	16229	1.22%	0.90%	1.68%	1.66%
11277	0.72	9346	11724	11509	13766	13228	1.14%	1.05%	1.95%	1.75%
124	1.05	9346	11724	11509	13766	13228	1.14%	1.05%	1.95%	1.75%
1997	0.26	10713	12838	13333	15515	14513	0.91%	1.10%	1.87%	1.53%
1999	0.30	10713	12838	13333	15515	14513	0.91%	1.10%	1.87%	1.53%
10547	0.49	12530	14881	17093	17997	16715	0.86%	1.56%	1.83%	1.45%
1995	0.61	17194	22219	20099	24413	24894	1.29%	0.78%	1.77%	1.87%
5044	0.13	17561	23228	20613	24628	25171	1.41%	0.80%	1.71%	1.82%
10549	0.95	15772	20641	18037	22023	22553	1.35%	0.67%	1.68%	1.80%
2003	0.30	13499	18459	15746	19564	20282	1.58%	0.77%	1.87%	2.06%
1840	0.31	12316	16252	12309	17940	16627	1.40%	0.00%	1.90%	1.51%
5045	0.39	13194	15861	13768	19366	18045	0.92%	0.21%	1.94%	1.58%
2002	0.42	12898	15574	13895	19277	17844	0.95%	0.37%	2.03%	1.64%
5055	0.23	11607	13247	12307	17526	15426	0.66%	0.29%	2.08%	1.43%
2570	0.43	10341	11800	11242	16257	13781	0.66%	0.42%	2.29%	1.45%
2578	0.41	12961	15333	15525	20371	17226	0.84%	0.91%	2.29%	1.43%
5065	0.25	15267	17909	18490	23129	19607	0.80%	0.96%	2.10%	1.26%
10557	0.08	15071	16991	17354	22813	19297	0.60%	0.71%	2.09%	1.24%
2572	0.22	14050	15756	16077	21492	17996	0.57%	0.68%	2.15%	1.25%
2587	0.21	15550	18117	17891	23628	20172	0.77%	0.70%	2.11%	1.31%
2584	0.25	10539	13054	14372	19315	16327	1.08%	1.56%	3.08%	2.21%
5071	0.15	10539	13054	14372	19315	16327	1.08%	1.56%	3.08%	2.21%
5069	0.39	3454	6013	5797	6637	6378	2.81%	2.62%	3.32%	3.11%
10565	0.07	3497	6130	5911	6754	6494	2.85%	2.66%	3.35%	3.14%
2592	0.44	2511	4007	3850	4319	4222	2.36%	2.16%	2.75%	2.63%
5053	0.39	2511	4007	3850	4319	4222	2.36%	2.16%	2.75%	2.63%
2562	0.73	2648	4250	4094	4547	4453	2.39%	2.20%	2.74%	2.63%
10578	0.65	4197	6691	6666	6934	6940	2.36%	2.34%	2.54%	2.55%
2607	0.42	3802	5604	5604	5604	5604	1.96%	1.96%	1.96%	1.96%

Link ID (2040 Model)	Length	Volume					Annual Growth (Base Model=2020)			
		2020	2040	S1	S2	S3	2040	S1	S2	S3
8645	0.10	3802	5604	5604	5604	5604	1.96%	1.96%	1.96%	1.96%

KYSTM and Hardin-Meade Model Runs

The KYSTM and Hardin-Meade 2045 model results were also used as comparisons for growth rates, although these models will likely be less accurate in the study area, due to the fact that they were not calibrated for this study area. **Table 4** and **Table 5** present the result of the KYSTM and Hardin-Meade models, respectively.

Table 4 KYSTM Model Results

ID	Length	2018 Volume	2045 Volume	Annual Growth
36202	0.05	20459	27308	1.08%
36204	0.10	20459	27308	1.08%
36206	0.08	20459	27308	1.08%
36208	0.14	20459	27308	1.08%
36210	0.03	20459	27308	1.08%
627897	0.03	25503	30729	0.69%
36212	0.03	25503	30729	0.69%
36214	0.03	25503	30729	0.69%
36218	0.15	30360	35710	0.60%
36220	0.06	30360	35710	0.60%
36222	0.19	30360	35710	0.60%
36224	0.03	30360	35710	0.60%
36226	0.01	30360	35710	0.60%
36228	0.01	30360	35710	0.60%
36230	0.05	30360	35710	0.60%
36232	0.04	27192	33893	0.82%
36234	0.02	27192	33893	0.82%
36236	0.07	27192	33893	0.82%
36238	0.02	27192	33893	0.82%
36240	0.06	27192	33893	0.82%
36242	0.06	27192	33893	0.82%
36244	0.16	19848	28615	1.36%
36246	0.11	19848	28615	1.36%
36248	0.13	19848	28615	1.36%
416506	0.20	19848	28615	1.36%
416508	0.03	19848	28615	1.36%
416510	0.01	19848	28615	1.36%
36250	0.11	19848	28615	1.36%
36252	0.13	19848	28615	1.36%
36254	0.08	19848	28615	1.36%
627919	0.02	18576	27061	1.40%
36256	0.04	18576	27061	1.40%
36258	0.13	18576	27061	1.40%
422298	0.10	18576	27061	1.40%
422300	0.08	18576	27061	1.40%
422302	0.28	18576	27061	1.40%
36260	0.03	18576	27061	1.40%
36262	0.23	18576	27061	1.40%
36264	0.42	18576	27061	1.40%
36863	0.16	18576	27061	1.40%
36865	0.02	18576	27061	1.40%
36867	0.08	16630	22977	1.20%

ID	Length	2018 Volume	2045 Volume	Annual Growth
36869	0.17	16630	22977	1.20%
36873	0.19	16630	22977	1.20%
36875	0.12	15569	20933	1.10%
36877	0.14	15569	20933	1.10%
36879	0.04	15569	20933	1.10%
36881	0.09	15569	20933	1.10%
36922	0.09	15569	20933	1.10%
36924	0.16	15569	20933	1.10%
600626	0.25	15569	20933	1.10%
600622	0.05	17742	26965	1.56%
600624	0.17	17742	26965	1.56%
36926	0.02	17742	26965	1.56%
627933	0.30	18176	27088	1.49%
36928	0.13	18176	27088	1.49%
36930	0.17	18176	27088	1.49%
589609	0.11	18176	27088	1.49%
589304	0.10	18176	27088	1.49%
589306	0.03	18176	27088	1.49%
589597	0.05	18176	27088	1.49%
589601	0.04	18176	27088	1.49%
589605	0.04	18176	27088	1.49%
36932	0.05	17395	26083	1.51%
36936	0.17	17395	26083	1.51%
36938	0.01	17395	26083	1.51%
36940	0.18	17395	26083	1.51%
592210	0.20	17395	26083	1.51%
592212	0.09	17395	26083	1.51%
36942	0.06	11862	20919	2.12%
36944	0.25	11862	20919	2.12%
36997	0.13	11862	20919	2.12%
627930	0.36	11381	15160	1.07%
542864	0.16	11381	15160	1.07%
538632	0.04	11942	15720	1.02%
538634	0.04	11942	15720	1.02%
538636	0.07	11942	15720	1.02%
37001	0.34	11942	15720	1.02%
37003	0.06	11942	15720	1.02%
37005	0.08	14154	18182	0.93%
37007	0.02	14154	18182	0.93%
37009	0.05	14154	18182	0.93%
37011	0.03	14154	18182	0.93%
37013	0.07	14154	18182	0.93%
37015	0.15	14154	18182	0.93%
640181	0.02	14154	18182	0.93%
36308	0.12	14154	18182	0.93%
36309	0.02	14154	18182	0.93%
36311	0.10	14154	18182	0.93%
36313	0.08	13949	17517	0.85%
36315	0.14	13949	17517	0.85%
36317	0.02	13949	17517	0.85%
36319	0.07	14624	18293	0.83%
36321	0.15	15613	18564	0.64%
36323	0.01	15613	18564	0.64%
36325	0.01	15613	18564	0.64%
36327	0.03	15613	18564	0.64%
36329	0.06	12932	16039	0.80%
36366	0.07	12932	16039	0.80%

ID	Length	2018 Volume	2045 Volume	Annual Growth
36368	0.07	12932	16039	0.80%
36370	0.03	12932	16039	0.80%
640175	0.02	12009	15046	0.84%
525491	0.03	12009	15046	0.84%
525493	0.04	12009	15046	0.84%
525497	0.07	12009	15046	0.84%
509987	0.03	10948	21951	2.61%
509995	0.02	10948	21951	2.61%
510294	0.02	10948	21951	2.61%
510298	0.02	10948	21951	2.61%
510306	0.04	10948	21951	2.61%
510310	0.01	10948	21951	2.61%
510312	0.14	10948	21951	2.61%
448618	0.01	10948	21951	2.61%
448620	0.01	10948	21951	2.61%
36380	0.10	10948	21951	2.61%
36382	0.21	10948	21951	2.61%
36384	0.05	10948	21951	2.61%
36790	0.05	10948	21951	2.61%
36792	0.18	8837	19956	3.06%
36794	0.02	8837	19956	3.06%
36796	0.24	8837	17409	2.54%
36798	0.15	8837	17409	2.54%
447819	0.17	8837	17409	2.54%
447821	0.05	8837	17409	2.54%
447825	0.04	9040	18412	2.67%
448106	0.05	9040	18412	2.67%
448110	0.10	9040	18412	2.67%
448114	0.14	9040	18412	2.67%
36965	0.20	9040	18412	2.67%
36967	0.46	3823	6151	1.78%
36969	0.49	3823	6151	1.78%
36971	0.12	3823	6151	1.78%

Table 5 Hardin-Meade Model Results

ID	Length	2017 Volume	2045 Volume	Annual Growth
42022	0.05	15632	17164	0.33%
42032	0.10	15632	17164	0.33%
42056	0.08	15632	17164	0.33%
42085	0.14	15632	17164	0.33%
42040	0.03	15632	17164	0.33%
309250	0.09	15632	17164	0.33%
42117	0.14	34041	40583	0.63%
42234	0.06	30108	35377	0.58%
42209	0.19	30108	35377	0.58%
42245	0.03	30108	35377	0.58%
42328	0.01	30108	35377	0.58%
42381	0.01	30108	35377	0.58%
41909	0.05	30108	35377	0.58%
41862	0.04	27379	32466	0.61%
42456	0.02	27379	32466	0.61%
41943	0.07	27379	32466	0.61%
41881	0.02	27379	32466	0.61%
41930	0.06	27379	32466	0.61%

ID	Length	2017 Volume	2045 Volume	Annual Growth
41967	0.06	27379	32466	0.61%
41828	0.16	27379	32466	0.61%
41846	0.12	27379	32466	0.61%
42178	0.12	27379	32466	0.61%
42063	0.20	27379	32466	0.61%
42094	0.04	27379	32466	0.61%
42148	0.11	27379	32466	0.61%
42012	0.13	27379	32466	0.61%
41870	0.10	27379	32466	0.61%
42441	0.04	21420	25808	0.67%
42305	0.13	21420	25808	0.67%
42160	0.10	21420	25808	0.67%
42334	0.08	21420	25808	0.67%
41900	0.28	21420	25808	0.67%
42100	0.03	21420	25808	0.67%
42497	0.23	21420	25808	0.67%
42387	0.42	21420	25808	0.67%
42075	0.16	21420	25808	0.67%
42214	0.02	21420	25808	0.67%
41893	0.08	21420	25808	0.67%
42184	0.17	21420	25808	0.67%
42326	0.00	21420	25808	0.67%
41956	0.19	21420	25808	0.67%
42355	0.12	21420	25808	0.67%
42251	0.14	21420	25808	0.67%
41921	0.04	21420	25808	0.67%
42068	0.09	21420	25808	0.67%
42469	0.09	21420	25808	0.67%
42451	0.16	21420	25808	0.67%
41939	0.28	21420	25808	0.67%
41982	0.07	21420	25808	0.67%
309286	0.07	21420	25808	0.67%
42130	0.29	25456	31541	0.77%
41916	0.32	23587	30090	0.87%
41819	0.13	23703	30177	0.87%
42029	0.16	23703	30177	0.87%
41950	0.11	20509	26147	0.87%
41993	0.01	20509	26147	0.87%
41841	0.26	20271	25691	0.85%
42241	0.05	20271	25691	0.85%
42165	0.17	20271	25691	0.85%
42424	0.01	20271	25691	0.85%
42275	0.18	20271	25691	0.85%
42519	0.20	15493	17817	0.50%
41888	0.01	15493	17817	0.50%
42046	0.09	15493	17817	0.50%
42041	0.06	15493	17817	0.50%
42179	0.25	15493	17817	0.50%
41863	0.01	18564	22206	0.64%
41968	0.34	18564	22206	0.64%
42299	0.07	19172	22530	0.58%
42006	0.08	19172	22530	0.58%
42226	0.02	19172	22530	0.58%
42113	0.05	19172	22530	0.58%
41931	0.03	19172	22530	0.58%
42411	0.07	19172	22530	0.58%
42400	0.14	19172	22530	0.58%

ID	Length	2017 Volume	2045 Volume	Annual Growth
309322	0.03	19172	22530	0.58%
42118	0.02	19172	22530	0.58%
310012	0.13	22478	24038	0.24%
41829	0.10	22478	24038	0.24%
42435	0.08	22478	24038	0.24%
42506	0.14	22478	24038	0.24%
42084	0.02	22478	24038	0.24%
41929	0.07	22478	24038	0.24%
42224	0.02	22478	24038	0.24%
309940	0.13	25293	25865	0.08%
42505	0.01	25293	25865	0.08%
42364	0.04	25293	25865	0.08%
42030	0.06	20619	20028	-0.10%
41917	0.07	20619	20028	-0.10%
42493	0.07	20619	20028	-0.10%
42210	0.03	20619	20028	-0.10%
309237	0.02	20619	20028	-0.10%
41889	0.14	20619	20028	-0.10%
42407	0.02	18449	18475	0.01%
42064	0.10	18449	18475	0.01%
42351	0.01	18449	18475	0.01%
42483	0.14	18449	18475	0.01%
41951	0.01	18449	18475	0.01%
42246	0.01	18449	18475	0.01%
42235	0.10	18449	18475	0.01%
42095	0.20	13244	13826	0.15%
41987	0.05	13244	13826	0.15%
42382	0.05	13244	13826	0.15%
42514	0.18	13244	13826	0.15%
42270	0.02	13244	13826	0.15%
41976	0.24	13244	13826	0.15%
42419	0.15	13244	13826	0.15%
42343	0.25	13244	13826	0.15%
42055	0.28	13244	13826	0.15%
42476	0.20	13244	13826	0.15%
41942	0.46	6472	3965	-1.74%
42373	0.49	6472	3965	-1.74%
42193	0.12	6472	3965	-1.74%
309692	1.34	6472	3965	-1.74%

Growth Rates

KY 44 programming study was originally expected to use one growth rate for the entire corridor; however, due to the differences in growth patterns along the corridor, three growth rates will be used. The corridor was divided into the following sections:

- KY-61 to I-65
- I-65 to US 31E
- US 31E to Spencer County Line

Table 6 presents the annual growth rate for KY 44 sections.

The results of the KIPDA and KYSTM models are generally consistent in most sections. The Hardin-Meade model results are not consistent with the other two models for two reasons: 1) it

was not calibrated for this study area, and 2) the study corridor is located near the edge of the model.

Table 6 KY 44 Annual Growth Rate

ID	Segment	KIPDA Model				KYSTM Model	Hardin-Meade Model
		2040 Base	S1	S2	S3	2045 Model	2045 Model
1	KY-61 to I-65	-0.84%	0.21%	0.26%	-0.70%	1.01%	0.33%
2	I-65 to US 31E	1.13%	0.81%	1.94%	1.68%	1.23%	0.59%
3	US 31E to Spencer County Line	2.37%	2.24%	2.66%	2.57%	2.35%	-0.89%
1-3	KY-61 to Spencer County Line	1.30%	1.10%	2.00%	1.74%	1.48%	0.15%

Note: S1: 2040 No-Build. S2: 2040 Build. S3: 2040 Sensitivity Test.

Section 1 from KY-61 to I-65 had the lowest projected growth rate in the study corridor ranging from -0.84% (2040 KIPDA Base) to 0.26% (S2: 2040 Build). The KYSTM Base Model showed a 1.01% growth rate for this section.

The middle (and largest) section from I-65 to US 31E had a growth rate in the range of 0.81% (S1: 2040 No-Build) to 1.94% (S2: 2040 Build). The KYSTM Base Model estimated a growth rate of 1.23%, which was close to the result of the KIPDA Base model (1.13%).

Section 3 from US 31E to the Spencer County Line had the highest growth rate in the study corridor ranging from 2.24% (S1: 2040 No-Build) to 2.66% (S2: 2040 Build). The KYSTM Base Model estimated a growth rate of 2.35%, which was close to the result of the KIPDA Base model (2.37%).

Overall, the highest growth rate was estimated from S2 2040 Build Model (2.00% for the KY 44 study corridor), followed by S3 2040 Sensitivity Test (1.74%). As expected, the lowest growth rate was projected from S1 2040 No-Build Model (1.10% % for the KY 44 study corridor). Refer to the KY 44 Traffic Forecast Report for the growth rates that were used for the project.

Figure 4 shows the annual growth rate for KY 44 sections.

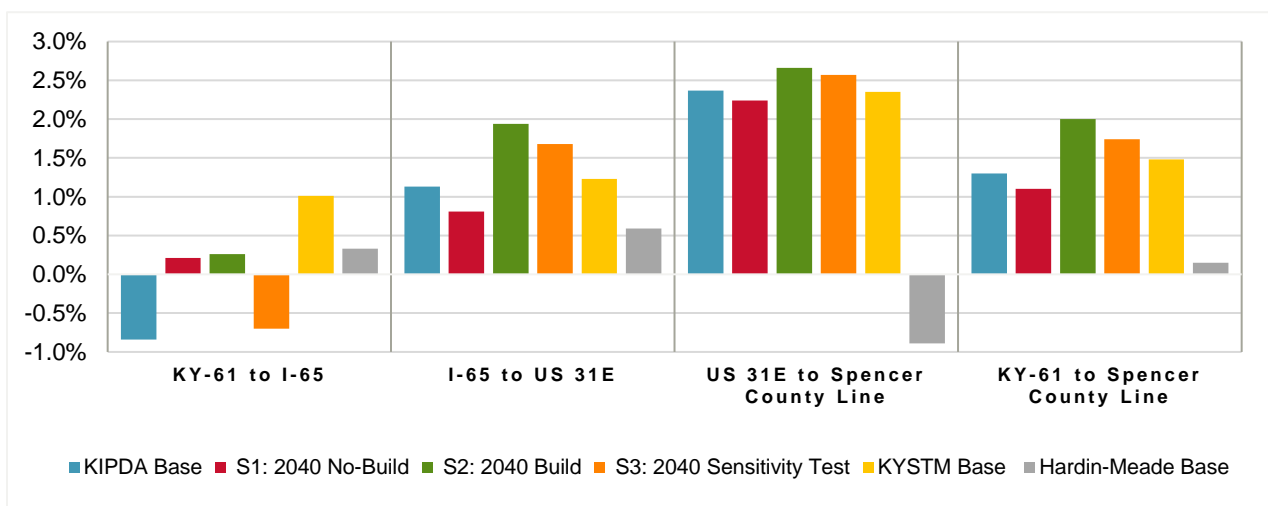


Figure 4 KY 44 Annual Growth Rate