Glendale Mobility Study

Hardin County

Traffic Forecast Report

February 2023

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1.0 PROJECT DESCRIPTION

This traffic forecast report has been prepared by Qk4 for the Kentucky Transportation Cabinet (KYTC) for the Glendale Mobility Study. The primary study corridor is KY 222 between US 62 and the I-65 interchange, from milepoint (MP) 0.000 to 6.459 in Hardin County, though a wide range of improvement types were considered.

While existing volumes (beyond I-65) are relatively low for the rural area, future travel demand is expected to increase significantly with Blue Oval SK (BOSK) Battery Park in Glendale, expected to bring 4,900 new employees to the region as early as 2025. **Figure 1** shows the study area.

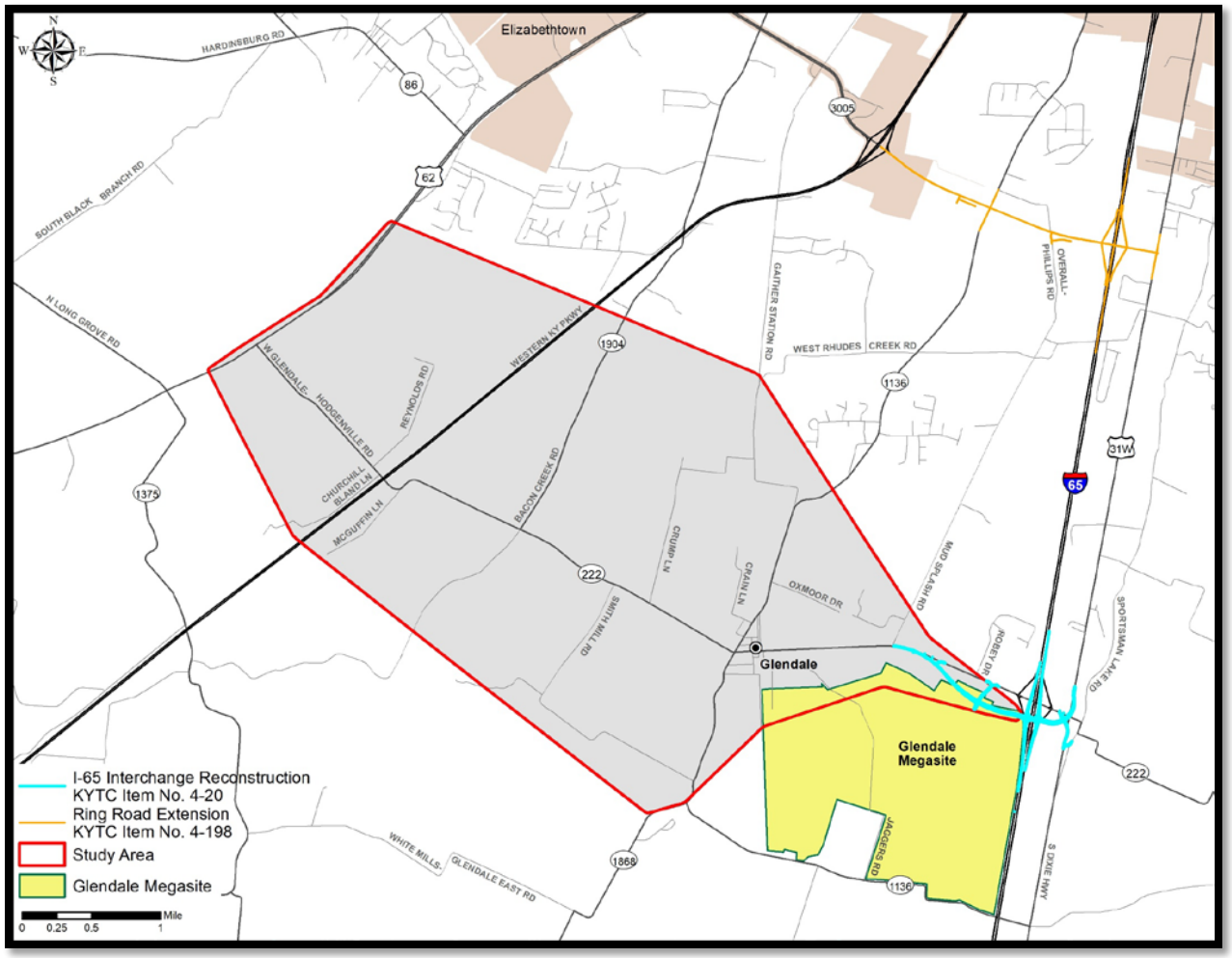


Figure 1: Study Area

To prepare for this growth, many infrastructure projects are underway in the region. Two transportation projects were specifically included in evaluating future traffic forecasts.

- Item 4-20, under construction, reconstructs the existing I-65/KY 222 diamond interchange as a single point urban interchange (SPUI), shifted slightly south of its current location.

- Item 4-198, north of the KY 222 corridor, extends KY 3005 (Ring Road) east to connect the Western Kentucky Parkway with I-65 and US 31W.

2.0 FORECASTING DATA

2.1 TRAFFIC COUNTS

Historic traffic count data between 2000 and 2020 were retrieved from the KYTC traffic counts database for seven locations across KY 222 (stations 047262, 047326, 047253, 047255, and 047275) and I-65 (stations 047256 and 047400). Additionally, turning movement counts were collected at the KY 222 intersections with US 62 and KY 1136 (April 2022) and at the I-65 ramps (March 2019). These count stations and turning movement locations are mapped in **Figure 2**. Turning movement counts are presented in **Appendix A**.

Figure 2: Study Area Traffic Count Station Locations

Count stations along KY 222 show a flat growth except near I-65, which demonstrates an average annual growth rate of 5.9%. Count station ADT data and trendlines for KY 222 are plotted in **Figure 3**.

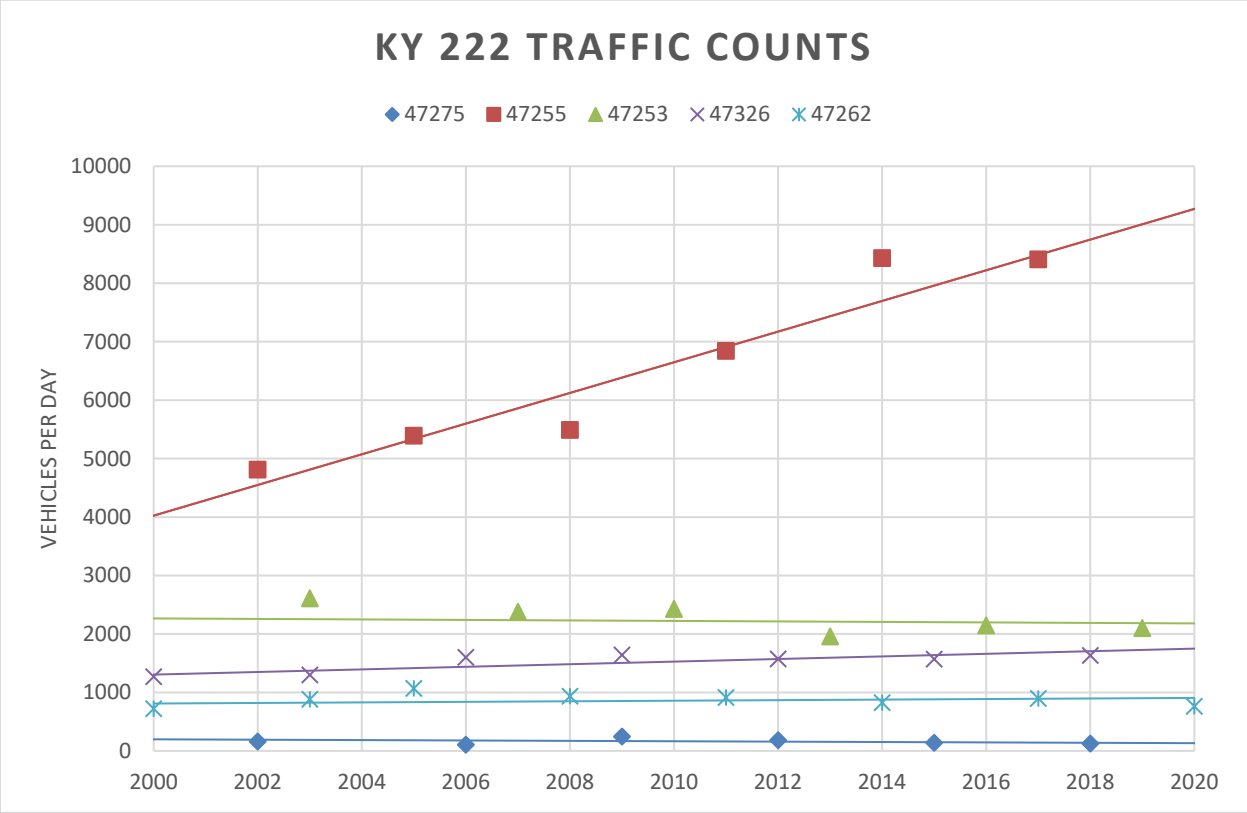


Figure 3: KY 222 Average Daily Traffic Counts and Trendlines (2000 - 2020)

Observed I-65 traffic volumes since 2019 have demonstrated relatively large variations—most notably related to atypical traffic patterns in 2020 with the pandemic. Given the fluctuations in volumes, KYTC District 4 provided updated hourly count station data along I-65 and throughout Hardin County. From discussion and review of this data between 2019 and 2022, shown in **Figure 4** and **Table 1**, it was determined that the sample used for 2021 AADTs had been impacted by Memorial Day volumes collected around May 31, 2021. The latest 2022 AADT estimates, sampled from late August and mid-September, suggest current average weekday volumes falling between the 2020 and 2021 reported volumes. From this latest data, average annual daily traffic (AADT) increases while traveling north, with 2022 volumes estimated at 48,800 to the south of KY 222 and 53,700 vehicles to the north, approaching Elizabethtown.

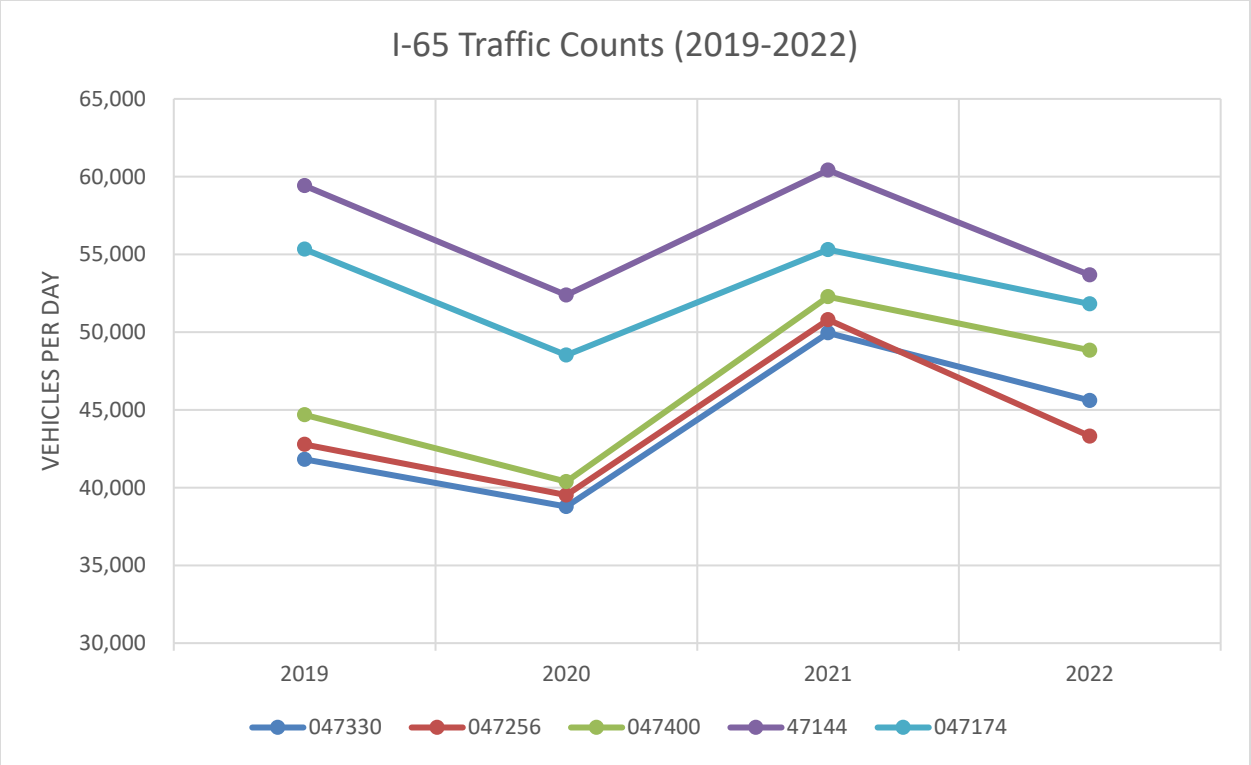


Figure 4: I-65 Traffic Counts (2019 - 2022)

Table 1: Hardin County I-65 Count Stations and ADT Counts

Station	Milepoint	2019 ADT	2020 ADT	2021 ADT	2022 ADT	2022 Truck Share
047330	78.661	41,817	38,783	49,948	45,605	26.72%
047256	80.457	42,776	39,522	50,800	43,310	26.77%
047400	85.686	44,682	40,384	52,275	48,835	35.72%
047144	93.345	59,419	52,382	60,416	53,676	27.41%
047174	94.154	55,331	48,519	55,307	51,813	29.20%

2.2 SOCIOECONOMIC DATA

Population data for Hardin County were obtained from the 2010 decennial census, the 2020 redistricting data (P.L. 94-171), and the previous two releases of the Kentucky State Data Center projections (October 2016 and August 2022). Shown in **Table 2**, both data releases project a steady increase in population for the county through the year 2040, with a slightly lower growth rate in the newer projections. For 2040 total county population, estimates decreased from 134,901 to 125,394.

Table 2: Population Projections - Hardin County

Hardin County Population	2010	2020	2025	2030	2035	2040
Census	105,543	110,702				
KSDC Projections (Oct 2016)			118,413	124,137	129,638	134,901
KSDC Projections (Aug 2022)			115,110	118,974	122,367	125,394

The city of Elizabethtown is updating their comprehensive plan concurrent with this Glendale Mobility Study. From discussion with the city at the time of this report, the comprehensive plan estimates significant growth, primarily in residential development. While this discussion helped to inform socioeconomic projection adjustments, specifics of this estimate were unavailable.

Employment and household estimates were obtained from the Hardin/Meade Regional Travel Demand Model (HMTDM)[1]. These estimates were developed for the Radcliff/Elizabethtown Metropolitan Planning Organization (MPO), with final socioeconomic adjustments outlined in **2.3.2**, are provided in **Table 3**. The MPO encompasses Hardin and Meade Counties while the HMTDM includes nine surrounding counties within Kentucky: Hardin, Bullitt, Nelson, Meade, Grayson, Breckinridge, Hart, Larue, and part of Jefferson. Existing and projected socioeconomic data is available throughout the model region for years 2020 and 2045. For Hardin County, the projected annual household growth rate is 1.28% with employment at 2.97%, which includes projected employment at the BOSK Battery Park.

Table 3: HMTDM Socioeconomic Data Projections

HMTDM Hardin County Projections		
	2020	**2045**
Households	39,847	54,094
Employment	46,111	84,448

2.3 HARDIN-MEADE TRAVEL DEMAND MODEL

2.3.1 KYTC Update for 2020 Base Year

KYTC revised the HMTDM in May 2022 to update the model from a 2015 to a 2020 base year. This effort included updates to the population, housing, and employment data on the model's traffic analysis zones (TAZ) for the 2020 base and 2045 forecast years. Socioeconomic growth patterns were derived from 2020 Census tract population statistics and employment data maintained by the KY Education Cabinet. For the model network, external stations were adjusted to reflect the latest Kentucky Statewide Model (KYSTMv19) assignment results and count stations were updated with recent counts from 2017-2020.

[1] Model version v20210402, updated by KYTC in May 2022

2.3.2 2045 Projection Adjustments

Analysts also engaged with local community leaders to ensure model growth patterns reflect current expectations. Qk4 set up one-on-one meetings with key local officials to review model growth patterns by TAZ and obtain feedback on anticipated future land use changes and socioeconomic growth assumptions. Each conversation provided information on recent development interest and anticipated long-term land use changes to be presented in their upcoming comprehensive plan updates:

- June 15, 2022
  - Adam King, Hardin County Planning Commission Director
  - Charlie Allen, Hardin County Engineering
- June 16, 2022
  - KYTC District 4 planning staff
  - Aaron Hawkins, City of Elizabethtown Planner

Additionally, a local officials meeting was held on July 14, 2022 which covered transportation projects in southern Hardin County. The following projects were discussed, with complete meeting notes provided in **Appendix B**:

- Item No. 4-20, I-65 / KY 222 Interchange Reconstruction
- Item No. 4-198, Ring Road Extension
- Item No. 4-171, Widen KY 1136 (Gilead Church Road)
- Glendale Mobility Study

As a result of these meetings, 2045 socioeconomic estimates in KYTC's May 2022 HMTDM were adjusted to incorporate an additional 896 households, 1,931 persons, and 1,321 employees. These adjustments also include an employee increase at the proposed Glendale BOSK site (TAZ 349) increasing from 4,700 to 4,900 employees, reflecting the latest traffic study projections.[2] **Figure 5** and **Figure 6** summarize the final distribution and 2045 forecast of households and employment for the study vicinity TAZs.

[2] *Ford Blue Oval SK Battery Plant Traffic Study*, Wade Trim Associates, Inc., May 2022.

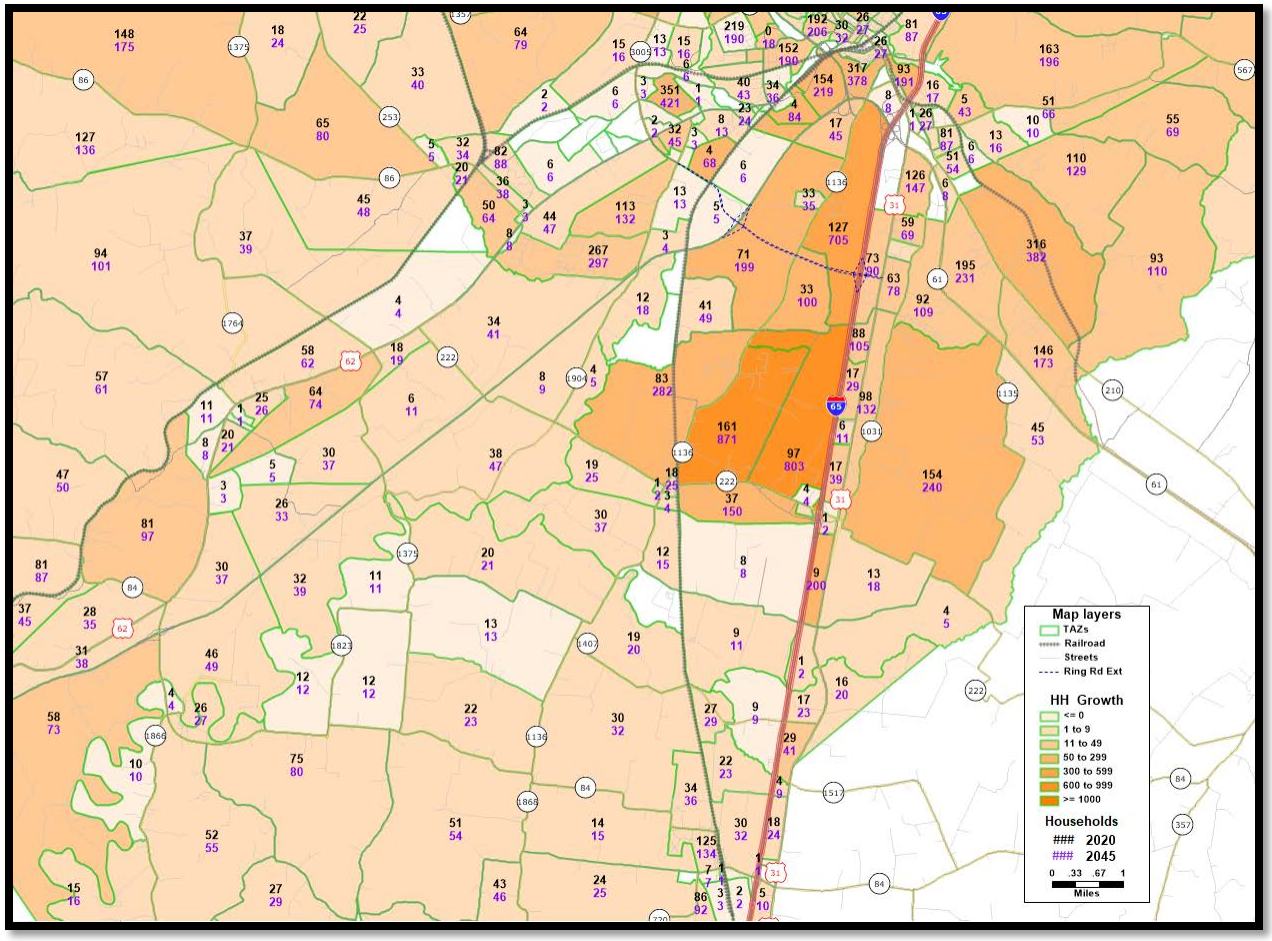


Figure 5: HMTDM Household Projections, 2020 to 2045

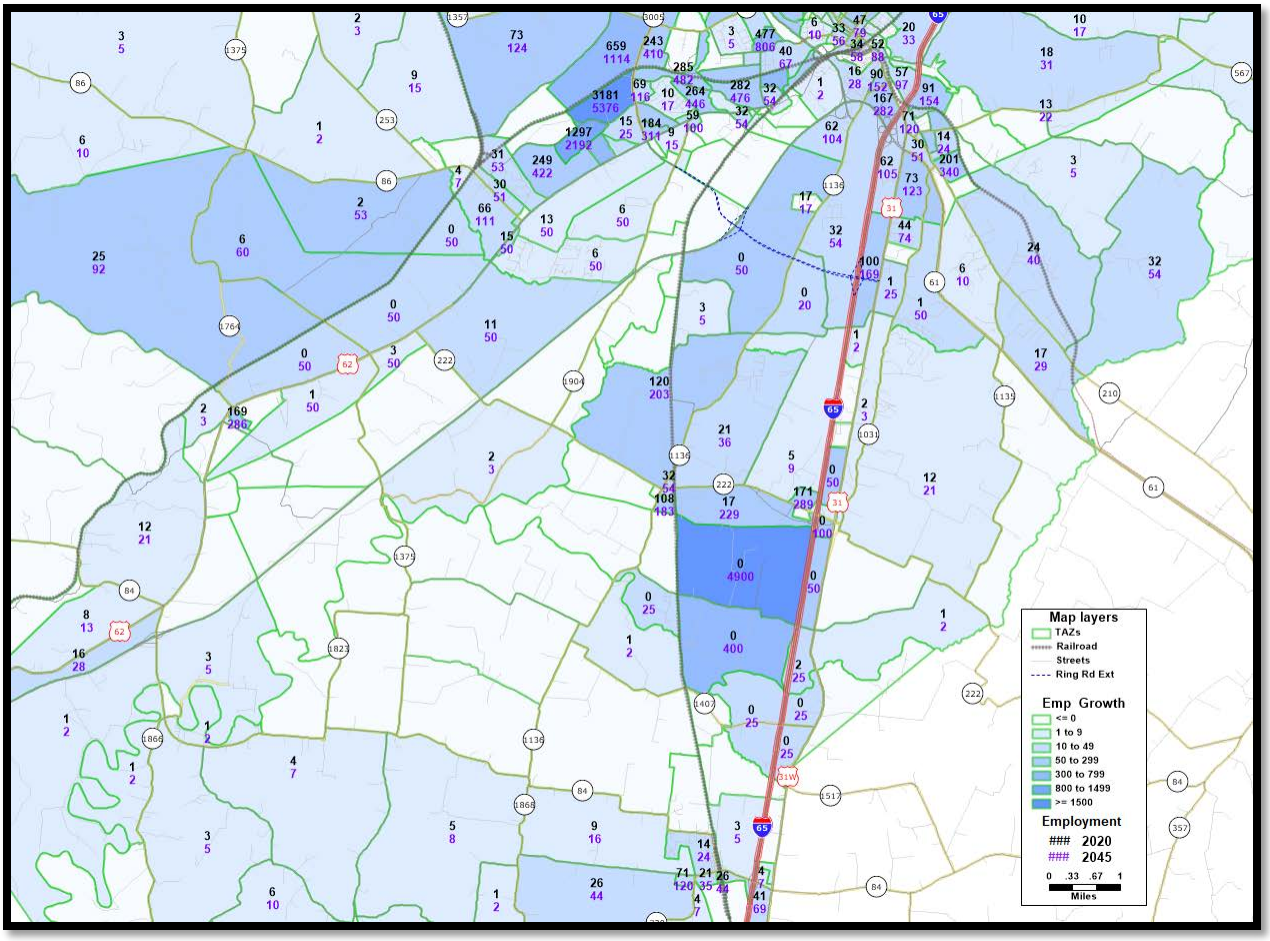


Figure 6: HMTDM Employment Projections, 2020 to 2045

2.3.3 Model Network Modifications

To improve the travel demand model operation, adjustments to the model network were performed. Centroid connectors were adjusted for two traffic analysis zones to support the Ring Road extension and the Glendale BOSK site (ID 296 and 349, respectively).

Vehicle speeds along two corridors, KY 1136 (New Glendale Road) and US 31W were reduced in all model years, as both corridors captured a higher-than-expected amount of travel routing between zone pairs competing with I-65. These changes were evaluated by travel time and routing comparisons between zones within the modeling software and publicly available navigational tools (e.g., Waze, Google Maps, Bing Maps). Along KY 1136 between KY 222 and Ring Road (5.84 miles long), speeds were reduced from 55 to 47.5 mph. Along US 31W between KY 222 and KY 61 (1.67 miles long), speeds were reduced from 55 to 45 mph.

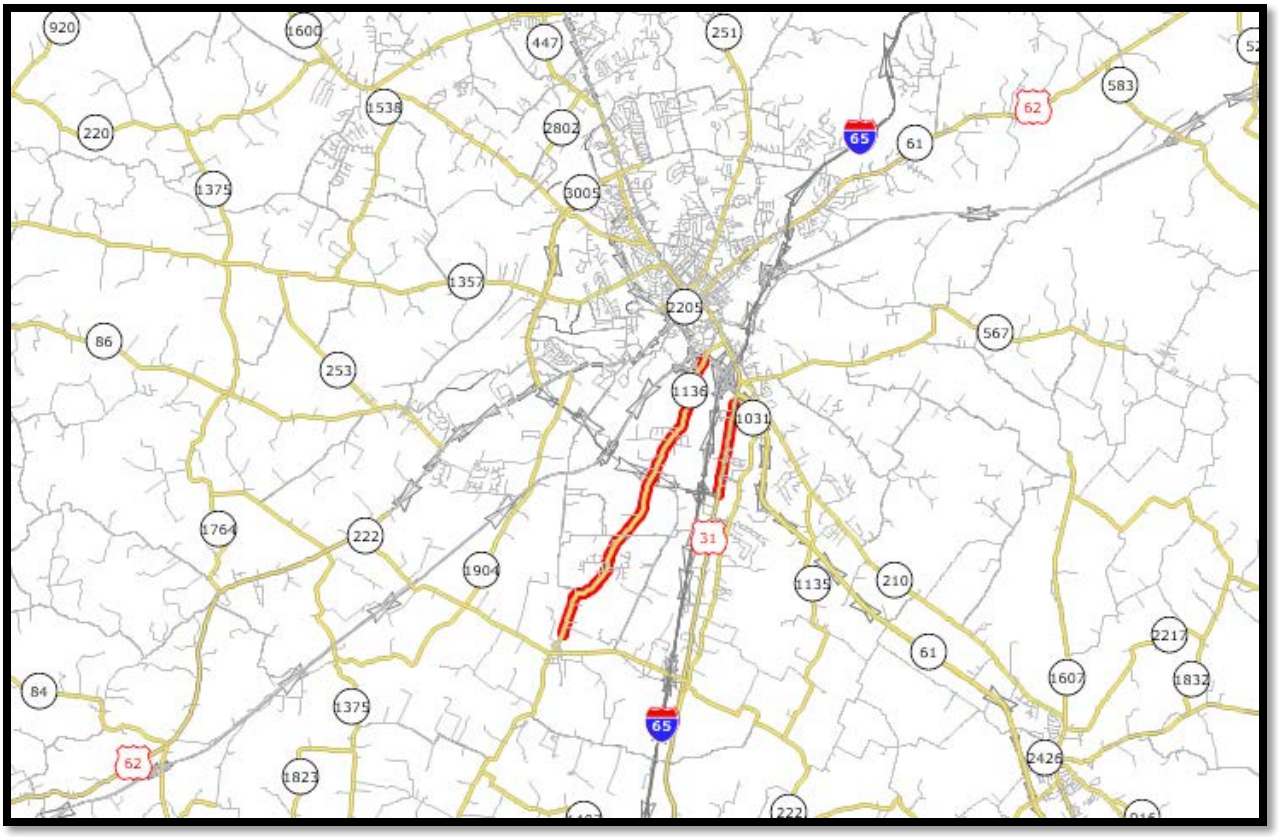


Figure 7: HMTDM Model Segments with Vehicle Speed Reductions

2.3.4 Model Validation

The HMTDM was provided with March 2021 documentation, which includes the development, calibration, and validation of the model for a 2017 base year. With the updates to the model, including an updated 2020 base year, a comparison of model performance metrics was analyzed. Percent root mean square error (%RMSE) is the primary validation statistic used in travel models, including the HMTDM, which measures the variance between the observed traffic counts and modeled volumes. This statistic is evaluated across three segments: volume group, functional classifications, and area types. Percent RMSE has the following formulation:

$$\%RMSE = \frac{\sqrt{\sum(Count - Model)^2/n}}{Mean\ Count} \times 100$$

Table 4 provides the Percent RMSE by volume group of the latest model. The 2020 base year model meets all RMSE targets defined in the model documentation and overall improves upon the error statistics of the prior 2017 year model. Notably, improvements are observed at higher volumes (greater than 20,000 AADT) of the latest model, with the count range of 20,000 to 30,000 counts improving from 20.23% to 11.05% RMSE. The highest count range in the 2017 model (50,000 to 60,000) is not reported in the latest

model due to revised counts on I-65 near Louisville. Additionally, I-65 and other major routes are dualized in the HMTDM and are reported separately in the model. For example, a hypothetical 50,000 AADT count on I-65 would report as two directional 25,000 AADT segments.

Table 4: Percent Root Mean Square Error by Volume Group

Count Range	% RMSE 2017[3]	% RMSE 2020	% RMSE Target	# Links 2017	# Links 2020
0-2,000	101.93	94.69	55+	424	426
2,000-5,000	51.23	54.54	45 – 55	213	213
5,000-10,000	41.50	42.27	35 – 45	154	165
10,000-20,000	31.90	30.91	27 – 35	109	105
20,000-30,000	20.23	11.05	24 – 27	16	15
30,000-40,000	10.22	7.86	22 – 24	2	6
40,000-50,000	9.20	7.56	20 – 22	4	6
50,000-60,000	9.17	n/a	18 – 20	4	0

Evaluating model error by functional classification, shown in **Table 5**, sees mixed results in relation to the prior model. Interstates, generally carrying the highest volumes, improve from 15.36% to 10.59% but the model sees increased RMSE in Other Freeways and Other Principal Arterials. **Table 6** summarizes RMSE by area type, showing improvements for all categories except Urban, which increases from 34.95% to 40.74% but is only evaluated from a set of 13 counts.

Table 5: Percent Root Mean Square Error by Functional Classification

Facility Type	% RMSE 2017	% RMSE 2020	# Links 2017	# Links 2020
Interstate (1)	15.36	10.59	33	32
Other Fwy/Exp (2)	25.74	33.82	27	25
Other Principal Arterial (3)	34.44	48.78	42	44
Minor Arterial (4)	40.75	36.15	264	273
Major Collector (5)	64.72	64.59	234	234
Minor Collector (6)	114.14	114.06	219	219
Local (7)	150.16	107.3	107	109

The 2020 model provides an overall RMSE of 45.73%. Although absent from model documentation, review of past model outputs suggest an RMSE of 47.75% for the 2017 model.

[3] *Hardin Meade Regional Travel Demand Model Documentation,* The Corradino Group, Inc., March 2021

Table 6: Percent Root Mean Square Error by Area Type

Area Type	% RMSE 2017	% RMSE 2020	# Links 2017	# Links 2020
Town & Country (1)	50.91	47.49	680	678
Suburban (2)	38.86	38.44	224	234
Second City (3)	28.91	20.29	11	11
Urban (4)	34.95	40.74	11	13

3.0 TRAFFIC FORECAST

To project future year traffic forecasts, the updated HMTDM was applied—incorporating the refinements identified in the previous chapter. A model base year of 2020 served as the existing baseline scenario. A future year forecast for 2045 was also developed.

The HMTDM model runs in TransCAD 8.0 and estimates four time periods: AM peak (6:00 a.m. to 9:00 a.m.), midday (9:00 a.m. to 3:00 p.m.), PM peak (3:00 p.m. to 6:00 p.m.), and night (6:00 p.m. to 6:00 a.m.). The model was calibrated and provides reporting for daily volume projections across three vehicle classes: denoted as Auto, Single-Unit Truck, and Combination Truck within the model. These classes, standard to most travel models, are generalizations of the FHWA Vehicle Classifications, presented in **Figure 8.** Autos are aligned with Class 1-3, Single-unit Trucks for Class 4-7, and Combination Trucks for Class 5-13.

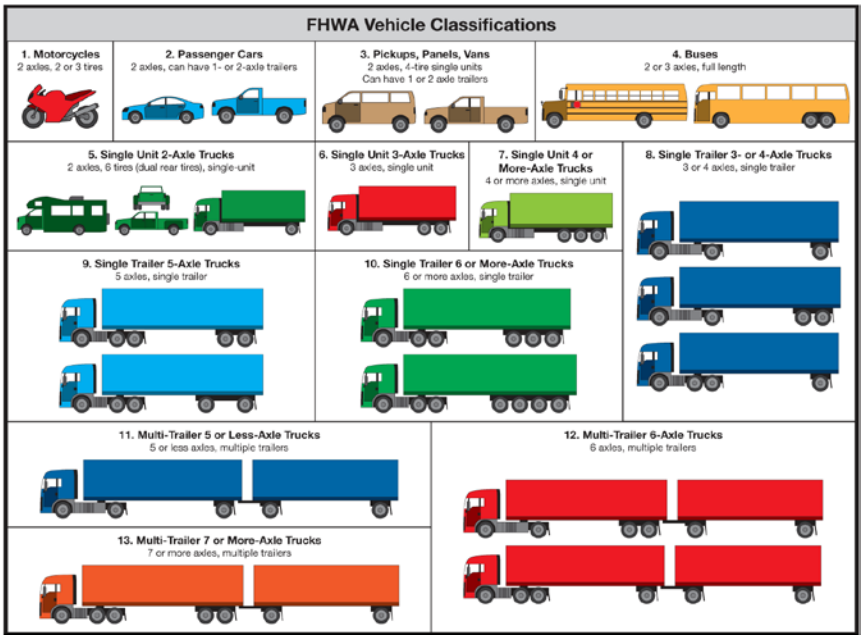


Figure 8: FHWA Vehicle Classifications

Over the nine-county model region, the model demonstrates an annually compounded growth (CAGR) of 0.54% in vehicle trips between 2020 and 2045. For trip-ends in Hardin county, a CAGR of 0.91% is observed, with 2.81% compound annual growth specific to the KY 222 corridor.

Two highway projects were modeled in the future year model network: Item No. 4-20, which reconstructs the existing I-65 and KY 222 interchange as a single point urban interchange and Item No. 4-198, which extends KY 3005 (Ring Road) east to connect the Western Kentucky Parkway with I-65 and US 31W. The model network for this project is identified in **Figure 9**. I-65 reflects a six-lane facility, consistent with current conditions.

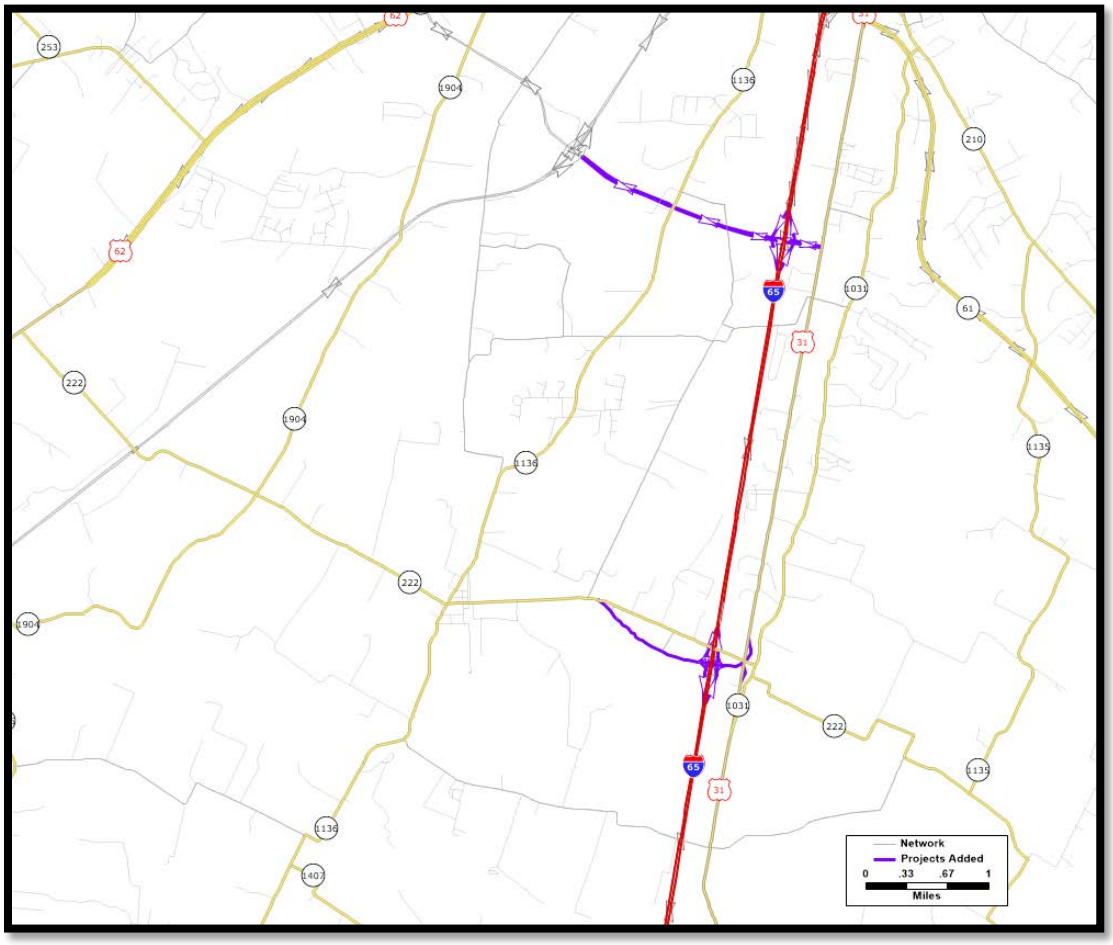


Figure 9: Highway Projects Added to the HMTDM

3.1 2045 NO-BUILD TRAFFIC PROJECTIONS

The HMTDM was used to forecast 2045 traffic volumes for use in capacity, turning movement, and microsimulation analysis. Using guidance from *NCHRP Report 765: Analytical Travel Forecasting*

Approaches for Project-Level Planning and Design,[4] travel model outputs were refined using the report's factoring procedures. These forecasts use the latest model revisions, as outlined in **Section 2.3,** including 4,900 employees at the BOSK Battery Plant near Glendale. **Figure 10** presents the 2045 No-Build ADT projections for the KY 222 corridor and other state-maintained highways in the study area. No-Build peak hour turning movement forecasts are available in **Appendix C**.

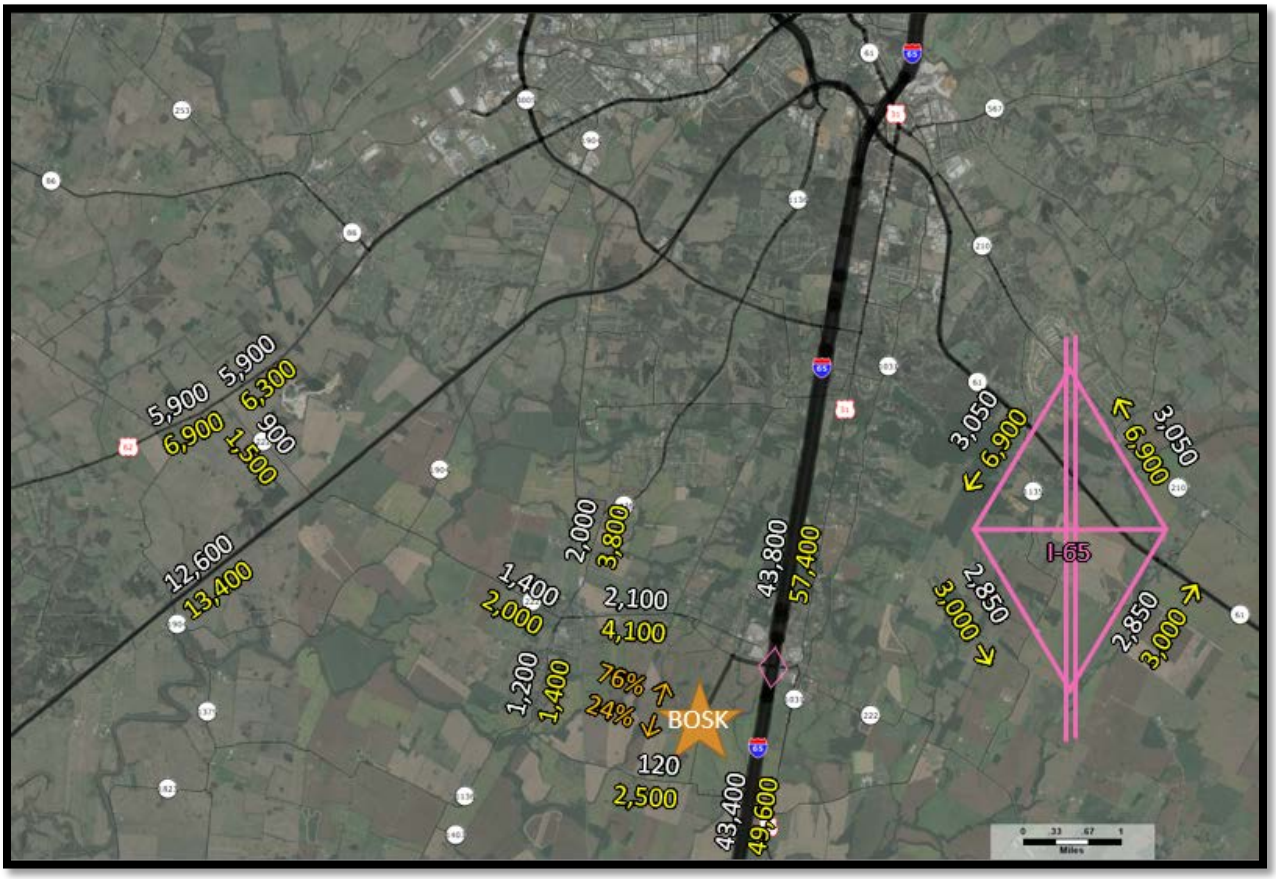


Figure 10: Daily Model Volumes - 2022 Existing (White) & 2045 No-Build (Yellow)

Beyond KY 222 and KY 1136 segments adjacent to the BOSK site, No-Build growth generally reflects the overall modeled county growth of <1% annually. From select link analysis of the TAZ representing the BOSK site, 76% of vehicles route through the zone's northern connector, with most trips utilizing I-65 to

[4] National Academies of Sciences, Engineering, and Medicine. 2014. Analytical Travel Forecasting Approaches for Project-Level Planning and Design. Washington, DC: The National Academies Press. https://doi.org/10.17226/22366.

the north. The northern I-65 ramps are expected to carry 6,900 vpd each with the southern ramps at 3,000 vpd each.

4.0 2045 BUILD FORECAST

4.1 BUILD CONCEPTS

For this study, four build concepts were organized into geographic areas. The A Concepts and B Concepts reviewed a northeast and northwest bypass of Glendale. While important to the development of the region, impacts from these bypass concepts cannot not be accurately modeled given the scale of the multi-county HMTDM. The C Concepts studied a new I-65 interchange at KY 1136 (Gilead Church Rd) and the D Concepts studied a new Western KY Parkway (WKP) interchange at KY 222. The C and D Concepts were the basis for the 2045 modeled build scenarios.

4.2 BUILD 1: WKP & KY 222 INTERCHANGE (D CONCEPTS)

Build 1, depicted in **Figure 11**, models an interchange at WKP and KY 222. Utilization of this interchange is relatively low, with 400 daily vehicles on each northern ramp and 900 daily vehicles on each southern ramp. Daily volumes decrease along US 62, while KY 222 through trips increase 800-1,300 vpd. The portion of BOSK trips using the northern driveway to access the site increases from 76% to 81% under Build 1, reflecting the increased demand along KY 222. Build 1 peak hour turning movement forecasts are available in **Appendix D**.

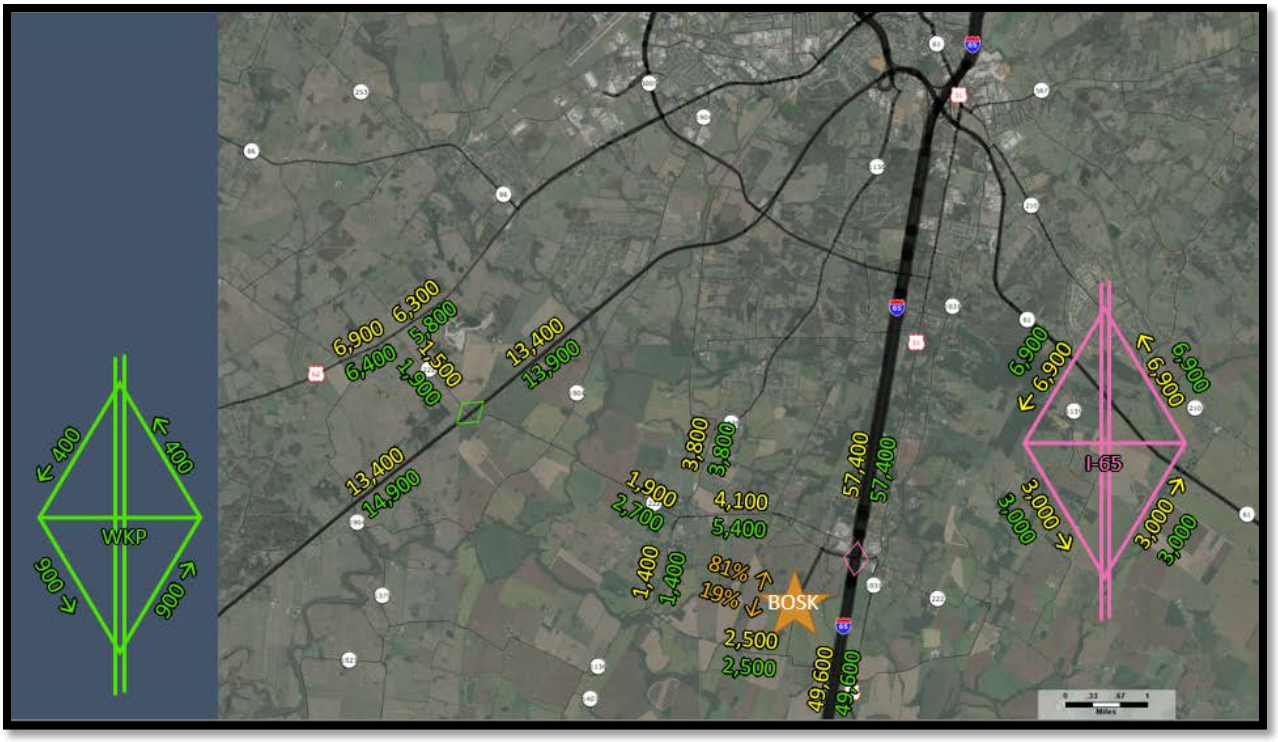


Figure 11: Daily Model Volumes - 2045 No-Build (Yellow) & 2045 Build 1 (Green)

A variation of Build 1, shown in **Figure 12**, tested assumptions of increased east-west access, providing a parallel connection to KY 222 to divert traffic around the historic community of Glendale. Forecasts from the HMTDM estimate 2,000 vpd on this new east-west connector with minimal effects to north-south volume estimates. Along with a 10% shift in the northern driveway access (81% to 71%), this variation presented a total reduction of 37.6% of traffic through Glendale on existing KY 222.

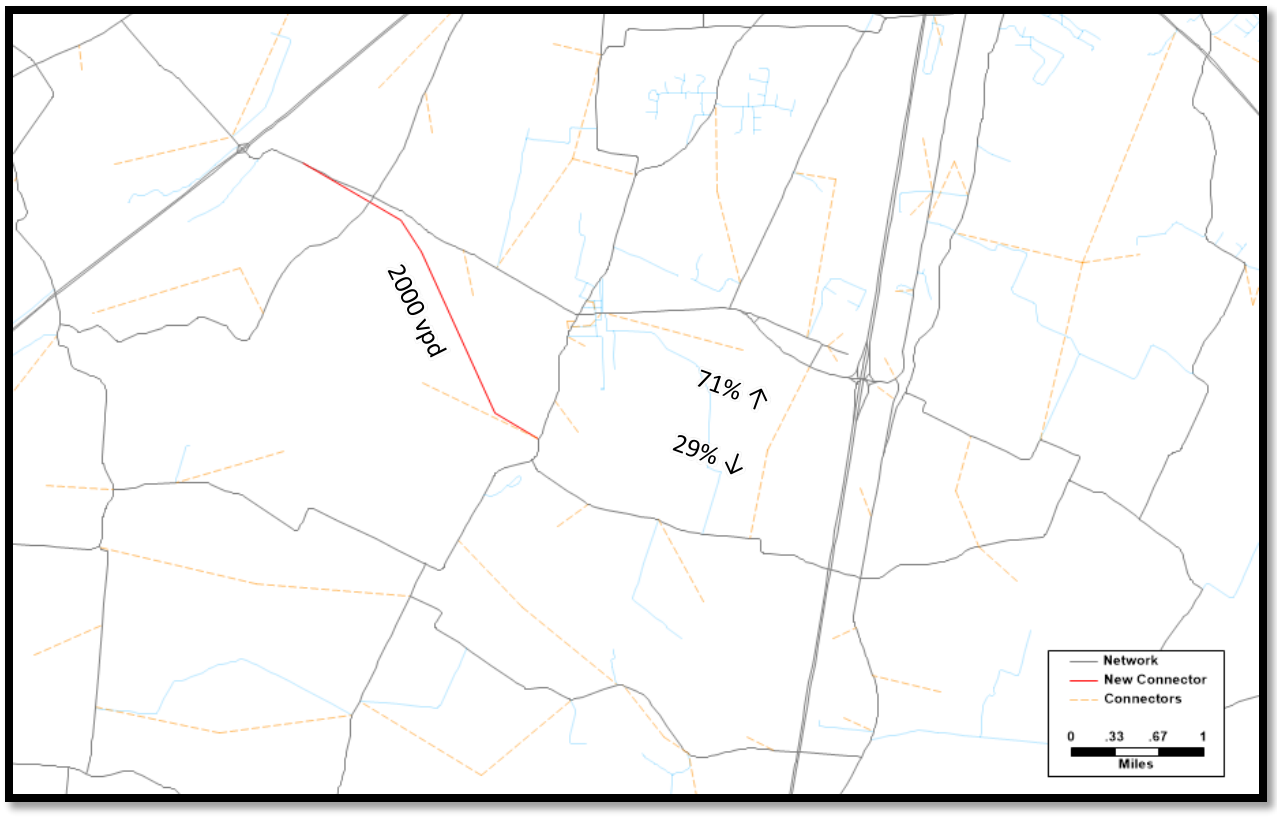


Figure 12: Build 1 Variation with New Connector

4.3 BUILD 2: I-65 & KY 1136 INTERCHANGE (C CONCEPTS)

Build 2 represents a new interchange at I-65 and KY 1136 (Gilead Church Rd), with volumes reflected in **Figure 13**. As expected, this increases trips utilizing the southern driveway to access the BOSK site, while the northern driveway decreases from a 76% to 66% share. Given this northern decrease, Build 2 exhibits decreased travel on all ramps of the I-65/KY 222 interchange, a 400 vpd decrease on KY 222 east of Glendale, and a minor decrease along KY 1136 (New Glendale Rd) in the north. The new interchange is projected to carry 1,300 vpd on each of its four ramps.

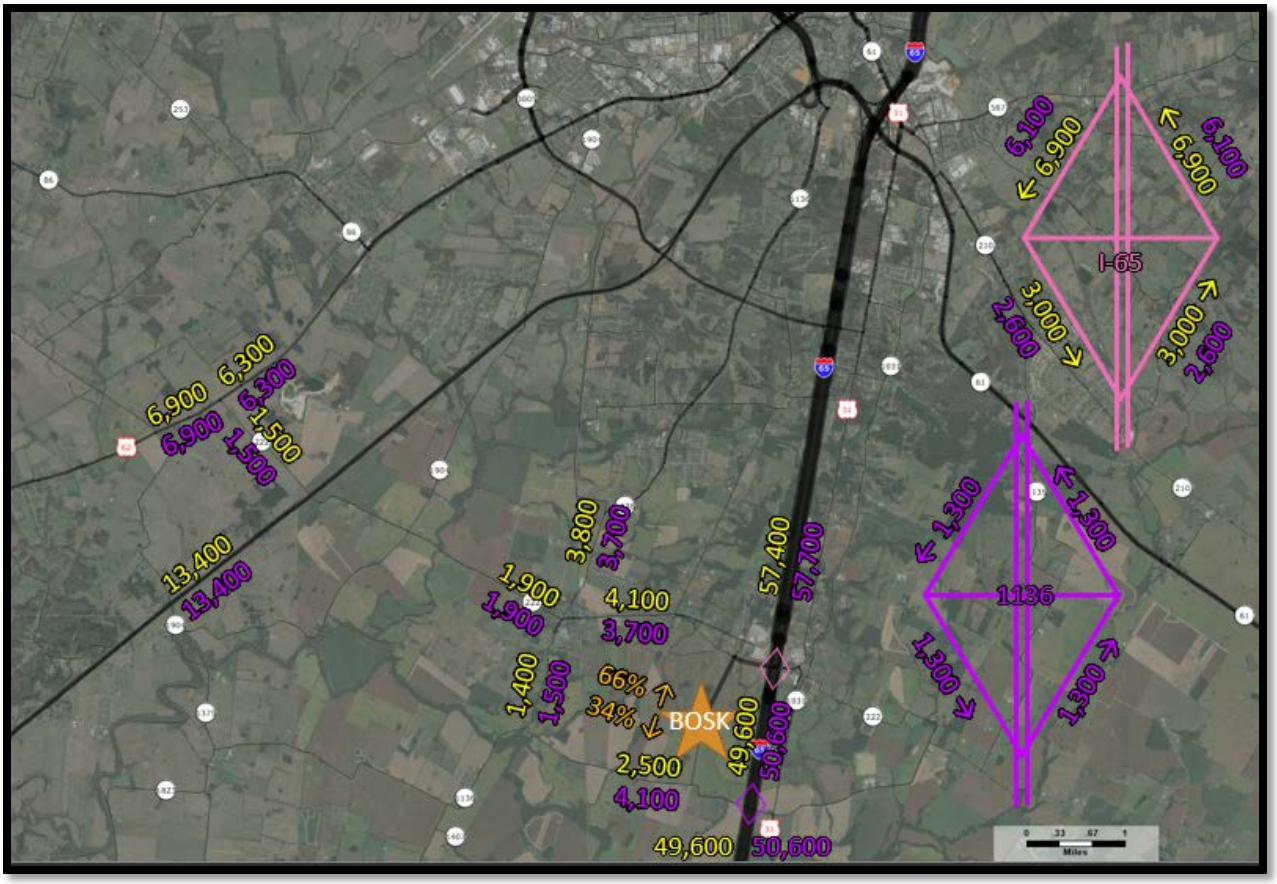


Figure 13: Daily Model Volumes - 2045 No-Build (Yellow) & 2045 Build 2 (Purple)

Build 2 peak hour turning movement forecasts are available in **Appendix E**.

4.4 I-65 INTERCHANGE AND BOSK DRIVEWAY MICROSIMULATION ANALYSIS

To get a more detailed estimate regarding queueing and overall vehicle operations between the I-65/KY 222 ramps and the BOSK plant primary driveway, a Vissim (Version 2022.00-04) microsimulation network at both signalized intersections was constructed. Two future year scenarios were evaluated in the microsimulation model: No-Build and Build 2 (I-65/KY 1136 interchange). Build 1 (WKP/KY 222 interchange) provided no notable impact to the I-65/KY 222 interchange or BOSK driveway estimated volumes. Inputs to the Vissim model were developed using forecast turning movement volumes assuming split phasing of the plant shifts. This phasing would result in approximately half of the AM shift arriving during the AM peak hour and a split between the two plant entrances for arriving traffic. Ford has not finalized a shift schedule at this point and variation from these assumptions may results in higher arriving volumes during the peak hour.

KYTC default simulation parameters were used for modeling purposes as the majority of traffic in the study area would be associated with the proposed plant. These defaults included driving behavior parameters, vehicle type distributions and truck type distributions.

Microsimulation results for the I-65 and KY 222 interchange is presented in **Table 7**. Overall, the interchange intersection operates at LOS B in both the scenarios, with improvements to the queue lengths and delay in the Build. It should be noted that the southbound right turn movements from the off-ramp are approaching capacity; small increases in volume or truck percentage cause large increases in delay and queueing for this movement—some reaching LOS D or E. More detailed investigations for the Item 4-20 SPUI project are underway concurrent with this report: e.g., adding a second southbound right turn lane.

The AM peak southbound right movement carries the highest estimated peak volumes, representing morning employee trips from I-65 in Elizabethtown to the BOSK plant. While queue spillback was a concern, the model reflects a yield-controlled single lane right turn design. From simulation, this movement produces a maximum queue of 454 ft in the No-Build and improves to 303 ft in the Build.

Table 7: I-65 & KY 222 SPUI Microsimulation Results

Approach	Movement	Period	Avg Queue (ft)	Max Queue (ft)	LOS	Delay (sec)	Avg Queue (ft)	Max Queue (ft)	LOS	Delay (sec)
			No Build				**Build 2**			
KY 222 Eastbound	Left	AM	27.2	133.0	C	27.1	22.4	102.3	C	25.2
		PM	70.8	264.6	C	30.7	65.1	252.7	C	31.3
KY 222 Westbound	Left	AM	9.0	65.3	C	32.1	6.1	67.6	C	22.1
		PM	10.8	82.0	D	38.3	8.1	54.8	D	35.6
Southbound Off-Ramp	Left	AM	8.4	57.2	C	26.9	8.1	56.4	C	30.7
		PM	12.2	69.9	C	26.4	12.9	76.1	C	30.3
	Right	AM	39.6	454.1	B	14.8	11.8	303.1	A	9.3
		PM	0.6	73.2	A	2.3	0.2	40.0	A	1.8
Northbound Off-Ramp	Left	AM	19.3	120.6	C	28.2	11.2	72.8	C	26.7
		PM	11.7	65.3	C	31.9	8.3	51.9	C	30.5
Intersection		**AM**	**11.0**	**454.1**	**B**	**15.0**	**6.6**	**303.1**	**B**	**12.1**
		PM	**11.9**	**264.6**	**B**	**16.4**	**10.3**	**252.7**	**B**	**16.2**

4.5 CAPACITY ANALYSIS

For all other study segments and intersections, Highway Capacity Software (HCS) Version 7.9.6 was analyzed for all scenario configurations, including calculations for level of service (LOS) measurements. Study area segments and intersections, summarized in **Table 8** and **Table 9**, operate at LOS C or better.

Table 8: Segment LOS & V/C of Maximum Peak Hour Volumes

Route	BMP	EMP	No-Build Peak LOS	No-Build Peak v/c	Build 1 Peak LOS	Build 1 Peak v/c	Build 2 Peak LOS	Build 2 Peak v/c
KY 222	0	2.453	A	0.04	A	0.06	A	0.04
KY 222	2.453	3.856	A	0.08	A	0.11	A	0.07
KY 222	3.856	4.243	A	0.08	A	0.11	A	0.07
KY 222	4.243	6.465	A	0.15	B	0.19	A	0.13
KY 1136	2.768	3.942	A	0.08	A	0.08	A	0.07
KY 1136	3.942	5.400	A	0.12	A	0.12	A	0.12
WK 9001	128	129	A	0.18	A	0.2	A	0.18
WK 9001	129	131	A	0.18	A	0.19	A	0.18
US 62	9.900	10.289	C	0.33	C	0.29	C	0.33
US 62	10.289	11.600	C	0.31	B	0.25	C	0.31
I-65	80.000	85.686	B	0.48	B	0.48	B	0.49
I-65	85.686	91.000	B	0.55	B	0.55	B	0.55

Table 9: LOS and Delay at Study Intersections

Location	No-Build		Build 1 WKP Interchange		Build 2 1136 Interchange		Build 3 Both Interchanges	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
KY 222 at US 62 (WB Approach)	B 10.7 sec	C 15.5 sec	B 10.8 sec	B 15.0 sec	B 10.7 sec	C 15.5 sec	B 10.8 sec	B 15.0 sec
KY 222 at WKP (NB Approach)			A 9.9 sec	B 10.1 sec			A 9.5 sec	A 9.8 sec
KY 222 at WKP SB (SB Approach)			B 10.5 sec	B 10.5 sec			B 10.3 sec	B 10.3 sec
KY 222 at KY 1136 (SB Approach)	B 14.4 sec	C 15.2 sec	C 18.6 sec	C 19.2 sec	B 13.7 sec	B 14.2 sec	C 17.2 sec	C 17.7 sec
KY 1136 at I-65 NB (NB Approach)					B 14.9 sec	B 10.6 sec	B 14.9 sec	B 10.6 sec
KY 1136 at I-65 SB (SB Approach)					B 13.2 sec	B 12.1 sec	B 13.2 sec	B 12.1 sec

Appendix A

2019/2022 Turning Movement Counts & Forecasts

Study Name KY 22 & US 62
Start Date 04/12/2022
Start Time 7:00 AM
Site Code
Project

Type Road
Classification Totals

	US 62 Southbound				KY 222 Westbound				US 62 Northbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM		25	5	0	4		2	0	2	68		0
7:15 AM		44	2	0	9		1	0	3	86		0
7:30 AM		45	5	0	8		10	0	2	85		0
7:45 AM		61	2	0	3		5	0	4	119		0
8:00 AM		35	3	0	4		4	0	2	98		0
8:15 AM		21	3	0	2		2	0	3	70		0
8:30 AM		18	3	0	2		2	0	2	35		0
8:45 AM		11	5	0	1		0	0	1	29		0
9:00 AM		18	2	0	5		1	0	0	22		0
9:15 AM		25	2	0	5		1	0	4	42		0
9:30 AM		28	0	0	5		2	0	1	36		0
9:45 AM		14	1	0	6		2	0	1	37		0
10:00 AM		23	0	0	1		0	0	3	24		0
10:15 AM		24	3	0	2		2	0	3	38		0
10:30 AM		34	5	0	3		1	0	3	37		0
10:45 AM		27	5	0	3		2	0	5	41		0
11:00 AM		28	3	0	6		1	0	4	32		0
11:15 AM		35	1	0	4		4	0	3	22		0
11:30 AM		24	3	0	3		4	0	4	36		0
11:45 AM		27	3	0	3		2	0	1	30		0
12:00 PM		28	2	0	2		3	0	0	29		0
12:15 PM		32	4	0	1		4	0	3	35		0
12:30 PM		40	3	0	2		3	0	2	33		0
12:45 PM		36	2	0	3		1	0	3	48		0
1:00 PM		39	6	0	4		1	0	3	34		0
1:15 PM		32	2	0	4		4	0	4	33		0
1:30 PM		48	2	0	2		2	0	1	39		0
1:45 PM		33	2	0	5		1	0	3	41		0
2:00 PM		53	5	0	3		2	0	1	37		0
2:15 PM		44	4	0	1		3	0	1	34		0
2:30 PM		63	2	0	2		6	0	2	24		0
2:45 PM		70	3	0	1		5	0	4	26		0
3:00 PM		92	4	0	2		4	0	5	31		0
3:15 PM		46	4	0	3		6	0	6	97		0
3:30 PM		100	9	0	4		4	0	10	77		0
3:45 PM		125	15	0	5		3	0	5	32		0
4:00 PM		82	7	0	4		6	0	2	32		0
4:15 PM		76	8	0	5		2	0	10	35		0
4:30 PM		104	7	0	3		3	0	1	43		0
4:45 PM		89	3	0	4		4	0	2	34		0
5:00 PM		103	3	0	2		2	0	3	38		0
5:15 PM		84	7	0	4		3	0	6	35		0
5:30 PM		67	6	0	3		9	0	7	32		0
5:45 PM		78	2	0	3		6	0	3	25		0
6:00 PM		66	2	0	2		2	0	1	24		0
6:15 PM		56	8	0	3		6	0	1	33		0
6:30 PM		54	3	0	3		2	0	0	34		0
6:45 PM		51	2	0	1		3	0	0	36		0

Study Name KY 222 & KY 1136
Start Date 04/12/2022
Start Time 7:00 AM
Site Code
Project

Type Road
Classification Totals

	KY 1136 Southbound				KY 222 Westbound				KY 1136 Northbound				KY 222 Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	1	2	0	0	1	12	0	0	1	8	2	0	1	6	1	0
7:15 AM	2	3	0	0	1	13	0	0	1	11	5	0	1	5	2	0
7:30 AM	1	1	1	0	0	10	1	0	5	17	6	0	1	12	1	0
7:45 AM	4	6	1	0	2	7	2	0	4	7	3	0	3	11	1	0
8:00 AM	1	10	1	0	2	5	2	0	4	10	2	0	2	5	0	0
8:15 AM	1	4	0	0	2	5	0	0	1	0	2	0	3	9	1	0
8:30 AM	0	3	0	0	0	5	0	0	3	4	1	0	1	3	0	0
8:45 AM	0	4	1	0	1	6	2	0	1	2	3	0	0	5	0	0
9:00 AM	1	3	0	0	1	6	0	0	1	3	3	0	0	6	1	0
9:15 AM	1	3	1	0	2	3	2	0	1	5	0	0	2	6	1	0
9:30 AM	2	4	2	0	1	5	1	0	5	2	1	0	4	6	0	0
9:45 AM	1	4	1	0	1	6	1	0	2	1	1	0	1	1	2	0
10:00 AM	0	2	0	0	0	6	2	0	3	3	1	0	2	5	0	0
10:15 AM	1	3	1	0	0	4	1	0	3	2	1	0	2	7	0	0
10:30 AM	1	1	4	0	1	1	3	0	0	2	1	0	0	9	2	0
10:45 AM	1	5	2	0	0	9	3	0	3	3	3	0	3	11	0	0
11:00 AM	0	4	1	0	1	4	1	0	5	3	4	0	2	9	0	0
11:15 AM	0	0	0	0	1	6	3	0	1	1	2	0	2	6	0	0
11:30 AM	1	4	1	0	1	6	2	0	7	1	1	0	2	7	0	0
11:45 AM	0	1	1	0	0	7	5	0	2	4	1	0	1	9	0	0
12:00 PM	1	2	0	0	2	4	0	0	3	7	3	0	1	3	0	0
12:15 PM	0	2	1	0	0	5	5	0	3	1	0	0	1	6	3	0
12:30 PM	1	8	0	0	0	2	2	0	3	4	1	0	2	3	1	0
12:45 PM	1	3	3	0	2	9	3	0	3	3	0	0	0	7	0	0
1:00 PM	1	2	4	0	3	5	6	0	1	2	0	0	1	6	1	0
1:15 PM	2	1	1	0	1	6	1	0	2	1	3	0	0	8	2	0
1:30 PM	1	0	1	0	2	8	4	0	1	4	0	0	1	4	0	0
1:45 PM	0	5	2	0	0	3	2	0	5	0	1	0	0	9	3	0
2:00 PM	1	3	2	0	0	10	2	0	6	1	1	0	2	6	1	0
2:15 PM	2	2	4	0	2	7	2	0	3	1	2	0	2	7	2	0
2:30 PM	2	6	0	0	3	9	1	0	2	9	3	0	3	4	0	0
2:45 PM	0	1	2	0	5	5	4	0	7	3	0	0	1	11	1	0
3:00 PM	2	8	1	0	1	8	4	0	5	3	1	0	2	5	2	0
3:15 PM	3	9	2	0	2	7	1	0	0	3	2	0	2	12	0	0
3:30 PM	3	7	2	0	2	8	2	0	3	1	1	0	5	17	3	0
3:45 PM	2	4	2	0	2	11	4	0	2	2	0	0	15	22	2	0
4:00 PM	2	11	3	0	0	10	7	0	2	5	1	0	8	10	1	0
4:15 PM	1	4	4	0	1	6	3	0	2	5	2	0	3	9	4	0
4:30 PM	2	8	1	0	2	11	4	1	1	7	1	0	3	14	3	0
4:45 PM	1	6	2	0	3	6	5	0	3	5	1	0	3	16	1	0
5:00 PM	3	5	1	0	3	10	5	0	4	4	0	0	5	10	2	0
5:15 PM	3	11	3	0	2	9	7	0	3	10	3	0	7	15	3	0
5:30 PM	5	12	2	0	0	14	2	0	4	5	1	0	7	13	3	0
5:45 PM	4	8	1	0	1	6	7	0	0	2	4	0	6	11	3	0
6:00 PM	1	7	1	0	0	4	3	0	3	1	2	0	5	4	0	0
6:15 PM	3	4	2	0	1	13	2	0	4	3	0	0	2	3	0	0
6:30 PM	1	5	0	0	0	3	4	0	2	2	1	0	4	9	2	0
6:45 PM	1	2	0	0	3	3	1	0	6	3	3	0	1	7	1	0

Study Name KY 222 & I65 Southbound Ramps
Start Date 03/06/2019
Start Time 12:00 AM
Site Code
Project

Type Road
Classification Totals

	I65 SB Off Ramp Southbound				KY 222 Westbound				I65 SB On Ramp Northbound				KY 222 Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
12:00 AM	2	0	7		4	1	0						9	6		0
12:15 AM	3	0	6		4	8	0						4	10		0
12:30 AM	7	0	3		4	4	0						1	5		0
12:45 AM	2	0	3		2	4	0						4	4		0
1:00 AM	4	0	2		4	1	0						2	6		0
1:15 AM	4	0	6		0	3	0						3	5		0
1:30 AM	2	0	3		3	5	0						3	1		0
1:45 AM	5	0	2		2	1	0						3	5		0
2:00 AM	6	0	2		2	5	0						4	1		0
2:15 AM	1	0	5		2	1	0						2	1		0
2:30 AM	6	0	6		2	2	0						4	4		0
2:45 AM	1	0	4		1	3	0						4	3		0
3:00 AM	2	0	5		2	5	0						3	3		0
3:15 AM	2	1	2		1	1	0						3	3		0
3:30 AM	0	0	3		3	5	0						2	3		0
3:45 AM	2	0	3		3	2	0						4	7		0
4:00 AM	5	0	5		2	2	0						3	8		0
4:15 AM	1	0	0		3	5	0						2	4		0
4:30 AM	4	0	2		3	4	0						4	3		0
4:45 AM	2	1	6		3	5	0						5	6		0
5:00 AM	2	1	1		2	6	0						6	13		0
5:15 AM	3	0	2		8	2	0						8	2		0
5:30 AM	5	1	2		8	6	0						5	13		0
5:45 AM	1	0	7		18	7	0						8	11		0
6:00 AM	8	0	3		8	6	0						9	11		0
6:15 AM	5	0	2		17	6	0						6	16		0
6:30 AM	8	1	6		16	7	0						19	17		0
6:45 AM	8	0	7		17	10	0						13	26		0
7:00 AM	17	0	3		24	14	0						27	27		0
7:15 AM	10	1	10		27	14	0						16	22		0
7:30 AM	24	0	10		39	11	0						22	18		0
7:45 AM	28	1	7		29	9	0						18	35		0
8:00 AM	11	1	13		23	9	0						21	48		0
8:15 AM	12	1	15		14	14	0						15	37		0
8:30 AM	14	0	16		22	9	0						18	23		0
8:45 AM	15	1	13		17	11	0						15	21		0
9:00 AM	11	1	12		13	5	0						18	19		1
9:15 AM	18	0	9		13	10	0						18	30		0
9:30 AM	19	0	11		8	10	0						16	23		0
9:45 AM	15	0	10		11	15	0						21	14		0
10:00 AM	7	0	9		14	19	0						14	16		0
10:15 AM	22	2	11		24	6	0						13	21		0
10:30 AM	14	1	8		15	11	0						17	12		0
10:45 AM	20	0	8		24	14	0						18	20		0
11:00 AM	21	1	6		18	12	0						16	29		0
11:15 AM	17	1	10		26	9	0						16	22		0
11:30 AM	20	0	10		19	8	0						13	17		0
11:45 AM	22	1	7		19	13	0						21	20		0
12:00 PM	19	0	13		25	15	0						18	18		0
12:15 PM	16	1	18		25	9	0						17	26		0
12:30 PM	18	0	12		23	22	0						14	28		0
12:45 PM	16	0	19		27	14	0						11	27		0
1:00 PM	22	0	12		30	12	0						19	25		0
1:15 PM	23	0	10		22	16	0						22	28		0
1:30 PM	19	0	6		30	5	0						10	21		0
1:45 PM	18	1	13		19	10	0						19	26		0
2:00 PM	17	0	17		22	12	0						20	23		0
2:15 PM	23	0	8		10	18	0						17	24		0
2:30 PM	18	0	17		29	11	0						12	32		0
2:45 PM	23	0	13		30	15	0						16	27		0
3:00 PM	18	2	14		27	9	0						19	30		0
3:15 PM	21	0	15		28	10	0						33	42		0
3:30 PM	25	0	16		30	9	0						12	34		0
3:45 PM	28	1	13		32	8	0						28	37		0

4:00 PM	26	0	17	24	15	0	24	32	0
4:15 PM	21	0	16	28	13	0	23	31	0
4:30 PM	26	0	19	28	16	0	25	31	0
4:45 PM	19	1	23	37	15	0	13	24	0
5:00 PM	32	1	14	29	8	0	22	27	0
5:15 PM	26	2	9	30	8	0	15	32	0
5:30 PM	27	1	20	30	8	0	17	43	0
5:45 PM	16	3	13	28	7	0	19	32	0
6:00 PM	23	0	16	30	10	0	18	22	0
6:15 PM	26	2	17	29	10	0	14	19	0
6:30 PM	17	2	15	25	7	0	10	19	0
6:45 PM	29	0	11	16	10	0	20	12	0
7:00 PM	18	0	12	15	13	0	17	16	0
7:15 PM	22	0	13	20	10	0	10	16	0
7:30 PM	11	0	10	17	6	0	15	20	0
7:45 PM	18	0	10	10	9	0	9	18	0
8:00 PM	11	0	4	14	5	0	7	11	0
8:15 PM	12	0	7	11	6	0	10	20	0
8:30 PM	24	1	18	14	8	0	6	11	0
8:45 PM	7	0	12	10	7	0	9	12	0
9:00 PM	12	1	8	15	5	0	11	10	0
9:15 PM	14	1	10	16	8	0	6	13	0
9:30 PM	16	1	7	18	7	0	6	16	0
9:45 PM	8	1	6	13	5	0	8	9	0
10:00 PM	9	0	9	13	7	0	8	19	0
10:15 PM	10	0	10	4	6	0	9	2	0
10:30 PM	10	0	13	11	9	0	6	10	0
10:45 PM	6	0	6	5	7	0	8	13	0
11:00 PM	9	0	6	8	6	0	10	9	0
11:15 PM	9	0	8	7	3	0	4	6	0
11:30 PM	7	0	7	5	5	0	7	6	0
11:45 PM	6	1	5	13	1	0	1	5	0

Study Name KY 222 & I65 Northbound Ramps
Start Date 03/06/2019
Start Time 12:00 AM
Site Code
Project

Type Road
Classification Totals

	I65 NB On Ramp Southbound				KY 222 Westbound				I65 NB Off Ramp Northbound				KY 222 Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
12:00 AM					8	3	0		3	2	3		10	3	0	
12:15 AM					3	10	0		6	0	3		13	3	0	
12:30 AM					4	5	0		6	1	4		5	3	0	
12:45 AM					6	7	0		6	2	1		4	3	0	
1:00 AM					6	0	0		7	1	4		7	1	0	
1:15 AM					6	4	0		3	0	1		5	6	0	
1:30 AM					4	4	0		3	0	2		2	2	0	
1:45 AM					6	2	0		6	0	2		3	5	0	
2:00 AM					5	5	0		2	0	1		2	1	0	
2:15 AM					1	2	0		3	0	1		5	1	0	
2:30 AM					5	3	0		6	0	1		8	2	0	
2:45 AM					5	4	0		5	0	1		3	3	0	
3:00 AM					4	7	0		2	1	1		6	2	0	
3:15 AM					2	1	0		5	0	2		2	2	0	
3:30 AM					6	6	0		3	0	1		4	3	0	
3:45 AM					7	3	0		10	0	2		5	3	0	
4:00 AM					5	4	0		4	1	1		6	8	0	
4:15 AM					5	5	0		5	0	2		1	4	0	
4:30 AM					6	8	0		5	1	0		2	2	0	
4:45 AM					5	8	0		7	0	1		7	5	0	
5:00 AM					12	6	0		6	0	0		4	9	0	
5:15 AM					8	10	0		9	1	1		2	3	0	
5:30 AM					14	9	0		6	1	4		6	9	0	
5:45 AM					13	17	0		10	2	8		12	6	0	
6:00 AM					13	11	0		13	1	4		5	9	0	
6:15 AM					16	16	0		9	2	6		9	10	0	
6:30 AM					24	13	0		12	1	10		17	5	0	
6:45 AM					31	23	0		12	0	6		16	18	0	
7:00 AM					27	26	0		12	0	12		14	14	0	
7:15 AM					20	31	0		14	0	11		19	14	0	
7:30 AM					20	31	0		11	0	16		19	12	0	
7:45 AM					12	30	0		11	1	9		23	16	0	
8:00 AM					18	23	0		11	0	10		39	20	0	
8:15 AM					13	22	0		13	0	5		33	23	0	
8:30 AM					22	22	0		10	1	8		25	13	0	
8:45 AM					16	18	0		16	2	11		25	9	0	
9:00 AM					17	9	0		9	0	10		21	9	0	
9:15 AM					15	21	0		14	0	3		18	21	0	
9:30 AM					25	18	0		14	1	1		25	11	0	
9:45 AM					17	21	0		12	0	4		13	10	0	
10:00 AM					22	27	0		11	3	7		17	8	0	
10:15 AM					13	22	0		12	0	6		20	9	0	
10:30 AM					12	20	0		13	0	6		13	8	0	
10:45 AM					24	29	0		12	1	9		21	8	0	
11:00 AM					16	24	0		23	1	7		23	11	0	
11:15 AM					23	22	0		11	0	12		20	12	0	
11:30 AM					16	17	0		13	0	12		13	14	0	
11:45 AM					14	25	0		14	0	5		15	11	0	
12:00 PM					20	31	0		13	0	10		26	7	0	
12:15 PM					12	27	0		12	0	9		27	14	0	
12:30 PM					14	30	0		18	0	12		28	16	0	
12:45 PM					25	31	0		12	0	11		24	16	0	
1:00 PM					19	28	0		14	0	14		27	13	0	
1:15 PM					13	23	0		13	0	15		23	18	0	
1:30 PM					10	15	0		13	0	20		13	13	0	
1:45 PM					16	20	0		12	2	9		22	16	0	
2:00 PM					14	19	0		17	0	15		26	15	0	
2:15 PM					20	20	0		18	0	7		20	13	0	
2:30 PM					20	29	0		12	0	13		30	18	0	
2:45 PM					14	32	0		12	0	11		28	12	0	
3:00 PM					11	24	0		20	0	12		29	14	0	
3:15 PM					15	29	0		11	0	11		33	25	0	
3:30 PM					14	27	0		16	1	13		31	22	0	
3:45 PM					16	23	0		12	0	15		36	13	0	

4:00 PM	14	27	0	14	1	14	31	17	0
4:15 PM	21	23	0	21	1	14	32	12	0
4:30 PM	20	26	0	9	1	18	32	18	0
4:45 PM	15	34	0	14	1	20	37	9	0
5:00 PM	14	26	0	12	0	12	26	16	0
5:15 PM	7	24	0	11	0	13	30	13	0
5:30 PM	8	28	0	14	1	9	38	23	0
5:45 PM	13	23	0	12	0	14	33	15	0
6:00 PM	18	22	0	14	0	17	24	11	0
6:15 PM	14	26	0	14	0	14	28	7	0
6:30 PM	19	23	0	10	1	10	27	11	0
6:45 PM	12	16	0	10	0	9	16	5	0
7:00 PM	8	18	0	7	0	11	20	10	0
7:15 PM	4	17	0	7	0	12	26	3	0
7:30 PM	14	10	0	10	1	13	20	9	0
7:45 PM	5	16	0	7	0	5	23	5	0
8:00 PM	8	13	0	9	0	5	7	5	0
8:15 PM	5	13	0	3	0	6	25	5	0
8:30 PM	7	14	0	10	1	11	22	6	0
8:45 PM	7	10	0	12	0	7	18	4	0
9:00 PM	8	12	0	13	0	9	15	5	0
9:15 PM	11	16	0	9	1	6	16	7	0
9:30 PM	5	18	0	14	0	9	16	6	0
9:45 PM	8	9	0	8	0	8	11	3	0
10:00 PM	5	9	0	5	0	11	20	10	0
10:15 PM	10	10	0	4	0	1	11	0	0
10:30 PM	5	12	0	9	2	7	15	7	0
10:45 PM	7	11	0	9	0	1	14	6	0
11:00 PM	4	11	0	5	0	5	11	3	0
11:15 PM	4	5	0	6	0	3	11	4	0
11:30 PM	4	9	0	3	0	1	9	4	0
11:45 PM	8	5	0	9	0	10	7	2	0

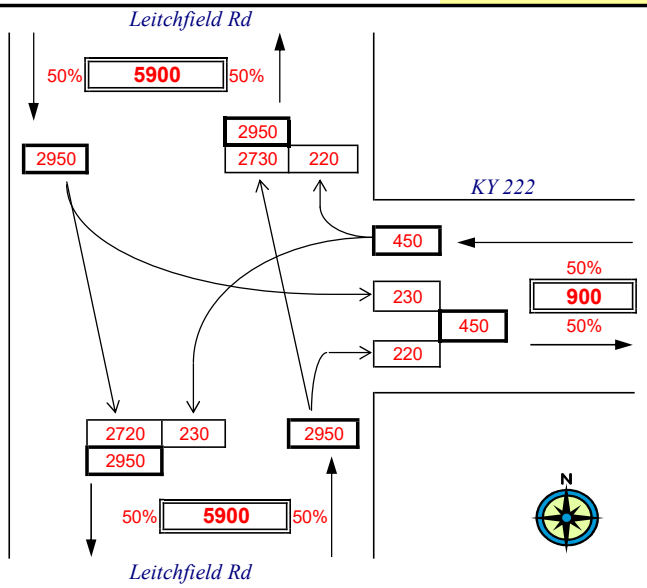
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2022** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & US 62

NOTE: Directional distributions were determined from a 2022 turning movement count.

TURN MOVEMENT 1 (2022)

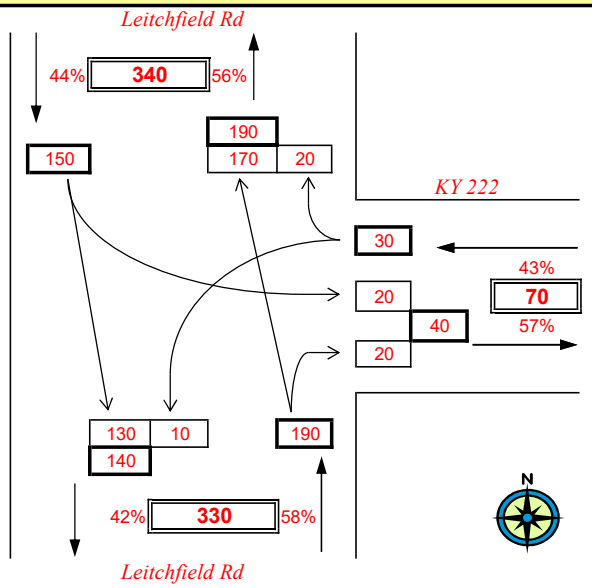
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2022 ADT



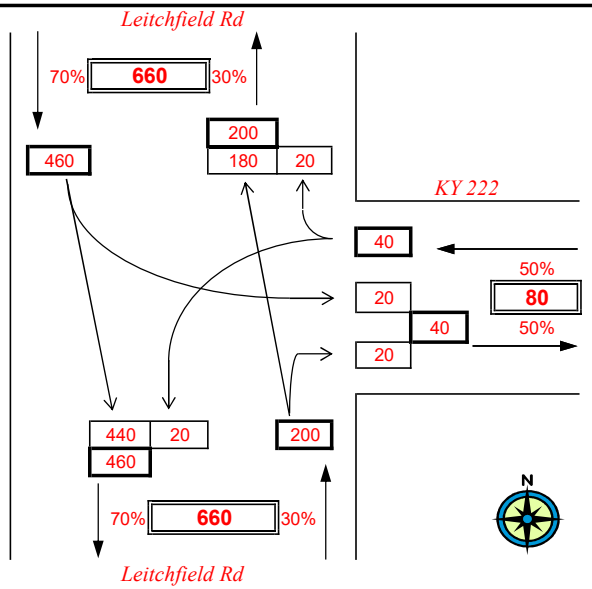
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2022 AM Design Hour



Location Map

2022 PM Design Hour



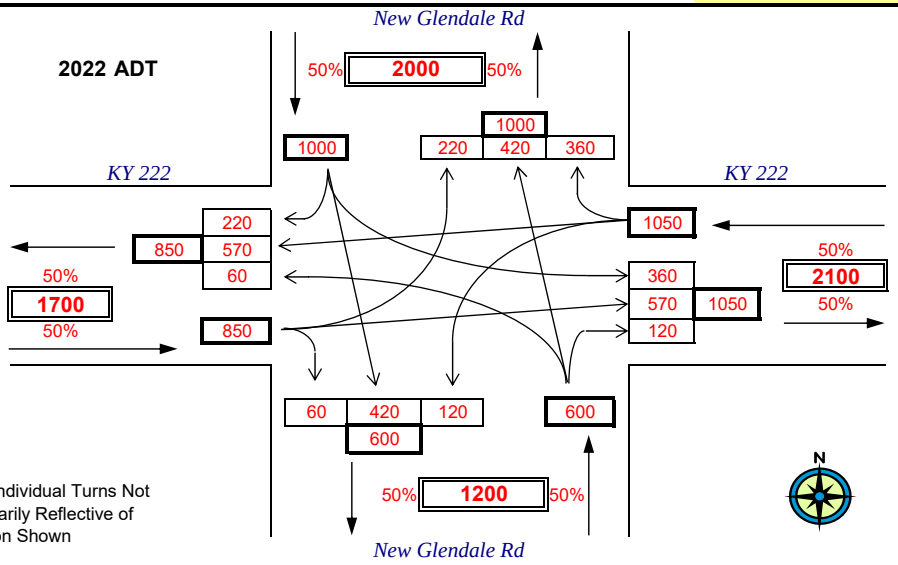
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2022** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & KY 1136

NOTE: Directional distributions were determined from a 2022 turning movement count.

TURN MOVEMENT 2 (2022)

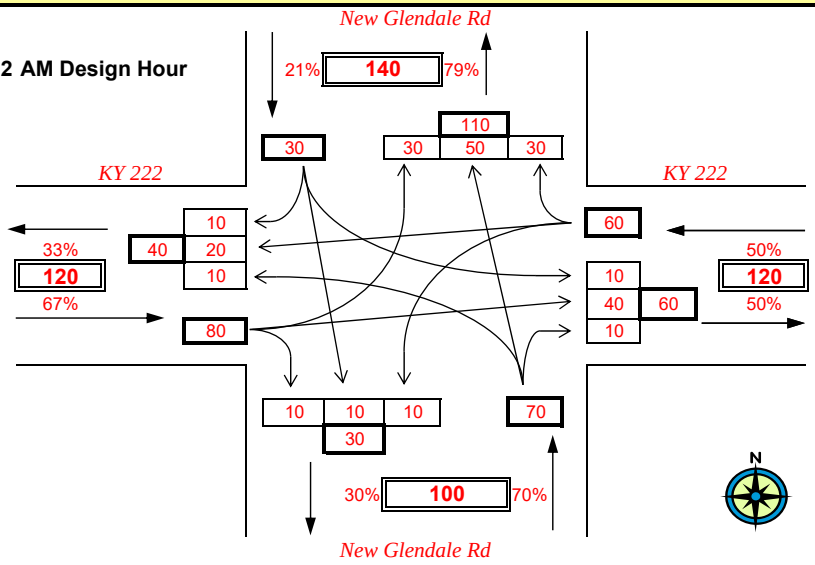
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2022 ADT

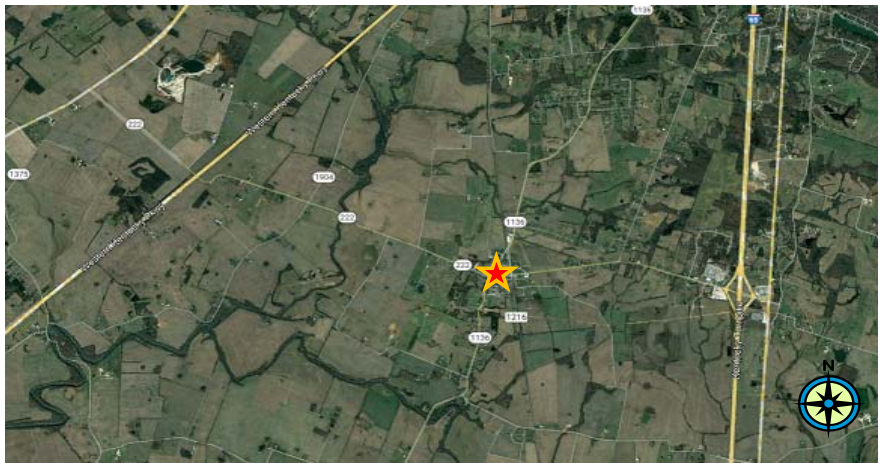


Note : Individual Turns Not Necessarily Reflective of Precision Shown

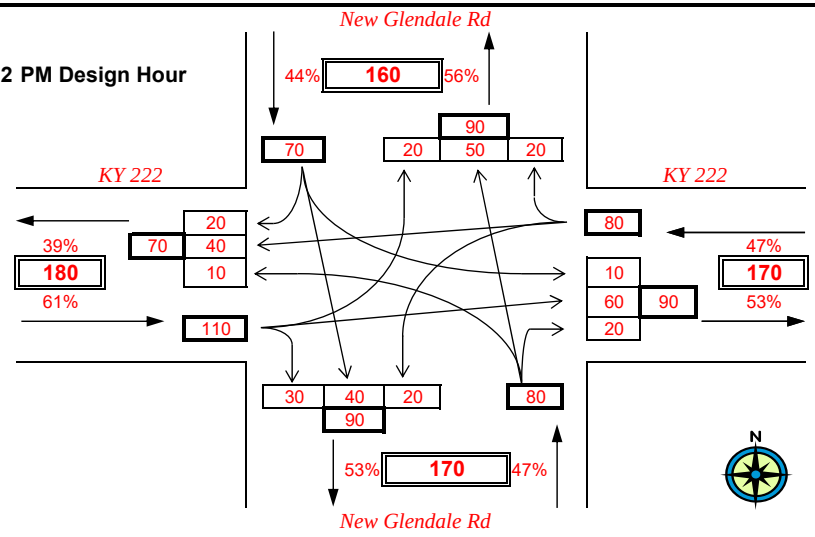
2022 AM Design Hour



Location Map



2022 PM Design Hour



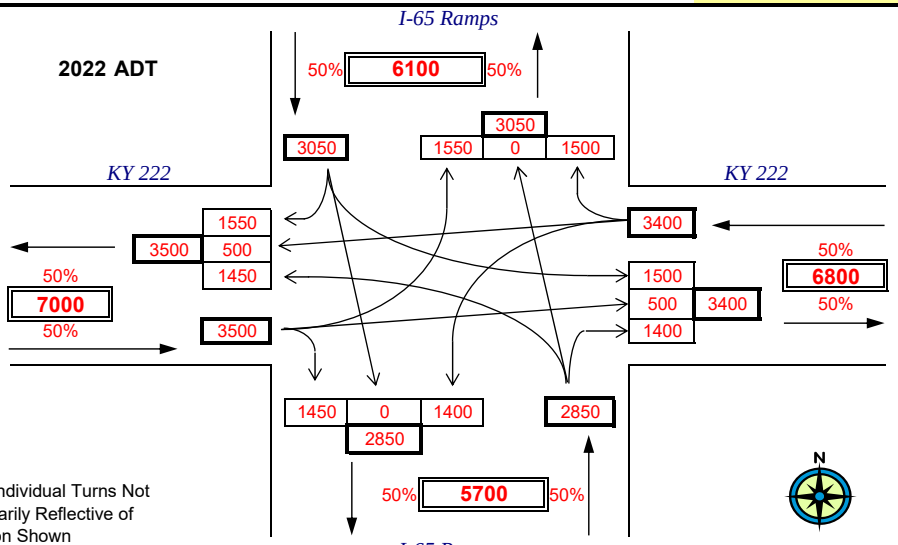
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2022** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & I65 Ramps NB

NOTE: Directional distributions were determined from a 2022 turning movement count.

TURN MOVEMENT 3 (2022)

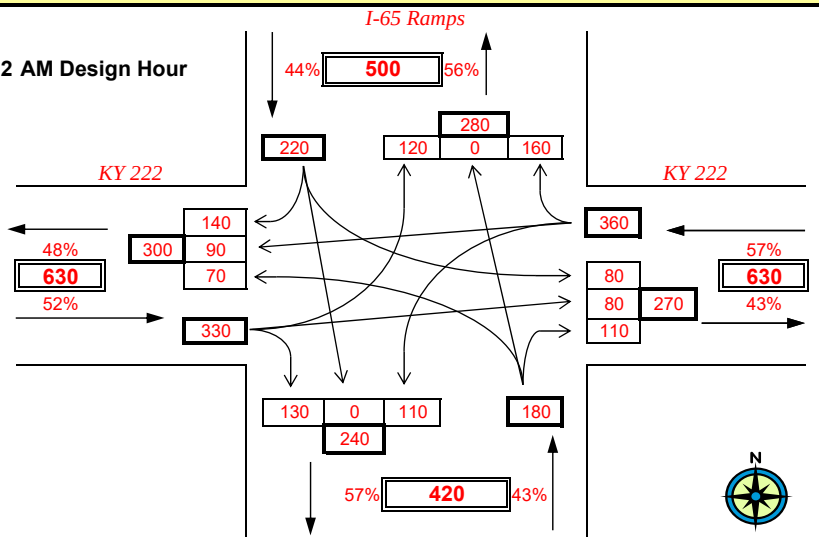
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2022 ADT



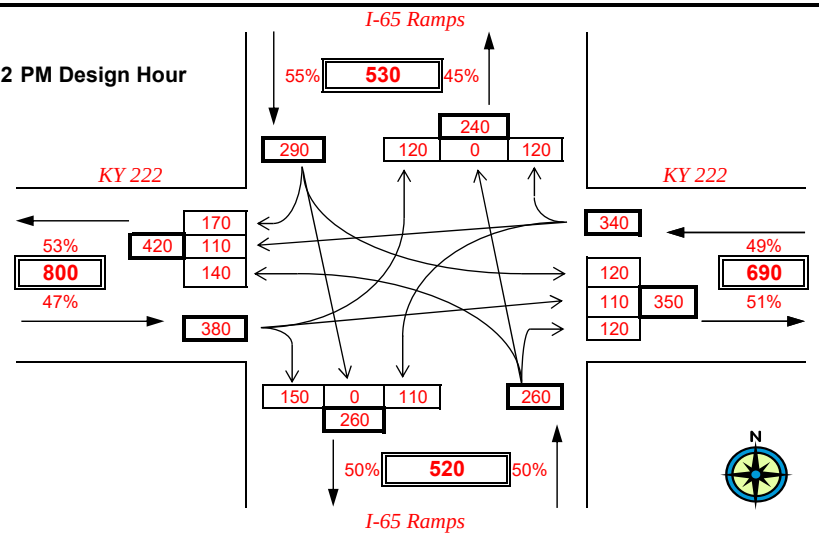
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2022 AM Design Hour



Location Map

2022 PM Design Hour



Appendix B

Glendale Area Highway Projects - Local Officials Meeting Minutes

July 14, 2022

MEETING MINUTES

Project: Glendale Area Highway Projects
Hardin County

Purpose: Local Officials Meeting

Place: Glendale Christian Church

Meeting Date: July 14, 2022 at 10:00 AM

Prepared By: Qk4

Participants:

Adam King	Hardin Co. Planning & Development
Brad Patterson	Hardin Co. Schools
Charlie Allen	Hardin Co. Government
Chris Corder	Hardin Co. Schools
David Lee	Hardin Co. Sherriff's Office
David Morgan	Hardin Co. Road Dept.
E. G. Thompson	Hardin Co. Government
Fred Clem	Hardin Co. Magistrate
Harry Berry	Hardin Co. Government
Jeremy Smith	KY State Police
Jim Duplessis	State Government
John Stith	Hardin Co. Board of Education
Marvin Rhinehart	Hardin Co. Sherriff's Office
Matthew Deneen	Elizabethtown City Council
Michael Steck	Hardin Co. Road Dept.
Mike Skaggs	Lincoln Trail ADD
Paul Moran	Hardin Co. Schools
Rick Gaines	Elizabethtown/Hardin Co. Industrial Foundation
Samara Heavrin	KY State House
Brad Bottoms	KYTC D4
Kevin Blain	KYTC D4
Joe Ferguson	KYTC D4
Anna Coffey	KYTC D4
Steve De Witte	KYTC Planning
Dave Heil	KYTC Planning
Jared Jeffers	KYTC Planning
Tom Springer	Qk4
Kate Sautel	Qk4
Rebecca Thompson	Qk4
Mitch Thomas	AECOM

John Edwards	AECOM
Jordan Taliaferro	AECOM
John Keeton	AECOM
Chadwick Collins	AECOM

Kevin Blain opened the meeting, welcoming attendees. The purpose of the meeting is to update local officials and stakeholders on various transportation projects currently under development in the Glendale area. There was a 2008 study of mobility needs, followed by a 2021 update. With the Ford plant moving rapidly towards construction, KYTC is working to stay ahead of emerging needs.

Item No. 4-20 I-65/KY 222 Interchange Reconstruction

Construction at the interchange is underway, starting with the new access to the Ford property to accommodate construction traffic. Up to 4,000 construction workers are expected at BOSK by next summer; Ford is also considering options to shuttle workers from other possible parking sites. During construction, there will only be one entrance into the BOSK site from KY 222 but ultimately there will be two entrances. The new interchange will be open to traffic in 2024; KYTC will publicize new traffic patterns closer to time.

Item No. 4-198 Ring Road Extension (to US 31W)

Starting in 2013, the project advanced with state funding including identifying a preferred alignment and beginning to purchase right-of-way. The project was paused in 2016 due to funding shortfalls statewide. Now, the project is moving again with federal funding. KYTC is updating past studies to meet federal requirements, revisiting previous alignments, and will hold a public meeting this fall. Construction is anticipated to occur by 2025 and last 2+ years but depends on funding in the next highway plan.

The project requires the southbound I-65 weigh station to be relocated. It is proposed to shift south, between Glendale and Sonora (milepoint 81), at the former location of the rest area. There will be additional truck parking spaces.

- How will Ring Road intersect with existing roads: KY 1136, Overall Phillips, US 31W, etc?
  KYTC is looking at several intersection design options (e.g., offset intersections, roundabouts). It is anticipated Ring Road would not connect with Overall Phillips. These connections will be discussed at the public meeting.
- Right-of-way costs will be more expensive now but are not a consideration in choosing a preferred alternative.

As a separate project, another Ring Road extension Lincoln Parkway (Item No. 4-80250) is identified in the 2022 Highway Plan but design work will not begin until a preferred alignment is selected for Item 4-198.

Item No. 4-171 Widen KY 1136 (Gilead Church Road)

The existing highway is narrow, curvy/hilly, and about to carry significantly more traffic. Section 1 is between the proposed KCTC training facility and US 31W. This section is fully funded in the Highway Plan and would reconstruct the two sharp curves. Section 2 is the western section to KY 1868 and includes bridging over the railroad. The proposed road has two 12-foot lanes with 8-foot paved shoulders. Turn lanes are proposed on US 31W and on KY 1136/KY 1868.

AECOM presented a virtual room and video with simulations of the proposed improvements.

- Will the US 31W/KY 1136 intersection be signalized?
  At first, it will remain a two-way stop control until increasing traffic volumes meet signal warrants. KYTC will monitor the situation.
- Are there short-term plans to handle traffic during construction of the BOSK site?
  KYTC can grant a permit for Ford or the local government to add some gravel where needed, but KYTC does not have a mechanism to implement short-term widening for large construction traffic.

New Planning Study

Qk4 is beginning a planning study covering the Glendale area, looking at future traffic demands and where needs/priorities remain between other ongoing projects. The study area runs from the I-65/KY 222 interchange, south to KY 1136/KY 1868, and west to US 62—potentially including a new interchange at the Western KY parkway. There is no identified funding for any future phases or projects.

Study area needs are driven by future traffic accessing the BOSK plant so traffic forecasts will be a critical component. The goal is to coordinate all projects and the future (2045) traffic scenario, including the Ford plant and future land use changes in southern Hardin County. Future regional traffic has been forecasted using the updated Meade-Hardin Travel Demand Model (TDM). Coordination has occurred with both city and county planning representatives to help forecast the future (2045) land use scenario, built around household and job projections. The ongoing city comp plan update forecasts 33,000-50,000 new households in the larger region. The current TDM model includes 14,000 new households in Hardin County (40,000 in 2018 versus 54,000 in 2045) and 38,000 new jobs (46,000 in 2018 versus 84,000 in 2045), including 5,000 at BOSK. Maps showing current TDM growth assumptions were distributed, asking attendees to review/comment.

- Most recent growth has occurred along US 62 near Cecilia. Other infrastructure improvements are being advanced that would support future development.
- Glendale's sewer plant will be near capacity once BOSK is operational. It will take more investment and capacity to support significant residential growth.
- Ford's current plans use about half the megasite. If the remainder develops with similar intensity in the future, it will change traffic patterns.

The current TDM growth assumptions show notable growth—600 new vehicles per day on KY 222 with 10,500 trips to/from the BOSK plant (75% to/from the north driveways to KY 222), and 5,600 new daily trips on KY 1136 (New Glendale Road) north of Glendale. KYTC noted a lot of these rural roads will need to be revisited in the future to safely accommodate increased traffic.

The 2021 *Glendale Mobility Study* identified several priority projects for the area, including bypasses for the historic community. A large "PACE" agricultural easement and numerous historic resources constrain a new highway connection north of Glendale. Qk4 will begin drawing up concepts—an improved KY 222, a new alignment connector, and/or new WKY parkway interchange—then schedule meetings with this group and the public in September. Attendees were encouraged to mark up the map following the presentation to note additional constraints, known developments, or potential corridors to evaluate.

- The northeast Glendale bypass should show on the project map. We do not need more through traffic cutting through the historic town. A bypass is necessary and should be a short-term priority.

- There are many highway needs noted here to accommodate increased traffic, but these projects compete with others statewide for limited funding—including the new battery plant at Bowling Green too.
- An I-65 interchange at KY 1136 was suggested previously, south of the BOSK property, to increase access. It should still be considered.
  The intent is that the KY 1136 widening discussed above could be widened to four/five lanes with little additional right-of-way needed.

End of Minutes

Appendix C

2045 No Build Forecasts

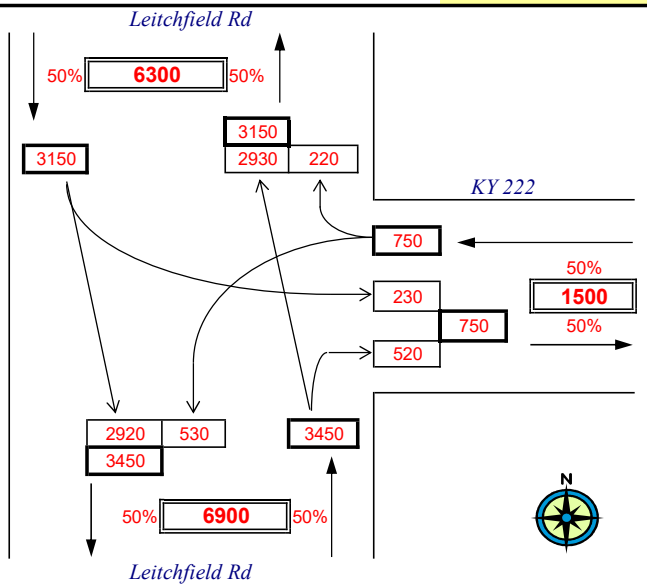
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & US 62

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 1 (2045)

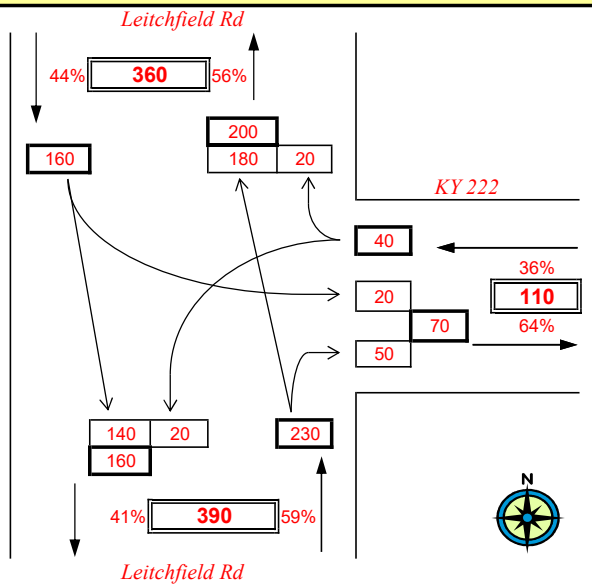
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT

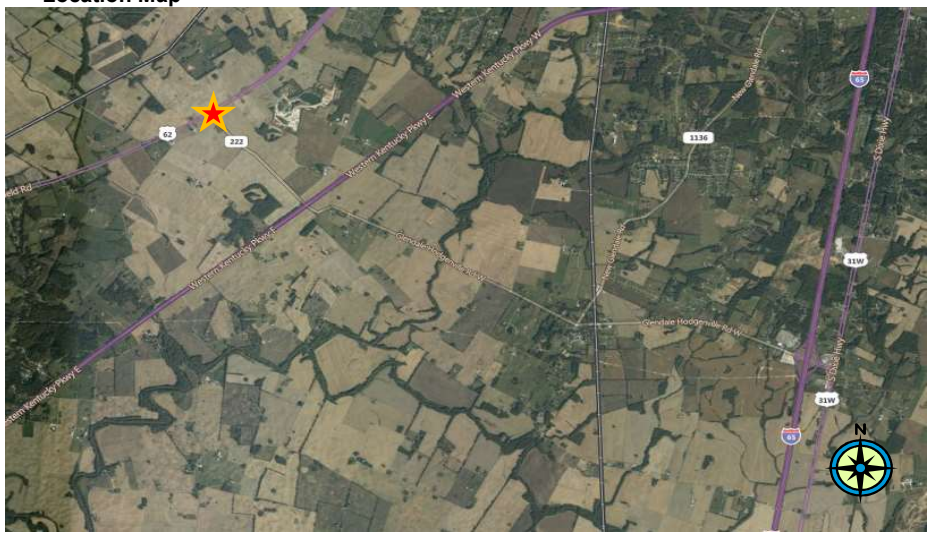


Note : Individual Turns Not Necessarily Reflective of Precision Shown

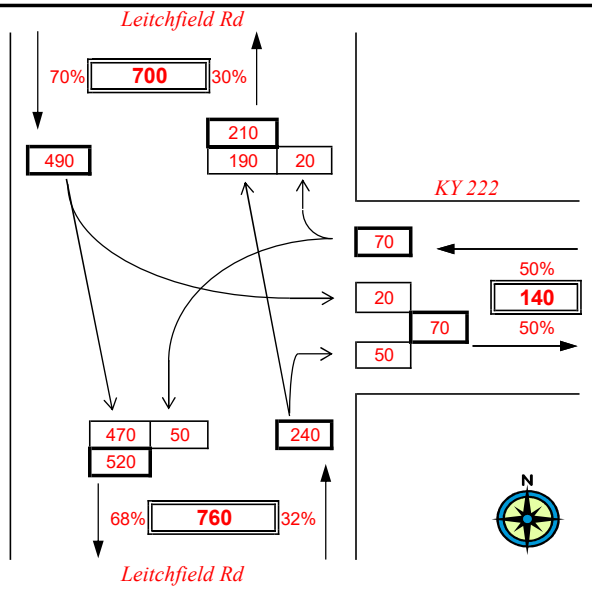
2045 AM Design Hour



Location Map



2045 PM Design Hour



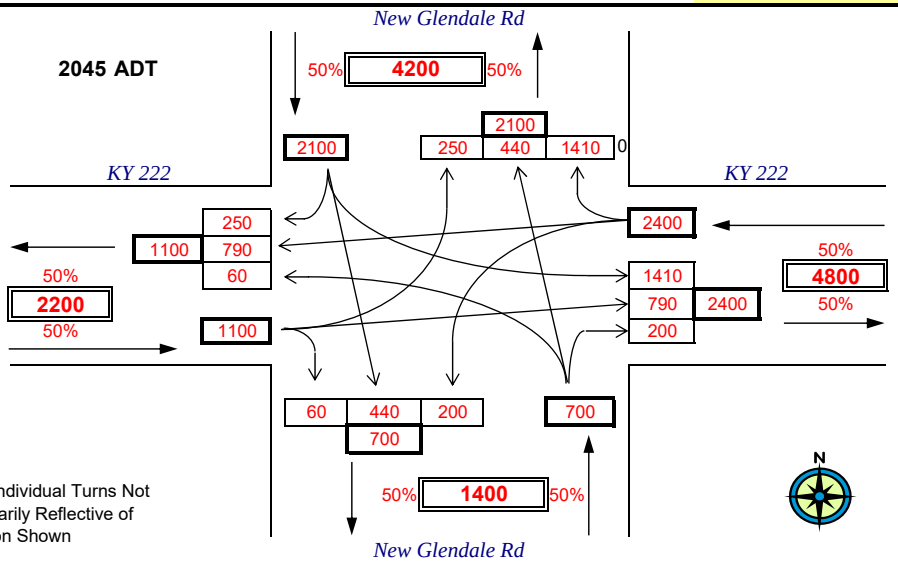
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & KY 1136

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 2 (2045)

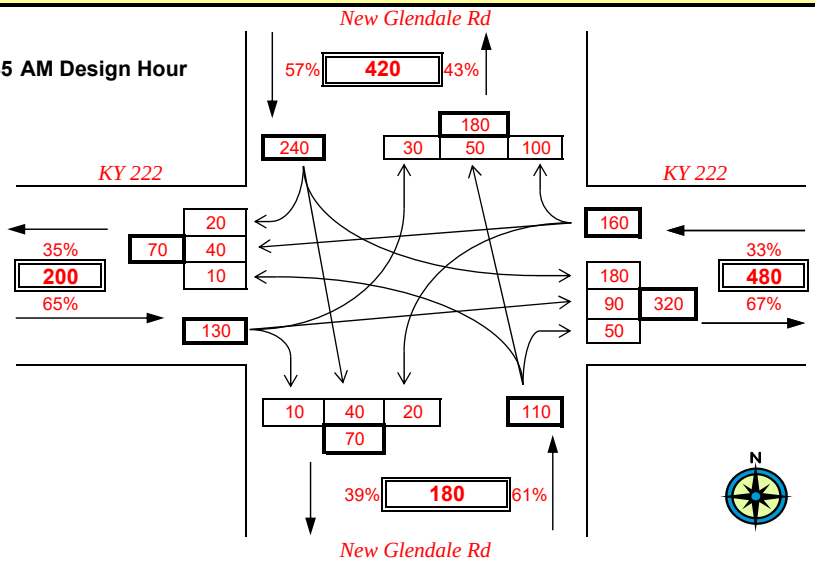
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT

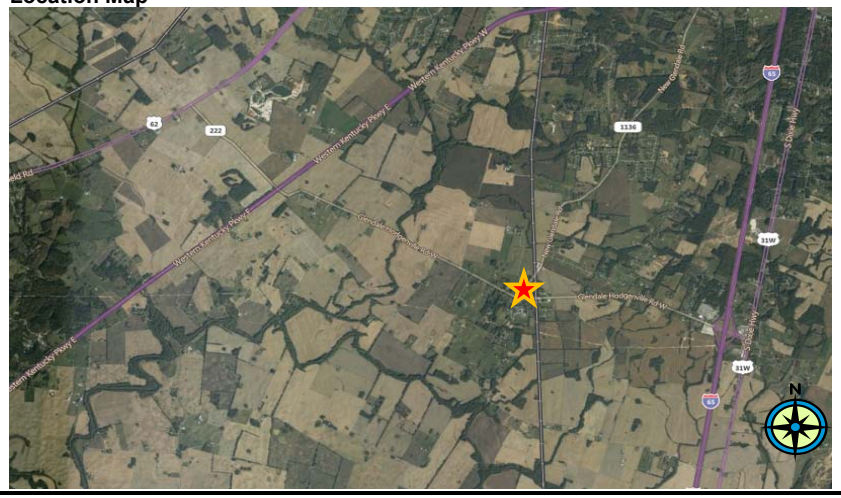


Note : Individual Turns Not Necessarily Reflective of Precision Shown

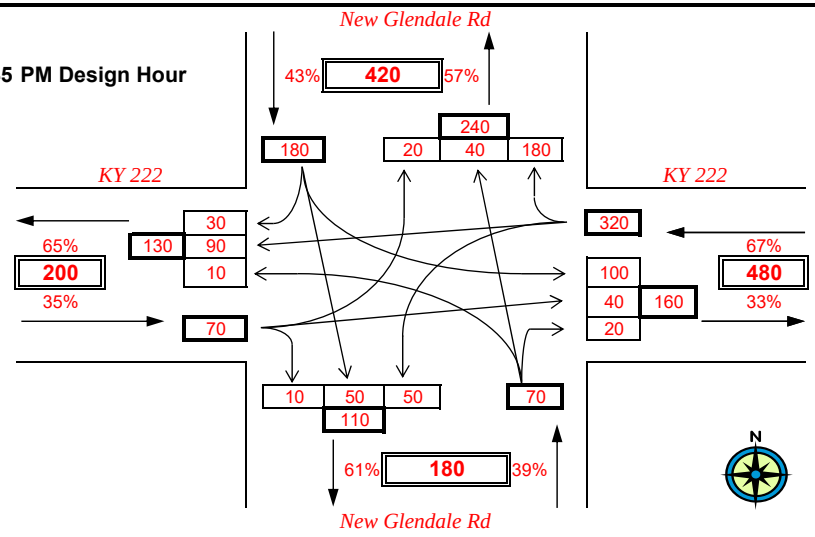
2045 AM Design Hour



Location Map



2045 PM Design Hour

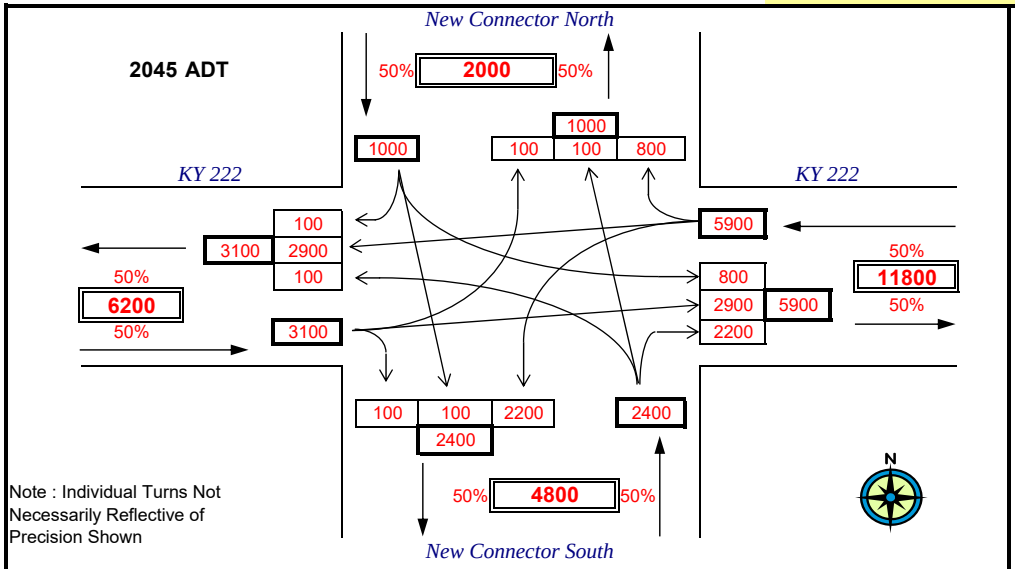


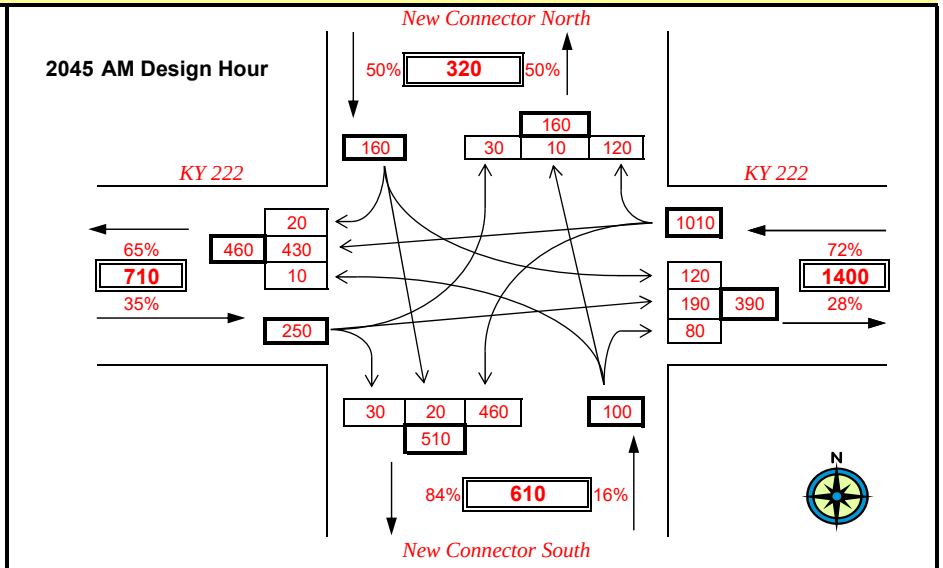
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & BOSK Driveway NB

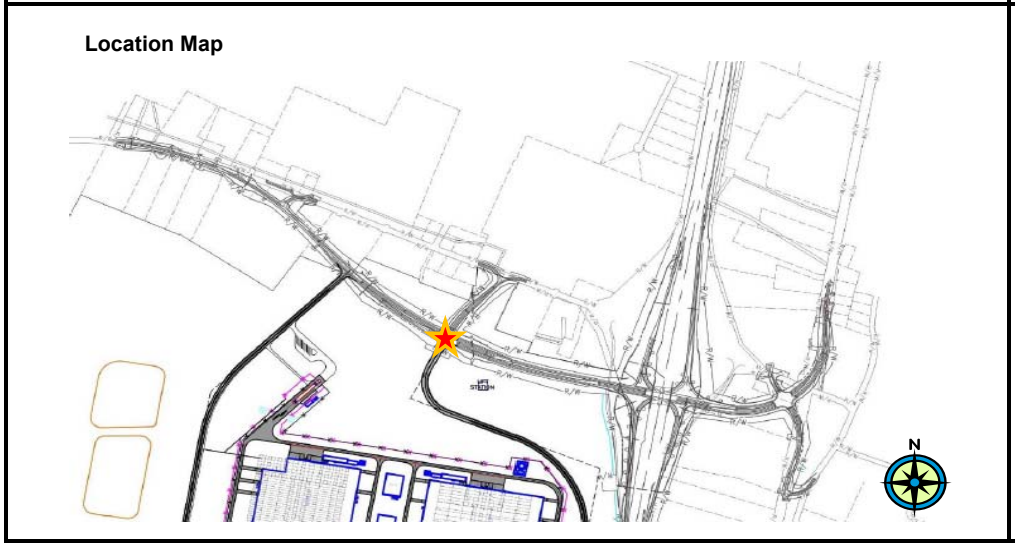
NOTE: Directional distributions were determined from a calculated turning movement count.

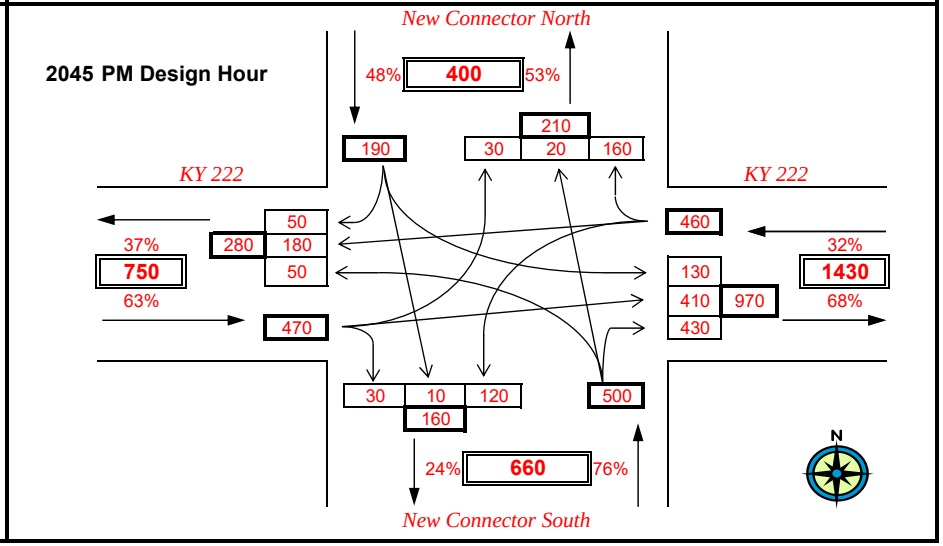
TURN MOVEMENT 3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**









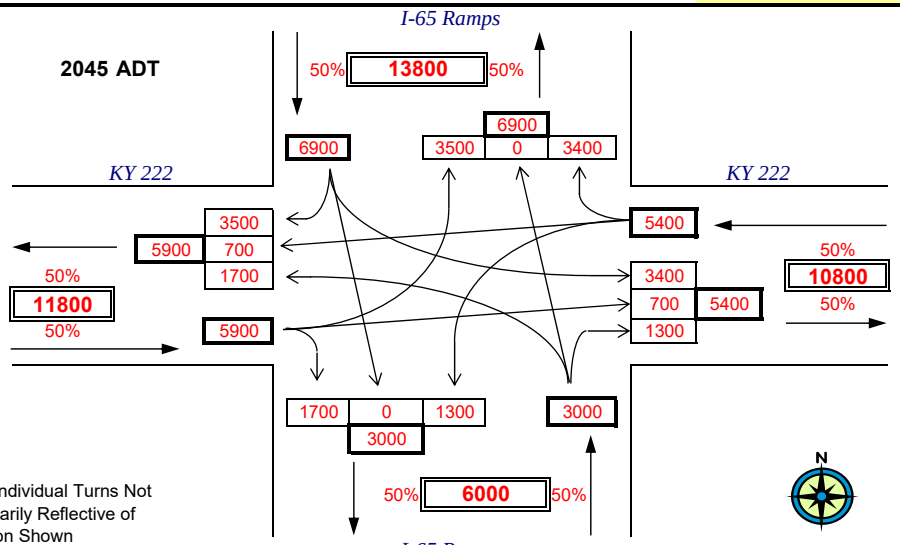
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & I65 Ramps NB

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 4 (2045)

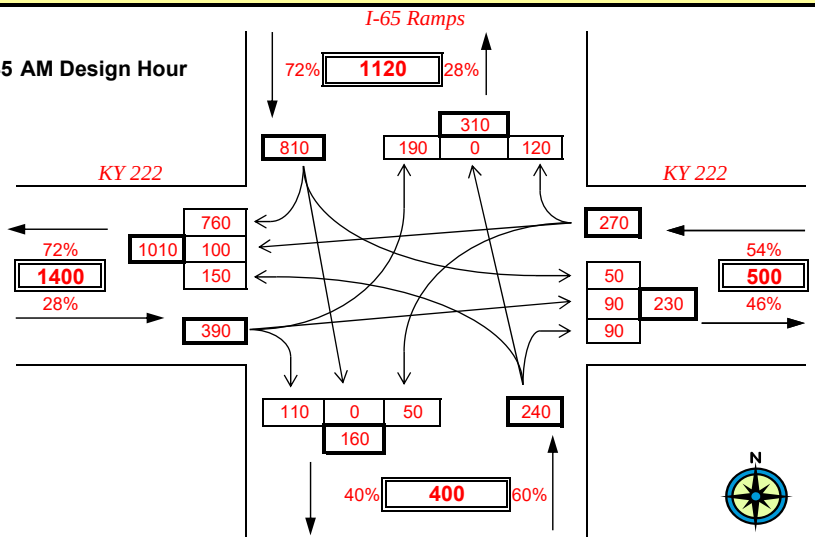
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT



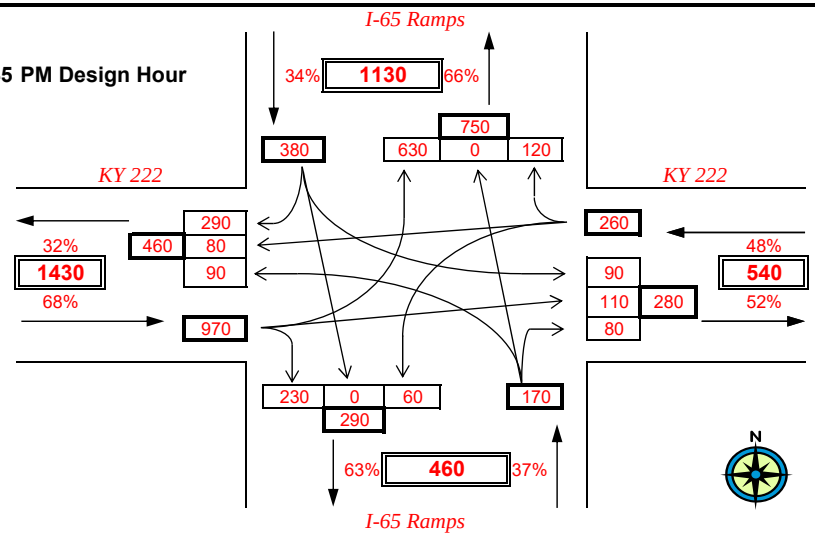
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2045 AM Design Hour



Location Map

2045 PM Design Hour



Appendix D

2045 Build 1 – WKP & KY 222 Interchange Forecasts

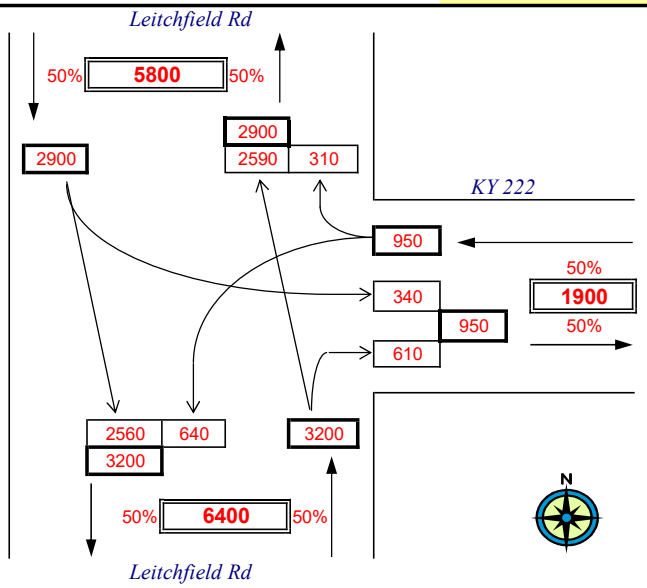
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & US 62

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 1 (2045)

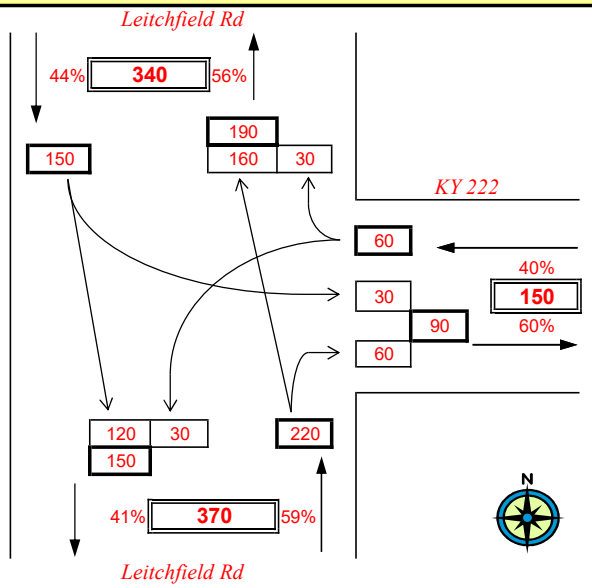
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT

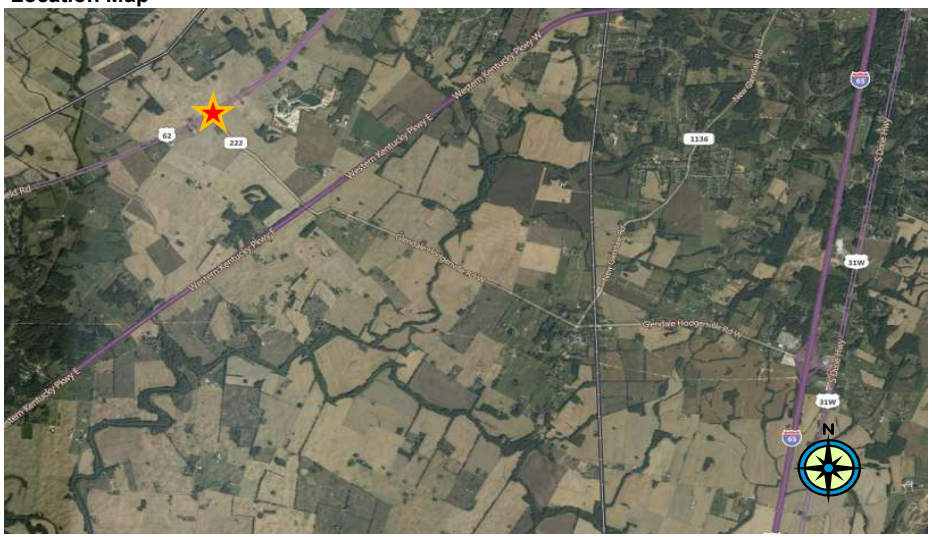


Note : Individual Turns Not Necessarily Reflective of Precision Shown

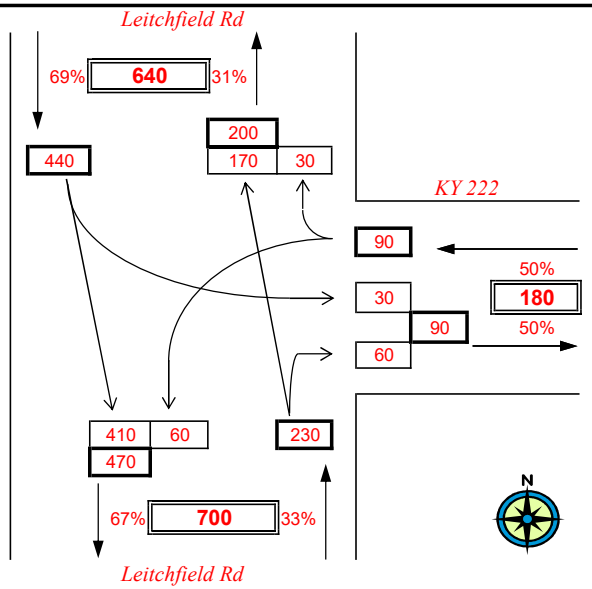
2045 AM Design Hour



Location Map



2045 PM Design Hour

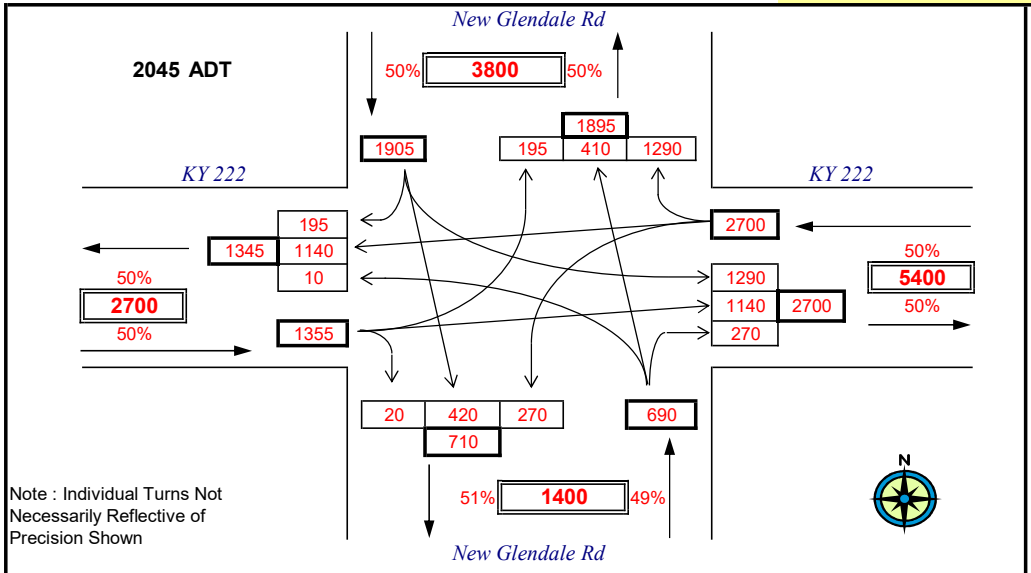


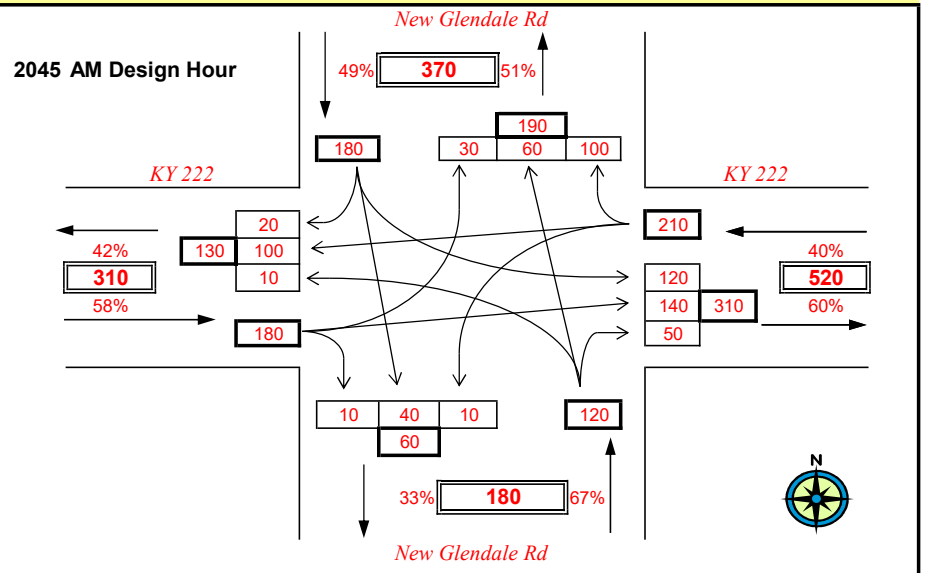
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & KY 1136

NOTE: Directional distributions were determined from a calculated turning movement count.

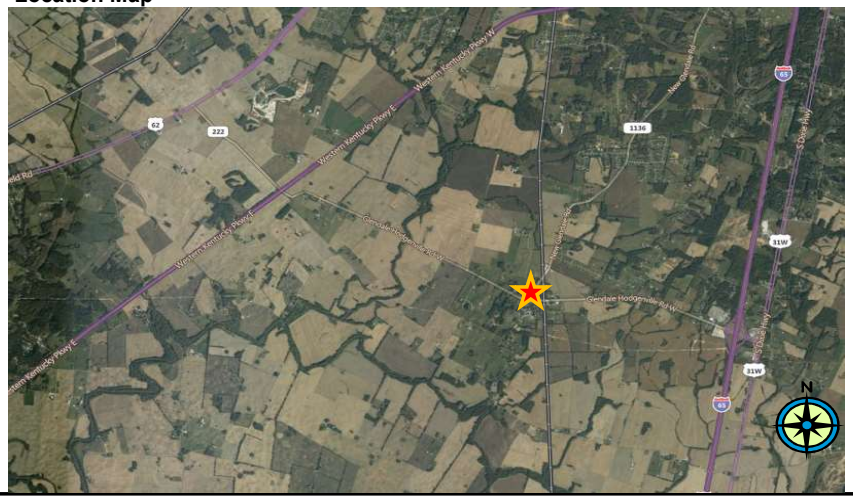
TURN MOVEMENT 2 (2045)

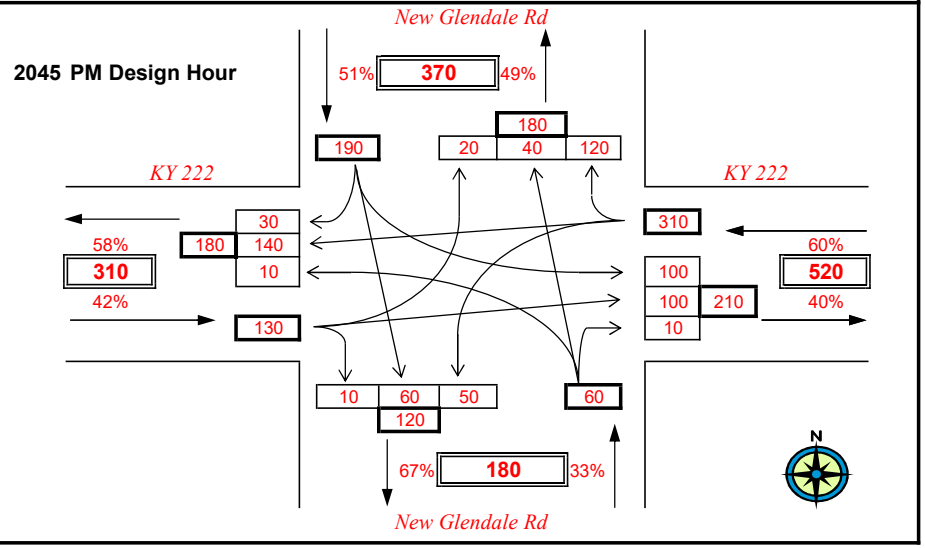
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





Location Map



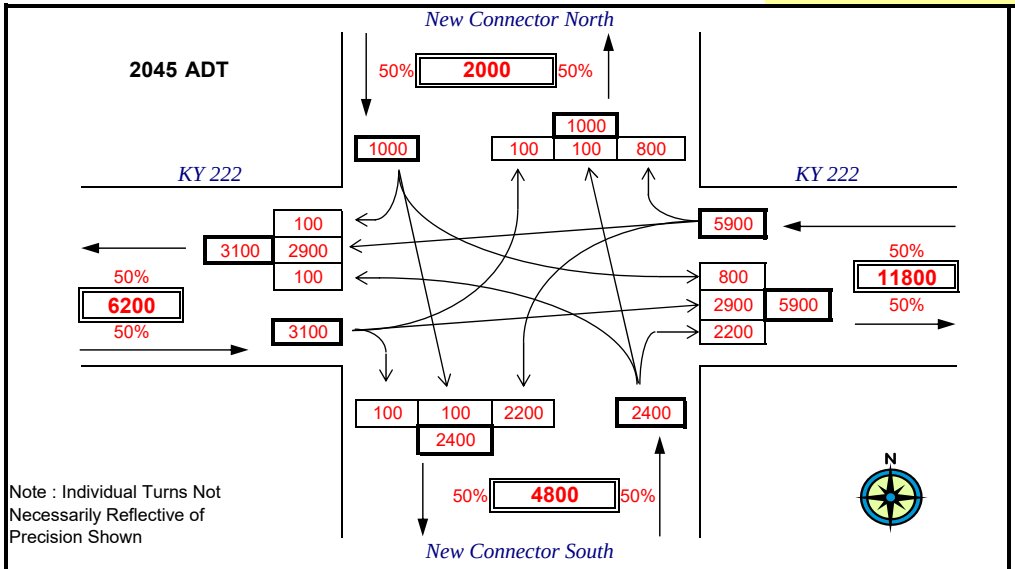


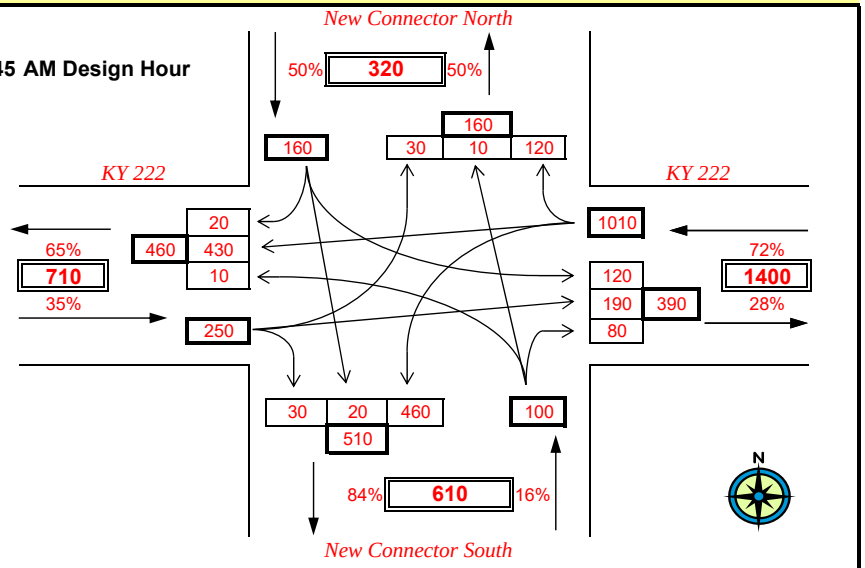
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & BOSK Driveway A1

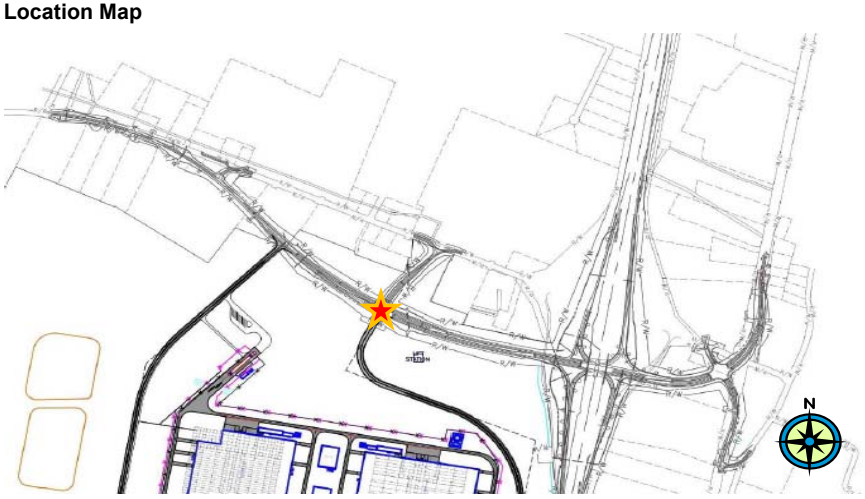
NOTE: Directional distributions were determined from a calculated turning movement count.

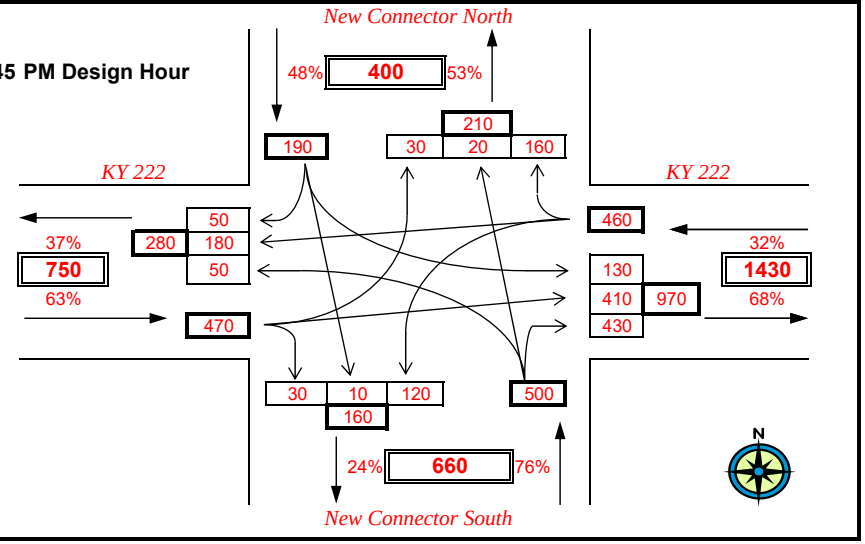
TURN MOVEMENT 3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**









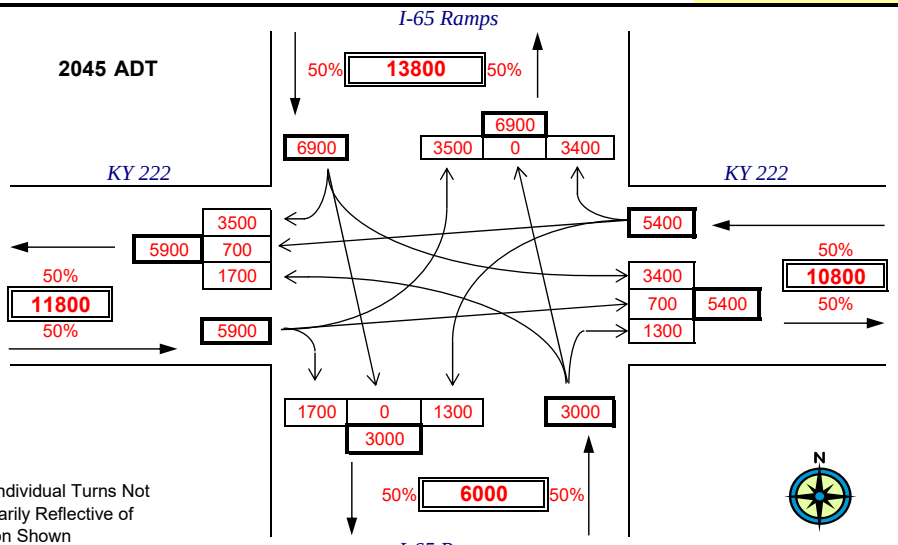
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & I65 Ramps A1

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 4 (2045)

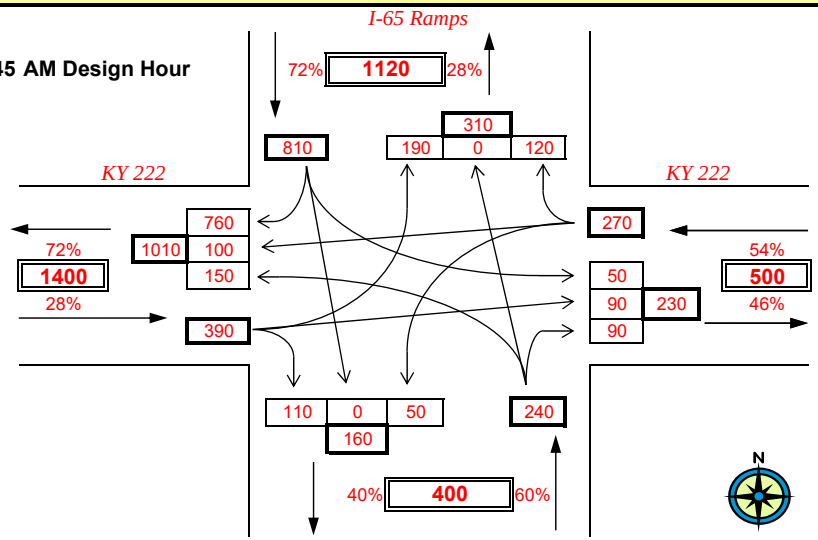
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT



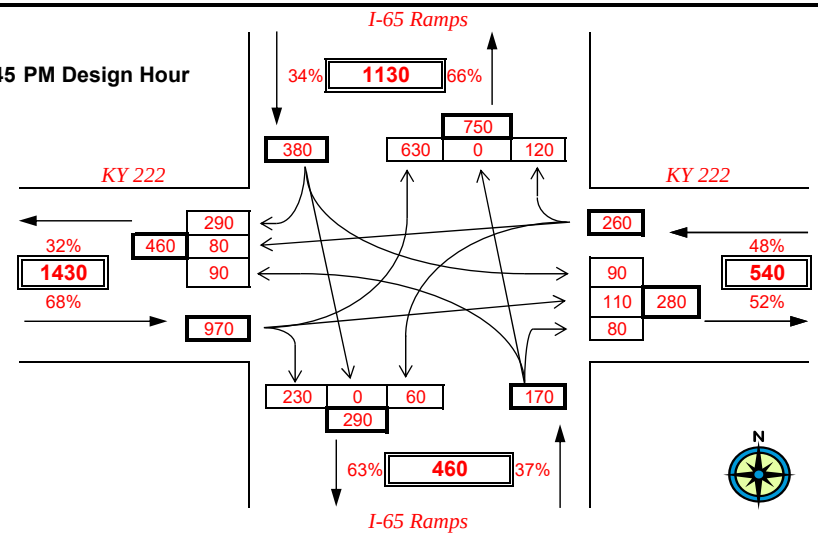
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2045 AM Design Hour



Location Map

2045 PM Design Hour

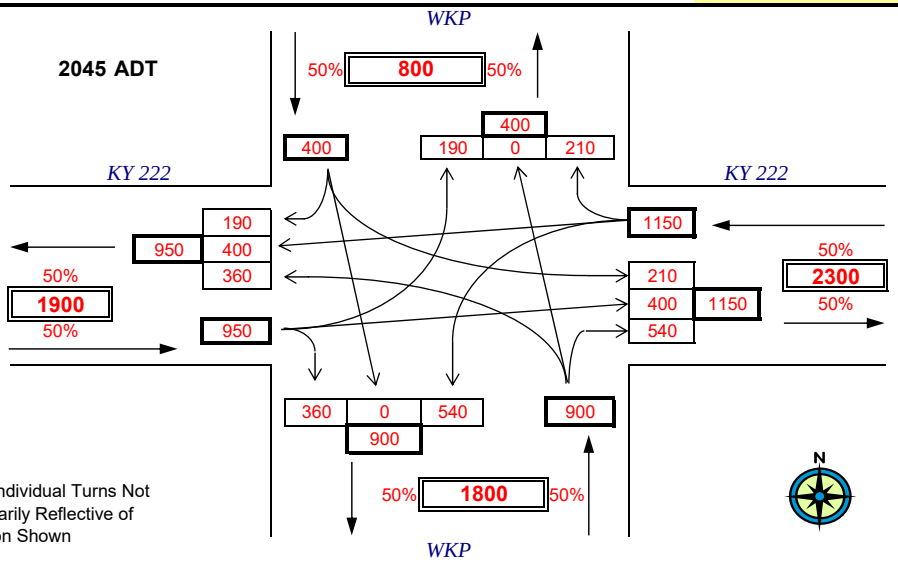


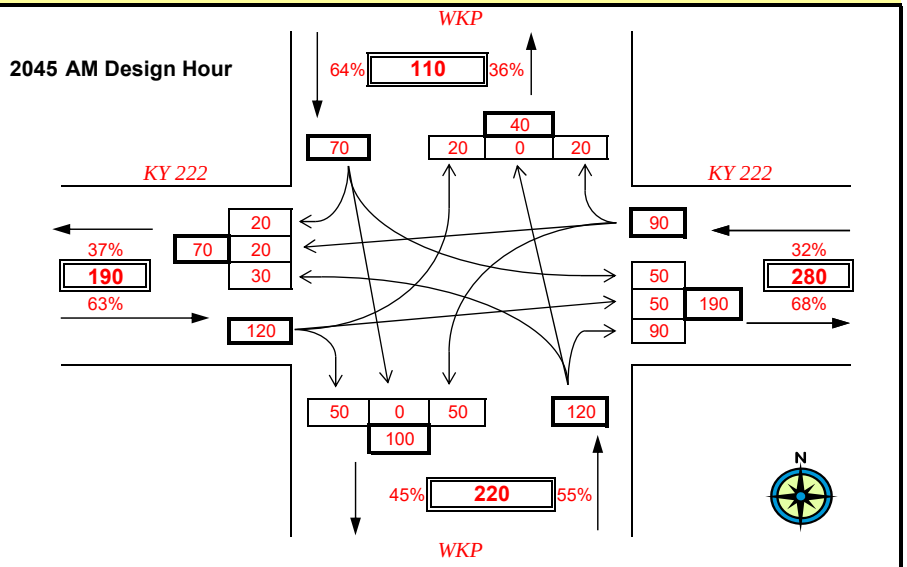
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & Western KY Parkway Ramps

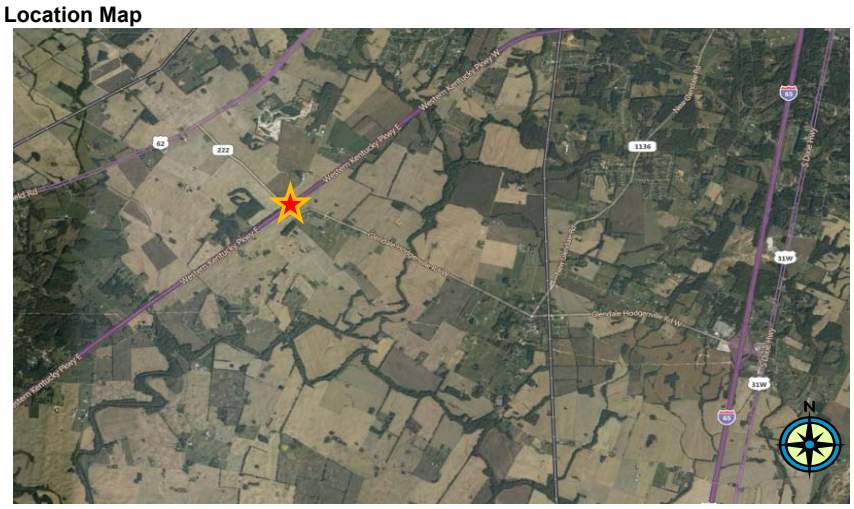
NOTE: Directional distributions were determined from a calculated turning movement count.

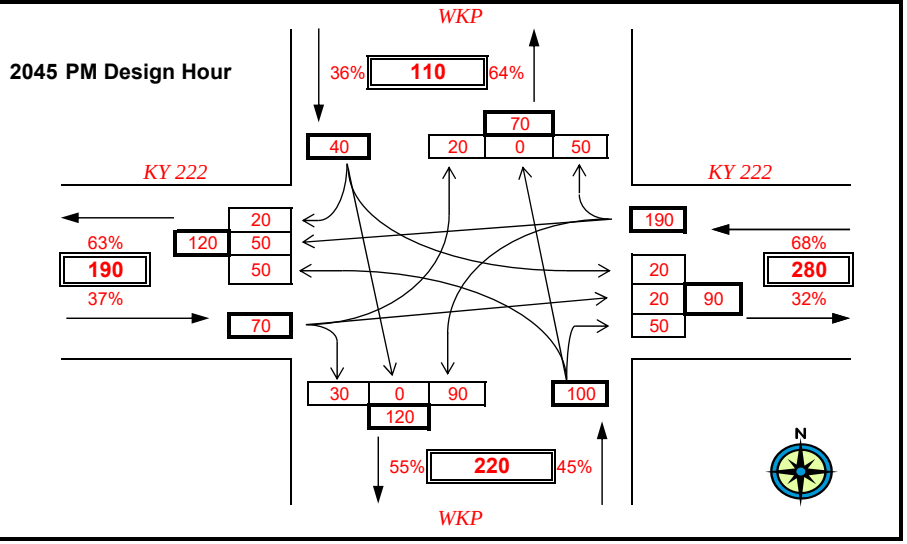
TURN MOVEMENT 5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**









Appendix E

2045 Build 2 – KY 1136 (Gilead Church) & I-65 Interchange Forecasts

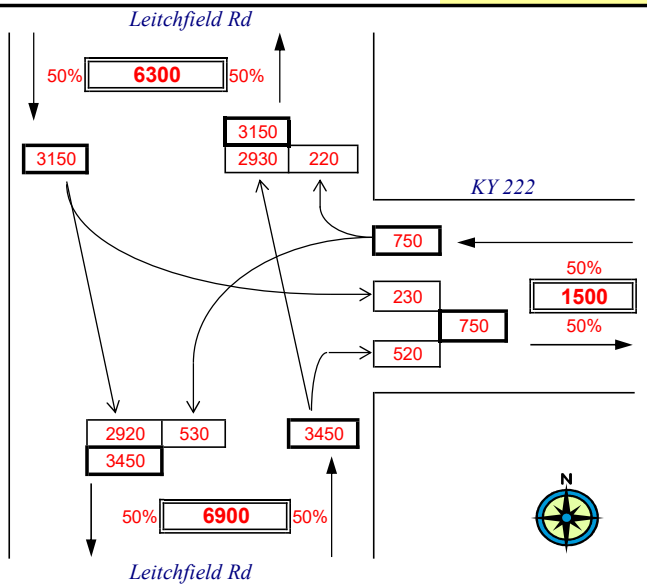
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & US 62

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 1 (2045)

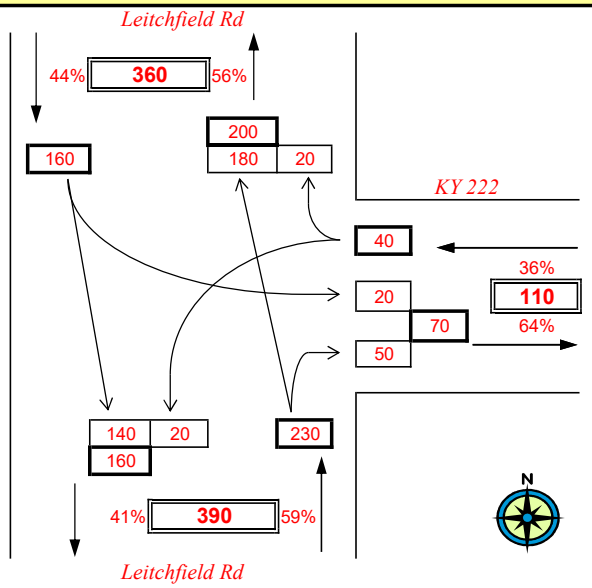
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2045 ADT

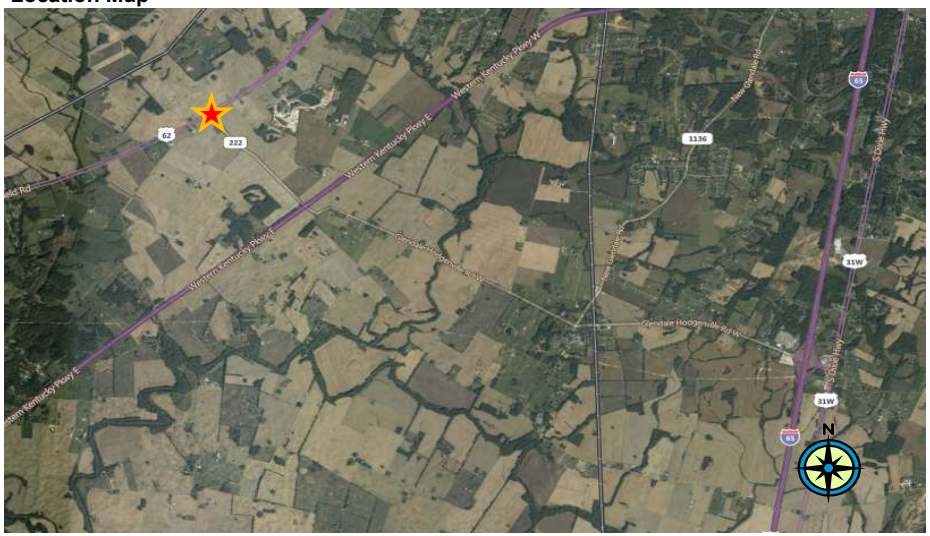


Note : Individual Turns Not Necessarily Reflective of Precision Shown

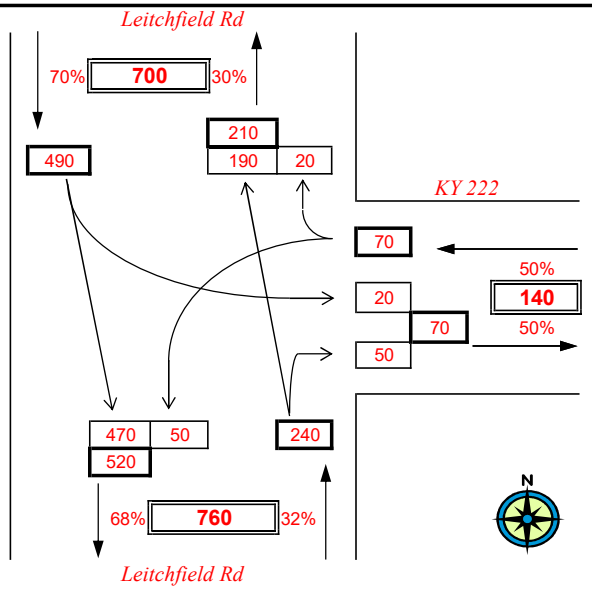
2045 AM Design Hour



Location Map



2045 PM Design Hour

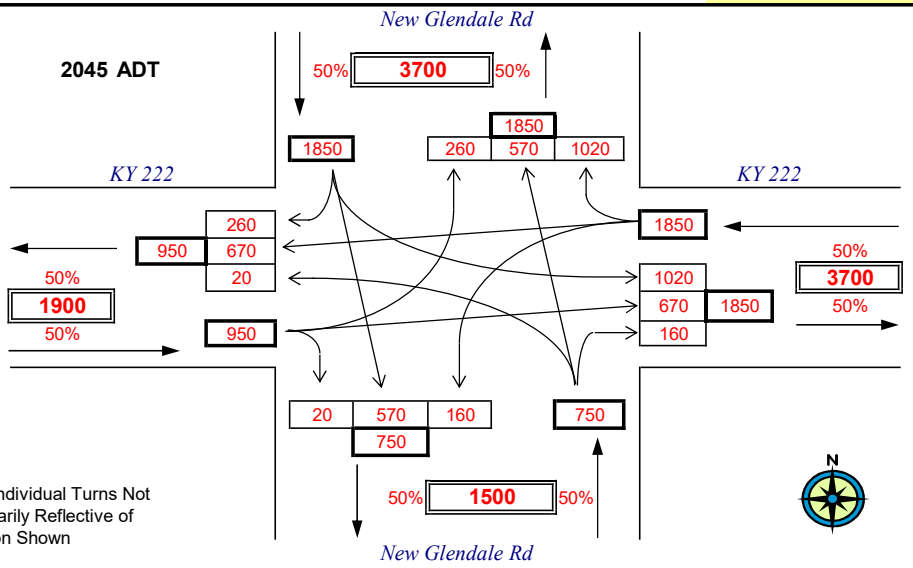


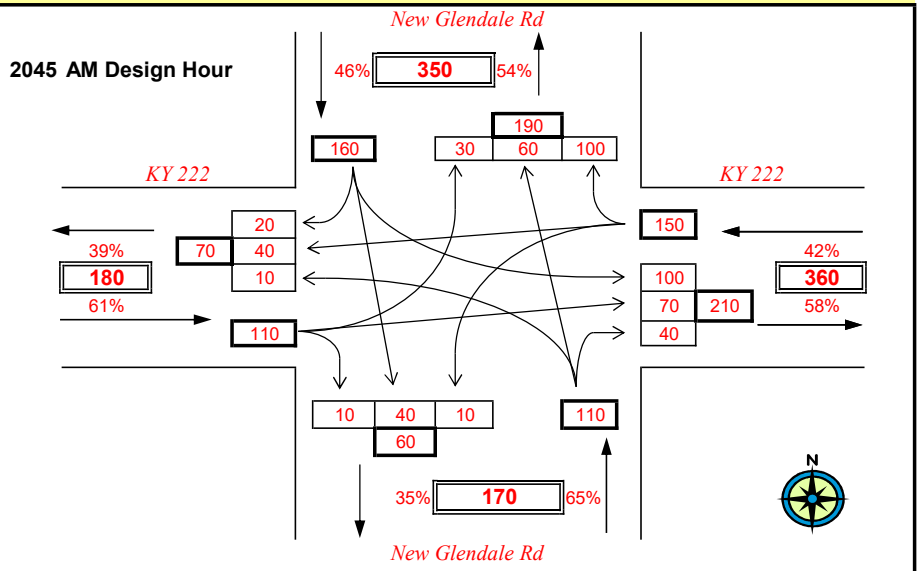
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & KY 1136

NOTE: Directional distributions were determined from a calculated turning movement count.

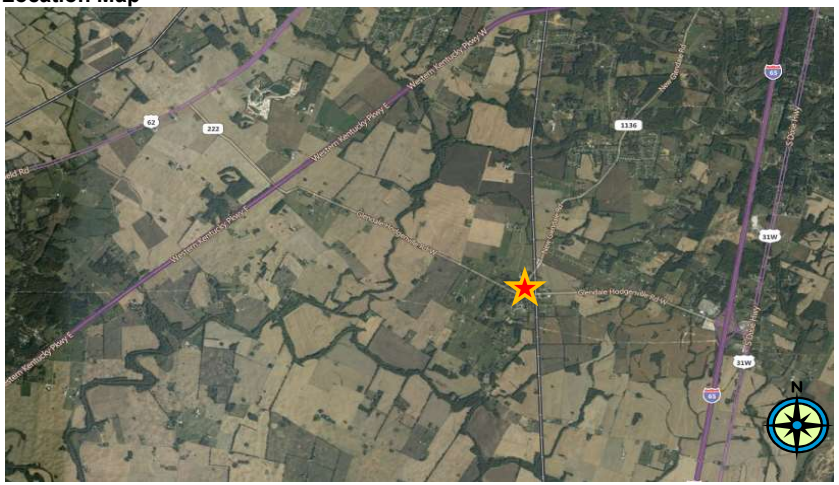
TURN MOVEMENT 2 (2045)

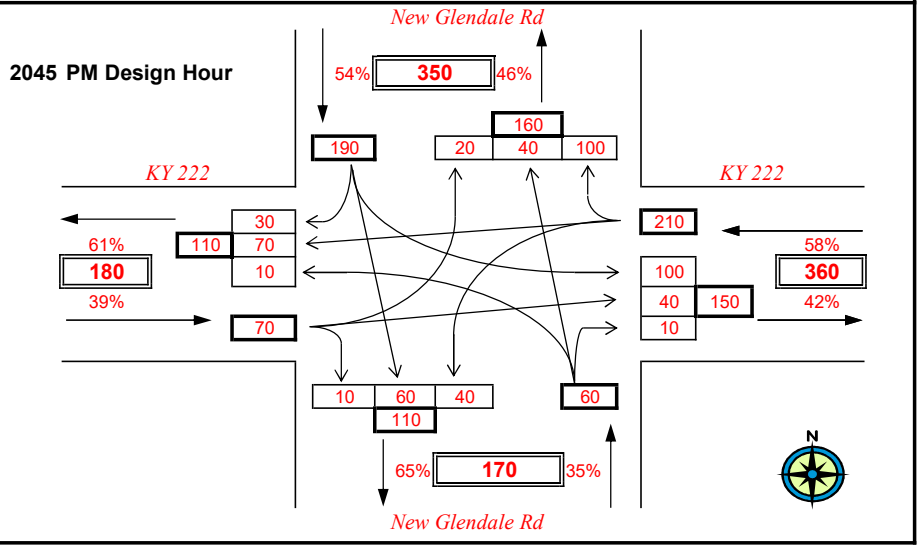
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





Location Map



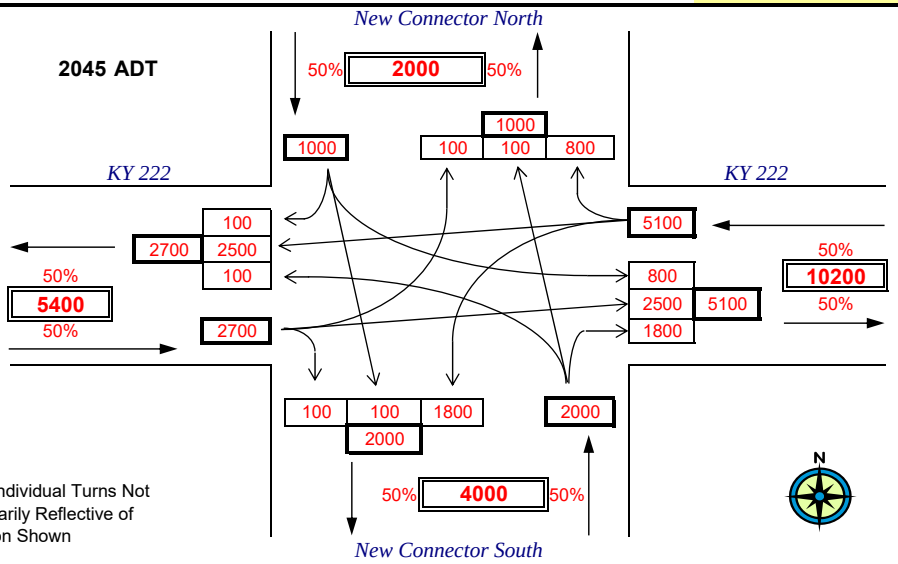


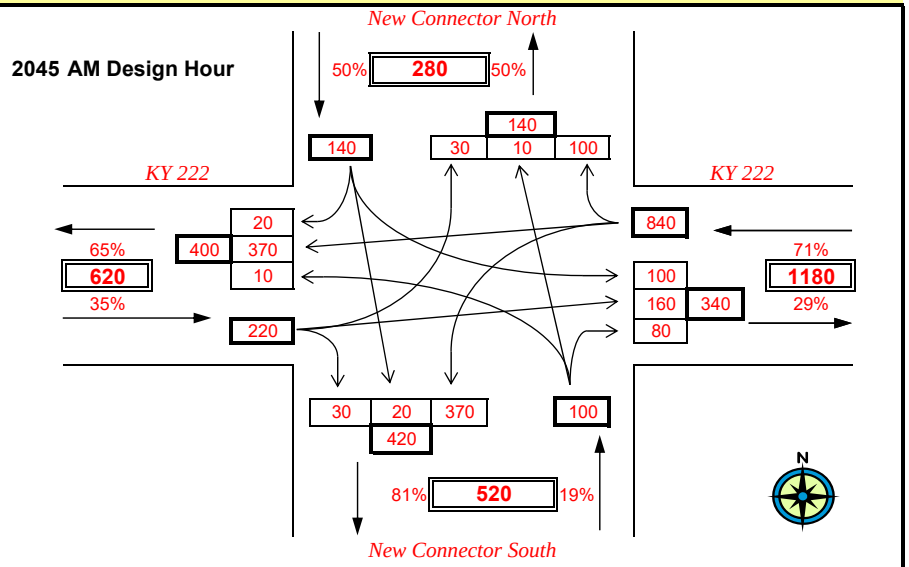
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & BOSK Driveway A2

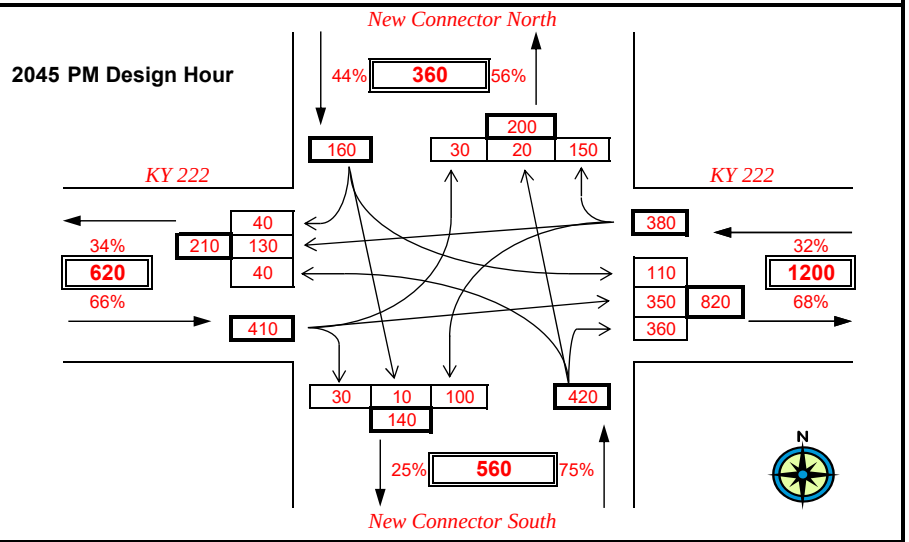
NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





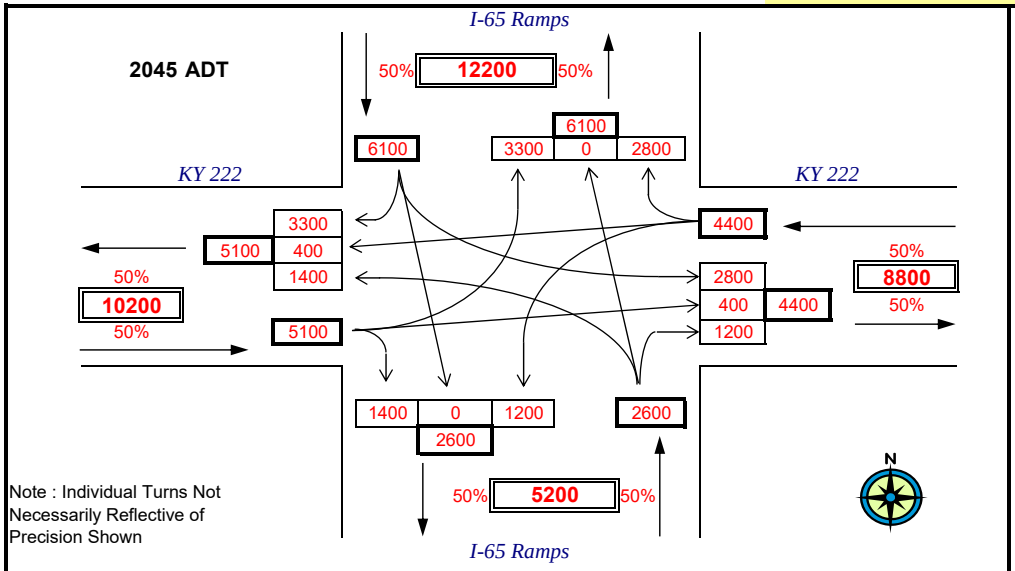


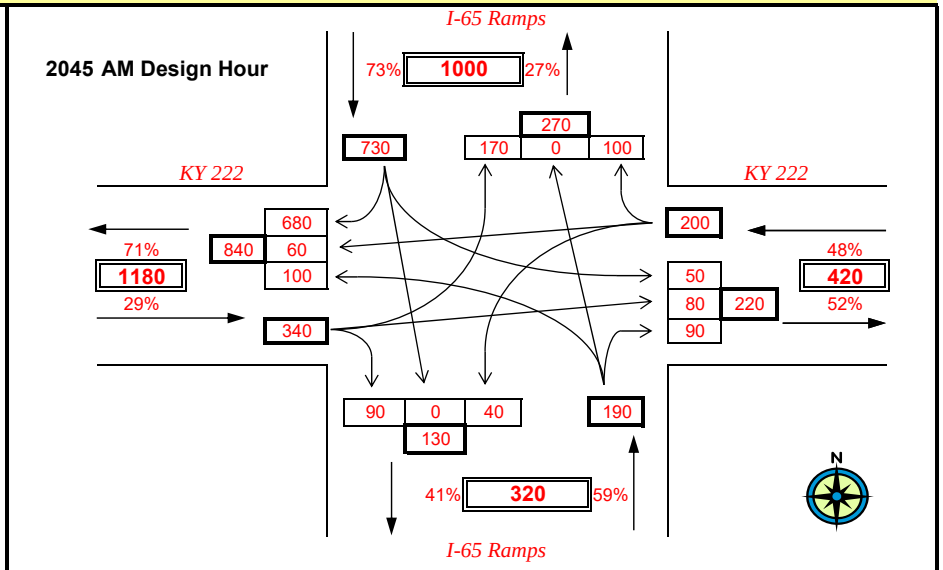
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 222 & I65 Ramps

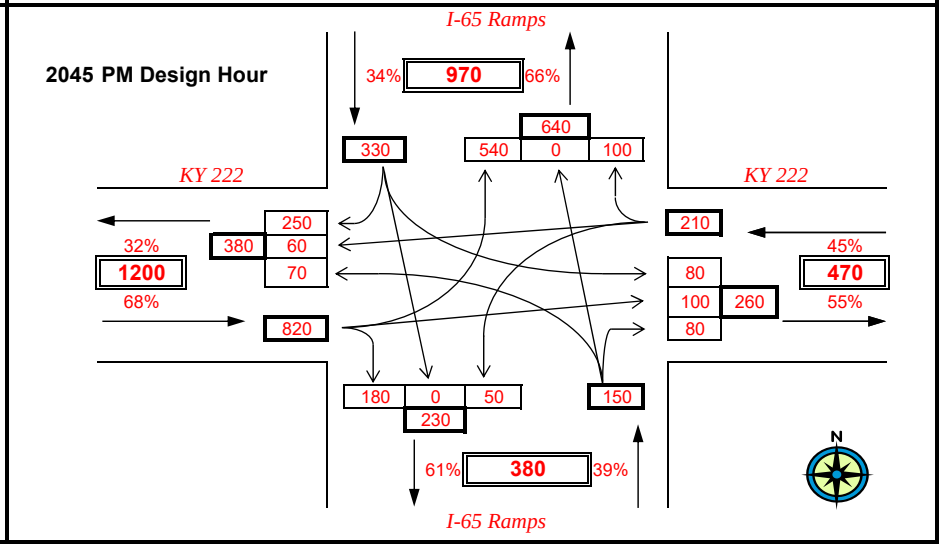
NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





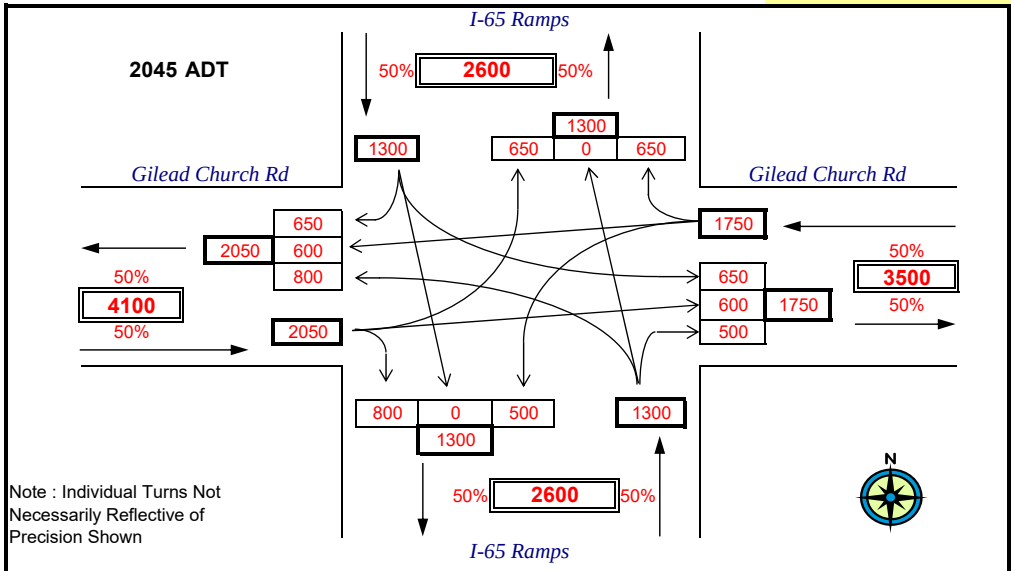


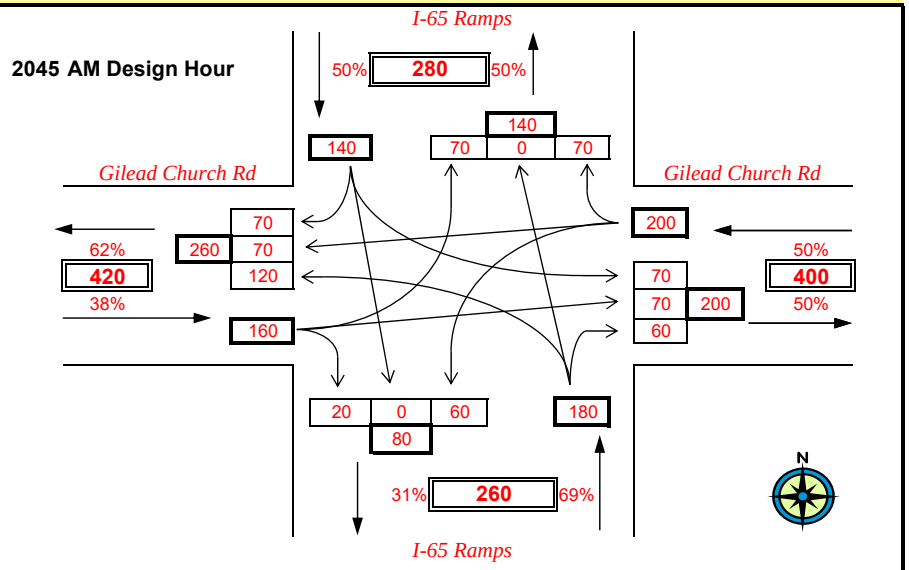
PROJECT: KY 222 Glendale Corridor Study
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: Monday, August 8, 2022
ANALYST: ST
YEAR: **2045** **ADT and Design Hour Volumes**
INTERSECTION: KY 1136 & I-65 Ramps

NOTE: Directional distributions were determined from a calculated turning movement count.

TURN MOVEMENT 5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





Location Map