

EXECUTIVE SUMMARY

Study Background

The Kentucky Transportation Cabinet (KYTC) initiated a corridor study in spring 2022 to examine mobility needs near the community of Glendale in south central Hardin County. With two new BlueOvalSK (BOSK) battery manufacturing plants under construction near Glendale, Hardin County is expecting to see 5,000 new full-time employees working at the 1,500-acre industrial site as early as 2025—adding traffic to the area's rural highways.

While several major infrastructure projects are underway in the area, this *Glendale Mobility Study* examines the local roadway network to understand what additional projects are needed to sustain anticipated growth. The study area (**Figure ES-1**) follows KY 222 from US 62 in the west to its interchange with I-65 in the east; north to south, the area is up to three miles wide to allow sufficient space to consider improving east-west connections.

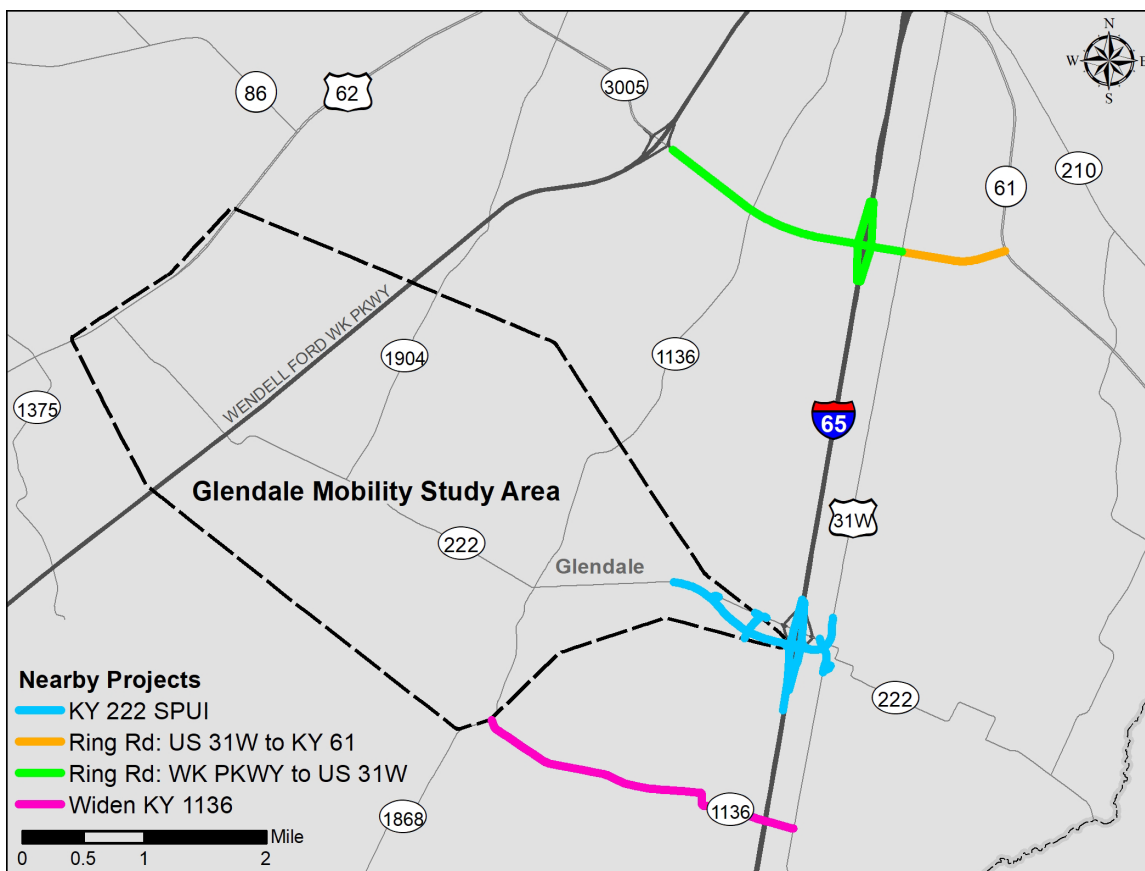


Figure ES-1: Ongoing Highway Plan Projects near Study Area

Near the study area, several highway projects are under development with funding for one or more project development phases in Kentucky's *2022 – 2028 Enacted Highway Plan*.

- **Item No. 4-20.01: I-65/KY 222 Interchange Reconstruction** is under construction, expected to open to traffic in 2024. The interchange will be reconstructed from its current diamond layout to a single point urban interchange (SPUI) with traffic signals and increased storage lanes/lengths to improve capacity, prioritizing the high-volume moves between the interchange and plant.
- **Item No. 4-198.00: Ring Road Extension**, currently under design, proposes to extend KY 3005 (Ring Road) east from its current endpoint at the Western KY Parkway to US 31W, including a new I-65 interchange.
- As a separate project, another **Ring Road Extension to Lincoln Parkway (Item No. 4-80250.00)** will not be developed until a preferred alignment is selected for Item 4-198.
- **Item No. 4-171.00 Reconstruction of KY 1136 (Gilead Church Road)**, currently in design, will improve the existing highway to provide two 12-foot-wide lanes with 8-foot-wide paved shoulders and turn lanes at key intersections.

Other previous studies and potential future projects near the study area were also considered from recent planning studies and KYTC's Continuous Highway Analysis Framework (CHAF) database.

Any improvement concepts considered should be developed to satisfy as many of the following goals as possible:



Existing Conditions

KY 222 (Glendale-Hodgenville Road) is a two-lane rural minor collector with 10-foot-wide lanes and minimal paved shoulders. Along KY 222, a series of rolling hills west of Glendale limit sight distance. Sharp curves just east of the Western KY Parkway has posted warning chevrons to alert motorists to slow down. Recent counts show 2,100 vehicles per day (vpd) use the KY 222 corridor east of Glendale compared to 800 vpd to the west. US 62, the Western Kentucky Parkway, and I-65 provide higher mobility north-south connections through the study area, with KY 1136 and US 31W providing north-south options for shorter trips.

In addition to passenger cars, school buses, farm equipment, and other vehicle types also traverse study area highways. Heavy truck traffic is common near the interchange, accessing the adjacent truck stops, and will likely increase with the development of the industrial plants. Hardin County is also home to an active bicycling community, relying on low-volume rural highways for solo rides and group events.

Historical crash data for a six-year period (January 2016 through December 2021) shows 121 crashes occurred throughout the study area: 51 along KY 222 and the remainder associated with other highways. By severity, there were three fatality crashes along KY 222, six injury crashes, and the remaining 42 crashes were property damage only. By type, most are single vehicle crashes (51%), followed by angle crashes (27%).

Environmental Overview

Much of the study area is rural, dedicated to farmlands. There is a large "PACE" easement north of Glendale plus a certified agricultural district to the west. The unincorporated community of Glendale has a higher density of residential properties, combined with several local commercial businesses, many geared to tourism/antiques. The eastern limits transition to a more highway-commercial setting, with two large truck stops/convenience stores. The developing Megasite southeast of the study area will be industrial and is expected to spur additional growth in the area as support businesses and demands for housing increase.

A records check and survey were completed to assess individual resources and potential historic districts and identify properties potentially eligible for inclusion on the National Register of Historic Places (NRHP). Shown in **Figure ES-2** alongside other environmental features, the Glendale Historic District is NRHP listed and includes 28 contributing resources plus an expanded district boundary adds 8 more resources to the north. Beyond the district, 12 individual properties within the study area are listed or were identified as potentially eligible for listing on the NRHP, requiring detailed field surveys and agency coordination should a Build concept advance for future project development.

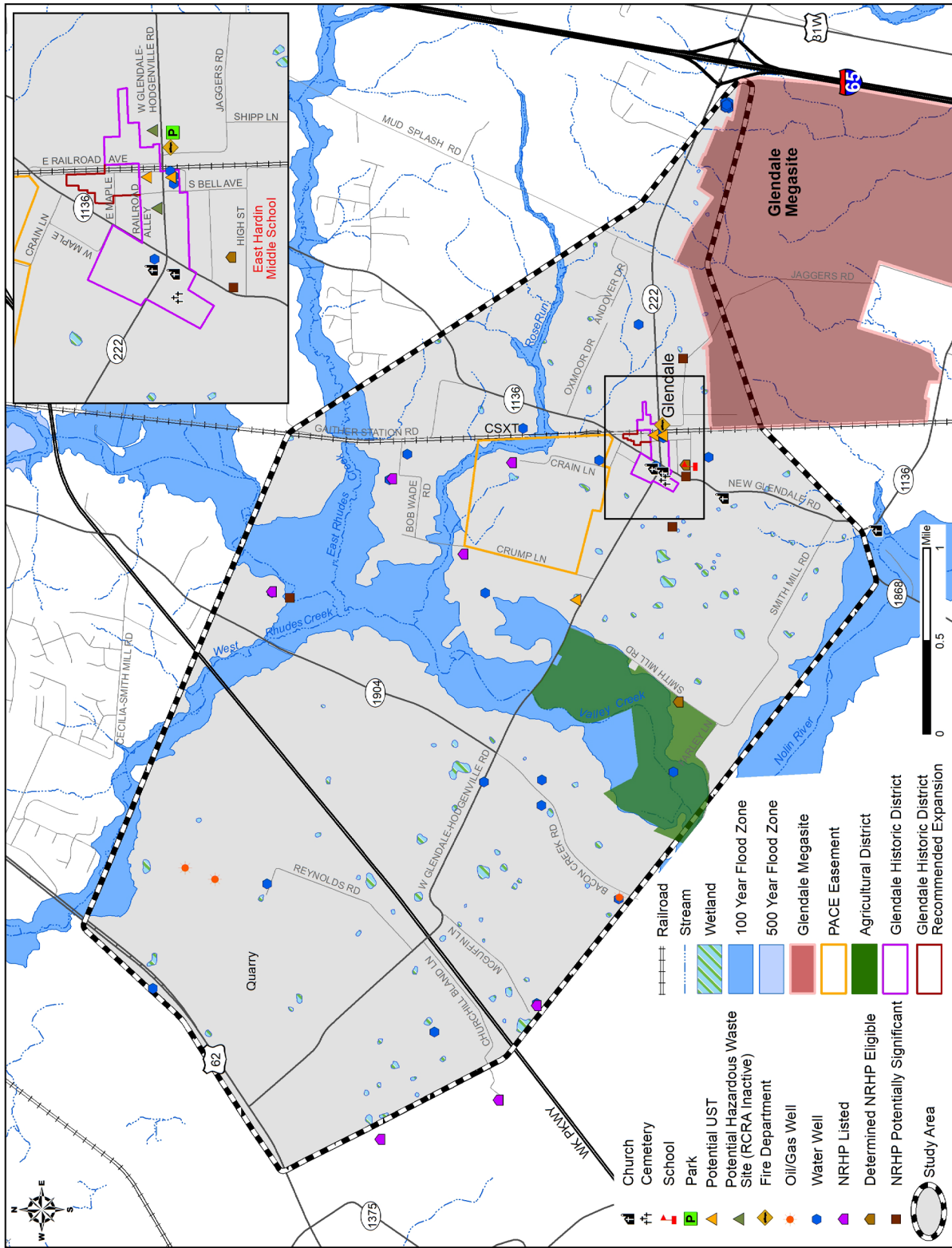


Figure ES-2: Environmental Overview

Alongside farmlands and historic resources, the study area also includes several named creeks, large floodplains, numerous wetlands, farm ponds, water wells, and groundwater springs. As the area drains into the Green River and sensitive groundwater areas around Mammoth Cave, the entire area is identified as a priority watershed.

US Fish and Wildlife Service (USFWS) records show three protected bat species have the potential to occur within the study area plus the monarch butterfly is under consideration for official listing.

The study area is located within the Western Pennyroyal physiographic region, characterized as an upland area primarily consisting of high karst potential limestones and karstic features, including frequent sinkholes. Karst terrain will likely be the most critical geotechnical factor to any new construction in the study area.

Within Glendale, the former East Hardin Middle School provides areas for sports teams' practices and community events though its future reuse is currently undetermined. There is a city park southeast of the KY 222 railroad crossing and three churches within the study area. The community hosts several local festivals throughout the year but is known for its annual Glendale Crossing Festival in October.

Future Growth

Study area needs are driven by future traffic accessing the BOSK plants, so traffic forecasts are a critical component of this study. The goal is to coordinate all projects and the future (2045) traffic scenario, including the new battery plants and future land use changes in southern Hardin County. Future regional traffic was forecast using the updated Meade-Hardin Travel Demand Model (TDM). Coordination occurred with both city and county planning representatives to help forecast the future (2045) land use scenario, built around household and job projections.

Over 1,600 new homes are expected to be constructed by 2045 within the three zones north of KY 222 between I-65 and Valley Creek. Other zones throughout south central Hardin County also exhibit substantial residential increases. The Glendale Megasite reflects 4,900 new employees by 2045, with 750+ additional jobs in the adjacent zones and even more job growth in the surrounding region. The two plants currently under construction account for the 4,900 projected jobs, with half the Megasite undeveloped but primed to support further growth. The I-65/US 31W and US 62/Railroad corridors exhibit the highest commercial/industrial growth projections.

Considering population projections, anticipated development, and TDM projections, 2045 No Build ADT volumes were forecast as shown in **Figure ES-3**, compared alongside the 2022 Existing traffic scenario. Three distinct projects are included in the No-Build assumptions: the BOSK battery plants with staggered shift start times, extension of Ring Road to US 31W, and reconstruction of

the I-65/KY 222 interchange as a SPUI. As shown, background traffic volumes continue to grow. KY 222 volumes east of Glendale and I-65 ramps to/from the north roughly double by 2045.

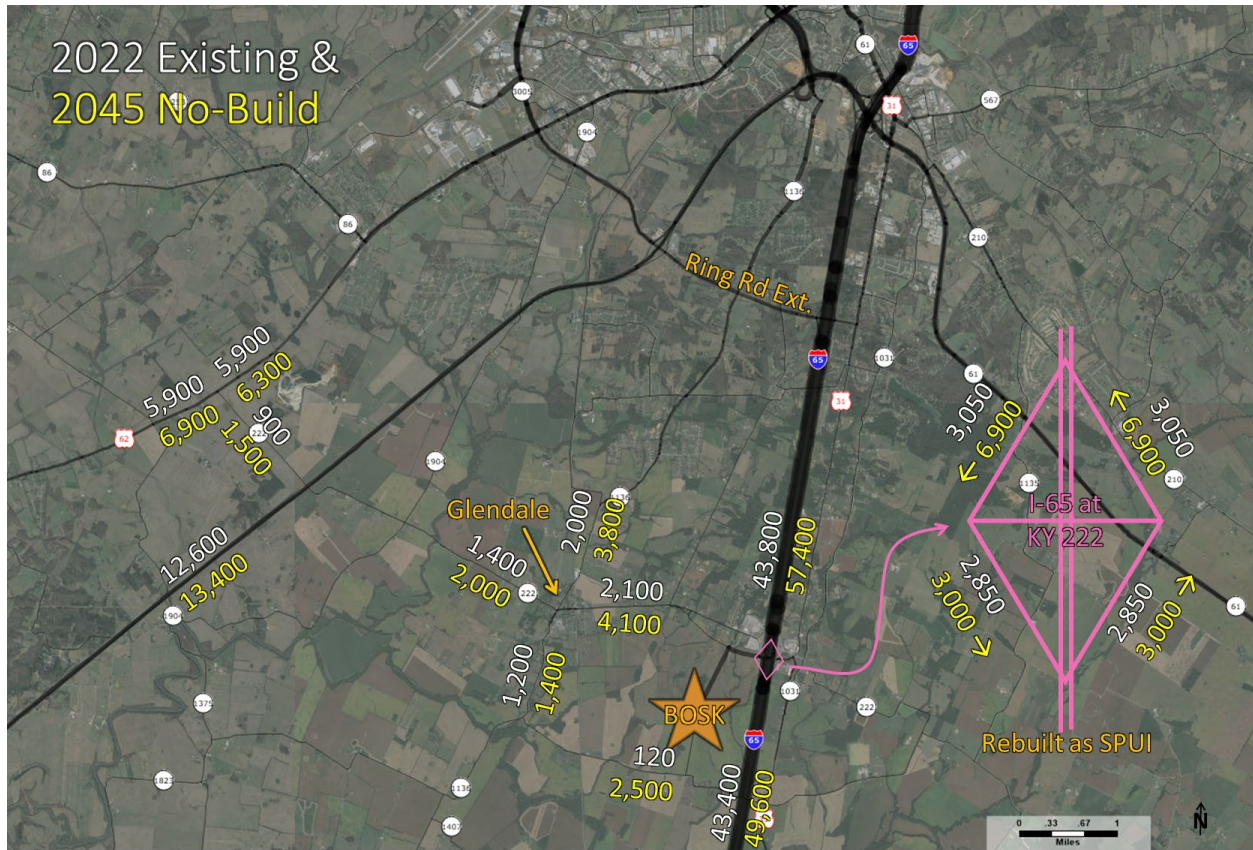


Figure ES-3: No-Build ADTs

Build Concepts Considered

Improvement concepts were developed based on a combination of input from the project team, a review of previous planning efforts, traffic projections, stakeholder feedback, and field reconnaissance.

- Concept A** represents a northeast bypass of the Glendale community, similar to a portion of the concept identified in the 2008 *Glendale Area Transportation Study* and 2021 update. The concept routes traffic to/from the north along KY 1136 (New Glendale Road) to KY 222 and the BOSK plants without traveling through the KY 222/KY 1136 intersection in Glendale. Concept A also eliminates the need to navigate two at-grade railroad crossings (or the local short cut along East Railroad Avenue) between these destinations. Two variations were developed, shown in **Figure ES-4**. Year 2045 traffic projections estimate 2,500 vpd using a northeast bypass, well within the theoretical capacity of a two-lane

highway. For the planning study, the typical section is assumed to include two 12-foot-wide lanes with 8-foot-wide paved shoulders.



Figure ES-4: Concept A Variations

- **Concept B** represents a northwest bypass of the Glendale community, also similar to a concept identified in the 2008 and 2021 studies. The linkage was initially dismissed as infeasible, but further study in early 2023 identified potential connections.
- **Concept AB** represents a full northern bypass of the Glendale community, connecting to KY 222 on either side of town—providing an alternate path for traffic currently passing through town. Year 2045 traffic projections estimate 1,800-3,300 vpd using a north bypass, well within the theoretical capacity of a two-lane highway. For the planning study, the typical section is assumed to include two 12-foot-wide lanes with 8-foot-wide paved shoulders. Options for both at-grade and grade separated rail crossings were considered along the route shown in **Figure ES-5**.

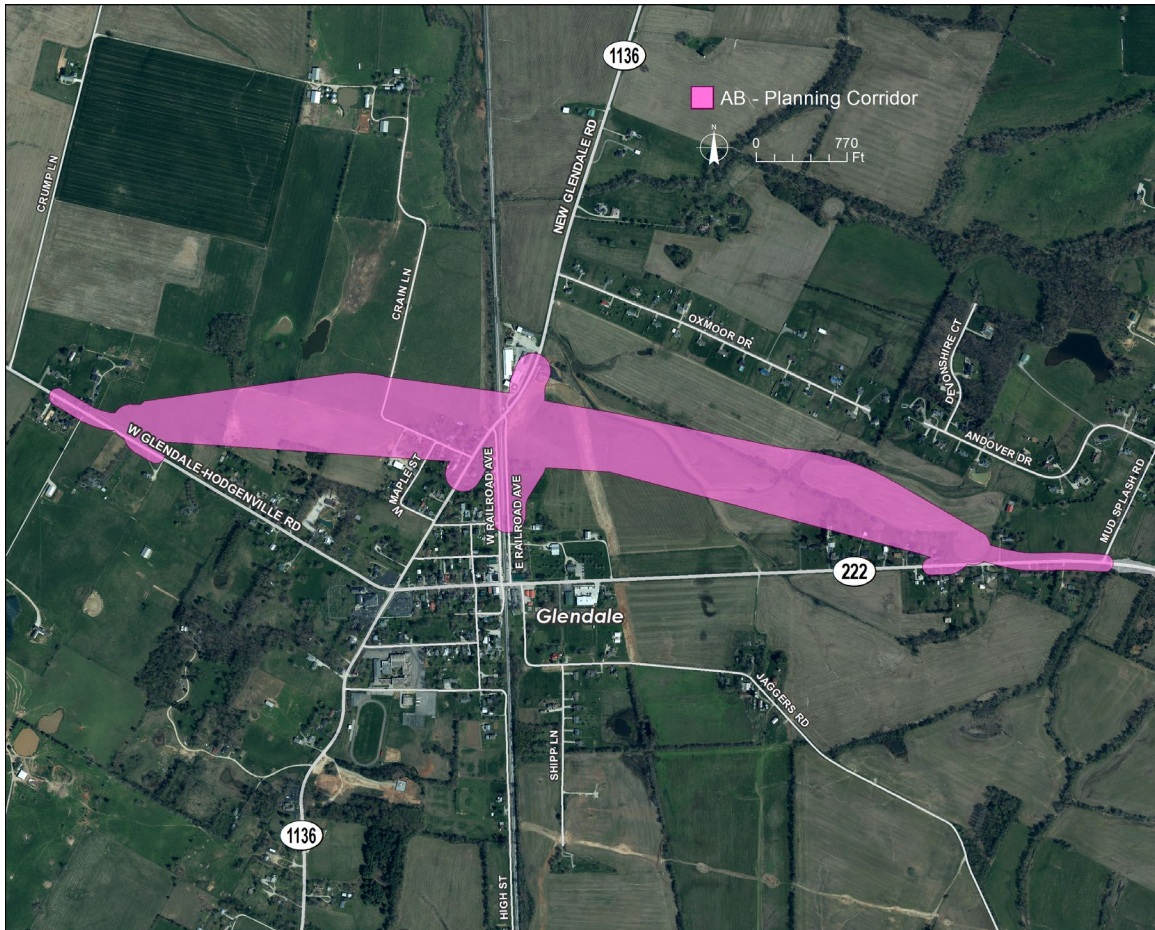


Figure ES-5: Concept AB

- **Concept C** includes a new interchange with I-65 at KY 1136 (Gilead Church Road), which is proposed for minor widening as part of Item No. 4-171. A new I-65 interchange would shorten the trip to/from the south and divert some traffic from the busy ramps at Exit 86. The proposed interchange would serve an estimated 5,200 vpd in 2045, divided among the four ramps.
- **Concept D** includes a new interchange with the Western KY Parkway at KY 222 (Glendale-Hodgenville Road) and improved east/west connection. Five variations of Concept D were considered and are shown in **Figure ES-6**. More southern routes could rely on KY 1136 (Gilead Church Road) to reach the BOSK plants while more northern routes could rely on a new South Glendale Bypass with a grade-separated railroad overpass to reach the BOSK plants. The proposed interchange would serve 2,600 vpd in 2045 divided among the four ramps but would not pull traffic away from the busy I-65/KY 222 interchange. Traffic using KY 222 to travel east/west increases versus the No-Build scenario. Based on projected 2045

traffic, a two-lane highway provides adequate capacity for anticipated volumes; the same typical section is assumed as for Concept A.

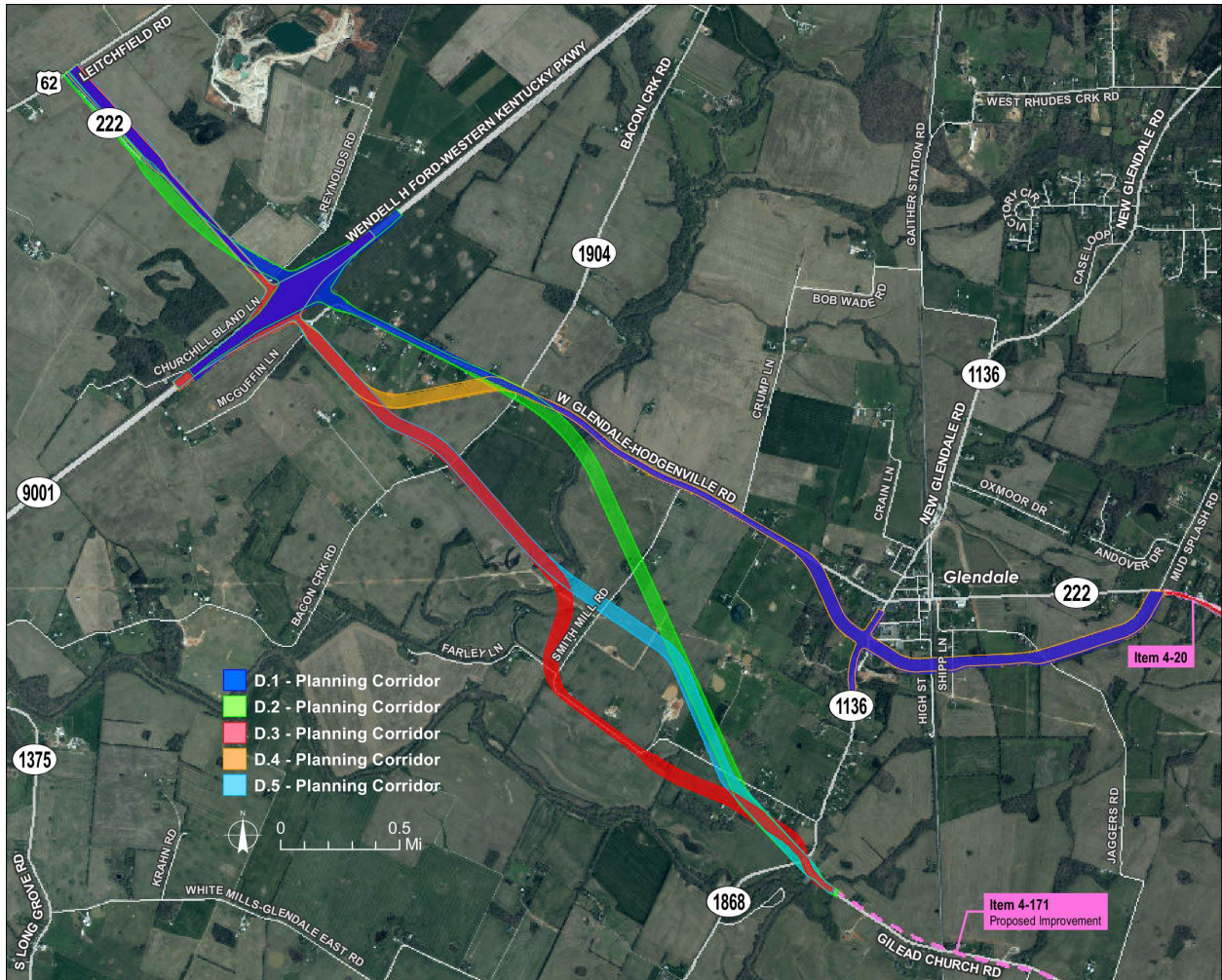


Figure ES-6: Concept D Variations

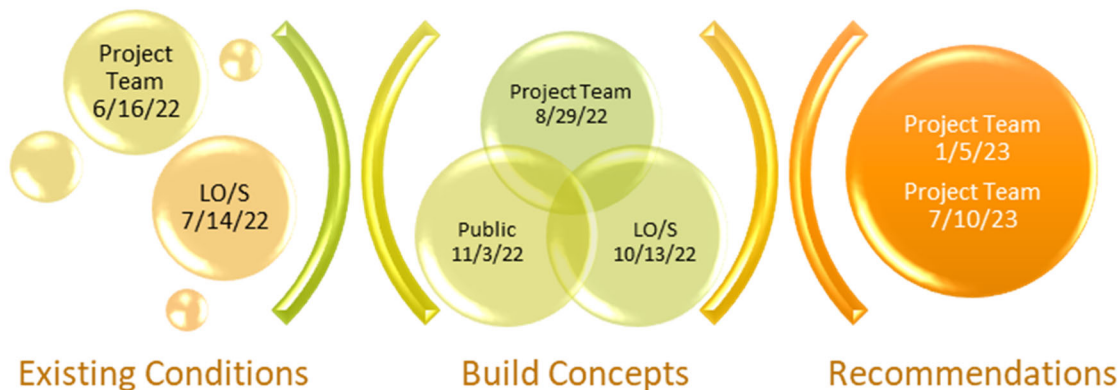
Cost estimates in 2023 dollars are summarized in **Table ES-1**.

Table ES-1: Planning-Level Cost Estimates by Phase

Concept	Design	Right-of-Way	Utility	Construction	Total
Concept A Northeast Bypass	\$500,000	\$1.5M	\$300,000 - \$1.0M	\$4.8M - \$5.6M	\$7.6M - \$7.9M
Concept B Northwest Bypass	\$700,000 - \$1.9M	\$2.7M - \$3.9M	\$1.6M - \$2.3M	\$5.6M - \$17.9M	\$10.8M - \$26.0M
Concept C KY 1136 Interchange	\$1.5M	\$6.5M	\$1M	\$18M	\$27M
Concept D WKY Parkway Interchange	\$2.6M - \$3.9M	\$8.9M - \$13.3M	\$1.6M-\$3.0M	\$31.4M - \$45.8M	\$45.5M - \$66.0M

Meetings

Collaborative project team, local official/stakeholder (LO/S), and public engagement efforts occurred through the course of the study.



During October and November 2022, surveys were collected to obtain community perspectives on the proposed concepts.¹ Overall, 146 completed surveys were submitted. Questions asked about Concepts A, C, and D—which would provide the most value and which, if any, should advance for further project development. Overall, each Build concept received more support than opposition. Concept C received the most support (80% in favor), especially for providing benefit for BOSK traffic with minimal impact to historic Glendale, farmlands, etc. Concept A received the

¹ Concept AB was developed following the Fall 2022 public outreach.

least public support of the three Build concepts but was noted to provide more benefits for historic Glendale than Concept D. **Concept A.2 (Purple)** was favored over **Concept A.1 (Yellow)** nearly 3:1 while results were divided among Concept D options.

Following the development of Concept AB in early 2023, updates were provided via the study website to publicize the expanded concept as well. This generated extensive public interest on social media. During August and September, 1,408 surveys were received indicating a strong opposition to Concept AB and priority to minimize impacts on the community.

Recommendations

Overall, Concept A (Northeast Bypass) is the highest priority. Both variations should be considered during preliminary engineering efforts, especially if much time elapses between the conclusion of this planning effort and obligation of design funds, as the area is rapidly changing. Concept A satisfies the study goals, is consistent with recommendations from previous studies, and received stakeholder support.

Concept C (KY 1136 Interchange) is also recommended for preliminary engineering and environmental activities. The currently proposed transportation network is sufficient to handle the increased traffic based on current employment and shift assumptions; however, private developments can arise more quickly than public roadway projects and generate high volumes of traffic. Beginning project development work early can streamline implementation timelines but construction is not recommended at this time.

Finally, Concepts B (Northwest Bypass) and D (WKY Parkway/East-West Connection) are not recommended at this time.