

## Executive Summary

### Smiths Grove Traffic Operations Study

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The Kentucky Transportation Cabinet (KYTC) initiated the Smiths Grove Traffic Operations Study in Warren County to take a comprehensive look at the KY 101 (South Main Street) commercial corridor in Smiths Grove and evaluate the need for improvements.

### Existing Conditions

The KY 101 study corridor, shown in **Figure ES-1**, extends approximately 0.25 miles on either side of the interchange with I-65 at Exit 38. Based on the most recent available data, KY 101 carries 4,950 vehicles per day (VPD). Results from the existing traffic analysis show that all study area intersections currently operate at an acceptable level during the AM and PM peak hours.

Safety is the primary concern along KY 101, along with alleviating congestion anticipated from future development. This portion of KY 101 carries a mix of local and regional traffic as it connects Smiths Grove (to the north) and Scottsville approximately 20 miles to the south in Allen County with I-65. It not only serves as a connection for these cities, but also provides access to numerous existing businesses – many of which rely on interstate travel. Angle, backing, rear-end, and sideswipe collisions make up a majority of the crashes along the study area portion of KY 101 - crash types that are typically attributed to issues related to access management.



**Commercial Area along KY 101**

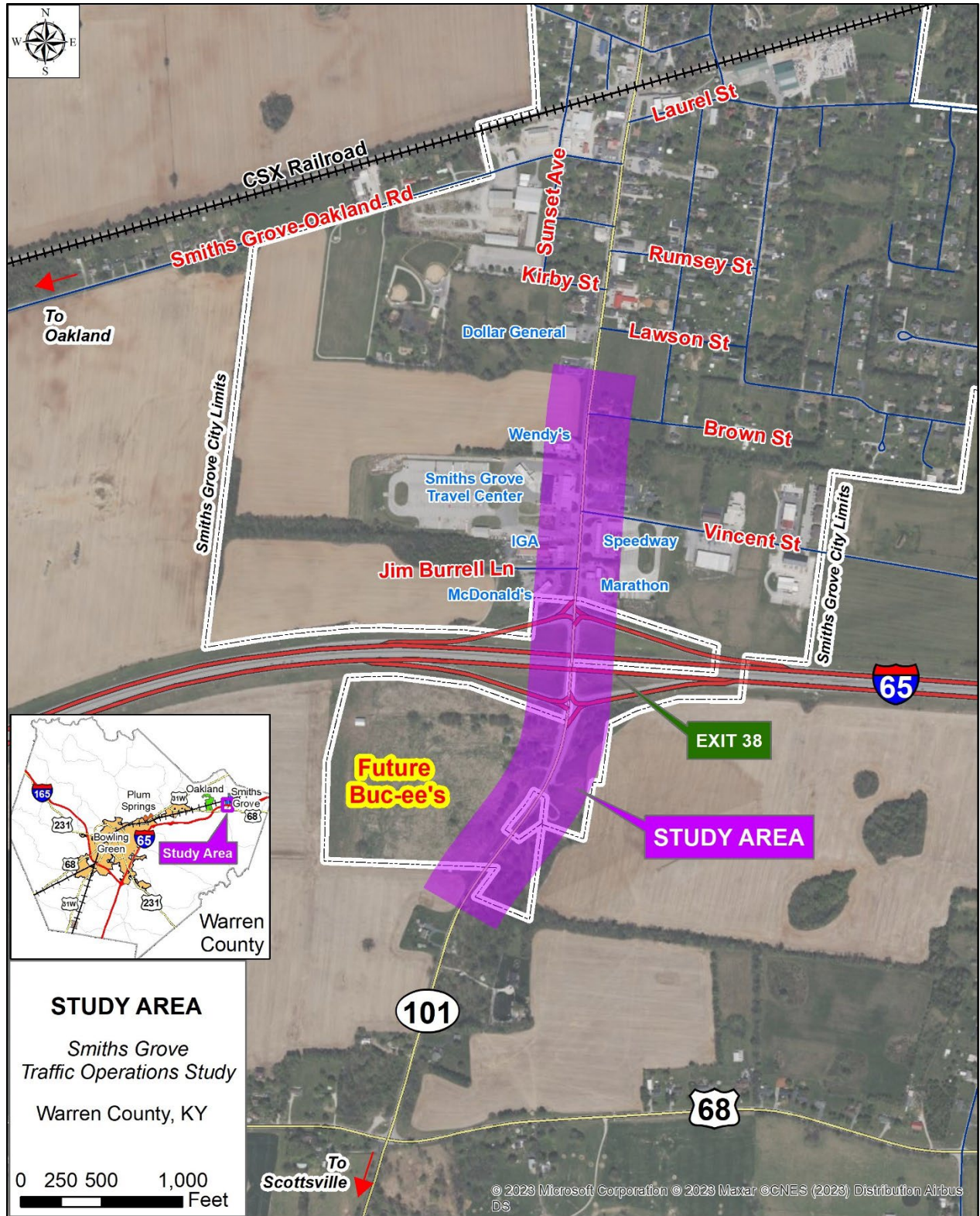
There are 15 access points on the 0.2-mile section of KY 101 between the I-65 southbound ramps and Wendy's, as shown in **Figure ES-2**. A high number of access points increases the frequency of turning vehicles, which creates more conflict points and compromises safety. It also reduces traffic operations as vehicles are constantly slowing to turn or allow others to turn.

In the five years between 2017 and 2021, there were 57 collisions reported on the study portion of KY 101, one of which resulted in a fatality and ten which resulted in an injury. Further analysis revealed the KY 101 corridor and the four major intersections (I-65 northbound and southbound ramps, Jim Burrell Lane, and Vincent Street) have experienced more crashes than what is expected based on volume and roadway characteristics. KY 101 has a Level of Service of Safety (LOSS) of three, indicating a moderate to high potential for crash reduction.

Without improvement, the frequency of these types of crashes is expected to increase as traffic from future development increases.



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**Figure ES-1: KY 101 Study Corridor**



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Figure ES-2: Access Points on KY 101

### Future Conditions

Construction is currently underway for a Buc-ee's in the southwest quadrant of the interchange. Once it opens, Buc-ee's is anticipated to introduce up to 1,600 trips per hour on KY 101 through and south of the I-65 interchange. As part of the development's approval process, the developer will construct the following roadway improvements to accommodate the additional traffic:

- Install traffic signals on KY 101 at the I-65 northbound and southbound ramps.
- Widen the I-65 ramps to accommodate dedicated left- and right-turn lanes.
- Construct a dual lane roundabout on KY 101 at the main Buc-ee's entrance.
- Construct a second stop-controlled Buc-ee's entrance on KY 101 south of the proposed roundabout.

In addition to the construction of Buc-ee's, there is approximately 150 acres of undeveloped land currently zoned for industrial, business, or residential development north of I-65 within the study influence area. Additionally, rezoning requests have been submitted for 23 acres off Jim Burrell Lane and 17 acres off Vincent Street. Traffic forecasts were developed based on estimates from the Buc-ee's Traffic Impact Study (TIS) and conversations with the Bowling Green-

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Warren County Metropolitan Planning Organization (MPO) and show that by 2045, traffic north of I-65 is likely to increase by 90 percent and traffic to the south will increase fivefold (500 percent). Such growth in traffic would adversely affect travel conditions and mobility along the corridor.

## Preliminary Improvement Concepts

Preliminary improvement concepts, described below and summarized in **Table ES-1**, were developed to improve congestion and safety by separating driveways so turning and crossing movements occur at fewer locations. Separating driveways and street entrances allows drivers passing through an area to predict where other drivers will turn and cross. Studies consistently show that roadways with good access management have crash rates 40 to 50 percent lower than poorly managed routes.

**Concept 1** includes maintaining the Buc-ee's improvements at the I-65 interchange, converting the Jim Burrell Lane intersection to right-in / right-out, consolidating entrances along KY 101 north of I-65, and constructing sidewalks on the west side of KY 101. Backage roads are also recommended to be constructed with private funds as part of future developments.

**Concept 2** includes maintaining the Buc-ee's improvements at the I-65 interchange, constructing a raised median on KY 101 north of I-65 to Brown Street, allowing left-turns in at larger intersections, constructing a single-lane roundabout at Brown Street, and constructing a sidewalk along the west side of KY 101.

**Concept 3** includes access management improvements on KY 101 along with a dual-lane "dogbone" roundabout at the I-65 interchange and a single-lane roundabout at Brown Street. North of the interchange, this concept includes a non-traversable raised median, with right-in/right-out access provided along the corridor and U-turn opportunities at the new roundabouts.

**Concept 4** includes the improvements from Concept 3 but allows left-in access at Shell, Vincent Street, BP, and Wendy's.

**Table ES-1: Evaluation Matrix of Preliminary Improvement Concepts**

Project Goals	Existing (No Build)	Concept 1	Concept 2	Concept 3	Concept 4
Estimated Total Cost (2023 Dollars)	\$0	\$2,600,000	\$6,000,000	\$10,400,000	\$10,900,000
Benefit-to-Cost Ratio	N/A	0.2	0.1	1.5	1.8
Improves Safety by Reducing Conflict Points	✘	●	●	✓	✓
Improves Congestion by Decreasing Access Density	✘	●	●	✓	✓
Provides Truck Access	●	●	●	✓	✓
Accommodates Future Development	✘	●	✓	✓	✓
Provides Sidewalk	✘	✓	✓	✓	✓
Reduces Right-of-Way Impacts	✓	✓	●	●	●
Reduces Utility Impacts	✓	✓	✓	✓	✓
<p>Key: ✘ Not Addressed            ● Somewhat Addressed            ✓ Addressed</p>					



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#### Public Outreach

The project team met with local officials and the public at the Smiths Grove Fire Station on July 27, 2023. Surveys were distributed to the 122 attendees to solicit feedback on the need for improvements, transportation issues affecting travel within the study area, and the preliminary improvement concepts. Of the 71 respondents, 94 percent indicated that improvements along KY 101 are needed, with congestion and safety listed as the primary transportation concerns. When asked which preliminary improvement concept they prefer, the leading response was Concept 3 (37 percent) followed by Concept 4 (34 percent).



**Public Meeting at the Smiths Grove Fire Station**

#### Study Recommendations

Based on results from the safety analyses, traffic forecasts, benefit-cost analysis, feedback from the Local Officials / Stakeholders, and feedback from the public, it was determined that Concept 3 and Concept 4 best meet the project goals. Three sidewalk options were considered for each of the concepts: Option A includes a sidewalk on the west side of KY 101 from McDonald's to Brown Street, Option B includes a sidewalk on the west side of KY 101 from Buc-ee's to Brown Street, and Option C includes a sidewalk on both sides of the KY 101 from Buc-ee's to Brown Street.



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The following options are recommended to move forward for consideration in Phase 1 Design:

- **Concept 3A** (shown in **Figure ES-3**): Sidewalk along the west side of KY 101 beginning at McDonald's and continuing north to the roundabout at Brown Street.
- **Concept 3B** (shown in **Figure ES-4**): Sidewalk along west side of KY 101 beginning at Buc-ee's and continuing north to the roundabout at Brown Street.
- **Concept 3C** (shown in **Figure ES-5**): Sidewalks along both sides of KY 101 beginning at Buc-ee's and continuing north to the roundabout at Brown Street. The I-65 bridge will be widened to accommodate two KY 101 northbound lanes.
- **Concept 4A** (shown in **Figure ES-6**): Sidewalk along west side of KY 101 beginning at McDonald's and continuing north to the roundabout at Brown Street.
- **Concept 4B** (shown in **Figure ES-7**): Sidewalk along west side of KY 101 beginning at Buc-ee's and continuing north to the roundabout at Brown Street.
- **Concept 4C** (shown in **Figure ES-8**): Sidewalks along both sides of KY 101 beginning at Buc-ee's and continuing north to the roundabout at Brown Street. The I-65 bridge is widened to accommodate two KY 101 northbound lanes.

Private developers, local planning staff, and local officials play a role in implementing the backage road recommendations from this study. The location of new backage roadways should be considered as part of rezoning applications, development plan applications, and plats. As the larger area continues to develop over time, these connections will be critical in providing alternative routes which will improve safety and reduce congestion along KY 101.

**Table ES-2** presents the cost estimates for each of the improvement concepts.

**Table ES-2: Cost Estimates (2023 Dollars)**

Concept	Design	Right-of-Way	Utility	Construction	Total
Concept 3A	\$900,000	\$1,500,000	\$2,000,000	\$6,000,000	\$10,400,000
Concept 3B	\$1,000,000	\$1,800,000	\$2,300,000	\$6,800,000	\$11,900,000
Concept 3C	\$1,300,000	\$2,000,000	\$2,500,000	\$8,400,000	\$14,200,000
Concept 4A	\$900,000	\$2,300,000	\$2,000,000	\$5,700,000	\$10,900,000
Concept 4B	\$1,000,000	\$2,500,000	\$2,300,000	\$6,400,000	\$12,200,000
Concept 4C	\$1,200,000	\$2,800,000	\$2,500,000	\$8,000,000	\$14,500,000







Figure ES-4  
Improvement Concept 3B





Figure ES-5  
Improvement Concept 3C



Figure ES-6  
Improvement Concept 4A



Figure ES-7  
Improvement Concept 4B



Figure ES-8  
Improvement Concept 4C