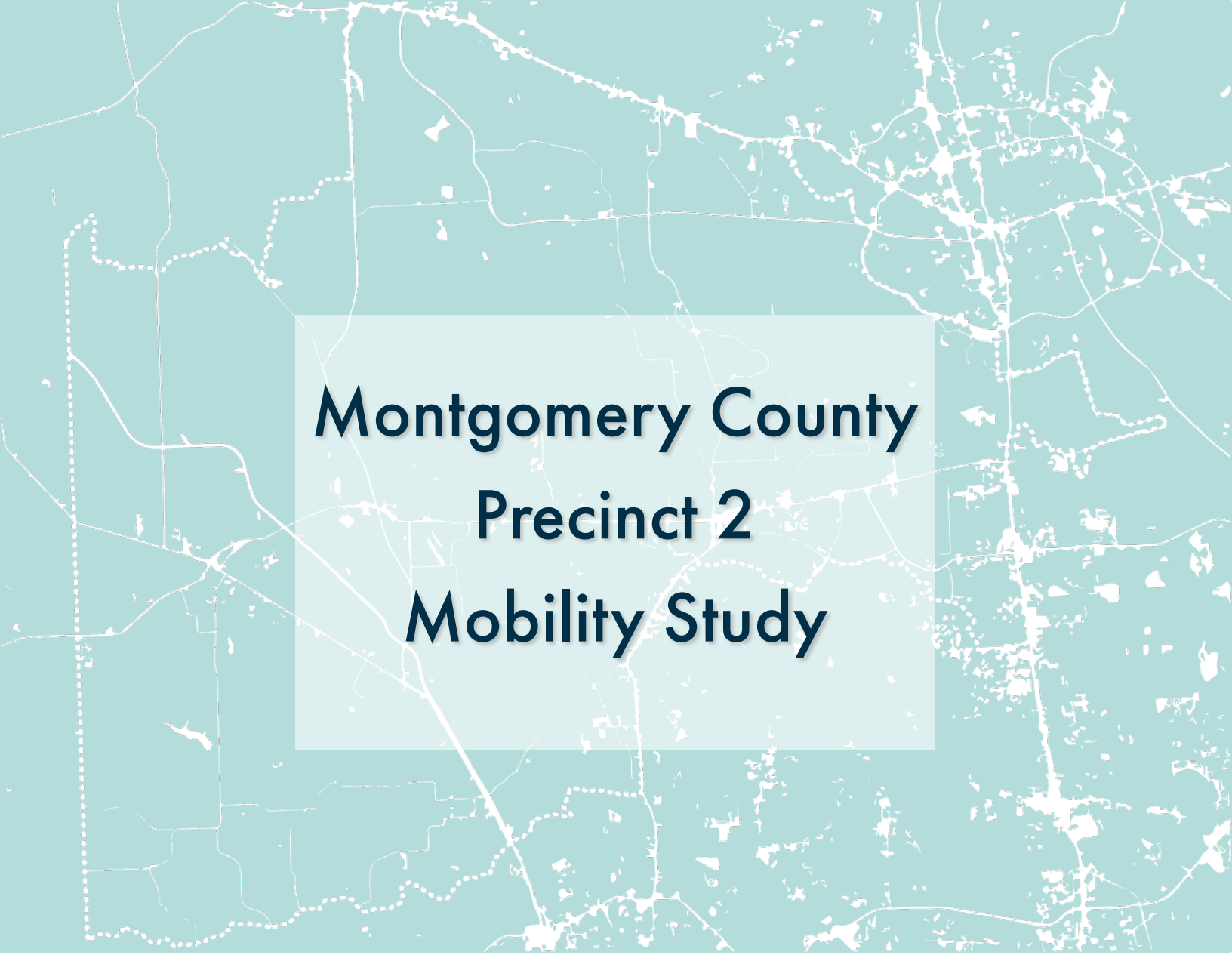

Montgomery County Precinct 2 Mobility Study

Executive Summary

December 2022

HDR

GUNDA CORPORATION

Acknowledgements

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- Texas Department of Transportation (TxDOT)
- Montgomery County Precinct 2

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I. Executive Summary

A. Introduction

The Montgomery County Precinct 2 Mobility Study is a 2-year comprehensive regional mobility study led by Houston-Galveston Area Council (H-GAC) in partnership with Montgomery County Precinct 2. The study has identified existing and future transportation needs and challenges of this growing area and aims to address these challenges and provide a framework for future investments. A roadway inventory was performed to identify maintenance, safety, and capacity concerns within the precinct. Additional mobility needs and issues have been identified using input from the steering committee, focus groups, public, and data analysis. The study team has collected a variety of existing conditions data for the region, including existing roadway conditions, crash data, planned developments, and traffic data. The study has resulted in a list of projects that, if implemented, will improve the safety and mobility of the region into the future. The findings of this study will guide short-term and long-term transportation investment decisions of local governments within the study area region.

VISION

Develop a **safe**, **well-connected**, and **efficient** multi-modal transportation system, achieved through **coordinated public and private investments**, that promotes **orderly growth** and provides **adequate mobility** for people, goods and services.

GOALS

The mobility study involved collecting a large amount of traffic data, including crash records, traffic counts, travel time runs, GIS data, and previous plans and studies. Additionally, a roadway inventory was conducted to evaluate the physical conditions of the existing roadways. The inventory collected information on the state of pavement condition, signage, pavement marking, drainage, and the status of various geometric roadway conditions.

Issues and needs throughout Montgomery County Precinct 2 were identified by the steering committee members, stakeholders, the public, and the study team.

Identified Issues:

- Traffic congestion
- Lack of road connectivity
- Safety
- Fast pace of new development
- Natural and man-made barriers
- Limited sidewalks, bikeways, and transit options
- Intersection design

A map of barriers in Precinct 2 can be found in Figure ES-1. 2021 traffic conditions on major corridors in Precinct 2 can be seen in Figure ES-2.

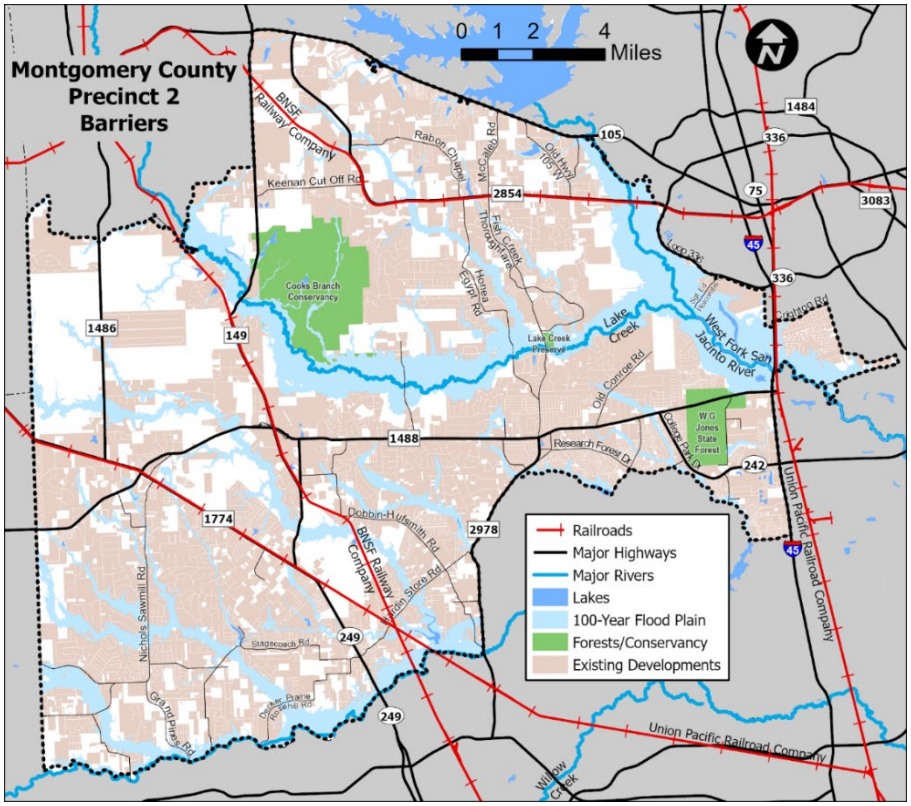

Figure ES-1: Barriers

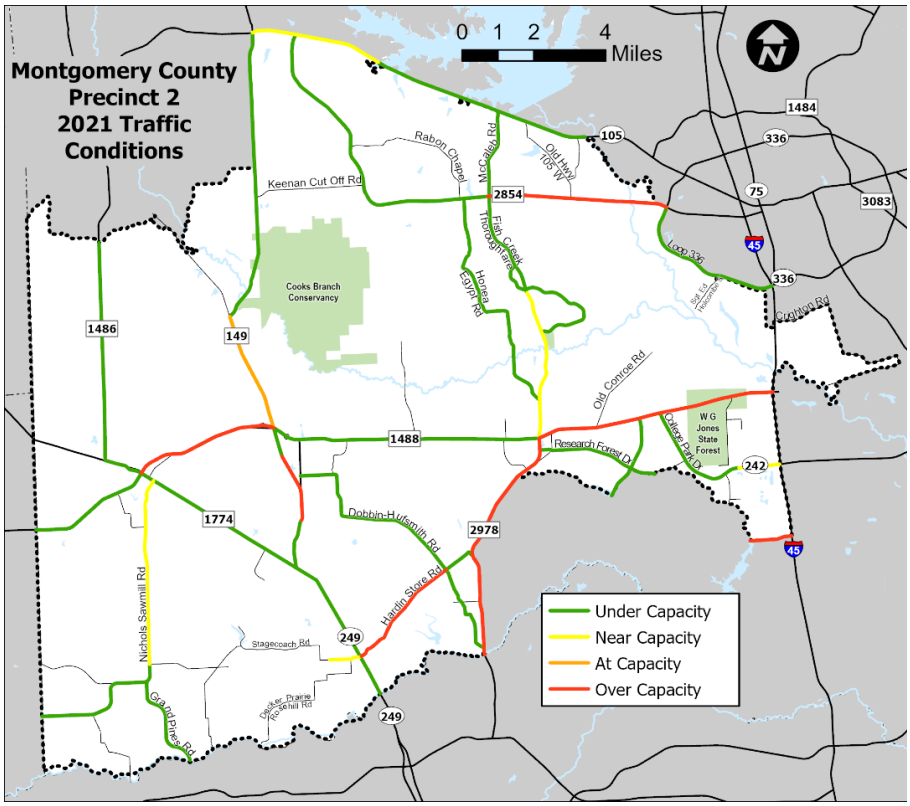

Figure ES-2: 2021 Corridor Congestion

B. Public Engagement

Feedback from the public helped to identify major mobility and safety concerns, determine and prioritize the wants and needs of people who travel through the region, and to solidify the final list of recommendations. During the course of the mobility study, there have been 2 public meetings, 8 steering committee meetings, 3 rounds of focus group meetings, and a working group meeting focused on the Research Forest at Grogan's Mill intersection. Figure ES-4 shows a ranking of mobility issues from most to least preferred from a public survey conducted as a part of the study. The highest priority issues were to build new roads and install turn lanes.

Figure ES-3: Public Meeting #2

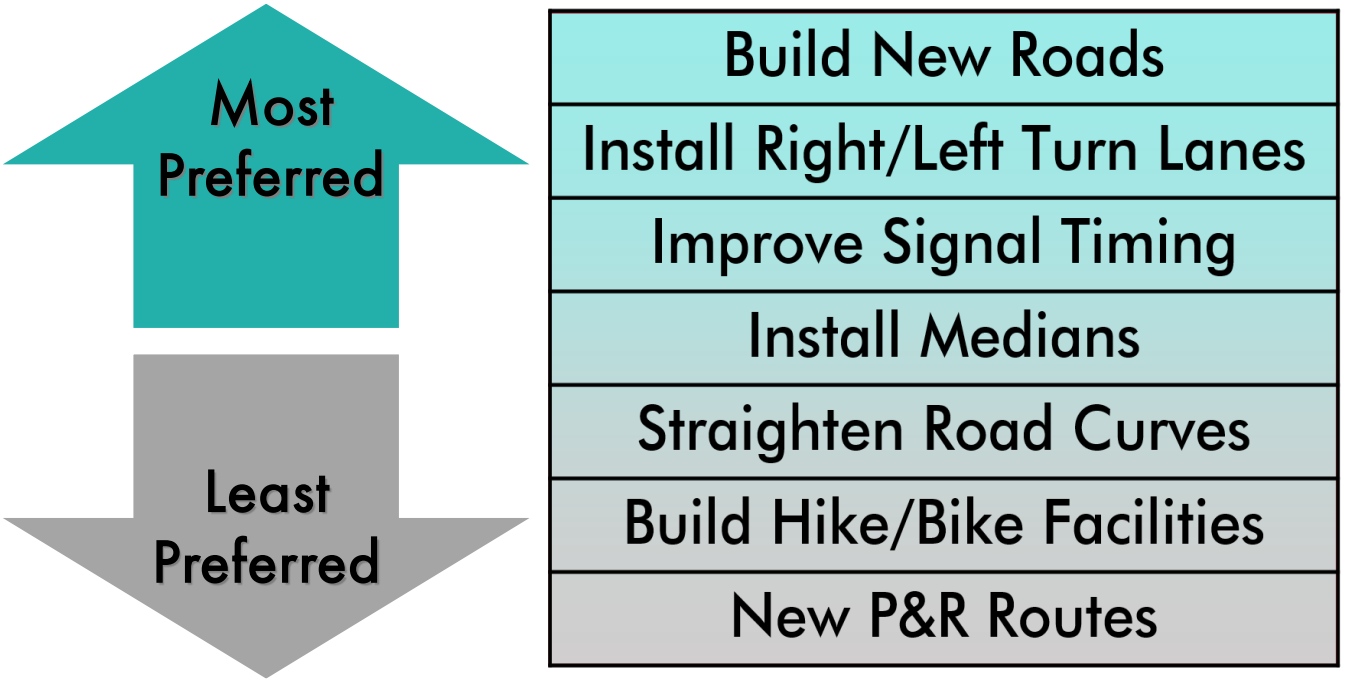

Figure ES-4: Ranked Mobility Issues

C. Analysis

A review of the existing transportation network in Montgomery County Precinct 2 was performed by analyzing and modeling major roadway corridors and critical intersections. The primary focus was to analyze the performance of the major intersections within the precinct, to identify bottlenecks in the network, and to assess potential transportation solutions. Peak hour conditions were modeled with existing conditions and with multiple alternative Build solutions. Analysis of various scenarios was performed with existing 2021 traffic volumes, as well as projected future volumes for 2030 and 2045.

Results of the analysis, in addition to public and steering committee input, were used to develop recommendations for the study.

II. Recommendations

A major component of this study has been to identify and assess mobility recommendations for Montgomery County Precinct 2. Recommendations were found through analysis of existing and projected data, identified issues, needs, and suggestions from the public and steering committees. Initial recommendations were presented to Montgomery County Precinct 2 Commissioner's office, the steering committee, focus groups, and the public. Feedback from these groups was used to modify, add to, and remove from the list of recommendations.

Specific recommendations for roadway, intersection, and alternative transportation mode improvements have been made. Each of these recommendations have been given Short-Term (0-10 years) or Long-Term (11+ years) time frames. Safety and Maintenance recommendations, a result of the Roadway Inventory, are considered a subset of the Short-Term recommendations from 0-1 year.

A. Roadway Recommendations

The existing roadway network in Montgomery County Precinct 2 will not be adequate for the future growth expected in the region. Both Short-Term and Long-Term solutions have been considered, and several roadway recommendations have been made related to increasing capacity, improving connectivity and mobility, and reducing delay experienced by roadway users. Some of these suggested improvements include roadway extensions, new roadways, roadway widening and corridor signal timing. Other short-term recommendations are related to improving roadway safety or maintaining the existing network.

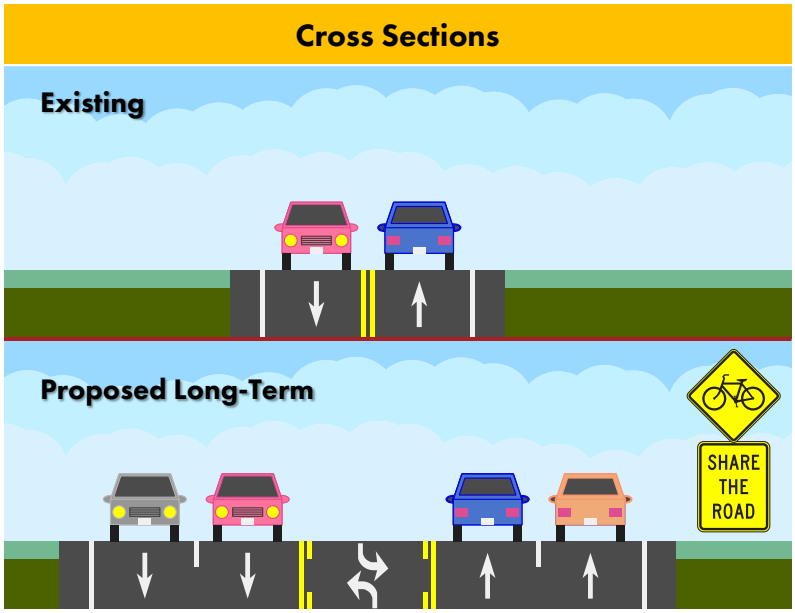

Figure ES-5: Example Roadway Recommendations Cross Sections

1. Safety & Maintenance

Safety & Maintenance recommendations cover **255 miles** of road in Precinct 2. An overview map showing the safety and maintenance recommendations for Precinct 2 is found in Figure ES-6. Safety and maintenance recommendations include:

- Replacing or adding warning signs
- Installing raised medians
- Installing street lighting,
- Resurfacing roads,
- Installing rumble strips, and
- Restriping roads.

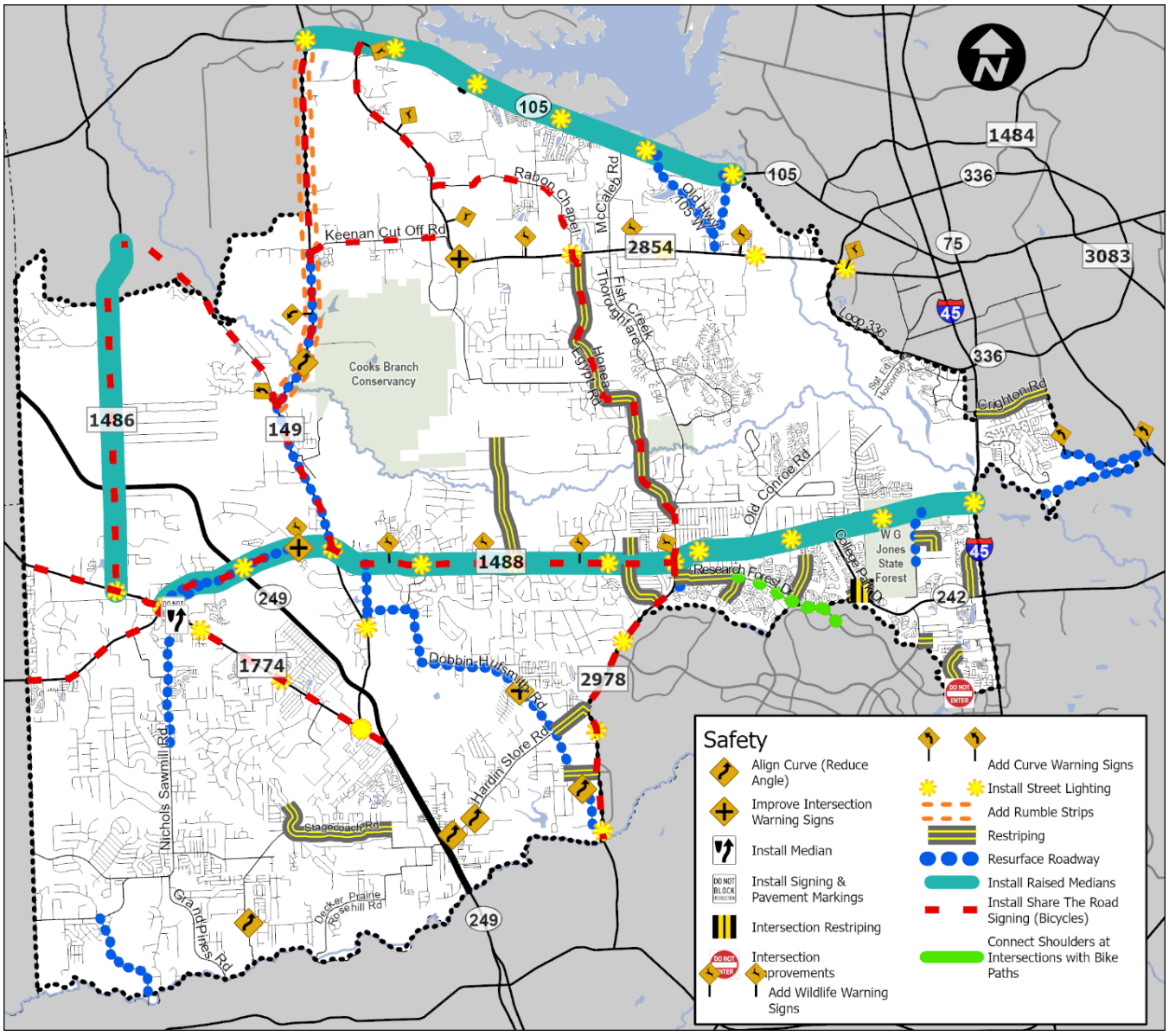

Figure ES-6: Safety and Maintenance Recommendations

2. Extensions/New Roads, Widenings, and Realignments

Short-Term roadway recommendations include:

- Roadway extensions and new roadways- **34.5 miles**
- Roadway widening - **56.5 miles**
- Roadway realignment - **0.5 miles**

Long-Term roadway recommendations include:

- Roadway extensions and new roadways- **94.9 miles**
- Roadway widening - **94.1 miles**
- Roadway realignment - **3.1 miles**

The combined network of both Short-Term and Long-Term roadway recommendations is found in Figure ES-7. The combined total length of new, widened, and realigned roadway recommendations for Precinct 2 is **283.7 miles**.

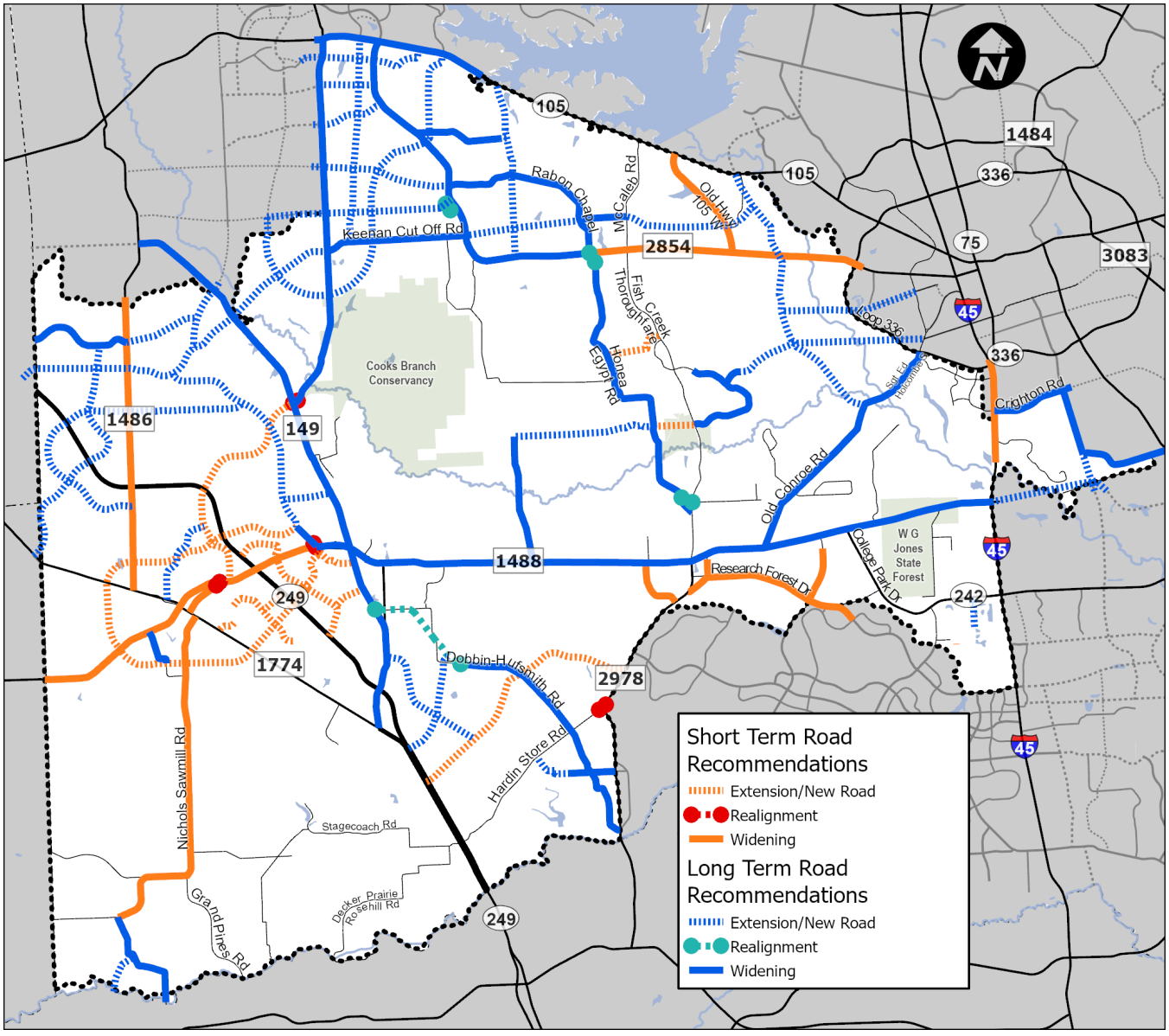

Figure ES-7: Combined Roadway Recommendations

B. Intersection Recommendations

Some of the intersection recommendations for Montgomery County Precinct 2 include:

- Adding turn lanes,
- changing traffic control type (signals, all-way stops, or roundabouts),
- signal timing improvements,
- upgrading signing and pavement markings, and
- construction of grade separations

There are **137 total intersection recommendations** for Precinct 2. **108 are Short-Term** and **29 are Long-Term.** A combined map of short and long-term recommendations can be found in Figure ES-8.

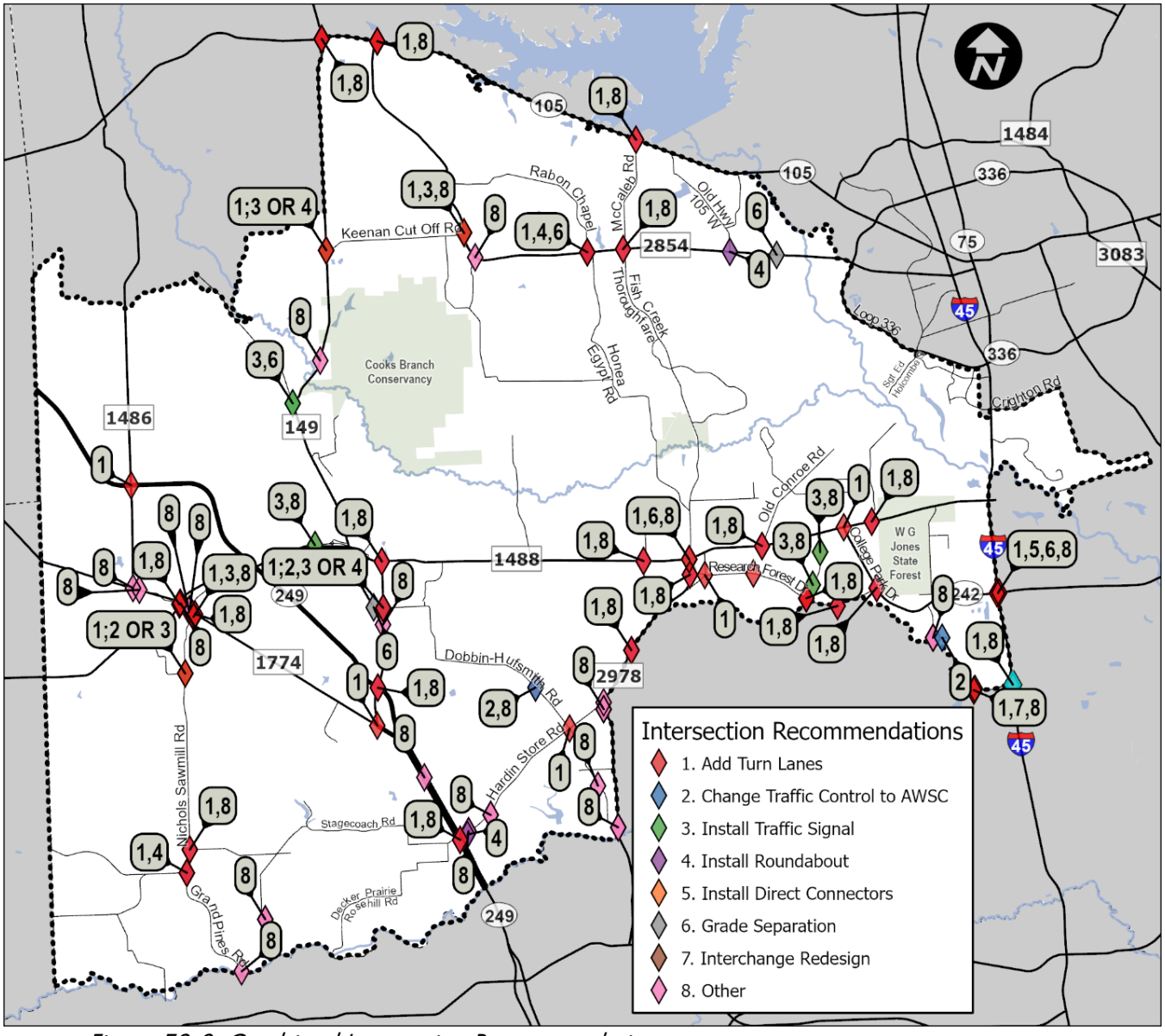

Figure ES-8: Combined Intersection Recommendations

1. Precinct-Wide Recommendations

In addition to individual intersection recommendations, there are also several precinct-wide intersection recommendations. These include the following:

- Installation of GPS Emergency Preemption Equipment at all signalized intersections
- Installation of Retroreflective Backplates for all signal heads
- Installation of Flashing Yellow Arrow Left Turn Signals
- Installation of "All Way" Sign Plaques where missing
- Installation of Additional Speed Limit Signs Development of a 311 app for Precinct 2

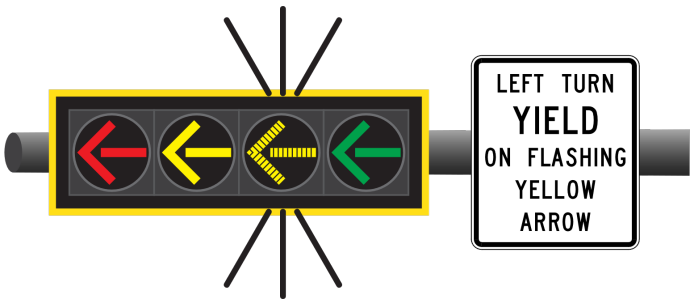

Figure ES-9: Precinct-Wide Recommendations

C. Active Transportation

Active Transportation recommendations include:

- Installing separated shared use paths,
- widening existing sidewalks for shared use with bicycles,
- providing safe interchange crossings for cyclists, and
- Installing a shared use bridge.

There are **173.5 miles of proposed shared use paths** in Precinct 2 and **1.6 miles of proposed sidewalk widening**. Figure ES-10 shows an overview of these locations. There are also several locations identified in the Safety and Maintenance recommendations for the addition of "Share the Road" signing along existing bike route corridors.

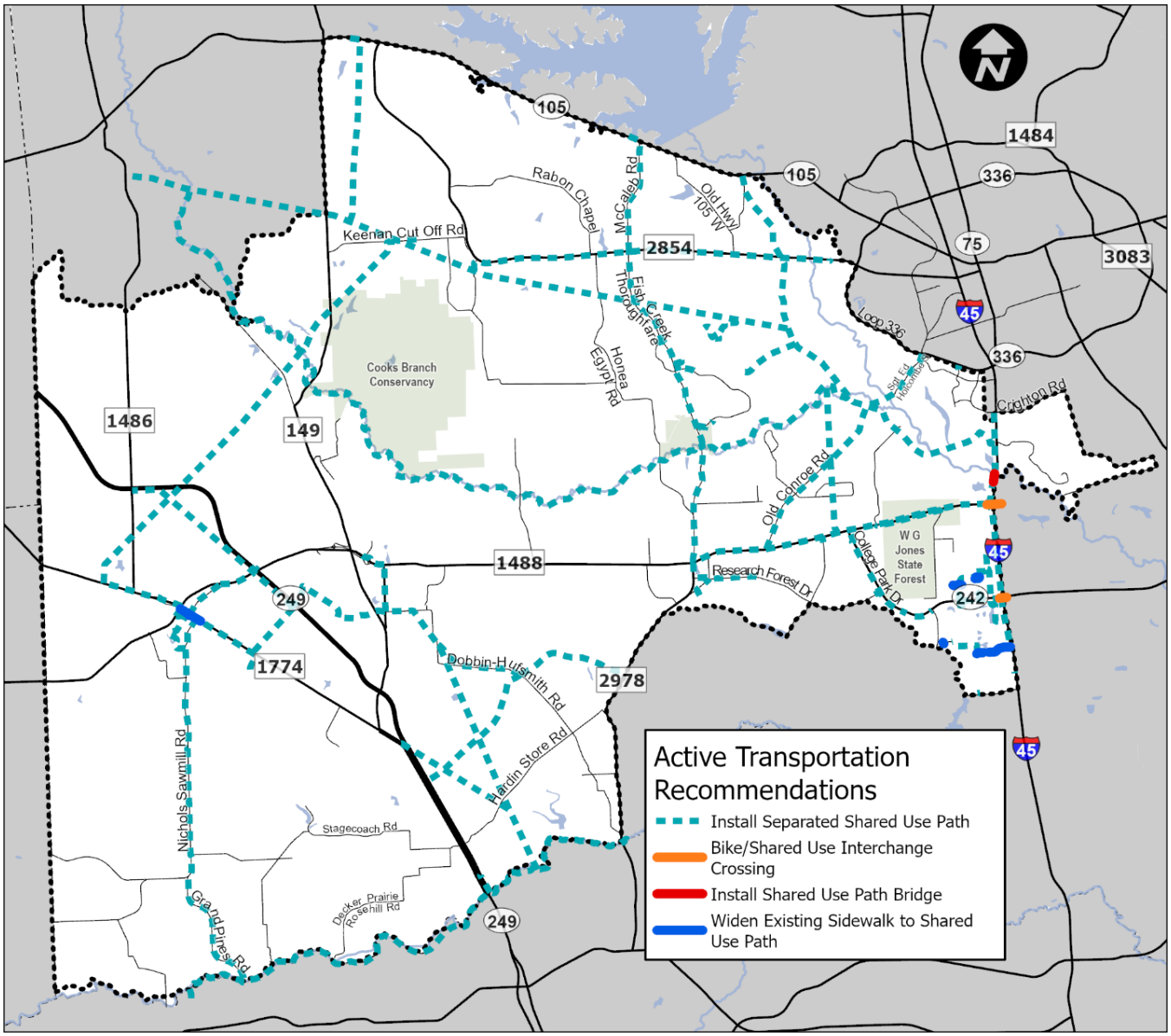

Figure ES-10: Active Transportation Recommendations

D. Transit

Transit recommendations include:

- 3 Park-and-Ride Facilities
  - Located near Montgomery, Magnolia, and just north of Tomball
- A Regional Express Route
  - Provides service between Montgomery, Magnolia, The Woodlands, Shenandoah, and Conroe.

Figure ES-11 shows a map of the proposed transit recommendations, as well as existing Park-and-Ride facilities in and around the study area.

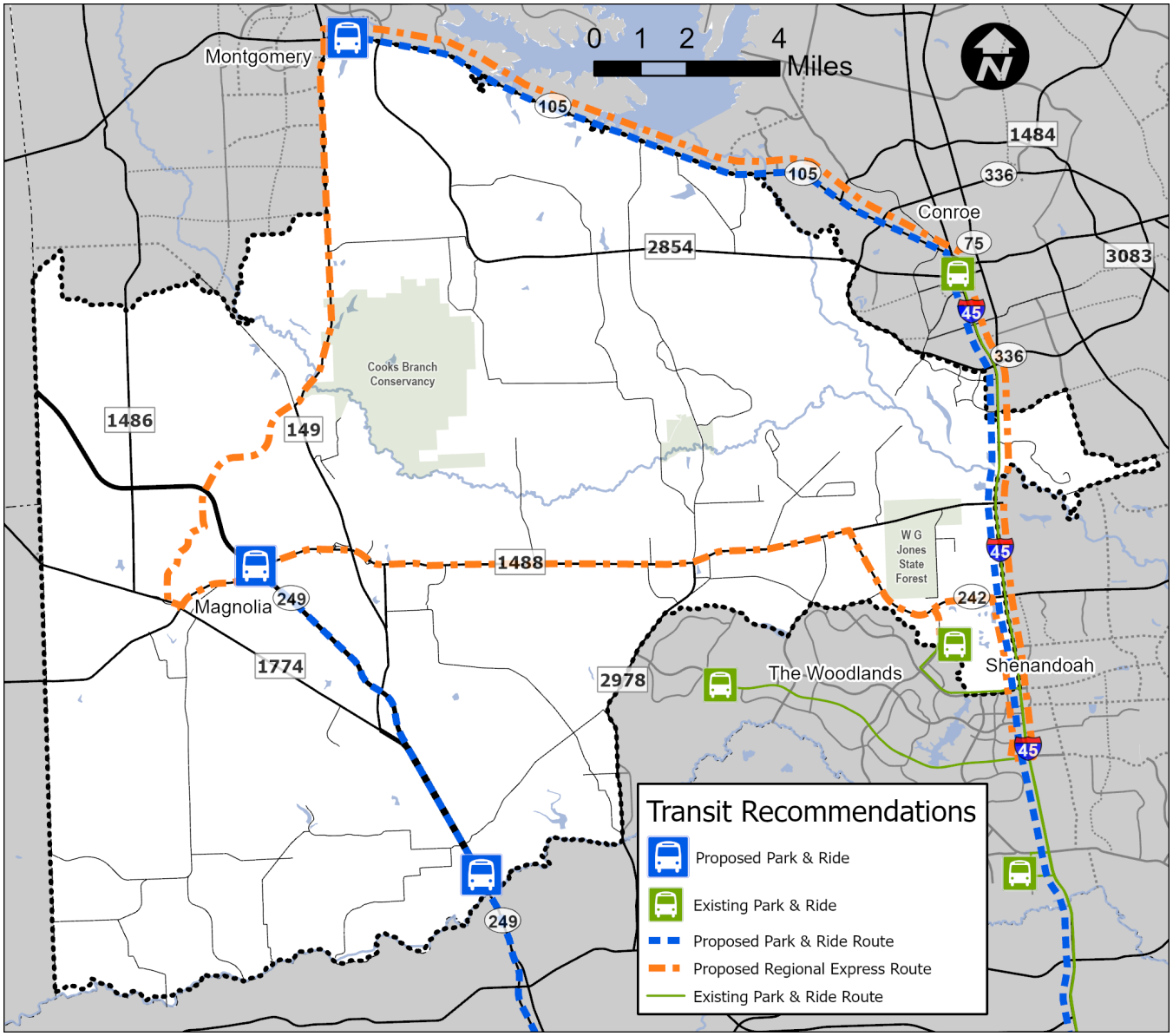

Figure ES-11: Transit Recommendations

III. Implementation & Funding

An important part of implementation of the recommended projects is understanding the cost of potential improvements and identifying funding sources that can be used to make projects a reality.

It is also critical to understand the benefits and impacts of the proposed improvements and the partners and entities that will be directly or indirectly associated with the improvements. Partnerships are a key part of project implementation from multiple perspectives, including funding, construction, scheduling, and additional cost-effective enhancements. Partnerships also provide opportunities to leverage multiple funding options and coordinated implementation strategies.

A. Implementation

A cost has been estimated for each recommended project. Cost estimates relied on average pricing for similar roadway and intersection projects or from average low bid prices for required items, with TxDOT as the primary source of data. When available, existing similar projects within Montgomery County or the TxDOT Houston District were used for estimation. If all recommended projects were implemented, including both Short-Term and Long-Term, the total estimated cost comes to $3.5 Billion. Table ES-1 shows the breakdown in Roadway and Intersection recommendations by Safety, Short-Term, and Long-Term recommendations. Table ES-2 shows the costs for Active Transportation and Transit recommendations.

Table ES-1: Roadway and Intersection Estimated Costs

Category	Roadway	Intersection	Estimated Cost
Safety	$ 49,700,000	$ 12,500,000	$ 62,200,000
Short	$ 917,200,000	$ 40,000,000	$ 957,200,000
Long	$ 2,042,600,000	$ 167,500,000	$ 2,210,100,000
Road Total	**$ 3,009,500,000**	**$ 220,000,000**	**$ 3,229,500,000**

Table ES-2: Active Transportation and Transit Estimated Costs

Category	Estimated Cost
Active Transportation (Bike/Pedestrian)	$ 289,500,000
Transit	$ 26,000,000
Total	**$ 315,500,000**

B. Benefits

If implemented, project recommendations would provide many benefits to Montgomery County Precinct 2. Roadway, intersection, active transportation, and transit recommendations would:

- Improve regional connectivity and mobility by developing an expanded network of roads and new mobility options
- Improve safety and reduce crashes
- Distribute traffic by providing alternate travel routes
- Reduce congestion and delay
- Improved air quality

C. Funding

In order to implement the recommended projects from this study, funding must be found to cover design and construction costs. Federal and state funds can be made available to local jurisdictions through H-GAC's Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP), which are administered through the H-GAC Transportation Policy Council (TPC). Other funding sources such as Capital Improvement Bonding, impact fees, and the creation of special districts and zones can be utilized by local governments and taxing authorities to implement transportation projects.