

# SOUTH COUNTY MOBILITY

options | priorities



## EXECUTIVE SUMMARY

SEPTEMBER 2015



BROWN & GAY  
ENGINEERS



Research Forest Drive at IH 45

# SOUTH COUNTY MOBILITY PLAN

SEPTEMBER 2015

## EXECUTIVE SUMMARY



# ACKNOWLEDGEMENTS

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City of Shenandoah  
Montgomery County Precinct 3  
The Woodlands Road Utility District #1  
The Woodlands Township

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# EXECUTIVE SUMMARY

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## PROJECT BACKGROUND

South Montgomery County is a rapidly-growing part of the greater Houston-Galveston region both in terms of population and employment. In order to coordinate transportation planning efforts undertaken by local agencies to accommodate this growth, elected officials asked the Houston-Galveston Area Council (H-GAC) to establish a partnership with Montgomery County Precinct 3, The Woodlands Township, the City of Shenandoah, Oak Ridge North, The Woodlands Road Utility District #1 and Texas Department of Public Transportation (TXDOT) to collectively examine current and future mobility needs.

## PROJECT PURPOSE

The purpose of the South County Mobility Plan (SCMP) was to perform a sub-regional mobility study that would result in actionable recommendations to improve mobility and access to jobs, homes, and services in the study area (**Figure E1**). The report analyzes current and future conditions (e.g., population, employment, other relevant demographics, roadway network, and economic vitality), and identifies existing traffic bottlenecks and roadway facilities with high congestion levels and/or potentially unsafe conditions. Unsafe conditions include roadways with design deficiencies or deteriorated physical condition, inadequate capacity, and outdated traffic control and management systems.

## THE VISION

Representatives from each of this study's participating agencies wanted to develop a transportation system that would accommodate existing and future mobility needs of all people and goods traveling within and through the area. These representatives formed a steering committee, which developed the following SCMP vision statement:

*"The vision of the South Montgomery County Mobility Plan is to protect and enhance the economic competitiveness and quality of life of the growing South Montgomery County area by designing a safe, efficient, interconnected, and cost-effective roadway network that recognizes the needs of all user: those traveling by autos, trucks and commercial vehicles, cyclists and pedestrians."*

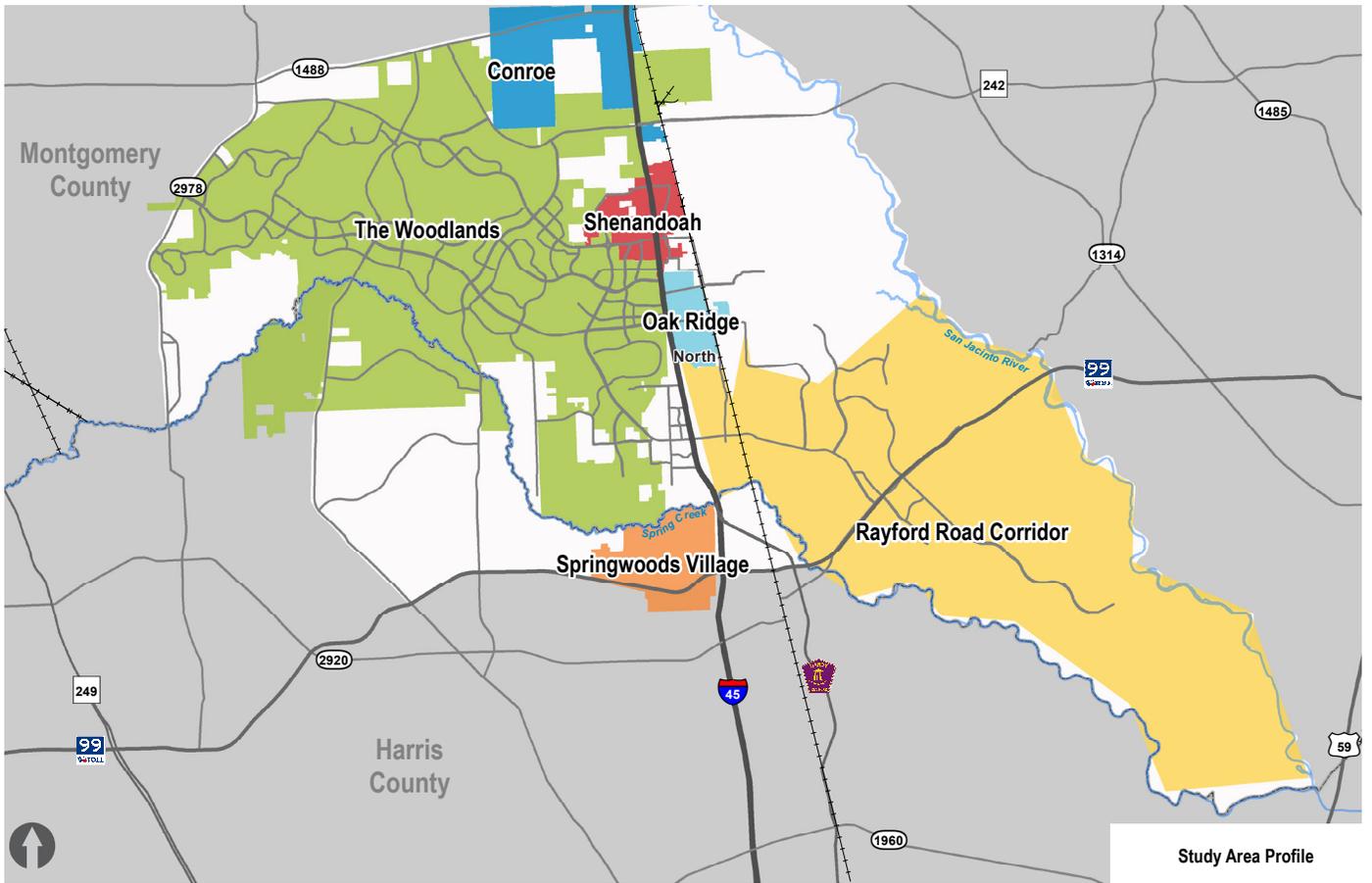


Figure E1: Study Area profile

The study's vision was delineated by specific goals, objectives, and performance measures.

## GOAL

### **Maximize Mobility:**

Develop innovative approaches to manage and improve transportation facilities throughout, minimize delays and selectively increase roadway capacity on the transportation network.

### **Quality of Life:**

Reflect the participating communities' priorities on protecting quality of life and the natural environment through appropriate use of design concepts and mitigation techniques

### **Project Consensus:**

Strengthen partnerships between local governments, TxDOT, other transportation agencies and the private sector by identifying projects with significant consensus in the South Montgomery County/North Harris County area.

### **Economic Vitality:**

Support continued economic vitality by managing congestion, improving travel reliability and safety.

## OBJECTIVE

- Develop innovative approaches to make the network more efficient
- Preserve Right-of-Way
- Balance between transportation and the natural environment
- Fiscal soundness
- Community support
- Strengthen partnerships
- Manage congestion
- Improve reliability
- Improve safety

Within this framework, the South County Mobility Plan identified the following areas of concern:

- Mobility
  - Lack of north-south and east-west connectivity
  - Incomplete roadway network
  - Traffic signal operations and management
- Safety
  - Crash hot spots
  - Roadway signage and lighting
  - Existing and Future Developments
  - ExxonMobil/Springwoods Village
  - East side residential and commercial
  - West side office and commercial
- Other
  - Connections to Grand Parkway
  - Coordination with Union Pacific on future grade separations at railroad crossings
  - Core bicycle plan for study area including the Spring Creek Greenway



Market Street is a major shopping destination in the Woodlands Township

# EXECUTIVE SUMMARY

## ANALYSIS

The study involved an extensive traffic data collection effort, roadway and intersection analyses, a thorough inventory and assessment of the roads in Precinct 3, a series of steering committee meetings and a public involvement program.

## PUBLIC INVOLVEMENT

The SCMP team customized a robust public involvement program that described the unique character of the area and needs of the residents, businesses, and employees who face daily mobility challenges. Two public meetings, a business open house, a project website, and several stakeholder presentations allowed members of the community to participate and express their concerns on mobility issues.

The study partners maintained continuous communications during the decision-making process. In addition to this, the SCMP team used a variety of public involvement techniques by eliciting public opinion and encouraging community participation.

A comment card was distributed at the first public meeting held February 27, 2014 at Oak Ridge Baptist Church to along with a project website to deliver feedback to the study team. Comments received from the public meetings, comment cards and the study's website indicated that the community was most concerned about congestion on the following roadways:

- Rayford/Sawdust (381 comments)
- Kuykendahl Road (243 comments)
- Robinson Road (203 comments)
- Hanna Road (143 comments)
- Woodlands Parkway (68 comments)
- Riley Fuzzell (65 comments)
- IH 45 (57 comments)

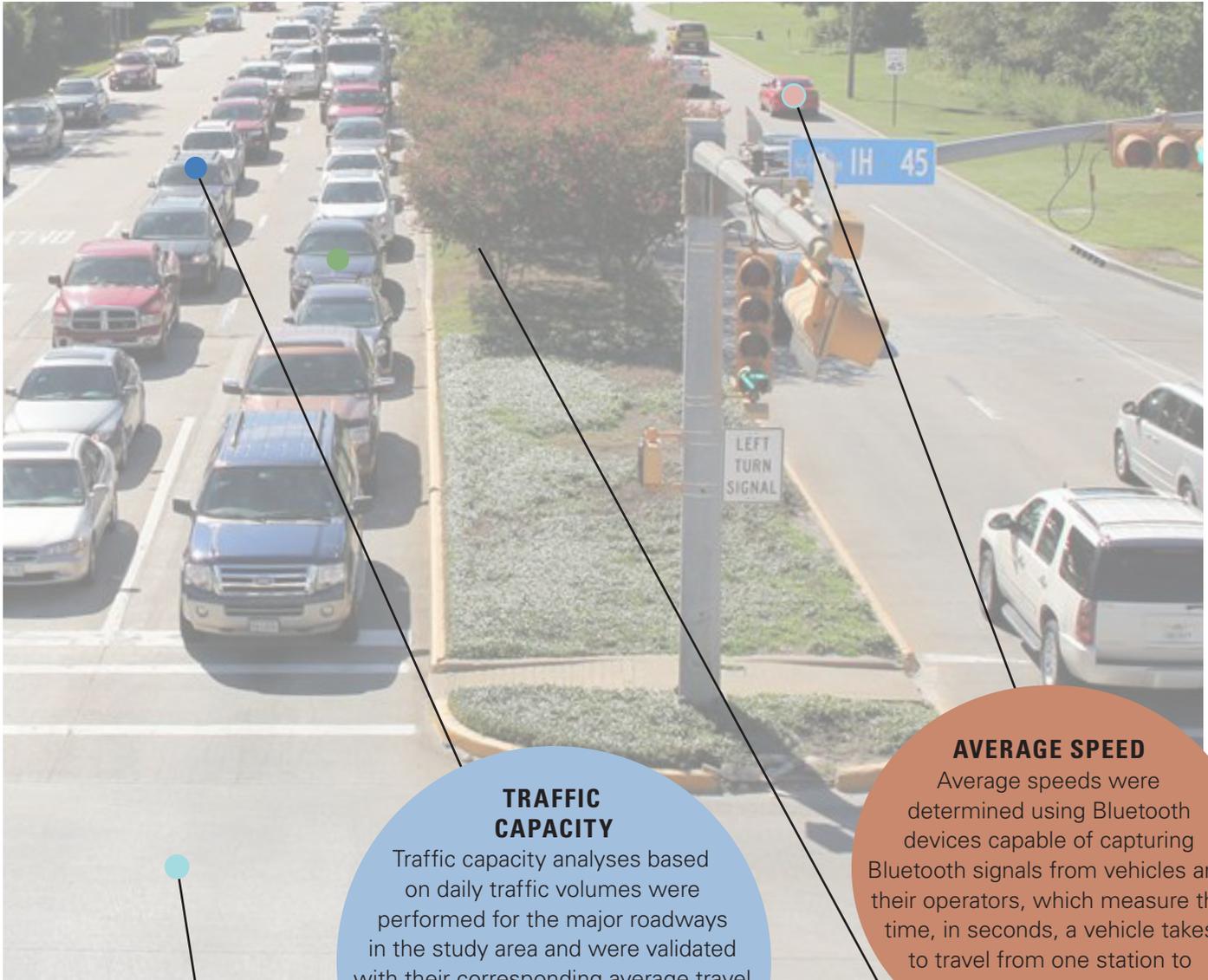
A second public meeting was held on September 25, 2014 at Shenandoah's Municipal Complex. At this meeting, the findings of the study and the proposed recommendations were presented.

Approximately 120 people attended this meeting which included an open house, two presentations, as well as a robust question and answer session.

**TABLE E1: DEMOGRAPHIC AND REAL ESTATE VALUATION PROJECTIONS**

Design Year	Household	Employment	Residential Real	Commercial	Traffic Increase from 2013
	Population Increase from 2013	Increase from 2013	Estate Valuation Increase from 2013	and Other Non-Residential Valuation Increase from 2013	
2018	7%	26%	\$11.1 Billion	\$3.6 Billion	22% to 84%
2040	74%	84%	\$22.6 Billion	\$5.2 Billion	44% to 94%

**Table E1** shows anticipated study area household population and employment growth, projected real estate valuation, and projected traffic increase for both design years relative to year 2013 conditions. The projected growth in household population and employment in the study area will generate future tax revenues to help pay for transportation facility improvements.



### **INTERSECTION LEVEL OF SERVICE**

Intersection level of service analyses were performed using Synchro/SimTraffic (version 8) using peak period-turning movement counts. Model inputs included traffic volumes, lane geometry, posted speed limits, traffic signal control timing plans, and vehicle/driver parameters. Average speed analyses and helicopter videos were conducted along the major arterial streets during the morning and afternoon peak hours. Intersection capacity analyses were conducted at the major intersections.

### **TRAFFIC CAPACITY**

Traffic capacity analyses based on daily traffic volumes were performed for the major roadways in the study area and were validated with their corresponding average travel speed. The criterion was based on the generalized capacity analysis tables and average speeds located in the 2010 Highway Capacity Manual.

### **AVERAGE SPEED**

Average speeds were determined using Bluetooth devices capable of capturing Bluetooth signals from vehicles and their operators, which measure the time, in seconds, a vehicle takes to travel from one station to the next.

### **TRAFFIC FORECAST**

The traffic forecast for the South Montgomery County area shows a significant traffic growth for the short term period (0-5 years) period as well as for the long term period (5-25 years). This growth in traffic is occurring as a result of increases in population and employment.

# EXECUTIVE SUMMARY

## FINDINGS

Inadequate transportation facilities and services in the SCMP study area threaten the quality of life enjoyed by current residents as well as its continued economic growth. The projected growth is due to new developments occurring both within and outside the study area. New developments in the study area include: ExxonMobil campus, Springwoods Village, The Woodlands Town Center and Hughes Landing, Oak Ridge North Industrial Park, Shenandoah's large commercial developments, and multiple new residential developments primarily on the east side of IH 45.

With the upcoming opening of Grand Parkway, there is a critical need for parallel facilities to IH 45 and alternative commute options. This includes improvement of the existing north-south facilities as well as the construction of new north-south facilities parallel to IH 45 in the near term in order to fully take advantage of the new capacity and connectivity provided by the Grand Parkway.

Another critical mobility shortcoming is the lack of transportation facilities to provide proper traffic circulation for the office and commercial developments in the area. The existing interchanges along IH 45 at Woodlands Parkway/Robinson Road and Lake Woodlands Drive are rural designs that have become obsolete as the area has developed. Mobility would also be enhanced by providing two additional grade separations along IH 45: one between Research Forest and Lake Woodlands Drive, and another between Woodlands Parkway and Rayford-Sawdust Roads to provide traffic circulation across IH 45 as well as u-turns to serve businesses along the frontage roads.

A third pressing issue is the lack of a grid network of arterial streets on the east side of IH 45 to distribute the traffic trying to access IH 45 and Hardy Toll Road via Rayford Road. Providing a grade separation at the Union Pacific railroad tracks will be a critical element to reliable east-west travel as well.

A fourth mobility issue regards the natural and man-made barriers in the area, which prevent traffic from moving more freely across Spring Creek in the north/south direction and the Union Pacific Railroad in the east-west direction. These barriers prevent mobility, not only for vehicles, but also for pedestrians and bicyclists.

The existing conditions analysis concluded that IH 45 is severely congested from SH 242 to the Hardy Toll Road, as are most of the major arterial streets and highways in the study area. These congested arterials and highways include Rayford Road, Sawdust Road, Woodlands Parkway, Robinson Road, Research Forest Drive, Tamina Road, Kuykendahl, Gosling, Lake Woodlands, Grogans Mill, FM 2978, SH 242, and FM 1488. The following are the top 10 most congested signalized intersections in the study area:

1. IH-45 Northbound Frontage Road at SH242/College Park
2. IH-45 Southbound Frontage Road at Sawdust Road
3. College Park Drive/SH 242 at IH 45 Southbound Frontage Road
4. Woodlands Parkway at Kuykendahl Road
5. IH-45 Northbound Frontage Road at Rayford
6. IH-45 Northbound Frontage Road at Tamina
7. Woodlands Parkway at Six Pines Drive
8. College Park Drive/SH 242 at Gosling Road
9. Woodlands Parkway at Woodloch Forest
10. Lake Woodlands at Gosling



Figure E2: Existing Roadway Capacity (Based on roadway capacity analysis, average speed analysis, and delay observed by the helicopter videos.)

Traffic capacity analyses based on daily traffic volumes were performed for the major roadways in the study area and were validated with their corresponding average travel speed. The results of these analyses were reported in terms of four levels of condition: (1) Under capacity, (2) At capacity, (3) Over capacity, and (4) Severely over capacity. The criterion is based on the generalized capacity analysis tables and average speeds located in the 2010 Highway Capacity Manual (HCM). **Figure E2** shows the results of the daily roadway capacity analysis, average speed analysis, and delay observations of the helicopter videos.

A significant portion of the development currently underway in the Springwoods Village/ExxonMobil campus area will be complete by 2018 and in The Woodlands Town Center/Hughes Landing area by 2020. Likewise, east of IH 45 between

SH 242 and Tamina Road, east of Aldine Westfield, and along the Grand Parkway, new development is occurring and a large portion of it should be in place by 2018. The Grand Parkway will be operational by 2018 and it could absorb a significant portion of the projected traffic demand provided the roadways accessing it are also improved by 2018. By 2040, the emphasis should be placed on relieving IH 45 with parallel facilities, rebuilding the IH 45 interchanges to urban standards, and providing grade separations at the major arterial streets crossing the Union Pacific railroad, and on Research Forest, Lake Woodlands Drive, and Woodlands Parkway.

# EXECUTIVE SUMMARY

## BICYCLE/PEDESTRIAN ANALYSIS

The South County region is growing rapidly and unless steps are taken to include other modal options, travel by walking and bicycling will become increasingly difficult. Currently, there is little bicycle or sidewalk access from residential areas east of IH-45 to the employment centers on the west side, with Rayford Road being the only possible route by bike. Along with the involvement activities for the general public and business communities, the bicycle and pedestrian communities were engaged to identify challenges, opportunities, and preferred solutions.

Lake Woodlands Drive was selected as the major east/west bicycle pedestrian corridor due to its central location in The Woodlands as well as its potential as a connector on the east side of IH 45 with Oak Ridge School Road and Sleepy Hollow Road. Gosling was selected as the major north/south corridor on the west of IH 45 due to its connectivity

and parallel utility easement for a possible future shared use path. East of IH-45, Hannah and Townsen Roads were selected in a similar manner. In addition to this, it is recommended that a multi-use facility be constructed adjacent to Grand Parkway.

**Figure E3** shows approximately 77 miles of proposed bicycle/pedestrian needs based on public input and field investigation.



Low traffic residential roadways provide comfortable bicycle access.

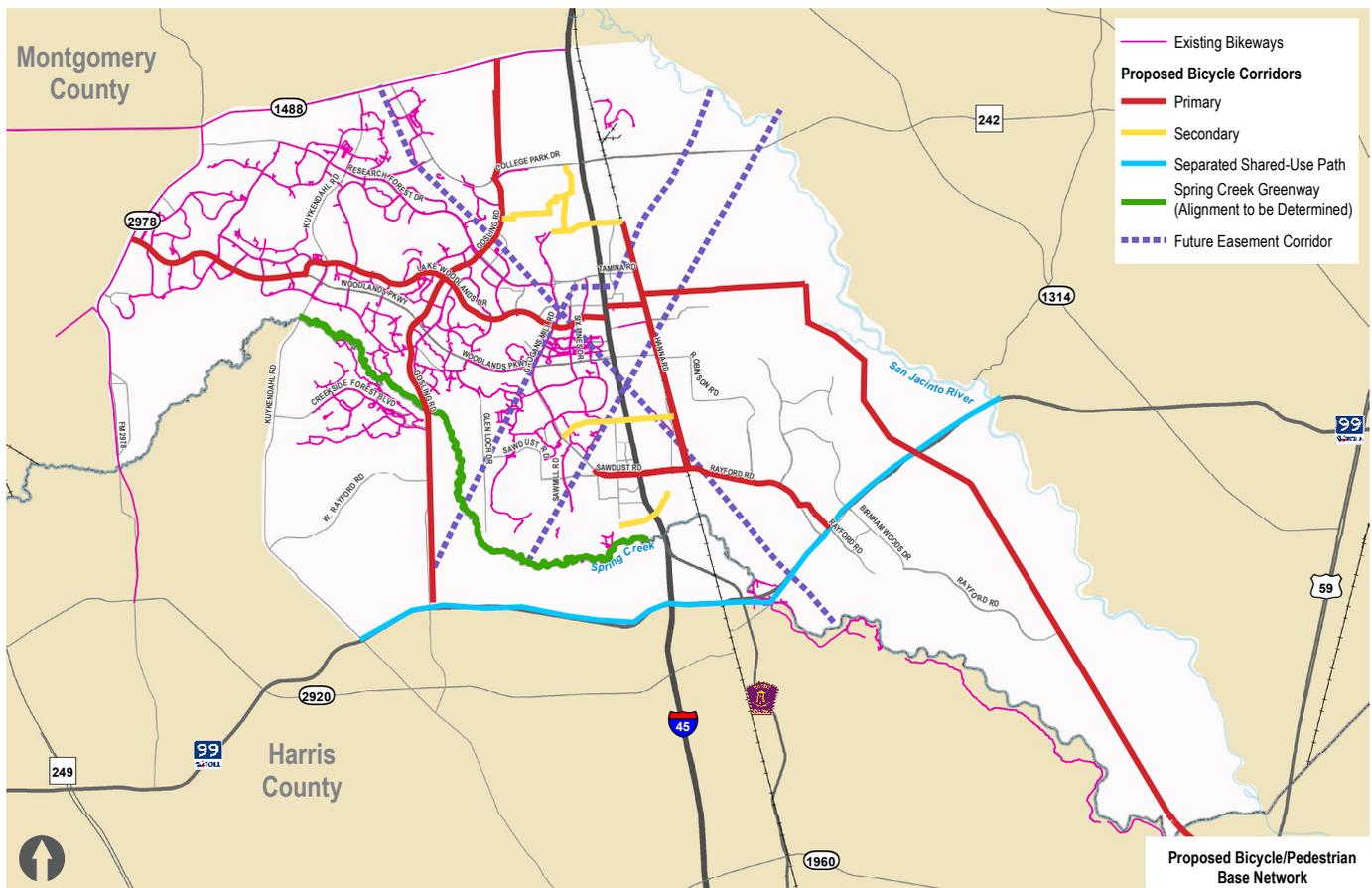


Figure E3: Proposed Bicycle and Pedestrian base network

## RECOMMENDATIONS

The short and long term programs of proposed projects have been designed to address the mobility issues in South Montgomery County. The improvements to the transportation network have been identified based on both existing and anticipated future traffic demand in the study area. As a result, the proposed projects listed below are expected to address the needs of this fast-growing area and allow for improved access to homes, jobs, shopping and entertainment by the general public. It will be up to the state and local governments with jurisdictional authority to implement the suggested solutions.

The proposed project listing includes a brief description of the project, estimated 2014 construction cost (excluding of potential right-of-way acquisition and utility relocation), and implementing entity or entities (Shenandoah, Oak Ridge North, Woodlands RUD #1, Montgomery County, TxDOT, Harris County and Conroe). Further details about each project, including the potential funding sources (federal, state, local, etc.), plan goals met (economic vitality, maximization of mobility, quality of life, and project consensus, and mobility issues addressed (IH-45 alternative, N/S and E/W connectivity, access to Grand Parkway, local circulation, overall mobility, bicycle/pedestrian and intersection issues), are available in the full report.

The local funding sources include capital improvement programs and bond financing by local governmental agencies, and construction of transportation facilities by private land developers. State and federal funding sources are normally available for state-owned facilities, traffic management projects, multimodal projects, and key transportation system projects.

The recommendations to improve mobility in the study area consist of the following general types of transportation improvement projects:

### Operational Strategies

- Traffic signal timing optimization
- Dynamic message signs
- Intersection widening
- New roadway interchanges

### Major Construction

- Roadway widening
- Roadway connections
- New roadways
- Roadway grade separations
- Railroad grade separations
- New cycling/pedestrian facilities

## SHORT TERM RECOMMENDATIONS (0-5 YEARS)

The short term recommendations consist of feasibility studies, route studies, environmental and schematic studies, intersection improvements, street widening, and area-wide traffic management improvements. These traffic management programs include implementing an aggressive incident clearance program, employing a traffic signal timing optimization program, and installing dynamic message signs throughout the study area. The short term recommendations were developed in order to mitigate the existing and recurring traffic congestion in the study area. (Note: Bicycle accommodations are recommended on all new or widened facilities. The type of accommodations will be determined by implementing entities and their partners during the design process.)

The short term recommendations were broken into two separate categories: key corridors and additional short term corridors.

# EXECUTIVE SUMMARY

**TABLE E2: SHORT TERM KEY CORRIDORS**

Corridor	Segment	Description	Segment Cost Estimate** (Millions)	Total Corridor Cost Estimate** (Millions)	Responsible Entity
Rayford Road				57.8	
	Rayford	Construct a roadway overpass at the UP Railroad.	13.7		M, UPRR
		Widen Rayford Road to six lanes, incorporating access management strategies, from the UP Railroad to Legends Run Drive and Fox Ravine Drive to Grand Parkway.	21.5		M
	Birnhem Woods	Widen to four-lanes from Elan Blvd to the Grand Parkway.	7.2		M
		Widen to four lanes from Grand Parkway, south, to Rayford Road.	9.9		M
	Elan	Widen to four lanes from Aldine Westfield to Birnhem Woods Drive.	5.5		M
Woodlands Parkway/Robinson Road				87.7	
	Woodlands Parkway/Robinson at IH 45	Convert the Woodlands Parkway/Robinson Road at IH 45 to a single-point urban interchange (SPUI), including frontage road U-turn lanes.	51.2		M, T, R, O
	Robinson	Widen to four lanes from IH 45 to east of the UP Railroad.	10.0		O
	Woodlands Parkway	Extend IH 45 direct connectors over Woodloch Forest and Six Pines.	26.5		M, R
Lake Woodlands/Grogans Mill				14.1	
	Lake Woodlands	Widen to six lanes from Lake Front Circle to IH 45.	6.8		M, R
		Construct an overpass on Lake Woodlands at Grogans Mill. *			M, R
		Construct a westbound-to-eastbound U-turn at Target/The Woodlands Mall entrance.	1.3		M, R
	Grogans Mill	Widen to six lanes from Woodlands Parkway to Research Forest.	6.0		M, R
Gosling				41.0	
	Gosling	Widen to four lanes from Flintridge to Grand Parkway.	21.0		M, R, H
		Construct a two lane bridge over Spring Creek.	20.0		M, R, H
Kuykendahl				6.6	
	Kuykendahl	Widen to four lanes from Lake Woodlands to Bay Branch.	6.6		M, R
		Widen to four lanes from Flintridge to Augusta Pines.*			M, R, H
		Construct a two lane bridge over Spring Creek.*			M, R, H
<b>TOTAL:</b>	<b>9 Roads</b>	<b>16 Segments</b>		<b>207.2</b>	

\*Committed Project

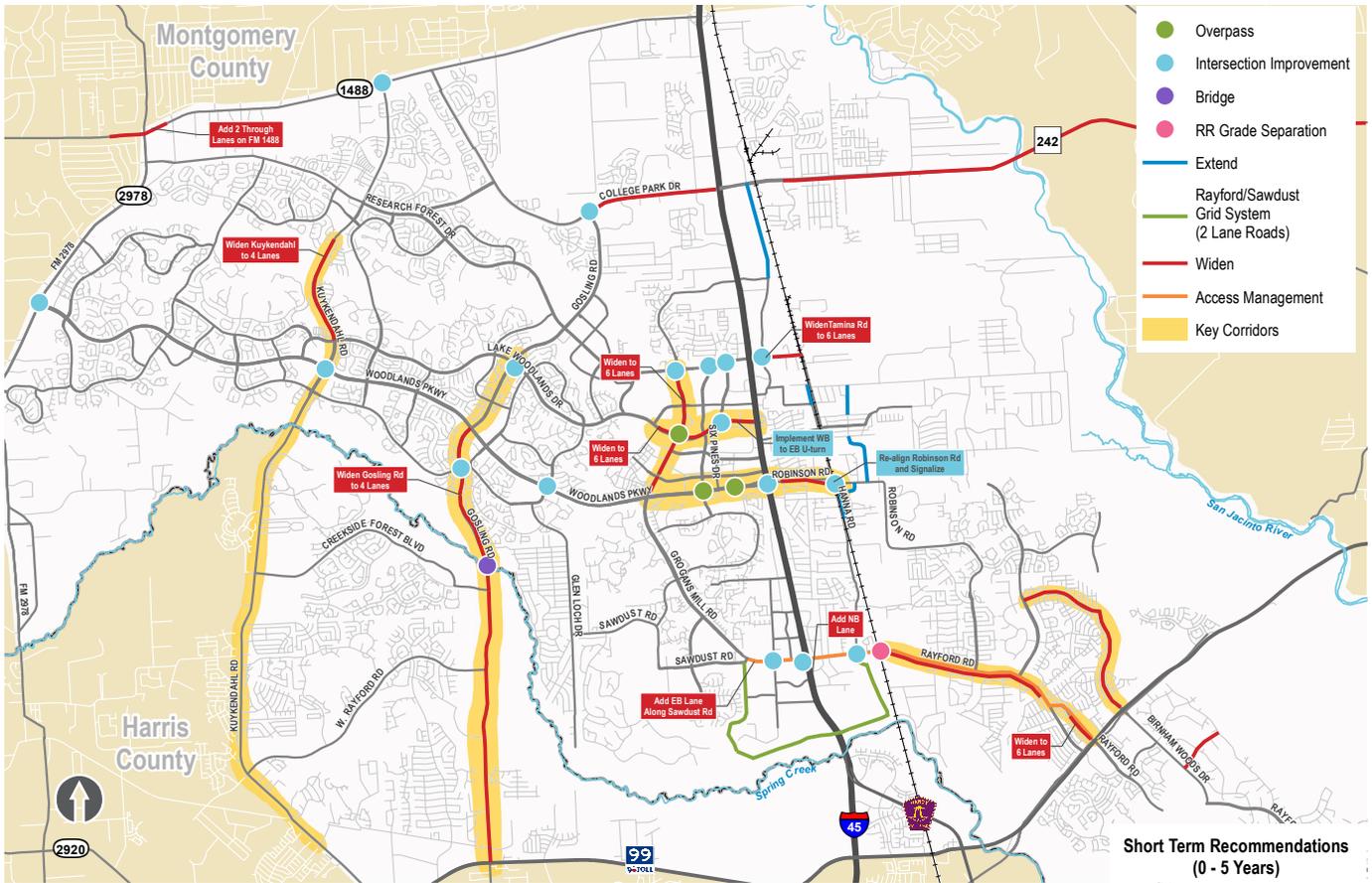


Figure E4: Short-term Recommendations

**SHORT TERM KEY CORRIDORS**

The short term key corridors were selected based on public input and the need for immediate congestion relief. The short term key corridors are shown in **Table E2** and **Figure E4**.

These recommended improvements to the Rayford Road corridor improve the single arterial connecting IH 45 to Grand Parkway serving the study area east of IH 45. Widening Birnham Woods and Elan Blvd also improves access to Grand Parkway east of IH 45. The recommended improvements to Woodlands Parkway and Robinson Road consisted of improving access to the core business areas in the Woodlands Town Center and Oak Ridge North. The recommended improvements on Lake Woodlands and Grogans Mill address the mobility needs of the projected growth in the Woodlands Town Center area in the

near term. The improvements on Gosling and Kuykendahl will provide the necessary access to the Grand Parkway, improve access to The Woodlands and consequently provide an alternative to IH 45.

**ADDITIONAL SHORT TERM CORRIDORS**

The additional short term corridors shown in **Table E3** and **Figure E4** consist of various types of studies, including feasibility, environmental assessments, route alignment and alternative analysis’ as well as road construction projects that do not require additional right-of-way.

# EXECUTIVE SUMMARY

**TABLE E3: SOUTH COUNTY MOBILITY PLAN: SHORT-TERM RECOMMENDATIONS (0-5 YEARS)**

Road	Segment Description	Segment Cost Estimate** (Millions)	Total Corridor Cost Estimate** (Millions)	Responsible Entity
Aldine Westfield Road	Conduct an environmental assessment and develop schematic drawings for the extension from the Riley Fuzzell/Grand Parkway to Ed Kharbat Drive in Conroe.		5.0	M, C, H
Blair	Extend the two lane road from Curry to Cox.		1.8	M
David Memorial Drive	Construct four lanes divided extension from Shenandoah Park Drive to SH 242.		11.0	M, S, C
Fairview/Blair/Foster Corridor Study	Conduct a route study to build a road from Rayford to SH 242 via Foster, Blair and Fairview alignments.		0.9	M, C
FM 1488	Perform an alternatives analysis to determine the alignment to extend from IH 45 to FM 1314.		1.4	M, C
Gosling	Conduct an environmental assessment to extend Gosling Road north from SH 242 to FM 1488.		0.8	M, R, C
Grogans Mill Road	Conduct a feasibility study to address the need for improving intersection at Woodlands Parkway	0.6		M, R
	Conduct a environmental and schematic study to evaluate options to improve capacity in the north-south direction of Grogans Mill, including the widening to six lanes from Woodlands Parkway to Sawdust, a direct connector from Grogans Mill to South Park Drive, widening of South Park Drive, widening of Westridge road, widening of Pruitt Road, and a direct connector from IH 45 northbound to Pruitt Road westbound.	2.0		M, R
Hanna/Oak Ridge School Road	Extend the two lane road north to connect to Johnson		1.4	M, O
Harpers Way	Conduct a route study to extend road south from Laughing Falcon Trail to proposed Tamina Road extension.		0.3	M, C
Kuykendahl	Widen to four lanes from Lake Woodlands Drive to Bay Branch		6.6	M, R
Lake Woodlands Drive	Conduct an environmental impact study for the extension from IH 45 to Sleepy Hollow.		0.6	M, R, O
Lexington Blvd	Widen to four lanes from Rayford to East Benders Landing.		9.3	M

**CONTINUED: TABLE E3: SOUTH COUNTY MOBILITY PLAN: SHORT-TERM RECOMMENDATIONS (0-5 YEARS)**

<b>Road</b>	<b>Segment Description</b>	<b>Segment Cost Estimate** (Millions)</b>	<b>Total Corridor Cost Estimate** (Millions)</b>	<b>Responsible Entity</b>
Oak Ridge Park			1.1	
	Extend two lane road from Robinson to Curry.			M
Rayford/Sawdust Corridor			34.8	
	Implement access management strategies (raised median, driveway consolidation) and add right turn lanes at all the signalized intersections between Grogans Mill and UP Railroad.	14.9		M
	Construct a new two-lane road under IH 45 at Spring Creek to connect both sides of IH 45.	19.9		M
Research Forest			9.1	
	Improve the intersection at Grogans Mill by converting the existing four-point intersection into a one- or two-point intersection.	3.1		M, R, S
	Improve the intersections at Six Pines, Holly Hill and Pinecroft by adding right turn lanes.	3.9		M, S
	Widen Research Forest/Tamina Road at IH 45 by adding one traffic lane in each direction under the freeway bridge.	2.1		M, S
Robinson Road			0.8	
	Conduct an environmental assessment to extend Robinson from east of UP Railroad to Townsen.			M, O
Sawmill Road Extension Study			0.3	
	Conduct an environmental assessment to extend Sawmill Road from South High Oak Circle (south of Sawdust) to Harris County, including a new bridge over Spring Creek.			M, H (ExxonMobil Springwoods)
SH 242			52.0	
	Widen by adding one lane in each direction from Gosling to IH 45, and from Harpers Way to FM 1314.			T
Shenandoah Park Drive			1.0	
	Conduct a study to extend from David Memorial to the San Jacinto River.			M, S

# EXECUTIVE SUMMARY

**CONTINUED: TABLE E3: SOUTH COUNTY MOBILITY PLAN: SHORT-TERM RECOMMENDATIONS (0-5 YEARS)**

<b>Road</b>	<b>Segment Description</b>	<b>Segment Cost Estimate** (Millions)</b>	<b>Total Corridor Cost Estimate** (Millions)</b>	<b>Responsible Entity</b>
Songwood/Industrial Way			3.9	
	Extend from Springwood to Robinson.			M
Tamina		6.9		
	Widen by adding one lane in each direction from IH 45 to David Memorial.	0.7		M, S
	Widen by adding one lane in each direction from David Memorial to Main St.	2.1		M, S
	Improve the intersection of Tamina and David Memorial.	1.1		M, S
	Conduct an environmental assessment to extend Tamina Road from Hanna Road to FM 1314, including a grade separation at the UP Railroad and a new bridge at the San Jacinto River.	3.0		M, C, S
Townsen			6.3	
	Conduct a route study extending road from Spring Creek to SH 242			M, C, H
<b>Totals</b>	<b>22 Roads, 15 Roadway Projects, 13 Studies</b>		<b>157.9</b>	

**Notes:**

**Responsible Entities**

M = Montgomery County    T = TxDOT    S = Shenandoah    O = Oak Ridge North  
 R = Woodlands Road Utility District #1    C = Conroe    H = Harris County

**Directions**

NB = North Bound    SB = South Bound  
 WB = West Bound    EB = East Bound

\*\* Construction cost only; does not include potential right-of-way acquisition cost and/or the relocation of utilities.

**TABLE E3 (CONTINUED): SHORT -TERM ADDITIONAL CORRIDORS RECOMMENDATIONS (0 - 5 YEARS)**

Type of Improvement	Description	Improvement		Responsible Entity	
		Cost Estimate (Millions)	Total Cost Estimate (Millions)		
Intersections			3.60		
	E. Panther Creek at Woodlands Parkway	Construct dual SB left and right turn lane	0.69	M, R	
	Flintridge at Gosling	Construct EB and WB designated left turn lanes	0.58	M, R	
	FM 1488 at Kuykendahl	Construct dual WB left turn lane	0.17	M, R, T	
	FM 2978 at Woodlands Parkway	Construct dual SB left turn lane, and NB right turn lane	0.34	M, R, T	
	Gosling at SH 242	Construct dual left and dual right turn lanes on NB Gosling to SH 242	0.25	M, R, T	
		Construct dual right turn lane on NB Gosling to EB SH 242	0.25	M, R, T	
	Kuykendahl at Woodlands Parkway	Construct SB right turn lane	0.27	M, R	
	Lake Woodlands Drive at Gosling	Construct dual WB left and WB right turn lanes	0.53	M, R	
	Pineroft Drive/Mall Entrance at Lake Woodlands Drive	Construct NB right turn lane	0.15	M, R	
	SH 242 at Gosling	Construct dual left turn lanes on WB SH 242 to SB Gosling	0.25	M, R, T	
	Woodloch Forest at Woodlands Parkway	Construct dual SB left turn lane	0.12	M, R	
Area Wide Improvement			6.40		
	Traffic Management	Implement an aggressive incident clearance program.	1.80	3.40	M
		Implement a traffic signal timing optimization program.	0.90		M
		Install dynamic message signs throughout the study area.	0.70		M
	Bicycle/Pedestrian Network Preliminary Design	Conduct design for the new bicycle/pedestrian connector routes to correspond with new roadway construction		3.00	R, S, O, C
<b>Total</b>	<b>10 Intersections</b>	<b>15 Projects</b>		<b>10.00</b>	

Notes:

Responsible Entities M = Montgomery County T = TxDOT S = Shenandoah  
 O = Oak Ridge North R = Woodlands Road Utility District #1 C = Conroe  
 H = Harris County U = Union Pacific Railroad

Directions

NB = North Bound  
 SB = South Bound  
 WB = West Bound  
 EB = East Bound

\*\* Construction cost only; does not include potential right-of-way acquisition cost and/or the relocation of utilities.

# EXECUTIVE SUMMARY

## LONG TERM NEEDS (6-25 YEARS)

The long term recommendations consist of street widening, construction of new roadways and extensions, new cycling/pedestrian facilities and grade separations. These improvements to the transportation network have been identified as necessary to handle the anticipated future traffic demand on the area's transportation network. The short term key corridors are shown in **Table E4** and **Figure E5**.

The long-term bicycle/pedestrian recommendations can be seen in **Table E5**. These recommendations include shared use paths, bicycle lanes and cycling/pedestrian paths in utility easements. Bicycle accommodations are recommended on all new or widened facilities. The type of accommodations will be determined by implementing entities and their partners during the design process.

**TABLE E4: LONG-RANGE RECOMMENDATIONS (6+ YEARS)**

Road	Segment Description	Segment Cost Estimate** (Millions)	Total Corridor Cost Estimate** (Millions)	Responsible Entity
Aldine Westfield Road			131.9	
	Depending on the result of the environmental assessment, extend from Riley Fuzzell to Ed Kharbat Drive in Conroe.	131.9		M, C
Atkinson Lane			6.7	
	Extend from Vision Park Blvd to St Lukes Way.	6.7		M, S
Birnam Woods Drive			55.8	
	Extend from Rayford Road to Birnamwood Blvd in Harris County. Includes a bridge over Spring Creek.	26.0		M, H
	Construct a new bridge over Spring Creek.	5.2		M, H
	Widen to 4 lanes from Rayford Rd to Grand Parkway.	9.9		M
	Widen and extend from Elan Blvd to Robinson.	14.7		M
Elan Blvd			11.1	
	Extend from Birnam Woods Dr to Townsen Blvd.	11.1		M
Fairview/Blair/Foster Corridor			30.8	
	Depending on results of earlier study, construct a 2-lane road from Rayford to SH 242 via Foster, Blair and Fairview alignments.	30.8		M
FM 1488			78.6	
	Depending on results of the previous study, extend FM 1488 east from IH 45 to FM 1314.	52.9		M, T
	Widen to 6 lanes and implement access management treatments from IH 45 to FM 2978.	25.7		M,T
Gosling Road			25.0	
	Extend from SH 242 to FM 1488.	25.0		M, C
Grogans Mill Road			90.1	
	Widen to six lanes between Woodlands Pkwy and Sawdust.	11.5		M R
	Widen to four lanes from Research Forest to Vision Park.	5.5		M,R,S

**CONTINUED - TABLE E4: LONG-RANGE RECOMMENDATIONS (6+ YEARS)**

<b>Road</b>	<b>Segment Description</b>	<b>Segment Cost Estimate** (Millions)</b>	<b>Total Corridor Cost Estimate** (Millions)</b>	<b>Responsible Entity</b>
	Depending on the results of earlier study, improve the intersection at Grogans Mill at Woodlands Pkwy to accommodate traffic volume.	20.0		M, R
	Depending on the results of earlier study, Construct a grade separation at South Park Drive, widen South Park Drive to four lanes, widen Westridge Road to four lanes, widen Pruitt Road to four lanes, and construct a new direct connector from northbound to Pruitt Road westbound.	53.1		M
Harpers Way			11.0	
	Depending on results of earlier study, extend Harpers Way south from Laughing Falcon Trail to Tamina Road.	11.0		M
IH 45				
	Encourage TxDOT and H-GAC to conduct a Major Investment Study (MIS) to investigate the need for and feasibility of additional capacity in the IH 45 N/Hardy Toll Road corridor from BW 8 in Harris County to Loop 336 North in Montgomery County.			T
Lake Woodlands Drive			19.4	
	Depending on results of the previous study, extend Lake Woodlands Drive from IH 45 to Sleepy Hollow Road, including an overpass at the UP Railroad.	19.4		M, O, U
Lexington Blvd			18.9	
	Extend from East Benders Landing to Townsen.	13.4		M
	Extend from Rayford to Birnham Wood Blvd.	5.5		M
Nursery Road/ Sagewood Drive			40.0	
	Construct a u-turn overpass on IH 45 service road and Nursery Road/Sagewood Drive.	40.0		M, O, T

**TABLE E4: LONG-RANGE RECOMMENDATIONS (6+ YEARS) (CONTINUED)**

<b>Road</b>	<b>Segment Description</b>	<b>Segment Cost Estimate** (Millions)</b>	<b>Total Corridor Cost Estimate** (Millions)</b>	<b>Responsible Entity</b>
Rayford Rd			76.2	
	Extend from Townsen Blvd to Northpark, including a bridge across the San Jacinto River.	60.0		M, H
	Widen to 4 lanes from Waterbend Cove to Birnham Woods Dr.	8.7		M
	Widen to 4 lanes from Birnham Woods Dr. to Townsen Blvd.	7.5		M
Research Forest			70.9	
	Widen to 6 lanes from Shadow Bend to FM 2978.	16.5		M, R
	Construct an underpass at Grogans Mill.	14.3		M,R, S
	Reconstruct the interchange at IH 45 to accommodate ten traffic lanes under the bridge.	40.1		M, T, S
Robinson Rd			30.2	
	Depending on results of the previous study, extend from Hanna Road to Townsen Blvd.	30.2		M, O
Sawdust Road and Rayford Road Corridor			56.9	
	Widen to eight lanes from Grogans Mill to the UP Railroad.	16.8		M, T
	Reconstruct the IH 45 interchange to accommodate 10 lanes under the bridge.	40.1		M, T
Sawmill Road Extension			8.8	
	Depending on results of earlier study, extend from South High Oak Circle to Spring Creek. (Sawmill will connect to Holzwarth in Harris County which will provide a direct connection to Grand Parkway).	8.8		M, H (ExxonMobil, Spring Woods)
Shenandoah Park Drive			33.0	
	Depending on results of the previous study, extend Shenandoah Park Drive as 4 lanes from David Memorial to the San Jacinto River.	33.0		M, S
Sleepy Hollow			24.6	
	Depending on the results of the Lake Woodlands extension east, widen to 4 lanes from Main St to Hayes Ranch Rd.	24.6		M
Tamina Road			92.0	
	Depending on results of the previous study, extend Tamina Road from Hanna Road to FM 1314, including a grade separation at the UP Railroad and a new bridge at the San Jacinto River.	92.0		M, U
Townsen Blvd			210.8	
	Construct a bridge over Spring Creek.	21.1		M, H
	Construct a new road from the Spring Creek to Grand Parkway.	109.3		M
	Construct a new road from the Grand Parkway to SH 242.	80.4		M, C
Vision Park/Shenandoah Park			40.0	
	Construct overpass with u-turns at IH 45 and Vision Park Drive/ Shenandoah Park Drive	40.0		M, S, T

**TABLE E4: LONG-RANGE RECOMMENDATIONS (6+ YEARS) (CONTINUED)**

Road	Segment Description	Segment Cost Estimate** (Millions)	Total Corridor Cost Estimate** (Millions)	Responsible Entity
Woodlands Parkway	Widen to six lanes from Kuykendahl to FM 2978		14.3	M, R
Bicycle/Pedestrian Network	Construct new bicycle/pedestrian connector routes to correspond with new roadway construction, the Spring Creek Greenway, and path in Grand Parkway right-of-way.	30.9	30.9	R, S, O, C
<b>Total</b>	<b>24 Roads</b>	<b>40 Roadway Projects</b>	<b>1207.9</b>	

Notes: Responsible Entities

M = Montgomery County

T = TxDOT

S = Shenandoah

O = Oak Ridge North

R = Woodlands Road Utility District #1

C = Conroe

H = Harris County

U = Union Pacific Railroad

\*\* Construction cost only; does not include potential right-of-way acquisition cost and/or the relocation of utilities.

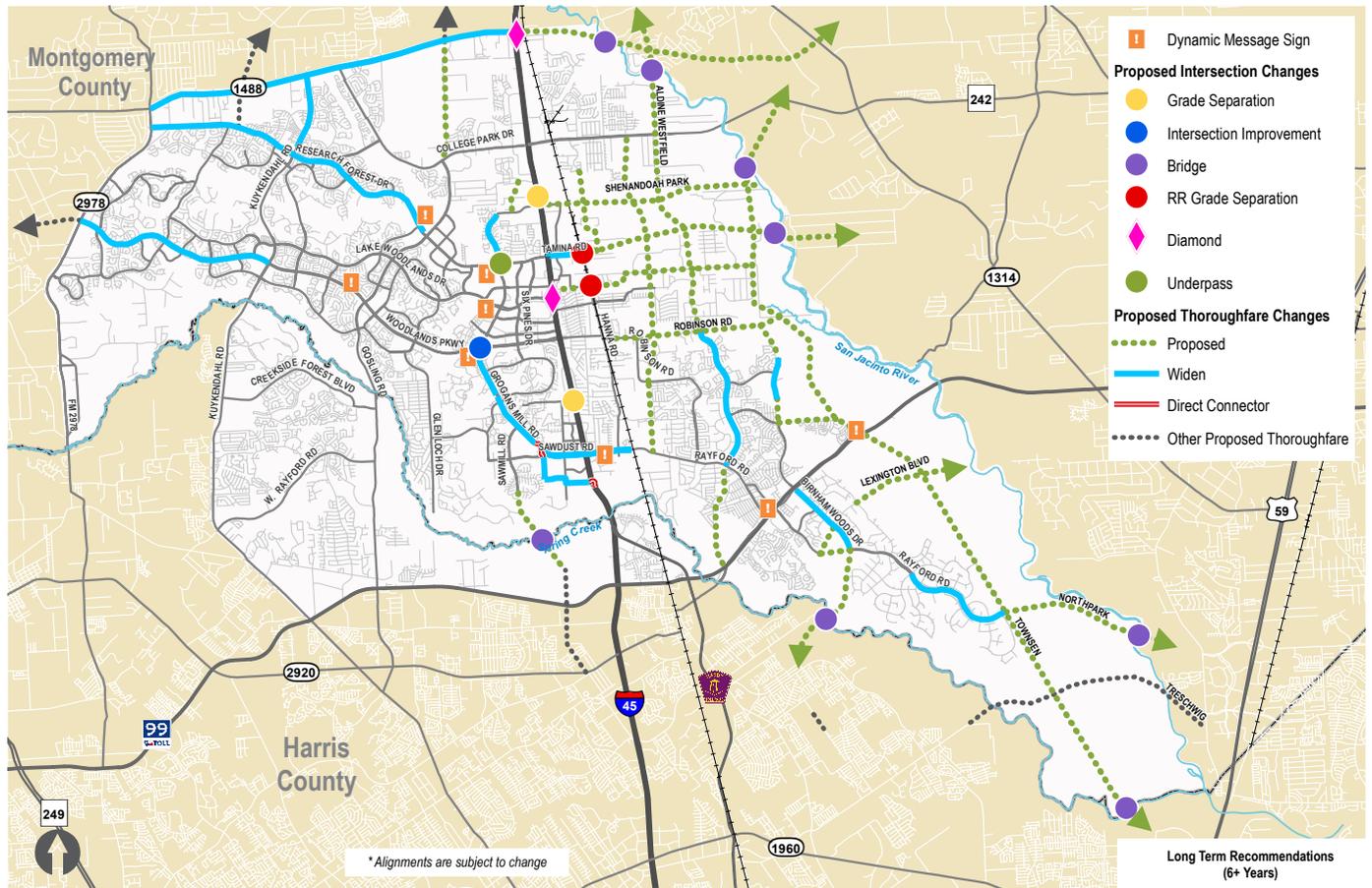


Figure E5: Long Term Recommendations

# EXECUTIVE SUMMARY

**TABLE: E5 LONG-TERM BICYCLE/PEDESTRIAN RECOMMENDATIONS**

<b>Corridors and Limits</b>	<b>Corridor Type</b>	<b>Facility Type</b>	<b>Length (Miles)</b>	<b>Cost (Millions)</b>
<b>Gosling</b>				
SH 99 to Spring Creek	Core	Shared Use Path	3.89	2.45
Spring Creek to Lake Woodlands	Core	Shared Use Path	2.31	1.45
<b>Gosling Extension</b>				
Lake Woodlands to College Park /SH 242	Core	Shared Use Path	2.27	1.43
College Park Dr/SH 242 to FM 1488	Core	Bike Lane - add pavement; no curb (with new construction)	2.32	0.78
<b>Hanna Extension</b>				
SH 242 to Sleepy Hollow	Core	Bike Lane - add pavement no curb w/resurfacing	2.47	0.83
Sleepy Hollow Rd to Rayford	Core	Bike Lane - add pavement no curb w/resurfacing	3.22	1.08
<b>Lake Woodlands</b>				
Woodlands Parkway to Gosling	Core	Shared Use Path or Bike Lane - add pavement no curb w/resurfacing	2.80	0.94
Gosling to IH 45	Core	Shared Use Path or Bike Lanes on both sides	3.32	0.67
<b>New Road (South of Rayford/Sawdust)</b>				
Pruitt to Spring Hills	Secondary	Bike Lane - add pavement no curb w/construction	3.30	1.10
<b>Oak Ridge School</b>				
IH 45 to Townsen	Secondary	Bike Lane - add pavement no curb w/construction	3.92	1.32
<b>Sawdust Rd/Rayford</b>				
Grogans Mill to Hanna Extension	Core	Bike Lane - add pavement no curb w/resurfacing	1.57	0.53
<b>Townsen Rd</b>				
Sleepy Hollow to SH 99	Core	Shared Use Path	3.83	2.41
SH 99 to Rayford	Core	Shared Use Path	4.18	2.63
Rayford to W Townsen (Harris County)	Core	Shared Use Path	4.82	3.04
<b>Woodlands Parkway</b>				
FM 2978 to Lake Woodlands	Core	Bike Lane - add pavement no curb w/construction	3.37	1.13
<b>Nursery /Sagewood</b>				
Grogans Mill to Hanna Extension	Secondary	Retrofit w/ paved shoulders	2.19	0.44

**TABLE: E5 LONG-TERM BICYCLE/PEDESTRIAN RECOMMENDATIONS**

<b>Corridors and Limits</b>	<b>Corridor Type</b>	<b>Facility Type</b>	<b>Length (Miles)</b>	<b>Cost (Millions)</b>
<b>St Lukes Way</b>				
College Park /SH 242 to Gosling	Secondary	Bike Lane - widening on street with curb & gutter	1.00	0.30
College Park /SH 242 to Gosling	Secondary	Retrofit w/ paved shoulders	1.20	0.24
Alternate extension from St. Lukes Way to Vision Park Blvd	Secondary	Bike Lane - add pavement no curb w/construction	0.70	0.02
<b>Vision Park Blvd/Shenandoah Park</b>				
Grogans Mill to Hanna Extension	Secondary	Bike Lane - widening on street with curb & gutter	1.32	0.40
<b>SH 99</b>				
SH 249 to Kuykendahl*	Core	Shared Use Path		*
Kuykendahl to Gosling	Core	Shared Use Path	1.71	1.07
Gosling to IH 45	Core	Shared Use Path	4.48	2.82
IH 45 to Rayford	Core	Shared Use Path	3.45	2.17
Rayford to Townsen	Core	Shared Use Path	2.08	1.31
Townsen to San Jacinto River	Core	Shared Use Path	1.60	1.01
San Jacinto River to US 59/ IH 69*	Core	Shared Use Path		*
<b>Spring Creek Greenway</b>				
Kuykendahl to Pruitt	Secondary	Various - depending on location	10.00	6.30
<b>Total: 14 Corridors</b>			<b>77.32</b>	<b>31.41</b>

\* Not in study area

## COST ESTIMATE

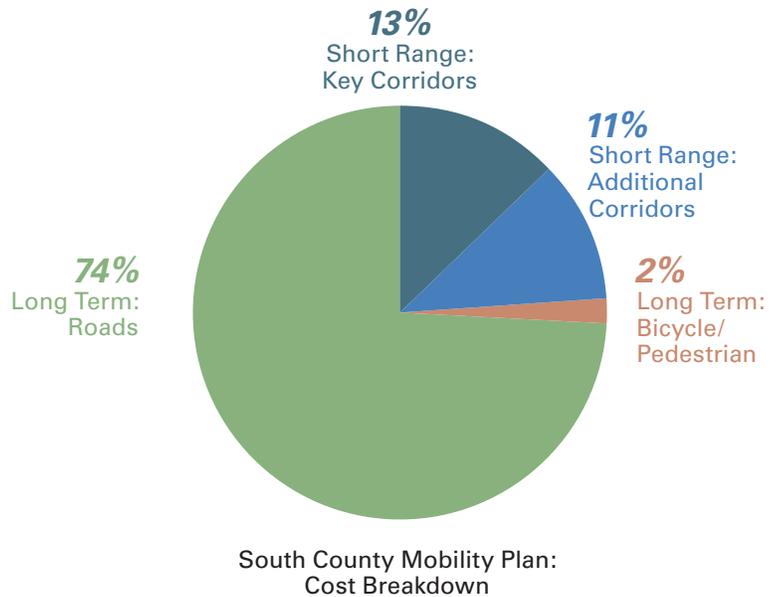
The total cost to implement the South Montgomery County Mobility Plan has been divided into short-term and long-term projects. The costs below are only construction costs, and do not include costs associated with right-of-way acquisition and/or utility relocation.

TABLE E6: COST ESTIMATE	
Estimate	
Short Term Cost Estimate	\$375.1 Million
Key Corridors:	\$207.2 Million
Additional Corridors:	\$167.9 Million
(Studies: \$23 Million, Roads: \$134.9 Million, Intersections: \$10 Million)	
Long Term Construction Cost Estimate*:	\$1.2 Billion
Bicycle/Pedestrian:	\$31.41 Million
<b>Grand Total Cost Estimate*:</b>	<b>\$1.6 Billion</b>

\*Construction cost only; does not include potential right-of-way acquisition cost and/or the relocation of utilities. Costs were based on 2014 dollars.

The benefits of the SCMP include:

- Improved travel time by developing a network of E/W and N/S roads that improve connectivity.
- Distributing traffic by providing alternative travel routes.
- Congestion mitigation by the use of access management techniques, aggressive incident management program, traffic signal optimization and the installation of dynamic message signals throughout the study area.
- Communities working together for better mobility in South County.







TO VIEW THE SOUTH COUNTY MOBILITY PLAN DOCUMENT VISIT:  
[MONTGOMERYCOUNTYMOBILITY.COM](http://MONTGOMERYCOUNTYMOBILITY.COM)