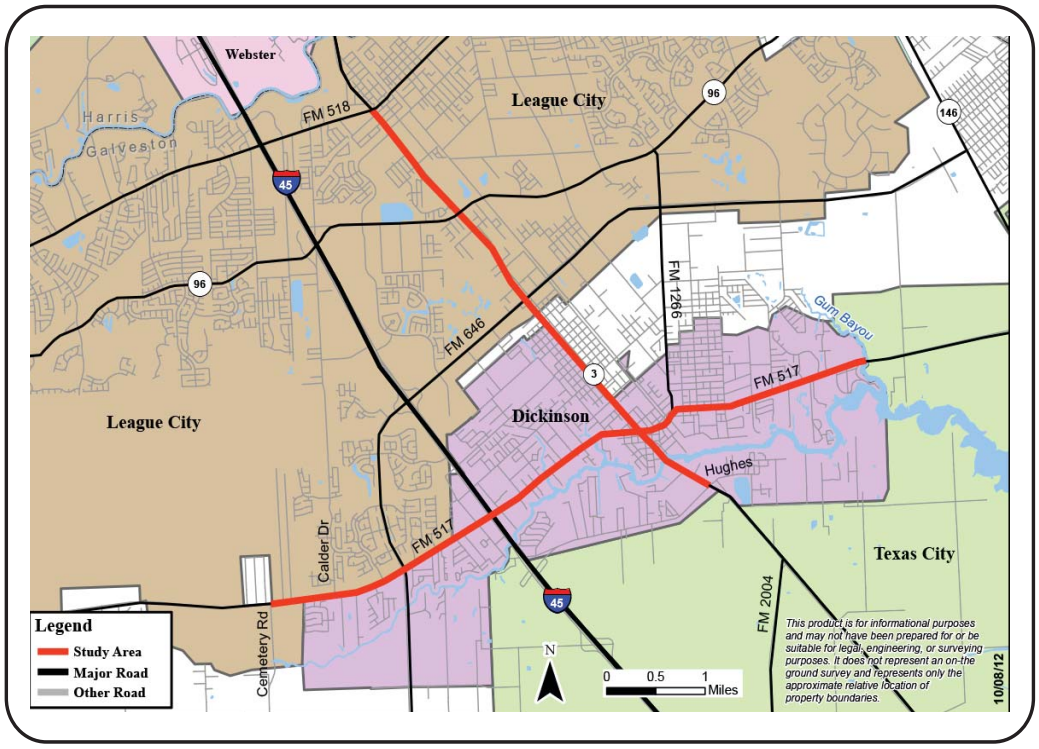
September 2013

FM 517/SH 3 Access Management Plan Executive Summary

The FM 517/SH 3 Access Management Plan was commissioned by the Houston-Galveston Area Council (H-GAC). H-GAC has continually worked with the Texas Department of Transportation (TxDOT) and local governments to improve safety and mobility throughout the region. H-GAC and TxDOT recognize developing a viable transportation system not only includes building new roadways but also managing the access and travel demand on these systems. Many H-GAC projects exemplify how working with local governments and successfully engaging the public can create a long-term plan and achievable vision.



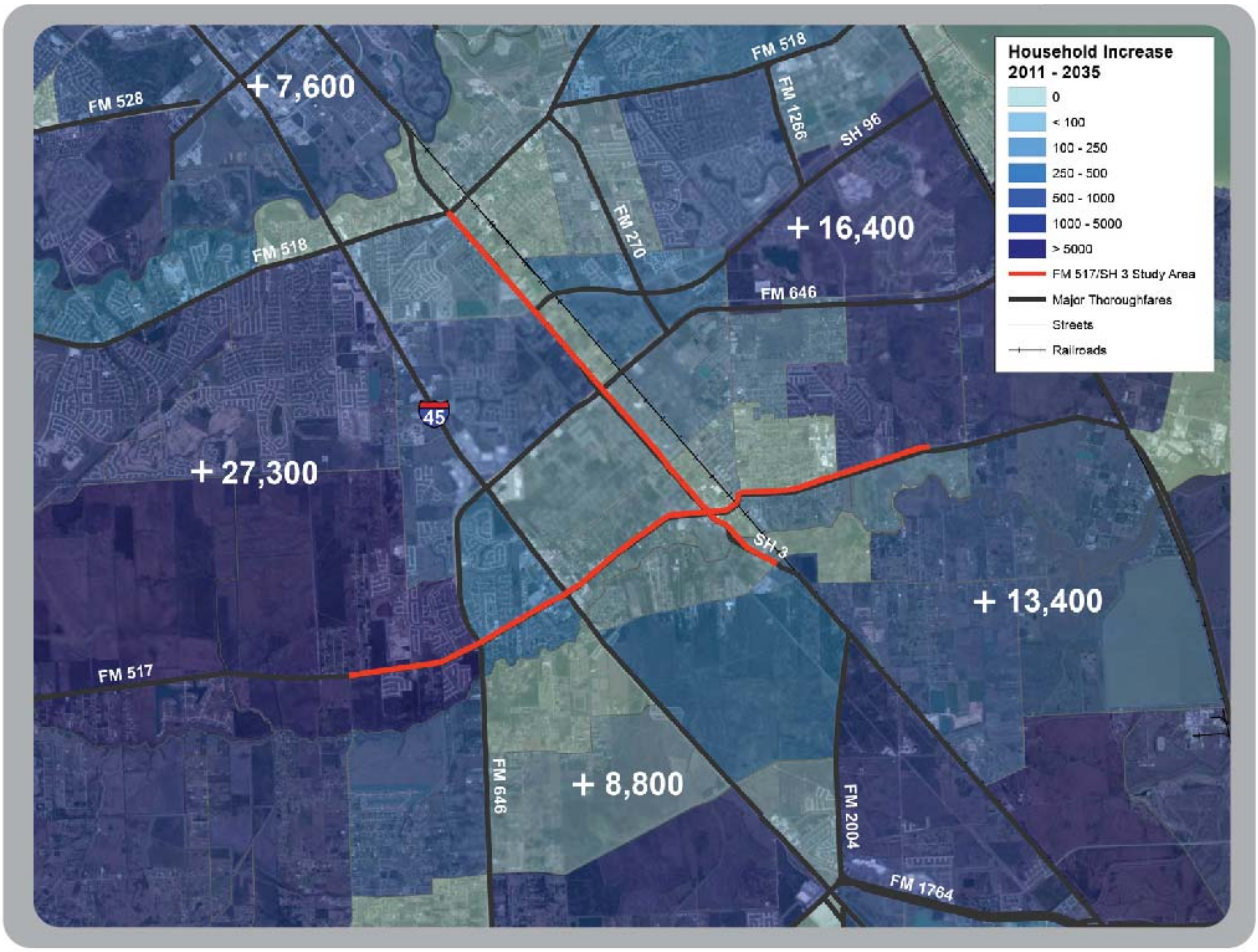
The FM 517 and SH 3 roadways through the cities of Dickinson and League City were identified as corridors showing safety and congestion concerns. The study area is defined as FM 517 from Cemetery Road to Gum Bayou (7 miles) and SH 3 from Hughes Road to FM 518 (5 miles). FM 517 is a primary arterial for serving eastbound and westbound travelers, and SH 3 runs parallel to IH 45, serving northbound and southbound traffic. TxDOT maintains both corridors.

Kimley-Horn and Associates, Inc.

Subconsultants:
AIA Engineering, Ltd.
Knudson, LP
CJ Hensch & Associates, Inc.

The purpose of the FM 517/SH 3 Access Management Plan is to develop a phased implementation plan of transportation improvements along FM 517 and SH 3 that reduces crashes, improves mobility, and accommodates existing businesses and future development.

The implementation plan includes short-, medium-, and long-term improvements. The long-term improvements should be considered as redevelopment is planned and congestion increases. The 2035 regional demographics developed by H-GAC estimate an additional 75,000 households over the next 20 years within the area served by the FM 517 and SH 3 corridors. This translates to approximately 750,000 additional trips per day on area roadways. Cost effective strategies, such as access management, will be required in order to manage congestion caused by increasing traffic volumes. As development plans become more focused, City staff and developers can use the long-term recommendations of the implementation plan as a communication tool in coordinating future transportation infrastructure with new or redeveloped land uses.



Improvements to the FM 517 and SH 3 corridors require significant “intergovernmental coordination” since they cross multiple jurisdictions and are maintained by TxDOT.

Public Involvement

Providing a transparent process that engaged businesses and residents was a key element of this study. Significant public engagement efforts were made throughout the study to gain input from residents, civic and homeowner organizations, businesses, emergency responders, schools, churches, landowners, developers and real estate professionals. The study consisted of six steering committee meetings; three stakeholder meetings; two business open houses; and two public open houses.

Corridor Goals

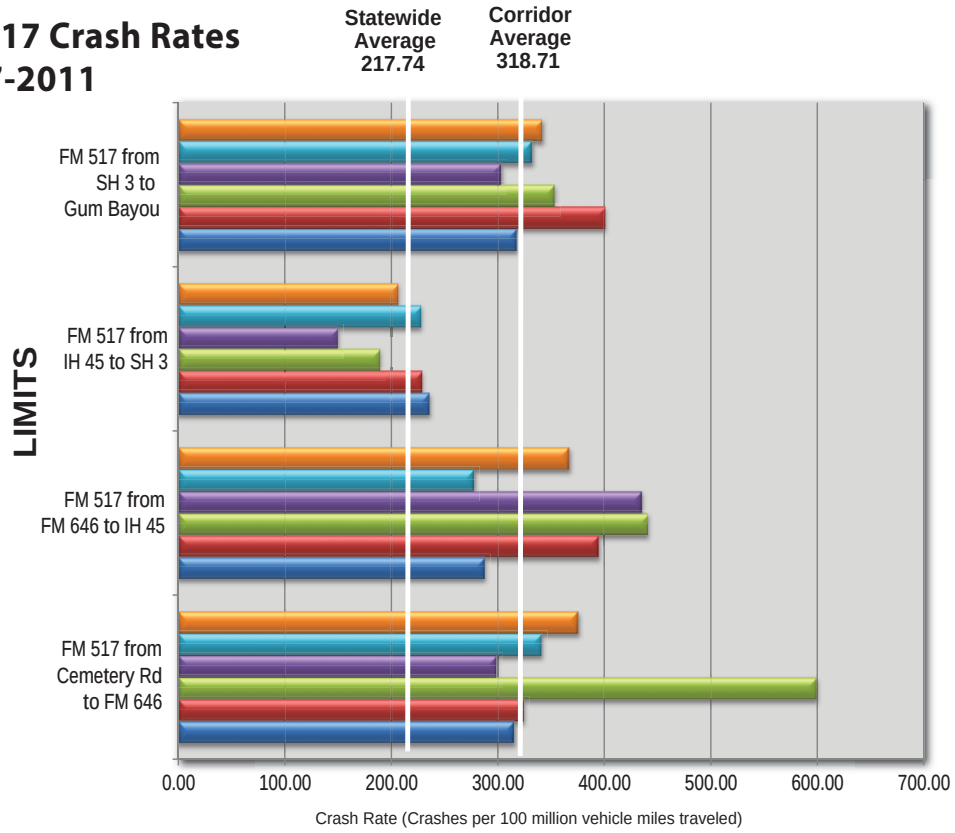
- **Improve Safety**
- **Improve Mobility and Accessibility**
- **Create Strategic Corridor Policies that Provide Guidance Without Hindering Development**
- **Development of a Multi-modal Corridor**
- **Maintain an Open Public Process**

Existing Conditions

Safety: Crash data compiled by H-GAC for 2007 through 2011 revealed 656 total crashes along FM 517 and 368 crashes along SH 3 with a range of injury severity. The crash rate for each corridor was calculated by using the total number of crashes, average daily traffic and segment length. The calculated crash rate by segment was compared to the statewide average crash rate for similar roadways. The FM 517 and SH 3 corridors exceeded statewide average crash rates on similar roadways by 46% and 78%, respectively. The charts on the following page depict the yearly comparison of average crash rates by segment of roadway from 2007 to 2011. The crash rate exceeded the statewide average both prior to and during the FM 646 construction.

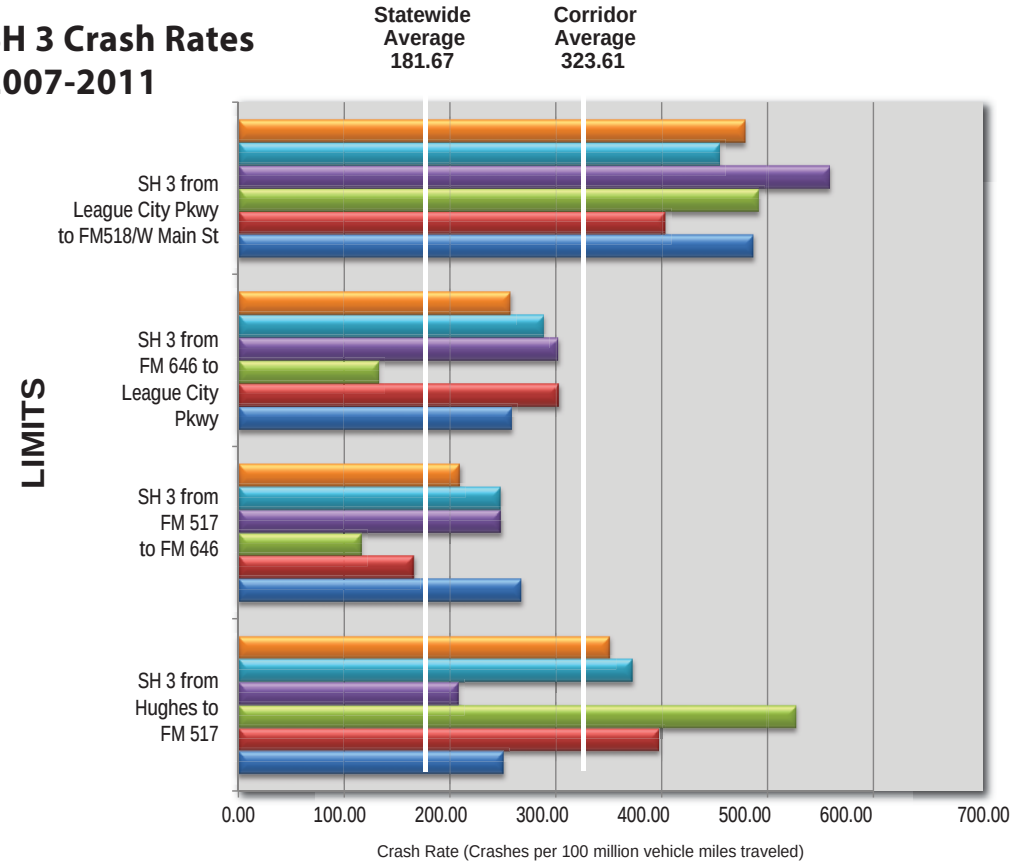
The study team documented crash hot spots by geographically analyzing the crash rate and collision type. The segments of FM 517 between FM 646 and IH 45 and SH 3 between Walker Street and FM 518 have historically resulted in the highest crash rates along both corridors. An analysis of the corridor collision types revealed that 40% of crashes on FM 517 and 32% of crashes on SH 3 were due to left turning and rear end conflicts. These types of crashes are typically attributed to roadways with two-way left-turn lanes and a high driveway density, which are characteristics that describe the majority of both corridors.

FM 517 Crash Rates 2007-2011



40% of crashes are due to left turning and rear end conflicts, which are typically attributed to two-way center left-turn lanes.

SH 3 Crash Rates 2007-2011



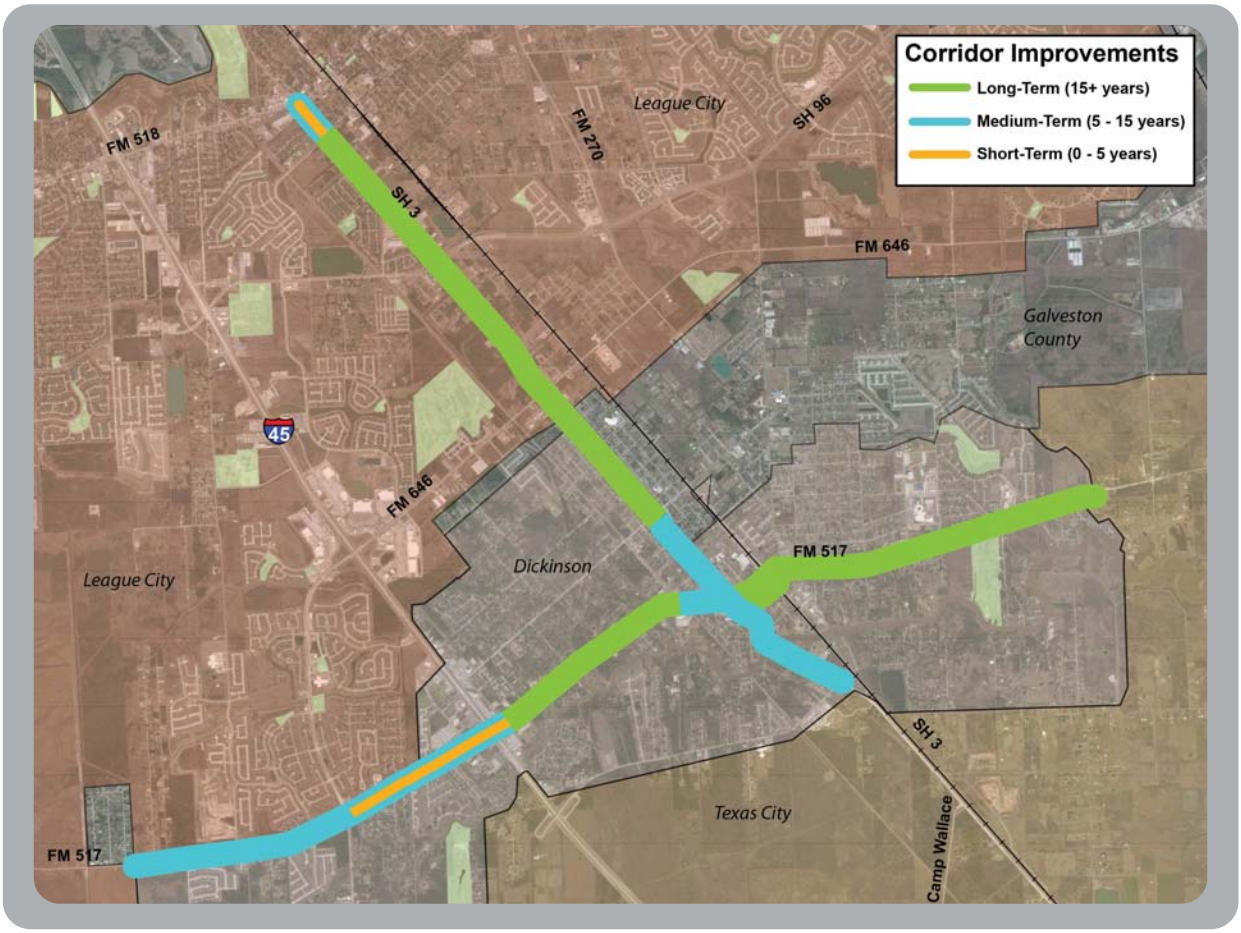
32% of crashes are due to left turning and rear end conflicts, which are typically attributed to two-way center left-turn lanes.

Congestion: The traffic operations for each signalized intersection and roadway segment was determined and summarized as Level of Service (LOS). LOS is an estimate of the amount of congestion experienced by drivers and serves as a measure of how well traffic moves. LOS ranges from level A, where vehicles travel freely along the corridor, to level F, where vehicles suffer heavy congestion and delay. The FM 517 segment between Kellner Road and IH 45 currently operates between LOS D and F during peak periods. SH 3 between Walker Street and FM 518 experiences LOS F conditions during the peak periods.

Generally, each person traveling along FM 517 and SH 3 is experiencing four minutes of delay in the morning and evening peak periods. Approximately 45% of the FM 517 corridor delay during the worst peak period is caused by congestion west of IH 45. The segment of SH 3 between Walker Street and FM 518 contributes to approximately 25% of the corridor delay during the worst peak period.

Implementation Plan

The recommendations in this chapter are a combination of tools to increase traffic safety and reduce vehicle delay Recommendations are based on valuable input from the public; the steering committee; and the stakeholder committees, focus groups, and public officials. The following figure describes the prioritization schedule based on the analysis and discussions throughout the public involvement process.



The planning approach to implementing improvements was divided into short-, medium-, and long-term improvements for each jurisdiction and each corridor. The following table describes the type of recommended improvement.

Recommended Improvements by Implementation Phase

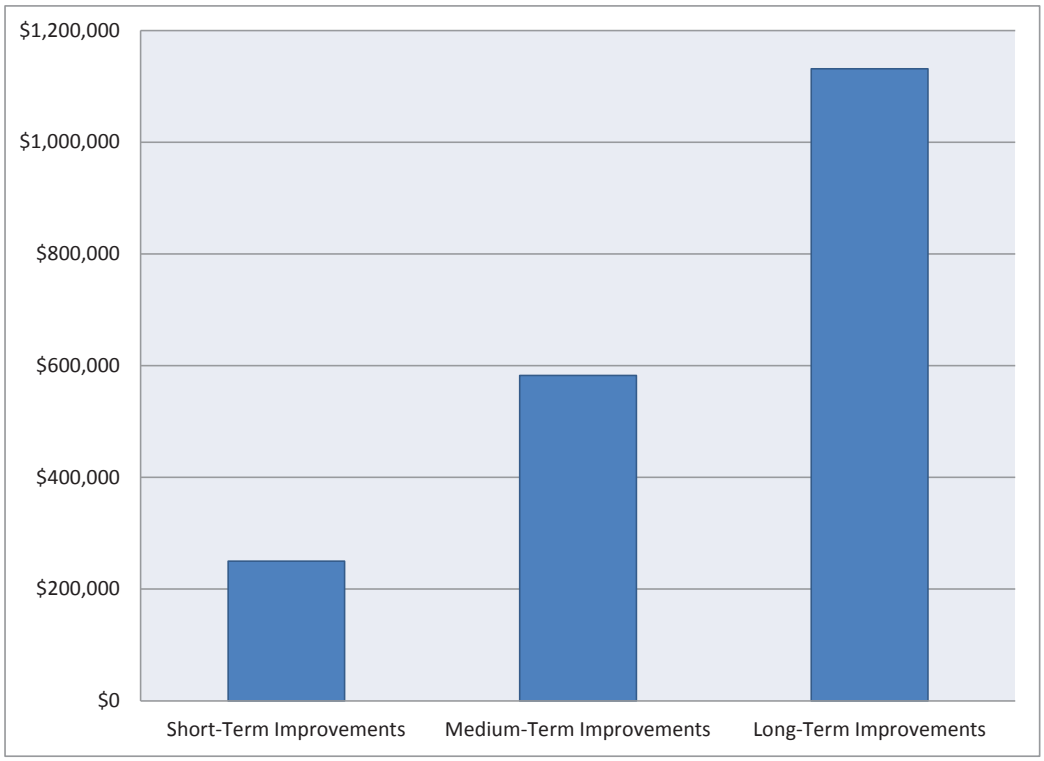
Improvement	Short-term (0-5 years)	Med-term (5-15 years)	Long-term (15+ years)
Intersection lane configuration and turn bay storage	X	X	
Upgrade intersection signal equipment	X	X	
Convert two-way left turn lane to a raised median	X	X	X
Add continuous sidewalks	X	X	X
ROW acquisition		X	X
Lane additions		X	
Side street realignment		X	X
Thoroughfare planning	X		
Landscaping	X	X	X
Grade separation at intersections (by TxDOT)		X	X
Reconfiguration of IH 45 ramps (by TxDOT)		X	
Dictated by future development plans			X

* Funding not yet identified for any projects

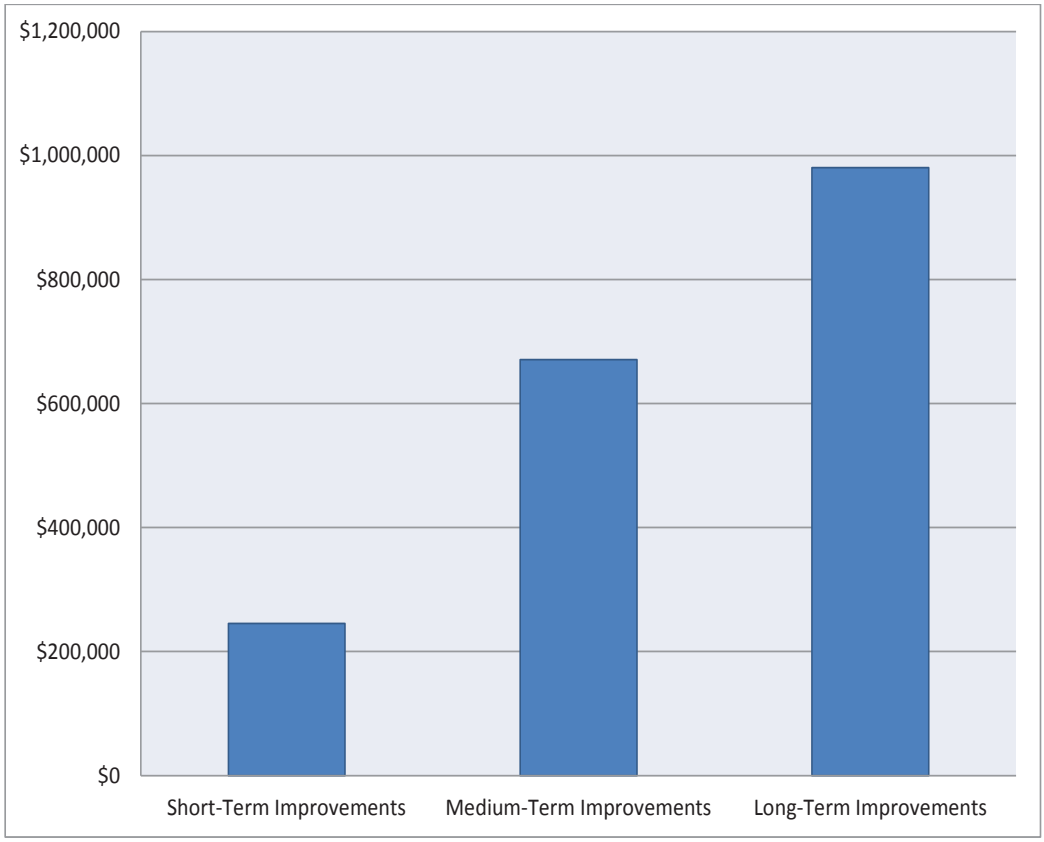
Project Results

Safety: Reducing the number of conflict points with the application of a raised median can significantly reduce crashes. In addition to vehicular safety, pedestrian safety is also improved when a nontraversable median is installed. Providing a raised median and refuge area, especially midblock, has demonstrated a 40% reduction in pedestrian crashes according to Federal Highway Administration (FHWA). Although no pedestrian crash data is available on either corridor, this safety enhancement to pedestrian mobility is another noteworthy benefit. According to the Transportation Research Board Access Management Manual, the conversion of a two-way center left-turn lane to a nontraversable raised median is projected to decrease the number of crashes by 30%. The figures on the following pages quantify the estimated annual crash cost savings for the short-, medium-, and long-term recommendations.

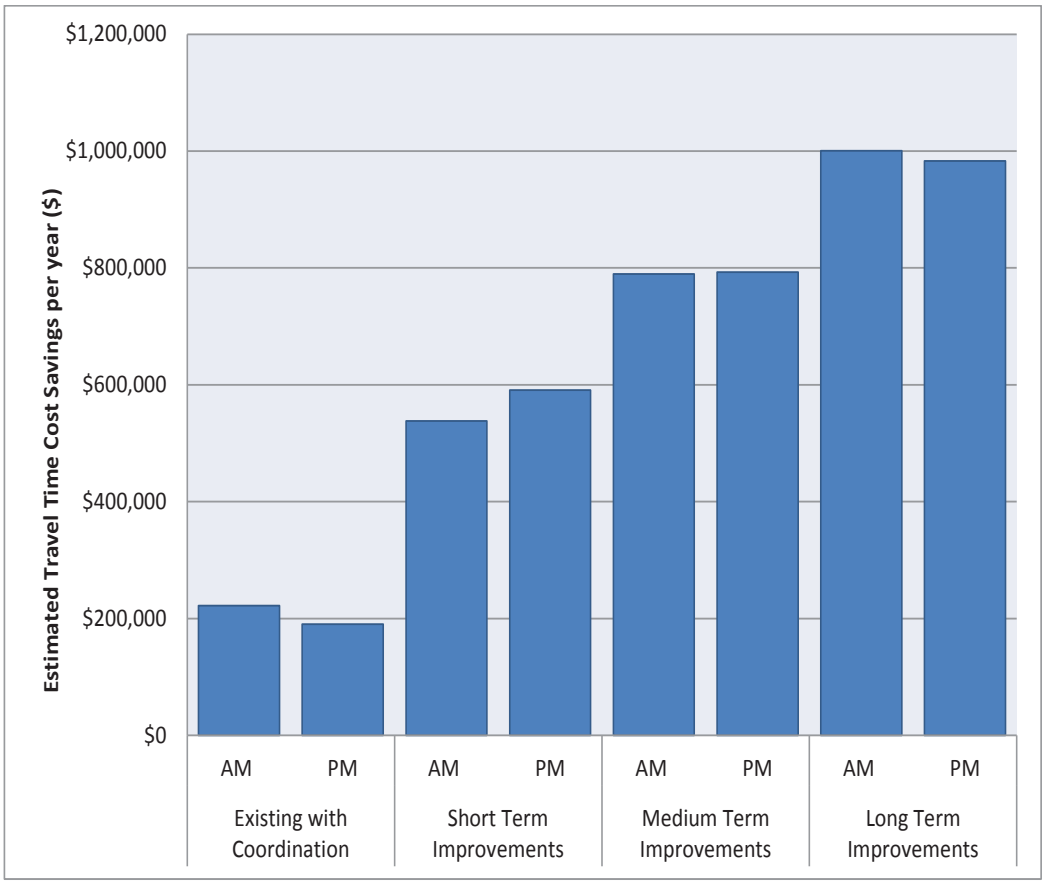
Congestion: Travel time savings was the key measure of effectiveness used to evaluate mobility benefits for each corridor. The value of time was applied to the estimated travel time savings for each corridor to project a travel time cost savings. The travel time cost savings for FM 517 was calculated as approximately $1,000,000 in the AM peak hour and $980,000 in the PM peak hour annually. Travel time savings for SH 3 was calculated as approximately $375,000 in the AM peak hour and $655,000 in the PM peak hour.



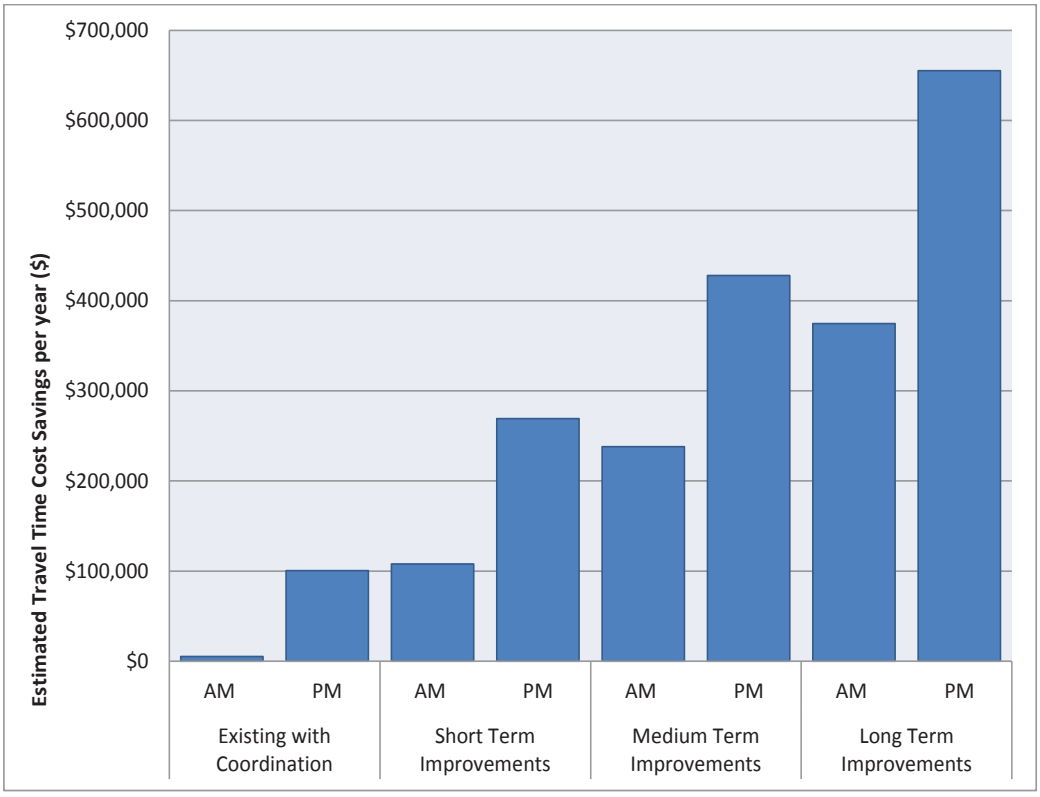
FM 517 Estimated Annual Crash Cost Savings



SH 3 Estimated Annual Crash Cost Savings



FM 517 Travel Time Cost Savings Per Year



SH 3 Travel Time Cost Savings Per Year

Multi-modal connections: Increased pedestrian accessibility to the corridor is a significant component of the proposed recommendations. Shared-use lanes, sidewalks, and planned bike routes are facilities through which pedestrians will have increased safety, as well as mobility.

In total, the FM 517 corridor is recommended to receive 4.4 miles of new sidewalks: 1.8 miles in the short-term and 2.6 miles in the medium-term. The SH 3 corridor is recommended to receive a total of 6.5 miles of new sidewalks.

In addition to sidewalks, shared-use lanes are recommended for the length of both corridors. Shared-use lanes are lanes constructed wide enough (at least 14 feet) so that a vehicle and a bicyclist can use the lane concurrently. With the proposed recommendations, FM 517 would receive 6.7 miles of new shared-use lanes, and SH 3 would receive 5.0 miles of shared-use lanes.

Air Quality: Once implemented, the recommendations outlined in this plan will contribute to the region meeting clean air goals and improve quality of life.

Action Plan

The study recommendations and action plan is the product of a comprehensive public involvement process, coordinated effort among all interested parties, and continuation of the partnerships needed for success. The following tables summarize the short-, medium-, and long-term estimated costs for each jurisdiction.

Summary of Estimated Costs			
FM 517			
Improvement Phases	TxDOT	City of Dickinson	City of League City
Short-Term (0-5 years)	$1,330,000 - 1,380,000	$20,000	$0
Medium-Term (5-15 years)	$14,744,000	$10,000 - 60,000	$5,000 - 30,000
Long-Term (15+ years)	$9,700,000	$90,000	$0
Total	$25,824,000	$170,000*	$30,000*

*Depends on cost of landscaping and aesthetics

Summary of Estimated Costs				
SH 3				
Improvement Phases	TxDOT	City of Dickinson	City of League City	Galveston County
Short-Term (0-5 years)	$8,223,000 - 8,253,000	$0	$5,000 - 30,000	$0
Medium-Term (5-15 years)	$5,511,000	$5,000 - 30,000	$5,000 - 30,000	$0
Long-Term (15+ years)	$7,876,000	$5,000 - 30,000	$5,000 - 30,000	$0
Total	$21,640,000	$60,000*	$90,000*	$0

*Depends on cost of landscaping and aesthetics

The success of the FM 517/SH 3 Corridor Access Management Plan is depends on the formation and strength of partnerships among the variety of involved entities. This section seeks to clearly identify the roles and responsibilities of each agency in meeting the goals of this study.

Steps	*Agency*
1. Policy board acceptance of FM 517/SH 3 study	H-GAC
2. Adopt FM 517/SH 3 Corridor Access Plan by ordinance	Cities
3. Implement system-wide signal retiming	TxDOT
4. Secure funding for short-term improvements	Cities, H-GAC and TxDOT
5. Coordinate with TxDOT for median aesthetics	Cities
6. Perform design for short-term improvements	TxDOT
7. Implement short-term improvements	TxDOT
8. Secure funding for medium-term improvements	H-GAC and TxDOT
9. Perform environmental documentation and schematic design	TxDOT
10. Perform detailed design of medium term improvements once environmental documentation approved	TxDOT
11. Implement medium-term improvements	TxDOT
12. Program long range thoroughfare improvements	Cities
13. Secure funding for long-term improvements	H-GAC and TxDOT
14. Perform environmental documentation and schematic design	TxDOT
15. Perform detailed design of long-term improvements once environmental documentation approved	TxDOT
16. Update comprehensive plans and subdivision standards	Cities