5.1 Introduction

The transportation system is an integral part of Webster's sustainability and vitality. Roadways, trails, sidewalks, and bike paths facilitate all those that travel in and out of the City. A well-functioning transportation system is a current and future indicator of the City's economic health and presents an opportunity for Webster to further brand itself and stand out from other communities.

The City of Webster's relatively small size ensures partnerships with Harris County, Texas Department of Transportation (TxDOT), and other mutually benefiting agencies. It is important to consider Webster as part of a larger regional transportation network. This larger network means that Webster must continually work with neighboring communities, focus on maintaining and improving partnerships, and lobby for roadway projects that increasingly improve the Clear Lake Area. The City of Webster owns all residential streets within the City, and several commercial roadways such as NASA Parkway, Blossom, Orchard, a portion of Texas Avenue, Genesis Boulevard, and many others. Harris County maintains major corridors, such as Bay Area Boulevard, Medical Center Boulevard, and El Camino Real. TxDOT owns and maintains Interstate 45, Highway 3, FM 270/Egret Bay Boulevard, and NASA Road 1 Bypass (Figure 5.1, p. 28).

Opportunities exist to improve the City of Webster's transportation system, potentially resulting in enhanced "curb appeal," economic vitality, branding, and multi-modal activities. Webster will continue to benefit from partnering on roadway projects within the City's limits, regardless of ownership.

5.2 Current Transportation Patterns and Projects

Much of Webster's land use consists of restaurants, offices, medical, retail, and entertainment, all of which attract a substantial draw to those outside of the City. The City's prime location, and the fact that Webster operates as the "central business district of Clear Lake," means the City's roadways are traveled extensively. Interstate 45, Bay Area Boulevard, NASA Parkway, Highway 3, Medical Center Boulevard, Texas Avenue, FM 270/Egret Bay Boulevard, and the NASA 1 Bypass constitute the more heavily traveled arteries.

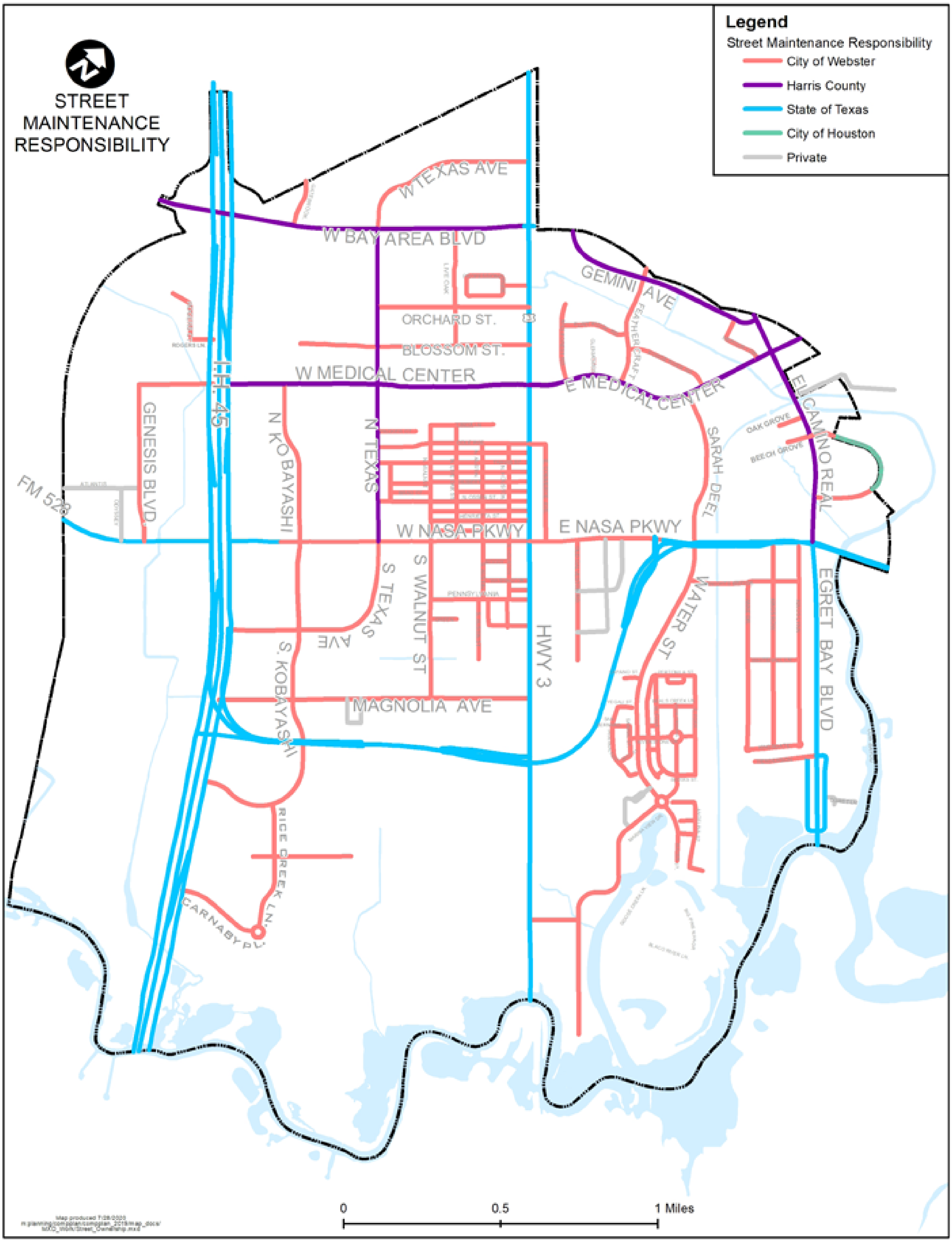
In Webster, the Public Works Department improves and maintains City-owned streets, sidewalks, easements, signage, streetlights, and landscaping. Since the City contains roadways not owned by Webster, partnerships with the Texas Department of Transportation and Harris County are essential in enhancing and maintaining the more traveled arteries within the municipality. The benefit of these partnerships is seen through past and current joint projects, such as the recently funded road and landscaping improvements on Highway 3, the NASA Road 1 Bypass, and the future NASA Bypass extension.

One current trend in Webster's transportation initiatives is the implementation of shared-use paths, as studies show the benefits biking, walking, and running have on physical and mental health (as well as the environment). In 2018, two shared-use path projects, one on NASA Parkway that extends from the western boundaries of the City to Kobayashi Road, and another on FM 270/Egret Bay Boulevard that spans from NASA Parkway to the FM 270/ Egret Bay Boulevard bridge, were constructed through a partnership with TxDOT. This plan has ambitious goals for increasing the shared-use paths within the City, a portion of which will facilitate a more tangible connection with Clear Creek.

5.3 Thoroughfare Plan

A thoroughfare plan dictates the design of roadways within the City. This plan establishes a hierarchical system of roadways from the largest capacity (such as freeways and arterials) and then funnels traffic to the smaller roadways such as collectors and local roads. Thoroughfare system planning is the process of ensuring coordination and development of the most efficient and appropriate street and sidewalk systems for existing and future

Figure 5.1 - Street Maintenance Responsibility



transportation demand. The primary objective is to secure and plan for adequate rights-of-way and easements needed for development, expansion, enhancement, and redevelopment.

Webster's Thoroughfare Plan provides for various roadway types and routes throughout the City. Additionally, there are planned roadways that will occur when necessary for development or the City dictates their construction. The plan serves as a template for right-of-way dedication or roadway construction if the project is impactful enough to warrant. The Thoroughfare Plan does not include private streets or local roads as these streets are the lowest denominator of a roadway system (Figure 5.2, p. 30).

5.3.1: Thoroughfare Plan

Webster's existing and future thoroughfare system is displayed in Figure 5.2 (p. 30) – Thoroughfare Plan. In this planned thoroughfare system, the network of freeways, arterials, and collectors, are designed to facilitate current and future mobility in the municipality and region. For future growth, this Plan depicts existing and prospective thoroughfare alignments and must be considered during the platting of subdivisions, the dedication of rights-of-way, and the construction of roadways. Since City ordinances specify design criteria, and development dictates how local roads will connect to collectors and arterials, this plan will not focus on residential streets, private streets, or minor commercial roadways.

5.3.2: Types of Roadways

Within its 6.7 square miles, Webster accommodates five types of roadways; freeway, major arterial, minor arterial, major collector, and minor collector. In hierarchical form, roadways are categorized by traffic volume, dimensions, access, and purpose. A definition of each type of roadway, with accompanying examples, reveals attributes of Webster's thoroughfare system.

5.3.3: Freeway

Webster encompasses 3.08 miles of Interstate 45 with three exits; Bay Area Boulevard, NASA Parkway, and NASA Road 1 Bypass. The freeway accommodates the most substantial volume of traffic in the City, as the average daily traffic count amounts to 250,000 vehicles per day with a speed limit of 65 miles per hour. TxDOT is in the process of enhancing and widening the entire I-45 corridor and has recently completed the highway sections within the Webster city limits.

5.3.4: Major Arterial

A major arterial, with a right-of-way of 120 feet, is the second-largest roadway section within the City and accommodates the second-largest volume of traffic – examples include Bay Area Boulevard, NASA Parkway, and Highway 3 (Figure 5.3). Major arterial roadways contribute to the City's image and economic vitality. Streetscapes, lighting, sidewalks, landscaping, medians, signage, mobility, and access to major arterials play a significant role in accident prevention, enhancing the overall perception (visual cognition and scenic appeal) of a roadway, and business retention, expansion, and recruitment. For example, Bay Area Boulevard features a landscaped median to enhance aesthetics and reduce risks of head-on collisions. Moreover, businesses depend on the mobility and access afforded by left-turn lanes on major arterials. Both Bay Area Boulevard and NASA Parkway offer left turn lanes which increase mobility and access to businesses. Bay Area Boulevard allows offset left turn options, while NASA Parkway provides a continuous center turn lane from Interstate 45 to Highway 3.

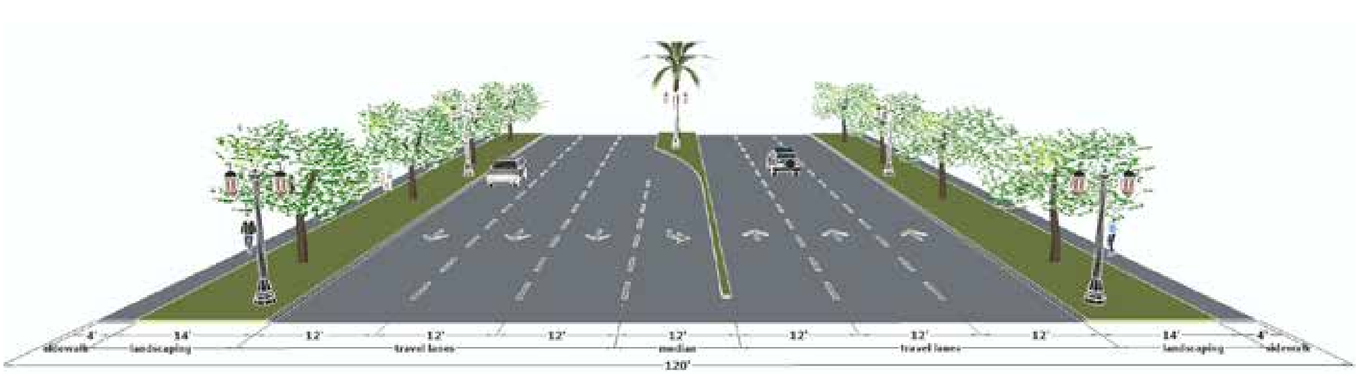
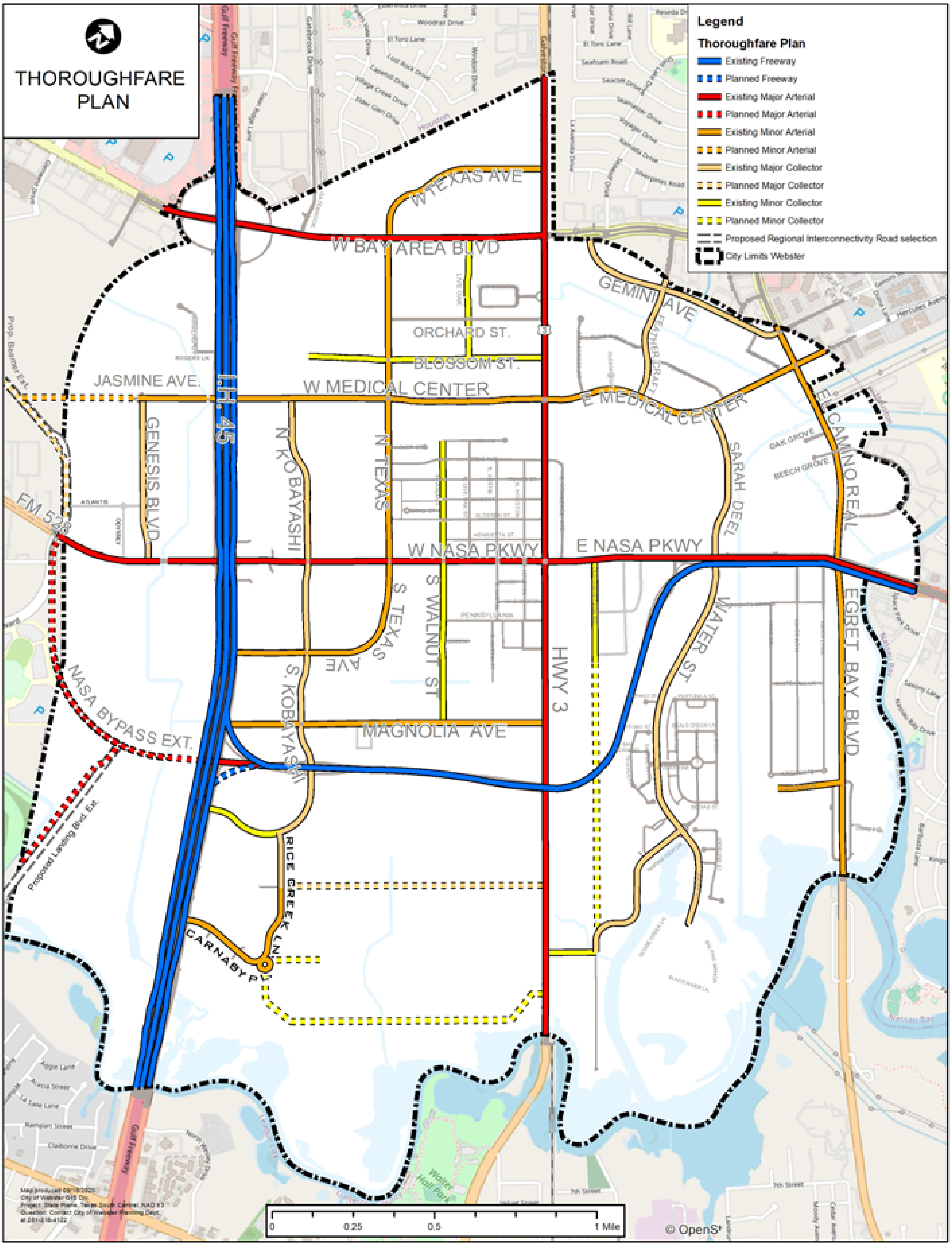


Figure 5.3 - Major Arterial Right-of-way with Median

Figure 5.2 - Thoroughfare Plan



5.3.5: Minor Arterial

A minor arterial, with a right-of-way of 100 feet, is the third-largest roadway section in Webster, therefore not as heavily trafficked as a major arterial (Figure 5.4). In Webster, minor arterials include Medical Center Boulevard, Texas Avenue, and FM 270/Egret Bay Boulevard. As with major arterials, many factors contribute to the "curb appeal" of the corridor, which influences planning and business decisions.

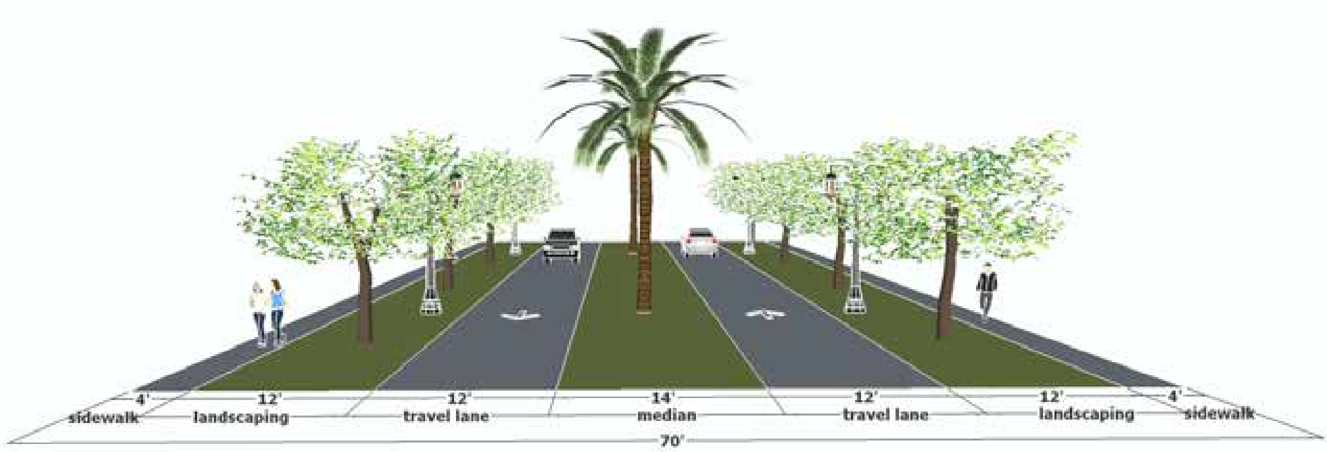


Figure 5.4 - Minor Arterial Right-of-way with Median

5.3.6: Major Collector

A major collector, with an 80 foot right-of-way, is designed to distribute traffic from roadways that accommodate higher vehicular volume (Figure 5.5, p. 32). Examples of major collectors include Kobayashi Road, Feathercraft Lane, Sarah Deel Lane, and Gemini Avenue. Based on its right-of-way width, major collectors can accommodate a landscaped median.

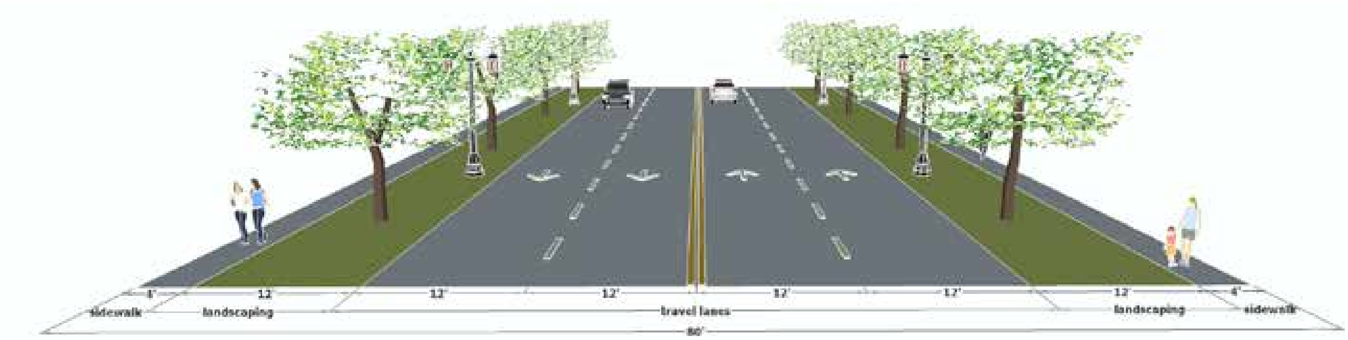


Figure 5.5 - Major Collector

5.3.7: Minor Collector

A minor collector, with a right-of-way of 60 feet, transports traffic to and from major collectors, minor arterials, and major arterials (Figure 5.6). Minor collectors within Webster include Blossom Street and Live Oak Street. These roadways afford only one travel lane in each direction. As is the case with most urban roadways, economic development and population growth outpace antiquated corridors. This is apparent with several minor collectors such as Blossom and Live Oak Streets.

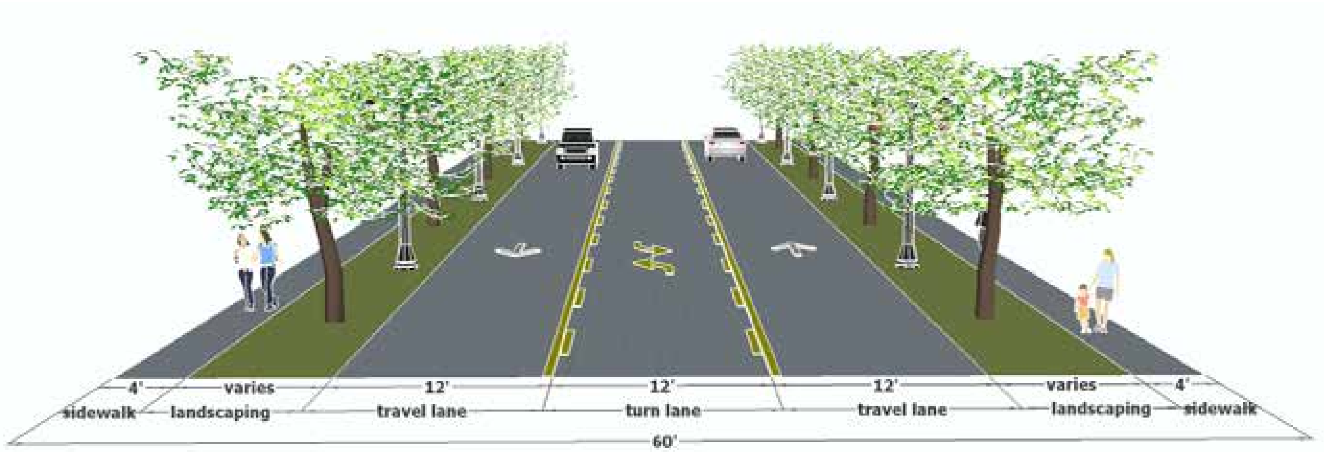


Figure 5.6 - Minor Collector

5.4 NASA Road 1 Bypass Extension and Beamer Road

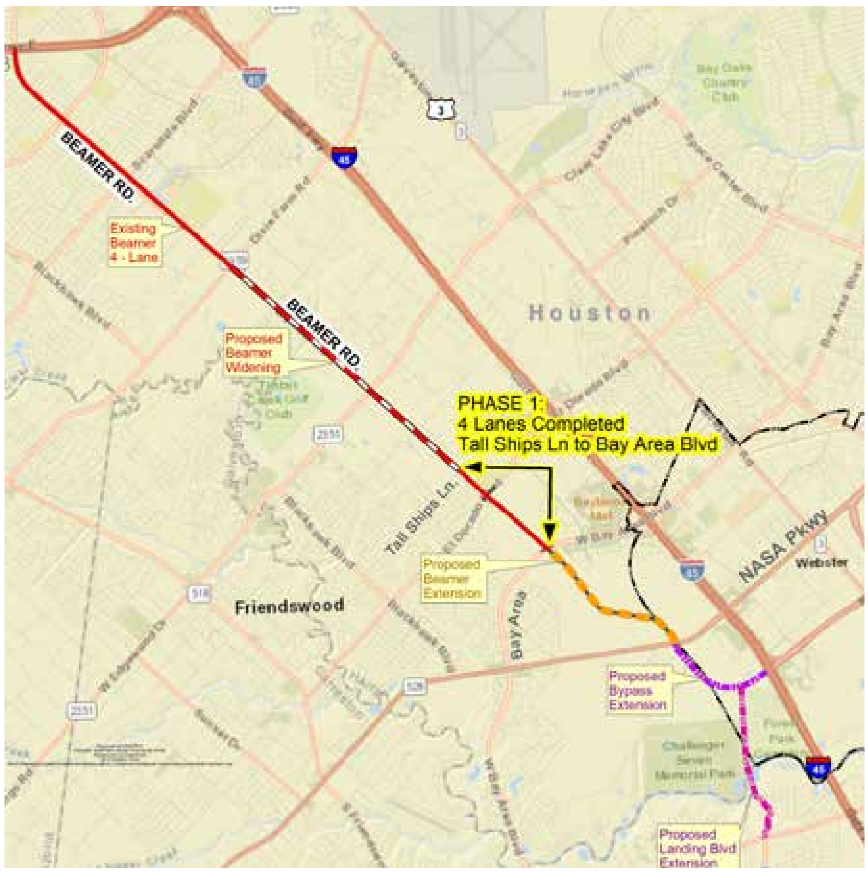


Figure 5.7 - Future Beamer Road Extension

The City of Webster's connection to Beamer Road via the NASA Road 1 Bypass Extension is a local and regional mobility project planned since the year 2000. This corridor will join NASA Road 1 Bypass to the west side of Interstate 45, connect to the north to Beamer Road, and intersect with NASA Parkway, Bay Area Boulevard, El Dorado, and Tall Ships. Beamer Road is becoming another major north/south roadway connection within the Clear Lake Area. The Beamer Road Extension Phase I has been completed connecting Beltway 8 in Houston with Bay Area Boulevard. League City has planned for a connection to the NASA Road 1 Bypass Extension (via Landing Boulevard), and Houston has planned for Beamer Road to extend south to connect to the future NASA 1 Bypass Extension (Figure 5.7).

The initial phase of the NASA Road 1 Bypass, a TxDOT project in which the City of Webster provided extensive assistance in utility relocations, was completed in 2008. The second phase, planned for the near future, is the NASA Road 1 Bypass Extension. This planned roadway will provide a new north/south route for a growing, super-regional population. Both the NASA Road 1 Bypass Extension and Harris County's Beamer Road Extension are considered integral for mobility, economic development, and emergency evacuation.

5.5 Bikeways and Pedestrian Routes

Bicycle and pedestrian routes not only provide an alternative mode of transportation but also serve the recreational needs of constituents. Eliminating barriers to bicycle and pedestrian mobility is a significant feature in cycling and pedestrian planning. Freeways, major arterials, railroads, water features, and topography can impose significant barriers in access and mobility. As cities grow and multi-modal improvements become more feasible, designated bicycle routes, on-street bikeways, and off-street hike and bike trails should be developed to link major attractions and destinations throughout the community.

5.6 Pedestrian Walkways and Sidewalks

Pedestrian walkways, sidewalks, and crosswalks are part of the City's existing transportation system to accommodate pedestrian activity in residential neighborhoods, commercial business areas, and around schools, parks, and other community facilities. Opportunities exist to increase the number of sidewalks while enhancing pedestrian and bicycle safety throughout the community (Figure 5.8, p. 34)

5.7 Bikeway Plan

In anticipation of the increasing number of cyclists, a bikeway plan is a vital component of the City's transportation plan to promote bicycle commuting and recreation, provide linkages among community facilities and employment centers, and to ensure safe routes with adequate striping and right-of-way. The State recognizes bicycles as a vehicle with all the responsibilities and rights of roadway use provided to motor vehicles. As such, cyclists can legally ride on any street in Webster, with the exception of Interstate 45 where it is prohibited by State law.

Just as there are five types of roadways in Webster for motor vehicles, these same types exist for cyclists. Certain types of roadways are more attractive to cyclists than others due to factors such as traffic volume, speed, street design, and location.

Local and collector streets are suitable for use by most adult bicycle riders, while minor arterial streets are suitable for limited use by bicyclists due to higher traffic volumes and speeds. Arterials, especially those with shoulders wider than four feet, attract sport cyclists interested in longer-distance travel with fewer interruptions. Typical sections for different bikeway classifications are displayed in Figures 5.9–5.11 (pp. 33 & 35). Like natural amenities found in its creeks, parks, and recreation areas, Webster has various rights-of-way and easements that present opportunities for the future development of bicycle and pedestrian facilities, such as projects that incorporate multi-use trails and scenic beautification areas.

The integration of bike facilities with adjacent communities and entities is another factor for consideration in further developing a bikeway plan. Through connecting Webster's bike facilities with other communities, a regional bike system can be built.

5.7.1: Bike Lane

Bicycle lanes are the most commonly used bike facility in Webster. A bicycle lane typically consists of a 4 foot to 5 foot wide lane adjacent to the slow traffic lane. An example of a bicycle lane found in Webster can be observed on NASA Parkway (Figure 5.9).

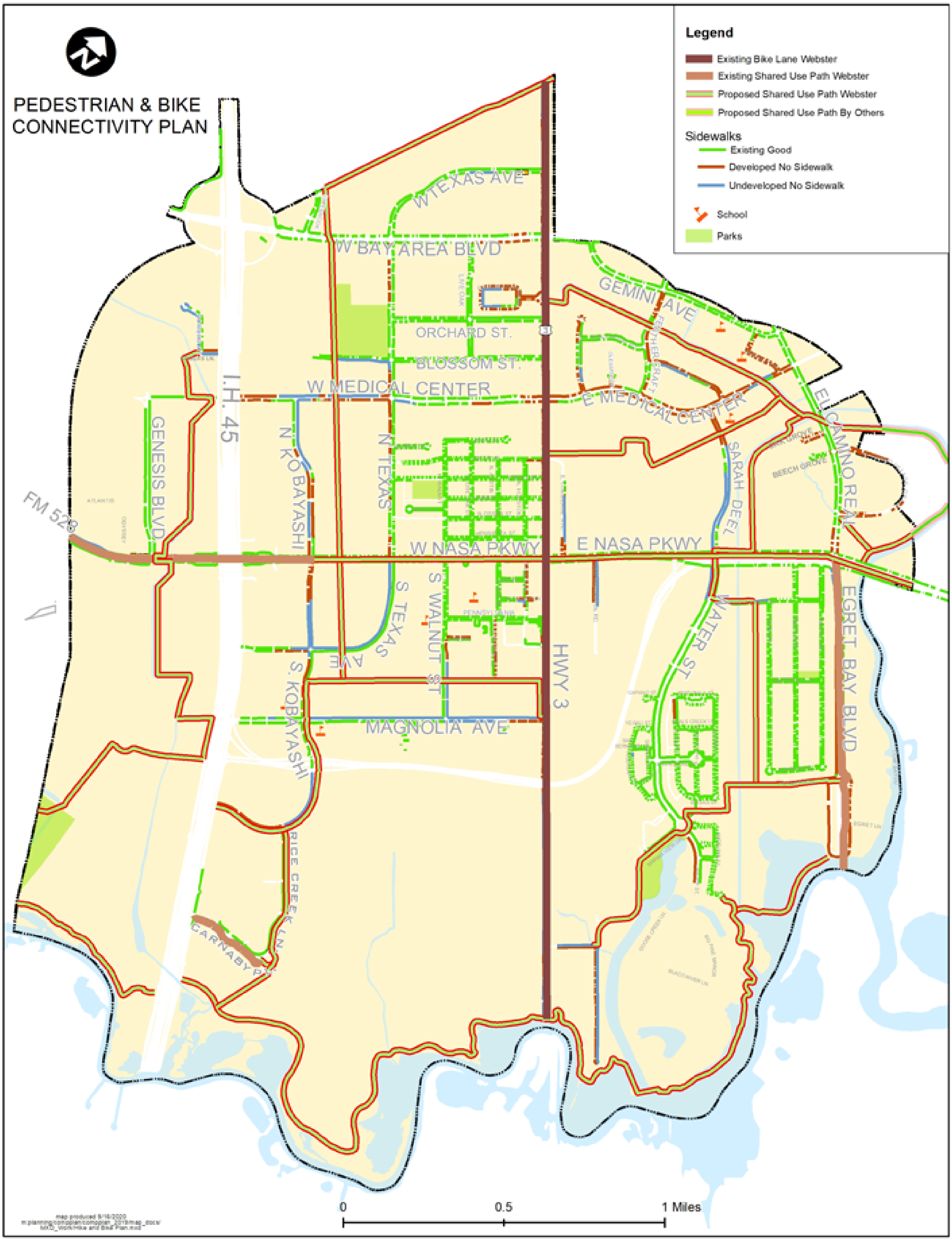
Figure 5.9 - Bicycle Lane

5.7.2: Hike and Bike Trail & Shared-Use Path

A hike and bike trail (Figure 5.10) facilitates the recreational needs of constituents within the City. These trails are commonly found adjacent to bayous or creeks; used by walkers, joggers, runners, and bicyclists. For pedestrians and bicyclists to use these trails simultaneously, the ideal width needs to be approximately 12 feet. The City of Webster has completed trails on FM 270/Egret Bay Boulevard and a portion of NASA Parkway, resulting in the beginning stage of a hike and bike system similar to those existing throughout the Houston area.

Figure 5.10 - Hike and Bike Trail

Figure 5.8 - Pedestrian Walkways and Sidewalks



5.7.3: Sharrow

Another option for bicycle facilities in Webster is a wide curb lane, also known as a “sharrow” (shared-lane pavement marking). With this extra-wide 15 foot traffic lane, cyclists use this space in locations where there is not enough right-of-way for a bicycle lane. Sharrows afford the rider the ability to safely ride within the lane, while still allowing a motorist an opportunity to pass. This type of bike facility has not been developed in Webster, but is used in the Houston region (Figure 5.11).

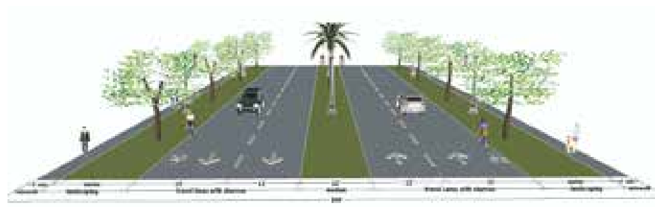


Figure 5.11 - Sharrow Lane

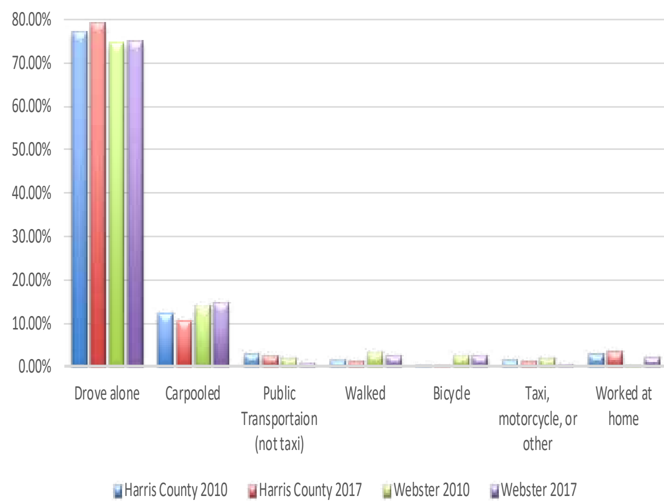
5.8 Public Transportation

The Metropolitan Transit Authority (METRO) provides fixed-route bus service throughout the region. Park and Ride facilities located outside of the City of Webster, on Bay Area Boulevard and El Dorado Boulevard, are available for Webster residents. These facilities provide transportation to downtown Houston, NASA Space Center, Fuqua Park and Ride, and the Eastwood Transit Center. Webster does not have any other public transit within its boundaries but is a part of the Houston-Galveston Area Council (H-GAC), which is the metropolitan transportation planning organization in the 13 county Houston-Galveston area.

H-GAC’s Transportation Policy Council approves the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP). H-GAC is involved in thoroughfare planning, hurricane evacuation planning, mobility, and air quality programs for the region. Webster is also a member of the Bay Area Transportation Partnership (BAYTRAN). This organization, which serves parts of three counties constituting Bay Area Houston, over 30 communities, and one million residents, provides information to communities and businesses regarding transportation initiatives.

5.8.1: Commuting Patterns

Currently, the dominant form of transportation within the City of Webster is individual commuters in cars, trucks, or vans. However, according to the U.S. Census American Community Survey, the Webster community utilizes carpooling more than the average for Harris County (Figure 5.12). There are also a fair amount of residents who are able to work from home, greater than the Harris County average.



Source: 2017 American Community Survey

Figure 5.12 - Commuting Patterns

In Webster, minor arterials include Medical Center Boulevard (shown here), Texas Avenue, and FM 270/Egret Bay Boulevard.

5.9 Vision, Goals, and Actions

The Comprehensive Plan stakeholders formulated a vision, series of goals, and actions to serve as a framework for the implementation of the transportation chapter. The vision statement below was prepared as a foundation for the goals and actions that follow. These goals and actions are numbered for reference purposes only and do not suggest a priority.

Vision: Foster a thoroughfare system that provides safe and efficient movement of goods and people and alternative modes of transportation, while also protecting the integrity and security of neighborhoods.

Goal 5.1 – Mobility: Establish a hierarchy of thoroughfare classifications that facilitate the safe and convenient flow of traffic throughout the community.

Action 1. Acquire additional rights-of-way to facilitate turn lanes and acceleration/deceleration lanes to provide increased traffic capacity and mobility at intersections.

Action 2. Adopt access management regulations on arterial roadways for driveways, street connections, medians, median openings, auxiliary lanes, on-street parking, traffic signals, turn lanes, and pedestrian and bicycle facilities.

Action 3. Require traffic impact studies and mitigation actions for large scale development proposals.

Action 4. Collaborate with TxDOT, H-GAC, and Harris County, in achieving desired infrastructure improvements in conformance with the Thoroughfare Plan.

Goal 5.2 - Multi-Modal Transportation: Promote alternative modes of transportation and related facilities, including pedestrian and bicycle routes.

Action 1. Fund and construct a comprehensive pedestrian and bicycle system to serve both recreational and alternative transportation needs.

Action 2. Pursue Federal and State financial assistance grants for pedestrian and bicycle transportation projects.

Action 3. Continue aggressive enforcement of speed limits and other traffic laws near schools, parks, and residential areas.

Action 4. Prioritize sidewalk projects to promote connectivity.

Goal 5.3 - Branding and Beautification: Plan for the increasing demand for transportation facilities while preserving and enhancing the attractiveness of the environment.

Action 1. Plan and acquire right-of-way for thoroughfares to include open space areas, buffer zones, and aesthetic enhancements.

Goal 5.4 - Recreation and Health: Provide shared-use paths that incorporate the natural environment with overlooks, nature information, and natural plantings.

Action 1. Design shared-use paths with a special focus on incorporating overlooks and opportunities for learning for the community.

Action 2. Partner with non-profit groups to include a direct connection to nature along shared-use paths, in particular those adjacent to Clear Creek.

Goal 5.5 - Private Roadways and Driveways: Provide opportunities for commercial developments to utilize private roadways or shared drives, instead of local roads maintained by the City.

Action1. Work with developers to allow private roadways or roadway easements to provide for access to parcels.

Action 2. Ensure that the property owners maintain driveways or private roadways by the use of an association that collects dues for maintenance.