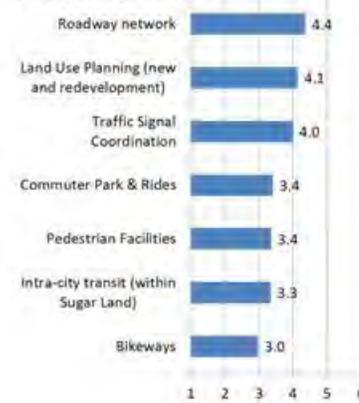




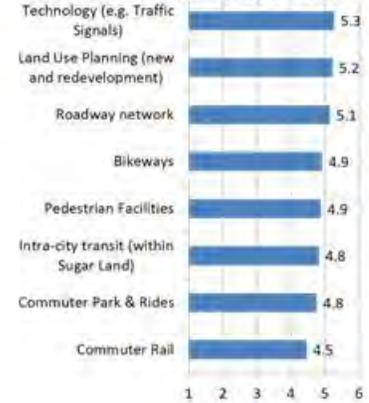
Goal 1: Predictable, Acceptable Travel Times, Increasing Connectivity Within the Sugar Land Area

Residents believe that roadways and technology are critical elements of providing Superior Mobility both now and in the future. A key element in achieving this goal includes evaluating the existing roadway network and identifying operational improvements, both physical and technological, that will maximize the efficiency of the roadway network. The City should also identify opportunities to maximize the effectiveness of the roadway system by creating new connections across

Q3. Today, how effective is each of the following at providing Superior Mobility for the City of Sugar Land?



Q4. How important is each of the following at providing Superior Mobility in Sugar Land in the future (For example in the year 2035)?



physical barriers and between neighborhoods and destinations. In planning for future developments, the City should ensure that an adequate roadway network - one that provides connectivity - is constructed in conjunction with new development inside the City Limits. The City should also influence the development of the roadway network and land use patterns in the ETJ, to the extent possible. Development in the ETJ will impact mobility in Sugar Land and, one day, the ETJ will be part of the City. Strategies and initiatives have been identified to assist the City in improving the effectiveness of the roadway network in providing Superior Mobility, not only for automobiles, but also for other modes of transportation are discussed in the following paragraphs.

Strategies for Providing Predictable, Acceptable Travel Times, Increasing Connectivity in the Sugar Land Area

Strategy #1: Optimize the roadway network to meet the continued City and regional goals.

Initiative 1A: Periodically reevaluate access management policies and implement on key corridors as redevelopment occurs.

The City has constructed, or is in the process of constructing, access management improvements along SH 6, including:

- Straightening out the lanes and lengthening turn lanes at the intersection of SH 6 and US 59
- Construction of a median on SH 6 from Voss Road to Dulles Road; an improvement identified in the SH6 Access Management Study from FM 521 to IH 10 conducted by Houston-Galveston Area Council



Some of the retail/commercial centers on SH 6, as well as along other major corridors, are partially vacant and will be redeveloped over time. The City should take advantage of opportunities to implement access management policies, such as consolidation of driveway and/or median openings and promotion of shared driveway access, as redevelopment of sites occur. Access management policies should be reevaluated periodically to incorporate new access management technologies and strategies.

Initiative 1B: Initiate plans for accommodating development and associated traffic south of the Brazos River

Currently, only existing thoroughfares and collectors are identified in the ETJ on the *Major Roadway Plan*. The Major Thoroughfare Plan Update should include a network of thoroughfares and collectors in the ETJ. If an adopted Thoroughfare Plan is not in place that illustrates major thoroughfares and collector corridors, it could be difficult for the City to require developers to dedicate right-of-way and construct the necessary thoroughfares and collectors that will provide the roadway connectivity needed for mobility.

The updated Major Thoroughfare Plan should also include the evaluation of providing a new crossing of the Brazos River. As more development occurs in the ETJ, there could be a need to provide additional access across the Brazos River.

Initiative 1C: Identify collector streets on the Major Thoroughfare Plan to increase connectivity and reduce trip length



Existing collectors are shown on the *Major Roadway Plan*; however, general corridors for future collectors should be identified. If a network of collector streets is not planned, the City will likely miss the opportunity to provide linkages between neighborhoods and destinations in the future. The location of the collectors will be subject to change based on development plans, but the importance of providing an adequate collector system will be reflected on the Plan.

As learned from existing development in Sugar Land, the lack of connections between neighborhoods and between neighborhoods and destinations presents mobility challenges, particularly to bicyclists and walkers. Additionally, trip lengths for all modes are increased when there is an inadequate collector system. Trips that should be made on the collector system must be made on the major thoroughfare network, which in turn impacts the effectiveness of the major thoroughfare system in meeting mobility needs.

Initiative 1D: Work with regional partners to improve connectivity external to the City

The City should coordinate major thoroughfare planning and development with its regional partners on a regular basis (e.g., every two years) to ensure that a regional network of major thoroughfares is planned. Fort Bend County has an adopted Major Thoroughfare Plan, as does Missouri City, City of Houston and the City of Stafford.



The City of Houston and Fort Bend County recently went through a process to identify and address discrepancies between their thoroughfare plans, i.e., thoroughfare alignments and thoroughfare designations.

Regional facilities providing access to/from Sugar Land impact mobility for Sugar Land residents. The City should work with adjacent municipalities, Fort Bend County and TxDOT to ensure that traffic bottlenecks at intersections outside the City are addressed and incomplete roadways are extended or widened. For instance, University Boulevard extends through Sugar Land and Missouri City and Ransom Road is located in Sugar Land and the City of Richmond. Additionally, the City should work with its regional partners in identifying and constructing regional bicycle and pedestrian facilities.

Initiative 1E: Construct railroad grade separations at strategic locations

Currently approximately 32 trains travel on the UPRR Glidden line daily; the number is expected to increase to 70 by 2035. Additionally, the line will be double tracked, and potentially triple tracked. The mobility impacts associated with that volume of trains are significant. A railroad grade separation at Eldridge Road and the UPRR Glidden line is included in the Houston-Galveston Area Council (H-GAC) Regional Transportation Plan as an unfunded project. Other locations that have been mentioned for potential grade separation include the UPRR at University Boulevard, the UPRR at the proposed light industrial office park and the BNSF at the potential light industrial office park.

Construction of railroad grade separations would have a significant impact on the efficiency of the roadway network. If commuter rail is constructed along the US 90A corridor, grade separations would also mitigate the impact of commuter rail. The design and construction of railroad grade separated crossing should be designed to facilitate bicycle/pedestrian access.

Initiative 1F: Review City requirements for mitigating regional traffic impacts of development projects

The City’s current Traffic Impact Analysis (TIA) guidelines typically require assessment of the impacts of a development on the roadway network. The scope of the TIA is dependent on the size of the development, but typically the scope of the study would be limited to intersections within one mile from the site, or less. Infrastructure improvements, such as construction of turn lanes or installation of a traffic signal, may be required to mitigate the impacts associated with the development. The cumulative or regional impacts of several developments in one area over time cannot be captured by the Traffic Impact Analyses prepared for the individual developments. The

City should consider other methods of assessing mitigation of new development, such as a Transportation Impact Fee. A developer is assessed a fee typically based on a development unit e.g., number of lots or square footage of building. Funds

| Collection Amount Schedule (Excluding credits and discounts) | | | | | | |
|--|-------------------|------------------|--|---------|---------|------------------------|
| Land Use Category | ITE Land Use Code | Development Unit | Schedule 2: Collection Rates per Development Unit | | | |
| | | | U, B, C, D, E, F, G, I, J, K, L, O, S, T, U, X, Y, Z | AA | W | H, I, J, K, T, Q, R, V |
| Industrial: General Light Industrial | 110 | 1,000 SF GFA | \$1,215 | \$309 | \$594 | \$0 |
| Industrial: Industrial Park | 130 | 1,000 SF GFA | \$1,067 | \$272 | \$522 | \$0 |
| Residential: Single-Family Detached Housing | 210 | Dwelling Unit | \$2,000 | \$382 | \$733 | \$0 |
| Residential: Apartment / Multi-Family | 230 | Dwelling Unit | \$1,228 | \$243 | \$450 | \$0 |
| Office: General Office Building | 710 | 1,000 SF GFA | \$2,015 | \$513 | \$985 | \$0 |
| Office: Office / Business Park | 750 | 1,000 SF GFA | \$2,027 | \$516 | \$991 | \$0 |
| Dining: Restaurant with Drive-Through | 934 | 1,000 SF GFA | \$10,268 | \$2,613 | \$5,019 | \$0 |
| Other Retail: Free-Standing Retail Store | 815 | 1,000 SF GFA | \$2,817 | \$717 | \$1,377 | \$0 |
| Other Retail: Shopping Center | 820 | 1,000 SF GFA | \$1,973 | \$502 | \$964 | \$0 |
| Services: Bank (Drive In) | 912 | 1,000 SF GFA | \$10,172 | \$2,589 | \$4,972 | \$0 |

Comprehensive list of land uses and collection amounts available at www.fortworth.gov/impactfees

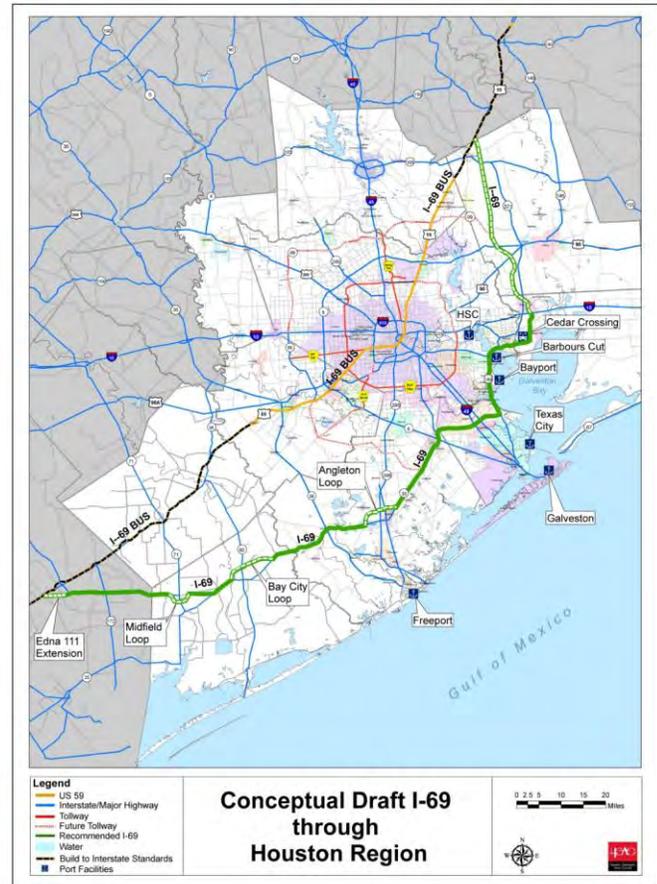
Source: Transportation Impact Fees Brochure Fort Worth, Texas



generated by the Transportation Impact Fee are used to fund new roadway construction and other transportation infrastructure.

Initiative 1G: Support efforts to relieve congestion on US 59, i.e., potential alignment of I-69 around Sugar Land

TxDOT formed five I-69 Segment Committees to provide input and recommendations to TxDOT regarding selection of the I-69 Corridor route in their areas. Segment Committees 2 and 3, which represent the greater Houston region, recommended the designation of existing US 59 as an I-69 Business Corridor. They also identified a second corridor as the I-69 corridor. The recommended I-69 corridor is located through the eastern portion of the Houston region. The principal reasons for selecting the corridor was to connect the ports in the region and provide a less congested, alternate north/south route for freight truck traffic. The majority of the route is not constructed to interstate standards. The City of Sugar Land should support the members of Segment Committees 2 and 3, H-GAC and others in furthering the adoption, planning, design and construction of the recommended US 59 Relief Route at Houston to reduce traffic volumes and congestion on US 59.



Strategy #2: Continue to actively manage Traffic Management/ITS systems

Initiative 2A: Establish Sugar Land Transportation Management Center as a satellite hub for connection between Transtar and Fort Bend County

The City is working with TxDOT and Fort Bend County to establish Sugar Land as the satellite hub to TranStar. This initiative will allow for travel data to be shared by multiple agencies. Additionally, travel time data could be disseminated to the public. While this would assist citizens in their day to day travel, the greatest benefit would occur during a hurricane evacuation. During an evacuation, the shared data and coordinated efforts would reduce the delays and improve traffic flow on the evacuation corridors.

Initiative 2B: Expand coverage of Traffic Responsive Signal System

Traffic Responsive Signal Systems (TRSS) automatically adjust to traffic fluctuations caused by stalled cars, accidents, weather, or other unexpected and random events. The City will implement TRSS in 2011 for the following corridors: US 90A, SH 6, First Colony/Sweetwater and Williams Trace. Expansion to Eldridge, West

Airport, Dulles and University in the future will complete the installation of TRSS on all primary commuter corridors in the City. The efficiencies gained by having traffic signals that respond to real time traffic conditions are significant; the need for some intersection improvements could be eliminated, enabling the City to reallocate resources to address other mobility issues.

Initiative 2C: Implement pilot project for Traffic Adaptive Signal System, with potential for systemwide implementation

A Traffic Adaptive Signal System (TASS) requires more detectors and maintenance than a TRSS. However, TASS has a greater capability to reduce delays compared to the TRSS, when it is maintained. The City would benefit from implementing a pilot project that would include the conversion of traffic signals to a TASS at either First Colony Mall, due to the seasonal variation in traffic volumes, or along US 90A because of the disruption of traffic by the trains. A TASS has the most value at locations with highly variable traffic volumes and would be less effective on commuter corridors where the travel patterns are more predictable.

Initiative 2D: Leverage ITS system for performance measurement, e.g. using technology to collect traffic data to optimize roadway operations and establish funding priorities

Through the use of the ITS technology that the City will soon have implemented, the City can collect traffic data to optimize roadway operations and establish funding priorities. Collection of traffic data over an extended period of time will enable the City to calculate cost benefit ratios for proposed roadway projects to determine the most effective use of resources. Travel time data can also be collected and used to locate bottlenecks within the system and identify seasonal peak travel demand. The City's ability to plan Capital Improvement Projects will be enhanced through the collection and analysis of traffic volume data over time.

Initiative 2E: Provide traveling public with real time data to assist them in route planning

The City can maximize the value of the travel time data collected by the ITS system by providing that information to the traveling public. This data might take the form of travel time maps similar to those used by TranStar, roadside dynamic message signs or text messages sent out to notify drivers of accidents or unusual congestion. Real time traffic information would allow the drivers to select another route or adjust their departure times to account for the roadway conditions.

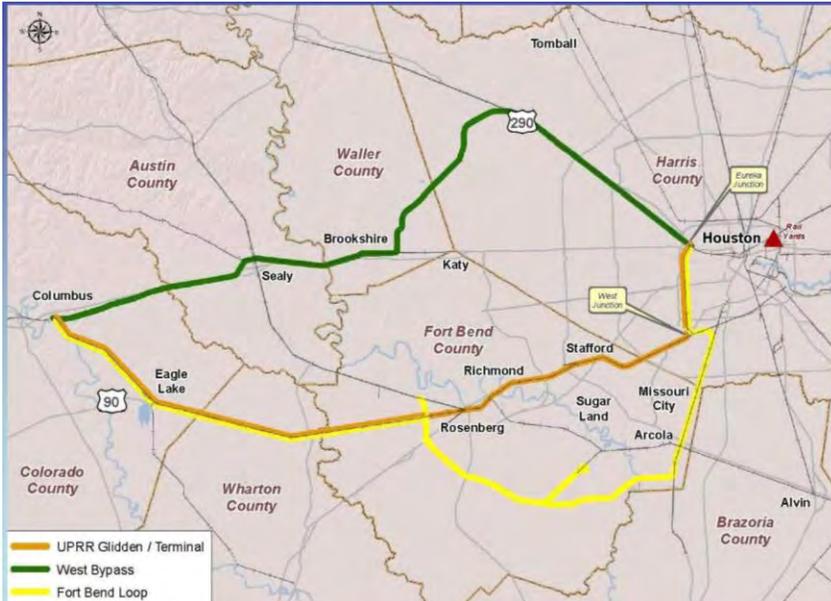




Strategy #3: Support the relocation of through freight rail traffic

Initiative 3A: Approach regional partners to develop regional consensus, identifying funding sources and move forward with implementation

Because the freight rail systems is a large national and regional system, Sugar Land should reach out to the rail



community to help develop strategies on reducing the number of through freight trains along the UP Glidden line. It is important to note that the purpose would be to reduce the number of freight trains, not totally eliminate the trains. Total elimination of the freight trains would significantly impact the City's Business Park and other rail customers within the City.

The *Fort Bend Rail Bypass Study*, completed in 2010 for the Gulf Coast Rail District (GCRD), identified two preferred bypass routes that need additional study. The City should work with the GCRD, Houston-Galveston Area Council and also the Texas Department of Transportation – Rail Division regarding next steps for examining the rerouting the freight traffic. One agency should be identified to take the lead on this important issue as the freight rail industry is a private industry that prefers one single point of contact to eliminate duplicative efforts and competing plans.

With respect to funding, the regional partners will need to agree on redirecting some of the roadway funding sources to rail improvements as this is the only current dedicated funding source for transportation improvements. This dedicated funding source can be successfully leveraged to build rail infrastructure through the Rail Rehabilitation & Improvement Fund (RRIF) program administered by the Federal Rail Administration under the SAFETEA-LU act. The RRIF program can provide direct federal loans as well as loan guarantees for programs that:

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track components of track, bridges, yards, buildings and shops.
- Develop or establish new intermodal or railroad facilities.

RRIF is a loan program; thus, the loan must be repaid. A dedicated funding mechanism is needed to provide the bondable finance for the application and program.

Strategy #4: Provide multimodal connectivity between neighborhoods and destinations

Initiative 4A: Improve at-grade pedestrian/bicycle connections across barriers, e.g., US 59, US 90A and SH 6

The City should evaluate all intersections along the US 59 frontage roads and all signalized intersections along US 90A and SH 6 for pedestrian/bicycle features such as wheelchair ramps, crosswalks and pedestrian heads. An inventory of recommended improvements designed to enhance multimodal access across these barriers should be developed for each intersection. The City should then develop a prioritized list of improvements and a schedule for implementing the improvements based on available funding.

Initiative 4B: Explore potential for construction of multimodal grade separated crossing(s) of US 59



Bicycle/pedestrian grade separated crossings of US 59 were recommended in the Sugar Land Town Center Pedestrian and Bicyclists Special District Study (LAN, Inc., et. al., September 2007). Support for construction of multimodal grade separations was voiced by the Mobility Advisory Committee. The City should explore the potential for the construction of multimodal grade separated crossing(s) of US 59 to enhance connectivity between destinations for pedestrians and bicyclists. In the short-term, the City should

explore other means, such as retrofit

Initiative 4C: Provide bicycle/pedestrian connectivity across the Brazos River

The need to include an additional crossing of the Brazos River in the updated Major Thoroughfare Plan has been mentioned by residents and City staff during the course of developing the Comprehensive Mobility Plan. If the location of a new crossing is identified in the Major Thoroughfare Plan, it should be identified as a multimodal crossing. Additionally, the crossing should be included in an update of the *Hike & Bike Trails Master Plan*. If a new multimodal crossing of the Brazos River is not identified on the Major Thoroughfare Plan, the City should explore other means of providing bicycle and pedestrian access across the Brazos River, such as constructing bicycle/pedestrian facilities on the US 59 frontage road bridges.

Strategy #5: Influence ETJ development south of Brazos River to facilitate implementation of City mobility goals

Initiative 5A: Encourage mix of uses, such as neighborhood services

Currently, all of the undeveloped land in the ETJ is shown on the *Future Land Use Plan* as residential; this assumption has implications for mobility as residents would have to go to Sugar Land for groceries and other services. Currently, the City is developing a *Land Use Plan for South of the Brazos*. This plan should identify a mix of land uses potentially including neighborhood retail centers. Providing a mix of land uses in the ETJ will promote walkable neighborhoods and the use of bicycles and walking for more trips. The length of the trips will be shortened and more direct, thus reducing the number of trips on major thoroughfares.

Also to be considered in the *Land Use Plan for South of the Brazos* is a potential site for a light industrial business park near FM 2759, so that rail access to the BNSF would be possible.

Initiative 5B: Provide bike/pedestrian connections between neighborhoods and destinations

A typical, comfortable trip distance for a pedestrian is 0.25 mile and, with the cul-de-saced designed neighborhoods in Sugar Land, it can be further than 0.25 mile just to exit a neighborhood. If the same street patterns are constructed in new neighborhoods in the ETJ, bicycle and pedestrian facilities (separate from the streets) should be required between neighborhoods and the external roadway network to provide efficient connections between neighborhoods and destinations. The City should also investigate the possibility of retrofitting connections between existing neighborhoods and destinations.

Initiative 5C: Require collector connectivity between neighborhoods

The extension of collector streets from one neighborhood to another should be required with new development in the ETJ. This will enhance connectivity between neighborhoods for all modes of transportation and will ensure that a collector network is in place to accommodate some of the shorter trips that would otherwise have to travel on the major thoroughfares.

METRICS

The following metrics are recommended to measure the progress of providing predictable, acceptable travel times, increasing connectivity in the Sugar Land area:

- **Travel Time on Key Arterials (SH 6, Dulles, University Boulevard):** The travel time data that will be collected by the ITS technology can be used to track the increase or decrease in travel times on commuter arterials over time. It could also provide information on the consistency or predictability of the travel times on corridors.
- **Corridors Operating at Level-of-Service (LOS) D or better:** The travel time data collected on an on-going basis can be used to track corridor levels-of-service. Corridors operating at or better than LOS D are typically considered to be operating with acceptable delays. The percentage of corridors operating at or above LOS D would be an indicator of how the City is progressing in achieving this goal.
- **Citizen Survey, Satisfaction with Traffic Management:** The Citizen Survey conducted every two years by the City could be used to track how successful the City is in achieving this goal. The percentage of citizens ranking traffic management as excellent would be a good indicator.



Goal 2: Well-designed, well-maintained transportation infrastructure that is safe for all users

Safety is a primary concern for any community, and the City of Sugar Land has built a reputation for being a safe place to live, work, and raise a family. Sugar Land continues to be a desirable community in part because its residents feel safe in their home and on the road. As an indication of the importance of safety to residents of Sugar Land, the Sugar Land Mobility Survey found that “improving safety” tied with “reduced traffic congestion” for the highest rated goal of the mobility plan among respondents.

With regards to transportation in Sugar Land, residents generally feel safe – as long as they are in their cars. Among respondents to the survey, 93% felt at least somewhat safe driving a vehicle in the City of Sugar Land. On the other hand, only 43% of respondents agreed or strongly agreed that they “feel safe walking to destinations in the City of Sugar Land.” Respondents were even more concerned about bicycling: only 16% felt safe riding a bicycle in the City.

These concerns for safety while walking or biking mirror studies of the safety of these modes in the Houston region. *Dangerous by Design*, a publication by Transportation 4

America released in 2010, found the region to be the 8th most dangerous in the United States for pedestrians and other non-motorized transportation modes. The report concluded that the physical design of roadways in the region contributes to a higher ratio of roadway collisions involving pedestrians and cyclists.

To continue the tradition of providing top-notch safety to residents of Sugar Land, it will be important to keep searching for ways to further improve safety for all transportation modes. Residents of Sugar Land have indicated that they value biking and walking transportation options in addition to their cars. These desires mirror goals established in the City of Sugar Land Comprehensive Plan, including *Goal 1: Safe and Beautiful City*, which establishes the general importance of safety within the city, and *Goal 5: Transportation and Mobility*, which emphasizes the need for “an integrated mobility system that is seamless [and] inclusive of pedestrian traffic, bicycle traffic, vehicular traffic, airport users, mass transit, and any other forms of transportation.” The following strategies are presented to accomplish the goal of increasing the safety of transportation infrastructure in Sugar Land for all users.



Strategies for Providing Well-Designed, Well-Maintained Transportation Infrastructure that is Safe for All Users

Strategy #1: Develop systematic approach to address safety issues across all modes

The first step towards providing a safe transportation system is to have a thorough understanding of safety issues on existing transportation facilities. Particularly in the case of bicycle and pedestrian modes of

transportation, new infrastructure such as sidewalks and hike and bike trails will never reach their full potential for utilization if they connect to other facilities that users judge to be unsafe. In these cases, the most cost-effective way of achieving the City’s mobility goals may be to “fix it first” – address existing safety issues before pursuing new capital expenditures.

Initiative 1A - Institute program to identify high crash locations, or potential high crash locations (automobiles, bicycles, pedestrians), and implement mitigation measures



Fig 5.1 - A crash map can help identify high-accident locations and suggest causes and mitigation options.

An ongoing program to identify and address safety “hot spots” is critical to ensuring the safety of roadway users. These hot spots may, in some cases, be the only obstacle keeping a corridor from being a safe route. Addressing such hot spots is often the most cost-effective method for improving transportation safety.

It is recommended that the City of Sugar Land institute a program to identify high crash locations, or potential high crash locations, across all transportation modes (including automobiles, bicycles, and pedestrians) and implement mitigation measures. A GIS database and map that shows crash locations based on police reports could assist with identification of crash hot spots. **Figure 5.1** shows an example of a crash hot spot map. Such a map should be regularly updated as police reports are created for roadway crashes.

The same database or an additional database could be used to track roadway safety problems. Such a database would be helpful for identifying locations with a high potential for crashes before a crash occurs. Identification of issues could be handled by city workers and complaints from citizens. A number of cities are beginning to invest in “crowd-mapping” programs to supplement these traditional sources of feedback. For example, SeeClickFix enables every road user with an internet connection to easily report problems such as potholes and traffic signal malfunctions by locating them on a Google Map interface. The data is then linked into city databases for analysis by city staff.



Fig 5.2 - Boston’s Citizens Connect program

In 2009, the City of Boston implemented a crowd-mapping initiative call Citizens Connect. The program allows users to use the camera and GPS features of their cell phones to take pictures of problems around the city and report them directly to public works. San Jose has a similar system, and many other cities nationwide have begun looking into crowd-mapping as a cost-effective way of compiling a database of safety concerns from the very people expressing those concerns. It is recommended that Sugar Land assess the feasibility of implementing a similar system to compile a database of safety concerns.

Strategy #2: Improve balance in transportation network to include all travel modes

Roads in Sugar Land typically have a focus on a single mode of transportation: the private automobile. Some provide sidewalks, but in general bicycle and pedestrian traffic is encouraged to use local streets and off-road facilities. This arrangement can create challenges for bicyclists and pedestrians attempting to access the jobs, stores, restaurants, schools, and myriad other important destinations located on major thoroughfares. To truly enable these modes of transportation, it is important that balance in the entire transportation network be achieved for all travel modes.

Initiative 2A - Adopt Complete Streets policies and design standards that will improve bicycle, pedestrian and transit safety and functionality

Building a well-designed transportation system that is safe for all users is the central tenet of the philosophy of **complete streets**. According to the National Complete Streets Coalition, *complete streets* are those designed and operated to enable safe access and travel for all users, including pedestrians, bicyclists, motorists, transit users, and travelers of all ages and abilities. Complete streets can have a variety of features including sidewalks, bike lanes, street trees, sidewalk lighting, and pedestrian signals at crosswalks (see **Figure 5.3**). Ultimately, the chosen set of roadway features varies depending on the context of the situation. Many of these infrastructure features are the exact analogues for what are routinely provided for motor vehicle traffic. Though there may not be many pedestrians or cyclists currently using a road, the same would likely be the case for motor traffic if roadway pavement wasn't provided. Constructing sidewalks and bike lanes and providing pedestrian signals and sidewalk lighting encourages pedestrian and cyclist traffic.

The premise of *completing the street* by no means intends to marginalize the motor vehicle-driving population, which will remain the majority in Sugar Land for the foreseeable future. Instead, it strives to design roads in such a way that maintains a high level of service for motor vehicles while improving safety for more vulnerable users. Furthermore, many of the features of complete streets directly benefit motorists as well by also increasing their safety. These features also tend to increase the aesthetic appeal of the road, which can create a sense of pride in the community. A high-speed arterial road designed to move as many cars into and out of Sugar Land neighborhoods as possible has a completely different feel to it than one lined with street trees and a well-designed pedestrian realm where residents and visitors chat and children play. The former is merely a pipeline; the latter contributes to the fabric of the community.

Communities around the nation have begun embracing complete streets as a way to provide for a more equitable and safe transportation system for all residents. They have recognized that building streets that do more for communities than just provide pipelines for traffic flow improves the quality of life of the entire area, making it more attractive to those families that have the ability to choose where they want to live.

Fig 5.3 - Types of Complete Street Improvements



To retain and build on the competitiveness of Sugar Land with other top-ranked places to live and work, it is recommended that Sugar Land adopt a Complete Streets policy to ensure that no matter how people in the City choose to move about, they can do so safely and conveniently. This policy would guide the design and construction of new roadways as well as the rehabilitation of old roadways. The policy should be framed as an “opt-out” instead of “opt-in” requirement for complying with the standards to ensure that all new streets are “complete” by default.

According to the National Complete Streets Coalition, complete streets policies can be successfully implemented in several ways: “ordinances and resolutions; rewrites of design manuals; inclusion in comprehensive plans; internal memos from directors of transportation agencies; and executive orders from elected officials, like Mayors or Governors.” Those techniques most relevant to Sugar Land are summarized below:

- **Ordinances** – Ordinances can be written to mandate specified elements of complete streets on public rights-of-way. In 2007, Seattle adopted a Complete Streets ordinance that required the city to “design and construct all new City transportation improvement projects to provide appropriate accommodation for pedestrians, bicyclists, transit riders, and persons of all abilities while promoting safe operation of all users.” The ordinance also specifies precisely where Complete Streets principles are to be implemented, including the City’s Transportation plan, transit plan, and pedestrian and bicycle plans.
- **Design Manuals** – A design manual describes the design requirements for structures constructed within a jurisdiction. These manuals, including the City of Sugar Land’s *Design Standards*, typically include requirements related to roadway facility design. *Design Standards* includes a requirement for sidewalks and crosswalks. However, it also includes a stipulation that “construction of a sidewalk will be deferred until a lot is improved.” This stipulation inherently leads to the potential for gaps in infrastructure for pedestrians and bicyclists. Recommendations on the consideration for bicycle and transit facilities along roadways should also be incorporated in the *Design Standards* to support more Complete Streets.



A range of “completeness.” Complete streets can improve safety, increase aesthetic appeal, and inspire civic pride.

- **Comprehensive Plans** – According to the City of Sugar Land, the City’s Comprehensive Plan is “used to guide development and land-use” and is regularly used by the City “to make policy decisions affecting the future of the City – whether it is related to land-use, economic development, or mobility.” A Comprehensive Plans can be an effective way to implement a vision for complete streets serving all modes of transportation. The National Policy and Legal Analysis Network to Prevent Childhood Obesity (NPLAN) offers model language on complete streets for comprehensive plans. According to NPLAN, “[by] including ‘complete streets’ language in a comprehensive plan, a community can promote street design and land use policies that allow people to get around safely on foot, bicycle, or public transportation. Integrating complete streets practices into planning and policy decisions can help encourage safe and active transportation, decrease pollution, and reduce the incidence of childhood obesity, social isolation, diabetes, and heart disease.”

Figure 5.4 provides a sampling of the complete streets policies adopted in cities across the United States.

Fig 5.4 – Examples of Complete Streets policies in the United States

| | | |
|---|------------------------|--|
| <p>on Boulevard: 4-Lane Divided <small>* Divided with Raised Median, Bike Lanes, Sidewalks, Landscaping</small></p> <p>Key Features: - Sidewalks - Street Lighting - Street Parking - Bus Lane - Median - Traffic Signal - Pedestrian Facilities - Bicycle Facilities - Transit Stop - Landscaping</p> | <p>Ordinance</p> | <p>"All streets shall be designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street."</p> |
| <p>North Myrtle Beach, SC</p> | | |
| | <p>Ordinance</p> | <p>"The inclusion of complete streets...is a response to a public interest. Local citizens, business owners, and officials recognize the importance of a shift from an automobile dominated roadway to a balanced, multi-modal transportation system that respects all users of the roadway and the rights of adjacent land owners."</p> |
| <p>Hendersonville, TN</p> | | |
| | <p>Internal Policy</p> | <p>"Like many suburbs, some areas in Rockville were designed for automobile transportation, and lack facilities such as sidewalks, bus shelters, and bicycle lanes. . . As demand for walking, bicycling, and transit facilities grows, safe and accessible transportation accommodations for all modes becomes even more necessary. Additional modal choices can also help in improving air quality and reducing greenhouse gas emissions by reducing private motor vehicle trips. . ."</p> |
| <p>Rockville, MD</p> | | |
| | <p>Internal Policy</p> | <p>"The new Complete Streets approach puts pedestrians, bicyclists and transit users on equal footing with motor-vehicle drivers. The initiative aims to improve the quality of life in Boston by creating streets that are both great public spaces and sustainable transportation networks. It embraces innovation to address climate change and promote healthy living."</p> |
| <p>Boston, MA</p> | | |

Initiative 2B - Require multimodal connections in site plans, general plans and Traffic Impact Analyses

Just as it is important that a safe bicycle and pedestrian facility connect to other safe facilities in the public realm, it is equally important that public infrastructure connect to safe facilities on private properties. For example, if the front door of a business is inaccessible from the sidewalks along an adjacent complete street because of a large parking lot or a lack of clearly-defined walkways, most patrons will still choose to drive to the business regardless of their mode preference. Chapter 7 discusses strategies for partnering with the private sector and utilizing the site plan review process to ensure the provision of pedestrian and bicycle amenities, and Chapter 11 further explores partnerships with the private sector and other governmental agencies.

Strategy #3: Develop a maintenance strategy that addresses an aging infrastructure and City mobility goals

As the City of Sugar Land reaches maturity, many of the roads in the city will begin reaching the end of their design lives and will need to be reconstructed. Each reconstruction of a road presents an opportunity to leverage the capital investment to achieve multiple City mobility goals. Adopting a process and strategy for dealing with system maintenance will ensure that the most is made of every maintenance project.

Initiative 3B: Incorporate a context sensitive evaluation in plan preparation for City reconstruction/maintenance projects

A practical and popular method of balancing multiple mobility goals in a maintenance plan is to utilize a **context-sensitive approach** that treats every transportation project as unique in terms of function, environment, and community. According to the Context Sensitive Solutions Clearinghouse, *context sensitive solutions* is “an approach [to transportation planning] that involves all stakeholders in providing a transportation facility that fits its setting.” The Clearinghouse presents the following principles of the process:

1. Strive towards a **shared stakeholder vision** to provide a basis for decisions;
2. Demonstrate a comprehensive **understanding of contexts**;
3. Foster continuing **communication and collaboration** to achieve consensus;
4. Exercise **flexibility and creativity** to shape effective transportation solutions, while preserving and enhancing **community and natural environments**.

The needs, desires, and characteristics of the community play a central role in context-sensitive projects. As a result, public involvement in these projects must come early and often – starting at the preliminary steps of identifying project purpose and need, and lasting at least through construction and frequently long into the life of the project. Transportation projects that utilize context-sensitive solutions often employ much more public involvement than standard projects and can ultimately look much different – a reflection of the various mobility goals and values particular to any community. In addition to the benefits to the community of such an approach, such as public pride in the project, a context-sensitive approach can have quantifiable benefits as well. These include lower overall project costs and more reliable project schedules which can result from addressing community and environmental concerns and minimizing controversy from the very outset of the project.

In 2009, the Texas Department of Transportation (TxDOT) became the first state transportation department in the country to adopt context-sensitive solutions in its project planning process by adopting the policies contained in *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, a document written jointly by the Institute of Transportation Engineers and the Congress for the New Urbanism



(see **Figure 5.5**). According to a Houston Chronicle article covering the adoption, previously “TxDOT would design a road project, bring it to the local community stakeholders and defend it at public hearings that could get contentious” (Houston Chronicle, Carolyn Feibel, December 7, 2009). The new process encourages transportation planners to engage the public from the start to build consensus and build a project with many champions and supporters. It is recommended that Sugar Land follow the lead of TxDOT and consider context sensitive solutions as the preferred approach for infrastructure planning and implementation. Some of this is being considered in the City’s updated Thoroughfare Plan.

Analysis of roadway conditions and projections of future maintenance expenditures could be assisted by the creation of a database of roadway segment age and condition. This data could then be plotted on a graph to show the number of roadway segments that will likely need reconstruction in any given year. This will support planning for maintenance funds budgeted for resurfacings and rebuilds.

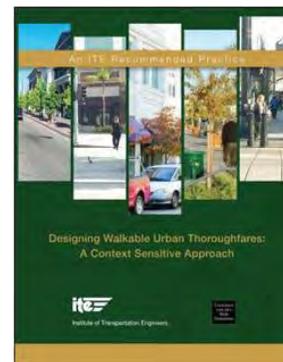


Fig 5.5 – The Context Sensitive Solutions document adopted by TxDOT

Metrics:

The following metrics are proposed for tracking the progress towards achieving the goal of providing well-designed, well-maintained transportation infrastructure that is safe for all users:

- **Vehicle Crash Frequency:** This metric would provide the total number of crashes involving automobiles in Sugar Land over a set time period. While many incidents are due to driver error, crash trends may be identified that will support improved roadway safety.
- **Ped/Bike Crash Frequency:** This metric would provide the total number of crashes involving bicyclists and pedestrians over a set time period. The metric would indicate the level of success of bicycle and pedestrian facilities at safely accommodating both modes. This metric may rise as more pedestrian and bicyclist facilities are built and will support analysis of potential safety issues with those facilities.
- **Serious Incidents:** This metric would provide the total number of serious incidents on roadways involving automobiles, pedestrians, and/or bicycles over a set time period. All crash information would require partnership with local police who are typically first responders to an incident.
- **Roadways in Good Condition:** This metric would compute the percentage of roadway miles rated to be in good condition by a field survey. It would provide a measure of the condition of roadway infrastructure in Sugar Land because even the most extensive infrastructure network can grow ineffective at providing mobility as it ages and deteriorates.
- **Citizen Survey - Satisfaction with Mobility Safety:** The Sugar Land Citizen Survey should track citizen satisfaction with mobility safety across all modes. Trends and correlations could be derived from the data to compare with implementation of safety-improving initiatives.
- **Citizen Survey - Satisfaction with Street Maintenance and Repair.** The Sugar Land Citizen Survey should track citizen satisfaction with street maintenance and repair. Trends and correlations could be derived from the data to compare with implementation of maintenance-related initiatives.
- **Complete Street Projects.** This metric would provide the total number or miles of roadway projects that explicitly provide complete streets elements. It could be compared to the total number of miles of roadway projects to provide trends in the proportion of projects that contain complete streets elements.

Goal 3: Transportation Choices That Meet the Needs of All City Residents Now and in the Future

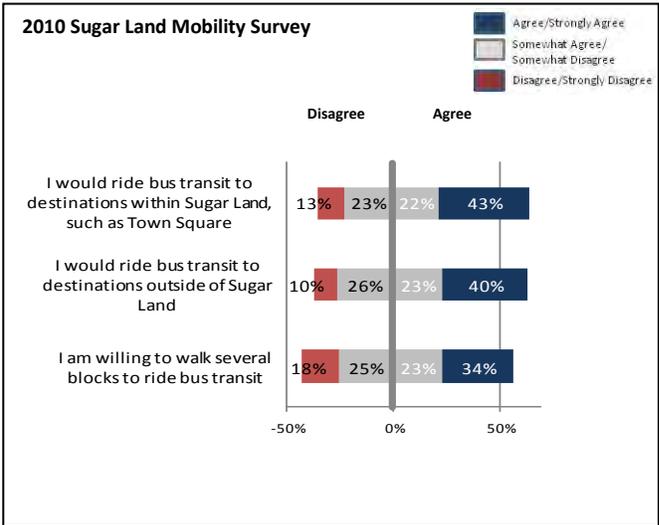
While automobiles provide the principle mode of transportation in Sugar Land, some transit services do exist. Fort Bend County provides both Park and Ride commuter service and demand response transit service in the County, including the City of Sugar Land, however these services are limited and do not effectively meet the needs of all the residents. Moreover, many residents are not aware of the available service or how to access the transit service. In order to achieve Superior Mobility in Sugar Land, residents need to be informed about available transit opportunities and viable transportation options for the City. There are a number of transit options that exist or can be implemented to meet the diverse and growing needs of the community and the aging population. Improved transit service in Sugar Land provides mobility choices for both the commute trip and the intracity trip. Together with the private sector and regional partners, multiple transit options, both on a small and large scale, can be implemented to effectively respond to the needs of the residents.

Residents express strong desire for greater transportation choices in the City

Repeated comments during stakeholder interviews and from the MAC meetings suggested that there should be transportation choices that do not require using the automobile. Input received revealed a desire to connect major attractions in the Sugar Land area (e.g. Town Center/Town Square, future ballpark and redeveloped Imperial Sugar site, future Entertainment and Cultural Arts Center, special events, etc.) without having to deal with traffic or parking. Survey results suggest that providing transportation choices is the third most important goal to be achieved in the Sugar Land Comprehensive Mobility Plan. Sixty-seven percent of the on-line survey respondents felt that Sugar Land should focus on developing transportation choices.

A 2009 study conducted by the Texas Transportation Institute (TTI) recognized that there was a desire and an opportunity to connect locations within the City. The TTI study addressed the option of providing a transit circulator service and developed a series of intracity circulator routes that could effectively serve the Sugar Land area, connecting multiple area attractions. The study concluded that there are opportunities for the successful implementation of circulator service in the Town Center area, given the right set of variables are in place to support implementation of the service.

Increased mobility choices are viewed as critical to the future economic growth and long term success of the City of Sugar Land. Many in the community are choosing to age in place and the provision of a local transit circulator/shuttle would support the mobility needs of the aging Sugar Land community. Being able to travel within Sugar Land without depending on a car is becoming an increasing important concern to the community.



Strategy #1: Promote and Expand Existing Transit Choices

Currently transit services are provided by the Fort Bend County Public Transportation Department to support the multiple mobility needs of the Sugar Land population. These services include the commuter TREK Express and FBC Express with direct routes to the Galleria, Greenway Plaza and the Texas Medical Center and a connection to METRO with service to Downtown from the West Bellfort Park & Ride Lot. Fort Bend County also provides Demand Response service, pre-scheduled door to door transit service in Fort Bend County and to regional medical facilities for all residents of the County. The Houston-Galveston Area Council, in conjunction with METRO Star, sponsors the Commute Solutions program which promotes vanpool services and shared ride opportunities.

Sugar Land residents do take advantage of these available transit options, but the services are underutilized. The Fort Bend County Demand Response provides an average of 60 daily Sugar Land trips to and from local destinations and area medical facilities. A number of the riders are senior citizens and are more apt to use alternative transportation options, instead of driving a single passenger auto. Commuting via park and ride services and vanpooling are also options Sugar Land residents take advantage of, but there is evidence that there is growing demand for more park and ride service and vanpool connections. A recent survey of Downtown Houston employees conducted by Central Houston, Inc. indicated that Sugar Land zip codes represent the greatest number of origins of the surveyed workers; the survey represented approximately 39 percent of the Downtown workers. Sugar Land residents currently use the TREK Express and METRO park and ride services for their work trip, however the potential demand for commuter transit service is considerably greater than the current patronage would suggest. A key to creating transportation choices for all residents in the City is to continue to market and build upon the existing services with a focus on growing those services to attract more users and respond to the needs of all residents.

Initiative 1A – Continue education and/or marketing programs designed to increase ridership on existing demand responsive and commuter transit services offered by Fort Bend County Public Transportation and other related services

While transit services are available in Fort Bend County and Sugar Land, it appears that the services are not well advertised and residents are not familiar with the services. Both in stakeholder interviews and in talking with County representatives, it was felt that greater marketing efforts were needed to inform and educate the residents about available transit services. A marketing and education program will bring greater awareness to the community about the transit opportunities and benefits that are currently offered in Sugar Land. Greater familiarity with the transit programs will result in residents willing to be participants. Promotions for free trials and rider appreciation days can also increase awareness. Offering free rides and special promotions will attract more patrons to the service and create a loyal following of commute ridership.

In addition to making residents aware of the transit services, the marketing program should include coordination with major employers to solicit their support and advertise the service to their employees. While some employers already offer ticket promotions or subsidies for commuters, greater employer participation in a commuter subsidy program may encourage more people to take advantage of the service.

The existing demand response service is available for all residents in Fort Bend County, providing door to door service to points throughout Fort Bend County and to and from medical facilities in Harris County. Approximately twenty percent of all the Fort Bend County demand response service either originates or

terminates in Sugar Land. The service is limited to operating Monday through Friday from 8:00 AM to 5:00 PM. In addition, daily capacity is limited and the service is provided on a first call, first serve basis requiring a reservation at least 24 hours in advance. Residents in the City of Sugar Land currently generate greater demand for the service than the other communities in the Fort Bend County. Increased marketing will create a greater awareness of the service and most likely result in even greater demand. The City of Sugar Land should work with Fort Bend County to promote the program and expand the service as needed to meet community demands.

TREK Express and Fort Bend County Express commuter bus routes attract a number of Sugar Land residents with services to the Galleria, Greenway Plaza, and the Texas Medical Center, however it appears many residents have limited knowledge about the service. There is sufficient capacity on the commuter buses to effectively accommodate a greater number of area commuters. An aggressive marketing program should attract more commuters to the service. Fort Bend County recently initiated a marketing effort to promote the County's park and ride program. The City of Sugar Land plans to partner with the County in implementing this new marketing and advertising campaign. As a result, there may be greater demand for service and for additional parking spaces at the two existing leased Park and Ride lots in Sugar Land. Increased ridership will require coordination between the City of Sugar Land, Fort Bend County and the property owners to provide more parking spaces for commuters and potentially long term or permanent lot locations.



In addition to marketing the Fort Bend County transit services, residents in Sugar Land also need to be informed about vanpooling and other alternative commuting options. Greater marketing and dissemination of information regarding Commute Solutions and vanpooling opportunities will help encourage residents to consider sharing rides and take advantage of other transit and commuting alternatives. The marketing and education program would be a joint effort between the City of Sugar Land and the FBC Public Transportation Department.

TRANSIT SERVICES AVAILABLE TO SUGAR LAND RESIDENTS

| Type of Service | Type of Service/ Hours of Operation | Service Provider | Estimated Average Daily Ridership (Sugar Land area) | Notes |
|--|---|----------------------------|---|---|
| Demand Response ¹ | M/F 8:00 AM – 5:00 PM | Fort Bend County | 57 daily trips | Sugar Land has the greatest # of users |
| TREK Express to Greenway/Galleria ² | M/F 5:10 – 8:10 AM 3:15 – 6:40 PM | Fort Bend County/TREK | 382 riders | |
| TREK Express to West Bellfort P&R ² | M/F 5:10 – 8:10 AM 3:15 – 6:40 PM | Fort Bend County/TREK | 90 riders | Connection to METRO service to Downtown |
| FBC Express to Texas Medical Center ³ | M/F 5:25 – 8:10 AM 3:40 – 7:20 PM | Fort Bend County | 40 riders | Service originates at FBC Fairgrounds |
| West Bellfort P & R to Downtown | M/F 5:00 – 8:30 AM 2:55 – 6:55 PM | METRO | N/A | SL residents use service from Houston P&R |
| Sugar Land Area Vanpoolers ⁴ | AM and PM peak periods | METRO Star Vanpool Program | 650 riders from SL 36 riders to SL | Over 3000 SL residents interested in vanpooling |

Funding for the transit operations are primarily the responsibility of Fort Bend County. Currently, there is minimal marketing of either the Demand Response or Commuter services, though Fort Bend County has recently initiated a marketing program for the services. TREK markets the TREK Express commuter service to employers and employees at the work place, but only limited marketing has been conducted in the community. Sugar Land and Fort Bend County should coordinate the marketing program, with the City taking the lead in developing the best strategy for communicating with residents.

The first action in providing more mobility choices in Sugar Land is to develop an aggressive marketing program directed at the residents of Sugar Land. This marketing program would be the shared responsibility of the City of Sugar Land and Fort Bend County and the cost for the marketing program would be minimal. Sugar Land should assume an annual budget of \$15,000 to market and educate the community about transit and the available services. Marketing and educating residents about transit service should be a continuing program to reinforce the opportunities and benefits of the available transit services, therefore the transit marketing/educating will be a recurring expense.

With greater knowledge and understanding of transit and the available transit services to Sugar Land residents, more people should take advantage of the services and use transit as a viable transportation choice. Greater use and reliance on existing transit services in the area will result in some reduction in traffic volumes, particularly during peak periods, and will generate increased support for transit. A better understanding of transit will support improved transit services and Superior Mobility in the City.

¹ Fort Bend County Public Transportation Dept., FY 2010, Trip Count by City of Origin

² TREK Express, Galleria and Greenway Plaza Ridership 2010

³ Fort Bend County Public Transportation Dept., Memo, Hwy 36 Passenger Count, February 2011

⁴ Sugar Land Area Vanpool, METRO Star Vanpool Summary, August 2010

**Initiative 1B – Work with Fort Bend County (FBC) Public Transportation to plan and provide for future demand**

Greater awareness and support of transit services (both commuter and demand response) will foster greater demand for transit services and establish transit as integral element of the transportation fabric in Sugar Land. In order to continue to attract and maintain ridership, the service needs to be responsive to patron demand. Therefore appropriate budget and equipment must be allocated to meet projected demand and the City of Sugar Land and Fort Bend County should be prepared to meet increased demand.

The key partner with Sugar Land is Fort Bend County and the FBC Public Transportation Department. Fort Bend County currently provides public transit service and should be expected to continue to expand the existing service, consistent with budget and demand requirements. Associated costs will include additional operating and maintenance costs for providing increased service. The current transit operations are primarily funded by Fort Bend County, which receives federal funding subsidies for a portion of the transit capital and operating costs. Fort Bend County is taking delivery of new equipment and should be able to provide the service with no additional capital costs. It is assumed that Fort Bend County will continue to fund the operating costs for the service and any marginal service increases as a result an aggressive marketing and education program.

The City of Sugar Land currently provides \$70,000 annually to Fort Bend County to support the operation of the existing transit services. The City may also need to participate in funding additional services and allocate more funds to support an expansion in the level of service provided. An increase of one bus operating 10 hours a day would have an approximate annual operating cost of \$110,000. Some federal funding may continue to be available to support the increased service, including CMAQ funds, Formula 5307 funds, and specific funds for special needs and services.

The more transit service offered to the residents of Sugar Land enhances the City's commitment to provide mobility choices for all residents. In addition, increased transit use will result in a reduction in traffic during peak traffic periods and some improvement in regional air quality.

Initiative 1C – Partner with FBC Public Transportation to develop direct commuter service to Downtown and/or a simplified connection to Downtown, i.e. combined FBC/METRO fare

As shown in **Figure 6.1**, many Sugar Land residents commute to Downtown for employment. Considering the high number of residents commuting to Downtown, transit ridership from Sugar Land is minimal. Findings from the Stakeholder interviews, public meeting and on-line survey indicated that residents would prefer direct service from Sugar Land to Downtown Houston or at a minimum an easier connection between the Fort Bend County TREK service and the METRO service at the West Bellfort Park & Ride lot. Currently the rider has to pay separately for the TREK service and the METRO service. A single fare for the trip would be more convenient and possibly less expensive than the current system. In addition, the connection between METRO and the TREK services in the PM peak could be improved to reduce the travel time to Sugar Land by reducing the headways of the TREK buses from the West Bellfort Park and Ride lot. Initially, the two seat ride on TREK and METRO could be streamlined by implementing a single fare and more timely transfer connections which also would attract more Sugar Land commuters to transit.

Central Houston, Inc. recently conducted a survey of home zip codes of Downtown employees. Of those surveyed, over 1,300 employees reside in zip code 77479 (in the Sugar Land area), which is more than any other zip code in the Houston region. Previous Census Journey to Work data also indicated that Downtown Houston

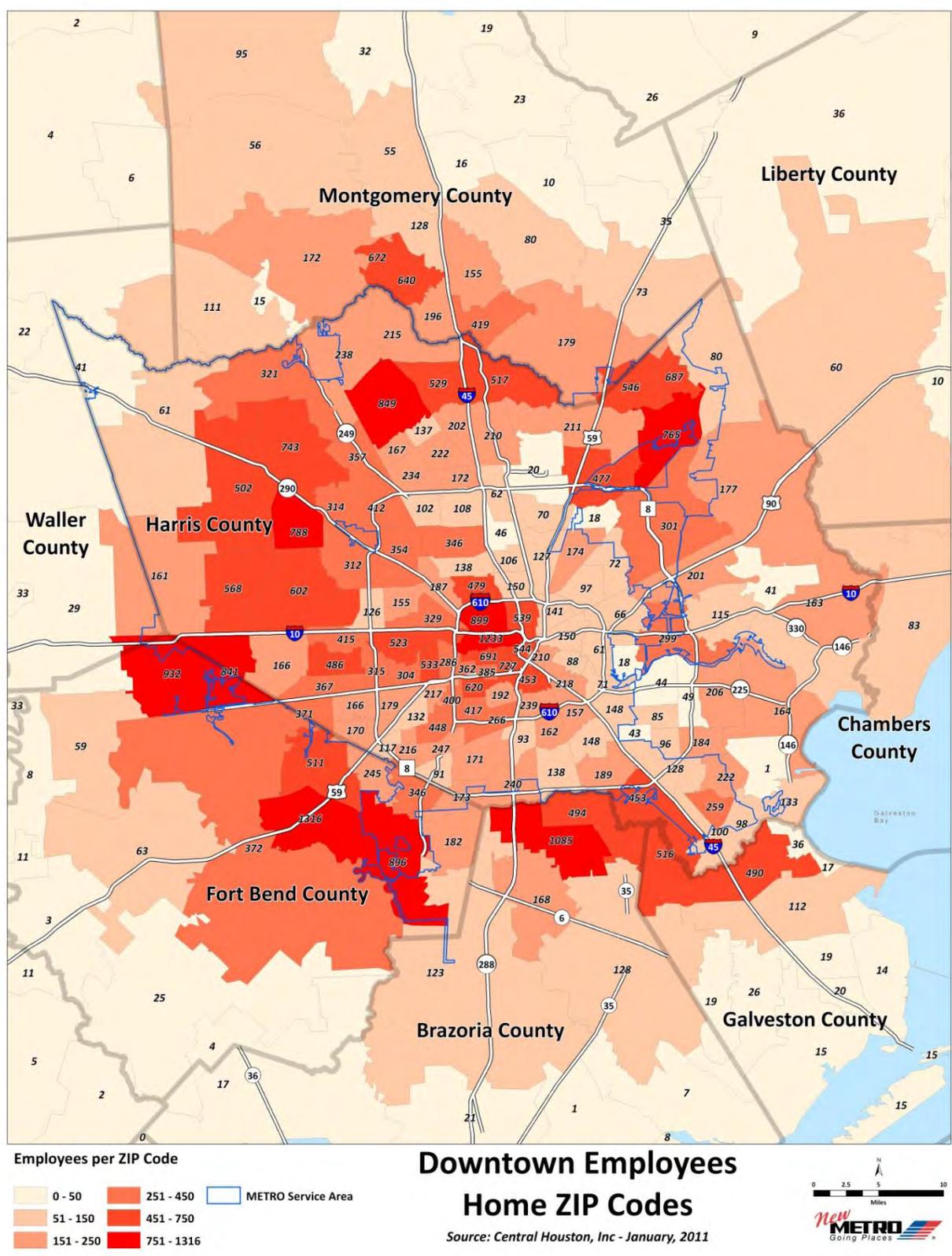
was the largest employment destination for Sugar Land residents.⁵ Work trips from Sugar Land to Downtown were significantly greater than work trips to other employment destinations. Direct park and ride service from Sugar Land to Downtown would be an optimal solution and would reduce transit travel time and attract more riders, which in turn would reduce peak period congestion on the major thoroughfares.

Streamlining the connection to Downtown from Sugar Land would require coordination between Fort Bend County and METRO, in an effort to offer a single fare for the total trip and to improve better time connections between the two services. METRO and Fort Bend County would be partners in coordinating a single fare for the two seat ride offered by the two separate service providers. Fort Bend County would continue to be the key partner with the City of Sugar Land to implement direct commuter service from to Downtown, though METRO might also be a partner in providing the service.

The ultimate goal is to provide a direct park and ride trip from Sugar Land to Downtown. The implementation of the new direct service would have both capital and operating costs implications. Based on the existing commuter service provided by Fort Bend County, approximately six (6) 32-passenger buses would be required to provide the Downtown commuter service. The aggregate cost of the new buses is approximately \$800,000. The annual operating and maintenance cost required to operate the service is estimated to be \$512,000. Currently, there are a few federal funding options that Fort Bend County and the City of Sugar Land may pursue in order to receive funds for a portion of both the capital and operating costs.

⁵ 2000 Census, H-GAC, November 2020

Figure 6.1 – Downtown Houston Home Employee Zip Codes





The implementation of direct commuter bus service from Sugar Land to Downtown Houston would attract additional transit riders and help to establish a strong transit base. The increased transit ridership would relieve traffic congestion during the peak periods and would justify continued development of transit improvements, eventually leading to the implementation of high capacity transit services, such as BRT and commuter rail operations.

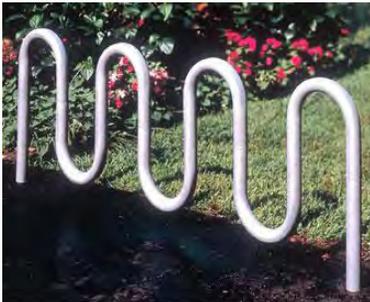
Initiative 1D – Ensure transit facilities and vehicles accommodate bicycles and pedestrian, e.g. bicycle/pedestrian connections, bike racks on buses and bike racks at facilities

A key to introducing mobility choices in the City of Sugar Land is providing accommodations to support access by bike riders and pedestrians to transit facilities. Bike racks should be installed at all park and ride locations and on the commuter buses. Sidewalk connections should be constructed from area neighborhoods and activity centers to the Park and Ride lots and other transit facilities. Lockers at transit facilities may also be installed at transit facilities to encourage cyclists to use their bike for a portion of the trip. Bike racks installed on the buses provides cyclists the opportunity to ride their bicycles from their home and to their final destination, using transit to provide the line haul portion of their trip.



Source green-wheels.org

Bicycle racks range in price from around \$200.00 to \$500.00 depending on style, composition, size, and number. Storage lockers also vary significantly in price depending on style, size, composition, number and installation. A typical bicycle locker ranges in cost from \$1,000 to \$2,000 per individual unit. By providing accommodations for bikes and pedestrians at transit facilities residents are able to leave their cars at home and use alternative transportation options for their entire trip. By providing bicycle and pedestrian amenities at transit facilities helps to establish a new culture for non-auto travel for multiple purposes.



Sample Bike Rack



Sample Bike Lockers at Transit Facility

Strategy #2: Implement Transit Circulator Service During High Demand Periods

During the stakeholder interviews and the public meetings, and from the findings from the on-line survey, many residents stated their desire to be able leave their cars at home and use some form of transit or alternative transportation mode to travel around Sugar Land. Due to the traffic congestion on the major thoroughfares in the City particularly during holiday season, at special events, and on weekends, a circulator would attract riders who want to avoid the stress of traffic congestion and parking.

Initiative 2A – Create public private partnership between the City and businesses to provide circulator transit service, e.g., Holiday Circulator or special events

The goal is to adeptly address the challenges faced by residents and visitors particularly during high demand times such as holidays or special events. Congestion, already a regular occurrence at key major intersections, is exacerbated during special events and holidays. During these occasions, parking spaces are harder to locate, requiring drivers to circulate the lot and search for a space. Transportation engineers essentially note that at 80% of capacity, users perceive the lot as full because individual spaces are disparately located and difficult to find. Also, vehicles not properly positioned in the parking spaces render some spaces unusable. A small side annoyance is sometimes locating the car when the shopping or event has ended. Another benefit of the circulator service is that it takes vehicles off the road that are moving from one shopping location to another. For instance a person stopping at the Whole Foods store, then traveling to the First Colony Mall, and making a final stop at an eatery in Town Square drives the vehicle on the road with each leg of the trip, possibly traveling through the Highway 6/US 59 intersection twice.

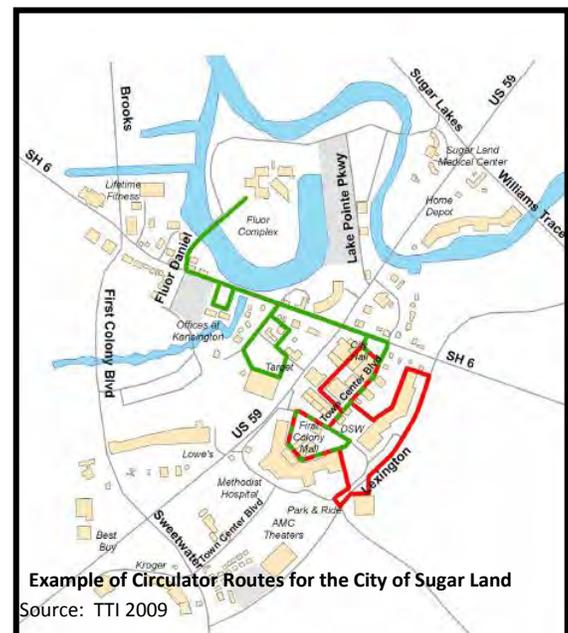
Circulator service available during these special times has the potential to alleviate pressure from the parking lots and relieve congested intersections by providing an alternative to having every trip made by passenger vehicles. Parking space requirements at area activity centers could also be reduced with the implementation of a circulator service; reducing parking requirements is another strategy identified as important to achieving Superior Mobility. Specific focus for the circulator service includes, but is not limited to:

- First Colony Mall and other high volume shopping areas
- Sugar Land Town Square for the 4th of July or other festivals
- Future baseball stadium site

The option is especially attractive because Sugar Land can implement the service independently without regional partners.

An initial initiative in implementing an intracity circulator is to create a public private partnership between the City and Town Center and other area businesses to provide circulator service during peak demand periods connecting major attractions. The objective of this initiative is to work with area businesses and developers to develop and fund a community supported transit service for residents to access area businesses without traffic or parking hassles. The circulator service would benefit both the area businesses and the City by improving access to the Town Center area while removing vehicles from the roadways during heavily congested times. The public private partnership will serve as a marketing tool for the area businesses and the City will be able to serve as a liaison/coordinator for the service while minimizing expenses. This would be a low cost way of initiating circulator service in Sugar Land and would serve as the first phase of the transit operation.

As ridership grows and more destinations in the City come on line, the service can be expanded. The greatest challenge will be coordinating participation of the Town Center and other local businesses and obtaining the funding to initiate the service. The City of Sugar Land would most likely serve as the program coordinator and



would be responsible for managing the circulator service, creating the partnership with the private interests, developing the budget for the service, and soliciting for funds for the service.

The key partners for the circulator service are the City of Sugar Land, Town Center area or other local businesses and interests. Other partners may also include the Fort Bend County Public Transportation Department, Fort Bend Chamber of Commerce, and the City of Sugar Land Department of Economic Development.

The cost of the service will depend on the amount service proposed to be implemented and the terms of the partnership agreement. At a minimum, one or two vehicles will be required to provide the service. Initially, the vehicles may be leased and maintained from a variety of local sources. A new 24 to 26 foot bus (seating for 12+) would cost approximately \$75,000, though cost will vary based on the procurement approach and the vehicle used. The operating costs would be dependent on the number of days and the amount of service to be provided, including the daily hours of operation and the frequency of the service. The costs would be approximately \$500 a day for one bus operating 10 hours. There also would be an operating cost for advertising and marketing the service, which would average around \$10,000. This cost would depend on the level of marketing and participation and pro bono support provided by partners.

Examples exist around the country of communities collaborating with businesses to improve circulation in areas with challenged mobility by reducing the volume of passenger vehicles. The circulators limit the need for parking spaces and ease people's need to move a vehicle around the area. In Emeryville, California, private businesses underwrite the funding by way of a tax assessment for two circulator routes that traverse the business and residential communities and link with the BART and Amtrak stations. One route has 18 stops and covers most of the City. The other route is shorter with 5 stops and is primarily perpendicular to the longer route. The non-profit Emeryville's Transportation Management Association exists to improve mobility and alleviate congestion.



McKinney, Texas' Collin County Area Regional Transit (CCART) operates five fixed routes in McKinney Monday through Friday. Patrons access vehicles by directly requesting them, (termed demand responsive) on Saturday and Sunday. The CCART extends the demand responsive service to Frisco. Private services also operate in Frisco providing airport transportation, buses for corporate outings,

doctor's appointments and McKinney and Frisco Independent School Districts. Mesquite, Texas allocated \$300,000 for a shuttle from their Rodeo complex to the nearest DART line. There is no specific timeline to begin these services, but funds are available in case suitable arrangements are made with DART.

As the service becomes established and the community takes advantage of the service, it will lead to the acceptance and expansion of transit service and encourage businesses and developers to be proactive in accommodating future transit improvements and providing financial support to continue the service. This foundational service will be a core that can be expanded for special events or as ridership and development growth warrant.

Initiative 2B – As additional activity centers are constructed (Imperial Sugar/Baseball Stadium, Entertainment, Tract 5, etc.) expand public private partnerships to include circulator service between the activity centers.

With the completion of new developments, the circulator service will move into the next phase of operation by connecting multiple attractions and destinations in the City. The transit service can be expanded incrementally to new developments over time to provide the service connections when needed. During periods of lower demand, schedules and routes may be reduced to most efficiently meet rider needs. The public private partnership would remain intact and be amended to include new partners and additional funding opportunities that may be needed to support and fund the service expansion. Fort Bend County Public Transportation may also become a partner as the service expands and new destinations are added.

As more activity centers come on line in Sugar Land, the City and the private partners will expand the circulator route and operation to service more area attractions. Most likely the service will operate on a regular schedule with more frequent headways between trips. An intracity circulator connecting Town Center, the baseball stadium, the concert venue and other activity centers in the City would be a viable mobility choice and will be part of the transportation network in the City. The greatest challenge will be to work with area businesses and developers to provide the amenities and funding for the intracity circulator. A key to the successful continued provision of service will be establishing a dedicated fund and committed funding source for the service.

Additional buses will be required as the service is expanded and demand increases. With a longer circulator trip and reduced headways, a minimum of two buses will be required and possibly more as the service attracts more riders and new routes or service variations are introduced. One 12+ passenger bus costs approximately \$75,000 and an appropriate budget to cover capital costs would range from \$150,000 to \$300,000 annually. Federal funding may be available to assist in purchasing new buses. In addition to deployment of more buses, transit amenities such as bus stops, shelters, benches, trash cans, etc. should also be budgeted. It is recommended that the transit amenities be integrated in the design and construction of new activity centers, such as at the baseball stadium, the cost of which would be assumed by the private developers. At bus stop locations at existing developments, the City or the private developer would be responsible to installing appropriate amenities. The above mentioned annual capital budget includes provisions for amenities.

Operating costs would be dependent on the duration and frequency of service, and level of private partnership in the expansion of service. The operating budget will also include a small allocation for a marketing effort. An estimate of annual operating costs ranges from \$50,000 to \$150,000. There may be specific federal funding programs that could be applied to operating costs, though that is difficult to assess at this time without more details about the service, partners and the demand for services.

Implementation of Phase 2 Intracity Circulator would provide an effective mobility choice to residents, employees and visitors for accessing major destinations in Sugar Land. Use of the circulator would help reduce congestion at major attractions during peak travel times. Integration of circulator service as part of the new activity center development may reduce parking needs at these developments. The circulator would connect a number of activity centers and would support the economic vitality of the City. The expanded Circulator service would lead to the operation of additional circulator routes to serve multiple activity centers in the Sugar Land area.



Strategy #3: Develop Innovative Strategies to Encourage Transit Use

There are a number of transit alternatives that can be promoted in Sugar Land that are not the traditional form of transit provided by a public agency. Throughout the country private transit providers are providing innovative means of offering transportation and shared ride options. A jitney is a transit mode comprised of owner operator cars or vans operating on fixed routes (sometimes with minor deviations) as demand warrants without fixed schedules or fixed stops. In Houston, private jitney operators provide transit service in heavily congested entertainment centers. The Wave is a jitney service that operates along Washington Avenue and in a number of entertainment activity centers within Loop 610. The service is privately funded and operated. Additional buses are continually being added to the route in response to the demand for the transit service to connect patrons to a number of venues within a small area. Many patrons park at a specified parking lot located along the route and then get on and off the jitney all along the route. Riders pay for the ride or can buy a monthly pass. The Rev Eco Shuttle offers a similar jitney service in the Midtown area.

The Sugar Land Town Center area has potential to be a great location to introduce jitney service or shared taxi to help transport residents to key destinations located in heavily congested areas, particularly near the intersection



The Wave



The Rev Eco Shuttle

of US 59 and SH 6. A jitney service could connect destinations on either side of US 59 and help relieve congestion in the area. Patrons could park at one location and use the jitney to access nearby locations.

City ordinances, restrictions and/or permitting may need to be modified or approved to support the service, but the cost of the operation would be assumed by the private provider. As the jitney movement is gaining popularity and apparently lucrative in the Houston area, the City of Sugar Land could look for interested providers to offer the service in the Town Center area.

Another option that is used in other communities is to work with a private operator to offer shared ride contract service to students for a door to door ride to and from home, school and outside activities. In Frisco, Texas a contract shuttle service is offered to students to provide the daily trip between home and school. This is a safe option for students and helps reduce congestion around school facilities, particularly in the peak periods.



Sugar Land could contract with any private bus company to supplement available options to and from school. The cost for the service could be fully paid by the parents/users or some form of subsidy from either Sugar Land or other agency could be provided as an incentive. There are a number of local service providers, even in Sugar Land that would be interested in providing the contract shuttle service. Support from Sugar Land may be needed to coordinate the service and help with administrative details.

Contract shuttle service could provide a reliable service that residents will feel comfortable using on a regular basis. Through a subscription or contract service, the service provider can better schedule and provide capacity to meet demand. Residents can regularly plan trips to Town Square and other area destinations and know the shuttle service is available. Based on input from residents, survey results and discussions with the Mobility Advisory Committee, a market exists for this service. Working with private contractors and resident users, the service would be self-sustaining and require only limited resources from the City.

METRICS

Improved transportation and quality of life are important to Sugar Land residents and would be realized by increased mobility choices for all residents. Tangible metrics are needed to determine the effectiveness of more transportation choices in and around Sugar Land. Several options are available as follows:

Ridership: Target ridership projections at specific intervals (i.e. 6 months, 1 year, 2 years, etc.) should be established in order to assess the service and possibly facilitate refinements to enhance ridership or be more responsive to demand. Benchmarking can be established over the current level of no service with percent increases measured annually. New service will require a reasonable period of maturation. In the early stages, residents must become aware of available services and gain confidence of its use. Any new service needs a period of time to become established and allowing the service to get started, early issues to be worked out, and a patron base to develop.

User Satisfaction: An additional metric would also be the input received by residents regarding the service through the City's Citizen Survey conducted every two years. If there are requests for expanded or additional transit services, then that would imply the community supports the transportation program and views it as a viable transportation alternative. If a considerable amount of complaints are lodged against the service, then the service choices need to be reassessed and modified to more effectively meet the needs of the community.



Goal 4: Transportation Choices That Promote a Healthy, Active Lifestyle

The City of Sugar Land has consistently ranked as one of the Fittest Cities in Texas by the Texas Round-Up Governor's Challenge. The community takes pride in its overall fitness level. On a broader scale, overall community health is becoming an increasingly important concern for public officials nationwide. Over the past several decades, many important indicators for the health of Americans have been declining. Consider these trends for the general population of America:

- The percentage of Americans with diabetes increased from 8% in 1988-1994 to 10% in 2003-2006.
- For adults, obesity rates have more than doubled from 15% in 1976-1980 to 35% in 2005-2006.
- For all children, obesity rates have more than doubled between 1976-1980 and 2005-2006. For adolescents, obesity rates have more than tripled, from 5% to 18%¹.

Improving mobility opportunities for healthy, active lifestyles can help address the serious public health concerns associated with illnesses including heart disease, stroke, diabetes, cancer, and hypertension. These ailments compromise quality of life and incur substantial costs for treatment. According to the Centers for Disease Control, "the health care costs associated with obesity and its associated conditions are thought to be substantial, and a recent study suggests that the health care costs associated with obesity are rising for both private and public payers." The CDC estimates the cost of treating the health effects of obesity in the United States to be approximately \$147 billion per year².



Source: Jonathan Maus on Flickr

Transportation choices can promote a healthy, active lifestyle

The United States Surgeon General noted in *The Surgeon General's Vision for a Healthy and Fit Nation 2010* that "Americans need to live and work in environments that help them practice healthy behaviors³." Both the CDC and the United States Surgeon General agree that exercise is a critical component of the healthy behaviors that can combat the ailments of obesity. Exercise can take many shapes, including jogging through the park, playing basketball at the gym, or swimming at the local pool. Sugar Land provides an excellent array of opportunities for recreational exercise, including a growing network of hike and bike trails and neighborhood recreation facilities.

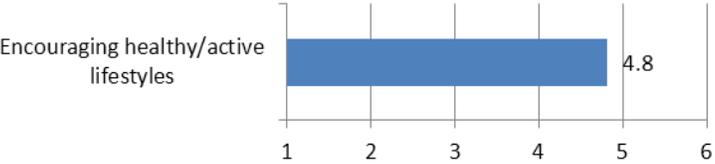
In addition to recreational activities, transportation can provide opportunities for exercise. Researchers at Rutgers, Virginia Tech, and the CDC found "statistically significant negative relationships between active travel and self-reported obesity."⁴ In other words, walking and biking to a destination have the same health benefits as walking or biking recreationally. These forms of "active transportation" have been shown to lower cholesterol,

lower blood pressure, and reduce the risk of Type 2 diabetes⁵. Additionally, bicycle commuting has been shown to increase life expectancy.

Providing infrastructure that supports multiple transportation choices would give residents a means of realizing the health benefits of active transportation. Several studies have drawn correlations between the availability of infrastructure that supports active transportation and health. Research from the University of British Columbia found a negative correlation between the interconnectedness of a neighborhood’s roadway network and rates of obesity in the neighborhood⁶. Other research shows that improvements to bicycle and pedestrian infrastructure can encourage people to be more active. Since 2003, New York City has expanded its bicycle infrastructure by approximately 111%, and during that time the number of people bicycle commuting to work increased by 126%^{7,8}.

Residents of Sugar Land have indicated a desire for healthy, active transportation options. The Sugar Land Mobility Survey conducted for this study revealed that 48% of respondents agreed or strongly agreed that they would walk more if the sidewalks were improved and that 52% of respondents agreed or strongly agreed that bicycles can be a useful way to travel for more than just recreational trips or exercise.

Q1. How important is the following goals for the Comprehensive Mobility Plan in Sugar Land?



However, infrastructure for active transportation such as walking and biking is often lacking, which makes using these modes difficult. According to the Center for Houston’s Future, the percentage of Sugar Land residents living within 1/4th mile of parks or trails – approximately the distance people would consider using the facilities for transportation – was less in Sugar Land (56%) than in other suburban communities such as the Woodlands (91%). While some infrastructure exists, connections to activity centers and across major barriers are sometimes limited. As a result, only 16% of survey respondents agreed or strongly agreed that they feel safe riding a bicycle in the City of Sugar Land. On the other hand, a majority of respondents agreed that they would ride their bicycle more often if the bicycle network was improved.

Sugar Land can become a model for biking and walking

The City of Sugar Land is strongly positioned to realize the health benefits of bicycle and walking transportation in the community. The City enjoys many advantages that could make bicycling and walking important parts of the transportation system:

- The landscape is flat and does not inherently impede walking or biking.
- The weather is amenable to walking or biking. For six months out of the year, the daily average high temperature does not exceed 80 degrees Fahrenheit; the daily average low temperature rarely falls beneath 40 degrees Fahrenheit. The high temperature exceeds 90 degrees Fahrenheit for fewer than three months out of the year. By contrast, Minneapolis, which was named Bicycle Magazine’s *Best City*

for Bicycling in 2010, has an average high temperature below 45 degrees Fahrenheit for five months of the year. **Figure 7.1** shows the average monthly temperature in Sugar Land

- The City of Sugar Land has a potent toolbox of land-use regulations and incentives that it can apply to encourage biking and walking and create a multi-modal transportation network.
- The City has an extensive network of drainage and utilities easements and roadway right-of-ways that could potentially provide excellent connectivity to activity centers.

Additionally, as discussed in Chapter 10, the types of land use that currently exist within and around Sugar Land are amenable to biking. **Figure 7.2** shows the location of land uses within the City that are of the type that can be accessed by bicycle (green), can possibly be accessed by bicycle (orange), and are difficult to access by bicycle (purple). As shown in the figure, the majority of land uses in Sugar Land are of the type that can be comfortably accessed by bicycle. To unlock that potential for bicycle transportation, however, those bicycle-friendly land uses must be connected with appropriate infrastructure so that residents can feel safe make the trip by bike from home to work, grocery store, or school.



Fig 7.1 - Average Temperature in Sugar Land; (Source: www.weather.com)

BICYCLE

Bicycling is flexible; you can leave at any time. It is good for short-to-medium distances. User cost is low and there can be little or no incremental infrastructure cost when riding on roads.

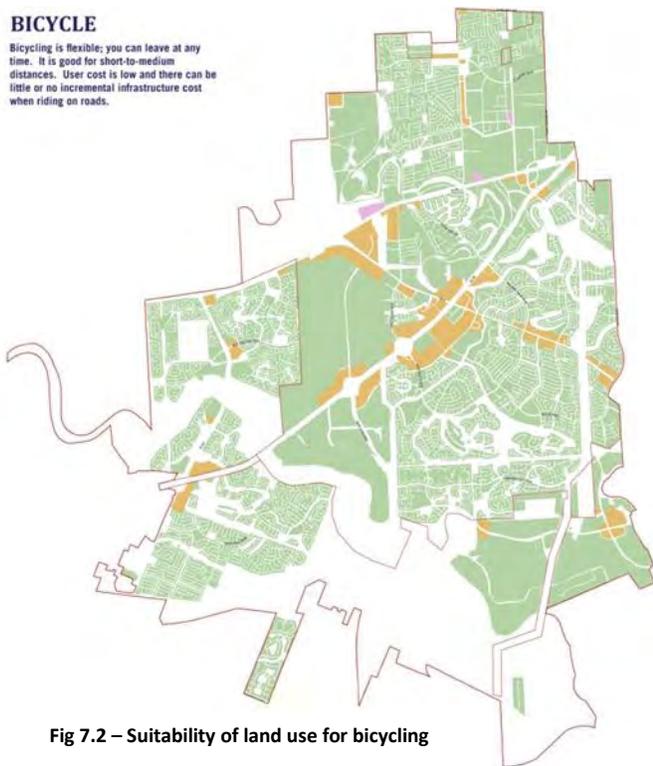


Fig 7.2 – Suitability of land use for bicycling

Strategies to Increase Transportation Choices that Promote a Healthy Active Lifestyle

The League of American Cyclists presents their annual “Bicycle Friendly Community” award to communities that have demonstrated a commitment to bicycling. The award is judged on five criteria, known as the “five Es”: engineering, education, encouragement, enforcement, and evaluation. The five Es apply equally well to promoting walking. These criteria assure that communities are not only committed to healthy transportation but are also thinking holistically about enabling it. The following Strategies and Initiatives are aligned with the five Es for Sugar Land to identify ways to promote healthy transportation options in the City.



Strategy #1: Expand bicycle and pedestrian infrastructure to serve all trips (recreational and nonrecreational) and increase safety.

Initiative 1A: Implement Hike and Bike Master Plan with focus on bikeway “arterials”

The 2007 Hike and Bike Master Plan recommended extensive implementation of bicycle and pedestrian infrastructure in Sugar Land. This infrastructure includes off-road trails, sidewalks, and sidepaths (trails located adjacent to roads). The projects identified as having the highest priority were those that connected various neighborhoods in Sugar Land to each other and to major retail and employment centers. Many of the projects utilized the extensive network of drainage and utility corridors present in the City, which provide an opportunity to create bikeway “arterials” for medium- to long-distance active transportation trips. It is recommended that all projects identified in the Hike and Bike Master Plan be implemented.

Initiative 1B: Enhance connections of trail network to destinations, including transit facilities

The Hike and Bike Master Plan identified projects that could form a strong backbone for bicycle and pedestrian infrastructure. However, much of the development and many of the important destinations in Sugar Land are not located directly along these backbones but are instead clustered around major roadways such as US 90 and SH 6. Existing and proposed sidewalks along these roadways are often sufficient for pedestrians but insufficient for bicyclists. In order to accommodate and encourage pedestrian and bicycle traffic to and from Sugar Land’s major destinations, bicycle and pedestrian facilities should be considered along major roadways or parallel facilities. Additionally, as transit operations are expanded in Sugar Land, it will be important to make connections to these facilities for bicycles and pedestrians. Every person walking and biking to a park and ride, for example, is equivalent to one fewer car on congested local roads during peak traffic hours.

Town Square, the larger Town Center area, and the future baseball park are unique districts that could be defined as centers for active transportation with focused infrastructure improvements. The straight-line distance from Town Square to the proposed ballpark site is approximately 2.5 miles, or a 15 minute bike ride at a comfortable 10 mph pace. If infrastructure improvements at the three sites are coordinated, a corridor of bicycle- and pedestrian-friendly development would be created. Families could readily decide to take a ride from home to lunch at Town Square, do some shopping around Town Center, and finish the afternoon with a baseball game at the ballpark. The corridor would become known for more than just the stores and restaurants at the end of the trip; it could also become popular for the trip itself.

Opportunities to support healthy active transportation choice have been developed to provide some guidelines of what can be possible to achieve the goal. These types of improvements can also be applied to other locations in the City.

Town Square and Town Center South

Sugar Land Town Square, at the southwest quadrant of the interchange of SH 6 and US 59, is designed with a mix of land uses, a regular street grid with comfortable sidewalks, and a variety of development densities. The urban form of Town Square makes walking within the development a very appealing option. Additionally, Town Square embraces the surrounding roadway system without a surrounding parking lot that would form a barrier to walking and cycling visitors. However, there are significant gaps in bicycle and pedestrian accommodations in the infrastructure connecting Town Square with the rest of Sugar Land. Until these gaps are addressed, the

majority of visitors to Town Square will forego walking or biking there and drive instead, thereby missing out on one of the most unique attractions of the development.

Traffic to and from Town Square utilizes one of the surrounding thoroughfares: Lexington Boulevard, Town Center Boulevard North, SH 6, or US 59 NBFR. In the vicinity of Town Square, Lexington Boulevard and SH 6 has sidewalk accommodations for pedestrians; US 59 NBFR has no pedestrian accommodations, although sidewalks are planned for construction and funding has been identified. None of the three roads has accommodations for bicyclists, who must therefore share the road travel lanes with vehicles or sidewalks with pedestrians (or choose to avoid the area). There is an existing trail along Ditch C southeast of Town Square with proposed additions, but existing trails do not connect directly to Town Square.

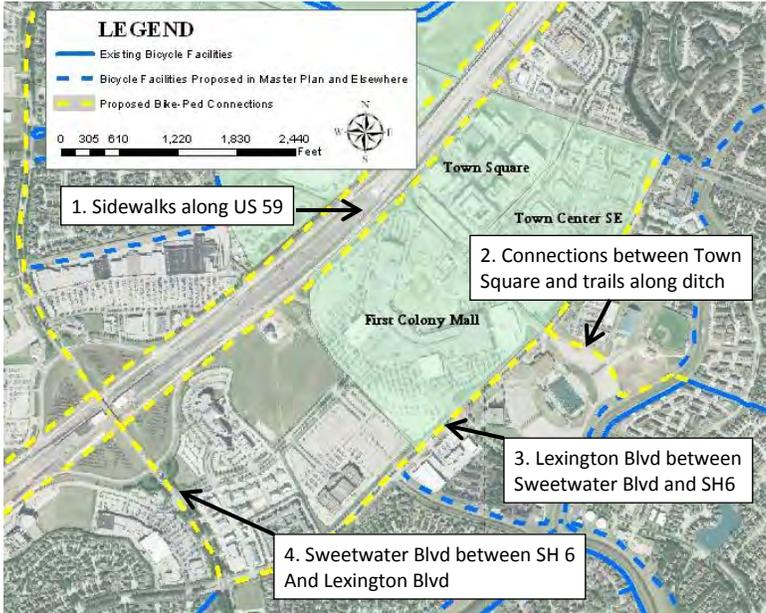
In 2007, Sugar Land partnered with the Houston-Galveston Area Council to create the *Sugar Land Town Center Pedestrian and Bicyclist Special District Study*. Since then, Sugar Land has continued to refine its approach to the Town Square area. The following opportunity corridors and connections, summarized in **Figure 7.3**, have been identified to continue improving bicycle and pedestrian connectivity to Town Square and Town Center South:

- 1. **US 59 Frontage Road in the vicinity of Town Square.** A sidewalk has been proposed for this section of the frontage road. This sidewalk will provide mobility for the entire Town Center area and is recommended for construction.

- 2. **Connection between Town Square and the proposed/existing trails along the ditch southeast of Town Square.** This drainage easement could enable residents in the neighborhoods southeast of Town Square to safely access Town Square if a connection is created between Town Square and the trails, possibly along the northeast side of Mercer Stadium. A bridge over the ditch may be considered to connect the north and south trails.

- 3. **Lexington Boulevard between Sweetwater Boulevard and SH 6.** Residents bicycling to the Town Square and First Colony Mall area have no dedicated route to move between the many local destinations; dedicated bicycle facilities would provide a safer way for residents to bicycle in this destination-rich environment. It would also provide a route to the area for residents living in the communities lying to the southwest and those coming from the north side of US 59 along Sweetwater Boulevard. The City is considering constructing a wide sidepath along Lexington Boulevard; this improvement is recommended for implementation.

Fig 7.3 – Opportunities for bike/ped improvements around Town Square



4. **Sweetwater Boulevard / First Colony Boulevard between SH 6 on the north and SH 6 on the south.** Many communities south of Town Square can be accessed solely from Sweetwater Boulevard; therefore, most residents choosing to bike to and from those communities will likely use Sweetwater Boulevard for most or all of their trips. Many of the communities north of US 59 use First Colony Boulevard to access the Town Square area. A bicycle/pedestrian facility along these roads could connect to existing and planned trails in the area, thereby providing a safe and direct route from a wide variety of Sugar Land neighborhoods to a number of destinations.

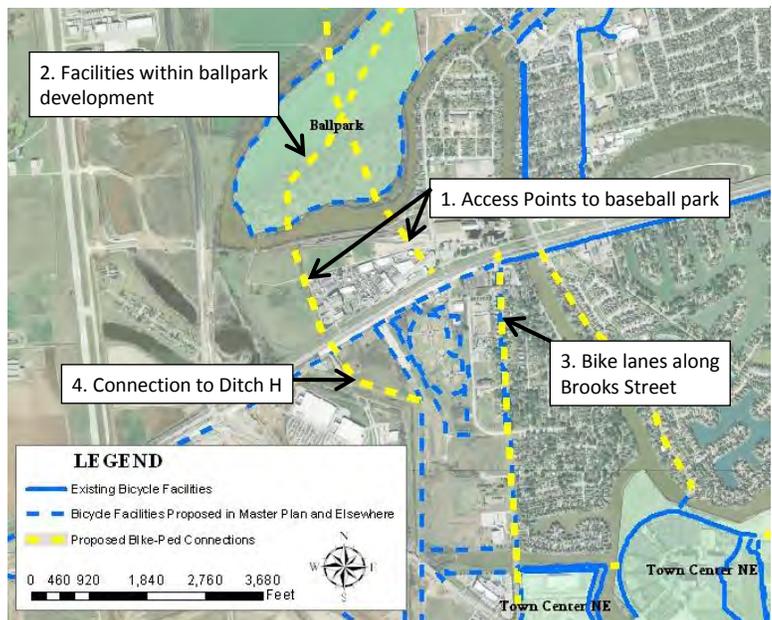
Baseball Park

The proposed baseball park development has the potential to be a bicycle and pedestrian-friendly destination from its inception. According to the 2007 Hike and Bike Trails Master Plan, proposed bicycle and pedestrian accommodations for the development will be sidewalks along the proposed Ulrich Boulevard and trails following the inside contour of the peninsula formed by Oyster Creek. Although these accommodations will provide access to surrounding neighborhoods and circulation within the development, both access and circulation could be further improved by including bicycle infrastructure in the proposed cross section for the University Boulevard extension and Ulrich Street construction. Many tracts along University Boulevard within the overall development are planned for mixed-use development, which visitors on foot and on bike will likely desire to patronize. Furthermore, parkway sidewalks are proposed for University Boulevard south of US 90, and proposed trails along Ditch H will intersect US 90 near University Boulevard; to fully maximize the utility of these accommodations, consideration should be given to how to connect them to the ballpark.

The following opportunity corridors and connections, summarized in **Figure 7.4**, have been identified to improve bicycle and pedestrian connectivity to the proposed ballpark development:

1. **Consider bicycle and pedestrian infrastructure on access points to the baseball park.** Ulrich Street and University Boulevard are planned to provide the main points of access to the ballpark development. Facilities such as sidewalks, sidepaths, and/or bike lanes along these roads would ensure that pedestrians and bicyclists can safely access the development. They would also provide important connections to the existing and planned trails south of US-90, including Ditch H. Pedestrian/bicycle facilities should also be considered at RR crossings.

Fig 7.4 – Opportunities for bike/ped improvements around the ballpark



2. **Provide facilities and amenities within the ballpark development.** An extension of University Boulevard and Ulrich Street are proposed to provide circulation mobility within the ballpark facility. These roads



could be designed as “complete streets” to create a Town Square-like environment where pedestrians and bicyclists feel safe and comfortable using the street. Facilities along these streets could tie into the hike and bike trails planned for construction along Oyster Creek.

3. **Develop bike lanes along Brooks Street.** Brooks Street is a north-south running street that runs between US 90 and SH 6 and continues south of SH 6 as First Colony Boulevard. It could serve as an important route for bicyclists between Town Center and the proposed ballpark. Bike lanes are currently planned for Brooks Street, and their implementation is recommended. Consideration should be given to how these bike lanes ultimately tie into the ballpark development
4. **Provide a connection between the trails planned for Ditch H to the ballpark development.** Ditch H is planned to create an important north/south bicycle and pedestrian arterial. There is an opportunity to connect this future trail with any bicycle/pedestrian facilities provided along the extension of University Boulevard to provide a direct route into the ballpark area.

Town Center North/Fluor Corporation

North of US 59, Town Center and adjacent developments consist of a rich assortment of destinations, including major shopping centers like Whole Foods and Target. There is an existing trail system around Brooks Lake and Fluor Daniel as well as around Ditch F, south of SH 6. However, these trails are primarily designed for recreational use as they largely lack connections to local or regional destinations. The trails around Ditch F provide a good route from residences to the Town Center area but are hindered by a lack of “last-mile” connections into the retail developments of Town Center.

There is currently no direct route for bicyclists to access the area from neighborhoods to the north. SH 6 provides the principle route for vehicular traffic through the area. The existing 6-ft sidewalk north of SH 6 is sufficient for low bicycle and pedestrian volumes, but at higher volumes the width will be insufficient for the substantial speed differential between bicyclists and pedestrians. The interchange of SH 6 with the US 59 Frontage Roads is difficult for bicyclists and pedestrians.

North of First Colony Boulevard/Brooks Street, the sidewalk along SH 6 disappears completely and bicyclists are forced to join heavy traffic in the mainlanes. Pedestrians are not provided for at all. Brooks Street provides an alternate route for northern destinations, but its current cross-section does not specifically provide for bicycles and lacks a consistent sidewalk for pedestrians.

Lake Pointe Parkway and Creekbend Drive provide sidewalks and are suitable for bicycles because of low traffic volumes, but that infrastructure could be improved, especially in how it connects to surrounding infrastructure.

The following opportunity corridors and connections, summarized in **Figure 7.5**, have been identified to improve bicycle and pedestrian connectivity to destinations in the Town Center area north of US 59:

1. **Construct bike lanes along Brooks Street.** The bike lanes that are planned for implementation along Brooks Street would provide a route between Town Center and the proposed developments at the Imperial Sugar redevelopment and the ballpark.
2. **Oyster Creek Drive north of Town Center.** Oyster Creek Drive is a local street that is discontinuous for vehicle traffic which tends to keep traffic volumes and speeds low, making it an attractive route for

bicyclists. The 2007 Hike and Bike Master Plan recommended construction of a trail across the dam at the southern terminus of Oyster Creek Drive; Oyster Creek Drive would be the natural northern continuation for that trail, connecting Town Center to the Imperial Sugar redevelopment and neighborhoods north of US 90. The street could be signed as a bike route, emphasizing the right of cyclists to use the road, and signs could be installed to provide directional information to cyclists.

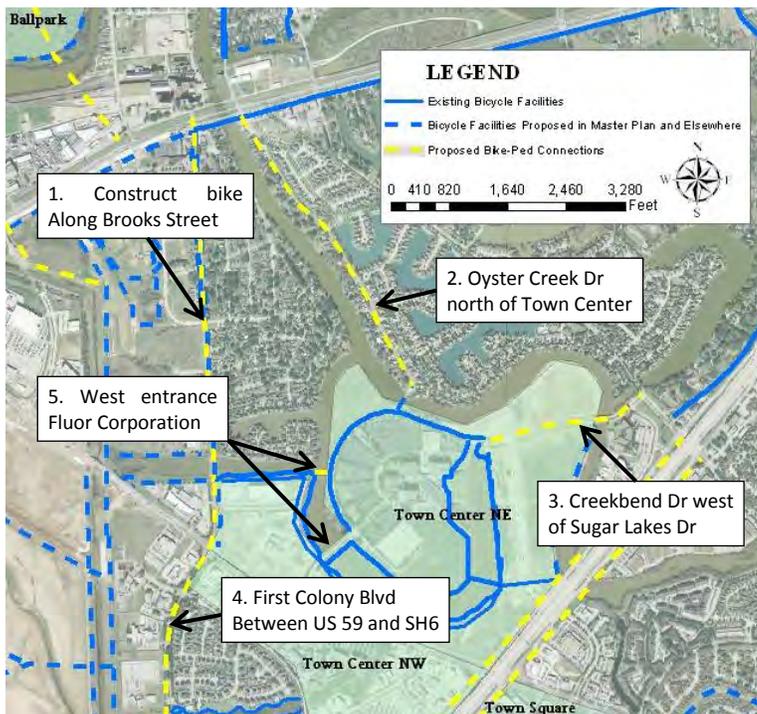
3. **Creekbend Drive west of Sugar Lakes Drive.** Bicycle facilities along Creekbend Drive from Sugar Lakes Drive to the existing bicycle lanes on Fluor Daniel Drive would connect bicycle traffic from Sugar Lakes Drive to Fluor Corporation as well as the mixed-use development along Creek Way Drive and Lake Pointe Parkway. It would also connect cyclists to the extensive trail network on and around the peninsula and to the proposed bridge to Oyster Creek Drive.

4. **First Colony Boulevard between US 59 and SH6.** First Colony Boulevard is an important north-south route for residents to access stores and restaurants at Town Center, Town Center Square, and, via Sweetwater Boulevard and Lexington Boulevard, First Colony Mall and Town Square.

The City of Sugar Land is planning to widen the existing sidewalk into a sidepath; this widening is recommended to accommodate bicyclists as well as pedestrians along this important route.

5. **Accessibility at the west entrance of Fluor Corporation.** There are relatively few connections between Fluor Corporation across the creek to surrounding development and trails. The main bridge across the creek provides a relatively narrow sidewalk and no bike facilities. It is recommended that Sugar Land explore options for improving bicycle and pedestrian accessibility on this side of the Fluor Corporation. These could include the reallocation of space on the existing bridge or even the construction of a dedicated pedestrian and bicycle bridge.

Fig 7.5 – Opportunities for bike/ped improvements around Town Center North



Initiative 1C: Implement on-street bicycle facilities to supplement the hike and bike trail network

Many of the recommended bicycle and pedestrian improvements identified above could be implemented using a variety of specific routes and infrastructure – including on-street bicycle facilities such as bike lanes. On-street facilities can be a low-cost way of providing needed bicycle infrastructure by using existing or proposed pavement. Studies have shown that properly designed bike lanes can be safer than other types of bicycle facilities, such as sidepaths adjacent to the road. On-street bicycle facilities also offer a significant advantage over other types of facilities in that they offer the most direct route to stores, businesses, schools, and other

destinations that front the road; a bike lane can fill the gap to areas inaccessible to off-street facilities. It is recommended that the City of Sugar Land explores opportunities to utilize on-street bicycle facilities to supplement the existing and proposed hike and bike trail network.

Initiative 1D: Explore use of technology to improve pedestrian and bicycle safety, e.g., in-pavement lighting, pedestrian heads

Technology exists that can assist pedestrians and bicyclists cross busy roads. Examples of such technology include pedestrian signal heads, in-pavement lighting, and motion-actuated pedestrian detection. It is recommended that Sugar Land implement a program to explore use of this technology to improve pedestrian and bicycle safety.

The *Sugar Land Town Center Pedestrian and Bicyclist Special Districts Study* identified pedestrian signal heads as an important element of assisting pedestrians determine “when to safely cross the street, especially at busy intersections, unusual geometry, or with complex signal phasing like split phasing.” Count-down signal heads, which display the amount of time remaining for a pedestrian to safely cross the road, are particularly effective.



Fig 7.6 - Lighted pedestrian crosswalk with automatic detection at Hobby Airport

The clear demarcation of pedestrian crosswalks is also critical to ensuring safe roadway crossings. Effective demarcation at unsignalized pedestrian crossing is particularly important, especially during low-light times of the day. In-pavement lighting can be effective at alerting drivers of the presence of a crosswalk at dusk and dawn. When these are tied to automatic, motion-actuated pedestrian detection -- as is the system at Hobby Airport, shown in **Figure 7.6** -- use of the system is greatly simplified and can ensure that the crosswalk is only illuminated when a pedestrian is crossing.

Strategy #2: Use policy, regulatory, and planning tools to ensure that public and private developments are consistent with the City’s bicycle and pedestrian infrastructure plans.

The reasons for the high quality of life that Sugar Land offers and which continues to define it as a premier community in the Houston region are many, but chief among them is the City’s policy, regulatory, and planning toolbox that it uses to achieve consistency and harmony among residential and commercial developments. Many of these tools could be used to ensure bicycle and pedestrian infrastructure at trip destinations that would complement the City’s existing and proposed pedestrian and bicycle infrastructure.

Initiative 2A: Incorporate complete streets in design of roadway projects

Sugar Land enjoys many existing hike and bike trails throughout the community, and many more of these trails are planned for the future. These facilities provide excellent routes for medium- to long-distance travel. However, trails by themselves are unable to completely enable walking and bicycle modes without



Source: Charmeck.org

complementary facilities along roadways and in private development. Most bicycle and walking trips begin at end at the same origins and destinations as other trips, and because these locations are frequently located along major roadways, making roads as safe as possible for bicyclists and pedestrians – in other words, providing “complete streets” – is essential to ensuring the availability of multiple modes of transportation. Retrofitting bicycle and pedestrian infrastructure into existing roadway cross sections is often much more difficult and costly than building that road with that infrastructure from the beginning. Furthermore, because of the expense of

retrofitting, routes must be selectively chosen and prioritized to maximize use of limited funds. On the other hand, building roads with sidewalks, bicycle lanes, and other elements of bicycle and pedestrian infrastructure at the start adds nominal costs to constructions and can ensure that *all* new roads are bicycle and pedestrian routes.

Chapter 5 discusses complete streets in more detail.

Initiative 2B: Partner with the private sector to ensure provision of pedestrian/bicycle amenities

Bicycle and pedestrian infrastructure cannot end at the property line and instead must be provided up to the front door of destinations. Ideally, end-of-trip amenities including bike racks, showers, and lockers for personal items would be provided at major destinations (see **Figure 7.7**). These amenities improve the comfort of walking and biking and increase the likelihood that residents will choose these active forms of transportation. Regulations requiring on-site bicycle amenities and incentives to reward volunteered provisions can both be effective methods for ensuring that private infrastructure complements public infrastructure. Potential incentives include:

- **Decreased parking requirements.** Destinations located on or near trails and complete streets and that provide end-of-trip amenities and infrastructure have the potential to replace automobile traffic with bicycle and pedestrian traffic. Locations that generate less automobile traffic do not need as much automobile parking, and the cost of parking infrastructure can be substantial. Lessening the parking requirements for these developments can be a strong incentive to attract as much bicycle and pedestrian traffic as possible. As an added benefit, fewer and smaller parking lots can make an area much more attractive and also put more destinations within walking or biking distance.



Source: illuminatela.org

Source: meadowlink.org

Source: dexioner.com

www.dexioner.com

Fig 7.7 – Types of end-of-trip bicycle amenities

- **Adjustments to Traffic Impact Analyses.** For the same reason that developments that use voluntary infrastructure and amenities to attract bicyclists and pedestrians may have decreased need for automobile parking, the same developments may have decreased traffic impacts on the roadway network. Allowing developers to account for potential bicycle and pedestrian traffic in Traffic Impact Analyses may reduce the need for expensive roadway and intersection improvements thereby creating a cost incentive to provide bicycle and pedestrian amenities.

Initiative 2C: Require on-site bicycle/pedestrian connections and amenities through site plan review process

Parking lots and driveways can be chaotic and hazardous to a pedestrian or cyclist attempting to access business destinations. In Sugar Land, pedestrian and bicycle accommodations are frequently not fully thought through for businesses, and patrons on foot or bike often must share driveway access points with cars and trucks. For bicycle and pedestrian infrastructure to be most useful, it cannot end at the property line – it must be provided up to the front door of residences, businesses, and other destinations. It is recommended that Sugar Land consider new and rebuilt developments provide direct, safe, and dedicated access routes for pedestrians and cyclists to ensure that publicly-funded infrastructure can be used for transportation in addition to recreation.

Initiative 2D: Adopt policy that recognizes differences between bicycle and pedestrian needs

Although pedestrians and bicyclists share many similarities – their relative vulnerability, for example – their needs are not always the same. In particular, although their speeds are low compared to motor vehicles, their relative speeds can create conflict on a shared facility. Pedestrian, walking at approximately 3 mph, can feel very uncomfortable when being passed by a bicyclist going three to seven-times as fast (10 mph-20 mph). A collision between a fast-moving cyclist and a pedestrian can result in serious injury to either party. Therefore, it is important that any facility shared by both pedestrian and cyclists provide sufficient space for passing maneuvers, not just to ensure comfort but also safety. Sidewalks, with a typical width of 4 feet to 6 feet, do not provide sufficient space for safe and comfortable passing maneuvers and should not normally be considered appropriate facilities for bicycle usage. It is recommended that the City of Sugar Land adopt a policy to provide appropriate facilities in addition to or in place of sidewalks in corridors where bicycle usage is observed or expected.



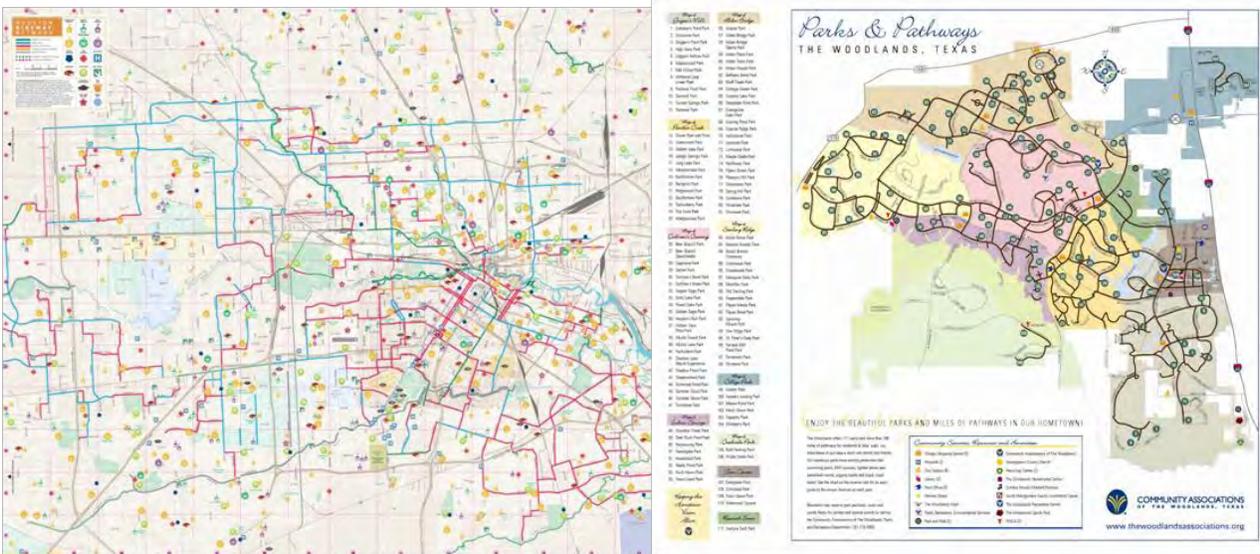
Strategy #3: Foster a culture of support for bicyclists and pedestrians

Initiative 3A: Create and distribute a bike routes map.

Trails, sidewalks, bike lanes, and other infrastructure that promotes healthy, active lifestyles will only be used if residents know about them. A bicycle map is a crucial for promoting investments in bicycle infrastructure, and it is recommended that Sugar Land develop a map of bicycle routes and update it on a regular basis to reflect the addition of new roads, trails, and development. Bicycle maps identify safe routes for bicyclists to popular destinations. They also demonstrate a citywide culture that embraces bicycling as a valid and safe form of

transportation. **Figure 7.8** shows bike and trail maps from the City of Houston and the Woodlands. Both maps include popular destination for cyclists in addition to infrastructure.

Fig 7.8 – Examples of bike maps from the City of Houston and the Woodlands



Initiative 3B: Explore need for Safe Routes to School Plan with school districts

Safe Routes to School (SRTS) is a federally-funded program with the goal of increasing the number of students that walk and bike to school. SRTS funds can be used to create a wide variety of local programs custom-tailored to the community. These projects can include sidewalk and crosswalk improvements, education for such topics as safe bicycle riding, and various forms of encouragement including bike-to-school events. SRTS plans can be created for any level of the school system, from individual school to the entire state level.



Many elements of a SRTS plan can be implemented quickly and at low cost. These can include after-school classes to teach kids proper bicycling and street-crossing techniques and “walking school buses,” where a group of children, typically with an adult chaperone, bikes or walks to school, stopping by houses on the way to add more children to the group. If more capital-intensive projects are identified in the plan, such as sidewalks, traffic signal modifications, or crosswalks, the projects can be submitted as candidates for funding when the State periodically puts out calls for projects. It is recommended that the City of Sugar Land team with Fort Bend ISD to explore the need for a SRTS plan for the district and for individual schools within the City.

Initiative 3C: Implement programs that encourage use of alternative modes of transportation, such as “Bike-to-Work Day”

Encouragement programs for bicycling and walking can be a very cost-effective way to send the direct message that bicycling can be an important part of the City’s transportation system. Historically, the culture in Sugar Land has been that bicycles do not belong on the streets with automobiles. Implementation of programs that encourage bicycle ridership are needed to educate residents and change the culture. Examples of encouragement programs include public bike rides, bike rack design competitions, and bike-sharing programs.

Public bike rides. Organized public bike rides can be a very popular type of encouragement program. Rides that are most effective at promoting bicycles as transportation are typically programmed around a destination. For example, Bike-to-Work Day, celebrated on the third Friday in May across the United States, encourages people to bike to work. The City of Houston sponsors a public ride to City Hall. Former Mayor Bill White participated in this ride and was able to draw substantial media attention to it. The City of Sugar Land could host a similar ride to its City Hall. It could also work with major places of employment and schools to organize their own rides for the same day. Encouraging as many people as possible to ride a bike to work or school on the same day at the same time will help send a powerful message that both the City Administration, as well as City residents, value bicycling.



Bike rack competitions. Several cities have used bike rack-design competitions to encourage residents to think about bicycling in their community while simultaneously resulting in a unique bicycle rack that can showcase the community’s commitment in perpetuity. Successful competitions have been held in Washington DC, San Francisco, New York City, and many other cities within the United States. In addition to adding valuable bicycle parking around the City, the bike racks that result from the competition serve as public art. **Figure 7.9** shows examples of winning entries in similar competitions.

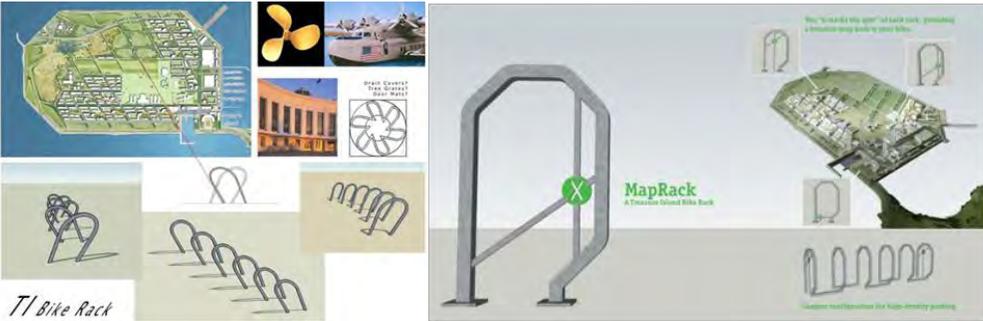


Fig 7.9 – Winning entries from bike-rack design competitions

Bike-sharing programs, such as the Vélib program in Paris or B-Cycle in Chicago and planned for Houston, provide multiple stations where shared bikes can be rented by credit card. Town Center and the proposed ballpark development would make excellent candidates for bike-sharing programs. They both have or will have a relatively dense mix of land uses and are likely to serve a high proportion of visitors to the City who may desire

to park once and explore the City’s offerings by bike. Many spectators of the baseball games may even decide to make the game part of a longer stay in Sugar Land. After the game, the family may want to bike along the nature trails planned for the surrounding land, or they may choose to bike together to a nearby restaurant. Bike-sharing makes these types of visits possible by making rental bikes convenient and accessible.



Source: malias on Flickr



Source: Sally Mahoney on Flickr

According to the Houston Advanced Research Center, the group pursuing a bike-share program in Houston, the most important key to attracting a bike-share program is to identify a champion for the program. This champion must engage community leaders and help them understand the opportunities associated with bike-sharing and lead them in approaching vendors as well as government entities for accessing various funding options.

Initiative 3D: Implement educational programs regarding pedestrian and bicycle safety

Some of the most cost-effective strategies for promoting bicycling and walking within a community involve education of children, parents, drivers, employers, and other members of the community. Some of the fears that keep people from biking or walking result from a misunderstanding of the true threats that exist. Other fears are based on real risks, but these risks can be effectively minimized with understanding and practice. As Sugar Land continues to build pedestrian and bicycle infrastructure, education can play a crucial

role in helping residents feel comfortable taking advantage of that infrastructure. Types of educational programs that could be considered include after-school classes that teach basic bicycling, walking, and street-crossing skills to children and “bicycle rodeo” events that are open to the community and which host a variety of bicycle-related activities.

Initiative 3E: Explore the potential for standing City/Resident Bicycle Committee

It is recommended that the City of Sugar Land explore the potential for a standing committee dedicated to bicycle and pedestrian issues. This committee would provide members of the community a clearly-defined channel for communicating bicycle and pedestrian needs and desires. It could also be tasked with developing a strategy for winning a “Bicycle Friendly Community” award from the League of American Cyclists. This coveted designation honors the winners with a very visible write-up in the League of American Cyclists’ annual publication *Bicycle Friendly America Yearbook*. Membership of the standing committee could be composed of City staff, elected officials, business leaders, and interested residents from the community.

METRICS

The following metrics are recommended to measure the progress of providing transportation choices that promote a healthy, active lifestyle in the City of Sugar Land:



- **Population within 1/4 mile of a Trail/Path:** People living close to a trail or path are more likely to use it; tracking the total population and percentage of population that lives within ¼ mile of a trail or path will provide a measure of the accessibility of the trail network to the residents of Sugar Land.
- **Off Road Trail Miles:** This metric would count the total number of off-road trail miles and would reflect the percentage of the population that can take advantage of the trail network as well as the number of destinations accessible by the trail network.
- **Trail Utilization (Selected Locations):** This metric would count the number of trail users over a set amount of time at selected locations to measure trail utilization. This count would provide a direct manner of measuring growth of utilization of trails from year to year. It would also enable comparisons of utilization of different trails to learn what trail characteristics most appeal to trail users. Existing pedestrian/bicycle counter technologies could be used to conduct the counts, including technology that uses an infrared beam that is broken when the pedestrian/biker passes the counter.
- **Bike Racks:** Every bicycle trip ends with a need to secure the bicycle. This metric would count the total number of publicly-accessible bike racks on public and private properties and would provide a metric for estimating the bicycle accessibility at trip ends. The metric could be defined by the number of either bike rack structures or individual bike securing spots.
- **Sidewalks in Good Condition:** This metric would compute the percentage of sidewalk miles rated to be in good condition. It would provide a measure of the condition of pedestrian infrastructure in Sugar Land. Even the most extensive infrastructure network can grow ineffective at providing mobility as it ages and deteriorates, and this goes for sidewalk networks as well.
- **Pedestrian/Bicycle Mode Share (ACS):** The American Community Survey (ACS) prepared by the United States Census provides detailed data about the population on an annual basis, including data related to transportation mode share. The ACS mode share estimate would provide a metric of the percentage of the population utilizing walking or biking as a primary mode of transportation.
- **Children walking/biking to school:** This metric would estimate the percentage of children biking or walking to school. The school district or individual school may already collect this data; in that case, the metric would simply require collecting it from the district.

¹ *Health, United States, 2008*, National Center for Health Statistics, 2008.

² *Vital Signs: State-Specific Obesity Prevalence Among Adults*, National Center for Health Statistics, 2011.

³ *The Surgeon General's Vision for a Healthy and Fit Nation 2010*, U.S. Department of Health and Human Services, Jan 2010

⁴ *Walking and Cycling to Health: A Comparative Analysis of City, State, and International Data*, American Journal of Public Health, 8/19/2010.

⁵ *Type 2 diabetes: Prevention*, Mayo Clinic website, accessed 3/31/2010.

⁶ *The Unintended Consequences of Cul-de-sacs*, Harvard Business Review, May 2010.

⁷ *2009 Sustainable Streets Index Report*, New York Department of Transportation, 2009.

⁸ John Pucher, Lewis Thorwaldson, Ralph Buehler, and Nicholas Klein, *Cycling in New York: Innovative Policies at the Urban Frontier*, *World Transport Policy and Practice*, Vol. 16, summer 2010.



Goal 5: Integrated Regional Transit Services Connecting To and From Sugar Land via Convenient, Efficient Trips

New residential developments and redevelopments are planned and underway in Sugar Land and the ETJ. The City is also the headquarters to several large corporations. Businesses are choosing to locate in Sugar Land and the City of Sugar Land is working with developers to bring more attractions to the area, including the new baseball park at the Imperial Sugar site, a concert venue and mixed use development near the intersection of US 59 and University (Tract 5), and a festival site at Memorial Park.

Currently, many residents in Sugar Land work at employment centers in Houston with heavy concentrations of area commuters traveling to work in Downtown Houston, the Galleria/Uptown area, Greenway Plaza and the Texas Medical Center. There are also a growing number of commuters from outside the City traveling to Sugar Land to reach employment. Large employers, such as Fluor Daniel, Schlumberger, Minute Maid, the Methodist Hospital, Memorial Hermann Hospital and St. Luke's Episcopal Hospital all have employees that reside outside of Sugar Land and travel to the City for work.

Sugar Land has grown extensively from a small industrial town to a regional hub of a residential, commercial and light industrial, and entertainment/recreational development. Traffic volumes and congestion have also increased with the growth and development of the City. The City is well connected to the region by a system of highways and major thoroughfares; and, although residents are typically pleased with their ability to move around the City, many roadways experience congestion during commuter peak hours. Transit can provide a travel choice and help reduce congestion at critical times. Implementing an integrated regional transit network connecting Sugar Land with other regional destinations would enhance area mobility and be an attractive alternative to the single passenger automobile. An integrated regional transit network also provides a convenient and cost saving alternative that is attractive to many residents.

Regional Transit Services Are Part of the Solution for Superior Mobility

When meeting with stakeholders to discuss mobility concerns in Sugar Land, interviewees agreed that the park and ride service from Sugar Land to other regional destinations is a successful program and supported the continued operation of service. The majority of the interviewees felt improved park and ride service and regional transit connectivity are critical to providing Superior Mobility in the City. At workshops with the City Council, Planning and Zoning Commission, and Parks and Recreation Advisory Board, there was also consensus in advocating for regional transit connectivity in the form of continued and expanded park and ride bus service. Many members of the Mobility Advisory Committee suggested that regional transit connectivity be included as a measurement of success in achieving improved mobility in Sugar Land.

Findings from the on-line survey conducted in Fall 2010 indicated that the provision of regional transit connectivity and commuter services is an important goal to include in the comprehensive mobility plan. The majority of respondents agreed that they would use bus or rail transit to access locations outside of Sugar Land and most of those respondents also strongly supported the development of commuter rail linking Sugar Land to



other employment and regional destinations. In addition, the majority of the respondents strongly agreed that Sugar Land would benefit from commute services linking Houston and the surrounding areas to jobs in Sugar Land.

The existing Sugar Land Park and Ride service provided by Fort Bend County has been successful with approximately 500 Sugar Land area residents riding transit via TREK Express/Fort Bend County Express for all or part of the commute trip to work destinations in Houston. Recently, additional trips and a new route were added to the TREK Express service in an effort to reduce travel time and meet patron demand to high density employment destinations. Parking at the two Sugar Land park and ride lots are almost at capacity and Fort Bend County is analyzing opportunities to expand commuter service and park and ride lots to other sites within Sugar Land. Fort Bend County is about to take delivery of new buses with plans to augment commuter services in Sugar Land and other locations in the county.

Strategies for Providing Integrated Regional Transit Service Connecting To and From Sugar Land via Convenient, Efficient Trips

Strategy #1: Encourage Alternative Commute Strategies such as Carpool/Vanpool, Telecommuting, Reverse Commuting, Flexwork

Initiative 1A – Work with H-GAC’s Commute Solutions, METRO and private sector to encourage residents/employers to use alternative commute strategies

A number of alternative strategies already exist that would improve conditions for daily commuters traveling to and from Sugar Land. Ridesharing, either in carpools or vanpools, is a popular and easily implemented option for commuters. The Houston-Galveston Area Council (HGAC) coordinates a number of rideshare initiatives through the Commute Solutions program to encourage commuters to seek alternatives to single occupancy vehicle travel.

The regional vanpool and rideshare program, METRO STAR, is another rideshare program for regional employers and employees. The METRO STAR Program is the third largest rideshare program in the nation. According to METRO STAR, there are currently 62 carpools traveling from the Sugar Land area. In addition to the vanpools traveling from Sugar Land to other regional destinations, there are 5 vans carrying 36 riders that commute to the Sugar Land area. An additional 650 employees have registered with METRO



STAR expressing an interest in vanpooling to Sugar Land area employers.¹ A more aggressive approach and program incentives may be needed to encourage greater use of the vanpools and other commuting alternatives.

¹ Sugar Land Area Vanpool, METRO Star Vanpool Summary, August 2010

H-GAC and the METRO Star Program have offered to work with Fort Bend County to reach out to employers and residents and coordinate the marketing efforts.

There are additional rideshare incentives aimed at companies to encourage their workforce to carpool or vanpool. H-GAC has established the Best Workplace for Commuters initiative in which companies are recognized nationally for their efforts to promote alternative commuter choices. These companies may even receive tax benefits or grants for their participation in various commuter programs. H-GAC and Commute Solutions have identified Fort Bend County and the Sugar Land area as candidates for an integrated campaign with residents and area employers to increase awareness about commuting alternatives and encourage a greater commitment to ridesharing.

Other innovative approaches to address commuting congestion are to encourage employers to implement flex work hours, telecommuting and reverse commuting opportunities for their employees. More and more companies are expanding and relocating to Sugar Land resulting in a growing number of workers making the reverse commute to Sugar Land. As the volume of reverse commuters increases, the City of Sugar Land may consider providing special traffic management treatments to support reverse commute travel.

The City of Sugar Land would incur a minimal cost for marketing alternative commuting options and coordinating with residents and area agencies to implement services. H-GAC, through the Commute Solutions and METRO STAR Vanpool Programs, would play a major role in reaching out to employers and residents and would fund specific marketing and awareness efforts. METRO STAR would be responsible for soliciting potential vanpool users, organizing vanpool groups, coordinating incentives with the employers, and providing the vehicles. The City of Sugar Land should continue to encourage residents and employers to pursue innovative commuting opportunities and more actively market ridesharing, telecommuting and FlexWork alternatives through existing communication and outreach sources.

The advantage of encouraging alternative commuting strategies is that it is relatively easy to coordinate and implement. Much of the promotional material already exists and Commute Solutions and METRO STAR both have experience educating the public about commuting opportunities and administering a variety of ridesharing and incentive programs.

Strategy #2: Identify Short-Range and Long-Range Park & Ride Facility Requirements For Sugar Land

Initiative 2A – Conduct a comprehensive study to assess the demand for and optimal locations for Park & Ride services in Sugar Land, taking advantage of studies being conducted by regional partners (Fort Bend County, METRO) and the recommended Bus Rapid Transit (BRT) in Sugar Land (Strategy #3)

Ridership from Sugar Land on the existing Fort Bend County commuter bus routes averages approximately 500 daily riders. In the short term, the transit routes provide an effective commuter service for Sugar Land residents. However, the two park and ride lots in Sugar Land (AMC 24 Theater and University of Houston) are both leased facilities and parking spaces for transit users are limited. It is possible that changes in the lease and ownership arrangements may impact the County's continued use of lots for park and ride purposes. Fort Bend

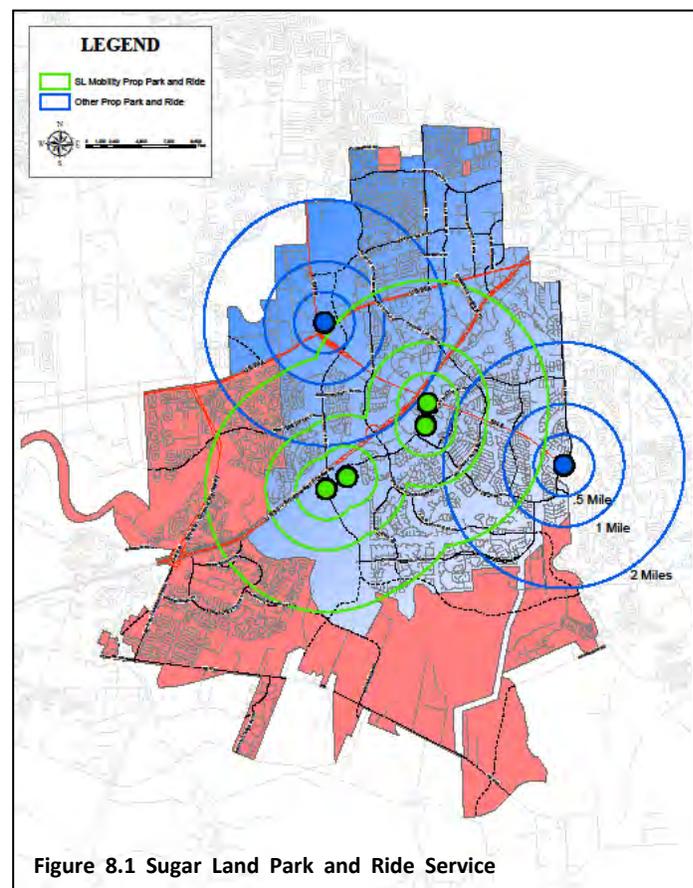


County may soon be faced with the task of finding alternative locations for staging park and ride service to replace the existing park and ride lots.

Fort Bend County is currently conducting a park and ride analysis to identify specific locations for additional park and ride facilities, based on growth projections and current commute patterns in the county. Targeted locations include sites in and adjacent to the City of Sugar Land. In particular, areas under consideration include the Imperial Sugar/Telfair developments in the vicinity of the US 90A/SH 6 intersection and the Riverstone/Missouri City area off of SH 6 in the eastern section of the County. The Riverstone/Missouri City park and ride facility will be a joint project with METRO and the service will operate on the Fort Bend County Parkway. Neither METRO or Fort Bend County are studying development of new park and ride facilities along the US 59 corridor.

As part of the development of the Comprehensive Mobility Plan for Sugar Land, the City is examining transit options, improved commuting opportunities, and park and ride development both in the short term and long term. As noted in earlier sections of this report, there is significant demand for expanded commuter transit services from Sugar Land to other regional destinations. An ultimate goal in providing Superior Mobility in Sugar Land is to have the existing commuter park and ride service evolve into a high capacity transit service that provides a more efficient connection to and from Sugar Land and the rest of the region. In the short term, park and ride facilities with greater parking capacity are needed to meet the demand in Sugar Land. These facilities should be in locations that also conform to long-term plans for transit development in Sugar Land. Opportunities exist to integrate new park and ride facilities with existing and planned mixed use developments that promote a more pedestrian, bicycle and transit friendly environment. Potential locations for larger capacity park and ride facilities in Sugar Land include sites where the parking can be shared with other uses. Sites in the vicinity of Town Square, the future Tract 5 development near the intersection of University and US 59, and Memorial Park/future Festival area all offer shared use opportunities and are easily accessible from the residential communities.

With Fort Bend County, METRO and Sugar Land all planning to develop new park and ride facilities and expanded commuter service, the commuter market may be saturated with service and the associated routes may be competing for some of the same riders. The market areas of the proposed park and ride locations include many of the same communities. Based on current Park and Ride planning activities, **Figure 8.1** provides a map of the Sugar Land area and the existing sites and potential locations for future park and ride development.



Concentric circles are drawn around the sites indicating market areas at ½ mile, 1 mile and 2 mile distances. While the lots serve varying communities within Sugar Land and Fort Bend County, the distance between lots is not that significant and the proposed sites draw from the same service areas. To avoid duplication and/or competing commuter services, the City of Sugar Land, in coordination with Fort Bend County and METRO, should conduct a Park and Ride Feasibility Study. The study would not only evaluate projected demand, lot location, and potential for shared use development, it would also examine route options and the employment centers to be served by the lots. The study would also identify potential service providers and the most cost effective options for the delivery of park and ride service.

The product of the study would be a Park and Ride Master Plan addressing both short term needs and long term objectives. The study would recommend a park and ride service plan that most effectively maximizes demand and collectively minimizes costs. The study would also address the growing demand for reverse commute services and how to integrate the service to and from Sugar Land during the peak periods. A challenge of the study will be to determine the location the park and ride facilities and the allocation of resources to efficiently provide service to multiple regional destinations. Coordination with Fort Bend County will be critical in both conducting the study and implementing the findings. Input from METRO will help in assessing the commuter markets and creating a comprehensive plan to meet the demands in the region. Both Fort Bend County and METRO could be partners in implementing the plan and providing the transit service.

Given the uncertainty of the future of the Federal Surface Transportation Bill and also the review and approval process required to qualify for transportation planning funding, FTA funding for a Park and Ride Feasibility Study may not be an option in the short term. By coordinating and partnering with Fort Bend County, some supplemental funding may be available through the resources they have to conduct planning studies.

The study will address the long term goal of growing the commuter transit service into a regional high capacity transit system. In particular, the park and ride feasibility study will include a discussion of integrating transit improvements with future land use decisions and the opportunity to accommodate multimodal mobility choices.

Initiative 2B – Consider preferential treatment for buses on major Park and Ride routes (e.g. diamond lanes and signal preemption) to enhance attractiveness of transit

For much of the commuter transit trip, the buses operate in the diamond and HOV lane on US 59. Presently, commuter buses leave the park and ride locations and access the freeway in mixed flow with all the peak period traffic. To make transit an attractive alternative to the single passenger auto travel, Sugar Land should consider implementing priority treatment for transit on local thoroughfares, including but not limited to diamond lanes, signal pre-emption and queue jumpers. Priority transit treatment will allow the commuters buses to avoid the choke points and heavily congested intersections that characteristically impede mobility during the peak periods. The preferential transit improvements on local roadways will enhance the transit trip and complement the special transit treatments that are already in place on the US 59. The result will be a reduction in travel time on transit; a major incentive to attracting commuters to switch to transit.

Preferential transit treatment would be implemented on the local roadways in Sugar Land. Coordination between the City's Transportation and Public Works Departments will be required to plan and install the

improvements. If signal preemption is one of the improvements selected, then coordination with the transit service provider will also be required to arrange for the installation and maintenance of the preemption devices.

Implementation of preferential transit treatment on local streets is a component of the Bus Rapid Transit system (Strategy 3) and is essential in the operation of a high capacity transit service. These preferential transit improvements represent the first phase in the development of a high capacity transit service and lay the ground work for advancing to the next phase of transit improvements.

Strategy #3: Implement Regional Rapid Transit Phase 1: Bus Rapid Transit

Initiative 3A – Develop premium, branded Bus Rapid Transit (BRT) service for the City with preferred station location at the intersection of US 59 at University Boulevard, with initial service to Downtown

In conjunction with the development of a Park and Ride Master Plan, plans should also be developed for a future high capacity transit (BRT/Rail) facility connecting Sugar Land with other regional destinations. Initially, a feasibility and planning study should be conducted to assess high capacity transit options for Sugar Land and define the process for planning, constructing and operating a high capacity transit facility. The feasibility study would address the phased development of high capacity service from the implementation of a Bus Rapid Transit facility to the eventual development of passenger rail connecting Sugar Land and other Fort Bend County cities to a network of regional destinations. H-GAC supports the need for a High Capacity Transit Feasibility Study and has offered to provide funding for the study.

Following the successful completion of the Feasibility Study, the next phase is to develop a branded BRT service that will offer commuters a premium, high capacity transit option. Conceptually, a park and ride/station facility would be developed in conjunction with other new developments near the intersection of US 59 at University.



Based on current demand and employment statistics, it is proposed that the initial BRT service would be destined to Downtown Houston. Other employment destinations may also be accommodated, depending on available resources, equipment needs, and existing transit options in Sugar Land.

The BRT buses

would enter and exit the freeway facility on an exclusive transit T-ramp allowing the buses to bypass congested areas when entering and exiting the freeway. The BRT service will offer a greatly improved trip to Downtown by providing a controlled access facility for bus operations which will in turn reduce travel times.

Bus Rapid Transit has been implemented in cities all over the world and operates similar to rail transit, but is more flexible and often less expensive to construct. The Orange Line in Los Angeles, California operates in an exclusive right of way (except for a small segment that operates in mixed flow) with station spacing farther apart and a pre board





payment program similar to a rail system. The Orange Line buses are specially branded and have a different look; easily recognized as Orange Line BRT buses. These buses provide low floor boarding and multiple doors for quicker boardings and alightings. A bike and pedestrian path run adjacent to the BRT route, offering users numerous multi-modal options along the corridor. Each station has bike amenities, including bike lockers and racks, and the buses feature racks on the front that accommodate up to three bikes. The BRT Orange Line is heavily used by residents in the San Bernardino Valley and ridership continues to grow on the line.

Ultimately, US 59 could be improved and modified to provide exclusive right of way for BRT, as congestion and capacity needs warrant. The feasibility study will address the service plan and operations and the threshold for implementing an exclusive high capacity transit facility.

In addition to the BRT bus operations, a major component of the BRT service in Sugar Land would be the park and ride station for Sugar Land commuters. Two potential sites have been identified for a BRT station location in Sugar Land (see **Figure 8.2**): 1) the intersection of US 59 and University Boulevard (exact location unknown) 2) the parking lot for the future Festival Site. The benefits and challenges of each site will be influenced by the City's goals for the facility. Potential benefits and challenges for the two potential sites have been identified including the following:



Location #1: US 59 at University Boulevard/Tract 5

Benefits

- Higher potential to serve a wider range of trip types such as reverse commute and peak and off-peak trips, thus, increasing the viability of transit as an alternative transportation mode for more users
- Catalyst for Transit Oriented Development (TOD) and economic development; provides improved access and benefit to adjacent Sugar Land activity (e.g., convention center, indoor concert venue)
- Superior access to existing Sugar Land neighborhoods, with minimal backtracking (e.g., Telfair, Avalon Commonwealth, First Colony).
- Easy access to the northbound US 59 on-ramp for express service
- Easy access via bicycle/pedestrian connections, i.e., Ditch H Trail, Town Center Ped/Bike Project with possible Lexington Boulevard shared-use path, Telfair Neighborhood Trails and University Boulevard bike lanes and path
- Potential transit linkages to Town Center, University of Houston, Memorial Hospital
- Access to Town Center employers for reverse commute trips; potential impetus for Town Center redevelopment
- Opportunity to integrate intracity circulator connection with the commuter service and station/stop
- Potential reduction in structured parking costs for concert venue and/or convention center by using federal funding, if parking is shared with transit
- Higher potential for federal funding due to integration of transit facility in mixed-use development

- Improved future commuter rail accommodations due to enhanced access to more locations such as potential route through Town Center to Tract 5.

Challenges

- Cost of structured parking
- Coordination with developer and builder(s); City has limited control over developer plans for remainder of Tract 5
- Timing necessary to meet needs of development partners
- Perception that transit is not a suitable land use on highly developable property

Location #2: US 59 at Festival Site

Benefits

- Increased level of City control
- Reduction in cost of construction for Festival parking facility
- Direct access on US 59 frontage road from west (e.g., Greatwood)
- Availability of site/Lease Agreement
- Ability for expansion
- Access to Brazos River Park
- Shared parking with festival site; potential for shared funding opportunities
- Bike/pedestrian connections, i.e., US 59 Corridor Trail and Brazos Trail
- Opportunity for site to serve as satellite hub for remote parking and intracity shuttle for special events
- Simple design and layout as surface parking lot, i.e., not incorporated into dense development

Challenges

- Circuitous access and locations that would require backtracking/U-Turn at Brazos River from major residential communities (e.g., Telfair, Avalon)
- Coordination with U of H including future development planning
- Relocation of Park & Ride from this location before useful life may require funding reimbursement if funded with Federal dollars
- Limited access and minimal mutual benefit/synergy with other major activity centers (further from Town Center, current U of H site)
- Planned roadway access limited to US 59 frontage road

The City will have to decide if it would like the Park and Ride Station/Transit Center to serve as a catalyst for economic development and TOD or if it wants the Station/Transit Center to be a typical Park and Ride where people park their car and get on the bus in the morning and then they get off the bus and drive away in the evening. Once the City decides on the desired role of the Park and Ride Station/Transit Center, a preferred Park and Ride Station/Transit Center site can be identified. Coordination with area developers and institutions is needed to reach a consensus on a plan that maximizes joint use development. The US 59 at University Boulevard location has been identified as the preferred site for a Park and Ride Station in this study due to the economic development benefits.



In many cities across the country, bus and rail stations have been integrated into mixed use developments where the parking is shared and the area development is supportive of transit activity. The TOD sites are attractively designed to enhance pedestrian movements and support the surrounding land uses. In Redmond, Washington, a suburban community outside of Seattle, there are four bus transit TOD park and ride facilities. At each of these facilities, all the parking for transit is shared and most of the parking is provided in a garage. The Redmond Transit Center is located in downtown Redmond and the TOD development includes a garage, housing, city park and future electric charging station. All the parking at the development has more than one use. At other TOD developments in Redmond the transit centers share access and parking with office developments, retail facilities, and movie theaters.



In Northwest Houston, METRO and NewQuest Development operate the Cypress Park & Ride TOD which is a 21 acre development and includes a 1500 space garage, bus platform and shelter, 75,000-square-foot commercial/retail center and 300-unit multi-family housing complex. The Park and Ride facility, which began operation in fall 2007, uses 8.5 acres of the development for the garage and the transit station. The 1,500 space garage cost \$14.7 million to construct. METRO received funding support from the Federal Transit Administration to build the facility. Currently, the park and ride averages between 800 to 850 daily riders. METRO owns the entire site and NewQuest leases the remaining 12.5 acres for the retail and housing activity. The garage is shared between METRO and the apartments. There is surface parking is available adjacent to the retail establishments. During the day, 80 percent of the spaces in the garage are reserved for METRO and the remaining spaces are reserved for the apartments. However, at this time parking restrictions are not enforced in the garage. METRO incurs the costs for maintaining the transit related facilities, e.g. the transit station canopy, platform, driveways and 75 percent of the garage. NewQuest is responsible for the remaining maintenance costs.



There are three parts to the BRT program; the bus service, the controlled access BRT alignment and the BRT Park and Ride Station. To develop the complete BRT operation, Sugar Land most likely will need to have several partners. For the provision of service, Sugar Land could partner with Fort Bend County and/or METRO to coordinate bus operations and service to downtown and other destinations in region. FTA and H-GAC could also be funding partners to support the high capacity transit operations, particularly given the new service would help with regional air quality improvements and congestion mitigation. TxDOT and FTA/FHWA along with METRO and/or Fort Bend County would be a partners with Sugar Land in the planning and construction of the BRT facility, which would connect to the existing Southwest Freeway HOV. Currently, there are federal funding opportunities that would support the capital investment of a new BRT service, but securing future funding may

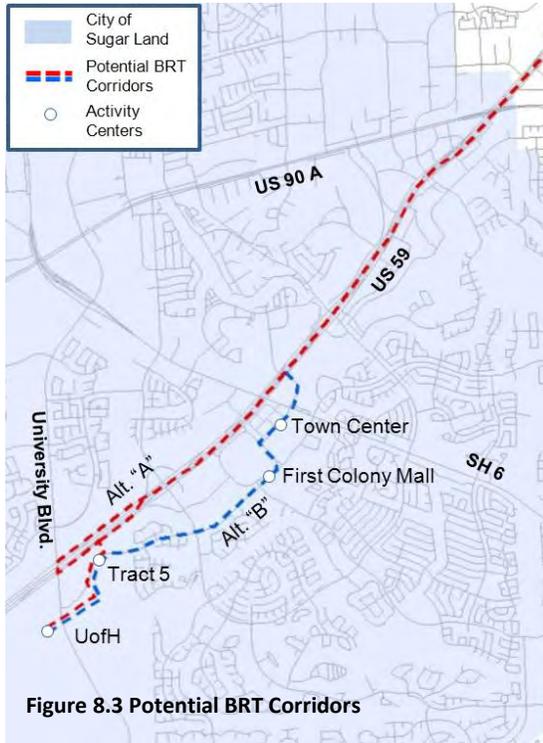


Figure 8.3 Potential BRT Corridors

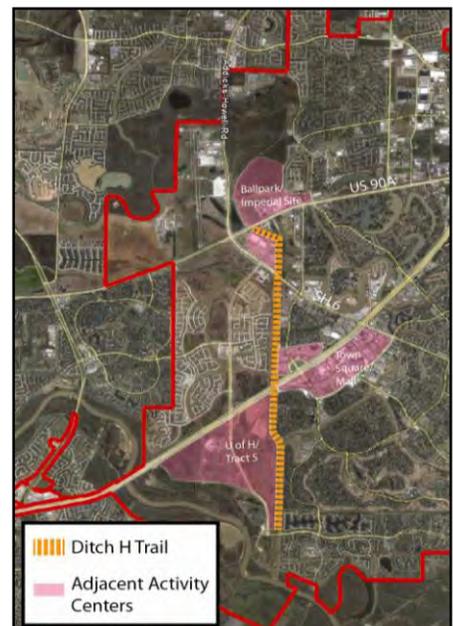
be more challenging depending on future transportation legislation. Sugar Land would most likely partner with a developer to coordinate the design, construction and operation of station and shared use garage as part of the TOD development.

The implementation of the BRT service will provide the residents of Sugar Land with a direct, fast, reliable transit trip to Downtown Houston and other regional destinations. Development of BRT is the first phase of the Regional Rapid Transit Service. With successful operation of the service, demand for high speed regional transit service will grow and eventually warrant an expansion in both service capacity and connectivity. Growth of the service will lead to the development of Regional Rapid Transit Phase 2: Commuter Rail and the ability to provide improved speed and connections to and from Sugar Land and multiple locations in the region. **Figure 8.3** shows potential corridors for a BRT service from Sugar Land operating

on US 59.

Initiative 3B – Provide connections between station and surrounding land uses via other modes such as bicycles, e.g. Ditch H Trail

The BRT service and new park and ride station will heighten the transit presence in Sugar Land and provide an improved mobility choice to the community. In conjunction with the construction of the BRT park and ride/station, accommodations for connections with other modes of transportation also need to be considered. Surrounding neighborhoods and developments should be connected to the station site through a network of sidewalks and bike paths. Connections to the station from the planned Ditch H Hike and Bike trail could easily be integrated into the layout of the site. Appropriate amenities to accommodate bike access, such as bike racks and lockers, should also be installed at the station site. The planned Ditch H Hike and Bike Trail is a major component of the Sugar Land Hike and Bike Trail Master Plan. When completed, the 5 mile trail will connect a number of residential areas with major destinations in Sugar Land and can conveniently connect to a proposed BRT station. The connection of Ditch H and other Hike and Bike trails to the transit station will provide residents with the opportunity to make the complete work trip without the use of a car.



Initiative 3C – Consider route and operation of transit service to reinforce activity centers between Town Center and Tract 5 (Tract 5 development)

Plans are being refined and finalized for the the development of Tract 5 and the area adjacent to the intersection of US 59 and University Boulevard. The route from a BRT station in the area adjacent to University Boulevard could be designed to connect to employment centers and attractions in Town Center just east of the Tract 5 development. Lexington Boulevard is scheduled to be extended from Sweetwater Boulevard to University Boulevard in conjunction with the Tract 5 development. The extension of Lexington will provide the means for connecting a number of destinations along Lexington and Town Center Boulevard, allowing transit to serve these activity centers between Town Center and the newer developments to the west. The final design of the Lexington extension would include accomodations to support transit operations.

The park and ride/commuter service originating in the Tract 5 area would be routed along Lexington Boulevard and Town Center Boulevard and would include stops at First Colony Mall and/or Town Square to pick up or drop off riders before the service destined to Downtown enters the BRT facility on US 59. The route connecting Town Center and Tract 5/University Boulevard would serve two purposes; the route would offer Sugar Land residents multiple locations to access the BRT service, and the route would provide a transit option for local connections between area activity centers. The route would establish a transit connection in the City and serve as the precursor to a local bus service that would operate between the activity centers. The BRT service would also promote redevelopment at locations along the route and enhance access to these locations.

The City of Sugar Land would take the lead in designing and implementing the infrastructure to support transit operations. Sugar Land would partner with the service provider to develop the route and identify stops locations. Including additional stops in Sugar Land will increase the travel time of the route, but will also provide greater access to the service and attract more riders. In designing the route, coordination between the City, developers and the service providers will be needed to reach a balance between offering efficient travel times and the potential to attract riders.

Initiative 3D – Coordinate with TxDOT/METRO, e.g. potential 2-way HOV/HOT lane for commuter and off-peak service between Houston and Sugar Land

One goal in creating Superior Mobility in Sugar Land is to provide an efficient connection between Sugar Land and Houston in both directions throughout the day. While many residents commute from Sugar Land to downtown Houston and other major activity centers in Houston. There is also a growing number of commuters traveling to Sugar Land for work purposes. There are a number of major corporations and medical facilities located in Sugar Land and more more of their employees are reverse commuting to get to employment centers in Sugar Land. During stakeholder interviews and at the Mobility Advisory Committee meetings, a desire to establish a transit connection for those commuters was expressed.

Sugar Land should take an active role in lobbying for the conversion of the US 59 HOV lane from one-direction to two-direction. The City would need to partner with TxDOT and METRO to initiate plans to convert the one-directional reversible HOV lane on Freeway (US 59) to bi-directional HOV/HOT lane providing express service between Sugar Land and Houston.

On IH-10 (Katy Freeway), the one-way HOV lane was recently expanded and converted to two-way managed HOT Lanes. The managed lanes allow transit vehicles and other vehicles paying a toll to travel in both directions in controlled access express lanes within the freeway between the Katy area and destinations in Houston. As traffic in the lanes increases, the tolls for using the lanes also increase, thus helping to maintain the desired speed in the lanes. Transit vehicles do not pay a toll to use the HOT lanes. Improvements are also in the final stages of design and engineering for the conversion of the one-way reversible HOV lane to two directional HOT lanes on US 290.

The conversion of the one-way US 59 HOV to two-directional HOV/HOT lanes will be a major project and will require coordination between Sugar Land, Fort Bend County, TxDOT, FTA/FHWA, METRO, H-GAC and other regional cities and agencies. Additional analysis and planning is needed to conceptually determine the length of the facility, operating plan, access points, right-of-way impacts, costs and overall feasibility of the project. Feasibility analysis of the two-directional HOV/HOT lanes should be conducted in conjunction with the feasibility study assessing opportunities for BRT and passenger rail in the corridor (discussed in Strategy 4). The potential may exist to develop two-directional HOV/HOT lanes which can be converted or transitioned to passenger rail service as demand warrants. Upon completion of the feasibility study, coordination among regional partners will be needed to support the study recommendations and ensure that the project is included in the Regional Transportation Plan (RTP) for consideration of future funding opportunities.

Initiative 3E – Identify optimal operating partner: Fort Bend County, METRO or other

The BRT route from Sugar Land to Houston will introduce a new, premium branded service to area residents and will require new buses and an operating partner to provide the service. Currently, Fort Bend County Public Transportation Department provides all the transit service for Sugar Land and the remainder of the county. For the park and ride service originating from Sugar Land, Fort Bend County uses 32-passenger buses and operates on an average headway of 20 to 25 minutes with 10 trips to and from Greenway Plaza and 12 trips to and from Galleria/Uptown during each peak period. A high capacity BRT system could require larger buses and a service plan with greater frequency of service. Further discussions with Fort Bend County are required to determine if they have the interest or capability to provide the BRT service in addition to the existing service to Greenway Plaza and Galleria/Uptown.

Currently, the City of Pearland is working with METRO to develop a Park & Ride facility and provide commuter service along the SH 288 corridor to employment centers in Houston. METRO and Pearland are working out the arrangements for site development and the operating plan. Other government entities and agencies including the City of Manvel, Brazoria County, Connect Transit, Houston-Galveston Area Council, and the Texas Department of Transportation have also been involved planning and coordinating the future park and ride lot development and service.

At present, Fort Bend County and METRO appear to be the most likely candidates to provide the BRT service. However, there may be other cost effective options available. In the Woodlands, the Woodlands Express park and ride service is provided by The District, a public transportation agency serving cities and rural communities in the Brazos Valley area. A regional transportation agency could be established in the Fort Bend County area to

serve the growing transportation needs in the region. Creating a regional transportation agency in the short term could be beneficial to consolidate conflicting demands on transportation services. Over time, as greater demands are placed on the transit system and neighboring jurisdictions compete for services and limited sources, the regional transportation agency could play a larger role in obtaining and distributing transportation funds. The agency could also serve as coordinating entity responsible for the future development of the passenger rail system operating in Fort Bend County and beyond.

There may also be opportunities to engage in a public private partnership in which private bus companies, such as AFC Transportation or First Transit, could be contracted to provide the service with either the City of Sugar Land or Fort Bend County responsible for program administration.

Strategy #4: Plan for Regional Rapid Transit Phase 2: Commuter Rail

Initiative 4A – Conduct a feasibility study in conjunction with regional partners (e.g. H-GAC, Fort Bend County and Cities, METRO, and Gulf Coast Rail District) to determine preferred rail corridor, i.e. US 59, US 90A or other)



As Regional Rapid Transit Phase 1 – High Capacity BRT matures and additional service on the facility is augmented, plans should be underway to transition from BRT to passenger rail transit when a threshold level of demand is met. Currently, METRO is conducting an environmental analysis of the US 90A corridor for the extension passenger rail from the Fannin South station to Beltway 8 in Missouri City. Missouri City and the cities of Stafford and Rosenberg are very supportive of the proposed US 90A passenger rail service and are engaged in discussions about the potential

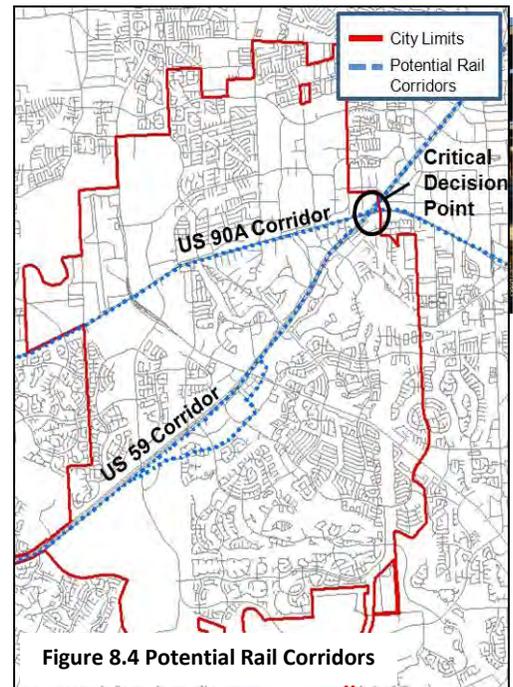
for the extension of the rail into Fort Bend County.

The proposed rail line extension would operate through the City of Sugar Land and would have a major impact on future development in the City. Sugar Land is the largest city in Fort Bend County and potentially would generate the greatest amount of ridership in the County on the rail line. Sugar Land should take an active role now in the discussion regarding the proposed passenger development and initiate analysis in determining the best location and operation of the rail service.



The rail feasibility study would be the second phase of the High Capacity Transit Study discussed as part of Strategy 3. This phase of the study would specifically address passenger rail development and the transition from BRT to rail service. Of critical concern will be where the rail alignment should be located. Historically, many have assumed that the rail line would extend from the terminal station at Beltway 8 and operate along the US 90A corridor adjacent to the active freight rail line. However in Sugar Land, the US 59 corridor may provide a better transit connection and serve the more densely developed areas of the region. The potential rail corridors are illustrated in **Figure 8.4**. The feasibility study would address the many issues related to the rail alignment, technology, and operation and would provide a forum for the many interested parties to participate in the examination and debate regarding the options for rail implementation. Sugar Land would play an instrumental role in coordinating the study analysis and establishing evaluation priorities.

From Sugar Land's standpoint, two potential alignments for rail are worthy of consideration: US 90A and US 59 (see **Figure 8.4**). Although there are many unknowns until a feasibility study is conducted, the potential benefits and challenges of constructing and operating rail in each corridor are included in **Table 8.1**. However, a detailed assessment of potential commuter rail corridors should be conducted in cooperation with regional partners





**Table 8.1
Benefits and Challenges of US 90A and US 59 Rail Corridors**

| US 90A Corridor | |
|--|---|
| Benefits | Challenges |
| <ul style="list-style-type: none"> Existing rail traffic in corridor Potential connection to Sugar Land’s ballpark, providing shared parking facilities Potential Transit Oriented Development (TOD) at Imperial Sugar Property Corridor has been studied as high capacity transit corridor by others Reduction in traffic on US 59 corridor | <ul style="list-style-type: none"> Heavy volume of freight rail traffic; UPRR does not want rail relocated or impacted Potential subsidies required to offset costly relocation of freight rail lines Existing spur lines to businesses along north side will impact freight and passenger operations. Potential reconstruction of US 59/US 90A interchange, SH6/ US 90A interchange, and SH 99/ US 90A interchange for new passenger service rail bridge If passenger service is located north of UPRR, right-of-way would be acquired; disruptive to businesses and residences If right-of-way required, new track construction and signals needed along corridor If passenger service is located north of UPRR, potential shortening of Sugar Land Regional Airport runway Creates additional north/south barrier, OR requires costly construction to grade separate (depressed or elevated) |
| US 59 Corridor | |
| Benefits | Challenges |
| <ul style="list-style-type: none"> Potential shared use of public right-of-way for high capacity transit New transportation mode within an existing corridor with existing activity centers Potential Transit Oriented Development (TOD) at University and US 59 intersection Potential connection to existing development, e.g., Town Center, proposed Tract 5 and medical facilities. Existing commuter corridor; improved commuter options should generate demand Relieves commuter congestion on US 59 | <ul style="list-style-type: none"> New transportation mode within an existing corridor Additional vehicular traffic on US 59 to access stations Rail overpass at US 59/US 90A interchange Higher costs for stations along corridor Corridor not identified as high capacity transit corridor by others If constructed within US 59 median, high construction costs Require coordination and cooperation with TxDOT and other regional entities |



Initiative 4B – Initiate and influence regional decisions regarding management, funding, implementation, and operation of a rail system in Fort Bend County

Sugar Land must take a proactive position in determining what is best for Sugar Land with regards to passenger rail development. The location and operation of passenger rail in Fort Bend County will have a major impact on Sugar Land both from an economic and transportation/mobility perspective. Sugar Land has the largest population of any jurisdiction in Fort Bend County and offers a number of major employment and recreational destinations in the region. Therefore, Sugar Land will be a principal partner in planning and designing the passenger rail project and in determining cost and implementation strategies.

A number of stakeholders have noted that Sugar Land's support of the rail system is critical to the successful implementation of the project. The City of Sugar Land is an innovative and economically strong leader in the region and should take advantage of its position to influence decisions regarding the passenger rail management, funding, implementation, and operation. Along with regional partners, the City will need to address what agency or governing body would be the best equipped to take the lead in orchestrating the design, construction, and ultimately the operation of the region rapid transit system. A regional organization that serves multiple communities would most likely assume a leadership role. There are a number of regional agencies that potentially could provide the service, including METRO, Fort Bend County, and the Gulf Coast Rail District. However, there are a number of jurisdictional and political issues that will need to be addressed before an operating entity is identified. An option that a number of metropolitan areas have implemented is the formation of a new regional agency created with the authority to raise revenue, build, operate and manage a regional transit system across multiple municipalities and counties, such as the Trinity Railway Express (TRE) in the Dallas/Fort Worth area or Valley METRO in the Phoenix area.

Initiative 4C – Identify and preserve locations for future rail alignments and stations for potential corridors, i.e., US 59 at University, Imperial development, Sugar Land Town Center and Lexington Boulevard

Following the completion of the High Capacity Transit Feasibility Study, Sugar Land will be in better position to determine what facilities to plan and implement and where these facilities should be located. In the case of rail rapid transit, implementation and construction of the facility may not occur for a number of years. However, in order not to preclude future development, the City of Sugar Land Transportation, Public Works, Planning, and Economic Development departments should work together with area developers to identify and preserve alignment and station locations for transit corridors.

A transit development plan should be prepared that identifies and defines proposed transit alignment and station locations and supporting infrastructure. The purpose of the plan is to preserve property and right of way for future transit use and incorporate in future plans those transit elements that will be part of the development. Future transit improvements should be anticipated and addressed as part of any new development or redevelopment project. Preserving locations and incorporating accommodations for future transit improvements help direct the land use development in the area. Identifying and preserving property may also be a cost savings, as it is easier to preserve available property for future transit alignments and

stations, than it is to retrofit transit improvements or acquire property in an area that is already well developed and the surrounding infrastructure is optimized.

Initiative 4D – Implement Regional Rapid Transit Phase 2 when congestion and demand warrant construction

The implementation of Regional Rapid Transit Phase 2 – Passenger Rail connecting Sugar Land to a regional network of destinations should occur when demand warrants a system that can provide greater capacity and a higher level of service. The advantage of a passenger rail service is the system’s ability to provide a high transit capacity service at a lower operating cost. The rail service also operates in a separate right of way and offers an alternative to traveling in congested roadway conditions. The rail service has broad appeal to many residents in the community and could attract many more new riders.

As the passenger rail system will most likely be an extension of the proposed US 90A rail project originating in Houston, the City of Sugar Land will not be the service provider for the passenger rail service. However, the City will play an integral part in working with regional partners to implement the service and coordinate with the appropriate agency to operate the service. By working through the initiatives for integrating a regional transit service to connect Sugar Land to regional destinations, plans should be in place to support the construction and operation of passenger rail service. Together with regional partners a feasibility study will have been conducted to determine the preferred rail corridor and service application. Sugar Land will have assessed its position regarding the passenger rail alignment, station locations, and operating plan and will have been actively involved in planning and identifying locations for the future service. Funding scenarios will have been studied and evaluated and a regional implementation strategy will have been prepared reflecting the efforts of a coordinated planning process. With the advanced planning and implementation strategies negotiated and agreed upon, Sugar Land and its regional partners will be able to facilitate the construction and implementation of the regional rapid transit passenger rail line when the timing is right for the transit improvement.

Strategy #5: Assess Transit Opportunities that Allow Non-Sugar Land Residents to Access Sugar Land

Initiative 5A – Provide transit service to major employers and off-peak service to major destinations

Recent data suggest that in addition to providing Sugar Land commuters with service from Sugar Land to employment centers in Houston, there is also a growing demand to provide transit service for commuters traveling to employment locations in Sugar Land. Many of the regional hospitals and major employers located in Sugar Land view reverse commute transit service as a needed incentive to attract employees to their work destinations. There is significant congestion on the local roadways in Sugar Land during peak periods and employees coming to Sugar Land are also impacted by the congestion. A transit option for trips to Sugar Land could help commuters avoid the stress of navigating through the congestion and adding to the problem. Over 70 percent of the on-line survey respondents felt the Sugar Land would benefit from commute services from Houston and other surrounding areas to jobs located in Sugar Land.

In addition, there is also demand for off-peak service to major non-work destinations in Sugar Land. With a number of existing attractions and plans for a new minor league baseball stadium and concert and

entertainment venue scheduled to open in the next few years, Sugar Land is also a regional destination. Travel to Sugar Land by non-Sugar Land residents is expected to continue to increase, warranting future transit connections to Sugar Land.

Sugar Land should coordinate with area employers to assess the volume of work trips currently being made to Sugar Land and evaluate appropriate transit options for the reverse commuter. Though more challenging to assess, Sugar Land also should work with area developers to monitor traffic volumes and non-Sugar Land attraction levels at major destinations and entertainment centers in the City. In conjunction with the augmentation of more bus service to serve Sugar Land residents, options should also be examined for providing transit service to major employers and off-peak attractions in Sugar Land. Initially, service could be specialized to serve specific employers or special events in the City.

The High Capacity Transit (BRT/Rail) Feasibility Study will include an analysis of service needs and opportunities to accommodate a reverse commute and off peak trips to Sugar Land. In the long term, trips to Sugar Land will most likely be accommodated with the conversion to two-way HOV/HOT lanes and the implementation of passenger rail transit. Interim options should also be explored to accommodate transit trips in and out of the City. Implementation of an intracity circulator may also coincide with the implementation of transit service to Sugar Land. Once non-Sugar Land residents arrive in Sugar Land on transit, a circulator would provide the distribution function to multiple destinations in the City.

Sugar Land's partners in providing transit service to area employers and major destinations would include private sector employers and developers. Fort Bend County may also be a partner in providing county residents with enhanced service to Sugar Land. In the long term, other transit providers (public and private) may also become partners in providing transit service to Sugar Land and promoting a regional network of destinations.

Metrics

The following metrics are proposed for tracking the progress towards achieving the goal of providing integrated regional transit services connecting to and from Sugar Land via convenient, efficient trips:

Trek Ridership for Sugar Land Park and Ride Lots - The best metric for evaluating park and ride success is to examine ridership counts on the transit service and taking into account the percentage of all commuters that use transit for their work trip.

High Capacity Transit Boardings – The number of boardings for the BRT system should be tracked to evaluate success and determine when to move to implementation of rail service. Prior to implementation, ridership projections and patronage benchmarks should be established to evaluate the service at various intervals following service initiation. The City of Sugar Land may want to consider establishing a ridership goal that clearly confirms the City's position regarding transit as part of Superior Mobility mix.

In conducting ridership counts, the evaluation should also determine where the trips originate and terminate and how, when and where the rider accesses the transit service. The ridership counts should also provide an

accounting of scheduled trips and corresponding demand for service. Once rail service is implemented, the ridership should be tracked as it was for BRT service.

Cost per Trip - Another measure of success is to assess how closely actual costs compare to projected costs. Cost effectiveness is also a metric that can be applied to rate of success. Cost effectiveness compares increase in ridership over time versus operating expenses over the same period. The project is considered cost effective the greater the ratio is between ridership numbers and operating expenses.

Vanpool Ridership – Vanpool ridership can be tracked to evaluate the effectiveness of the marketing efforts designed to increase ridership. Ridership should be tracked for vanpools that initiate in Sugar Land as well as vanpools that terminate in Sugar Land.

Mode Share/Commuter – The modal split (single occupancy vehicles/transit) can be calculated for commuter trips. Ideally the percentage of transit trips as a percentage of the total number of commuter trips would continue to increase as higher levels of transit service are provided.



Goal 6: Leverage Transportation Infrastructure to Support the Continued Economic Vitality of the City

A primary goal through the course of the development of the Comprehensive Mobility Plan has been to identify opportunities where improving mobility will enhance the economic vitality of the City. Each roadway, bike path, sidewalk or transit investment should be considered based on the connectivity it creates and the corresponding interactions and activities that are enabled. These interactions can support the continued growth of the economic base of the City, resulting in increased job growth and sales and ad valorem taxes. These allow the City greater flexibility in the investments it makes in future mobility projects and potentially lowers the tax rates for other residents. The City also has infrastructure that support a large percentage of the economic activity that occurs and making the greatest use of this infrastructure will be critical.

Addressing each of the other seven goals of the Comprehensive Mobility Plan will have a potential economic benefit to the City of Sugar Land. And the discussion of those goals has identified significant opportunities to improve modes of transportation including driving, walking, cycling and using transit that will have potential benefits to supporting economic development. This is particularly true of recommendations that support the economic development goal of the City to become a “Regional Business Center of Excellence”. Being a Regional Center of Business Excellence implies a larger job base, more economic activity and therefore greater demands on the mobility systems the City has in place. This will be true for residents who live and work in Sugar Land as well as employees looking to get to work from outside of the City. This was expressed though this projects public involvement process, frequently by employers whose staff may be unable to afford to live in the City of Sugar Land. So while much of the discussion in this chapter will revolve around the mobility of freight rail and other modes that are not as explicitly discussed elsewhere, all travel modes will be required to provide the mobility levels needed to achieve the parallel economic goals the City has in place.

Strategies that Leverage Transportation Infrastructure to Support the Continued Economic Vitality of the City

Strategy #1 – Effectively Capitalize On Rail Infrastructure Assets While Limiting Impact on Connectivity

The City of Sugar Land is fortunate in that it has two major Class I rail lines either within its boundaries or adjacent to its ETJ (**Figure 9.1**). The first of these rail lines is the Union Pacific line that parallels US 90A. This line currently has about 32 trains per day and will increase to around 70 trains in 2035. The second line is the BNSF line along FM 2759 and FM 762. This line currently has about 12 trains per day and will increase to around 25 trains per day in 2035. Because of the increased train traffic on these lines, it may be difficult to provide new rail access to developing properties such as the land that currently houses the Central Prison west of Sugar Land Regional Airport, a parcel that is planned for future industrial development upon relocation of the Prison facility. With the significant growth in train

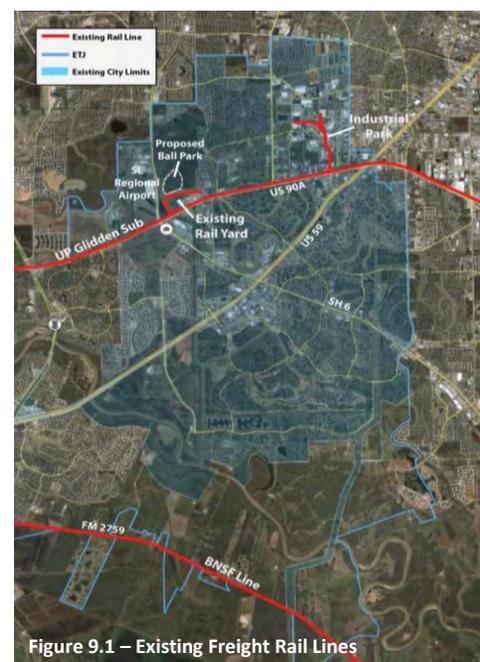


Figure 9.1 – Existing Freight Rail Lines



volumes and the plans for the Union Pacific to double and possible triple track its line, the City must be aware that any new rail access points to new light industrial should be coordinated with other rail access points. To develop additional opportunities to utilize this infrastructure to support economic development, opportunities that provide potential benefit to both the City and the rail operators may be required. This can include operational improvements (grade crossings, improved sidings) as well as additional development that benefits the rail road operators.

Strategy #2 – Develop Transportation Infrastructure to Support the Airport as a Driver of Job Creation and Economic Activity

2A – Evaluate the potential to relocate existing UP Imperial Sugar rail spur to the proposed industrial park west of the Airport

With the high train volumes and the plans for the Union Pacific to double and possibly triple track its line, the City should be aware that any new rail access points to new light industrial that are shown on the master plan for the current Central Prison site may be difficult to obtain. However, the City may want to explore the option of relocating the current Union Pacific Rail Yard that is located east of Highway 6 and north of US 90A to collocate with the potential industrial park. This rail yard is currently a maintenance yard and also a delivery point for cars that are headed to and picked up from the Sugar Land Business Park near US 90A and Dairy Ashford. As this is already served by the UP, a potential concept for providing freight rail service to the new park would be to relocate this rail yard near the airport. The relocation of the rail yard would reduce the impact of the existing freight rail operations near the Imperial Sugar Factory area, allowing additional redevelopment to occur east of SH 6 and improving the feasibility of extending University Boulevard north of US 90A. If the rail yard was located in the new light industrial area, the UP may be more receptive to adding freight customers within the City as they could stage the delivery of the cars with the yard deliveries. A conceptual view of this potential relocation and rail served light industrial park is shown in **Figure 9.2**.

While this above plan provides rail access to the park, the City must weigh the potential impacts with the Airport's Master Plan. However, an industrial park which is served by three modes – rail, highway and air – provides a unique market potential that is not easily duplicated elsewhere in the country.

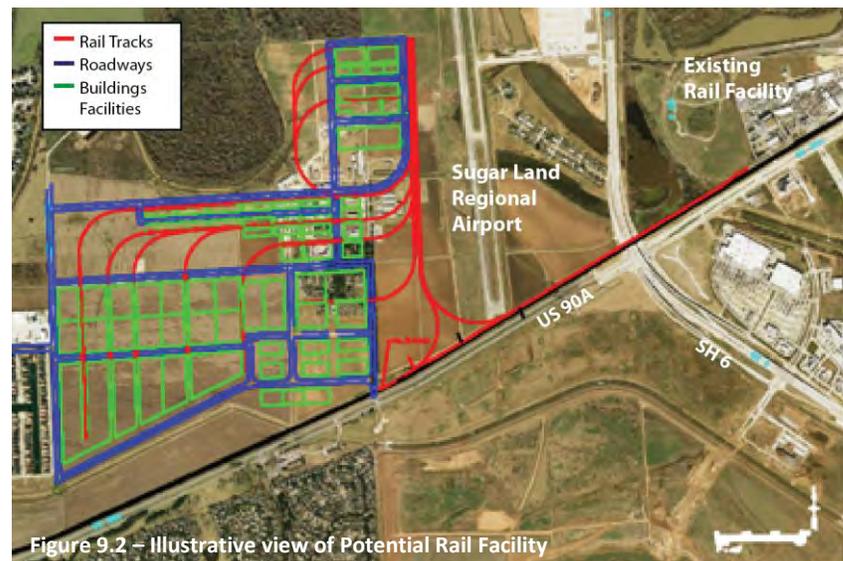


Figure 9.2 – Illustrative view of Potential Rail Facility

Strategy #3 – Consider potential commercial uses south of the Brazos River

3A – Evaluate need for a business park with potential rail access in the City’s ETJ (north of FM 2759), including impact on the existing City Land Use Plan and other Master Plans

While the City has benefited from the rail served Sugar Land Business Park located near Dairy Ashford and US 90A, the opportunities for additional areas to be zoned for industrial development are limited within the existing city limits. One area that would be a potential opportunity area for increase light industrial facilities would be for the City to examine a new, freight rail served, light industrial park in the ETJ, south of the Brazos River. If evaluated and determined to be a positive opportunity, providing for a grade separated structure for FM 2759 would be desirable. By having FM 2759 elevated, a new rail spur off of the existing BNSF rail line could be provided underneath the overpass structure. This will allow for limited impact to the adjacent roadway network as the area develops.



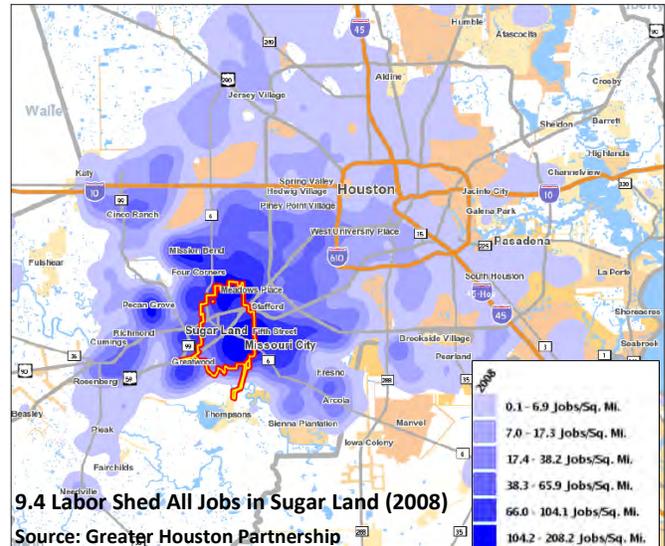
Figure 9.3 Light Industrial Opportunity Area in Sugar Land ETJ

Strategy #4 – Support objectives and initiatives in the Economic Development Plan

Initiative 4A - Implement initiatives to establish Sugar Land as a "Regional Business Center of Excellence", reducing demand for regional commute trips by residents

The City’s Economic Development Plan (City of Sugar Land, Economic Development Plan, 5-Year Strategic Roadmap, 2011-2016, April 2011) includes initiatives to increase the number of local jobs and establish Sugar Land as a “Regional Business Center of Excellence”. Implementation of the initiatives in the Economic Development Plan, as well as rising gas prices and the desire of people to reduce their carbon footprint, will likely increase the number of Sugar Land residents who both live and work in the City, thus, reducing the demand for regional commute trips by residents. The total impact on mobility will be affected by how closely the profile of jobs in the City match the skills of the local population base as well as, potentially, the availability of housing for employees at all levels of the organization who wish to live and work in Sugar Land. Regardless, increased economic activity will increase the total trips to and within the City which will need to be supported by mobility improvements.

Although the demand for regional commute trips will likely be reduced by creating additional employment opportunities for residents of Sugar Land and Fort Bend County, the need to provide services for commuter mobility will not go away, and, in fact, will increase the demand to fulfill other commuter needs. As Sugar Land



9.4 Labor Shed All Jobs in Sugar Land (2008) Source: Greater Houston Partnership

becomes a regional business center, the number of reverse commute trips Sugar Land will increase resulting in the need to think about transit services that provide more frequent, bi-directional service or circulation around the City between activity centers. The current Labor Shed (where people who work in Sugar Land live) for jobs within Sugar Land is shown in **Figure 9.4**. The figure shows that most Sugar Land jobs are filled by people who are relatively local to the area though this is likely to broaden as the job base grows.

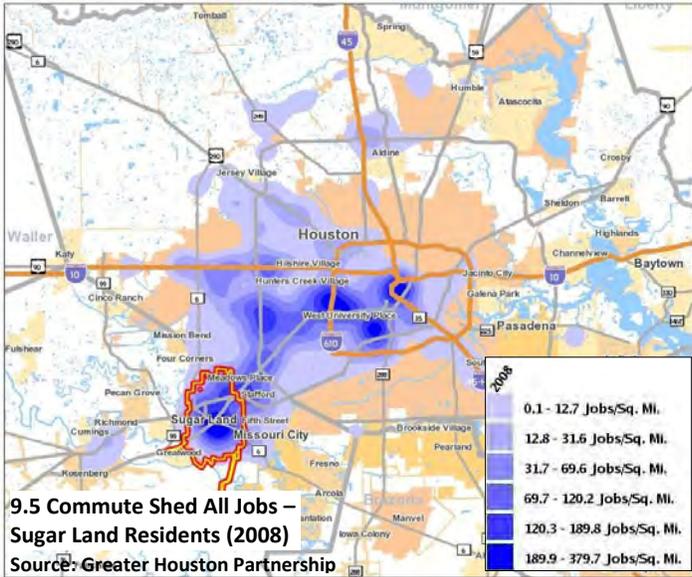


Figure 9.5 indicates that while many Sugar Land residents work in the Sugar Land area, there is also a high concentration of residents working in Downtown Houston, Galleria/Uptown, Greenway Plaza and Texas Medical Center. The City will affect the number of Sugar Land residents working in Houston over time, as Sugar Land becomes a “Regional Business Center of Excellence”; however, it is likely that many Sugar Land residents will continue to be employed by Houston companies.

As any mobility improvements should support continued economic vitality in the City, so to should new developments be implemented with mobility outcomes in mind. The City should

ensure that multimodal connections to the individual employment centers that will comprise the “Regional Business Center of Excellence” are incorporated into the design of the development sites. These connections should consider local employment trips, freight movement, as well as the reverse commute trips, including access by bicycles, pedestrians, intracity transit services and high capacity commuter transit. This will create a virtuous cycle supporting continued economic prosperity and improving mobility outcomes.

Metrics

There are significant potential benefits for the City of Sugar Land with the development of mobility projects that support the continued economic vitality of the City. Tangible metrics are needed to determine the effectiveness of the outcomes for these and other mobility projects. Options include:

Employment Base (Total employees or per capita): The employment base of the City is an indicator of the economic vitality of the City. Jobs within Sugar Land potentially will limit increased roadway and commuter congestion and give current a future resident more career options close to home, increasing quality of life

Sales Tax: An indicator of the economic strength of the community and the success of local retail option of attracting consumers within and from outside the City.

Ad Valorem Tax from Industrial Base: Industrial land uses can be a major contributor to the overall taxes from property values in the City. Continued growth that is not detrimental to the overall quality of life in the City should be encouraged.

Goal 7: Coordinated Land Use Development and Mobility Planning that Supports the Preservation of Neighborhood Integrity

There is an intrinsic link between land use, form, and mobility. For example, land use determines where people take a trip to the grocery store to pick up milk. Form determines how people get to the grocery store. Form is important because of scale and density, both of which determine distances from one destination to the next. The closer the store is to your house, the more likely you are to walk. Providing a variety of land uses within a short distance increases opportunities to walk or bike instead of drive and makes providing transit services more efficient.

If Sugar Land wants alternative transportation options to cars, there are land use considerations that can support those alternatives. According to the Sugar Land Mobility Survey land use planning is the second most important component to providing Superior Mobility for Sugar Land today and in the future. Land use and form are critical components to providing efficient, convenient and cost-effective transportation. Additionally, 67% of respondents agreed that more mixed-use development would be beneficial to the City of Sugar Land. The Form & Typology Matrix in **Figure 10.1-10.2** highlights the relationship between the forms of various land uses and how easy it is to serve those land uses with various modes of transportation.

The matrix identifies forms for each land use with several categories within office, retail, and residential. For example, Business Parks are home to a variety of tenants and are typically set 50 to 200 feet back from the street by surface parking lots with access off a main arterial road. This typology is differentiated from Corporate Campuses, which are typically set back over 200 feet from the public street and can often have controlled access. A Business Park development is easier to serve by bus than a Corporate Campus, which has a long walking distance from the property entrance to the building entrance and is more easily accessed by car. Based on the land planning and zoning in the City, Sugar Land has been comprised mostly of segregated clusters of land uses. Commercial uses are clustered along main arterial and collector roads. The majority of development has been residential cul-de-sac, single family style developments located within planned communities such as First Colony, Sugar Creek, Telfair and Avalon. By mapping the land use types and their relationship to transit, areas of potential opportunity for each mode are revealed as shown in **Figures 10.3-10.4**.

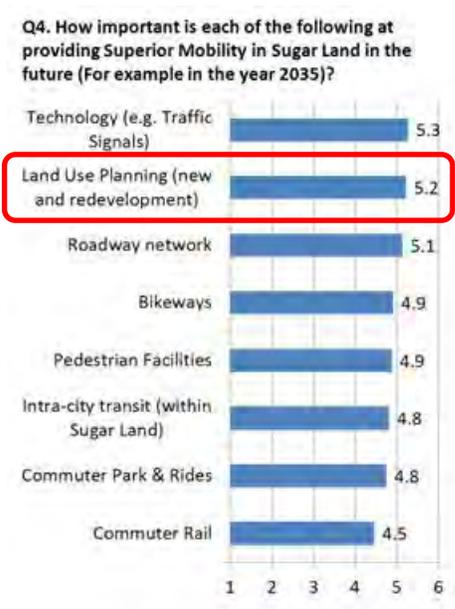




Figure 10.1

SUGAR LAND MOBILITY

FORM & TYPOLOGY

The matrix indicates which transportation modes typically serve the various land uses. The matrix is one tool that can be used to identify mobility solutions in Sugar Land.

EASY POSSIBLE DIFFICULT

| Land Use | Walking | Bicycle | CAR | WANPOOL | PARK & RIDE | BUS | LOCAL RAIL | REGIONAL RAIL |
|--|--|---|---|---|---|--|---|--|
| CUL DE SAC SINGLE FAMILY Most Sugar Land residents live in low-density, master-planned communities featuring cul-de-sacs. Sugar Creek was built in the 1970s, and was the first of many others, including Avalon, First Colony, Jeldira, and River Park Colony. Connectivity in these areas is low. | Walking is the most popular mode of transportation. It is limited to short distances and has a low user cost. Infrastructure (sidewalks) is inexpensive. | Bicycling is flexible; you can go for short-to-medium distances. User cost is low and there can be little or no incremental infrastructure cost when riding on roads. | Cars are the most flexible mode of transportation to schedule and stop. Distance travelled is unlimited, but the cost to users is high, and road construction is very costly. | Van pools operate on a fixed schedule and long distances in small groups (7-15 riders) from home to work. The user cost is low and there is no infrastructure cost - the roads are already there. | Park & Ride lots operate on a fixed schedule. Subsidized ride numbers are required and user cost is low. Infrastructure costs are shared with businesses. | Buses operate at varying frequencies on regional and express routes. Routes have frequent service, low ride numbers, and low infrastructure cost. They require medium density. | Local rail operates on a fixed route in high-density urban areas. Ridership is more expensive than buses. Infrastructure is very expensive. | Regional rail features long distances between stations. Ridership pay more than local rail and frequent. Infrastructure is very expensive. |
| ORIGINAL RESIDENTIAL SINGLE FAMILY Sugar Land's original neighborhoods were built around the Imperial Sugar Factory. These single family residences were constructed in the 1920s on a grid street pattern, which allows for high connectivity of streets. This type of low density housing construction continued into the 1960s. | Long walking distances, limited area destinations | Slower traffic makes on-street bicycling safer | Mostly only local traffic | Commuters save time and money | Commuters save time and money | Low connectivity and low density | Low density | Low density |
| TOWNHOMES Sugar Land is seeing more townhome development as the market demand shifts to include lower-maintenance housing options. This small-lot housing type is typically located near more commercial areas with access to main thoroughfares. | Short blocks, easy to walk | Slower traffic makes on-street bicycling safer | Streets easy to navigate, on-street parking plentiful | Commuters save time and money | Commuters save time and money | Good connectivity | Low density | Low density |
| MULTI-FAMILY RESIDENTIAL Multi-family residential options are located in Sugar Land in typical and for-sale units. They are well connected to activities and are near major thoroughfares. As a high-density land use type, multi-family housing is very supportive of transit stops. | Higher density, likely close to activity centers | Proximity to activity centers | Streets easy to navigate | Commuters save time and money | Commuters save time and money | Good connectivity, access to many activities | Depends on connectivity and ridership numbers | Low activity |
| STRIP RETAIL Many master planned communities feature separated land uses with strip commercial sites lining the main roads. Typically there are 2 to 4 rows of public sidewalk from the building entrances. Density is low, and sites are designed primarily for cars. | Parking lots separate street from building entrances | Depends on location, safe routes, and availability of bicycle parking | Lots of parking, easy access from main roads | Home to work trips only | Home to work trips only | Depends on location and connectivity | Low density, low activity | Depends on connectivity and ridership numbers |
| SHOPPING MALL First Colony Mall first opened its doors in 1996, offering Sugar Land over one million sq. ft. of retail. In 2006, the mall added 40,000 sq. ft. of retail and restaurant options in a new outdoor shopping area. The shopping mall is surrounded by surface parking and is a local destination. | Internal pedestrian environment usually not connected to external network | Depends on location, safe routes, and availability of bicycle parking | Lots of parking, easy access from main roads | Home to work trips only | Home to work trips only | High-density activity center | High-density activity center | High-density activity center |
| MIXED USE Mixed-use developments are more popular in Sugar Land since the completion of the new high-density Town Square. Walkable streets featuring restaurants and shops beneath offices are well-connected by high-quality sidewalks. On-site housing adds people to the street, creates an active street life. | Lots of activities within walking distance | Lots of activities within biking distance | Garage and on-street parking, lots of destinations, good connectivity | Primarily home to work trips | Design dependent; Primarily home to work trips; potential create activity for destination | High-density activity center | High-density activity center | High-density activity center |



Figure 10.2

SUGAR LAND MOBILITY

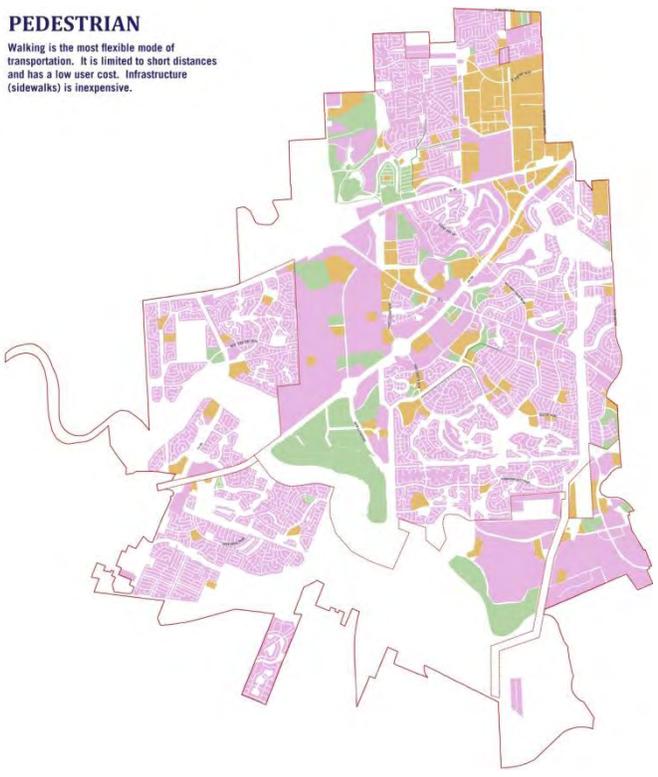
FORM & TYPOLOGY

EASY POSSIBLE DIFFICULT

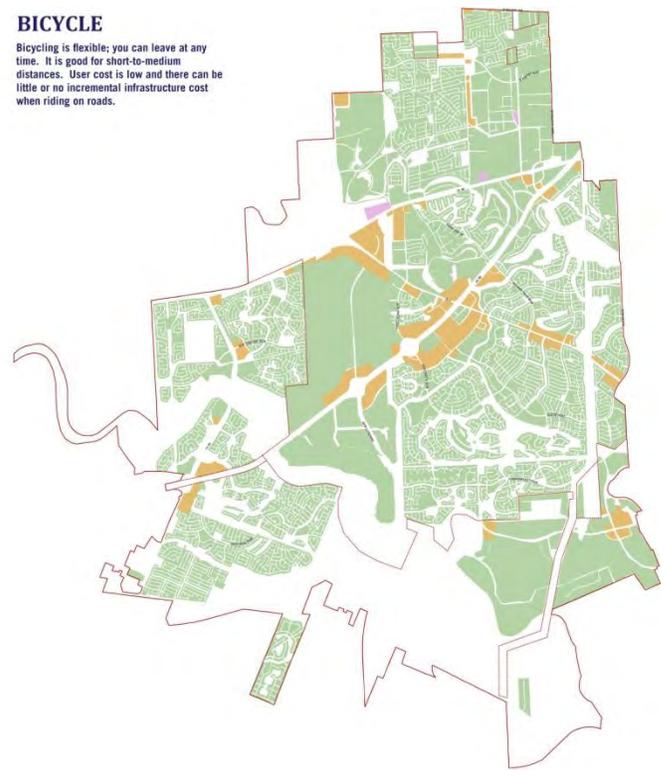
| Form & Typology | PEDESTRIAN | BICYCLE | CAR | VANPOOL | PARK & RIDE | BUS | LOCAL RAIL | REGIONAL RAIL |
|--|--|---|---|--|--|---|--|--|
| SCHOOLS Primary and secondary schools are typically located at the heart of residential communities with access to major thoroughfares. They are high-density neighborhood centers with bustling morning and evening activities. | Not all neighborhoods feature sidewalk routes to schools | Located within residential areas, close proximity to users | Well-designed vehicle routes for pick-up and drop-off | Home to work trips only | Home to work trips only | High activity | Lacks connectivity | Mostly local traffic, typically not a regional destination |
| COLLEGE CAMPUS College campuses are pedestrian focused areas with most parking along campus perimeter areas. Buildings are situated within close proximity to each other and can be connected by plazas and open space. | Strong internal pedestrian network | Strong internal bicycling network (likely shared with pedestrians/cars) | Parking along campus perimeter | Commuters can be students or employees | User specific | High activity, local destination | High activity, local destination | High activity, regional destination |
| BUSINESS PARK Business parks are home to a variety of tenants including office, high tech, manufacturing and distribution. Typically, buildings are set back from the street (approx. 200 ft) by a surface parking lot and accessed off a main arterial road with heavy truck capacity. | Low density sites create long walking distances | Strong internal bicycling network (likely shared with pedestrians/cars) | Access off main roads, parking plentiful | Commuters save time and money | Low density | Access to main roads, building proximity to street | Dependent on connectivity to other activity centers, ridership numbers | Dependent on connectivity to other activity centers, ridership numbers |
| SUBURBAN OFFICE BUILDINGS Suburban office buildings are located along major routes such as freeways and arterial roads. Building entrances are typically 200+ feet from the public sidewalk, but connections to destinations and commercial uses are limited. Parking on site is plentiful. | Buildings are usually close to the public sidewalk, but connections to destinations are not guaranteed | Proximity of other uses, on-street bicycling connectivity likely | Access off main roads, parking plentiful | Commuters save time and money | Low density | Access to main roads, building proximity to street | Dependent on connectivity to other activity centers, ridership numbers | Dependent on connectivity to other activity centers, ridership numbers |
| CORPORATE CAMPUS Corporate campuses can feature a mix of administrative buildings and additional buildings and pedestrian connections between them. Typically, a campus has controlled or limited access with one or two main entrance drives. Buildings are located long distances from the public sidewalk. | High security sites, controlled access, long walking distances to buildings from public streets | On-street bicycling connectivity likely | Access off main roads, parking plentiful | Commuters save time and money | Low density | Long distance from public street to building entrance | Long distance from public street to building entrance | Long distance from public street to building entrance |
| REGIONAL MEDICAL Regional medical facilities are built along major routes with medium-high connectivity to clients traveling from towns in the region. These high-density sites feature plenty of surface or garage parking. Typically, they are low-rise and operate as an independent campus. | Depends on sidewalk network between buildings and connections to adjacent destinations. | Proximity of other uses, on-street bicycling connectivity likely | Access off main roads, parking plentiful | Medical employees only, not for patients | Low density | Access to main roads, high activity | High activity | High activity |
| PARKS & EVENT FACILITIES Parks and event facilities draw activity from a large area on a regular basis (e.g., regional festivals, events). They can have regional connectivity, but usually require medium to high levels of connectivity in order to accommodate strong concentrations of regular activity. | Inherently pedestrian friendly | Inherently bicycle friendly | Access off main roads, parking plentiful | Home to work trips only | Trip frequency, limited time spent at location | High activity | High activity | High activity |
| INDUSTRIAL Industrial uses feature controlled or highway access, but can handle heavy truck activity. Parking is accommodated on site. Sites are located far from incompatible uses (e.g., residential) and typically have a heavy security perimeter. | Heavy security perimeter, long walking distances to site entry | Location on busy, high-speed roads to provide access for heavy trucking | Access off main roads | Commuters save time and money | No connectivity | No connectivity | No connectivity | No connectivity |

Figure 10.3

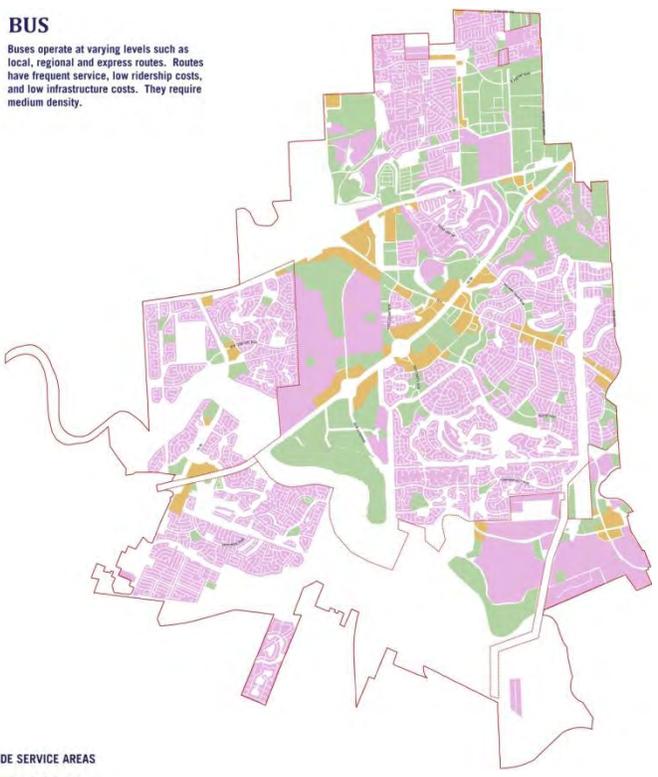
PEDESTRIAN
Walking is the most flexible mode of transportation. It is limited to short distances and has a low user cost. Infrastructure (sidewalks) is inexpensive.



BICYCLE
Bicycling is flexible; you can leave at any time. It is good for short-to-medium distances. User cost is low and there can be little or no incremental infrastructure cost when riding on roads.



BUS
Buses operate at varying levels such as local, regional and express routes. Routes have frequent service, low ridership costs, and low infrastructure costs. They require medium density.

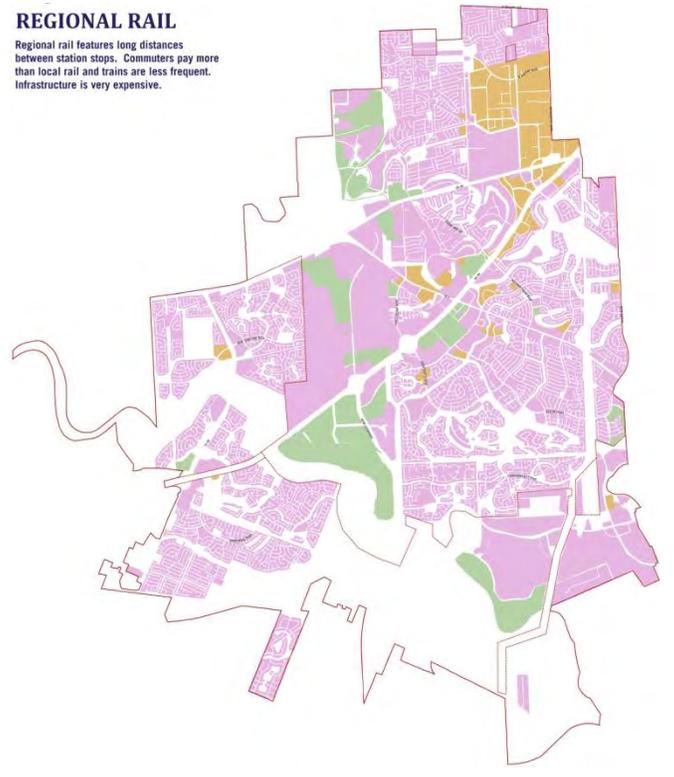
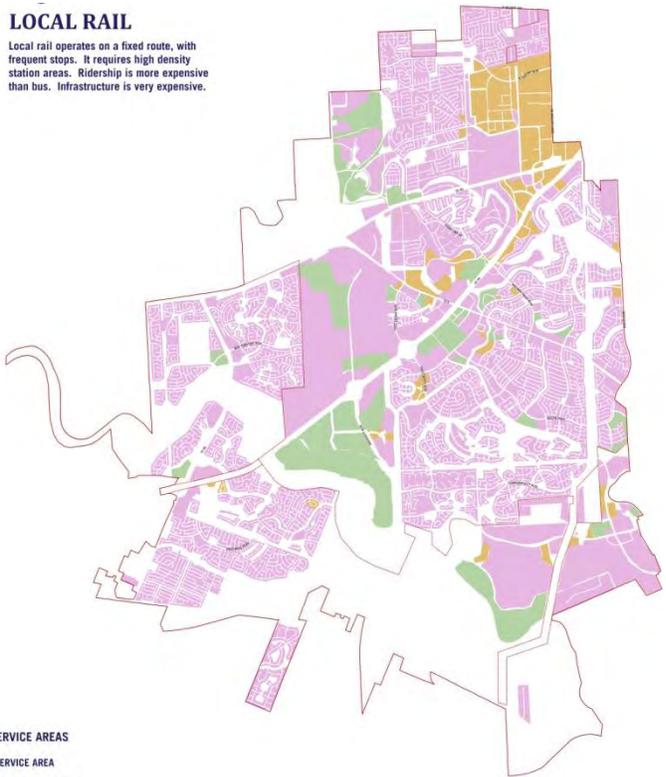
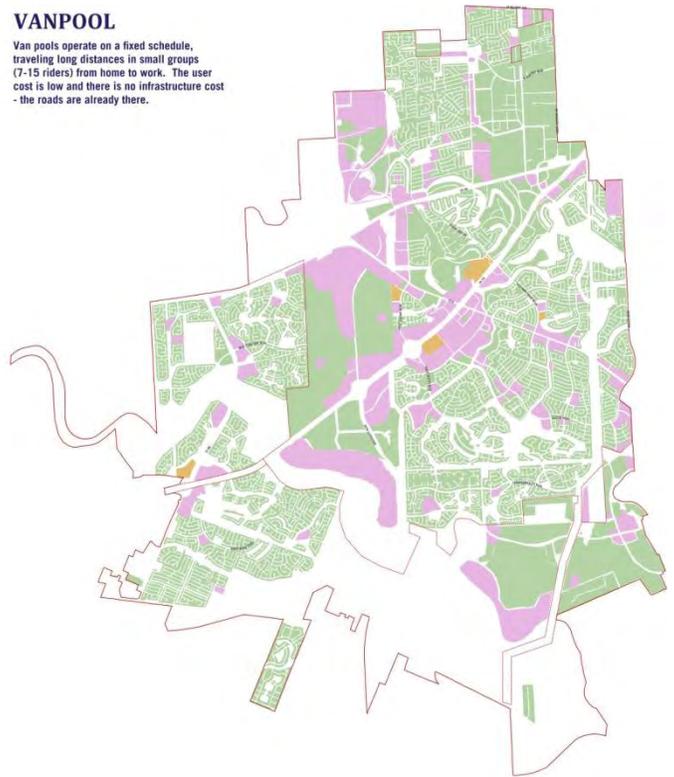
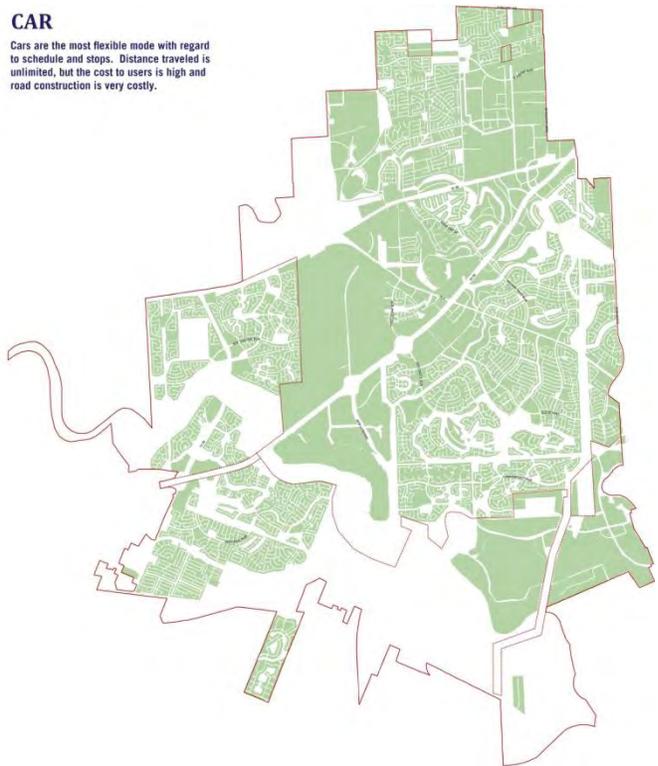


PARK & RIDE
Park & Ride lots operate on a high-frequency, fixed schedule. Substantive ridership numbers are required and user cost is low. Infrastructure costs are low - parking lots can be shared with business.



MODE SERVICE AREAS
 ■ SERVICE AREA
 ■ NON - SERVICE AREA
 ■ SERVICE POSSIBLE

Figure 10.4



MODE SERVICE AREAS
 SERVICE AREA
 NON - SERVICE AREA
 SERVICE POSSIBLE

For each mode, the following factors influence the ease in providing service: reasonable walking distances to destinations, connectivity to destinations, frequency and cost of service, potential ridership. The effectiveness of transportation modes is dependent on these factors to provide cost effective, convenient and timely service. There are implications for each land use type with regard to which transportation modes are the best fit.

PEDESTRIAN

Pedestrian trips rely on short distances between destinations. Good connectivity is an important key to encouraging pedestrian trips. Pedestrian access is difficult in most areas because the existing residential neighborhoods are designed with limited entrances and little connectivity to other land uses or activity areas. Trips are specifically non-recreational, so while it may be easy to take an evening stroll through your neighborhood it is difficult to walk to the store for milk.

BICYCLE

Safety is the most critical component for bicycling, as was shown through the Mobility Survey results where only 16% of respondents felt safe riding a bike in the City. Long distances through even poorly connected neighborhoods are easy to traverse by bicycle, but longer trips that require on-street riding through high-volume intersections can be dangerous enough to discourage bike trips. For example, strip retail with multiple curb cuts on major arterial roads, are less attractive destinations for bicyclists.

CAR

Sugar Land is very car friendly. The City continues to invest in a well-maintained road network to address any capacity constraints. It is easy to travel to or from anywhere by car and parking is plentiful. Sugar Land will continue to be a car-friendly city in the future.

VANPOOL

Vanpool typically supports low-medium density residential at one end and a concentration of jobs at the other. Vanpools operate very easily for travel from home to work destinations. They operate on a fixed schedule and require substantive ridership numbers (7-15 people).

PARK & RIDE

Park & Ride locations link low-medium density residential uses to a fixed route transit system. Park & Ride service is limited to home-to-work trips. This mode is dependent on density (primarily employment) on one end in order to create sufficient ridership numbers to support the cost of providing service. Stations may be located in shared parking lots, but ridership is generated by residential land uses.

BUS

Buses rely on ridership numbers within walking distance of bus stops. This mode serves riders at both the origin and the destination. Bus service is easier to offer along main arterial and collector roads with easy pedestrian access from bus stops to destinations. Medium- to high- density land uses are beneficial to create sufficient ridership numbers.

LOCAL RAIL

Local Rail requires high ridership or a significant density. High activity areas such as Shopping Malls, Mixed-Use Districts, Regional Medical and Park & Event Facilities are good station location anchors.

Business Parks, Suburban Office Buildings and higher density residential land uses can potentially support rail service if they are well-connected to stations and provide adequate ridership numbers. Multi-Family and Townhome land uses can be big drivers for Local Rail service.

REGIONAL RAIL

Regional Rail requires significant density at one end to create ridership demand. There is usually a Park & Ride at a Regional Rail station, but this is not 100% of the riders. There must be a critical mass around the station itself to justify its location, which is likely to have a region-wide draw of activity. Multi-Family and Townhomes may not be enough alone to support Regional Rail. High activity areas such as Shopping Malls, Mixed-Use Districts, Regional Medical and Park & Event Facilities can be good station location anchors.

Land use and form have a significant impact on mobility planning and transportation choices. Typologies and modes can be helpful in determining the potential for transportation options and the development or redevelopment patterns that can transform areas to support greater transportation choice. As Sugar Land strives to provide superior mobility for its residents, there is a specific concern for maintaining the integrity of neighborhood character. Mobility initiatives must revisit the impacts transportation choices will have on existing neighborhoods.

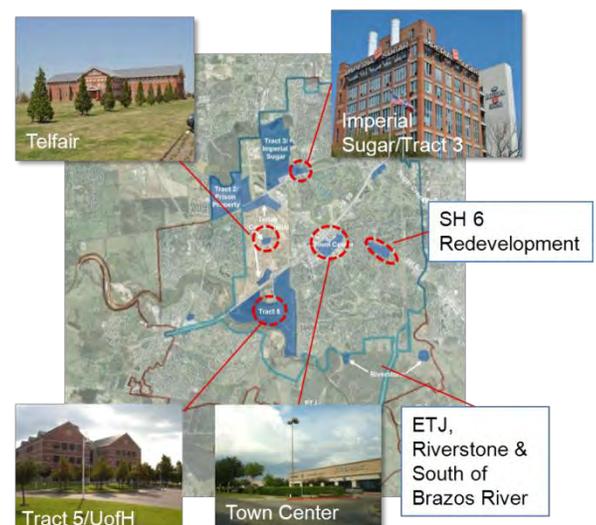
Strategies for Coordinated Land Use Development and Mobility Planning that Supports the Preservation of Neighborhood Integrity

Strategy #1: Consider land use/transportation relationship when developing and prioritizing mobility options.

The relationship between land use and transportation is undeniably linked. Sugar Land has to consider the implications transportation planning has on land use and the implications land use planning has on transportation.

Initiative 1A - Leverage opportunity areas to create mixed-use developments that support walking, biking and transit.

Mobility can be improved by focusing on future development sites as well as redeveloping existing sites to better accommodate multimodal options. Sugar Land has to create places where it is easy to use alternative transportation options for people to be able to walk, bike and ride transit. The best opportunity to do this is with new development. There are several core opportunity areas where new development patterns can be implemented to better support alternative transportation: Telfair, Tract 5/University of Houston – Sugar Land, Imperial Development (Tract 3), and areas in the ETJ.



Adding mixed-uses, multimodal centers to the network will enhance alternative transportation service by simply adding more destinations on a bike route, for example. To facilitate mixed-use development, the City should partner with land owners, provide clear examples of desired development patterns, and implement changes in zoning and development regulations, where applicable. In some cases, the City may choose to offer development incentives for additional site specific enhancements not included in regulations.

An example of this is shown in **Figure 10.5**. This shows an example of what could be possible on a high potential development like the portion of Tract 5 in the southeast corner of University Boulevard and US 59. The City of Sugar Land already has identified parcels of this area as the site for a potential 6-7,000 seat entertainment venue and a hotel and convention center site. Lexington Boulevard is also planned to be extended through the site. As part of this study the intersection of University Boulevard at 59 was identified as a high potential location for a transit hub for some form of high capacity transit (Park & Ride, Bus Rapid Transit, and Rail). The site is also along the Ditch H corridor, which will one day provide a major spine for pedestrian and bicycle connectivity. The proposed site identifies the potential for a mix of land uses, commercial and residential development types supported by true transportation choice. The location could link to the Town Center area to the east to support a meaningful set of activity centers with a high degree of connectivity and represent a major realization of the Vision for Superior Mobility linking transportation and development.



Figure 10.5 - Example of Mixed-Use Development Integrating Multiple Transportation Choices

SUGAR LAND COMPREHENSIVE MOBILITY STUDY: TRACT 5

MORRIS
ARCHITECTS

ADVANCED DESIGN

Redeveloping properties are a secondary opportunity to incorporate transit-friendly activity centers into the City landscape. The *Market Research and Analysis / Baseline Data* prepared for the City of Sugar Land in 2008 identifies several key opportunity sites for redevelopment. This includes vacant properties as well as several office and retail sites with redevelopment potential. Some development in the City is old enough to increase the likelihood and consideration of redevelopment. As strip malls begin to age, retailers move to newer centers. Older retail centers reach the end of their useful life and can be redeveloped and repositioned for new markets.

The SH 6 corridor is experiencing this shift in commercial retail development. Newer retail centers are replacing old ones, and today there are vacancies such as the vacant Randall's at Dulles Avenue. Sites like these will become available for redevelopment in the near future. **Figure 10.6** shows a redevelopment scenario for a typical retail strip redevelopment site along Highway 6 at Settler's Way Boulevard known as The Market at First Colony. As with the mixed-use development on Tract 5 (see **Figure 10.5**), the plan is intended to be illustrative of what may be possible by rethinking some of these areas. The site is located along a bike trail at a key connection to Oyster Creek Park. At the eastern boundary, Settler's Way is a main entry road into a residential planned community. The site features a stretch of waterfront access at the northern edge, which is designated as a future hike and bike trail head.

Over the next 20 years, the SH 6 at Settler's Way site could transform into a vibrant village with a central main street corridor. The redeveloped neighborhood center can be accessed by cars, bikes, and pedestrians and would be a logical location for any future transit service. The site could include new mixed-use retail with office uses above and a shared structured parking facility to serve tenants, visitors, and park & ride transit riders. New townhouses provide a critical addition of households to support retail businesses while offering additional housing opportunities for a growing, aging Sugar Land population or young professional that will support area growth. There is a demand from existing neighborhoods for mixed-use neighborhood centers, and the economic viability of these centers requires an adequate number of households. A new traffic signal at SH 6 would allow easy access to the development through one main entrance in place of six curb cuts into the former street-front, surface parking lot. Reducing curb cuts improves traffic flows on Highway 6 and creates safer access to the activity center. Bike and pedestrian routes along Highway 6 would provide a needed connection from Oyster Creek Park to the Highlands bike trail, which terminates at a waterfront park lined with restaurants. Additional connections to the adjacent properties would provide needed alternative access to increase activity at the site's new retail destinations and amenities. The site accommodates 3-4 story structures at most, a smaller-scale development in comparison to Town Square, to better integrate with the surrounding neighborhoods and offer a character that does not compete with the City's central business district. This typological approach can be applied to other redeveloping neighborhood strip retail sites throughout Sugar Land. The City can facilitate and encourage implementation of this typology through development standards and codes and possibly by providing economic incentives. When a developer meets with the City about the redevelopment of an existing retail center, the City should discuss the desired development typology with the developer and find out how the City can facilitate the construction of a mixed-use neighborhood center.



BEFORE

REIMAGINING STRIP RETAIL DEVELOPMENT

HIGHWAY 6 @ SETTLER'S WAY

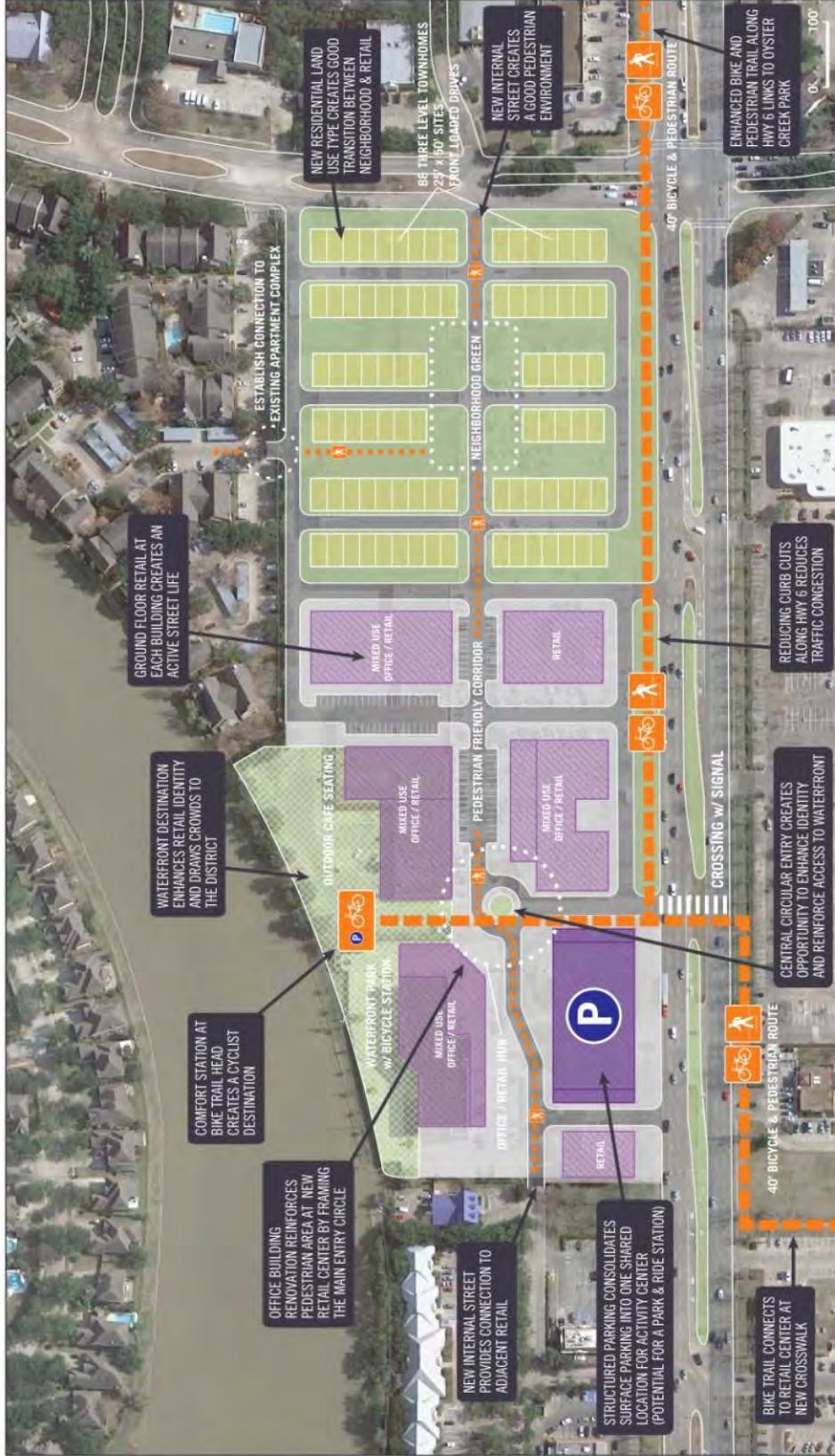


Figure 10.6 - Example of Redevelopment of Strip Retail Center on SH 6

Initiative 1B – Identify mobility improvements and multimodal transportation corridors to strengthen local activity centers.

As additional activity centers are developed (Imperial Development, the concert venue and convention center/hotel development on Tract 5, University of Houston and the Festival Site in Memorial Park), multimodal access should be addressed in the development plans, both within each center, as well as between the activity centers. The locations of the activity centers facilitates the designation of portions of SH 6, US 90A, University Boulevard and Lexington Boulevard as multimodal transportation corridors.

Construction of “arterial” bicycle trails, such as the Ditch H Trail will provide connections between activity centers; however, additional bike lanes and/or shared paths along the designated multimodal transportation corridors will be needed to provide comprehensive access by bicyclists. Pedestrian access should be strengthened along these corridors, typically in conjunction with bicycle improvements. Also, the implementation of transit circulator service will provide important connections between these employment centers.

Initiative 1C - Institutionalizing multimodal connectivity through City ordinances and the development review process. Designing for multimodal developments is a key to changing the landscape to better accommodate choices in transportation. It’s not only about creating higher density activity centers; it’s about the details on each parcel. Developers can extend hike and bike trails, connect to pedestrian and bike routes, and provide amenities on their properties. Roughly seventy percent of Mobility Survey responders indicated they would ride their bikes more often if the network was improved. The review process can encourage developers to provide multimodal connectivity and amenities for each project. The City of Sugar Land can offer financial and other incentives for enhanced multimodal features and amenities. Zoning approval can drive developers to include designs to accommodate multiple modes of transportation for each development site. Traffic Impact Analysis mitigation efforts can include alternative transportation improvements such as enhanced pedestrian areas or bike comfort stations. Incentives, zoning requirements and TIA mitigation options will ensure that each new development contributes to improving mobility throughout the network.

Strategy #2: Further utilize modified parking requirements to improve flexibility and accessibility for new development/redevelopment

Sugar Land’s parking supply currently exceeds its parking demand. This can fuel low density development and large open surface parking lots, which remain empty for long periods and create undesirable places for pedestrians. Shared parking is a good solution for matching supply with demand. Sugar Land modified parking requirements in the development of Town Square to create a more walkable environment and can extend this option to other areas as well. Seventy-six percent of survey responders agree that parking requirements should be relaxed for higher density, more walkable development. The City can use modified parking requirements for new development and redevelopment sites to minimize an oversupply of parking.

Initiative 2A - include district-wide, shared parking at activity centers, including parking for public facilities and potential transit hubs.

Shared parking encourages and allows visitors to park in one location and walk to several destinations thereby reducing car trips and encouraging a more active pedestrian realm. Additionally, activity centers with a mix of uses can efficiently combine parking demands from several separate uses whose timing varies, such as Park & Ride commuters and movie theater patrons. Reducing the total amount of parking required and the cost to provide that parking allows for more uses on the same site supporting increased economic development. The challenge here is accepting structured and shared parking scenarios in an environment accustomed to private surface lots. A recommendation is to revisit the percentages of off-site shared parking permitted for each use in Development Code *Sec. 2-209 Location of Parking Spaces* to encourage more shared structured parking. District wide, shared parking can contribute to a more vibrant pedestrian environment.

Initiative 2B - Evaluate the potential for market-driven parking capacity in higher-density activity centers (e.g., elimination of parking requirements). In Houston's Central Business District, there are no parking requirements. The private market builds parking garages, many of which are shared among tenants and visitors of various buildings, based on pure demand. There are additional parking opportunities with on-street parking, from which the City generates revenues. The result is dense development and high activity. This option may be suitable for Sugar Land Town Square and other major local activity centers.

Strategy #3: Encourage commercial/mixed-use development in undeveloped portions of the City to reduce trips through congested corridors.

A key to improving mobility is reducing trip distances by providing more local destinations so people don't have to drive long distances and even have alternative transportation options to get groceries, go shopping, see a movie, and eat out. The majority of land area in Sugar Land is made up of residential uses, mostly single-family detached houses. While there are neighborhood services in strip centers near these communities, there are a limited number of true activity centers. Without neighborhood activity centers, City activity centers experience increased traffic congestion, as is the case near Highway 6 at US 59. Undeveloped sites in the City are great opportunities to relieve the pressure on existing nuclei of activity and provide new destinations within closer proximity.

Activity generated in clusters of the City puts pressure on major transportation corridors. While this is not always a negative (lots of people in Town Square is a good thing), it is important that the development of the ETJ not require additional capacity from the network beyond what it can absorb. That is to say, roads leading from the ETJ to Town Square may not be able to accommodate the capacities of automobile trips generated from new residential development, and having destinations within the ETJ can help provide alternatives.

Initiative 3A - Develop neighborhood centers in the ETJ.

New activity centers must be developed in the ETJ to service new residents and eliminate the need for longer trips to existing centers along Highway 6 and US 59. Opportunities are likely to exist in the locations like the planned Riverstone development which have identified commercially zoned locations that could serve as neighborhood centers.

Initiative 3B - Identify alternative mode access to activity centers (bike and pedestrian routes), thus reducing car trips.

Creating alternative modes of transportation to local activity centers can also alleviate traffic congestion. Residents can choose to bike to the movies or walk to the store to pick up a few groceries instead of driving their cars for these trips. Planned communities should have identifiable routes to activity centers for bikes and pedestrians. Creating and identifying continuous and safe routes will encourage people to use them. Currently bike routes move from separated lanes into shared lanes with vehicles and it is not obvious to cyclists where routes go. Additionally, the City should explore an alternative alignment for regional rapid transit (bus or light rail) that stops at local activity centers. Stations along Lexington Boulevard could provide service to Town Square, First Colony Mall, AMC Theatres, Tract 5 and the University of Houston for local residents and regional commuters. Providing alternative access to activity centers helps reach two of the most important goals as indicated by survey responders: to provide transportation choices and reduce roadway congestion.

Strategy #4: Include neighborhood considerations in mobility planning

Sugar Land is made up of many master-planned communities, whose character is an integral piece of why so many people call Sugar Land home. First and foremost, residents must be a part of planning their future and shaping mobility projects in and around their communities. It is the local stakeholders who often know the issues most intimately and they are a great resource for informed planning of successful projects. A focused public engagement process for major mobility projects and initiatives will benefit the development of these projects. While improving connectivity, Sugar Land needs to prioritize maintaining neighborhood integrity.

Initiative 4A - Ensure mobility projects (new and reconstruction projects) preserve neighborhood connectivity and integrity.

Connectivity can be enhanced by creating more intersections and additional thoroughfares. But Sugar Land neighborhoods are inherently disconnected with limited entry points and transforming them would compromise their character. Balance should be an objective when considering increased connectivity. Projects that will enhance connectivity from neighborhood entry points must be a priority. An example could be ensuring safe, comfortable pedestrian and bike paths from community entrances to neighborhood retail destinations. Overall mobility improvements can be made while maintaining the integrity of neighborhoods and adapting to the neighborhoods vision.

Strategy #5: Encourage increased communication between the City and school districts to improve access to schools and reduce impacts on mobility

Neighborhood schools have a major effect on mobility. Many master-planned communities were built around neighborhood schools. According to the 2009 American Community Survey, there are approximately 18,200 Sugar Land residents enrolled in primary and secondary schools. School districting and enrollment have a great impact on traffic patterns in and around communities, and therefore it is critical to have good coordination between schools, transportation, and residents.

Initiative 5A - Encourage school districts to include the City early in the process of site location and site plan decisions.

Small adjustments in school entry access points and public realm design of sidewalks and bike infrastructure can encourage alternative transportation options. For example, some schools experience long carpool lines that back up traffic on major thoroughfares. In some cases, drop off and pick up locations can be moved elsewhere on site to eliminate traffic on these major routes. With the proper coordination, school districts and City departments can work together to improve access to and reduce congestion around neighborhood schools. Proper design can encourage an increase in walking and biking to school. As shown in the following example, lack of good access can make what could be a short trip long and circuitous and encouraging automobile trips.

**Elementary School – Sugar Land
Cul de sac Neighborhood**



**Elementary School – Houston
Grid Network**



Where schools are located and how they are designed to connect with street, sidewalk and bike networks can impact mobility.

Initiative 5B - evaluate the need for Safe Routes to School Plans in coordination with school districts. Kids and parents will walk or bike to school if there is a clear, safe network to support them. This would reduce car trips to school and can have a big impact on neighborhood traffic congestion. The openings or closings of schools and redistricting of residential areas should be coordinated with City departments to anticipate needs and mitigate any negative impacts on mobility.

Metrics

The success of strategies for coordinated land use development and mobility planning that supports the preservation of neighborhood integrity can be evaluated by the following metrics:

Residents within 1/4 mile walk to retail: Identified the share of the population that would be within a reasonable distance for a walking or biking trip or an area that could be more easily serve through a transit circulator.



Average City Walkscore (Walkscore.com): The overall City Walkscore is a 38 (out of 100) with a peak in the Town Square area of 78. An overall increase in Walkscore would be an indication of a greater integration between mobility and land use

Citizen Survey - Availability of Mixed Use Destinations & Citizen Survey - Level of Citizen Involvement: These measures, captured through the citizen survey conducted by the City, will provide input into the perceptions of citizens on the continued availability of mixed use (a stated preference in the Mobility Survey) and the level of engagement in the development process.

Goal 8: Effective Partnerships with Other Agencies to Address Mobility Issues within and Beyond the City Borders

Like many large scale, important issues, mobility and transportation do not always fit nicely within political boundaries. Many of the mobility issues that the City will face in the future will require strong partners to implement successfully. Improvements to state facilities will require TxDOT support, regional transit may require partnering with Fort Bend County and METRO. With the development of the Comprehensive Mobility Plan, the City of Sugar Land has created a vision for what its future mobility system can look like. The City can now engage partners with a view on how to turn the vision into reality.

Strategies for Developing Effective Partnerships with Other Agencies to Address Mobility Issues within and Beyond the City Borders

Strategy #1 – Identify partners for projects that extend beyond the City borders

Initiative 1A – Initiate partnerships with state, regional and municipal agencies to implement projects that align with Sugar Land’s mobility goals and provide solutions to regional transportation issues

Sugar Land’s sustained growth and reputation as a strong, independent city form the foundation for continued development. An advantage to the City is its proximity to other growing and prosperous municipalities. Fort Bend County, neighboring cities like Missouri City, Stafford, Rosenberg and Houston all posted gains according to recent census estimates. Residents and businesses within this large metropolis have relative ease in seeking employment and employees throughout the region. Patrons do not feel bounded by geography or official maps when pursuing retail and service establishments. The result is a crisscross pattern of trips to, from and through Sugar Land. Since travelers access the freeways and roadways throughout the metropolis, it is important for Sugar Land to establish or maintain strong liaisons with other agencies dedicated to improving mobility and increasing travel options. Partners should include TxDOT, Fort Bend County, METRO, Houston Galveston Area Council, Gulf Coast Rail District and nearby cities. Also, liaisons should be established with Activity Center transportation groups (e.g., Downtown, Galleria/Uptown, Greenway Plaza, Texas Medical Center and Energy Corridor) and Transportation Management Organizations, such as TREK.

| Agencies | Cities |
|---|--|
|  | <ul style="list-style-type: none"> ▪ Houston ▪ Missouri City ▪ Stafford ▪ Meadows Place ▪ Richmond ▪ Rosenberg |
|  | |
|  | |
|  | |

As outlined in previous sections of this report, Sugar Land mobility requires a compendium of transportation solutions from roads and streets, flexible work options, vanpooling, ITS and public transportation. Some aspects of the solutions can be done by Sugar Land, independently, but the majority of the high cost, long range regional proposals will be coordinated, multi-agency initiatives. These are not transportation goals just for Sugar Land, but are also in the best interest of Fort Bend County and other regional transportation entities. Indication that the City of Sugar Land is interested in the transport of its residents, employees and visitors to and from the region is the first step to initiating dialogue with the following transportation agencies.

Regional Transit Authorities: Comments from Sugar Land residents through the surveys, MAC meetings and public meetings indicated an interest in improved and more direct service to downtown Houston and other major employment destinations. Travel options to many employment centers are currently available, but do not constitute a competitive service option. Large numbers of employees from these areas live in Sugar Land. Discussions with existing transit entities, Fort Bend County Public Transportation Department and METRO could lead to options that would entice more people from their private vehicles. Moreover, establishing a pattern of communication and coordination is important for later dialogue about long term, capital intensive projects like bus rapid transit and/or rail services. Research conducted for TxDOT in 2008 showed three basic scenarios for formal multi-jurisdictional arrangements. One option creates a new entity designed to facilitate a consortium of interested jurisdictions. Galveston recently initiated such an organization, The Galveston County Urban and Rural Transportation District. The purpose of the new transportation district is to pull together the many municipalities in the county and speak in a single voice to negotiate with Houston Metro, the federal government and other entities regarding transportation projects and funding for the county. The second scenario, less likely for this region, is to dismantle existing entities to create a new regional transit agency comprised of the multiple jurisdictions and establish a new governing body. The District, operating in the Brazos Valley area (central and east Texas), is a multi-county transportation agency that provides multimodal transportation service in both urban and rural communities in that part of the region. The third option, most likely, is series of intergovernmental agreements delineating operating, financial and governing provision for participating entities. An important local organization in this category is the Gulf Coast Rail District as it has both passenger and freight rail responsibilities, with decisions important for Sugar Land. The Trinity Railway Express (TRE), which provides commuter rail service between Dallas and Fort Worth, is another example in North Texas. The TRE is a cooperative service provided by the Fort Worth Transportation Authority (The T) and Dallas Area Rapid Transit (DART).

School Districts: School districts offer one of the important areas for increased dialogue and future planning. Routing for school buses might be streamlined as decisions about new street patterns include consideration of how students will travel to school. The City of Sugar Land should be engaged in the school district's planning and site development process to ensure that mobility patterns to and from the new schools is consistent with the existing travel patterns and traffic conditions and that the new facility does not create greater congestion or safety issues for the students. Coordination can also support creating opportunities to allow a greater share of students to walk or bike to school.

Adjacent Cities: Major arterials that extend from adjacent municipalities in many cases include vehicles traveling through Sugar Land. Examples are US 90A, Highway 6, Dulles, Dairy Ashford/Sugar Creek, University Boulevard and Lexington Blvd. Actions taken in a jurisdiction outside Sugar Land could exacerbate traffic congestion in Sugar Land. For instance, a grade separation at one intersection along Highway 6 enabling traffic to avoid a traffic signal will allow more traffic to reach the next stopping point, creating congestion and shifting the problem downstream. Likewise, Sugar Land decisions could affect its neighbors; agreements to optimize traffic flow through contiguous cities will result in overall improved travel for all users. Joint planning activities and cooperative agreements can facilitate decision making and establish guidelines for communication.

Strategy #2 – Explore private services or partnerships that would benefit the City

Initiative 2A – Initiate Public Private Partnerships that promote a multimodal transportation system

A strong, positive relationship with the business community is essential for full effectiveness of Sugar Land’s mobility plan. A future intracity circulator may rely on financial support from businesses and in-kind support for advertising or promotions as incentives for riders. Some passenger drop-off or pick-ups or bus turnaround locations may need to occur on private property. Coordination between Sugar Land and private interest in developing an intracity circulator can be a win-win opportunity for both entities, as the combined forces will effectively design a sustainable service that will best serve the private interests while promoting alternative mobility choices.

Initiating dialogue with Sugar Land private companies that have vehicles available for lease could provide an avenue for the circulator service. There may be more than one option available of service providers living in the City, which could facilitate starting the service. When investigating service options to the major employment centers in Houston, Central Houston (downtown), Texas Medical Center and TREK (Galleria/Greenway) work with the employers in their areas to ease the home to work trip. These entities might be allies in working to improve transit options for residents from Sugar Land.

Initiative 2B – Engage the development community, including the Development Committee, to improve integration of transportation goals in projects

The City of Sugar Land can implement a significant set of transportation and mobility improvements, but mobility benefits and challenges also exist on private properties. Proactive discussions on how development occurs and encouraging allowances for transit-friendly characteristics or pedestrian amenities that link to City facilities will benefit patrons accessing these properties in the future. Wider sidewalks, buffer areas between traffic lanes and where riders wait for buses are examples of development decisions that can facilitate transit use. Building construction with parking areas located in the rear of the site, also will prevent pedestrians or transit riders from needing to cross busy parking lots to access their destination.

Strategy #3 – Take leadership role with other entities whose facilities impact mobility in Sugar Land

Initiative 3A – Initiate dialogue with public and private entities, such as railroad companies and school districts, regarding anticipated growth and planned projects; work with entities to mitigate impact of plans/projects

There exists a tremendous opportunity to plan for Sugar Land’s future and incorporate its vision of improved mobility. Future school locations, open space, and particularly residential environments can be designed to reduce circuitous travel by increasing connectivity between destinations. Developments that are bicycle and transit friendly reduce demands of passenger vehicles by making other modes more attractive. Sugar Land already began the concept of mixed use with the Town Square development. Residents of these areas can walk or bicycle to dinner and accommodate some shopping trips. Greater attention to these types of developments can continue to increase the number of non-motorized trips. The baseball park and Imperial Sugar site are prime candidates to include the concepts of developing with a mobility focus.

As freight rail continues to grow, with expectation for the UP Glidden line along US 90A to double in trains per day over the next 20 years, continuing to work with rail companies to both manage the impacts of noise and traffic and to support potential rail based economic development opportunities will be critical.

Metrics

Success in achieving effective partnerships will be experienced through a variety of mobility improvements. More transportation options, less time spent on congested roadways, connected bicycle and pedestrian paths, and better regional transit service will be evidence of liaisons with government and private sector partners. That noted, the following can also be assessed.

3 Year Average Funding Awarded: a rolling three year average of funding awarded to the City which will enable the City to leverage local fund to implement mobility projects.

Grant Application Success Rate: To successful develop grant applications required significant resources from City staff. The metric will track what % of the time that effort is rewarded through selection for funding through the various mobility related grant programs.

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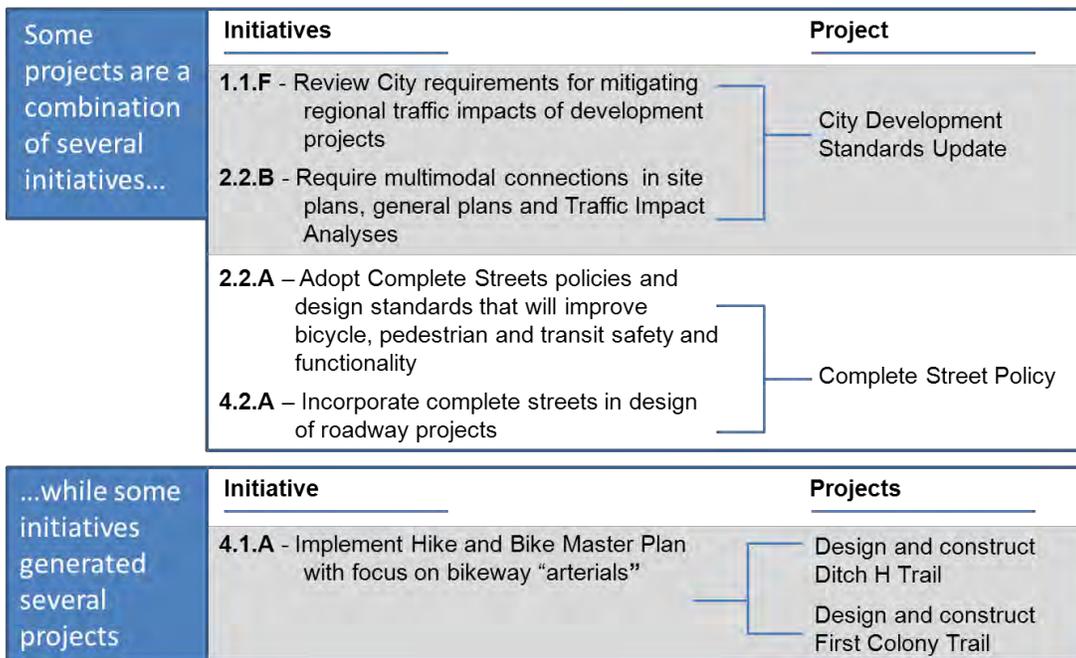
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Implementation and Performance Management

Through an extensive process of public engagement and an analysis of current and future transportation challenges and opportunities for the City, a mobility implementation plan has been developed. This chapter outlines the approach to translating the mobility initiatives into actions through prioritization, funding strategies and the development of an implementation timeline. This chapter also identifies ongoing performance management of the implementation of the plan as well as performance metrics that will support the assessment of program effectiveness.

Prioritization

The development of the VG-SIM model for the City of Sugar Land has identified a portfolio of strategies and initiatives that, when taken together, are designed to deliver the goals for Superior Mobility now and in the future. To successfully address the initiatives, a set of recommended projects has been identified for implementation. These are specific, tangible projects that the City can pursue. As shown in the following examples, in some cases initiatives have been combined into projects and, in some cases, a single initiative generates several projects.



The identified projects are listed on the following page in **Figure 12.1**. They have been categorized by the primary mode of travel or content area (e.g. Land Use) so that related projects are grouped together. Detailed project descriptions for the projects are provided in tabular form in the Project Implementation Approach and Timeline section of this Chapter.



Figure 12.1 – List of Mobility Projects

Auto/Roadway

- Thoroughfare Plan Update (Underway) & Implementation
- Wayfinding Signage
- ITS (Intelligent Transportation Systems)
 - Expand/Install Traffic Signal Adaptive and Responsive Systems
 - Establish Regional Traffic Management Center (TMC)
 - Public Traffic Information
- Railroad Grade Separations
- Safety Program & Access Management Study & Implementation
- Parking Plan Development
 - Phase 1 – Parking Plan
 - Phase 2 - Implement Parking Plan

Pedestrian/Bicyclist

- Bicycle Arterial Design/Construction
 - Town Center Pedestrian/Bicycle Project
 - Brooks Street Project
 - First Colony Trail
 - Ditch H Trail
 - On Street & Other
- Multimodal Access Study
- Complete Street Policy
- Private Development Pedestrian & Bicycle Accessibility Improvements
- Updated Pedestrian & Bicycle Plan
 - Programs to Support Bicycle Culture
 - Safe Route to School (SRTS) Study
 - Revise to include new opportunity locations

Land Use

- Rail Based Light Industrial Facilities
- Development Standards Update
- Land Use Update for South of the Brazos
- Support City's Economic Development Plan

Transit

- Transit Operations
 - Alternate Commuting (TREK, Vanpool, Carpool) marketing program
 - Initiate direct service to Downtown
- Intracity Circulator
 - Phase 1 (Implementation)
 - Phase 2 (Expansion)
- Transit Feasibility and Planning Study
 - Park and Ride Study
 - High Capacity Transit (BRT/Rail) Feasibility Study
 - Transit Oriented Development (TOD) Study - Phase 1: Feasibility
 - Transit Oriented Development Study - Phase 2: Design
- High Capacity Transit Service
 - Identify and preserve alignment and station locations
 - Bus Rapid Transit (BRT)
 - High Capacity Rail Service
- Private Intracity Transit

Freight Rail

- Rail Route Bypass

Management

- Advocacy for Regional Projects (e.g., Rail bypass, I-69, 2 way HOT/HOV)
- Superior Mobility Performance Management
- Transportation Funding Strategy
 - Partnerships
 - Identify and implement funding guidelines
 - Consider establishing a dedicated revenue stream for mobility projects



Prioritization and Work Plan Formulation

The mobility projects have been assessed to develop a prioritized set of short/catalyst, medium and long term projects. Project prioritization was based on several inputs including public input from the Mobility Advisory Committee and stakeholders as well as an assessment of the mobility benefit for each project and the perceived ease of implementation for the project. Ease of implementation was factored based on cost, barriers and time to implement. As any organization has a certain level of capacity to implement projects, some care was taken to not overload the early stages of implementation.

The prioritization timeframe indicates when a project will be initiated, not implemented. The prioritizations are intentionally optimistic and reflect the importance that the City places in pursuing implementation of the identified mobility projects. However, the timeframes are “targets” that will be revisited on an annual, if not semiannual, basis based on the City’s capability to deliver the projects, including the funding capacity and the availability of staff resources.

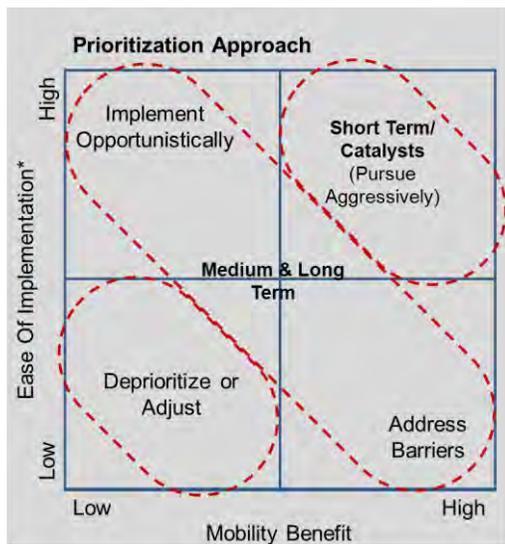


Figure 12.2 – Prioritization Matrix

Prioritization categories have been defined as:

Short Term/Catalyst Projects (0-2 years) – projects that have high level of mobility benefit and relative ease of implementation. This category would also include projects that serve as catalysts to enable significant mobility benefits to be captured in the future. Example projects in this category may include roadway projects that can address bottlenecks, major bike routes where right-of-way and environmental issues have been addressed or planning studies that will enable future capital investments to occur.

Medium Term Projects (3-5 years) and **Long Term Projects** (5+ years) – Projects in these categories may have significant mobility benefits (e.g., commuter rail) or be relatively easy to implement (planning studies) but typically face some challenge or barrier that makes them longer term in nature. This can include funding availability, right-of-way or environmental issues or the complexity of agencies and partnership involved to successfully execute. Some medium or long term projects may be able to be implemented opportunistically. An example of this occurred when “shovel ready” projects were prioritized for funding through the American Recovery and Reinvestment Act in 2009-2010.

Low Priority Projects – Over time projects that are both difficult to implement and lack significant mobility benefits will be identified. Effective program management of mobility projects will be required to either deprioritize these projects relative to other more beneficial projects, or to adjust these projects so that they deliver greater benefit to the City’s overall level of mobility.

Funding Strategy

A critical factor in the implementation of any mobility related project is funding availability. Funding for transportation projects typically comes from a mix of sources including local dollars, state and federal funding, user fees such as tolls or fares, private developer's fees and public private partnerships (PPPs). Funding sources will also vary by mode (e.g., transit vs. roadway) and are subject changes in Federal and State funding priorities. The City of Sugar Land has been able to maintain a strong financial record (e.g., an excellent bond rating) but currently there is a significant degree of uncertainty in funding on other levels due to economic and political circumstances. The City of Sugar Land will likely need to explore a combination of funding opportunities to successfully achieve its mobility objectives.

Dedicated Resources - To ensure that the City capitalizes on available funding opportunities aligned with high priority mobility projects, it is recommended that the City develop and implement a mobility funding strategy. Dedicating resources to developing and managing a financial strategy would have several benefits including:

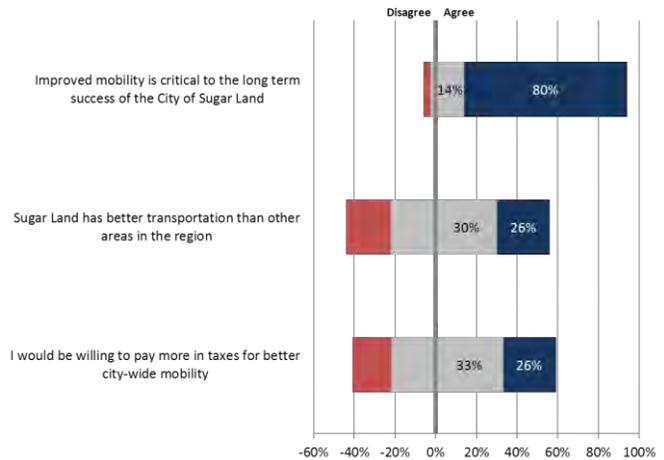
- Focuses funding strategy on most important projects and sources
- Allows the City to leverage mobility investments with outside funding wherever possible
- Enable proactive planning for upcoming funding opportunities to develop project applications that are aligned with funding ranking criteria
- Ability to identify partners (e.g., other cities, agencies) to support highest priority projects increasing likelihood of developing projects that qualify for funding
- Potential to increase capture rate of available transportation funding

Federal & State Funding - The last federal Transportation funding and authorization bill - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU), was passed in 2005 and originally expired in Sept 2009. Federal transportation funding has continued through a series of short term reauthorizations continuing the current funding categories in SAFETEA-LU. At the time of this report, it is unclear when a new Transportation Bill will be passed, giving greater clarity on major funding opportunities available to state and local agencies. Significant issues exist with how the revenue to pay for future funding that supports mobility projects will be raised. Historically funding has been driven by fees (e.g., automobile registration) at the state level and gasoline taxes at the state and federal levels. Federal and state motor fuel (e.g., gasoline & diesel) tax revenue has declined relative to overall growth due to changes such as increased vehicle fuel efficiency and declining vehicle miles traveled, leading to less funding for future projects. These fuel taxes have not been increased since the early 90's and alternative funding sources have yet to be defined to pay for major projects. This may increase the burden on local agencies and cities to find creative approaches to fund critical mobility projects and increased competitiveness for scarce funding support across modes and projects.

Local Funding - Sugar Land’s citizens consistently see mobility as critical to the ongoing success of the region. They also have a mixed view as to whether the transportation system in Sugar Land is significantly better than other areas in the region with 44% of the survey respondents disagreeing with that statement and only 26% agreeing or strongly agreeing. On funding for transportation, they are also mixed on whether they would be willing to pay more in taxes to improve mobility citywide (See **Figure 12.2**). Therefore a thoughtful approach that leverages all available funding options and creates partnerships with other key agencies will likely be required to successfully implement major mobility initiatives.

Figure 12.2 – Survey Responses

Q11. & Q12. Please indicate your level of agreement with each of the following statements (Range: 1-Strongly Disagree; 6: Strongly Agree)



City of Sugar Land Funding Sources

Capital Projects Fund - The City typically funds major mobility projects through its Capital Projects Fund. The sources of these funds are varied and can include tax revenue (sales and ad valorem), developer fees, state and federal funding, user fees, grants and the issuance of debt. Capital projects are prioritized annually and capital funds are also used for projects related to drainage, water & wastewater, the Sugar Land Regional Airport, municipal projects including the planned minor league baseball stadium, and parks projects in addition to streets, traffic and transportation.

The City of Sugar Land maintains some funding opportunities for capital projects through dedicated funds. For example, water and wastewater are finance thought the City Utility Fund and solid waste is financed primarily through the Solid Waste Fund. These funds collect revenue primarily based on a usage fee for services provided. Other funding sources including debt issuances are utilized to pay for larger capital projects as well.

Unlike some of the dedicated utility funds, there is not a solely dedicated funding source for mobility projects. Mobility projects on the Capital Projects Plan including streets, sidewalks and traffic improvements typically are funded at least in part through the General Fund and leverage external funding sources to maximize the benefit of the use of City investments in a project. As general funds are also used to fund other city services (e.g., Police & Fire Services, Community Development), funding for projects can vary based on the needs and priorities of the City.

Dedicated Revenue Stream - To address the uncertain funding for mobility projects, it is recommended that the City of Sugar Land consider the creation of a dedicated revenue stream to finance the critical ongoing mobility projects for the City. This revenue stream could provide dedicate pay-as-you go funding for projects or serve as the local match for large projects in which external funding is required. Based on examples of existing and proposed funds in other cities, potential revenue sources for a mobility fund could include:

- Developer fees – currently the City utilizes traffic impact analyses to determine potential mobility mitigation requirements. An alternative approach, the Developer Impact Fee, development impact fee is

a charge imposed on new development to compensate for their impacts on the local transportation infrastructure.

- General Funds – The City can establish a set amount or rate of general funds that would go to the Mobility Fund every year.
- Local option gas tax – While the Texas legislature has not increased the state Fuel Tax since 1991 but there has been some discussion of increased local option fuel taxes or local vehicle registration fees. These increases which would need to be voted on by the public. This may provide local mobility funding, should the Fort Bend County region elect to add this tax.
- Drainage & Streets Fee – The City could establish a drainage and street infrastructure program funded based on estimated drainage impact the owner’s property has, as measure by impervious cover. This would be similar to the recent “Renew Houston” charter amendment effort in the City of Houston.
- Parking Fees – Parking fees can include revenue from City operated parking meters or parking garages as well as in-lieu of fund for developers
- Other fees that may be related to mobility improvements.

If the City elects to establish a dedicated Mobility Fund, guidelines will be needed to define eligible expenditures. The guidelines need to be broadly defined to give the City flexibility in using the funds and at the same time, they should clearly define eligible categories of expenditure. A decision should be made on whether the fund could be used for capital investments as well as ongoing operations. Funding both would typically provide maximum flexibility for the City to invest in highest priority projects so would be recommended.

Component Units - The City of Sugar Land can also fund some capital projects and ongoing operation though the use of one City’s Component Units. There are several existing structures in the City to do this and additional options may exist establish a funding mechanism through additional TIRZs, other tools such as a Business Improvement District (BID) or new structures that are allowed by the Legislature. The City currently utilizes some of these tools to support economic development including:

- Sugar Land Development Corporation - can invest in projects that are related to economic development in the City including business incentives that support economic growth and diversity. This corporation is funded through a quarter cent sales tax.
- Sugar Land 4B Corporation - can provide funding for quality of life projects such as parks and aesthetic improvements and support economic development effort. This corporation is funded through a quarter cent sales tax.
- Tax Reinvestment Zones (TIRZ) – the City has established TIRZs for major development areas including Town Square, Tract 5 and the area adjacent to the Imperial Sugar site. These TIRZs are funded based on incremental property tax revenue for the properties within the TIRZ relative to the base year value. The funds can be used for events and improvements within the TIRZ area and for debt repayment through transfer to the City Corporations.

There are certain requirements for these Component Units in terms of how funds may be allocated. For example, Economic Development funds like the Sugar Land Development Corporation, which are generated via a sales tax levy cannot be used to subsidize operating costs for transit. ED funds can, however, be used for capital improvements such as bus stops and shelters. General funds revenue of the City may be used to subsidize transit

operations and capital expenditures. At the current time, the City has dedicated a significant portion of future Development funds to the construction of a minor league baseball stadium to be opened in 2012. The 4B fund will also potentially be allocated towards the development of an entertainment venue in Tract 5 near US 59 at University Boulevard. These allocations will likely absorb a significant portion of the City’s Component Fund dollars for the next 10-15 years, limiting the use for mobility related projects.

External Funding Sources

The following is an overview of available external funding options at the time of this report. Changes in federal, state and local programs will influence the availability of these funding sources.

Roadway and Traffic

Fort Bend County Mobility Bonds - Fort Bend County has issued mobility bonds for the implementation of identified mobility projects that are a benefit to the county and the local cities within the county. They typically will issue a call for projects from across the county and include the highest priority projects within a referendum.

TxDOT “Pass Through” Toll projects - This program lets local agencies accelerate state highway improvements by locally funding the improvements up front, then receiving State reimbursement over time based on traffic volumes on the completed highway.

Transportation Improvement Program (TIP) - Within the state of Texas, the Texas Transportation Commission and Texas Department of Transportation (TxDOT) develop a document called the Unified Transportation Plan. This plan organizes the transportation spending for the state by category. These categories comply with the SAFETEA-LU requirements for which transportation systems federal funds can be allocated. There are 12 categories of funding in the UTP and are shown in the Table below. The projects in the Preservation & Safety categories are represented by projects in Categories: 1 - Preventative Maintenance & Rehab, 6 - Structures and Bridges, and 8 – Safety which are projects that preserve the existing transportation network. The projects in the Mobility categories are represented by system development projects funded in the other 9 categories shown in the Table. These funding projects are managed locally through the TIP at the Houston-Galveston Area Council (H-GAC) and the Transportation Policy Council. They typically funded 80% by the state with a 20% required local match. There is typically a long lead time of getting projects approved for State though the TIP so advanced planning and an understanding of what prioritization factor exist is critical.

A description of some of the major funding categories for roadways includes:

- *Category 2 - Metropolitan Area (TMA) Corridor Projects* - Mobility and added capacity projects on major state highway system corridors which serve the mobility needs of the Metropolitan Areas (TMA) Metropolitan Planning Organizations (MPOs such as H-GAC).

**TABLE 2-1
2008-2011 TRANSPORTATION IMPROVEMENT PROGRAM
FEDERAL AND STATE FUNDING CATEGORIES**

| | CATEGORY |
|--------------|--|
| 1 | Preventative Maintenance & Rehabilitation |
| 2 | Metropolitan Area (TMA) Corridor Projects |
| 3 | Urban Area (Non TMA) Corridor Projects |
| 4 | Statewide Connectivity Corridor Projects |
| 5 | Congestion Mitigation Air Quality Improvement (CMAQ) |
| 6 | Structures Replacement & Rehabilitation |
| 7 | Surface Transportation Metropolitan Mobility/Rehabilitation (STP-MM) |
| 8 | Safety |
| 9 | Transportation Enhancements |
| 10 | Miscellaneous |
| 11 | District Discretionary |
| 12 | Strategic Priority |
| LOCAL | Locally Funded |
| TOLL | Toll Funded |

- *Category 5 - Statewide Connectivity Corridor Projects* - Mobility and added capacity projects on major state highway system corridors which provide statewide connectivity between urban areas and corridors. Composed of a highway connectivity network which includes:
 - Texas Trunk System
 - National Highway System (NHS)
 - Connections from Texas Trunk System or NHS to major ports on international borders or Texas water ports
- *Category 5 – Congestion Mitigation and Air Quality Improvements* - Addresses attainment of national ambient air quality standard in the non-attainment areas (currently Dallas-Fort Worth, Houston, Beaumont and El Paso). Funds cannot be used to add capacity for single occupancy vehicles.
- *Category 7 – Metropolitan Mobility/Rehabilitation* - Transportation needs within the Transportation Management Areas (TMAs). Projects selected by the Metropolitan Planning Organizations (e.g., H-GAC).

Additional TIP categories including Category 9 – Transportation Enhancements provide funding for project “above and beyond what is normally expected for standard TxDOT roadway activities” including pedestrian and bicycle and landscaping improvements will be discussed in more detail in the section on other modes of travel.

Transit

Fare Revenue

Fare revenues cover a very small portion of operating costs of transit systems nationally, with very small or growing transit system generally covering an even smaller portion of the costs through the farebox than larger systems. Fare recovery of operating costs of less than 10 percent should be expected for very new and small operations. Fort Bend County Transportation currently charges \$1.00 per ride for local demand response service. Trek Express commuter rates from the Park & Rides at University of Houston-Sugar Land and the AMC movie theater are \$1.00 to the METRO W. Bellfort Park & Ride and \$2.25 to destinations in the Uptown/Galleria area and Greenway Plaza. Federal law requires that half-price fares be offered to certain groups (seniors, disabled, and those eligible for a Medicare card) during off-peak hours. In addition, many systems offer half-fares to students and offer the half-fares to other eligible groups during all hours of the day. Enforcing peak/off-peak fare differentials can be very difficult.

External Funding Sources and Grants

While Fort Bend County Transportation is comfortable with local cities within the county operating their own service or contracting with the County, the County would like to continue to be the coordinator and recipient for grant monies from the federal and state governments. Fort Bend County as a whole will likely be better served by negotiating for grants as one entity rather than having parts of the County competing with other parts of the County for limited funds.

Federal Transit Administration - The primary source of operating grants that will be applicable to Sugar Land will be its share of Section 5307 Urbanized Formula Funds from the Federal Transit Administration (FTA). This program can cover about 50 percent of the operating costs of transit service. The funds are allocated to an entire urbanized area based on a formula that includes urban population, miles of service provided, and passenger miles carried. The regional Metropolitan Planning Organization (in the Houston area’s case, H-GAC) is responsible for then allocating those funds to all transit providers in the region. Fort Bend County Transportation is currently receiving a share of these funds and would potentially receive more if Sugar Land expanded transit service offerings.

Federal funds are also available to help pay for bus acquisition and other capital needs. If wheelchair lift-equipped buses are purchased—as Fort Bend County uses now—the local share of the cost of buses would be only 17 percent. FTA funds will cover about 80 percent of shelters, benches, bus stop poles, and other passenger amenities.

The State of Texas does not provide operating assistance to systems in urban areas (Sugar Land is in the Houston urbanized area). The State does administer various special Federal grant programs, such as Job Access and Reverse Commute (JARC) and New Freedom. While New Freedom grants are focused on improving mobility for the disabled, the funds can be used to provide service for the general public as well on a space available basis.

Congestion Mitigation and Air Quality (CMAQ) grants are administered by H-GAC for this region and are available for projects that potentially decrease air pollution. Transit services, both operating and capital, are eligible for support under this program. Operating subsidies are only available for a particular service for up to three years, however. So the CMAQ program can be used to help launch services, but local sources must still be developed to keep the service operating.

Private Sector Sources

The private sector could help support transit services in a number of ways, including in-kind contributions, capital investments, and subsidized transit passes. Examples of in-kind contributions could include the provision of marketing materials and maintenance of bus stops and shelters. Local developers or property owners may consider paying for transit shelters, benches, or other amenities at bus stops on or near their properties if they perceived a potential benefit. And finally, local employers could support the service by paying for free or subsidized transit passes for employees. Transit pass programs can both increase ridership and create a more stable fare revenue stream on which the City can rely.

Pedestrian and Bicycle

There are a wide variety of external funding sources that the City may be able to use to fund pedestrian and bicycle improvements.

Transportation Enhancements Grants – Transportation Enhancement (TE) (TIP Category 9) activities offer funding opportunities to help expand transportation choices and enhance the transportation experience through 12 eligible TE activities related to surface transportation, including pedestrian and bicycle infrastructure and safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation. TE projects must relate to surface transportation and must qualify under one or more of the 12 eligible categories.

Safe Routes to School – Safe Routes to School programs create practical projects to make school routes safer for children to walk and bicycle, such as sidewalks, crosswalks and bicycle facilities. Community leaders, parents and schools also use education programs to help children travel safely to and from school. TxDOT typically issues a call for projects approximately every two years.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) – The funds are mainly used to help communities in nonattainment areas and maintenance areas to reduce emissions. Pedestrian and bicycle



programs are two kinds of the many programs that can be funded using CMAQ funds. Pedestrian and bicycle programs that can be funded under this program can include trails or paths as well as education efforts and marketing efforts designed to encourage bike riding and walking as forms of transportation. Education and outreach programs are also eligible for CMAQ funds and could be used to increase public knowledge about the benefits of biking and walking. CMAQ funds are only released as reimbursement payments for completed work.

FHWA Recreational Trails Program - The Recreational Trails Program (RTP) provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA) is overseen by the Texas Parks and Wildlife Department. Federal transportation funds can be tapped to benefit a variety of recreational activities. Grants are typically subject to an 80-20 funding match. Individual trail grants can range from \$4,000 (\$5,000 total project cost) to \$200,000 (\$250,000 total project cost).

Rail

Rail funding in the Houston region is largely supported through the TIP process. To generate meaningful funding sources, the regions will need to agree on redirecting some of the roadway funding sources to rail improvements as, currently, this is the only dedicated funding source for transportation improvements. This dedicated funding source can be successfully leveraged to build rail infrastructure through the **Rail Rehabilitation & Improvement Fund (RRIF)** program administered by the Federal Rail Administration under the SAFETEA-LU act. The RRIF program can provide direct federal loans as well as loan guarantees for programs that

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track components of track, bridges, yards, buildings and shops.
- Develop or establish new intermodal or railroad facilities.

The key component of this program is that it is a loan program and thus the City and the region must repay the loan and need a dedicated funding mechanism to provide the bondable finance for the application and program.



Recommended Project Implementation Approach & Timeline

Based on the approach for project prioritization and the development of the funding strategy, the Mobility projects that have been identified have been refined into an Implementation Plan. The Mobility Advisory Committee played a significant role in the development of the Implementation Plan through a workshop where projects were discussed, debated and prioritized.

The Implementation Plan (Work Plan) should be adjusted as project details are formulated, including the project feasibility, funding availability, cost refinement and partnership availability. Prioritization of mobility projects should be considered annually as the City develops its work plan and budget for the upcoming year. The prioritization years are intentionally optimistic “targets” that will need to be reevaluated on a regularly scheduled basis.

The Implementation Plan, which is detailed in **Figures 12.3-12.11**, represents the projects that this Comprehensive Mobility Plan recommends that the City pursue. The projects have been arranged based on the recommended implementation priority and grouped based on primary mode or content area. The projects have also been arranged based on implementation priority in **Appendix F**. For each project the following information has been provided:

- **Mode/Content:** Primary travel mode or major content area (e.g. Land Use or Management)
- **Priority:** Short Term/Catalyst, Medium Term, Long Term
- **Project Name:** Title of the proposed project
- **Project Description:** Detailed description of project objectives and activities
- **Planning Cost Estimates**
 - **Planning & Advocacy** - costs associated with planning advocacy projects. Will range from cost of staff time to the fees for consultants/ contractors to perform the work.
 - **Capital** – The costs incurred on the purchase of land, equipment, design and project construction to implement a mobility projects. Examples would include the construction of streets or bicycle paths or the acquisition of transit vehicles.
 - **Operations** – the cost for ongoing operations for a mobility project including labor costs, maintenance, fuel etc.

Cost estimates represent the total project costs – City of Sugar Land’s cost will vary based on inclusion of grants or other funding partners, potentially limiting the city cost to 20% or less of total project cost.

- **Goal:** Mobility Goal most affected by this project, with the understanding that many identified projects will have an impact on multiple goals

- **Mobility Factor:** Infrastructure Place Planning Culture Performance Management



Automobile/Roadway



Figure 12.3

Factor
 Infrastructure
 Place
 Planning
 Culture
 Performance Management
Goal
1 The Mobility Goal most aligned with project objectives

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|---------------------|---|---|------------------------------------|------|-------------------------------------|
| Underway | Thoroughfare Plan | Update of Thoroughfare Plan is underway to ensure multimodal thoroughfare network in City and ETJ; schedule for future Plan updates should be established | Planning: \$200,000 | 1 | <input checked="" type="checkbox"/> |
| | Wayfinding Signage | Design and installation of distinctive wayfinding signage to guide motorists and establish brand identity. | Capital: \$460,000 - \$560,000 | 1 | <input type="checkbox"/> |
| | ITS (Intelligent Transportation Systems) | Implement Traffic Responsive Signal System (TRSS) along US 90A, SH 6, First Colony/ Sweetwater and Williams Trace corridors | Capital: \$667,000 | 1 | <input type="checkbox"/> |
| Short Term (Year 1) | Safety Program & Access Management Policy | Expand existing access management and safety program to systematically identify high crash locations (auto-auto, auto-ped, ped-bike) | Planning: Staff | 2 | <input checked="" type="checkbox"/> |
| Short Term (Year 2) | ITS (Intelligent Transportation Systems) | Evaluate effectiveness of TRSS; expand TRSS and/or implement Traffic Adaptive Signal System (TASS) | Capital: \$1-2 Million | 1 | <input type="checkbox"/> |
| | Safety Program Implementation | Provide real time travel information on major City streets to residents | TBD (Based on technology approach) | 1 | <input type="checkbox"/> |
| | | Implement recommended improvements from expanded access management and safety programs. | Capital: \$100,000 - 400,000/yr | 2 | <input type="checkbox"/> |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)

Automobile/Roadway CONTINUED



Factor
 Infrastructure Place Planning Culture Performance Management
Goal
 1 The Mobility Goal most aligned with project objectives

Figure 12.4

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|----------------------------|---|--|---|------|-------------------------------------|
| Medium Term (Years 3-5) | Citywide Parking Plan Development - Phase 1 | Evaluate current parking requirements, creation of Parking District to manage parking supply and demand and also source of funding for mobility improvements | Planning: Staff | 7 | <input checked="" type="checkbox"/> |
| | Citywide Parking Plan Development - Phase 2 | Implement recommendations included in Parking Plan | Capital/Operations: TBD based on Plan Outcome | 7 | <input checked="" type="checkbox"/> |
| Long Term (Years 5+) | Railroad Grade Separations | Construct railroad grade separations at key locations, e.g., US 90A at Eldridge Parkway, US 90A at University Boulevard, potential future Industrial Park at FM 2759 | Capital: \$10,000,000-25,000,000 each | 1 | <input type="checkbox"/> |
| | ITS (Intelligent Transportation Systems) | Establish City Traffic Management Center (TMC) for Fort Bend County Region. | Capital: TBD | 1 | <input type="checkbox"/> |
| Ongoing | Thoroughfare Plan Implementation | Implement Thoroughfare Plan in City and ETJ through construction of new streets by developers and City (through CIP) and widening and reconstruction of existing streets | Capital: Variable | 1 | <input type="checkbox"/> |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)

Pedestrian & Bicycle



Factor
 Infrastructure Place Planning Culture Performance Management
Goal
 1 The Mobility Goal most aligned with project objectives

Figure 12.5

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|---------------------|---|---|---|------|-------------------------------------|
| Underway | Bicycle Arterial Design/ Construction | Design and construct Town Center Pedestrian/ Bicycle Project enabling greater pedestrian and bicycle access to/from and within the Town Center area | \$4,900,000 | 4 | <input type="checkbox"/> |
| Short Term (Year 1) | Multimodal Access Study | Identify locations and improvements to address multimodal access across barriers, i.e., US 59, SH 6, US 90A, Brazos River (Incorporate into Hike & Bike Master Plan) | Planning: Staff | 2 | <input checked="" type="checkbox"/> |
| | Complete Street Policy | Institutionalize inclusion of pedestrian, bicycle and transit needs with construction of new/reconstructed streets | Capital: \$75,000 | 2 | <input checked="" type="checkbox"/> |
| Short Term (Year 2) | Private Development Ped/Bike Accessibility Improvements | Educate/partner with private property owners in improving on-site ped/bike amenities/ access; ensure ped/bike amenities are included in new development. (Town Center Project is first phase) | Capital: TBD (By Others) | 4 | <input type="checkbox"/> |
| | Updated Pedestrian & Bicycle Plan (Schools) | Partner with FBISD, LCISD and private schools to conduct Safe Routes To School (SRTS) Study to develop recommendations for improving and encouraging ped/bike access to schools. Coordinate with school districts on operations and siting to improve mobility. | Capital: \$20,000 - \$25,000 per school | 2 | <input checked="" type="checkbox"/> |
| | Brooks Street Project | Construct combination on-street bike lane and shared use path from US 90A to SH 6. | Capital: \$365,000 | 4 | <input type="checkbox"/> |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)

Pedestrian & Bicycle CONTINUED



Factor
 Infrastructure Place Planning Culture Performance Management
Goal
 1 The Mobility Goal most aligned with project objectives

Figure 12.6

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|-------------------------------|---------------------------------------|--|-------------------------------|------|-------------------------------------|
| Short Term (Year 2) Continued | Bicycle Arterial Design/ Construction | Design and construct Ditch H Trail connecting major current and planned activity centers and other trails (PER complete) | Capital: \$6,150,000 | 4 | <input type="checkbox"/> |
| Medium Term (Years 3-5) | Updated Pedestrian & Bicycle Plan | Update plan (Revise name from Hike & Bike to Pedestrian and Bicycle Plan); Identify additional ped/bike facilities to serve non-recreational trips and additional origins and destinations, e.g., ballpark, employment centers | Planning: \$200,000 | 4 | <input checked="" type="checkbox"/> |
| | | Identify locations for on-street bike facilities to provide connectivity between neighborhoods, trails and destinations | Planning: \$100,000 | 4 | <input checked="" type="checkbox"/> |
| | | Develop Programs to Support Bicycle Culture, e.g., establish Bike-To-Work Day, create Bike Route Map, establish City/Resident Bicycle Committee | Capital: Staff | 4 | <input checked="" type="checkbox"/> |
| Long Term (Years 5+) | Bicycle Arterial Design/ Construction | Design and construct First Colony Trails Project | Capital: \$4,150,000 | 4 | <input type="checkbox"/> |
| | Safe Routes to School (SRTS) | Apply for SRTS funding to implement recommendations in SRTS Study | Capital: Staff | 4 | <input checked="" type="checkbox"/> |
| | Bicycle Arterial Design/ Construction | Design and construct on-street and additional trails included in City CIP | Capital: TBD based on project | 4 | <input type="checkbox"/> |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)



Factor
Infrastructure Place Planning Culture Performance Management
Goal
1 The Mobility Goal most aligned with project objectives

Figure 12.7

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|------------------------|---|---|--|------|--------|
| Short Term (Year 1) | Transit Operations | Develop and implement Park & Ride marketing program in conjunction with Fort Bend County to increase awareness and ridership | Planning: Staff | 3 | ■ |
| | Intracity Circulator - Phase 1 (Implementation) | Develop and implement program in conjunction with H-GAC, METRO to increase awareness and use of Alternative Commute Strategies (Vanpool/Carpool) | Planning: Staff | 5 | ■ |
| | Transit Feasibility and Planning Study | Refine approach (e.g., public/private partnership) and implement intracity circulator during high peak demand, such as holiday season, special events, ball games | Capital: \$100,000 Operations \$120,000 | 3 | □ |
| | Transit Feasibility and Planning Study | Conduct Park and Ride Study in coordination with Fort Bend County and METRO including evaluation of lot location and employment centers served by lots (e.g., Downtown, TMC) and preferential bus treatment | Planning: \$75,000 | 5 | ■ |
| | Transit Operations - Planning | Transit Oriented Development (TOD) Study - Phase 1: Assessment and preservation of TOD opportunities for active development projects: US 59 at University and Imperial Development. | Planning: \$50,000 | 5 | ■ |
| | Transit Operations - Planning | Develop approach for direct service to downtown by Fort Bend County Transit | Planning: Staff | 5 | ■ |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)



Factor
 Infrastructure Place Planning Culture Performance Management
Goal
 1 The Mobility Goal most aligned with project objectives

Figure 12.8

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|----------------------------|--|---|---|------|-------------------------------------|
| Short Term (Year 2) | Transit Feasibility and Planning Study | Conduct High Capacity Transit (BRT/Rail) Feasibility Study in coordination with Fort Bend County and cities | Planning: \$200,000 - 300,000 | 5 | <input checked="" type="checkbox"/> |
| | Transit Operations - Implementation | Initiation of direct service to downtown by Fort Bend County Transit | Capital: TBD (By Others) | 3 | <input type="checkbox"/> |
| Medium Term (Years 3-5) | High Capacity Transit Service | Implement Bus Rapid Transit (BRT) service linking Sugar Land to major destinations (e.g., Downtown, Medical Center) | Capital: \$24-33 Million Operations: \$0.6 -1.8 Million/year | 5 | <input type="checkbox"/> |
| | Intracity Circulator - Phase 2 (Expansion) | Transit Oriented Development - Phase 2: Implementation of TOD for active development projects (US 59 at University and/or Imperial Development) | Capital: By others may include city incentives | 5 | <input checked="" type="checkbox"/> |
| | Private Intracity Transit | Expand services to additional activity and employment centers and/or service times, i.e., Imperial Development, U of H, Tract 5 | Capital: \$240,000 Operations: \$150,000/year | 3 | <input type="checkbox"/> |
| Long Term (Years 5+) | Private Intracity Transit | Engage private transit service providers (jitneys or private for profit companies) in implementing enhanced local transportation options | Capital: By others may include city incentives | 3 | <input type="checkbox"/> |
| | High Capacity Transit Service | Implement High Capacity Rail Service connecting Sugar Land to regional network of destinations | Capital: \$240-500 Million Operations: TBD based on approach | 5 | <input type="checkbox"/> |

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Factor
 Infrastructure Place Planning Culture Performance Management

Goal
 1 The Mobility Goal most aligned with project objectives

Figure 12.9

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|-------------------------|---|---|--|------|--------|
| Underway | Rail Based Light Industrial Facilities | Study and potential development of current TDCJ's Central Prison Unit site (pending relocation) adjacent to Sugar Land Regional Airport | TBD | 6 | ■ |
| | Support City's Economic Development Plan | Implement initiatives to establish Sugar Land as a "Regional Business Center of Excellence", reducing demand for regional commute trips by residents | Included in Economic Development Plan | 6 | ■ |
| Short Term (Year 1) | Development Standards Update | Revise current development standards, e.g., site plan review, design standards, TIA guidelines, to include multimodal analysis and mobility initiatives | Planning: \$100,000 | 7 | ■ |
| | Rail Based Light Industrial Facilities | Develop industrial park with rail access on prison tract west of Airport by relocating existing UPRR Imperial Sugar rail spur | By others though may include City Incentives | 6 | ■ |
| Medium Term (Years 3-5) | Land Use Update for South of the Brazos (ETJ) | Develop and adopt a land use plan for the ETJ that identifies a mix of land uses, provides connections between neighborhoods, encourages short trips and reduces congestion | Planning: Staff | 1 | ■ |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)



Figure 12.10
Freight

Factor
□ Infrastructure ■ Place ■ Planning ■ Culture ■ Performance Management
Goal
1 The Mobility Goal most aligned with project objectives

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|-------------------------|------------------------------------|--|-----------------|------|--------|
| Long Term (Years 5+) | Relocation of Through Freight Rail | Implement relocation of through freight rail around Sugar Land; maintain existing access for Sugar Land businesses | TBD | 1 | □ |

Management

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|------------------------|--|---|-----------------|------|--------|
| Short Term (Year 1) | Transportation Funding Strategy | Develop funding policy guidelines: | Staff | 8 | ■ |
| | | <ul style="list-style-type: none"> When to seek? Which grants/programs meet City criteria? What level of time and investment | Staff | 8 | ■ |
| | | Implement guidelines by continuously monitoring, identifying, applying and advocating for external funding for transportation projects | Staff | 8 | ■ |
| | Superior Mobility Performance Management | Identify and form partnerships with other governmental entities and private entities to advocate for and fund transportation projects | Staff | A | ■ |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)



Factor
 Infrastructure
 Place
 Planning
 Culture
 Performance Management
 Goal
 The Mobility Goal most aligned with project objectives

Figure 12.11

| Priority | Project | Description | Cost Estimates* | Goal | Factor |
|------------------------|---------------------------------|--|------------------------|------|--------|
| Short Term (Year 2) | Transportation Funding Strategy | Consider establishing a dedicated revenue stream for mobility projects with revenues from special tax/fees, portion of general revenues, overlay districts or other means to finance construction of transportation projects | Staff | A | |
| Ongoing | Advocacy for Regional Projects | Conversion of HOV/HOT lane from one-way to two-way, I-69 alternative alignment south/east of Sugar Land, UPRR rail relocation and implementation of passenger rail | Staff, City Leadership | 5 | |

* Cost represents total project cost – Sugar Land portion will vary based on inclusion of grants or other funding partners (potentially limiting City cost to 20% of total)



Performance Management and Metrics

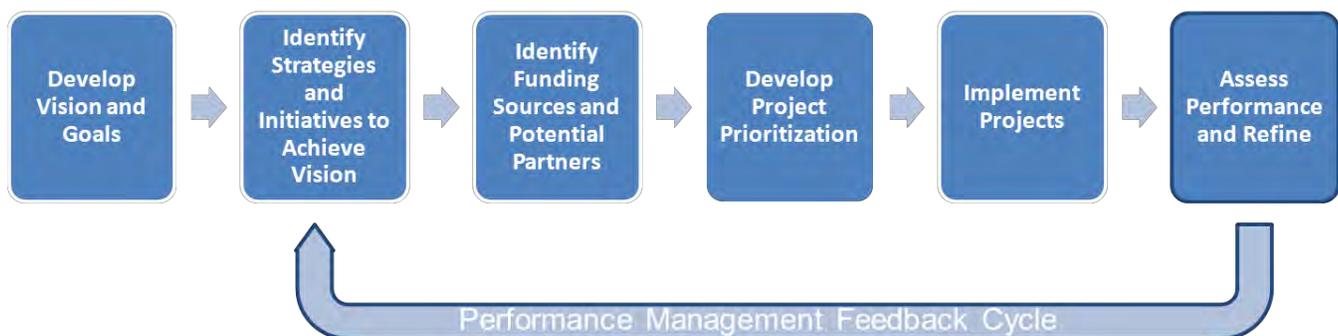
As the City of Sugar Land manages its portfolio of mobility projects and makes prioritization decisions about which project to implement at any time, it will be important to monitor and assess the impacts the projects are having towards achieving the vision of Superior Mobility. A well-defined performance management approach will support the City in decision making and resource allocation to continually improve against the City's eight Mobility Goals.

In high performing organizations, performance management is viewed as a way to work that enables the organization to consistently evaluate its performance against its goals. It gives the ability to monitor performance utilizing current, fact-based, prioritized data and identify areas to improve. In short, performance management helps us to answer two crucial questions:

- “How good of a job are we doing?”
- “What can we do better?”

The proposed performance management approach is shown in **Figure 12.12**.

Figure 12.12 – Performance Management Approach



Performance management allows an organization to ingrain a strategic vision into an ongoing approach that supports continuous improvement towards the vision. While creating a vision and goals and the strategies and initiatives to achieve them, there are critical on-going steps to implementing a performance management approach include the following important steps:

Metrics (Defining Success): Metrics are the measures against which performance can be assessed; targets will be established for each metric as a means to define success. Establishing metrics means having a common understanding of an organizations definition of success and how it can be quantified. Successful metrics should be linked to a Mobility Goal and be measurable with reasonable resources and effort. The most useful metrics will inform options on how to improve performance.

Assessing Performance: It is important to build into an organization planning cycle an assessment of how the organization is performing against goals. With time set aside for this activity, the City can ensure that resources such as capital funding and staff time are aligned against top priorities.

Refining Approach/Feedback Cycle: While a broad set of strategies and initiatives have been defined to achieve Superior Mobility in the City of Sugar Land, over time changes in the environment, technology or politics will influence the goals of the City and tools available to address them. Building and feedback cycle into the long term planning process allows the City to make adjustments and capture opportunities.

Performance Score Card

One tool that will support the City in on-going performance management on Mobility Goals is a performance scorecard. The scorecard provides a consolidated snapshot of performance in critical outcomes. A proposed scorecard for the City is shown in **Figure 12.13**. The metrics are aligned with each of the 8 Goals outlined in the VG-SIM Model with several metrics identified for each Goal. The metrics range from collection of travel times on Sugar Land Arterials to the feedback of Sugar Land residents through the biennial Citizens survey.

For each Metric the units have been defined and the scorecard allows for the comparison of current performance versus previous performance as well as percent change. This can support the identification of trends that can be addressed through future mobility projects. An example metric with columns descriptions is shown below.

| Goal | Metric | Units | Target | Previous Year | Current Year | % Change | Status |
|--|------------------------|--------------|--------|---------------|--------------|----------|-----------|
| Transportation choices that meet the needs of all City residents now and in the future | Boardings (Circulator) | Annual Count | 750 | 500 | 550 | +10% | Improving |

| | | | | | | | |
|-------------------------------|--------------------|---------------------|------------------|------------------------------|-----------------------------|-----------------------------|--|
| Mobility Goal metric supports | Metric Description | Unit of measurement | Metric objective | Value of previous assessment | Value of current assessment | Current vs. previous change | <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> Improving</div> <div style="display: flex; align-items: center;"> Neutral</div> <div style="display: flex; align-items: center;"> Declining</div> </div> |
|-------------------------------|--------------------|---------------------|------------------|------------------------------|-----------------------------|-----------------------------|--|

Figure 12.13

Proposed Implementation Scorecard - City of Sugar Land Mobility

| Goal | Metric | Units | Target | Previous Year | Current Year | % Change | Status |
|---|---|---------------------------|--------|---------------|--------------|----------|--------|
| Predictable, acceptable travel times, increasing connectivity in the Sugar Land area | Travel Time on key arterials (e.g., SH 6, Dulles, University) | Hours | | | | | |
| | Corridors Operating Level of Service D or Better | % | | | | | |
| | Citizen Survey - Satisfaction with Traffic Management | % Excellent/ Good | | | | | |
| Well-designed, well-maintained transportation infrastructure that is safe for all users | Vehicle Accident Frequency | Count | | | | | |
| | Ped/Bike Accident Frequency | Count | | | | | |
| | Serious Accidents | Count | | | | | |
| | Roadways in Good Condition | % | | | | | |
| | Citizen Survey - Satisfaction with Mobility Safety | % Excellent/ Good | | | | | |
| | Citizen Survey - Satisfaction with Street Maintenance and Repair | % Excellent/ Good | | | | | |
| | Complete Street Projects | Arterial/ Collector Miles | | | | | |
| Transportation choices that meet the needs of all City residents now and in the future | Boardings (Demand Response) | Count | | | | | |
| | Boardings (Circulator) | Count | | | | | |
| | Citizen Survey - Satisfaction with Transportation Options/Balance | % Agree/ Strongly Agree | | | | | |
| Transportation choices that promote a healthy, active lifestyle | Population with 1/4 mile of a Trail/Path | % | | | | | |
| | Off Road Trail Miles | Miles | | | | | |
| | Trail Utilization (Selected Locations) | Count | | | | | |
| | Bike Racks | Count | | | | | |
| | Sidewalks in Good Condition | % | | | | | |
| | Pedestrian/Bicycle Mode Share (ACS) | % | | | | | |
| | Children walking/biking to school | % | | | | | |
| Integrated regional transit services connecting to and from Sugar Land via convenient, efficient trips | Trek Ridership from Sugar Land Park & Rides | Count | | | | | |
| | High Capacity Transit Boardings (BRT or Rail) | Count | | | | | |
| | Cost per Trip | \$ | | | | | |
| | Vanpool Ridership | Count | | | | | |
| | Mode Share - Commuter | % | | | | | |
| Transportation infrastructure that supports the continued economic vitality of the city | Employment Base | Count | | | | | |
| | Sales Tax | \$ | | | | | |
| Coordinated land use development and mobility planning that supports the preservation of neighborhood integrity | Residents within 1/4 mile walk to retail | % | | | | | |
| | Average City Walkscore (Walkscore.com) | # | | | | | |
| | Citizen Survey - Availability of Mixed Use Destinations | % Agree/ Strongly Agree | | | | | |
| | Citizen Survey - Level of Citizen Involvement | % Agree/ Strongly Agree | | | | | |
| Effective partnership with other agencies to address mobility issues | 3 Year Average Funding Awarded | \$ | | | | | |
| | Grant Application Success Rate | % | | | | | |

Implementation Summary

While the City of Sugar Land's Comprehensive Mobility Plan defines a path forward for the City to achieve its Vision for Superior Mobility, many factors will impact the City's ability to achieve its goals. The major drivers of the pace of project implementation will be funding availability, City capacity to manage and execute projects and the coordination and cooperation of partners for projects that are beyond the limits of control for the City. Successful implementation of the plan will be driven by the City's ability to focus on defining and executing priority projects and on capturing available funding opportunities.

Pace of implementation is important as Sugar Land and Fort Bend County are expected to see continued economic and population growth and therefore continued demand on the mobility infrastructure. As funding will be a critical requirement to implementation, development of a funding strategy that continually identifies opportunities aligned with goals and allocates sufficient staff resources to address funding proposal requests will be critical. The consideration of the creation of a dedicated funding source for City mobility projects can create a resource that the City can leverage to implement high priority projects and address the needs of the growing community.

As many of the mobility challenges the City is likely to face are regional in nature, engaging with other cities and agencies will be critical. The Comprehensive Mobility Plan allows Sugar Land to proactively engage others in discussion on these issues. By being proactive Sugar Land can take a leadership role in advocating for the outcomes that work within the context of the region and provide the greatest benefit to the City's long term mobility needs.



Vision: Superior Mobility across all modes of transportation for the City of Sugar Land