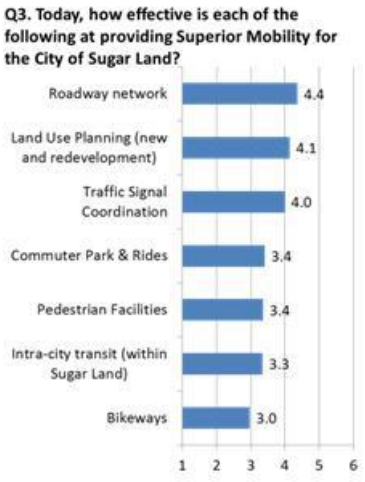
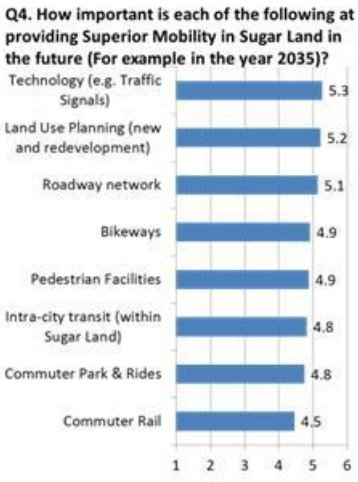
# Goal 1: Predictable, Acceptable Travel Times, Increasing Connectivity Within the Sugar Land Area

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 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 | | | |
|---|---|---|---|---|---|---|
| | | | A, B, C, D, E, F, G, L, M, N, O, S, T, U, X, Y, Z | AA | W | H, I, J, K, P, 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 Detatched Housing | 210 | Dwelling Unit | $2,000 | $382 | $733 | $0 |
| Residential: Apartment / Multi-Family | 220 | 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 |

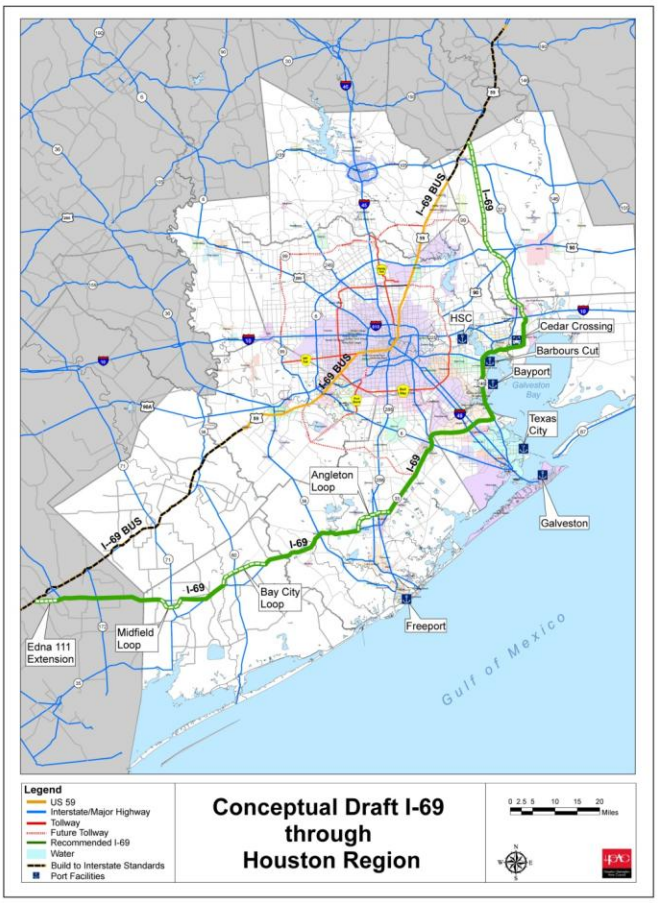
Comprehensive list of land uses and collection amounts available at www.fortworthgov.org/impactfees.

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**

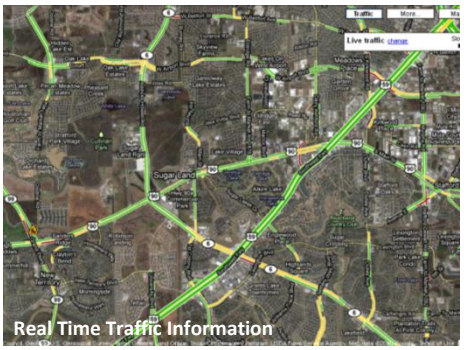
A Traffic Adaptive Signal System (TASS) requires more detectors and maintenance than a TRSS. However, TASS has a greater capability to reduce delays compared to the TRSS, when it is maintained. The City would benefit from implementing a pilot project that would include the conversion of traffic signals 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.

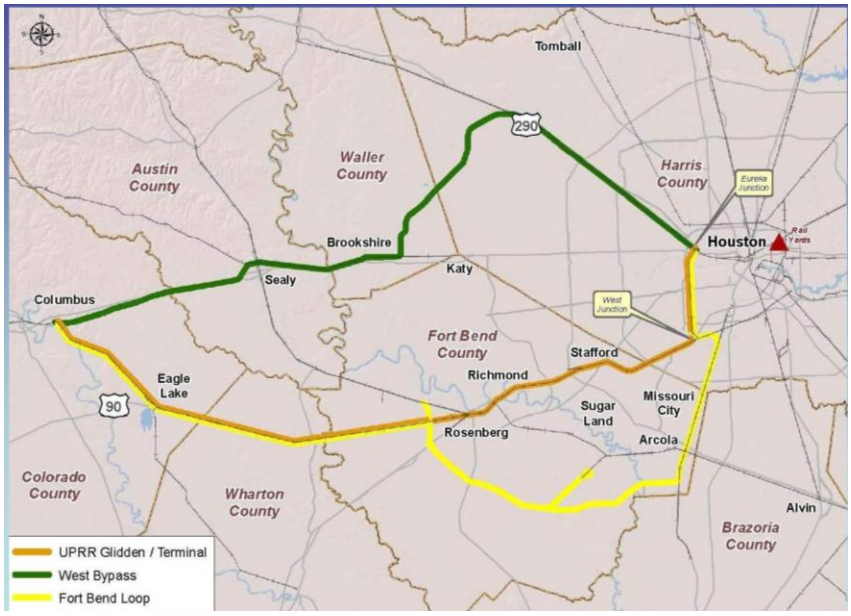


Real Time Traffic Information

## 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.

RIFF 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 retro-fitting 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 predicable, 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.