

2013

SEAMLESS REGIONAL TRANSIT FORT BEND COUNTY TO DOWNTOWN HOUSTON



[Page intentionally left blank.]

Table of Contents

Problem Statement..... 3

Partners..... 3

Working Group Objectives..... 3

Summary of Literature..... 3

Background: Houston Regional Transit Services..... 4

Six Regional Coordination Case Studies..... 5

Best Practices from Case Studies and Literature 7

Estimated Demand for FBC Park and Ride Service to Downtown 7

Existing and Four Alternative Service Options..... 10

Cost Estimations..... 12

Risk Analysis of Service Options..... 12

Comparison of Service Options..... 13

Recommendation..... 15

Next Steps 16

USE OF TERMS

Alighting—Passenger exiting the bus.

Bus Rapid Transit (BRT)—Express bus service aimed at mirroring light rail service by offering high frequency trips often with dedicated lanes and branding. Boarding and alighting take place at a street-side bus stop or transit depot. Fares are typically collected at the front interior of the bus in a farebox or at an off-vehicle ticket vending machine.

Capital Cost of Contracting (CCC)—Federal assistance with costs attributable to privately owned capital consumed during the course of contracting public services.

Common fare—Single payment method utilized and accepted by all participating regional agencies as fare media, often in the form of a smart card.

Commuter rail—Passenger train service that operates on existing freight rail right of ways. Fares are typically collected onboard the train during service or at an off-vehicle ticket vending machine and boarding occurs from low platforms.

Express bus service—Fixed route service with limited stops traveling longer distances; typically provided by over-the-road (motor) coaches with standardized commuter amenities (high back seats, overhead luggage racks).

Farebox recovery—Ratio of operating expenses paid or “recovered” by passenger fares.

Feeder service—Transit service that drops riders off in convenient areas either to use other modes of transportation on the same system or other transportation services altogether.

Good neighbor policy—Agreement among two or more transit providers to use each other’s stops or stations. The transit provider that owns the bus stop/station is responsible for posting the route numbers of the other provider using the stop/station and vice versa.

Light rail—Passenger train service that operates on urban streets or on dedicated right of ways powered by overhead electric lines. Fares are typically collected in advance of the passenger boarding process and boarding occurs on dedicated platforms.

Local bus service—Bus service with several passenger stops per mile on local streets.

Peak hours—Time of day when most transit vehicles are in operation to provide the highest level of service to the largest number of riders (as compared to other times of the day).

Seamless transit service—Any type of service (bus, rail, paratransit) coordinated and integrated across jurisdictional boundaries and agencies resulting in transit services that are coordinated, efficient, and convenient to the rider.

Smart cards—Technology where fare media is digitally stored, reloaded, and used by customers in place of using cash or paper passes; fares are typically shared between agencies.

PROBLEM STATEMENT

Transportation systems throughout the U.S. must increase coordination to meet the changing needs of riders due to long-range commuting, activity centers spread across multiple transit districts, and funding sources limited in availability and application. Through improved coordination and integration, agencies can provide seamless transit service in both urban and rural areas that is cost-effective, efficient, and beneficial for all stakeholders.

In 2010, approximately 13,700 people lived in Fort Bend County (FBC) and commuted to their primary job in downtown Houston (U.S. Census Bureau, LEHD Origin-Destination Employment Statistics). Currently, seamless transit service is not available for residents making the commute from Fort Bend County to downtown Houston.

PARTNERS

Major partners in the study included:

- Central Houston
- Chevron
- City of Sugar Land
- Fort Bend County Public Transportation Department (FBC Transit)
- Metropolitan Transportation Authority of Harris County (METRO)



WORKING GROUP OBJECTIVES

The partners formed the Central Houston – Fort Bend Commute Working Group and engaged the Texas A&M Transportation Institute (TTI) to provide facilitation services, technical support, and analysis to the working group. TTI independently evaluated all options associated with the most financially prudent and mutually advantageous means to effectuate a one-seat, common fare ride for commuters from Fort Bend County to downtown Houston. As the project progressed, researchers added work products to a central website to facilitate convenient access and sharing. This report references documents that can be found on the site by clicking here: <http://tti.tamu.edu/group/transit-mobility/commuteworkgrp/>.

SUMMARY OF LITERATURE

There are many barriers to creating and maintaining seamless transportation systems, including funding conflicts, infrastructure discrepancies, and financial risk. However, “chances of success are greatly enhanced with the presence and strong action of a regional champion(s), such as the regional metropolitan planning organization or association or council of governments” (Miller & Lam, 2003, p. ii) and with the presence of a common vision among all stakeholders, including non-transit agencies (Lewis C. A., Higgins, Perkins, Zhan, & Chen, 2009, p. 22).

-INTERIM REPORT -

Ease of system use by riders can help facilitate successful regional transit coordination. One way to coordinate services and diminish the complexity of transfers between regions is to create a common fare, which riders can use interchangeably between services. Smart cards, technology where fare media is digitally stored and shared between agencies, represent the most widely-used application of this method. Smart cards are often used in conjunction with intelligent transportation system technology, which allows for real-time vehicle tracking, route scheduling, and the manipulation of on street service (Miller & Lam, 2003, p. ii).

Transit agencies can also coordinate their schedules to minimize passenger wait times at transfer points and effectively synchronize service. In addition, agencies can provide pertinent information to riders about other agencies; examples include signage, route information, and trip-planning applications that can schedule trips between multiple agencies.

Regional coordination agreements between agencies are widely used and can take on various forms including consolidation to create a new regional transportation entity, creation of an umbrella agency to coordinate services between various agencies, or creation of joint agreements where autonomy is maintained (Lewis, Higgins, Perkins, Zhan, & Chen, Public Transportation Solutions for Regional Travel: Technical Report, 2008, p. 6).

Strategically coordinated regional transit service can result in less overall financial resources used and less duplicative service (Lewis, Higgins, Perkins, Zhan, & Chen, Public Transportation Solutions for Regional Travel: Technical Report, 2008, p. 7). Agencies can save money by pooling assets such as vehicles, workers, and facilities with other regional operators, while maintaining the same level of service. Long-range and capital planning for regional transportation can also help increase connectivity, eliminate gaps in service, and analyze projections of future growth.

BACKGROUND: HOUSTON REGIONAL TRANSIT SERVICES

The Houston-Galveston metropolitan planning area includes eight counties and contains four urbanized areas (UZA). The Houston UZA and Conroe–The Woodlands UZA each have a population exceeding 200,000 and therefore are classified by FTA as “large” UZAs.

Table 1 provides the population and area of each county and UZA in the metropolitan planning region. Figure 1 provides a map of UZAs and counties in the region.

Table 1. Area Population and Size

County	2000 Population	2010 Population	2010 Area (Sq. Miles)
Brazoria County	241,767	313,166	1,386
Chambers County	26,031	35,096	599
Fort Bend County	354,452	585,375	875
Galveston County	250,158	291,309	398
Harris County	3,400,578	4,092,459	1,729
Liberty County	70,154	75,643	1,160
Waller County	32,663	43,205	514
Montgomery County	293,768	455,746	1,044
Total	4,566,754	5,891,999	7,705
Houston UZA	3,822,509	4,944,332	1,295
Conroe–The Woodlands UZA	89,445	239,938	42
Texas City UZA	96,417	106,383	59
Lake Jackson-Angleton UZA	73,416	74,830	34

Source: U.S. Census Decennial Census

-INTERIM REPORT -

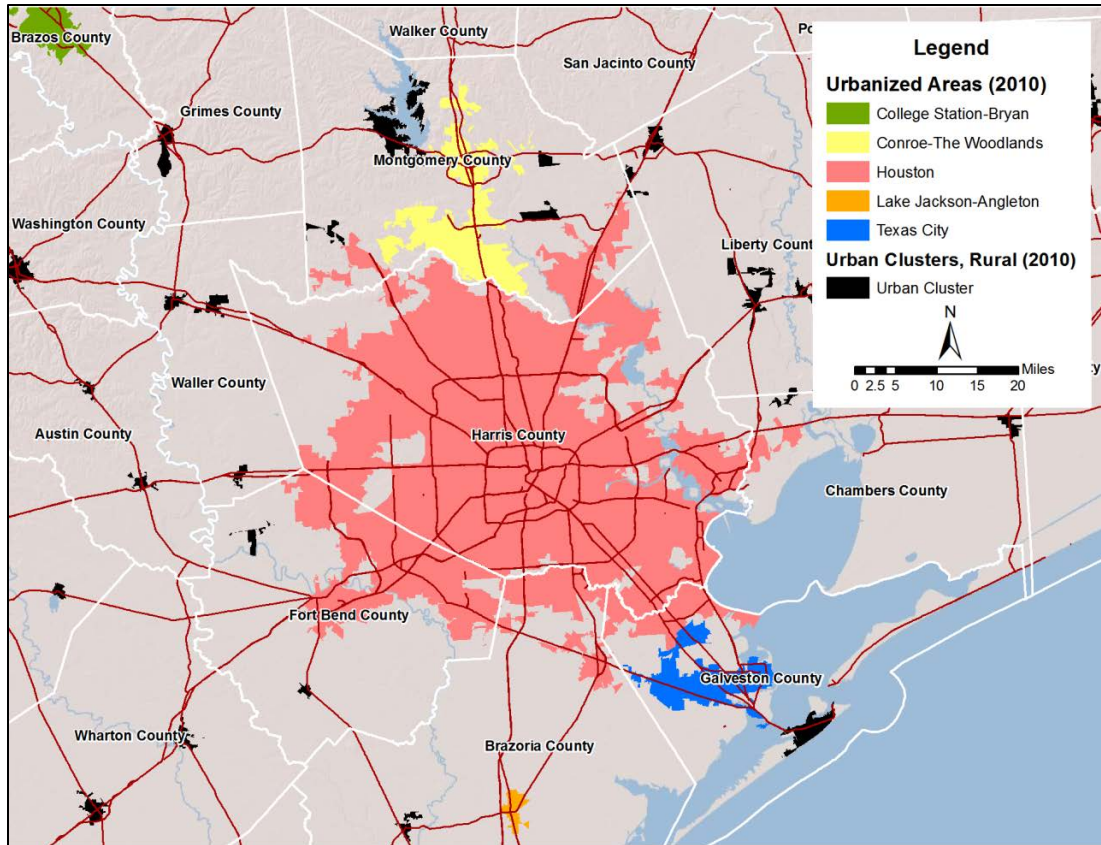


Figure 1. UZAs in the Houston-Galveston Region

There are several existing examples of regional transit service coordination in the Houston area.

- **Co-Sponsored Park and Rides**
 - Harris County sponsors and METRO operates commuter bus service from the Baytown Park & ride to downtown Houston.
 - Connect Transit, the City of Pearland, and METRO are jointly exploring the possibility of building a new park and ride and operating commuter bus service in Pearland to the Texas Medical Center (TMC).
- **Shared Service Area**
 - FBC operates Fort Bend Express commuter bus service to destinations in METRO's service area including Uptown/Galleria, Greenway Plaza, and the TMC.
 - Brazos Transit District manages The Woodland Express commuter bus service from Montgomery County to downtown Houston, Greenway Plaza, and the TMC.
- **Interlocal Agreements**
 - Gulf Coast Center Connect Transit contracts with Island Transit to provide commuter service from League City to Galveston Island.

SIX REGIONAL COORDINATION CASE STUDIES

TTI conducted targeted case study research to document the most important elements of complex regional transit coordination. Table 2 highlights key elements from each case study. Further details can be found on the shared website under *Case Studies of Regional Transit Services in Other Areas*.

-INTERIM REPORT -

Table 2. Regional Coordination Case Studies

Metropolitan Region Served	Examples of Collaboration	Regional Partners	Agreement Types	Services Provided under Agreement
Atlanta, GA	<ul style="list-style-type: none"> Coordinated regional service Shared infrastructure Park and rides 	<ul style="list-style-type: none"> Cobb Community Transit Metro Atlanta Rapid Transit Authority Georgia Regional Transit Authority Gwinnett County Transit 	<ul style="list-style-type: none"> Intergovernmental Agreement Good Neighbor Policy 	<ul style="list-style-type: none"> Local Express Reverse Commute
Boston, MA to Washington, DC	<ul style="list-style-type: none"> Coordinated regional service Information coordination Shared infrastructure Shared commuter rail Common fare smart card 	<ul style="list-style-type: none"> Metro Boston Transit Authority Washington Metro Transit Authority Virginia Railway Express County Transit Fairfax Connector Arlington Transit Northern Virginia Transportation Commission PRTC Loudoun County 	<ul style="list-style-type: none"> Joint Use Agreement JPA Joint Fares Good Neighbor Policy 	<ul style="list-style-type: none"> Bus Commuter Rail
Dallas/Fort Worth, TX	<ul style="list-style-type: none"> Coordinated regional service 	<ul style="list-style-type: none"> Dallas Area Rapid Transit Fort Worth T Denton County Transportation Authority City of Cleburne Northeast Transportation Service City of Mesquite 	<ul style="list-style-type: none"> JPA Interlocal Agreement 	<ul style="list-style-type: none"> Commuter Rail Regional bus service Specialized service for seniors
Phoenix Tempe/Mesa, AZ	<ul style="list-style-type: none"> Regional transit provider created (common fare and branding) Coordinated regional service (buy and sell revenue miles) Assistance to local business to meet local trip reduction goals 	<ul style="list-style-type: none"> Valley Metro Regional Public Transportation Authority City of Phoenix City of Mesa City of Tempe City of Scottsdale 	<ul style="list-style-type: none"> Consolidated Transit Service Interlocal Agreement 	<ul style="list-style-type: none"> Light Rail Local Express LINK Bus Rapid Transit Circulators Para-transit Carpool Vanpool
Central Puget Sound (Seattle), WA	<ul style="list-style-type: none"> Regional transit provider created (Sound Transit) Common fare smart card Shared stops and stations 	<ul style="list-style-type: none"> Sound Transit Community Transit King County Metro Pierce Transit City of Auburn Metro Transit Everett Transit Kitsap Transit 	<ul style="list-style-type: none"> Contract Good Neighbor Policy Interlocal Agreement 	<ul style="list-style-type: none"> Express Light Rail Commuter Rail Feeder Service
San Diego, CA	<ul style="list-style-type: none"> Regional transit provider created Common fare Shared structures "511" Information sharing 	<ul style="list-style-type: none"> San Diego Metro Transit System North County Transit District Chula Vista Transit 	<ul style="list-style-type: none"> Consolidated Transit Service Revenue Sharing Agreement 	<ul style="list-style-type: none"> Commuter Rail Express Bus Rapid Transit Light Rail

BEST PRACTICES FROM CASE STUDIES AND LITERATURE

TTI reviewed literature and case study findings to identify best practices for successful implementation of regionally coordinated transit services; the four elements below summarize the key findings.

REGIONAL SERVICE COORDINATION

As transportation demand leads to longer commutes across county lines, the coordination of services between agencies becomes increasingly important for regional sustainability, efficiencies, and inter-jurisdictional mobility. Examples of coordination include jointly-provided service, consolidated service, and aligned routes. These efforts are generally formalized among agencies through contracts and various types of interlocal agreements.

SHARED INFRASTRUCTURE

The “Good Neighbor Policy” proves to be a widely used tool to maximize infrastructure and resources among those agencies coordinating regional transit services. This policy is an agreement among two or more providers to use each other’s transit stops or stations. The transit provider that owns the stop and or station is responsible for posting the route numbers of the other provider using the stop or station, and vice versa.

COMMON FARE

A common fare, or single payment method for riders that is accepted by all participating regional agencies as fare media, is a hallmark of regionally-coordinated transit services. In an effort to unify and modernize the fare collection process, many agencies have switched to an electronic pass system or “smart card” method of implementing a common fare. The option to use a single payment method aids in the ease of system use by riders, is easier to administer for bus operators, and can increase on-time performance. A revenue sharing agreement, tailored to operational differences, is also often developed in conjunction with a common fare.

PARK AND RIDE SERVICE

Park and ride facilities and the associated services facilitate an integrated transportation network by attracting commuters to leave single occupant vehicles and use public transportation services. Customers are attracted to the seamless service and limited stops. Park and ride transit service is mostly consumed by commuters who travel long distances to and from their place of business; park and ride facilities and services are, therefore, often evident in instances of regionally coordinated services.

ESTIMATED DEMAND FOR FBC PARK AND RIDE SERVICE TO DOWNTOWN

TTI analyzed METRO Park & Ride service along all major freeway corridors. TTI selected services that are relatively the same distance to downtown Houston as the existing FBC Transit park and ride lots at the AMC Movie Theater and University of Houston Sugar Land in Fort Bend County. TTI identified eight METRO Park & Rides that met these criteria in the area, including Spring, Kingwood, Townsen, Bay Area, Grand Parkway, Kingsland, Cypress, and Northwest Station (see Figure 2). For comparison to the Sugar Land area, the Katy, Cypress, and Kingwood Park & Ride markets have the most similar demographics.

-INTERIM REPORT -

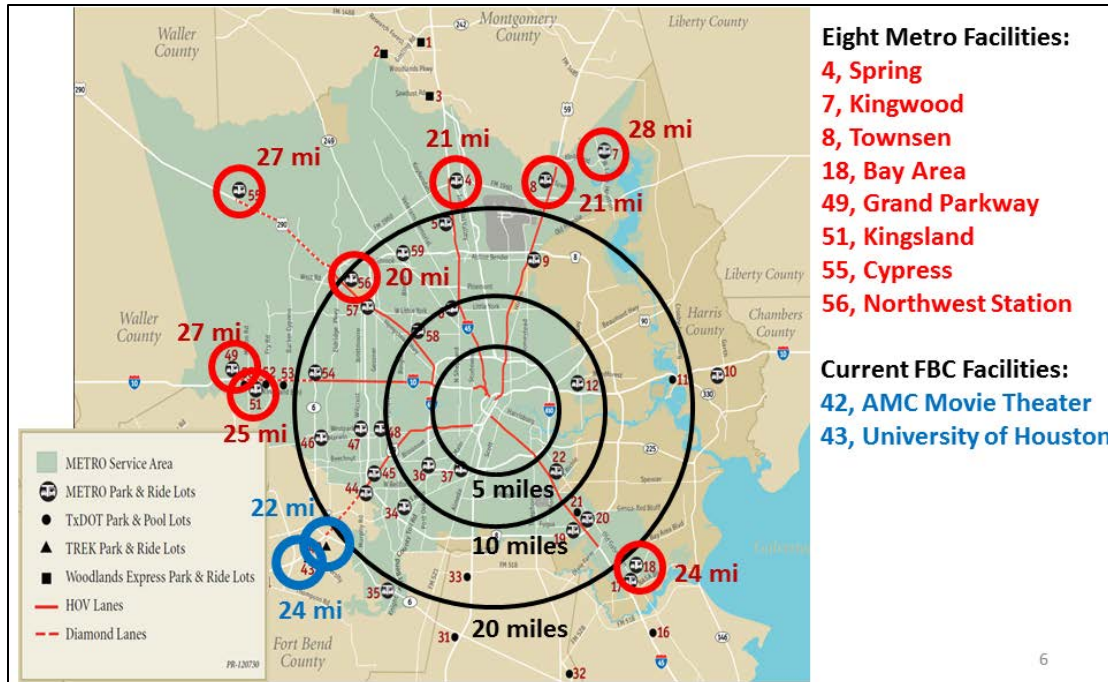


Figure 2. Location of METRO Case Study Facilities (red, labeled with miles to downtown)

A summary of findings from the Houston-focused park and ride case study is below:

- Average distance to downtown Houston: **24.3 miles**
- Average A.M. peak inbound riders to downtown: **726**
- Average number of inbound bus trips: **25**
- Average boardings per bus trip at park and ride: **27.9**

TTI combined METRO route and ridership data with the U.S. Census Bureau’s Longitudinal Employer-Household Dynamics (LEHD) data to estimate the latent demand for park and ride service connecting FBC residents to downtown Houston. In short, TTI compared known ridership for each peer facility to known worker flows to downtown to generate a park and ride mode share rate:

- Average METRO A.M. peak inbound riders to downtown from each park and ride: **726 riders**
- Average number of workers within park and ride catchment area that work downtown (2010 LEHD data): **4,087 workers**
- TTI divided ridership by total workers to calculate estimated mode share rate for METRO-like park and ride service to downtown:
 - Low estimate of mode share capture **10.7 percent (lowest three case study facilities)**
 - Medium estimate of mode share capture **17.8 percent (average of all 8 facilities)**
 - High estimate of mode share capture **28.2 percent (highest three case study facilities)**

The Central Houston – Fort Bend Commute Working Group decided that in order to estimate potential demand for park and ride service from Fort Bend County to downtown Houston, TTI should assume a hypothetical park and ride located near the University of Houston Sugar Land. Using LEHD data from the Census Bureau in 2010, approximately 3,100 workers traveled from the catchment area of the hypothetical new facility to downtown Houston each day. If every commuter used the park and ride in the future, the target market would translate to about 6,200 transit trips per day (most park and ride

-INTERIM REPORT -

users use transit to get to work and return home each day). However, only a portion of the population will decide to use park and ride service for their commute. TTI used the METRO case study mode share rate to estimate total latent demand for METRO-like park and ride service from Fort Bend County to downtown Houston:

- **Low scenario**
10.7% capture rate X 6,200 transit trips = latent demand for 665 park and ride trips per day
- **Medium scenario**
17.8% capture rate X 6,200 transit trips = latent demand for 1,100 park and ride trips per day
- **High scenario**
28.2% capture rate X 6,200 transit trips = latent demand for 1,747 park and ride trips per day

The population and demographic characteristics of Fort Bend County in the capture area most closely resemble the three METRO Park & Rides in the high scenario, suggesting a latent demand of 1,700 park and ride trips per day.

In addition to the case study estimation of latent demand, TTI reviewed the data from a 2012 license plate survey of cars parked at park and ride facilities, provided courtesy of METRO. The Westwood and West Bellfort Park & Ride facilities are located along the US 59 corridor. Both park and rides afford FBC residents the opportunity to drive several miles, park, and ride an express route into downtown Houston. Figure 3 depicts the general distribution of existing METRO Park & Ride users' home origins. The majority of origins are in Sugar Land or the surrounding neighborhood communities.

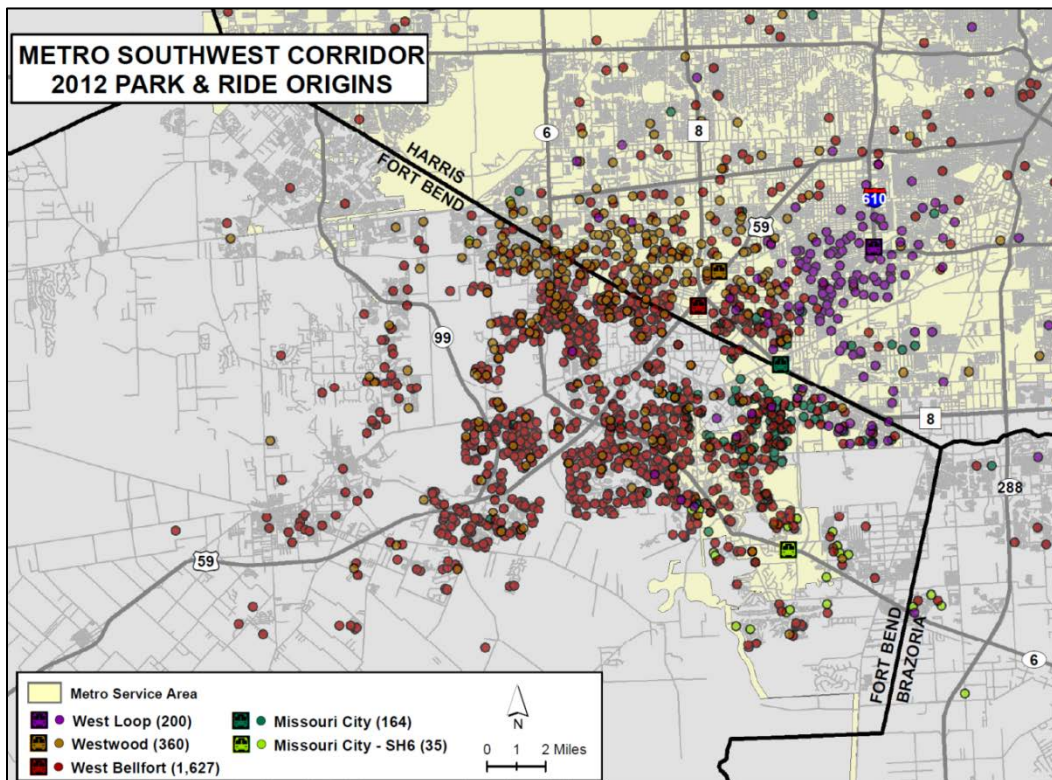


Figure 3. 2012 METRO Park & Ride Origins along U.S. 59 Corridor (source: METRO)

The METRO 2012 license plate survey of West Bellfort and Westwood Park & Ride corroborate the estimate of latent demand in FBC. A substantial share of current METRO park and rider users, nearly 50

-INTERIM REPORT -

percent, drive from Sugar Land in FBC (e.g. First Colony, Commonwealth, North Sugar Land) or from the city’s extra-territorial jurisdiction (e.g. New Territory, Greatwood) to METRO’s Westwood and West Bellfort Park & Ride facilities in order to ride transit to downtown Houston.

The Central Houston – Fort Bend Commute Working Group agreed with TTI’s estimate of latent demand and decided to assume the high scenario during the development and evaluation of service options. The working group relied on both the METRO license plate analysis from 2012 and the TTI analysis of the similarity demographics in the Sugar Land/FBC capture area as compared to the three METRO park and ride services in the high scenario. The exact park and ride service (schedule, vehicle, amenities, etc.) influences residents’ willingness to use of the service; the estimate of demand detailed in this section assumes similar, high-quality park and ride service to the METRO park & ride sites studied. The next section compares four park and ride service options for FBC.

EXISTING AND FOUR ALTERNATIVE SERVICE OPTIONS

TTI and the Working Group developed and evaluated four options for peak-hour transit service between Fort Bend County and downtown Houston. Table 3 details the key elements of each option.

Table 3. Options for Analysis

Options	2	3	4	5
<i>Description</i>	<i>Fort Bend Shuttle</i>	<i>Extension METRO 262</i>	<i>New Fort Bend Route</i>	<i>New METRO Route</i>
Type of Vehicle				
Operator	FBC (Contractor)	METRO	FBC (Contractor)	METRO
Type of Service	Shuttle from FBC to West Bellfort Park & Ride	Commuter Express with stops at Westwood Park & Ride	Park and ride	Park and ride
Service Description	Buses operate from park and ride in FBC on a schedule to meet METRO Route 262 West Bellfort Park & Ride	Selected bus trips on the METRO Route 262 start/end at park and ride in FBC	Buses operate from park and ride in FBC directly to downtown Houston	Buses operate from park and ride in FBC directly to downtown Houston
Average Travel Time per Trip	60 minutes	50 minutes	40 minutes	40 minutes
Required Transfers	1	0	0	0
Estimated Daily Passenger Boardings in Year 4	299	667	1,708	1,708
Assumed Vehicle Fleet	7	18	28	17
Cost Model	Current FBC contract with First Transit	METRO cost model for Baytown Park & Ride	Current FBC contract with Contractor	METRO cost model for Planned Brazoria Park & Ride
Fare Assumptions	\$1.00 for shuttle to West Bellfort Park & Ride, \$3.25 METRO fare	\$4.50 METRO fare from Sugar Land to Downtown	\$4.00 FBC fare from Sugar Land to Downtown	\$4.50 METRO fare from Sugar Land to Downtown

Working with METRO and FBC Transit, TTI designed service levels and schedules for each option. Detailed schedules can be found on the shared website under *Descriptions and Analysis of Service*

-INTERIM REPORT -

Options. Morning peak hours are defined as 6:01 a.m. to 8:30 a.m. and afternoon peak hours as 3:31 p.m. to 6:30 p.m.

The comparison of options includes an assessment of route alignments, stops, schedules, target markets, operating costs, and required capital costs (if any). TTI used the previously described ridership estimations to determine required revenue hours and miles and vehicles to meet expected demand. Additionally, each transit agency's cost structure was used to calculate operating costs and federal, state, and local funding strategies.

OPTION 1 CURRENT FBC TRANSIT SERVICE

The FBC Transit-operated Greenway Route stops at METRO West Bellfort Park & Ride to allow for passenger transfers to METRO Route 265. Riders pay FBC Shuttle fare and then pay METRO's Route 265 fare to travel to downtown Houston.

FBC Transit is starting a procurement to purchase a smart card fare collection system. The vendor believes that METRO's smart card (Q Card) readers will also be able to read FBC Transit's smart cards, but this assumption is not yet verified. The options below assume that FBC Transit has purchased its new system and that interoperability with METRO's Q Card system is possible. Under the current fare collection system, riders pay two separate fares—a \$1.00 fare on the FBC Transit portion of the trip and a Zone 2 fare \$3.25 on the METRO portion of the trip. Once FBC Transit has installed its smart card fare collection system, riders would then need two smart cards (one for METRO and one for FBC) under a non-seamless system. The total fare would be the same as it is under the current system.

To achieve a seamless fare for riders of the current service, smart card readers would be needed on all FBC Transit buses used for Uptown and Greenway services. The entire fare would be collected on the FBC buses with their smart cards. Riders transferring to the 265 West Bellfort would tap their FBC cards and the transfer would not require another passenger fare. How much of the fare paid would be allocated to METRO and FBC would require negotiation.

Another alternative is to treat the first part of the trip like a local bus trip, wherein a transfer to an upgraded service only requires paying the differential. In that case, \$1.00 would be deducted at the FBC Transit lots when a passenger boards and the difference between Zone 2 and \$1.00 (\$2.25) would be deducted when the transfer is made. In this case, the total fare would be \$3.25 per trip.

OPTION 2 ADDITIONAL TRIPS ON EXISTING SERVICE, OPERATED BY FBC TRANSIT (REVISED EXISTING SERVICE)

Service from Fort Bend County to downtown would be provided by a transfer between FBC Transit buses and METRO buses at either METRO's 265 West Bellfort or 262 Westwood Park & Ride lot. The option assumes use of existing park and ride sites in FBC and 32-seat "shuttle" vehicles, similar to those currently operated by FBC Transit. The transfer between FBC Transit service and METRO routes will require riders to pay two fares as they would be using two different transit systems or one fare if a unified fare system exists in the future. Seamless fare collection would require smart card readers on all FBC Transit buses used to provide the shuttle service. Again, fare levels and revenue allocation between METRO and FBC Transit would need to be determined.

OPTION 3 EXTENSION OF METRO ROUTE 262 INTO FORT BEND COUNTY (METRO EXTENDED SERVICE)

METRO Westwood Route 262, the existing route connecting riders from their transfer point at the West Bellfort Park & Ride to downtown Houston, would extend to provide park and ride service from existing FBC Transit park and ride lots into downtown Houston under contract to FBC Transit. No transfer would be needed. The option assumes adequate park and ride spaces in an undetermined location along the

-INTERIM REPORT -

US 59 corridor in Sugar Land—approximately 24 miles from downtown Houston. The service would use vehicles similar to current METRO Park & Ride vehicles. Riders would pay one fare to METRO and travel into and out of downtown. Since this service option uses METRO buses that already have Q Card readers, riders would simply pay with a Q card. The agencies would need to negotiate fare levels and revenue allocation.

OPTION 4 FBC TRANSIT-OWNED AND OPERATED PARK AND RIDE SERVICE (NEW SERVICE)

This service would connect riders from Fort Bend County into downtown Houston on a service operated by FBC Transit. The option assumes adequate park and ride spaces in an undetermined location along the US 59 corridor in Sugar Land—approximately 24 miles from downtown Houston. The service would use vehicles similar to the current 32-seat vehicles in the FBC fleet. Riders would pay one fare and travel directly into and out of downtown. Since no transfer or interconnection with METRO service is needed, no fare system interoperability is required. FBC would need to establish what fare it would charge from each lot and how it planned to collect the fares. FBC would use its own smart card fare collection system to collect fares.

OPTION 5 FORT BEND COUNTY-OWNED, METRO-OPERATED PARK AND RIDE SERVICE (NEW SERVICE)

The service would connect riders from Fort Bend County into downtown Houston on a service operated by METRO. The option assumes adequate park and ride spaces in an undetermined location along the US 59 corridor in Sugar Land—approximately 24 miles from downtown Houston. METRO would use FBC Transit’s park and ride lot and would therefore enter into a contract with FBC Transit for this purpose. The service would use vehicles similar to current METRO Park & Ride vehicles. Riders would pay one fare and travel directly into and out of downtown. This service option is similar to what METRO is proposing to operate from the park and ride lot under consideration in Pearland to the TMC. Since this service option uses METRO buses that already have Q Card readers, riders would simply pay with a Q card. The agencies would need to negotiate fare levels and revenue allocation.

COST ESTIMATIONS

Researchers made careful assumptions to estimate the costs associated with each option. Costs considered included the vehicle capital, maintenance, supervision, and marketing costs of each service option. Researchers also estimated each option’s potential daily passengers, fare revenue and recovery and the amount of local funds required to match the federal contribution. The Working Group ultimately decided that the local share element was the most important factor. Detailed cost estimations, including the local share requirements, for each option can be found on the shared website under *Comparative Summary: Local Share and Advantages/Disadvantages*.

RISK ANALYSIS OF SERVICE OPTIONS

TTI developed a comparative summary of the local share required for each option. From there, a comprehensive risk analysis was performed evaluating all options independently and against each other. The risk analysis examined the risk of operating costs rising by 25 percent and passenger ridership (or revenues) decreasing by 25 percent, or both, using constant dollars over a four year period of service starting and reaching ridership maturity. Table 4 details the effect of the risk analysis on local share dollars in years 1 and 4 of service operation for each option. In terms of total local share, option 2 is

-INTERIM REPORT -

always the least costly because it adds the least amount of additional service, as compared to the other three options.

Table 4. Local Share in Total Annual Dollars

	Year 1		Year 4	
	Low	High	Low	High
Option 2	\$69,000	\$92,500	\$69,000	\$102,250
Option 3	\$428,000	\$735,025	\$413,000	\$861,488
Option 4	\$212,000	\$708,630	(\$88,000)	\$662,160
Option 5	\$414,000	\$1,038,705	\$161,000	\$1,093,435

Table 5 details the effect of the risk analysis on local share funding needed per boarding passenger in years 1 and 4 of service operation for each option. In terms of local share/boarding, any of the four options could be the most cost-effective service, depending on the year and the risks encountered. Option 3 is generally the least cost effective as it has the higher cost of METRO service without the higher ridership generated by options 4 and 5.

Table 5. Local Share per Boarding

	Year 1		Year 4	
	Low	High	Low	High
Option 2	\$2.16	\$3.85	\$1.30	\$2.57
Option 3	\$4.20	\$7.21	\$2.44	\$5.10
Option 4	\$0.81	\$2.70	\$0.00	\$1.53
Option 5	\$1.58	\$3.96	\$0.37	\$2.52

COMPARISON OF SERVICE OPTIONS

Several considerations were included in the review of the proposed options and their respective advantages and disadvantages. These include:

- Current riders (convenience, comfort, cost)
- Future riders (ability to attract new riders)
- Transit operator (supervision of service quality, time and effort to manage, marketing)
- Operating cost (operating cost/unit, local share required)
- Capital cost (vehicle investment, park and ride)
- Other (parking capacity at FBC lots; midday bus capacity downtown)

Table 6, 7, and 8 list all known advantages and disadvantages associated with the implementation of each proposed service option.

-INTERIM REPORT -

Table 6. Current Service Option 1: Advantages and Disadvantages

	Advantages	Disadvantages
Option 1– Current service	<ul style="list-style-type: none"> No additional oversight by transit agencies No additional operating cost No additional vehicles No capital investment FBC Transit stop at West Belfort Park & Ride adds opportunity for riders to board for destinations at Greenway Plaza 	<ul style="list-style-type: none"> Requires riders to transfer to reach downtown Requires passenger to pay two fares (\$1 to FBC and \$3.25 to METRO) Capacity for riders transferring to downtown ~50 each peak period without adding additional service; some FBC Transit bus trips to/from Greenway reach seated capacity with transfers Riders may be required to wait for transfer to FBC Transit bus at West Belfort Park & Ride in afternoon due to less frequent FBC Transit bus trips Not marketed as Fort Bend County to downtown service No standardized commuter amenities onboard FBC Transit vehicles

Table 7. Short Term Options, 2 & 3: Advantages and Disadvantages

	Advantages	Disadvantages
Option 2– Additional trips on existing service, operated by FBC Transit	<ul style="list-style-type: none"> Increases Option 1 passenger capacity for transfers from FBC Transit vehicles to METRO at West Belfort Park & Ride Provides more frequent service to METRO West Belfort Park & Ride than Option 1 Lower operating cost/hour for FBC Transit-operated service than Option 3 Lower local share than Option 3 due to lower unit costs and FBC Transit’s ability to draw down additional federal funds 	<ul style="list-style-type: none"> Requires riders to transfer to reach downtown (No improvement as compared to Option 1) Requires passenger to pay two fares (No improvement as compared to Option 1) Lower projected ridership than Option 3 Requires additional FBC Transit operating supervision to ensure timely performance Requires additional FBC Transit vehicles to operate the shuttle; vehicles are small buses with seated capacity 32-riders Increased demand may exceed available parking capacity at existing FBC Transit parking lots No standardized commuter amenities onboard FBC vehicles METRO would likely incur costs to meet increased demand
Option 3– Extension of METRO Route 262 into Fort Bend County with service operated by METRO	<ul style="list-style-type: none"> One seat ride for riders from Fort Bend County to downtown Houston (no transfers) Passenger pays one fare (to METRO) Vehicles are METRO commuter buses with additional passenger amenities and comfort Higher projected ridership than Option 2 METRO price based on incremental revenue hours at direct operating cost Minimal incremental management and supervision by METRO Marketing and customer service shared responsibility of FBC Transit and METRO Recognizable, branded as service from Fort Bend County to Downtown 	<ul style="list-style-type: none"> Higher operating cost per hour for METRO service as compared to FBC operation in Option 2 Higher local share as compared to Option 2 due to higher METRO unit costs and FBC Transit cannot apply additional federal funds Increased demand may exceed available parking capacity at existing FBC Transit parking lot at UH Requires METRO to assign more buses in peak periods Requires space to park midday buses near downtown; METRO midday lot at or near capacity

Table 8. Long Term Options, 4 & 5: Advantages and Disadvantages

	Advantages	Disadvantages
Option 4– Newly-created, FBC Transit-owned and -operated park and ride service	<ul style="list-style-type: none"> • One seat ride for riders from Fort Bend County to downtown Houston (no transfers) • Passenger pays one fare (to FBC Transit) • Higher projected ridership than Options 2 and 3 • Lower operating cost/hour for FBC Transit-operated service than Option 5 • Lower local share than Option 5 due to lower unit costs and FBC Transit ability to draw down additional federal funds • Recognizable, branded as service from Fort Bend County to downtown 	<ul style="list-style-type: none"> • Vehicles operated by FBC Transit; small bus with 32-seats and fewer passenger amenities, less comfortable bus for longer distance commute • Requires more peak buses than Option 5 due to smaller capacity • Significant expansion of service requires additional FBC Transit management, supervision, marketing, and customer service • No facility to park midday buses downtown Houston; operating costs includes miles/hours for buses to return to Fort Bend County midday • Long-term project to develop park and ride facility (same as Option 5)]
Option 5– Newly-created, Fort Bend County-owned, METRO-operated park and ride service	<ul style="list-style-type: none"> • One seat ride for riders from Fort Bend County to downtown Houston (no transfers) • Passenger pays one fare (to METRO) • Vehicles are METRO commuter buses with additional passenger amenities and comfort • Higher projected ridership than Options 2 and 3 • METRO price based on revenue hours at direct operating cost • Incremental increase in management and supervision by METRO • Marketing and customer service shared responsibility of FBC Transit and METRO • Recognizable, branded as service from Fort Bend County to downtown 	<ul style="list-style-type: none"> • Higher operating cost/hour for METRO service as compared to FBC Transit operation in Option 4 • Higher local share as compared to Option 4 due to higher METRO unit costs and FBC Transit cannot apply additional federal funds • Requires METRO to assign more buses in peak periods than Option 3 • Requires space to park midday buses near downtown; METRO midday lot at or near capacity • Long-term project to develop park and ride facility (same as Option 4)

RECOMMENDATION

Based on the above evaluation and discussions with other stakeholders regarding the risks, advantages, and disadvantages associated with each option, the Central Houston – Fort Bend Commute Working Group’s collective recommendation is a phased implementation of Option 4 with certain assumptions.

Option 4 has many advantages, most notably the development of a one-seat, single fare ride connecting the most commuters from Sugar Land residents to downtown Houston (as compared to Options 2 and 3). The current operating environment has changed since the commencement of research. METRO is “re-visioning” current services and possible changes in priorities may affect the viability of Options 3 and 5. Specifically, METRO may limit its service levels in those jurisdictions outside of the current service area due to concerns of cost recovery.

Additionally, FBC Transit’s funding has changed under new federal legislation, Moving Ahead for Progress in the 21st Century (MAP 21). This change likely limits FBC’s ability to contribute to the local

-INTERIM REPORT -

share cost of operating new service. Under any option implemented, FBC Transit will need a plan to mitigate new restrictions on the use of funds for operating. Such a plan may affect a local share contribution to the implementation of Option 4 from stakeholders.

Other barriers for consideration and strategy include limitations posed by FBC Transit's existing vehicle operations and maintenance facility including fueling requirements, bay size, vehicle lift weight capacity, and available space. These factors must be addressed with the addition of new vehicles under Option 4. In the short-term, the City of Sugar Land will investigate interim parking locations.

NEXT STEPS

The findings of the original scope indicate significant demand for commuter service from Fort Bend County to downtown Houston and as detailed in the preceding sections, each of the four options proposed is financially viable given the assumptions during the study. Since the project began in June 2012, several developments have changed the financial climate. In particular, federal funding authorization (MAP-21) has changed the eligible use of federal funds for operating for Fort Bend County. METRO funding is also affected by MAP-21 and other local financial and policy considerations. The original scope did not include a task to evaluate the cost of a park and ride facility for the long-term.

Fort Bend County Transit and Central Houston agreed to expand the scope of work for the Fort Bend Downtown Commute Study to include additional tasks to determine if there are opportunities to overcome these new challenges and to develop an implementation plan for commuter transit service from Fort Bend to Downtown Houston.

TTI will provide technical assistance and stakeholder facilitation through December 2013 in two specific areas:

- Provisions of MAP-21 and how the new federal authorization impacts the options for funding transit in the Houston urbanized area, with focus on effects on commuter service between Fort Bend County and Downtown Houston; and
- A financial plan for capital and operating costs for a commuter service between Fort Bend County and downtown Houston to support applications for additional sources of funding.