Montgomery County

TRANSIT PLAN

April 2008

Houston-Galveston Area Council

MONTGOMERY COUNTY TRANSIT PLAN

By the H-GAC Transportation Department
in association with
the Texas Transportation Institute, URS Corporation

April 2008

For the Citizens of Montgomery County.

Approved by the Montgomery County Commissioners Court, March 10, 2008.

DISCLAIMER

Funding for the development of this planning document was provided by the U.S. Department of Transportation, the Federal Highway Administration, the Federal Transit Administration and the Texas Department of Transportation. The contents of this report reflect the views of the authors who are responsible for the opinions, findings and conclusions presented herein. The contents do not necessarily reflect the views or policies of the U.S. Department of Transportation, the Federal Highway Administration, the Federal Transit Administration or the Texas Department of Transportation.

Table of Contents

List of Tables and Figures

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Montgomery County Transit Plan
Executive Summary

This Executive Summary is organized around several key questions that are answered more completely in the full text of this document. The questions are highlighted here for the ease of the quick reader.

Keep in mind that Montgomery County has one of the premier express bus systems in the nation, which provides adequate commuter transportation for those traveling into Houston regularly.[1] This transit plan addresses the urgent need for better public transportation options for other residents in the County that have different travel needs.

5. Why does Montgomery County need a transit plan? Is there a problem? What is the problem?

Seniors, disabled and low income individuals that live within Montgomery County are mobility limited. They have very few viable travel options. The primary organization that has provided limited transportation services for seniors in the past, The Friendship Center, is in a period of transition due to staff turnover and budget constraints. Parts of the county are urbanizing very quickly, while other parts are retaining their rural character.

As discussed in Chapters 1 and 2, a significant population exists in the County who by reason of age, income, and/ or physical disabilities require additional transportation options for daily life needs such as medical, education, grocery shopping, and employment. This situation is further exacerbated by the spiraling cost of gasoline which discourages many of these trips even if an automobile is available. This, coupled with the fact that the number of transportation deficient individuals in the County who are elderly, disabled, or low income are becoming a larger segment of the total population, accentuates the need for additional transportation options above and beyond those currently provided by various agencies in the County.

2. What can be done about it?

There are several options available to the leadership in Montgomery County. Assuming that doing nothing is not a likely option there are a range of possible investment strategies that could be implemented incrementally. The recommended transit plan includes three elements summarized as:

1) Better coordination of existing services;
2) expansion of demand response services county-wide; and
3) The establishment of a northbound express commuter route between The Woodlands and Sam Houston State University (SHSU) in Huntsville, with interim

[1] Based on the farebox recovery ratio, the Woodlands Express services to Houston's major employment centers is very successful by industry standards for similar services. The Brazos Transit District contracts with Coach USA to provide those services.

stops at Conroe, Montgomery College and others to be determined. (See Figure 8, page 30 for a map of the commuter route)

3. How much would the various options cost?

The total service program costs would be approximately $6.8 million per year as outlined in the table below. This financial plan summary assumes that currently available vehicles would be used to enhance existing operations and does not include capital purchases.

Current estimates indicate that more than half of the total needed funding is available within the county today from local, state, and federal sources. Moreover, a large portion of the local funds for the existing public transportation services are being provided by various agencies within Montgomery County including the United Way and Community Development Block Grant funds.

The locally generated portion of those funds could be consolidated and leveraged as the local match necessary to attract additional transportation funds from federal and state programs to permit the expansion of transit services in the area. A financial strategy to support that expansion is discussed at the end of Chapter 5 in the plan document.

Table ES 1 – Montgomery County Transit Service Program (2007 $)

Period	Elements	Annual Cost ($ mil.)
Short term	Rural Demand Response	1.82
Mid term	County-wide Demand Response	4.82
	SHSU Shuttle	0.37
	TOTAL	5.20
Long term	County-wide Demand Response	6.37
	SHSU Shuttle	0.37
	TOTAL	6.75

The following Table ES 2 identifies the primary funding by agencies providing public transportation services in Montgomery County. Additional sources for local revenues to match federal and/or state funds should be considered in the development of a viable funding strategy. Other potential funding sources are presented in Appendix D of the full report.

Based on the Financial Plan and the information in Table 10 (in the full document) approximately $3.8 million, or more than half of the needed $6.75 million for the total cost of the recommended projects (at maturity) could be available through the combination of programmed federal, state and local funds assuming that other revenue sources are available to fund the other existing transportation services (such as the Woodlands Express Commuter services).

An implementation plan is needed next that will coordinate the **consolidation of the local transportation funds** and allow them to be used to leverage new federal funding in the future. Recent developments with the TxDOT Commission to restore funding to rural transit operators and coordination efforts between the Brazos Transit District and the Friendship Center indicate that county-wide demand response services for the general public will be implemented sooner than anticipated in this plan. Nevertheless, as the various components of the Montgomery County transit system are implemented over time, there will be a growing need to expand that core system which will require additional revenues in the future to be **sustainable**. A financial strategy to increase the magnitude of funds available to Montgomery County for transit expansion is outlined in Chapter 5.

Table ES 2 – Available Public Transportation Resources

Agency	Source of Funds ($ FY 2008)	Urban 5307	Elderly 5310	Rural 5311	Other	Comments
Brazos Transit District (Operating Expenses)	Federal State Local Total	1,138,336 254,734 828,523 2,221,593		 1,200,000		The Woodlands Small Urban Area + TxDOT Rural
Montgomery County Committee on Aging (dba) The Friendship Center	Federal State Local Total		TBD		158,000 118,000 109,000 45,000 430,000	AAA TxDOT, United Way TCID

Financial Plan Summary

- Incremental expansion.
- Available transit funds $ 3.8 million.
  - The Woodlands Express, Mall Circulator, Water Taxi, Friendship Center (seniors).
- Total transit plan costs $6.75 million.
  - At 100% maturity.
    - County wide demand response.
    - SHSU Shuttle.

4. Is the recommended transit plan feasible?

The recommended transit plan is feasible and makes good business sense from an economic development perspective. The diverse businesses within Montgomery County rely on the availability of a diverse and mobile workforce within relatively close

proximity. The first priority activity, coordination of services among and between the various agencies providing transportation services, should commence immediately. In the absence of formal agreements which define clients, service areas, trip type, hours and days of service, etc., there will invariably be a duplication of services among the various client groups. This results in a less than optimal utilization of resources which reduces the efficiency of services provided and/or results in unmet trip needs.

As indicated in the population density map (on the next page) there are several areas with current population densities exceeding 1000 people per square mile in areas nearby The Woodlands, south Montgomery County and Conroe. That level of population density suggests that the expansion of demand response transit services would be viable within and connecting to those areas ***today***. Furthermore, the 2000 Census reported that a large volume of ***daily work trips, about 69,000, remain within the County***.

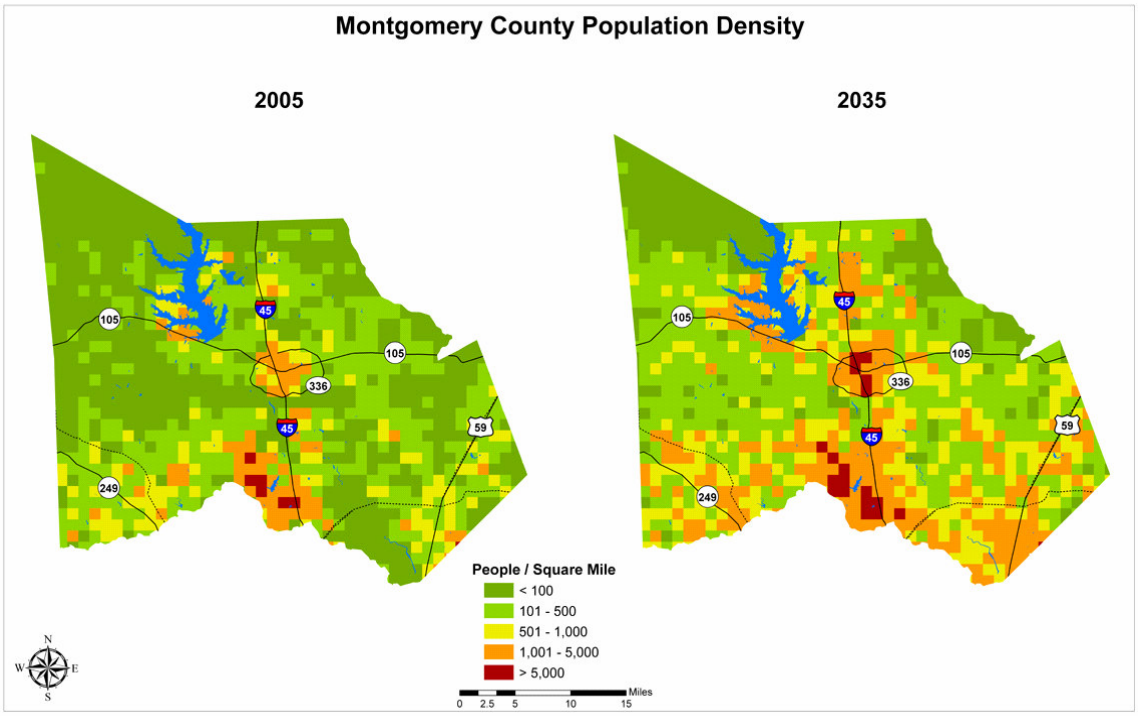
The population projections for 2035 show several areas with more than 5,000 people per square mile. Those areas will have sufficient population densities to support fixed route transit services (in the future) if the current population projections become reality. Based on the combination of those factors the expansion of intra-county public transportation services is recommended.

A proactive grants management program could be started today to apply for new grant funding that is available from the Federal Transit Administration (FTA) for Job Access Reverse Commute (JARC) and New Freedom programs. Congestion Mitigation and Air Quality Improvement (CMAQ) program funds could also be applied for through the Metropolitan Planning Organization (MPO) Call for Commuter and Transit Services Pilot Projects. The leadership in Montgomery County could start the process now to be in a position to receive more federal transit formula funds in the near future.[2] The following factors illustrate the reasonableness of the recommended elements of the plan.

- Better coordination among existing providers can result in a 25% -40 % increase in efficiency, based on national experience.
- The costs for the county-wide demand response service at $21 per trip is comparable to the national average of $24 per trip (National Transit Database).
- The recommended commuter shuttle between the Woodlands and Huntsville with interim stops at Montgomery College, Conroe and possibly others (to be determined) will provide job access for students, faculty, and the general public as well as opportunities for reverse commuting. It would also reduce the need for expanded parking at the college campuses.

[2] Part of the Houston Urbanized Area (UZA) extends into southern Montgomery County therefore a portion of the UZA formula funds could be allocated back to Montgomery County.

Figure ES 1: Montgomery County Population Density

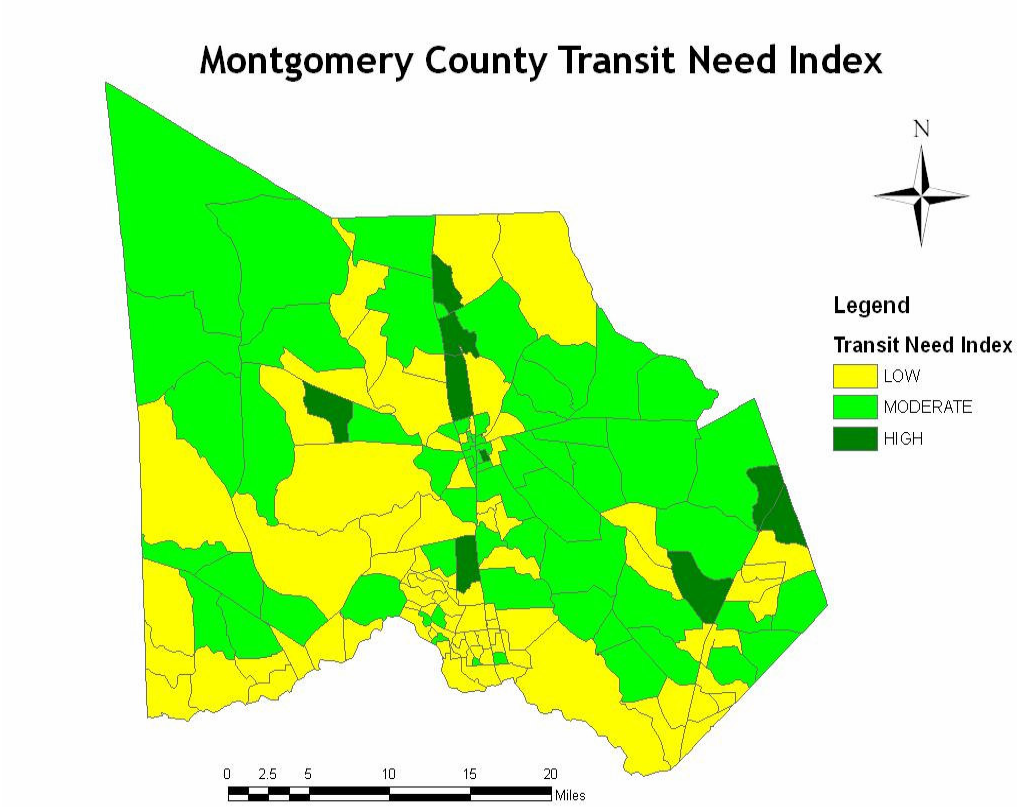


Transit Need Index

Transit planners utilize several tools in conducting an assessment of the need for transit services in an area. One of those tools is the Transit Need Index (TNI) which uses the demographic characteristics of an area and formulates scores using a mathematical model. The model was formulated based on experiences within small Texas cities in the 1990's and updated with 2000 Census data. The model results are shown in Figure 2 and indicate some localized areas of relatively higher transit need; however the majority of the Montgomery County area would be considered as having moderate transit needs according to the TNI.

As shown in Figure ES 2 higher transit needs (urban and rural) exist along the I-45 North corridor near the Conroe area, and throughout the more rural parts of the county. The broad nature of the urban and rural transit needs in Montgomery County, and the overall geographic size of the County underscore the need for expansion of public transportation services for the general public.

Figure ES 2: Transit Need Index



5. What about a longer range public transportation system plan?

This transit plan is based on several short term strategies to improve the current situation during a five year time frame. If the forecasted rates of growth in population and employment in Montgomery County continue there will be a need for a more comprehensive public transit system during the next five to ten years.

It is envisioned that the basic elements of this transit plan could evolve over time along clearly defined bus routes as the major transit travel patterns emerge. The intersections of those routes could eventually become connection points to future higher frequency and perhaps longer distance travel options, such as Bus Rapid Transit (BRT) or Commuter Rail.

Bus Rapid Transit (BRT) Vehicle, Las Vegas

Beyond the 10-15 year planning horizon it is feasible that higher speed passenger transport systems will be available to connect the major cities in Texas. A high speed passenger rail system is being planned now by the Texas High Speed Rail & Transportation Corporation (THSRTC) that would connect Houston, Austin, and San Antonio by the year 2020. Eventually, a connecting link from Galveston to Dallas along the IH-45 corridor, with a stop in Montgomery County, is conceivable.

Photo courtesy of THSRTC

Chapter 1
INTRODUCTION

Several recent developments in the public transportation sector in Montgomery County have combined to make the development of this transit plan timely and important. The timeliness of the effort is best described by the comments of one of the local elderly residents who participated in a recent transportation related survey:

" I don't get around. I can't go anywhere. It's stressful to be alone too much". [3]

The Friendship Center has provided transportation services for seniors for many years throughout the county however that organization has experienced some significant staff and budget reductions recently that have negatively impacted their operations and effectively reduced their service area. In addition, recent reductions of state- provided public transportation funds have delayed the planned expansion of some needed public transportation services. This 2007 Montgomery County Transit Plan (MCTP) proposes a plan of action that will help to stabilize the current situation and evolve into a more coordinated public transportation system in the near future if it is implemented. This plan also suggests some options to be considered for longer term improvements to provide a more comprehensive public transportation system in Montgomery County.

The MCTP describes a phased approach to enhance existing transit services and to implement the highest priority pilot projects that were recommended in the regional transit coordination plan: (1) a county-wide demand response (also known as dial-a-ride) service, and (2) a commuter shuttle service between The Woodlands, Montgomery College and Sam Houston State University (SHSU) in Huntsville that could be utilized by students, staff and faculty**.** It is expected that over an extended period of time common travel patterns will emerge from the demand response trips and fixed-route transit services could then be implemented when they are warranted in the higher density parts of the county such as in Conroe.

Background

Montgomery County is located in southeast Texas, north of Harris County, and is home to over 360,000 residents (American Community Survey, 2006). The population grew by over 60 percent from 1990 to 2000, and significant population growth is expected to continue with more than 865,000 residents projected for 2035, (H-GAC, 2006).

Montgomery County is a fast growing county and a preferred location for a variety of activities from fishing on Lake Conroe to conferences and meetings at the world class Woodlands Resort and Conference Center. While Montgomery County has many suburban style communities, there are still several rural areas of the county that are difficult to serve with traditional public transportation because of low population

[3] Comments made by a 71 year old Montgomery County woman with multiple health challenges. Excerpt from "Assessing Transportation Challenges: Findings and Opportunities", United Way of the Texas Gulf Coast by the Texas Citizen Fund, as part of the Gulf Coast Regional Public Transportation Coordination Plan (H-GAC, 2006).

densities and poor road access. The sheer size and diversity of the county combined with this dramatic growth mandates that a proactive position be taken to ensure that Montgomery County citizens attain optimal access to goods, services and employment.

Montgomery County Transportation Task Force

About four years ago, a group of concerned citizens and public agency representatives, began to explore the feasibility of coordinating and effectualizing all available transportation resources in the county. Under the leadership of Judge Alan Sadler and the Montgomery County Commissioner's Court this group has since been formally recognized as the Montgomery County Transportation Task Force (MCTTF) by Montgomery County Commissioners Court. That group is also guiding the development of this transit plan and has provided much of the detailed information that is included within it. The Woodlands Development Corp initiated plans for transit services in the Woodlands which included the new shoppers shuttle (trolley) that connects various activities in the vicinity of the Woodlands Mall and the Town Center. The MCTTF has been instrumental in implementing that service.

Regional Public Transportation Coordination

During the time that the MCTTF was meeting, House Bill 3588 passed during the 78th Texas Legislature that mandated the coordination of public transportation services and funding among the Health and Human Service agencies, Texas Workforce Commission, and the Texas Department of Transportation (TxDOT). Although a statewide mandate, planning and coordination efforts took place at the local and regional level. [4]

The Houston-Galveston Area Council (H-GAC) served as the lead agency for coordination efforts in the 13-county Gulf Coast region. There were two public meetings in Montgomery County, one in The Woodlands and another in Conroe. In addition to the public meetings, workshops in counties were conducted to ascertain the needs and priorities of transit coordination for each jurisdiction. The projects recommended in this transit plan are responsive to the transit related needs that were identified in the regional transit coordination plan.

[4] For more information about the regional transit coordination plan see www.ridethegulfcoast.com. Information about the statewide effort is at www.regionalserviceplanning.org.

Existing Public Transportation Services

Brazos Transit District

The District (Brazos Transit District) is the designated public transportation provider for Montgomery County. BTD currently operates its public transportation services in Montgomery County under contract with TxDOT. BTD provides the following services in Montgomery County:

- Commuter Service – The Woodlands Express Park and Rides to Houston employment centers, downtown, the Medical Center and Greenway Plaza.
- Local Circulator and Trolley within the Town Center Improvement District
- Water Taxis (Pedestrian/Transit Corridor)

BTD reports approximately 700,000 one way annual trips in Montgomery County. [5]

The Friendship Center

The Montgomery County Committee on Aging (MCCOA), dba The Friendship Center (TFC) is a non-profit 501 © 3 corporation. Established in 1973, The Friendship Center's mission is to enrich and promote the social, physical, mental, educational and cultural well-being of the seniors of Montgomery County.

Photo courtesy of The Friendship Center.

[5] Includes 5307- Small Urban and 5311- Rural, per L. Nelson, 10-12-07, phone conversation.

The program operates on a demand-response structure with Door-to-Door and Curb-to-Curb services. Clients are picked-up on a daily basis and taken to six senior centers where they can participate in activities and eat a hot meal. Transportation (demand/response) is also available and scheduled daily for medical appointments, essential care appointments (social services), essential shopping (groceries, pharmacy, etc.), and other errands for the elderly and disabled of Montgomery County. This program allows the Elderly to maintain levels of independence and allow them to be active members of the community. In a 2006 survey, The Friendship Center reported approximately 49,000 one way annual trips although the more recent decrease in services has probably lowered that ridership considerably . [6]

The Medical Transportation Program (MTP)

The MTP is currently administered by TxDOT and is transitioning back to administration by the Texas Department of Health and Human Services (DHHS). The MTP provides non-emergency transportation for Medicaid recipients who have no other means of transportation. MTP arranges medical transportation services by contracting with private and public transportation providers. Contractors are required to meet transportation related requirements of the Americans with Disabilities Act. Contractors cannot charge clients for services. [7]

Several agencies provide some limited transportation services within Montgomery County and include the Tri-County Mental Health Mental Retardation (MHMR) program, the Willis American Legion Veteran VA Transportation, the Conroe Veterans of Foreign Wars VA Transportation, Interfaith Senior Bridgewood Farms, and Precinct 4 Veterans VA Transportation. Those agencies provide client specific transportation services.

Justification for Montgomery County Public Transportation Expansion

- ✓ Public Transportation is needed by special needs populations in our county
  - According to the 2006 Census estimates, 46,263 Montgomery County residents – or 12% of the population - 5 years of age and over report a sensory, physical, mental or self-care disability
  - Montgomery County has experienced a 26% increase in the number of people between the ages of 16 and 64 reporting a significant disability (between 2004 – 2006)
  - 44.1% of individuals with reported disabilities in Montgomery County are employed
  - 9% of Montgomery County citizens are 65 and older

[6] Gulf Coast Region Coordinated Public Transportation Plan, Appendix C, 2006.

[7] The MTP program provides other transportation services also. For more information about the MTP visit the TxDOT website at http://www.dot.state.tx.us/PTN/mtphome.htm or call 1-877-MED-TRIP (1-877-633-8747).

- Transportation is needed by the special needs population for: daily essential errands such as medical appointments, grocery shopping, job training, college, employment

✓ Public Transportation is an economic development issue.
- Large businesses demand a diverse, stable and accessible workforce
- As the largest county in the state with approximately 1,000 square miles, Montgomery County does not have the financial resources to continuously expand roadways to address the growth of the county, thereby creating challenges for current and potential employees.
- Montgomery County is in the regional air quality non-attainment area as a contributing county and is expected to enact plans to reduce vehicular emissions.

✓ The increase in gas prices is beginning to force people to look for public transportation for work, essential errands.
- Lower income families are affected most by the rise in gas prices as they have the least amount of disposable income with which to absorb the added expenses.

✓ The state has created a mandate to coordinate and consolidate health and human transportation delivery for eligible members of the county which should create efficiencies and expand capacity through economies of scale.
- This presents a unique opportunity for our county to create an integrated system addressing diverse agendas.

✓ Montgomery County is currently expending local county funds that can be used to leverage state and federal transportation dollars.
- The Friendship Center: cash, gas discount, van storage, office space/senior centers.
- Montgomery County Emergency Assistance: cash, gas discount, in-kind office space
- Montgomery County Youth Services: cash
- Community infrastructure such as sidewalks/roadway improvements, signals/crosswalks for pedestrians, signage

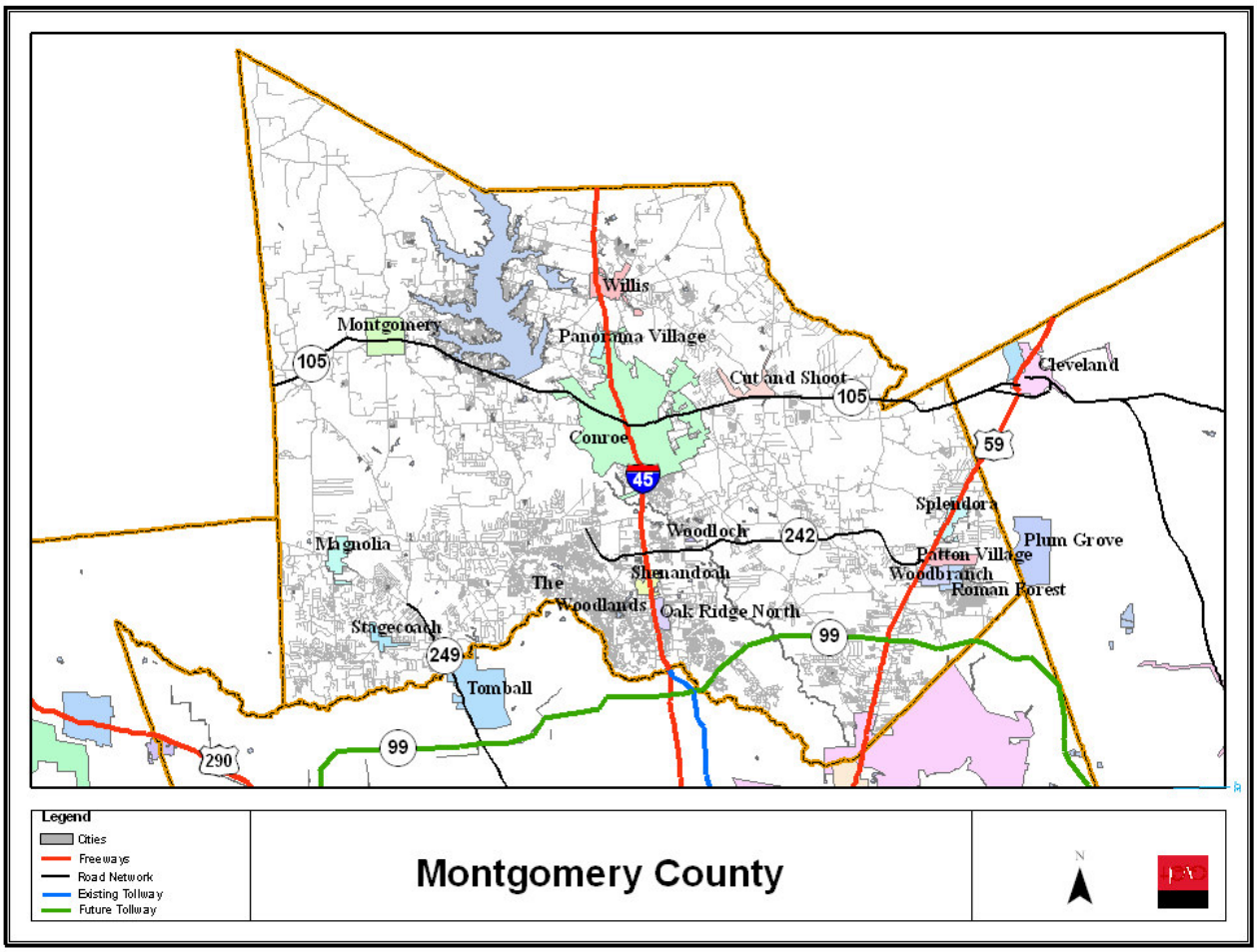
✓ Other local funding currently being provided to organizations offering a client based transportation component can also be leveraged as match for state and federal funds:
- Town Center Improvement District/Township: cash, infrastructure
- East Montgomery County Improvement District: cash, vehicles
- Montgomery County United Way: cash
- Montgomery County Community Development Block Grant: cash, vehicles, infrastructure
- Montgomery County Community Foundation: cash

Chapter 2
STUDY AREA PROFILES

This chapter presents summary profiles of Montgomery County in order to understand the general population features, the distribution of major concentrations of origins and destinations and the connecting corridors between them, to get a better idea of potential transit travel patterns and potential transit needs in the county. This chapter includes the following topics:

- Geographic Profile- a brief discussion of major roadways and cities in the county.
- Demographic Profile- a summary of Census data and population and employment density maps.
- Major Attractors and Generators map indicating the locations of potential transit origins and destinations (See Appendix B for the associated summary table).
- Transit Need Index- a thematic map that shows the locations of highest transit needs in the county based on a model that considers several factors.

Figure 1: Montgomery County Major Roadway System



Source: H-GAC Transportation Department, 2007

Geographic Profile

Montgomery County, located 25 miles north of Harris County is one of the fastest growing counties in the region. The county is comprised of primarily rural communities. Conroe and The Woodlands are the two most populated areas within the county. Both Conroe in North Montgomery County and The Woodlands in South Montgomery County are situated along IH 45, one of the major north-south corridors within the county. US 59 is the other major north-south corridor within the county. The Hardy Toll Road is another north-south corridor that provides a connection for commuter traffic into the Houston Central Business District from Southern Montgomery County (Spring, TX). SH 105 is the major east –west corridor in the county. SH 242 provides east-west connectivity from US 59 to IH 45. Figure 1 shows the major roadway system within Montgomery County. Other cities and small towns in Montgomery County are Willis, Panorama Village, Cut and Shoot, Woodloch, Splendora, Shenandoah, Oak Ridge North, and Montgomery.

Demographic Profile

In 2006, the population of Montgomery County was 398,290 residents. The population grew by over 60 percent from 1990 to 2000, and significant population growth is expected to continue with the 2035 population forecasted to be more than 865,000 (H-GAC, 2006). Montgomery County continues to experience rapid growth and is one of the fastest growing counties in the region. Table 1 presents a demographic profile of Montgomery County.

TABLE 1- MONTGOMERY COUNTY DEMOGRAPHIC PROFILE	
2000 Population	293,768
2006 Population Estimate	398,290
2000 – 2006, April 1, 2000 to July 6, 2006	35.6%
1990 – 2000 Change	61.2%
Persons over 65 years (%)	9%
Persons under 18 years (%)	26%
Persons with a Disability (%) *(people at least 5 years old)*	12.6%
Non English Spoken at Home	13.8%
Persons Hispanic or Latino	66,177
Households	134,256
Median Household Income	$60,224
Individuals Below Poverty Level	11.7%
Land Area (Square Miles) (2000)	1,044
Density (Persons per Square Mile) (2000)	281.4
Source: U.S. Census-American Community Survey, 2006	

Figures 2 and 3 below show the current and projected population and employment densities for Montgomery County. As indicated there are several areas with current population densities exceeding 1000 people per square mile in the areas near The Woodlands and Conroe. That level of population density suggests that demand response transit services would be viable in and connecting to those areas. The projections for 2035 show several areas with more than 5,000 people per square mile (in red). Those areas will have sufficient population densities to support fixed route transit services (in the future) if the current projections become reality. When the population densities are considered with the nearby employment densities (as shown in Figure 3) the potential for county-wide and cross-county commuting using public transportation is greater.

Figure 2- Population Density 2005 and 2035.

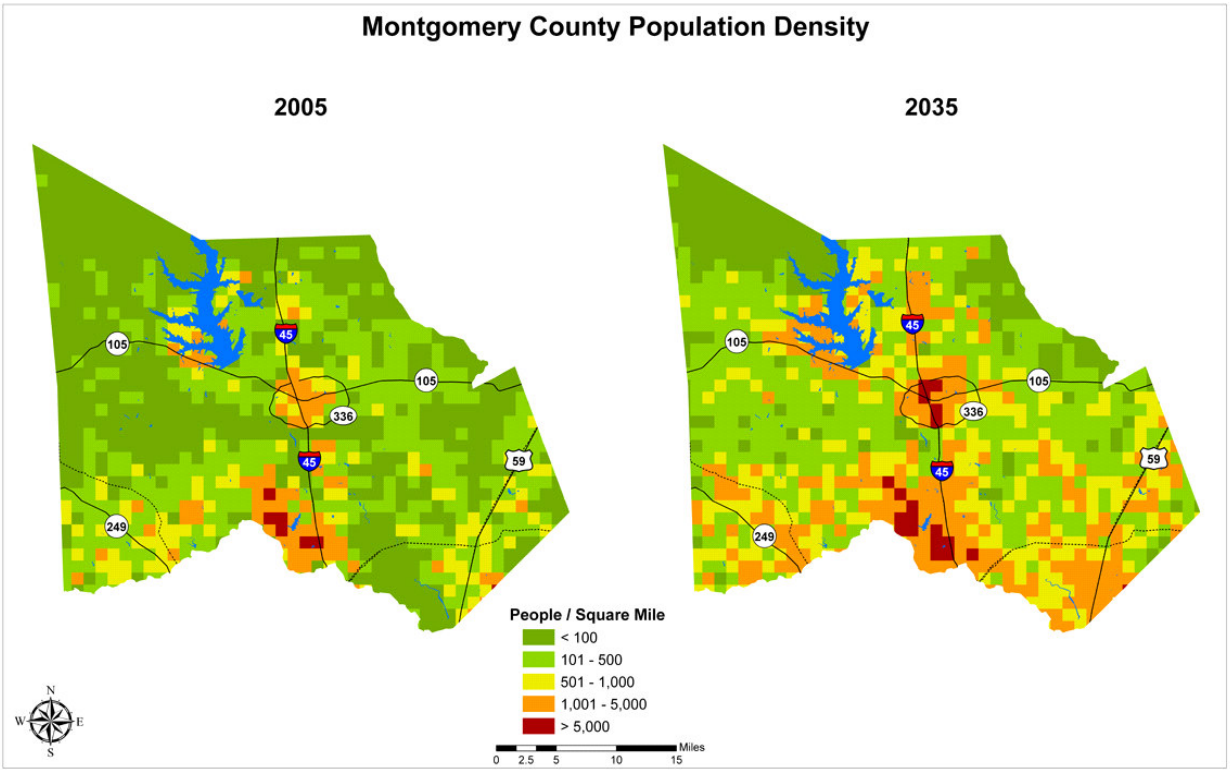
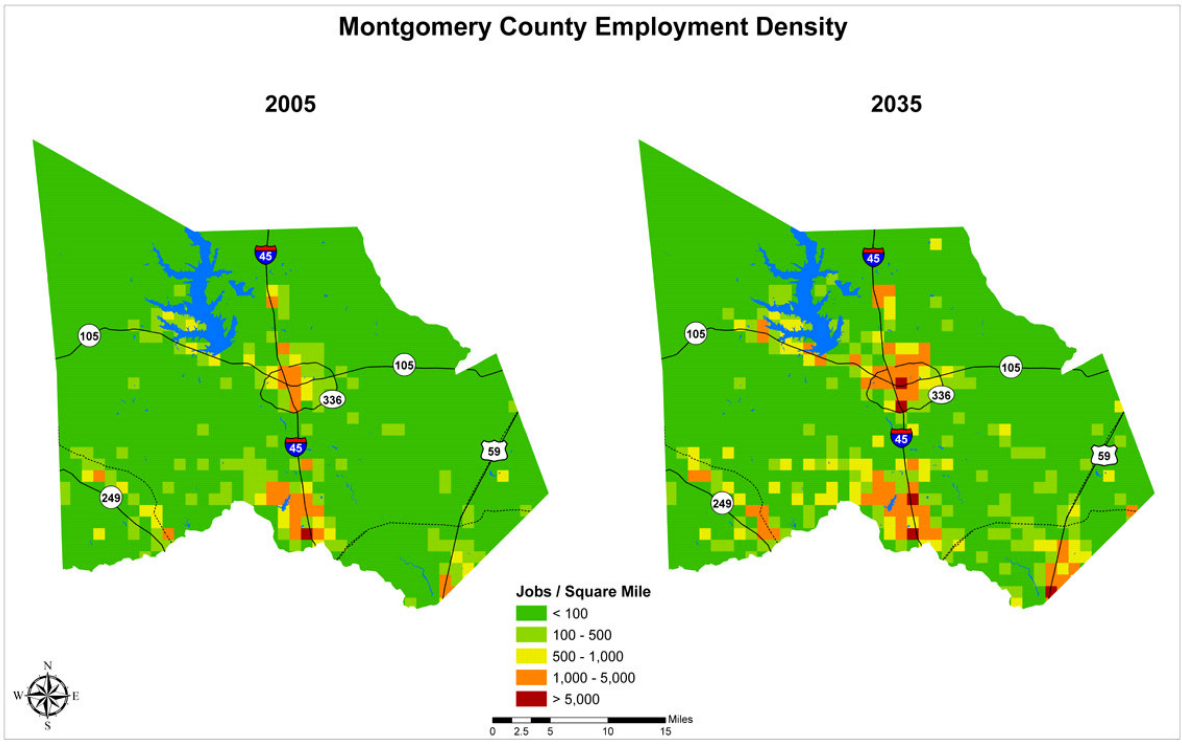


Figure 3- Employment Density 2005 and 2035.



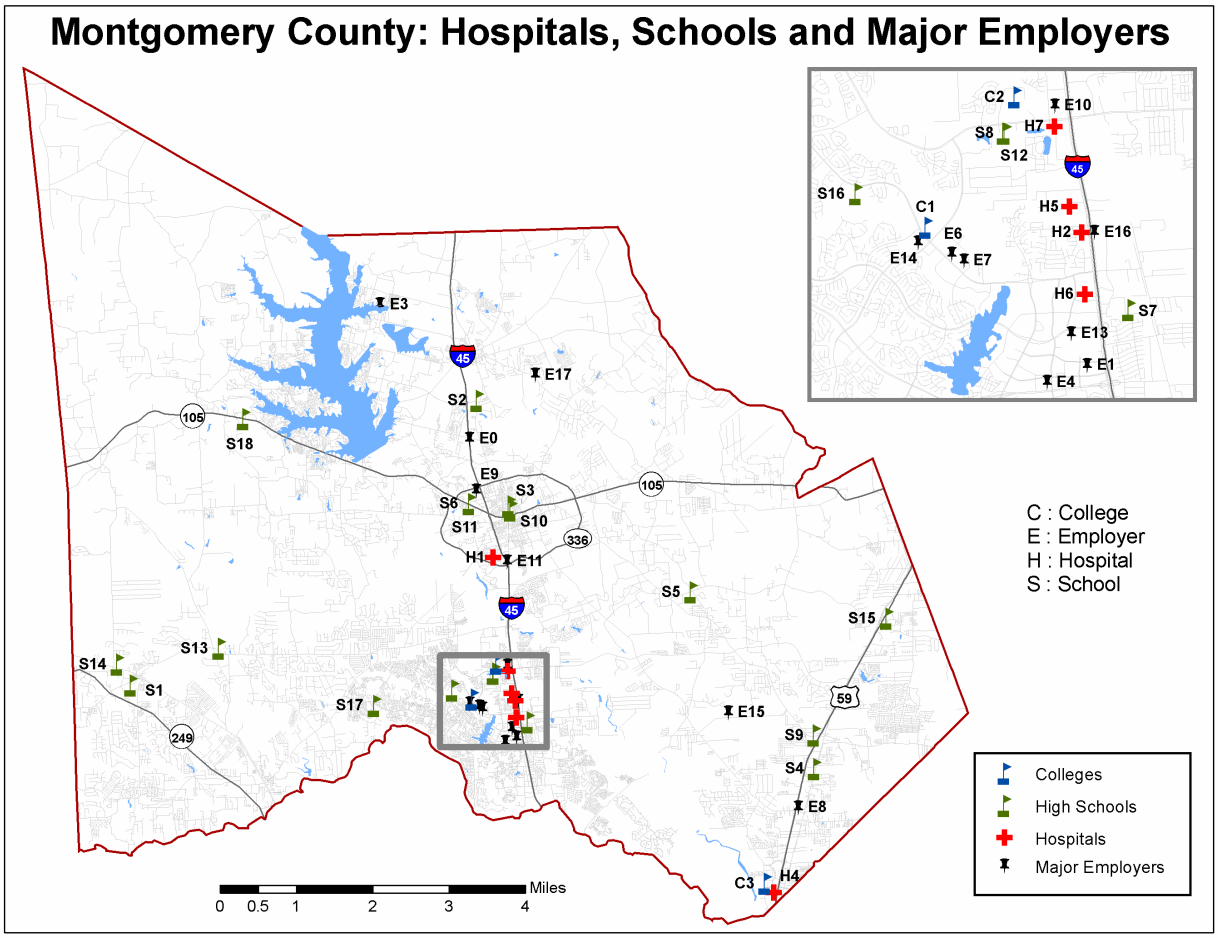
Transit Attractors and Generators

The following map (Figure 4) shows the locations of major traffic generators and attractors as represented by major employers (500+), hospitals/health centers/ clinics, colleges and high schools throughout the county. See Appendix B for a summary of the level of activity at each of those sites, such as the estimated number of employees at the major employment locations. Those locations that show some ***clustering of activities***, where multiple trip purposes could be served within close proximity would provide the best opportunities for consolidating public transit services in the future. Those areas are shown in the vicinity of the Woodlands, Conroe and the east side of the County adjacent to US 59 North- Eastex Freeway near the Kingwood area.

In addition, as development of the Earth Quest Adventures theme park near US 59 continues, consideration should also be made for public transport linkages between that theme park and other tourist attractions throughout the county. Some of those attractions include the Lone Star Convention Center, the Spring Creek trail system, Lake Conroe, the Woodlands and the higher density residential and commercial developments along IH-45

North Freeway throughout the central core of Montgomery county and into the adjacent counties, Walker, Harris, Liberty and Waller counties.

Figure 4-Major Attractors and Generators



Transit Need Index

Transit planners utilize several tools in conducting an assessment of the need for transit services in an area. One of those tools is the Transit Need Index (TNI) which uses the demographic characteristics (See Table 2) of an area and formulates scores using a mathematical model. The model was formulated based on experiences within small Texas cities in the 1990's and updated with 2000 Census data. The model results are shown in Figure 5 and indicate some localized areas of relatively higher transit need, however the majority of the Montgomery County area would be considered as having moderate transit needs according to the TNI.

Table 2 – Transit Needs Index Weights		
Need Characteristic	***Urban (Fixed Route)***	***Rural (Demand-Response)***
Population density	2.0	1.0
Median household income	3.5	2.5
Minority population	2.0	1.0
Zero car households	1.5	1.5
Senior population	0.5	2.0
Work force disability	0.5	2.0

See Appendix C for more details about the model formulation for the TNI Methodology[8]

As shown in Figure 5 higher transit needs (urban and rural) exist along the I-45 North corridor near the Conroe area, and throughout the more rural parts of the county. The broad nature of the urban and rural transit needs in Montgomery County, and the overall geographic size of the County underscore the need for expansion of public transportation services for the general public.

Travel Patterns Journey to Work

The 2000 U.S. Census provides information on the place-of-work and journey-to-work characteristics of all workers 16 years and older; this detailed information is available from H-GAC. The journey to work trip is a major factor when considering new transit services that would serve traditional daytime employees. A total of 68,700 workers commute **within** Montgomery County on a daily basis. The largest out-county work flow is to Harris County (58,320) and there is a significant reverse commute pattern northward into Walker County of about 1,440 workers (see Figure 6).

Montgomery County residents that commute into the Houston area can use the successful express commuter service operated by BTD. The service, known as The Woodlands Express, provides express service from two locations in The Woodlands to the Houston Central Business District, Texas Medical Center, and Greenway Plaza.

[8] The TNI is derived from the Brazoria County Transit Feasibility Study Report, April 6, 1995 developed by LKC Consulting Services Inc. as reported in the Gulf Coast Region Coordinated Regional Public Transportation Plan, 2006

Figure 5: Transit Needs Index

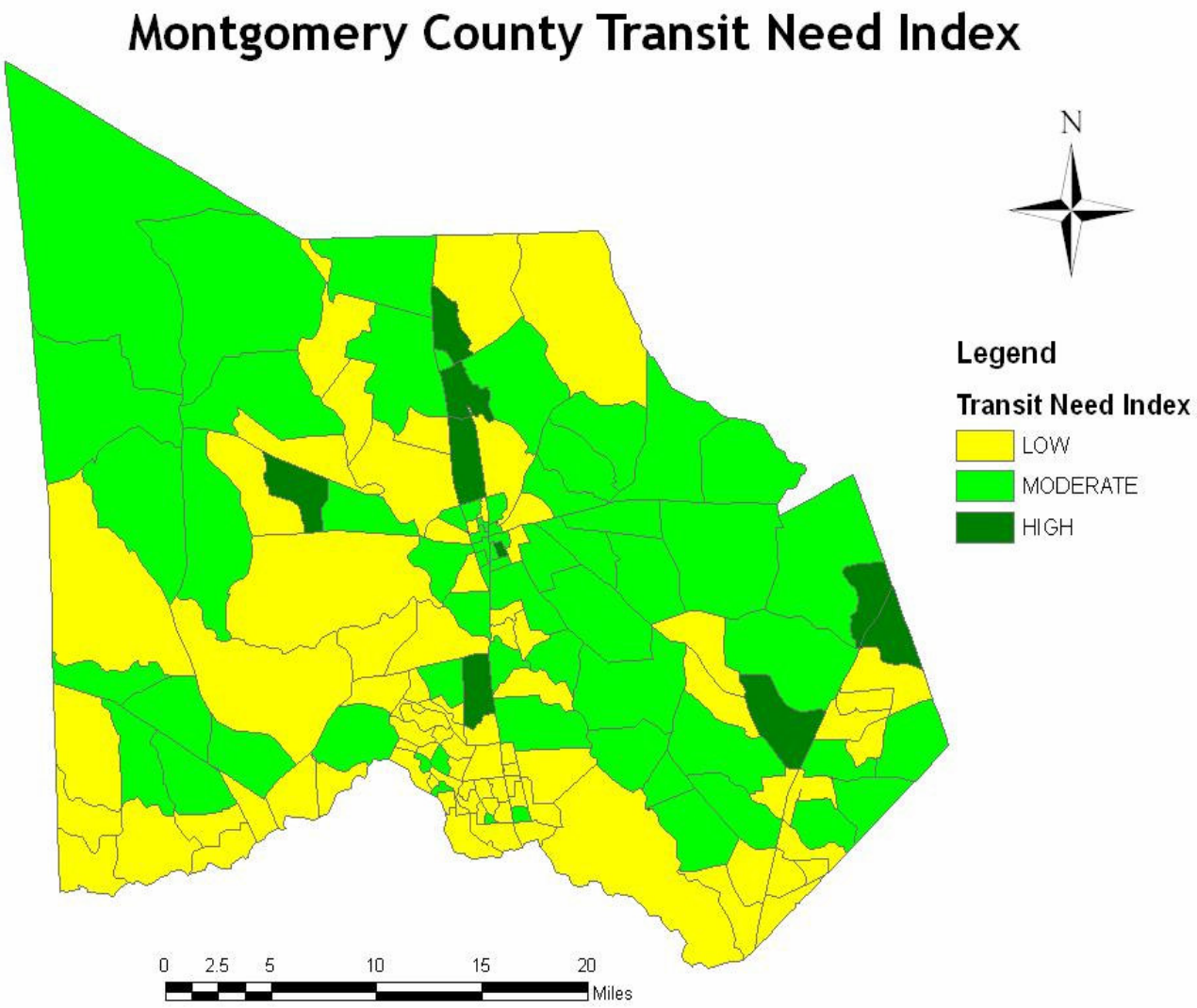
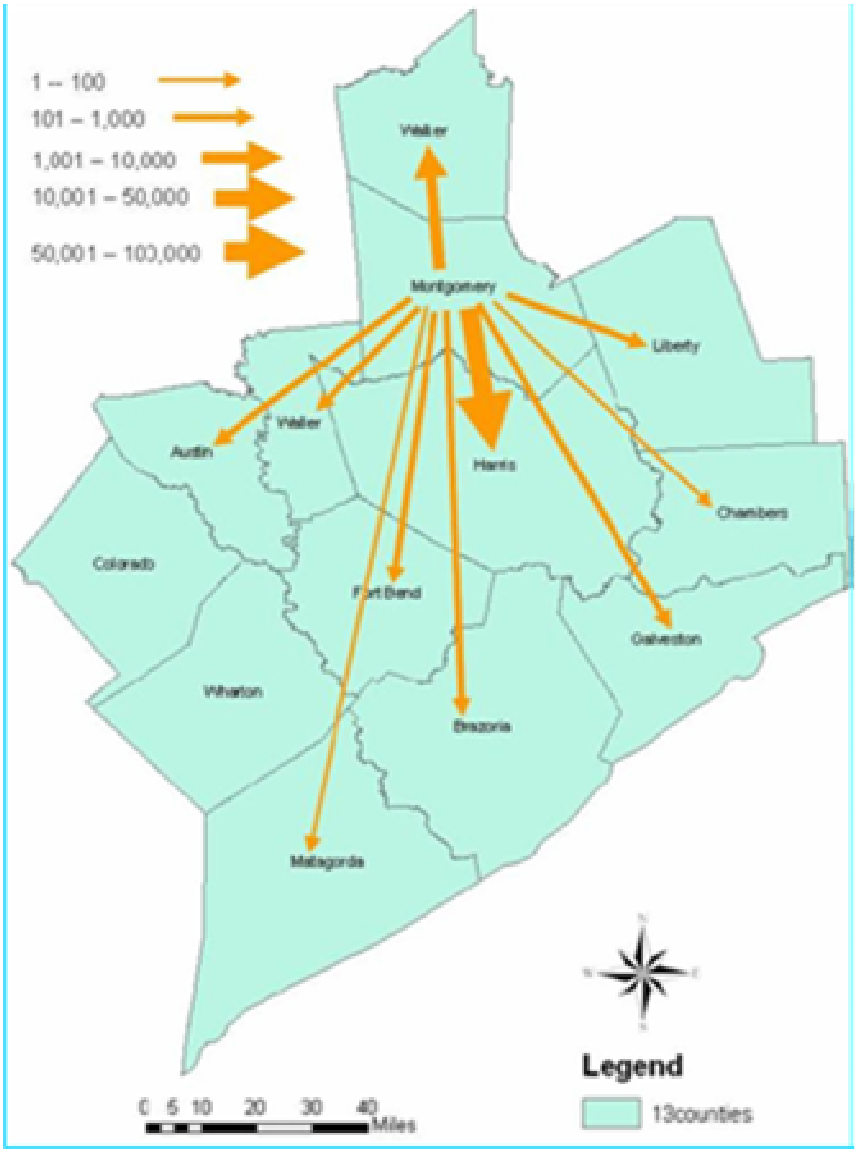


Figure 6: Montgomery County Journey to Work Travel Patterns



Source: H-GAC, Regional Public Transportation Coordination Plan, 2006

Chapter 3
RECOMMENDED TRANSIT SERVICE PLAN

The following recommendations are organized relative to a multi-phased and incremental approach to enhancing public transportation services in Montgomery County. The highest priority activities are described in the **short term** (first year) and involve the following activities:

1. **Coordination of public transit** services to maintain the core services provided by the Friendship Center and to enhance the transportation services of other agencies such as the Tri -County MHMR, the veterans transportation services operated through the county precincts offices and funded by the Veterans Administration, in association with the District.
2. **Expansion of demand response services** into the rural areas of the county. The total estimated cost is $1.8 million.

At this time a phased implementation approach will enhance existing services and expand demand response services into the rural areas of the county first, then into the more urban areas later (mid-term). The Friendship Center will continue to provide its **core transportation services** for its current senior customers using approximately 9 of the 20 or more vehicles in its current vehicle fleet. Plans are being developed to utilize the vehicles that the Friendship Center does not need for its core services to provide a county-wide general public demand response system to be operated by the Brazos Transit District in the near future. It is anticipated that those vehicles will need to be rehabilitated before they are redeployed for that county-wide demand response service. Potential short term coordination activities include sharing vehicles (based on available space), joint use of maintenance staff and facilities, training expertise and space, and the development of a seamless fare media (through interlocal agreements or memorandums of understanding) to enable trips that cannot be made today.

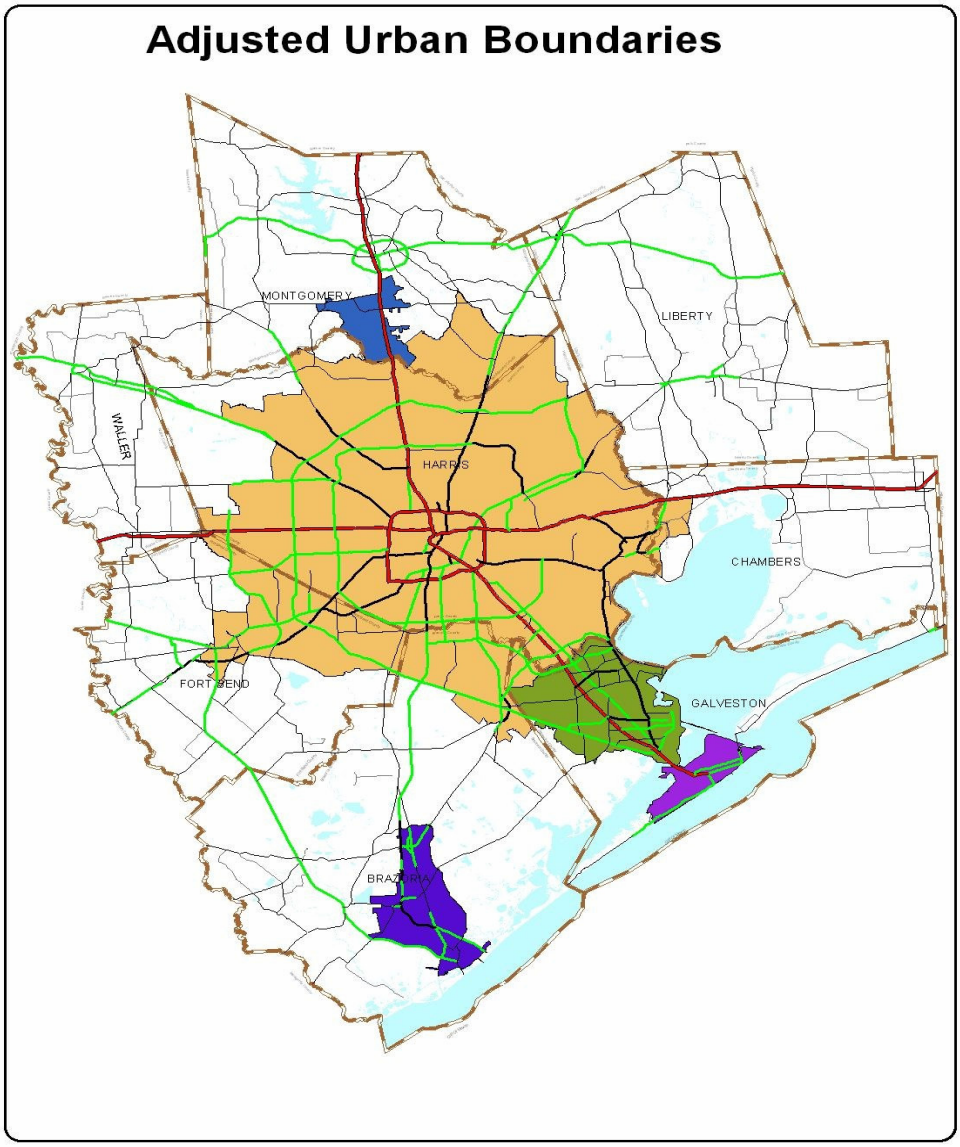
A near term funding opportunity exists in the form of a Call for Projects for Job Access Reverse Commute (5316) and New Freedom (5317) program funds for the small urban and rural areas that is due to TxDOT in February 2008. It is assumed at this time that future calls for projects will follow on an annual cycle assuming that funds will be available from state and federal sources. Another near term funding opportunity exists and is dependent on whether or not the state of Texas restores the funding cuts to public transportation. At this time an action is pending, but if it is approved, that would accelerate the implementation of a county-wide demand response service. In the

meantime it is recommended that active fund raising efforts are initiated to tap the potential revenue sources identified in the Financial Plan (Chapter 5, page 19).

The **mid-term** phase (second year) of the implementation plan includes: 1) the expansion of demand response services into the more urbanized areas of the county and; 2) the start-up of the commuter shuttle between Huntsville-SHSU and the Woodlands via Montgomery College.
Those activities are also identified as mid-term actions associated with the financial plan (Chapter 4). The more urbanized areas of the county with higher than average transit needs are in the vicinity of the Woodlands, Oak Ridge North, Tamina, the cities of Shenandoah, Conroe and Willis. The estimated total annual budget for the expanded service is $ 4.82 million.

A **longer-term** implementation process (three to five years) assumes that the services started during the short and mid-terms will have matured to 100% of their projected ridership levels. The total annual cost for that expanded service plan would be $6.37 million, excluding capital costs. It is assumed that existing vehicles will be used for the enhanced services and that the capital costs for any new facilities would be provided through other sources (TBD). Figure 7 (on the next page) shows the urbanized areas in the region. Table 3 provides a suggested timeline and task list associated with the implementation of the county-wide demand response service.

Figure 7 Houston Urbanized Area Boundaries



As shown above a portion of the Houston Urbanized Area extends northward into southern Montgomery County. Therefore a portion of the Houston Urbanized Area transit formula funds could be utilized within that area. The area in blue is the Woodlands Small Urban area (less than 200,000).

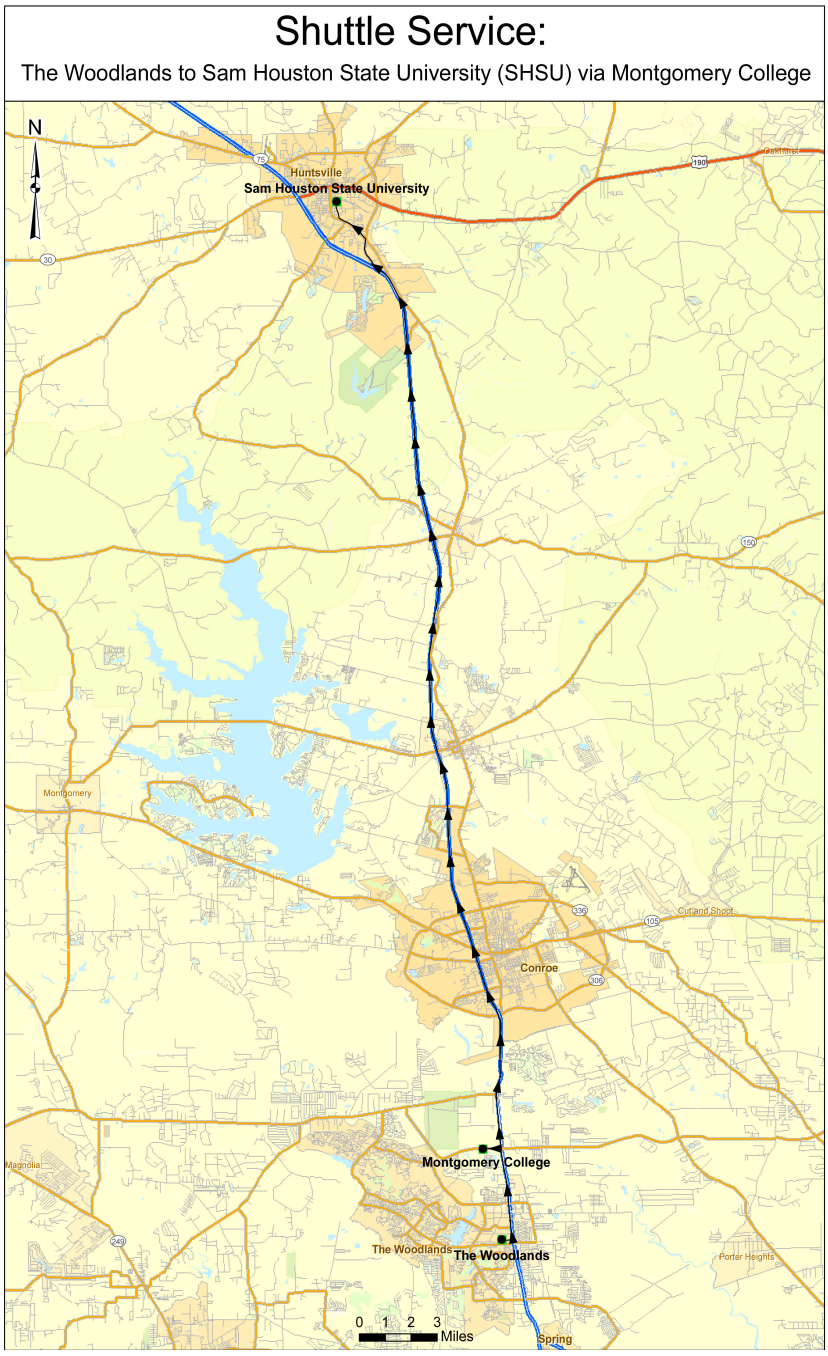
Table 3: Timeline for Montgomery County Demand Response Service (Tentative)

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
1- Prepare Detailed Plan for Countywide Demand Response Service												
2- Secure Political Support from Commissioner's Court												
3- Secure Federal and State Funding												
4- Secure Local Funding Commitments and Agreements to meet Local Match requirements												
5- BTD, in cooperation with MCTTF develop marketing and public information materials												
6- - Implement Pilot Service												
7- Evaluate and Refine Service as Needed												
8- Apply for funds through TxDOT for JARC, New Freedom and H-GAC CMAQ Demonstration Funds (1)												
9- Continue to Secure Ongoing Political and Funding Support												
(1) Periodically, TxDOT and H-GAC issue a Call for Projects for New Freedom, JARC, and CMAQ Demonstration projects. Funding proposals will only be accepted during the Call for Projects period.												

Sam Houston State University Shuttle Service

The second priority project for Montgomery County is the implementation of a shuttle service to Sam Houston State University in Huntsville (Walker County) from The Woodlands. SHSU has 6,000 students, plus faculty and staff that commute daily from Montgomery County, northern Harris County, and other counties in the region. Another 9,000 students travel to Montgomery College. The shuttle service between The Woodlands, Montgomery College, and SHSU could function like the park and ride service (The Woodlands Express) currently operated by BTD. The shuttle service could

also serve economic development purposes by connecting retail establishments with potential workers among the student population and residents within or nearby the cities of Conroe and Huntsville. Figure 8 below shows the proposed routing.



The 2000 Census Journey to Work data shows 1,440 workers commuting into Walker County from Montgomery County daily.

Table 4 below shows a suggested timeline and task list for the implementation of the commuter shuttle.

Table 4: Timeline for SHSU Shuttle

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
1- Conduct Feasibility of SHSU and Montgomery College Shuttle Service.								
2- Conduct zip code analysis and student surveys.								
3- Develop Grant Application for Pilot Project Funding.								
4- Apply for Federal/ State Funds to operate service.								
5. Develop cost sharing agreements with SHSU and Montgomery College.								
6. Implement service, if feasible.								
7- Evaluate and refine service as needed (2)								

(1) Service should be initiated at the start of the school year.
(2) This would occur after the first six months of operation.

Long Range Transit Plan Considerations

Future considerations for long range transit planning purposes (beyond five years) could include the following activities:

- Secure obligated revenue sources to sustain the transit services over an extended period of time.
- Plan for future service expansions including fixed-routes in areas, as demand warrants it, and develop a comprehensive interconnected county-wide public transportation network.
- Maintain provisions for intermodal connections with longer distance intercity bus and passenger rail services as they mature over time in the IH-45 North and US 59 Eastex freeway corridors.

The City of Conroe, the Lake Conroe and Lake Woodlands Convention and Visitors Centers and other retail shopping outlets, hospitals, large scale employment centers and Montgomery and Kingwood Colleges are other potential transit connection points for future services. In addition, Montgomery College with an estimated student enrollment of 9,000 already has a shortage of parking spaces and those students, staff and faculty could benefit immediately by the introduction of ridesharing (transit) options for their travel needs.

It is also recommended that the county leadership considers other options such as Bus Rapid Transit (BRT) to consolidate current park and ride/ express bus services into fewer vehicles to reduce overall operating costs. The BRT option could also be tailored to provide a similar level of service to light rail in the faster growing higher density areas (such as the Woodlands) to allow time for transit ridership to grow and stabilize before making significant capital investments in a fixed guideway transit system to connect to the major employment centers in Houston and other parts of Harris County. There are several advantages that the BRT type of system offers in terms of the flexibility to operate over regular streets for service distribution and also along fixed guideways (such as the HOV lanes) for faster speeds. The articulated BRT vehicles can also carry more people and the vehicles could be connected together similar to light rail vehicles to increase passenger carrying capacity.

Bus Rapid Transit (BRT) Vehicle (Las Vegas)

The Woodlands Town Center and related developments were envisioned with a transit system spine that could eventually provide a nexus for interconnecting transit services throughout Montgomery County. A transit center[9] is in the planning stages adjacent to the Woodlands Mall and that transit center could accommodate multimodal transfer opportunities such as shuttle bus, trolley and express bus services in the near future. That transit center will also provide transfer connections to local retail, employment, educational and recreational sites throughout the county.

Future extensions of the METRO Light Rail system into Montgomery County or commuter rail adjacent to existing freight railroad corridors should also be considered as an option to the over-the-road buses for daily commuter travel. Local circulators and cross county bus routes would serve more non-work trips and provide a stimulus to increased economic development opportunities along the transit corridors, particularly as joint venture developments adjacent to transit stations.

Longer range planning considerations (ten years or more) might also include connections to regional commuter rail or inter-city passenger rail services. Available rights of way should be preserved for future developments along those lines.

[9] Woodlands Town Center Transit Terminal/Park and Ride, Project ID 13671, H-GAC Transportation Improvement Program TIP, 2007

Chapter 4
FINANCIAL PLAN

In order to develop a financial plan for the proposed services in Montgomery County, operating statistics were generated based upon the service plan as outlined above. The service plan and related financial plan reflects three time points – short term (first year); mid term (year three) and long term (year five).

Financial requirements are driven by service levels, which in turn are driven by passenger demand. Therefore, the process includes the following steps:

1. Demand estimates are derived based upon assumed passenger generation rates per population.

2. Service levels are then derived based upon assumed service productivity (passengers per revenue hour of service).

3. Costs are calculated based upon the service levels and the unit cost of service.

Each of these steps is discussed below as related to general population demand response services. A discussion of shuttle service between The Woodlands and Sam Houston State University (SHSU) follows the section on demand response service.

Demand Estimate

The demand for general public demand response service is estimated based upon the population serviced and the annual passenger trips typically generated per person. Among Texas rural providers (excluding providers whose performance is extremely different such as South Padre Island and border rural districts along the border with Mexico and South Padre Island where transit riders are disproportionately nonresident visitors), the median rural operator carries 0.76 annual passenger trip per population of their service area. Brazos Transit District carries ridership at 0.75 annual passenger trips per population within their rural areas. Therefore, the median value is reasonable to use for planning purposes.

U. S. Census estimates for 2006 were used for the population of the service area. The total estimated population for Montgomery County is 398,290, which reflects a 35.6% growth rate over year 2000 population. The split of population between the portions of Montgomery County that are within the Houston urbanized area and the portions of Montgomery County that are rural (outside the urbanized area) is based upon the proportion of each as established in the year 2000 census.

Table 5 displays the resulting projection of general public demand response service in Montgomery County, broken by urbanized and rural areas of the county.

Table 5: Demand Response Ridership Projection

	Urbanized Area	Rural Area	Total
2006 Population	171,267	227,023	398,290
Annual Psgr./Population	0.76	0.76	0.76
Annual Passengers	130,163	172,537	302,700

Service Levels

The next calculation will convert the number of annual passengers into the number of annual revenue hours required to serve those passengers. The amount of service required to carry passengers is a function of several factors, including population density and average trip length.

The median service productivity among the peer rural providers in Texas is 2.79 passengers per revenue hour. The average productivity is 3.21. In this case, Brazos Transit's productivity is nearly double the median, at 5.69. However, this productivity is a blend of demand response and fixed route service; fixed route services are typically more productive than demand response service. This would elevate the Brazos Transit productivity compared to strictly demand response service productivity.

For purposes of planning, the peer average productivity value of 3.21 was selected. This is a reasonable assumption and comparable to the productivity of Capital Area Rural Transportation System (CARTS), a rural provider outside Austin. Table 6 displays calculation of service levels for Montgomery County.

Table 6: Service Level Calculation

	Urbanized Area	Rural Area	Total
Annual Passengers	130,163	172,537	302,700
Passengers/Rev. Hour	3.21	3.21	3.21
Annual Rev. Hours	40,541	53,750	94,294

Estimated Cost

The cost of general population demand response service can be estimated by applying a cost per revenue hour to the revenue hours of service necessary to meet the projected demand. Assuming the service is provided by Brazos Transit District, the cost per revenue hour of service was $67.56 in fiscal 2007. Table 7 displays the cost calculation of general public demand response service in Montgomery County.

Table 7: Cost Calculation

	Urbanized Area	Rural Area	Total
Annual Rev. Hours	40,541	53,750	94,294
Cost per Rev. Hour	$67.56	$67.56	$67.56
Annual Cost	$2,738,950	$3,631,350	$6,370,300

Programming Service

The calculations above reflect a mature service operating throughout the entire county. Transit services require time in order to reach mature ridership levels. The community must become aware of availability, understand how to access the service and become trial users. For purposes of programming, it is assumed that ridership reaches 50% of maturity in the short term, 75% of maturity in the mid term and 100% of maturity in the long term.

Further, introducing new service can be staged in order to control initial costs and test planning assumptions. This financial plan is predicated upon providing demand response service in the rural areas only during the short term and then expanding into the urbanized areas in the mid term. Table 8 reflects the costs associated with this service programming.

Table 8: Programming General Public Demand Response Service in 2007$

Period	Annual Cost at Maturity ($mil)		Percent of Maturity		Annual Cost for Period ($mil)		Total ($mil)
	Urban	Rural	Urban	Rural	Urban	Rural	
Near term	2.74	3.63	N/A	50	N/A	1.82	1.82
Mid term	2.74	3.63	75	75	2.10	2.72	4.82
Long term	2.74	3.63	100	100	2.74	3.63	6.37

These data can also be used to estimate fleet requirements. An average vehicle will operate 10 to 12 hours per day for 255 days per year, or between 2550 and 3060 hours per year. Based upon service levels at the programmed levels, the required fleet for the near term is 5 vehicles; for the mid term is 14 vehicles; and for the long term is 21 vehicles. This does not include back-up or spare vehicles.

Shuttle Service

The second element of the service program for Montgomery County is the implementation of a shuttle connecting The Woodlands to Sam Houston State University (SHSU), with a stop enroute at Montgomery College. For estimating purposes, it was assumed that patrons would board at a parking area near Town Center, travel non-stop to

Montgomery College, stop at the College and then proceed non-stop to SHSU. The one-way route length is approximately 47 miles.

The service level for the shuttle is based upon delivering a pre-determined service frequency over a selected span of the day. Based upon the distance and expected speeds, the number of vehicles and related revenue hours of service can be calculated.

The proposed span of service and service frequency is as follows:

AM Peak	2 roundtrips
Midday	2 roundtrips
PM Peak	2 roundtrips
Evening	one additional trip

This schedule would generate seven round trips each day, using two vehicles during the peak periods and one vehicle during the non-peak hours. The service would generate 3,387 annual vehicle hours, assuming service over 161 days during the school years and 60 days over the summer with service levels reduced in half. Based upon an estimated rate of $108.00 per hour of service (inclusive of vehicle costs), the annual cost of service would be $ 365,800.

From a programming perspective, the cost of the service is driven by the frequency of service offered as opposed to the ridership. If ridership exceeds the provided capacity, cost may increase to permit added service. However, as designed, the shuttle service is operating at a minimum level of service. Therefore, costs cannot be factored down to account for growth of demand.

It is assumed that this service would be introduced in the mid term. Typically, university shuttles are financed, at least in part, through introduction of a transportation fee to students at the affected schools. The financial plan reflects requiring a period of time for negotiations of funding support and therefore does not reflect near term implementation of the shuttle.

Total program

The total service program would be as outlined in Table 9.

Table 9: Montgomery County Transit Service Program in 2007$

Period	Elements	Annual Cost ($ mil.)
Short term	Rural Demand Response	1.82
Mid term	County-wide Demand Response	4.82
	SHSU Shuttle	0.37
	TOTAL	5.20
Long term	County-wide Demand Response	6.37
	SHSU Shuttle	0.37
	TOTAL	6.75

During this period, the county-wide demand response service would be closely monitored and evaluated to identify corridors or markets that would support fixed route transit services. If fixed route service is implemented in the long term, the demand in that corridor would likely increase and additional funds would be required to support the fixed route service.

The following Table 10 identifies the primary funding by agencies providing public transportation services in Montgomery County. Additional sources for local revenues to match federal and/or state funds should be considered in the development of a viable funding strategy. Other potential funding sources are presented in Appendix D.

Table 10 -Available Transportation Resources by Agency in Montgomery County

Agency	Source of Funds ($ FY 2008)	Urban 5307	Elderly 5310	Rural 5311	Other	Comments
Brazos Transit District (Operating Expenses)	Federal State Local Total	1,138,336 254,734 828,523 2,221,593		1,200,000		The Woodlands Small Urban Area + TxDOT Rural
Montgomery County Committee on Aging (dba) The Friendship Center	Federal State Local Total		TBD		158,000 118,000 109,000 45,000 430,000	AAA TxDOT, United Way TCID

Based on the Financial Plan and the information in Table 10 approximately $3.8 million or about half of the needed $6.75 million for the total cost of the recommended projects (at maturity) could be available through the combination of programmed federal, state and local funds assuming that other revenue sources are available to fund the other existing transportation services (such as the Woodlands Express Commuter services). The budget estimates for The Friendship Center in Table 10 approximate the transportation related expenses only. They do not reflect the total operating budget for the center which includes funds for other programs combined with transportation funds. Some of the other sources of local funds that have been provided to the Friendship Center include Montgomery County and the federal Community Development Block Grant (CDBG) program.

An implementation plan is needed next that will coordinate the **consolidation of the local transportation funds** and allow them to be used to leverage new federal funding in the future. Recent developments with the TxDOT Commission to restore funding to rural transit operators and coordination efforts between the Brazos Transit District and

the Friendship Center indicate that county-wide demand response services for the general public will be implemented sooner than anticipated in this plan. Nevertheless as the various components of the Montgomery County transit system are implemented, over time, there will be a growing need to expand that core system which will require additional revenues in the future to be **sustainable**. A financial strategy to increase the magnitude of funds available to Montgomery County for transit expansion is outlined in Chapter 5.

Chapter 5- Feasibility Assessment

As indicated in Chapter 3 – Recommended Transit Service Plan, the highest priority activities for the enhancement of transit service in Montgomery County are as follows:

1. Coordination of transit services among the various agencies currently providing such services in the County.

2. Implementation of new and expanded demand response transit service in the rural areas of the County.

3. Initiation of a commuter shuttle service between Huntsville-Sam Houston State University (SHSU) and the Wooldlands via Montgomery College. Concurrent with the development of the shuttle service will be the expansion of demand response transit service into the urban areas of Montgomery County.

Initiation of the first two activities could begin immediately upon the availability of funding for these purposes. The third activity, development of the Sam Houston State University – Woodlands commuter shuttle and expansion of demand response service into the urban areas of the County could begin in the second or third years of the program again, subject to the availability of adequate funding for these purposes. A discussion of a potential funding strategy for these activities is discussed in a latter portion of this Chapter.

As discussed in Chapters 1 and 2, a significant population exists in the County who by reason of age, income and/or physical disabilities require additional transportation options for daily life needs such as medical, education, grocery shopping and employment. This situation is further exacerbated by the spiraling cost of gasoline which discourages many of these trips even if an automobile is available. This, coupled with the fact that the number of transportation deficient individuals in the County i.e. elderly, disabled, etc., are becoming a higher segment of the total population, accentuates the need for additional transportation options above and beyond those currently provided by various agencies in the County.

Moreover, funds for these services, which are currently being provided by the agencies and the County, could be leveraged as the local match necessary to attract additional transportation funds from Federal and State programs to permit the expansion of transit services in the area. Again, this financial strategy is discussed in greater detail at the end of this Chapter.

The first priority activity, coordination of services among and between the various agencies providing transportation services, should commence immediately. In the absence of formal agreements which defines clients, service areas, trip type, hours and days of service, etc., there will invariably be a duplication of services among the various

client groups. This results in a less than optimal utilization of resources which reduces the efficiency of services provided and/or results in unmet trip needs.

While no attempt was made to quantify the impact of the lack of coordination between agencies, it typically ranges between a 25-40 % inefficient expenditure of resources for transportation services when compared to areas where such coordination occurs. There are numerous examples of organizational frameworks throughout the country where this has occurred in areas similar to Montgomery County. Again, this is a relatively low-cost option which could result in the expansion of such services without the expenditure of additional resources or, in the alternative, permit a comparable level of transportation at a lower cost.

The second priority activity indentified as part of this study effort was the implementation of demand response transit service in the rural areas of Montgomery County. The implementation strategy for this service was defined as follows:

1. Short – Term: First year service targeted toward 50% of rural demand response target market.

2. Mid –Term: In the second year of the program, initiate demand response service in urban areas designed to target 75% of the travel market while expanding service in the rural areas to achieve the same 75% level of market penetration.

3. Long – Term: In the third to fifth years of the program, achieve 100% market penetration in both the rural and urban areas.

Obviously, as the level of service is increased and the service areas are expanded, the costs of providing the services are increased proportionately. This is illustrated in the following table (Table 11) where the population, trip rates and service productivity are identified for both the rural and urban demand response service plans for the short term (50% maturity in rural areas), mid-term (75% maturity in rural and urban areas), and the long term (100% maturity in rural and urban areas).

Table 11 Demand Response
Cost and Revenue Assumptions

DEMAND RESPONSE SERVICE:

RURAL ASSUMPTIONS

Population = 227,000

Annual Trips/Person = 0.76

Passengers/Vehicle Hour = 3.21

Operating Cost = $67.56/Vehicle Hour

	MATURITY		
	50%	**75%**	**100%**
Annual Trips	86,250	129,375	172,520
Annual Vehicle Hours	26,870	40,304	53,738
Annual Operating Cost	$1,800,000	$2,700,000	$3,600,000

URBAN ASSUMPTIONS

Population = 171,300

Annual Trips/Person = 0.76

Passengers/Vehicle Hour = 3.21

Operating Cost = $67.56/Vehicle Hour

	MATURITY		
	50%	**75%**	**100%**
Annual Trips	N/A	97,600	130,160
Annual Vehicle Hours	N/A	30,410	40,540
Annual Operating Cost	N/A	$2,100,000	$2,700,000

As indicated in this table, the cost of providing the service in the first year of the program amounts to $ 1.8 million. As the service expands into the urban areas and becomes more mature, the annul cost of operation increases to $4.8 million a year ($2.7 million for rural services and $ 2.1 million for urban services). After the 3rd to 5th year of the program when full market penetration has been achieved, the annual cost of operation will increase to $6.3 million a year ($3.6 million rural and $ 2.7 million for urban services). It should be noted that the costs in this table are for operating purposes only, i.e. fuel, maintenance, wages, etc., and that there is sufficient excess capacity in the current vehicle fleet to operate the initial phase of service. However, as the service expands into urban areas and the market penetration is increased, additional funds will be necessary for capital items such as new vehicles, maintenances facilities, etc.

As part of the pre-implementation planning process, there are a series of critical decisions which must be made relative to the operation and maintenance of the services. Matters such as eligibility, i.e. client profile or general public, span and days of service, i.e. weekday only versus five, six, or seven day a week service, and rates of fare must be determined. While these specific matters are beyond the scope of this study effort, some general guidance may be offered to facilitate this discussion.

Relative to the rate of fare for this service, METRO Transit in Houston charges a $1 fare for demand response service. Unlike the service proposed for Montgomery County, however, METRO limits their service to eligible senior and disabled persons and assesses the same discounted fare regardless of what type of service is utilized. As a contrast, another local transit operator, Connect Transit, provides demand response (dial-a-ride) services to the general public in Galveston and Brazoria counties at a $1.00 base fare, and higher fares for inter-county trips.

While the service for Montgomery County is envisioned to be available to the general public, some fare should be charged to riders to eliminate abuse of the system. One approach would be to offer a discounted fare to seniors, disabled and student passengers of perhaps $1, with a higher fare to members of the general public which could be in the $2 range. Again, the revenues generated from this fare would be minimal but would be designed to deter abuse of the system and the farebox revenue help to offset a portion of the local match monies required for this service.

Another important aspect of consideration would be the span and days of service provided. For analysis purposes, the amount of services proposed could be allocated in a manner which would provide service 12 hours a day Monday thru Friday utilizing nine (9) vehicles. While this would be ideal for work or educational purposes, it would not serve a number of leisure, religious, or social trips which contribute to an improved quality of life for a number of individuals who would otherwise be unable to participate in such activities. Consequently, the span and days of service could be tempered to adjust the hours of service during the week to shift a portion of the resources to weekends to serve a larger variety of trip purposes.

Lastly, this table indicates that the cost per rider for this service amounts to approximately $21 per trip in current year dollars. While this will be partially offset by fare revenues, it indicates that a subsidy in the $19 to $ 20 a ride range will be necessary to sustain the service. A review of the National Transit Database published annually by the Federal Transit Administration (FTA) indicates that in 2005, the last complete year for which such information was available, the national transit average for the cost of a demand response transit trip was $23.90 a ride. Thus, the demand response service proposed for Montgomery County is well within the National average for similar services provided throughout the country. As such, it may be viewed as a necessary public service designed to improve the quality of life of Montgomery County residents.

The remaining prioritized transit service activity indentified in the Montgomery County Transit Plan was the initiation of commuter shuttle service between Huntsville – Sam Houston State University (SHSU) and the Woodlands via Montgomery College. While this service would be of primary benefit to the students and employees of Sam Houston State University (SHSU) and The Woodlands, Montgomery College, it would also serve employment possibilities for residents of Conroe and Huntsville.

It should be noted that there are several park-and-ride lots and major employment/activity center opportunities along the 47 mile route of service. Minor deviations from the route, as proposed, could be instituted to provide service to major employment and activity centers as the need arises and the potential for increased ridership is realized.

Unlike the demand response service discussed earlier in this chapter, there are not trip generation rates available for comparable services operated elsewhere. Nonetheless, it was possible to make reasonable assumptions as to the potential level of utilization of this service to develop a range of potential revenue and expenses which could be realized from this service.

The following table (Table 12) enumerates the assumptions utilized in the development of operating costs and potential revenues for this service. As discussed in the Montgomery County Transit Plan report, the proposed level of service during the regular school year would amount to two (2) round trips in the morning peak, two (2) round trips in the midday time period, two (2) trips in the afternoon peak and one (1) trip in the evening for a total of seven (7) round trips per day. Service would be reduced to approximately half of this level with two (2) round trips operated in each peak period during the summer months. Assuming 161 days during the normal school year and 60 days over the summer, this would amount to 1,367 round trips a year for this service.

Table 12- Commuter Shuttle Cost and Revenue Assumptions

SHUTTLE SERVICE: **The Woodlands to Sam Houston State University (SHSU) via Montgomery College**

ASSUMPTIONS

7 Round Trips/Day for 161 Days (Normal School Year) =		1,127 Round Trips
4 Round Trips/Day for 60 Days (Summer Schedule) =		240 Round Trips
	Annual Round Trips	1,367 Round Trips
Round Trip Running Time		2.5 Hours
	Annual Vehicle Hours	3,418 Vehicle Hours
Cost/Vehicle Hours		$108
	Annual Operating Cost	$370,000

Scenario 1:
20 Passengers/Trip @ $2/Trip =27,300 Pass/YR = $54,600 Revenue/Year

Scenario 1A:
20 Passengers/Trip @ $3/Trip = 27,300 Pass/YR = $81,900 Revenue/Year

Scenario 1B:
20 Passengers/Trip @ $4/Trip = 27,300 Pass/YR = $109,200 Revenue/Year

Scenario 2:
30 Passengers/Trip @ $2/Trip = 41,010 Pass/YR = $82,000 Revenue/Year

Scenario 2A:
30 Passengers/Trip @ $3/Trip = 41,010 Pass/YR = $123,000 Revenue/Year

Scenario 2B:
30 Passengers/Trip @ $4/Trip = 41,010 Pass/YR = $164,000 Revenue Year

Inasmuch, as the vast majority of the route would be operated on highways with very limited stops, it is anticipated that a round trip could be operated in 2.5 hours. Extending the round trip running time against the annual numbers of round trips indicates that the service could be operated, as specified, for 3,418 vehicle hours/year. The current contract operating cost for Brazos Transit is $108/vehicle hour meaning that the annual operating cost for this service would be $370,000/year.

Fares for service comparable in length and quality operated by Houston METRO would be the equivalent of a four (4) zone ride at $4/trip. Thus, it is assumed that $4 would be the maximum fare for this service. Inasmuch as the majority of riders would be students, a discounted fare in the range of $2/trip may be in order. Consequently, three alternative fares were utilized for revenue generation purposes - $2/trip as the low threshold and $4/trip as the ceiling. An intermediate fare of $3/trip was also utilized as it is the midpoint of the range in fares.

With respect to potential ridership for this service, two levels were assumed. In the low end, 20 passengers/round trip was assumed and 30 passengers as the upper limit. Again, these values were selected because they represent a reasonable average of ridership which may be anticipated recognizing that some trips may be more heavily utilized and some less utilized than others.

As indicated in this table, the range in anticipated revenues would fall between $55,000 and $164,000 a year. The rather large range in the span of revenues is more of a function of the amount of fare charged than the average number of projected passengers.

The next table (Table 13) summarizes the amount of subsidy which would be necessary to sustain this service for the various levels of ridership and fares assumed in this exercise. On the high end, the amount of subsidy required to operate this service would amount to $315,000 a year and on the low end, with the higher ridership and fare assumptions, $206,000 a year.

As was mentioned elsewhere in the text of this study, similar services are frequently subsidized by the colleges and universities. The reason for this is that such services enhance enrollment because it provides a transportation option for students who otherwise would be unable to attend that college or university. Secondly, the availability of transportation options other than the private automobile, reduces the demand for costly on-campus parking which could range in cost from $12,000/space for surface and $25,000/space for structured parking. In addition to avoiding the capital expense of on-campus parking, colleges and universities also benefit because they do not have to absorb the ongoing cost of such parking for items such as maintenance, security, etc.

Table 13-Subsidy Levels

SHUTTLE SERVICE	ANNUAL REVENUE AND EXPENSE SUMMARY TABLE			
SCENARIO	**DESCRIPTION**	**REVENUE**	**EXPENSE**	**OPERATING SUBSIDY**
1	20/Trip @ $2	$54,600	$370,000	$315,400
1A	20/Trip @ $3	$81,900	$370,000	$288,100
1B	20/Trip @ $4	$109,200	$370,000	$260,800
2	30/Trip @ $2	$82,000	$370,000	$288,000
2A	30/Trip @ $3	$123,000	$370,000	$247,000
2B	20/Trip @ $4	$164,000	$370,000	$206,000

A financial strategy to address the identified funding shortfall of about $3.5 million could include the following elements over an extended period of time (2-3 years).

1. Apply for Job Access Reverse Commute (JARC) and New Freedom Programs grant funds in response to the TxDOT Call for Projects, which is due in February 2008. It is anticipated that biannual calls for those projects will be forthcoming assuming that federal (FTA) funds will continue to be available. Since the recommended county-wide demand response services would provide access to jobs and related activities for the general public (including low income populations) it would qualify for JARC funding. Additional demand response services for seniors, to enhance their abilities to access or better utilize those para-transit services, beyond ADA requirements would be eligible for New Freedom funding. The Commuter shuttle between the Woodlands and Sam Houston State University would also be eligible for JARC funding since it would provide transit connections between suburban employment and training locations.
2. Apply for funding for the Commuter and Transit Services Pilot Projects in response to the H-GAC Call for Projects (which is open now) for Congestion Mitigation and Air Quality Improvement (CMAQ) funds. The commuter shuttle would also be eligible for CMAQ funding since it would provide more ridesharing opportunities for workers, students and faculty.
3. Coordinate with local businesses and large employers that could benefit from transit patronage close to their business or office sites to provide cash donations or to donate land or a bus shelter that could be counted as a local match contribution.
4. Coordinate with H-GAC staff to garner local match from programs such as the Workforce and Small Business Administration Challenge Grants.
5. Coordinate with TxDOT staff to secure Transportation Development Credits to provide a portion of the local match required.

Several other potential funding sources are summarized in Appendix D. Essentially, a ***proactive*** grants management approach in combination with some innovative strategies to increase local funds for local match could provide ample funds to implement the recommendations in this transit plan.

Appendix A-Public Involvement

This section includes the public involvement efforts of several initiatives including:

- Montgomery County United Way Focus Groups
- Regional Public Transportation Coordination Public Meetings

Through the efforts of each initiative, a common theme emerged: there is a need for a public transportation system that can serve the diverse needs of the residents of Montgomery County.

A brief summary of each public involvement initiative is below.

Montgomery County United Way Focus Groups
As a supplement to Regional Public Transportation Coordination public outreach activities conducted by H-GAC, the United Way of Greater Houston hired The Texas Citizen's Fund to conduct focus groups to residents in Montgomery County. The focus of its efforts centered on reaching seniors, persons with disabilities and low-income families through social service agencies, non- profit organizations, and the faith-based community.

Regional Public Transportation Coordination Public Meetings
In support of regional public transportation coordination planning efforts public meetings were held in each of the 13 counties in the Gulf Coast Planning Region. Two meetings were held in Montgomery County, one in The Woodlands and another meeting in Conroe. A summary of each meeting in Montgomery County is included below.

The information contained in this section is anecdotal in nature and not to be considered absolute. The information has not been verified for accuracy.

The United Way
A preliminary summary of a survey of 228 Montgomery County respondents revealed the following:

Modes of Travel Used:

Get a ride from others (family and friends)	48.2%
Drive (ownership of vehicle not specified)	46.0%
Ride bus/public transportation	15.6%
Walk, wheel, or use scooter	12.9%
Ride a van or community transportation	11.2%
Will not drive alone	14.7

Traveling within last 6 months and destinations to which they were unable to travel:

Unable to get there because of a lack of transportation	60.5%
Unable to access medical care	57.5%
Unable to access grocery shopping	54.2%
Unable to visit family or friends	52.5%
Unable to go shopping	51.7%

Unable to attend church or worship services	43.3%
Unable to access recreation	40.0%
Unable to travel to work	36.7%
Unable to get to other cities and other counties	36.7%

Challenges Respondents Face When Traveling:

Do not have a car	47.9%
Lack of transportation where they live or travel	43.2%
Distance between home and destination made trips difficult	41.4%
Not aware of available services	30.8%
Safety related concerns	32.5%
Costs of services is a challenge	24.9%
Difficulty coordinating timing of trips with available services	24.9%
Bus stop is too far away	14.2%

Regional Public Transportation Coordination

Montgomery County/ The Woodlands Public Meeting
July 31, 2006
26 Attendees

Strengths of Existing Services in The Woodlands:

- YMCA is currently providing services for field trips organized by them
- The "211" program is actively running in Montgomery County
- Have successful public/private partnership with Coach USA to provide transportation to Houston

Issues/Challenges affecting The Woodlands:

- Concerns of YMCA:
    - Buses are often not up to ADA standards
    - There are not enough vehicles
    - seem to be funding barriers and disparities (only vehicles available for elderly/disabled)
    - other legal barriers
- Citizen concerns:
    - Besides elderly and disabled passengers, others need to go to work, doctor, grocery store, etc.

    - Also need for those who are currently without work, but seeking employment
    - and low-income citizens
    - Concern about "second shift jobs" having no public transportation to their place of employment
    - Need for more public education on public transportation issues
    -
    - Teenagers/children are often forgotten
        - those who want to travel to work should have adequate transportation
    - Residents feel under-connected and under-served
        - all money in Montgomery County goes to Conroe/The Woodlands
        - all regional money goes to Houston

- United Way and Homeless Association concerns:
    - Concern about "second shift jobs" having no public transportation to their place of employment
    - Need for more public education on public transportation issues

- Concerns for Montgomery County:
    - this plan is needed to access funding sources for public transportation
    - also, there is no "county-wide" transit program
    - no complete list of transportation providers
    - there is a very wide range of needs presented in the county
    - rural populations

Suggested Actions for The Woodlands:

- light rail and passenger rail through Montgomery County to rest of region
- with The Woodlands as a hub
- create a county plan, as a plan is necessary for funding on such projects
- possibility of RMA and associated benefits versus toll roads
- Using most updated census data (rather than 2000) given the facts of Montgomery County's current and projected rate of growth

Montgomery County/City of Conroe
July 31, 2006
23 Attendees

Strengths of Existing Services in Conroe:

- The Friendship Center currently provides demand-response services to Montgomery County
    - Serve disabled and elderly
    - United Way, as well as Montgomery County, help with funding
- Conroe Regional Medical Center is currently using a taxi voucher program for patients who arrive by ambulance

Issues/Challenges affecting Conroe:

- Concerns of Montgomery County:
    - Many residents are low income and elderly
    - rural areas (need demand response in addition to Friendship Center)
        - New Caney, Splendora, etc.
        - All go to Conroe/The Woodlands
        - Many blue-collar residents
        - Areas of very high need
        - Montgomery County is more than Conroe/The Woodlands!
    - lack of awareness about sources of federal funding
    - Emergency Evacuations
        - Concerns about traffic that passes through Montgomery County from Houston and surrounding areas
        - What is TxDOT's plan for evacuations?
    - Concerns for youth:
        - those who want to work
        - medical trips when parents are at work
- The Friendship Center states that refueling and maintenance costs are problem issues

- Conroe Regional Medical Center concerns:
    - Taxi voucher program is overloaded, too much demand
- Time Constraints of Public Transportation:
    - Inefficient timing
        - Example – takes a user ½ an hour to go 1.5 miles (1 way)
    - Associated costs of inefficiencies
    - Vehicle downtime when users are at medical appointments
- City of Magnolia concerns:
    - Seniors need transportation for medical and shopping trips
    - Citizens seeking and keeping work need help
    - Distance between origins and destinations

Suggested Actions for Conroe:

- Possible pilot program to expand the taxi voucher program at the Conroe Regional Medical Center

Summary of Montgomery County Transit Plan
Public Meeting
Tuesday March 18, 2008
Lone Star Convention Center, Conroe, Texas

(75 Attendees).

Elected Officials attending and acknowledged:

1. Honorable B. J. Gaines, Walker County Commissioner and President of H-GAC Board of Directors
2. Buddy Reynolds, Walker County
3. Tim Paulsel, Walker County
4. Paul Martin, The Woodlands
5. Honorable Craig Doyal, Montgomery County Commissioner
6. Honorable Garry B. Watts, City of Shenandoah City Council

Mr. Kari Hackett, H-GAC Transportation Program Manager, welcomed everyone and informed them of the meeting format. He introduced Mr. Steve Sumner, Montgomery County Transportation Task Force Chairman, who briefed the audience on the Montgomery County Transit Plan.

Mr. Sumner stressed that the Montgomery County Transportation Plan is a "Plan" and as such, has to be designated as regionally significant in order to receive funding. The Federal and State funding process includes going through the local Council of Governments (H-GAC). The plan can be added to or deleted from after it goes through the local COG. Public transportation is a huge issue in Montgomery County. The Transit Plan has to do with demand response, general commuting, and economic development.

Mr. Hackett explained that the Montgomery Transit Plan is a short-range transit plan to be implemented with a five-year planning horizon. Some of the recommendations made are actually pilot projects that were identified as part of the regional coordination planning process. These include some new projects which could be implemented in order to address some of the needs identified in the Draft Plan.

Public Comments:

Julie Martineaux, United Way of Montgomery County – Ms. Martineaux thanked everyone for coming out to support the Transit Plan. She works with Plan Committee; she stressed the importance of starting with demand response system as a consideration for the future because Montgomery County has both rural and urban areas; United Way is involved from a work force perspective; wants to know where people are via a demand response system; looking to collect data over a three-year period to determine where the fixed routes are; United Way is involved in social services aspect as well; disabled population in Montgomery County are the most ignored group—some of these are hooked up with the Friendship Center, but what about the rest of the disabled population? What about the blind who want to work but cannot drive? What about the young mother who is disabled but needs to get to work? What about the people who cannot

afford gasoline at $4.00 a gallon, but need to work to support their families? People need transportation services to get to work, to the doctor, to the grocery store, etc.

Fred Thomspon, President of Thompson Consulting – Presented results of a needs assessment Thompson Consulting conducted on behalf of the Montgomery County Department of Community Development. His company developed a five-year Strategic Plan via focus groups and a county-wide community survey. Topics were public transportation, affordable housing, economic opportunity, special needs, and quality of life.
Highlights of the Needs Assessment as it Relates to Transportation - Focus groups were asked:

1. What are your thoughts about the need for public transportation in the County and would you use it if available?
   Answer: There is a need for public transportation in the County and they would use it. A lack of public transportation is a barrier to development in the County.

2. If public transportation were available in your area of the county, where would you want to go?
   Answer: There would be much better access.

3. What kind of operation would you prefer?
   Answer: Seven-day-a-week operation and a need for study survey to determine demand.

4. What type of vehicle would you prefer?
   Answer: Monorail, but participants were also receptive to buses, shuttles and vans.

5. How should it be funded?
   Answer: Public transportation should be funded by a combination of users -- State funds, bonds, Federal funds, and private investment; users should bear the significant amount of the costs.

6. What are your primary concerns about public transportation?
   Answer: Cost/funding, affordability for those who need it the most; issues of safety, management, and potential increase in crime as a result of implementation of public transportation.

Questions and Answers/Commentary (Speakers not identified): {Clarifying comments added}[10]

Q – Has there been a ridership survey performed by zipcode?
A – There was a recent onboard transit ridership survey of the Woodlands Express. {it was tabulated by traffic analysis zones which can be correlated to zip-codes. Copies of that report are available through H-GAC}.
Q – According to METRO's standard, a fixed route bus service is put in place for every 5K population per square mile. Does this include light rail in the 20-year plan as well?
A – It could, but usually for a rail system, a higher density is preferred.

[10] The clarifying comments were added by Kari Hackett after the meeting summary was prepared.

Q – Are there plans to connect the demand response service from Montgomery County to Bush Intercontinental Airport? I understand taxis and limos cover that area but are expensive so a more economical method would be helpful.
A – {That service to Bush Airport is not included in this plan but could be added later, in the second phase of transit planning.}
{a comment was provided by another person who wanted everyone to know that a bio diesel plan—a $12 million dollar investment—exists that converts animal fat into usable fuel. That is envisioned as a source for alternative fuel that would be less expensive than current gasoline prices}.
Q – Regarding public support, by what means are you promoting this plan and what methods are you using to generate/gather responses? I think publicizing the plan will rate a larger response.
A – A draft plan has been developed based on input from a couple of public meetings and findings from these meetings have been presented to the Technical Advisory Committee and the Transportation Policy Council. Your response at today's meeting will serve as an endorsement of the recommendations which says we are on the right track. The Plan will go before the Policy Council next month for approval and once it is approved, elected officials will have an opportunity to solicit Federal support for it. In terms of marketing and advertising, the plan is advertised on the H-GAC/Transportation website, in local newspapers, and other public announcements.
A – Steve Sumner: That is also the aim of the Montgomery County Transportation Task Force. As we receive the support, our subcommittees will advertise in conjunction with H-GAC as things are approved.

Q – Do the routes to Huntsville students start in the Woodlands and where does it go from there?
A – Yes, but it is a Montgomery County Plan and will principally serve its residents but also the surrounding areas.

Q – Have you considered using existing rail lines or upgrading of existing rail lines for the possibility of commuter rail?
A – This possibility is being examined for commuter rail in the future, but there is much freight traffic on those lines. {A Commuter Rail Connectivity Study has been commissioned by H-GAC to evaluate the best potential corridors for passenger rail in the region}.

Q – When are you opening up a park and ride and is safety being considered?
A – That park-and-ride lot {in Conroe at Loop 336} was closed due to a lack of participation, but I don't know anything about the safety issue. (Lyle Nelson)

Q – Regarding the cost of ridership, where does the $21 per person per trip figure come from?
A – This cost is based on a lot of data developed by TTI and are reasonable trip generation rates in areas that exhibit comparable social economic statistics. From that, ridership is projected and then what kind of transportation is estimated.

Q – Is this going to be in competition with METRO or in coordination with them? Would this effort be in competition or coordination with providers such as Continental or Greyhound?
A – Ideally, it should be coordinated with METRO's services.

Q – Is the $21 a provider expense or a rider expense?
A – That is the cost of providing the service per person per trip. There should be a small cost per person to avoid misuse of the system.

Q – I don't understand why public officials didn't look at all these issues 25 years ago when the Woodlands became a community? We could have had a rail system and now the costs are much greater than they would have been 25 years ago.
A – The good news is that Mr. Mitchell and other planners did have the foresight to include a transit element 25 years ago in their master planned community {The Woodlands}. Over time, there would be other services that would connect with the Woodlands, but it takes a long time to accomplish that, and it might take 40 or 50 years to make that happen. However, make sure your ideas get heard by your local elected officials and that it gets put on their public discussion agendas.

Comments:

- Would like to see a bike rack on the front of the buses.
- There needs to be better coordination of efforts with Tri County MHMR for the disabled who have transportation needs.
- A woman who said she would like to do some "cheerleading" stated that she has lived in Montgomery County for 25 years and the number one issue in the County has been transportation. She has seen some positive changes over that time and she commended all the people who are not here who made those changes possible. She thanked all those who came to tonight's meeting and is grateful to see the accomplishments achieved so far.

Some of the MCTP meeting participants socializing before the presentation started.
(Photo by H-GAC)

Appendix B- Major Attractors and Generators

LARGEST SINGLE EMPLOYER BUILDINGS IN MONTGOMERY COUNTY (500+ JOBS)

ID	Company	Street Address	City	Est. # Employees
E1	Anadarko Petroleum Corp	1200 Timberloch Pl	Spring, TX 77380-1046	3000
E2	Hewitt Associates	2601 Research Forest Dr	The Woodlands, TX 77381-4211	1500
E3	Bearden Wallpapering	15020 Conroe Bay Blvd	Willis, TX 77318-3234	500-999
E4	Chevron Phillips Chemical CO	10001 Six Pines Rd	The Woodlands, TX 77380-1498	500-999
E5	D R Hortom America's Builder	1525 Lake Front Cir	Spring, TX 77380-3604	500-999
E6	Lexicon Genetics Inc	8800 Technology Forest Pl	The Woodlands, TX 77381-1160	650
E7	Maersk Line	8686 New Trails Dr	Spring, TX 77381-1176	500
E8	Wal-Mart Supercenter	23561 Highway 59	Porter, TX 77365-4991	500
E9	Wal-Mart Supercenter	1407 N Loop 336 W	Conroe, TX 77304-3503	500-999
E10	Wal-Mart Supercenter	3040 College Park Dr	Conroe, TX 77384-8002	500
E11	Wiesner Inc	1645 Interstate 45 N	Conroe, TX 77304-2143	500-999
E15	Walmart distribution center	20131 Gene Campbell Rd	NEW CANEY	700
E13	Inkjet inc	11111 INKJET	WILLIS	500

LARGEST MULTIPLE EMPLOYER BUILDINGS IN MONTGOMERY COUNTY (500+ JOBS)

ID	Company	Street Address	City	Est. # Employees
E13	Woodlands Mall	1201 Lake Woodlands	The Woodlands	3500
E14	Cochran's Crossing Village Center	4747 Research Forest	The Woodlands	750
E16	Portofino Shopping Center	19075 IH 45	Conroe	600
E0	Conroe Outlet Center	1111 League Line Road, Conroe, TX 77303	Conroe	450

HOSPITALS

ID	Hospital	Street Address	City	Beds
H1	Conroe Regional Medical Center	504 Medical Center Blvd	The Woodlands	322
H2	HEALTHSOUTH Rehabilitation Hospital o	18550 Interstate Highway 45 South	The Woodlands	96
H4	Kingwood Medical Center	22999 U.S. Highway 59 N	Conroe	155
H5	Nexus Specialty Hospital-the Woodlands	123 Vision Park Drive	Shenandoah	75
H6	Memorial Hermann The Woodlands Hosp	9250 Pinecroft Drive	The Woodlands	216
H7	St. Luke's Community Medical Center - Tl	17200 St Lukes Way	The Woodlands	91

SCHOOLS

ID	School	Street Address	City	Students
S1	Alpha Academy			
S2	Willis High School			1488
S3	Hauke Alternative School			138
S4	New Caney High School			2200
S5	Caney Creek High School			1674
S6	Conroe High School			2834
S7	Oak Ridge High School			2215
S8	The Woodlands College Park			1833
S9	New Caney Credit Recovery Center			36
S10	DAEP/JJAEP			
S11	Academy of Science & Technology			280
S12	Academy of Science & Health Professions			275
S13	Magnolia High School			2795
S14	Magnolia West High School			
S15	Splendora High School			863
S16	The Woodlands High School			2672
S17	The Woodlands 9th Grade Campus			860
S18	Montgomery High School			

COLLEGES

ID	College	Street Address	City	Students
C1	NHMCC- District Services and Training Center			
C2	NHMCC- Montgomery College/The University Center			
C3	NHMCC- Kingwood College			

Appendix C- Transit Needs Index (TNI) Methodology

The methodology for calculating the TNI involves the identification of geographic concentrations of potential transit need, based on 2000 US Census data. Data was collected on the following demographic categories:

- Population density (persons/square mile)
- Minority Population (all races other than "White, Not Hispanic")
- Median Household Income
- Auto ownership (households without automobiles)
- Senior population (persons 65 and older)
- Disabled population

For each demographic characteristic urban and rural weighting factors were applied in a mathematical model (multivariate equation) to determine levels of potential transit need. The weights applied are based on experience from other small transit systems in Texas. Urban and rural block groups were based on Census Bureau urbanized area boundaries. Urban block groups have a density of at least 500 people per square mile.

Table 3 – Transit Needs Index Weights

Need Characteristic	*Urban (Fixed Route)*	*Rural (Demand-Response)*
Population density	2.0	1.0
Median household income	3.5	2.5
Minority population	2.0	1.0
Zero car households	1.5	1.5
Senior population	0.5	2.0
Work force disability	0.5	2.0

The TNI factors were calculated as follows:

1. Block groups were assigned an "urban" or "rural" classification based on the region's urbanized area boundaries defined by the Bureau of the Census;
2. Individual factor indices were calculated as follows:

Need Factor	Index Calculation
Population density	Divided the block group density by the regional (county) density
Median household income	The negative of the difference of the block group median income (BGI) and regional median income (RGI) divided by the regional median income $-\frac{BGI - RGI}{RGI}$ Higher Block Group median incomes compared to the region will result in a negative income index, suggesting a lower financial impact in owning an automobile
Minority population	Divided the percentage of minorities in each block group by the regional percentage
Zero car households	Divided the percentage of households without autos in each block group by the regional percentage
Senior population	Divided the percentage of population over 65 in each block group by the regional percentage
Work force disability	Divided the percentage of disabled in each block group by the regional percentage

3. Urban or rural weight factors were applied to each factor index.

A sample formulation is shown here:

TNI (rural) = (pop density index*1) + (household inc. index * 2.5)+
(min. pop index*1)+(ZeroHH index*1.5)+(seniors index* 2) + (disabled index* 2)

4. The factor indices for each block group were summed to get total transit need index for each block group.

Appendix D- Potential Transit Funding Programs [11]

There are numerous funding programs that can assist with transportation facility and service improvements and transit coordination activities. The following sections describe the relevant federal, state, and local programs that are available.

Federal Funding Resources

In August 2005, President George W. Bush signed the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) that provides $286.4 billion in guaranteed funding for federal surface transportation programs over five years, through FY2009, including $52.6 billion for federal transit programs. This reauthorization provides a 46 percent increase over the transit funding guaranteed in the previous bill.

Surface Transportation Program

The SAFETEA-LU program provides federal Surface Transportation Program (STP) funding on an annual basis to support both highway and transit improvements. In non-attainment areas, STP funding can be programmed to support local improvements such as reconstruction of streets, sidewalks, and other streetscape elements. STP funds are programmed typically by the local Metropolitan Planning Organizations (MPO) in different categories, one of which includes urban improvements.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

Congress established the federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program to address projects that lead toward reduction of congestion and air pollution in urban areas that have been identified as either non-attainment or on the threshold of non-attainment. CMAQ money is also available to attainment areas through annual allocations to state departments of transportation. CMAQ money is very useful in addressing community betterment projects that have a direct nexus to reducing vehicular congestion and air pollution. The local MPO identifies a wide range of community betterment projects and decides CMAQ programming priorities. A project that receives 80 percent of project costs must demonstrate that it will create a linkage to reducing congestion and pollution.

FTA Section 5307 and Section 5309 Statutory Provisions

The Federal Transit Administration (FTA) allocates funding on an annual basis to all urbanized and rural areas for support of the planning, operation (in some urban and rural areas), and development of transportation systems and improvements that provide a linkage between transportation infrastructure and the community. The Section 5307 program is an annual allocation to designated recipients (typically transit agencies, states, or cities) who can use their appropriated allocation for planning, engineering design, construction, and, in some cases, operations. The FTA Section 5309 program is a discretionary fund to support bus and rail improvements that, in recent history, had been earmarked directly by Congress for specific projects. It is within the Section 5309 program that many communities in the nation have

[11] Excerpts from Gulf Coast Region Coordinated Public Transportation Plan, The Goodman Corp et al, for H-GAC 2006.

pursued and achieved congressional support for transit access-related programs under the Livable Communities Initiative (LCI), discussed later.

Transportation and Community and System Preservation (TCSP) Pilot Program

SAFETEA-LU authorizes a category of funding known as the Transportation and Community and System Preservation (TCSP) Pilot Program at an annual level of $25 million for projects that meet the following objectives:

Improve efficiency of the transportation system;

Reduce the future need for costly public infrastructure;

Ensure efficient access to jobs;

Create a positive environment for development; and

Reduce the impact of transportation on the environment.

The TCSP program is divided into a research component for recipients seeking to utilize TCSP funding to establish methodologies linked to meeting the objectives identified above, and a grant component for projects directly linked to implementation (engineering, design, and capital development). SAFETEA-LU authorized $25 million during 2005 and $61 million each year from 2006 to 2009. TCSP funding competes with no other federal community betterment appropriation and, in most cases, requires no local share. The TCSP program research and grant components require dedication of a portion of the awarded funds toward an evaluation component for the program.

Community Development Block Grant (CDBG) Program

Since 1974, the Community Development Block Grant Program has been the backbone of improvement efforts in many communities, providing a flexible source of annual grant funds (through the U.S. Department of Housing and Urban Development - HUD) for local governments nationwide. With the participation of their citizens, communities can devote these funds to a wide range of activities that best serve their own particular development priorities, provided that these projects *(1)* benefit low- and moderate-income families; *(2)* prevent or eliminate slums or blight; or *(3)* meet other urgent community development needs.

As one of the nation's largest federal grant programs, the impact of CDBG-funded projects can be seen in the housing stock, the business environment, the streets, and public facilities of almost every community. Traditionally, the largest single use of CDBG funds has been the provision of public facilities. In the last few years, however, the program has played an increasingly key role in stimulating economic development activities that expand job and business opportunities for lower income families and neighborhoods.

Each state establishes its own programs and rules to govern the distribution of its CDBG funds. While states may implement policies that give priority to particular activities, such as economic development projects and wastewater treatment systems, their choices are limited by the activities that are eligible under the national program, which include, but are not limited to, the following:

Acquiring real property;

Reconstructing or rehabilitating housing;

Building public facilities and improvements, such as streets, sidewalks, sewers, and water systems, parks and community centers, fire stations;

Helping people prepare for and obtain employment;

Providing public services for youths, seniors, and disabled individuals; and

Carrying out crime reduction initiatives.

One of the biggest advantages of CDBG is its ability to be used as local match for other federal grant programs such as those referenced in this chapter. Thus, by combining grant programs, improvements can occasionally be made with virtually no expenditure of local funds.

State Administered Federal Funds

Most of the federal funds from the sources listed in the previous section flow directly to the individual grantees that are mostly major agencies. However, other categories of funds are designated to each state's governor to distribute to smaller entities across the state. In Texas the governor delegates that responsibility to the Texas Department of Transportation (TxDOT) to administer.

Planning and Research Grants Program (Section 5303 and Section 5304 Funds)

Section 5303 funds are provided to the MPO through TxDOT for transit or highway planning activities. Section 5304 monies are used by TxDOT for statewide transit planning and research activities. Both Section 5303 and Section 5304 are 80 percent federal and 20 percent state match. Section 5303 funds are administered in concert with the Federal Highway Administration (FHWA) 112 planning funds through the Transportation Planning and Programming Division. The Public Transportation Division monitors transit activities and submits required reports to FTA.

Urbanized Area Grants Program (Section 5307)

Grants for public transportation in urbanized areas are distributed by FTA using a formula based on population and population density. In areas of over 200,000 population, grants are awarded directly to the local recipient. Grants for urbanized areas with populations between 50,000 and 200,000 may be made to the governor or to local recipients designated by the governor. Currently, the cities make application directly to FTA. Capital/Planning is 80 percent federal maximum and 20 percent state/local match on most projects. Elderly and Disabled projects may receive up to 95 percent federal funding. Administrative/Operating expenses can use 50 percent federal share and 50 percent state/local match. Section 5307 is the major federal funding source for urbanized transit properties. Unobligated funds may be transferred to another Section 5307 recipient or to the Section 5311 program.

Grants Program for Services to Elderly and Disabled (Section 5310)

Provides capital grants or loans for the provision of services to elderly persons and/or persons with disabilities. Eligible recipients include private nonprofit organizations or associations, public bodies that coordinate services for the elderly and/or disabled; or any public body that certifies that nonprofit organizations in the area are not readily available to carry out the services. The funding ratio is 80 percent federal maximum and 20 percent local match. TxDOT has been designated by the Governor to administer the Section 5310 program. Grants are typically used to

purchase vans (many of which are lift-equipped) and ancillary equipment, such as radios. The Section 5310 program is undergoing a major redesign at present to reflect the strengthened coordination requirements for local recipients. Refinements are also necessary to ensure that federal planning requirements are met.

Non-urbanized (Rural) Grants Program (Section 5311)

Provides grants for public transportation in non-urbanized areas fewer than 50,000 in population. Eligible recipients include state agencies, local public bodies, private nonprofit organizations, Indian tribes and groups, and operators of public transportation services. Unless the Governor certifies to FTA that intercity bus service needs are being met, 15 percent of the allocation must be reserved for the development and support of intercity bus transportation. The funding ratio for Capital/Planning/Administrative is 80 percent federal maximum and 20 percent state/local match on most projects. ADA projects may receive up to 90 percent federal funding. Operating costs are supported at 50 percent federal share and 50 percent state/local match. TxDOT has been designated by the Governor to administer the Section 5311 program.

Job Access/Reverse Commute Funds (Section 5316)

The Job Access/Reverse Commute (JARC) funds are used for public transportation projects for access to jobs and reverse commute purposes. A **job access** project is one that transports welfare recipients and eligible low-income individuals to and from jobs and activities related to employment. A **reverse commute** project is one that takes individuals from urbanized (cities/downtown areas) and non-urbanized areas to suburban employers. The federal statute has no reference to welfare or income status associated with reverse commute projects; therefore these projects are open to a rider of any income level. Local governmental authorities, private nonprofit organizations, operators of public transportation services and private for-profit operators of public transportation services are eligible recipients.

New Freedom Funds (Section 5317)

This is a new category of funds introduced in SAFETEA-LU. The purpose of these funds is for public transportation projects that provide new public transportation services and public transportation alternatives beyond those currently required by the Americans with Disabilities Act (ADA) of 1990, that assist individuals with disabilities with transportation, including transportation to and from jobs and employment support services. Eligible recipients include local governmental authorities, private nonprofit organizations, operators of public transportation services, and private for-profit operators of public transportation services.

Useful Federal Funding Tools

Capital Cost of Contracting

The federal government encourages the utilization of private contractors to provide transportation services, including operations and maintenance. FTA provides funding through its Capital Cost of Contracting (CCC) program that rewards the public entity that contracts with private sector providers with bonus money representing the capitalized portion of the contract cost being provided by the private provider (e.g., depreciated value of equipment or facilities furnished in the provision of privately contracted services). This bonus money, which can

reimburse 80 percent of the costs that range from 10 percent to 100 percent, can be used to support local share costs of other federal capital improvement programs.

Joint Development Provisions

Joint development provisions enable a local government or transit entity to pursue redevelopment opportunities (with or without private sector participation) to implement mixed-use development into the transit terminal/parking facility development to maximize services linked by transit (retail, daycare, community facilities, residential, etc.). A local government or transit entity may acquire land and develop that land in a manner compatible and conducive to public transit improvements in a way that generates economic value and additional revenue to help support transit operations. The joint development approach also reflects combining transit terminal operations with a parking facility, in lieu of building just a parking garage, to maximize the funding opportunity provided by creating facilities to promote public transportation. The joint development approach can also be used to maximize private funding opportunities, using these funding opportunities to leverage future federal funding matches. Joint development benefits are provided to projects that maximize the services linked to public transportation, such as daycare, retail, restaurants, health care, and community facilities.

Transportation Corridors

Federal transit legal provisions enable the acquisition of real property by a federally supported transit agency within a 1,500-ft. radius of any transit terminal, to support development that is compatible and conducive to public transit improvements in a way that generates economic value and additional revenue to help support transit operations. Local government funding of pedestrian infrastructure improvements and utility improvements through public works and Community Development Block Grant (CDBG) resources can be used to satisfy the local share to compliment federal funding grants or appropriations, and to leverage future federal funding matches.

Funding Partnerships

Public/private partnerships offer opportunities for the development community to donate land in fee simple interest, through a long-term lease or easement, which is used to support transit/pedestrian related improvements. The value of the land or interest donated can be used to match federal funding and/or leverage additional federal resources to fund other transit improvements.

Parking and Farebox Revenue

Transit terminal parking facilities served by a transit system offer parking revenue streams which can be used to meet the local funding obligations for the project and which can be used to offset the operating and maintenance costs for the facility and transit system. While Federal dollars provide funding for parking and transit infrastructure, each transit terminal facility generates revenue over time. Parking revenues offer the financial means to fund the operating costs for the transit terminal facility and the transit system.

Livable Communities Initiative (LCI)

FTA has made a strong financial commitment to the improvement of communities under the federal LCI program. This commitment reinforces the importance of integrating and linking communities with the nation's transportation systems through infrastructure improvements that

provide greater access to public transportation. These provisions authorize projects that enhance the effectiveness of mass transportation projects. The flexible funding provisions of SAFETEA-LU strengthen the funding opportunities for transit investments that meet community needs. The essential purpose of the federal transit laws is not simply to fund the capital and operating costs of transit systems themselves, but also to improve the quality of life in urban and rural communities through the use of transit systems, and recognizing them as the lifeblood of livable communities. Thus, the objective of the LCI program is to improve mobility and quality of services available to residents in neighborhoods by:

Recognizing the importance of integrating and linking communities through infrastructure improvements that provide greater access to public transportation;

Developing a transit-based mobility program, integrated with supportive land uses, that, in turn, create a more positive environment for the pedestrian;

Providing a public transportation linkage to local and regional mobility systems;

Implementing transit terminal parking to promote public transportation; and

Implementing a mixed-use development concept into transit terminals to maximize services linked by transit (retail, daycare, community facilities, residential, etc.).

State Funding Resources

In addition to the previous section regarding sources of federal funding available to public transportation services, there are several sources of state funding as well. Many of these state funding resources are set up and distributed in a similar manner as their federal counterparts, but each is worthy of individual discussion.

Transportation Development Credits

The transportation bill passed by the U.S. Congress in 1997 enabled the utilization of Transportation Development Credits (TDC), formerly known as toll road credits, for local match to federally funded transportation projects. Several states, including Texas, that have toll facilities have adopted the utilization of TDC's to match federally funded transportation projects. The toll road credit is derived from the revenues paid by the users of a toll facility to support bonds that have been issued to build the toll facility. If the facility is located along a state or federal highway system, the revenues utilized to debt service the capital improvement bonds may be used as a credit to match federally funded transportation projects.

The Texas Department of Transportation Commission has recently issued rules relating to the distribution of TDC's for Texas transportation projects, including transit. The rules generally favor those areas of the state that generate the credit, such as Houston or Dallas. However, a portion of the TDC's will be available for areas of the state (25% of the total TDC value) that do not have toll facilities. In the case of non-toll generating areas, TxDOT has established that other factors, such as local area need, the amount of local contribution to the project, and the ability of the project to meet state transportation objectives, will determine the recipients of the TDC's.

State Public Transit Funding

During the 1975 State legislative session, the legislature transformed the Highway Department to the Department of Highways and Public Transportation, subsequently renamed the Department of Transportation, and established a State Public Transit Trust Fund at $30 million per biennium.

This amount of funding has subsequently increased to its current level of $58 million each biennium. This funding is supported by highway-related user fees deposited annually into what has become known as "Fund 6." What is noteworthy regarding Fund 6 is that a large portion of the $58 million has been dedicated through legislative initiative; however, $18 million is discretionary. There has been recent discussion by TxDOT, as evidenced through its report to the Legislative Budget Board, to shift the $18 million non-dedicated Fund 6 support for transit to the General Revenues of the State.

In addition, the Texas Transit Association is requesting an additional $16.7 million of state funding from any source to replace the small urban and rural state transit fleets, as well as an increase in state transit funding by $18 million per biennium for a total of $90 million in state funding. This additional funding is justified to support the locally required match for federal funding and to assist local transit agencies in meeting infrastructure requirements necessary to meet state regional transit coordinating objectives.

State Transit Funding Distribution Formula

The TxDOT Commission has established a new formula for the distribution of state public transit funding, to small urban and rural areas, which has injected new "accountability" within the state oversight of transit operations. The new formula relies on a combination of factors including evidence of local need (demographics, economic, etc.), actual performance of transit (passengers per hour, cost per hour, etc.), and the amount of local contribution to the overall transit budget of the operator. The implementation of the new formula has resulted in several small urban and rural operators receiving less state funding than previously experienced, and some operators receiving more state funding than previously experienced. The implementation of the new formula has been particularly hard on some small operators who receive little or no financial support from local jurisdictions such as small cities and counties. However, the new formula has been successful in increasing the awareness at the local level that some financial participation will be necessary to sustain and increase public transit services. The factors utilized within the formula that impact the distribution will be reexamined by TxDOT to determine their relevance and fairness.

Intercity Bus Funding

The existing and previous two national Transportation Bills, established that 15 percent of funding provided through the Rural Formula program of FTA's Section 5311(f) will be made available for improvement of Inter-City Bus Service. This funding resource, which for Texas is approximately $4 million annually, can be utilized to support a variety of planning, infrastructure, and operating needs related to the linkage of cities through inter-city bus carriers. Therefore, projects that include intercity bus terminals, subsidies for new intercity bus linkages, and improvements to existing intercity bus stops have, in recent years, been funded through this program.

Statewide Transportation Enhancement Program

Ten percent of STP funds are set aside as a separate funding category for transportation enhancements. Funds are allocated to state departments of transportation for distribution. In Texas, TxDOT administers a competitive program known as the Statewide Transportation Enhancement Program (STEP). The goal of STEP is to encourage diverse modes of travel, increase community benefits of transportation investment, strengthen partnerships between state

and local governments, and promote citizen involvement in transportation decisions. To be eligible for consideration, all projects must demonstrate a relationship to the surface transportation system through either function or impact and go above and beyond standard transportation activities.

The funds provided by this program are on a cost reimbursement basis, not a grant. Projects undertaken with enhancement funds are eligible for reimbursement of 80 percent of allowable costs. The governmental entity nominating a project is responsible for the remaining cost share, including all cost overruns, and for continuing maintenance.

Leverage/Use of Local Resources

Communities often fail to take advantage of local resources that can be used as local match to leverage federal funding. A myriad of opportunities exist to provide local match in a way that reduces or eliminates any requirement for additional general fund commitments to a federally assisted project. For the most part, all of the federal programs identified above require a 20 percent cash or in-kind local contribution. Local contributions can qualify as local match as follows:

Land Donation

The value of land not previously dedicated to support transit-related purposes can be utilized under the FTA program as match for capital improvements. FTA requires two appraisals of a parcel (one prior to grant approval) to support its value for leveraging purposes. The value of the land often meets the local share requirement of the specific community betterment project being targeted for use of federal funds.

Private Utility Relocation

City franchise agreements with private utility companies often include the provision that the utility company is responsible for relocation costs associated with publicly funded community betterment improvements. Cities around the nation have taken advantage of private utility investment in required utility relocation associated with public improvements such as street/sidewalk reconstruction and streetscape to provide an urban-friendly transit utilization atmosphere. The value of private utility company investments associated with these public improvements can be used as local match for federally funded projects.

Bond Program

Local funds for major capital investments are generally raised through general obligation bonds. Issuing of bonds can be done only with the approval of the voters and transit service expansions could be included as part of a bond referendum.

Sales Tax

The Legislature has designated that part of the local (city) sales tax may be used for property tax relief or economic development. Referenced in 4A and 4B, one use for any portion allocated to economic development is public transit. The use must be explicitly in the local designation. Over 530 Texas cities have adopted this program, but not all have designated transit as part of their application of the funds.

Regional Mobility Authorities (RMA)

Regional Mobility Authorities (RMAs) may construct, maintain and operate transportation projects including highway, rail, aviation and pedestrian facilities. RMAs have several options for generating revenue. They may issue revenue bonds and collect tolls. A segment of the state highway system can be converted to a toll road and transferred to an RMA by the Texas Transportation Commission. RMAs can purchase right-of-way and later lease portions for use by hotels, restaurants, gas stations, stores, garages or railroad tracks. Surplus revenue from tolls is controlled by the RMA, providing local officials with new revenue streams for other transportation projects in the area {***such as transit expansion projects***}. By allowing an individual county or multiple counties to work together to develop and implement a regional approach to transportation needs, RMAs give local governments a greater ability to provide mobility and safety benefits to citizens. Because they are allowed more flexibility in obtaining funding for needed projects, RMAs provide faster solutions for traffic congestion. As more responsibilities are managed by RMAs, the state will be able to direct its resources toward other critical needs in the region.

Appendix E- Transportation Coordination Peer Review Summary [12]

There are a variety of organizational structures and institutional arrangements that have been formed between local governments, transportation, health and human service providers nationally. The range of options vary from a regional brokerage system with a central call center and centralized dispatching to a dispersed (or decentralized) system where the customer has the option to call upon a variety of transportation service providers. Some of the best models for transportation coordination were highlighted in a December 2006 Peer Review that was prepared by Nelson/ Nygaard Consulting Associates. Some of the more salient facts from that review are summarized in the table below. For more complete information refer to the full report which is available online at www.h-gac.com/transportation.

Agency	Services	Organization	Service Area	Ridership
Denver-Boulder Region, Colorado	Local fixed route, express, ADA paratransit, light rail, call-a-ride for general public.	County based broker system.	NR	NR
Tarrant County, Texas (Fort Worth)	Local fixed route, express, ADA paratransit, commuter rail, carpool/vanpool support, elderly/disabled (5310).	Fort Worth Transit (T) serves urban area. Centralized administration in Tarrant County.	1.4 million in region.	5,898 (coordinated trips in Tarrant County)
Heart of Texas COG	ADA paratransit, Elderly, Disabled, Rural (5310, 5311)	Centralized administration and bookkeeping by the COG. Each county has their own contractor and access number .	NR	186,000
Mason County, Washington	General public dial-a-ride, fixed route, commuter services, school district trips, Naval shipyard.	Mason County Transportation Authority- Contracts with outside providers.	40,000 population, 700 sq. miles	300,000
CARTS, Austin, Texas	Fixed route, inter-city commuter routes, community transit service. (5311, Title III), general public.	Capital Metro within Austin city limits. CARTS serves rural areas.	700,000 in Austin, 1.4 million in region.	100,000
ART Program, Raleigh, North Carolina	Fixed route, ADA paratransit, supplemental dial-a-ride.	Centralized broker system for ADA, Decentralized for subsidized cab system.	NR	500/day (ADA) 50-100 week (dial-a-ride)

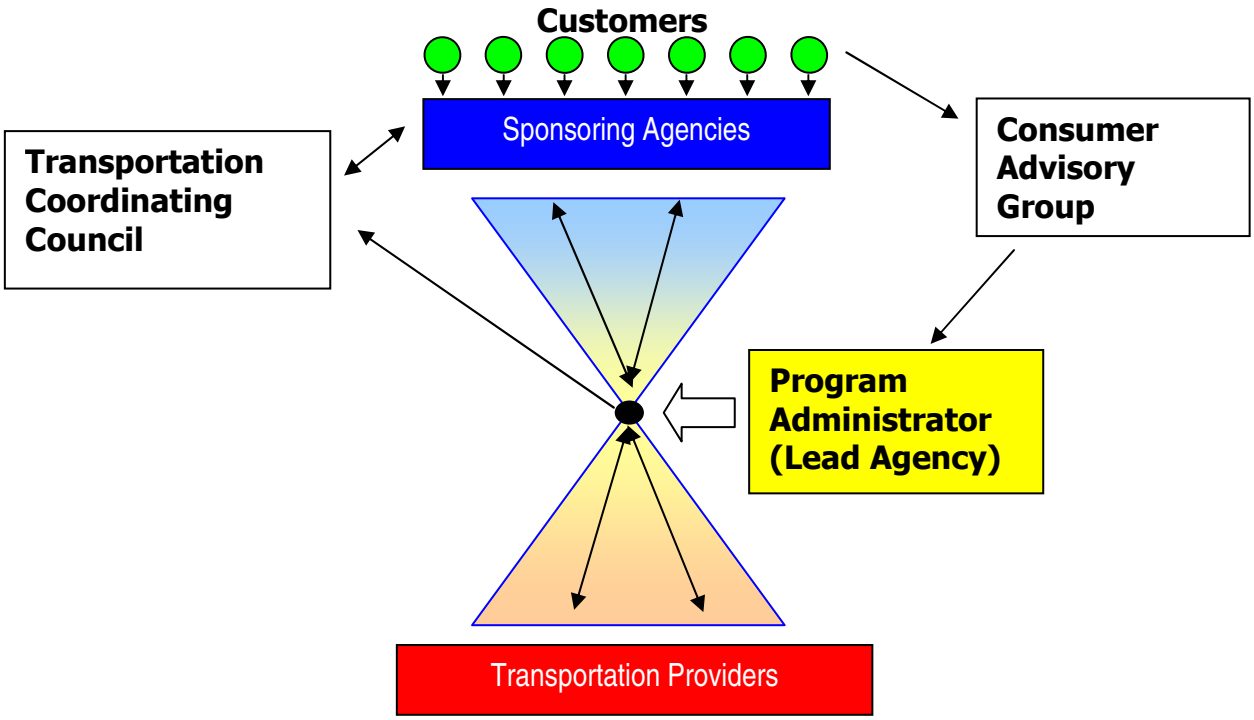
[12] Information is excerpted from the Gulf Coast Regional Public Transportation Coordination Plan- Appendix B- Peer Review, by Nelson/Nygaard Consulting in association with The Goodman Corp. et al, 2006, NR=not reported.

Another approach to transportation coordination combines elements of the centralized and decentralized systems into one model. A local example is the Harris County Rides program which was recommended in the Harris County Transportation Coordination Study. That model is described as a countywide user-side subsidy program. "It is one way to address the identified level of need by creating additional services quickly and at the lowest incremental cost. A user-side subsidy program, with a lead agency administering the program was recommended and developed with the input of the Harris County Transportation Coordinating Council.

The model relies on the County government to support the role of the Program Administrator. This was viewed as a neutral organization that would most likely have the interest of a variety of customers in mind, and would be able to work toward coordinating service with other providers in the County. " [13]

A diagram of the recommended program structure is shown below.

Subsidized Transportation Program Organizational Structure



There are several advantages to this model including ease of access for the customer, who can call any one of several transportation providers and also benefits from reduced costs through cost sharing agreements with the sponsoring agencies. A similar coordination model could be established in Montgomery County if (and when) more private transportation providers (such as cab companies) are available. This is also a simple framework for the transportation providers because there is only one contract manager (the Program Administrator within the Lead Agency).

[13] Exerpts are from a briefing paper prepared by Multisystems Inc. for H-GAC, 2001.