Houston-Galveston Area Council

Colorado Valley Transit District

Sub-Regional Transit Service Planning & Coordination

Final Report

December 2011

HDR

Colorado Valley Transit District

Sub-Regional Transit Service Planning and Coordination

Prepared by HDR Engineering Inc. in association with

the Houston-Galveston Area Council

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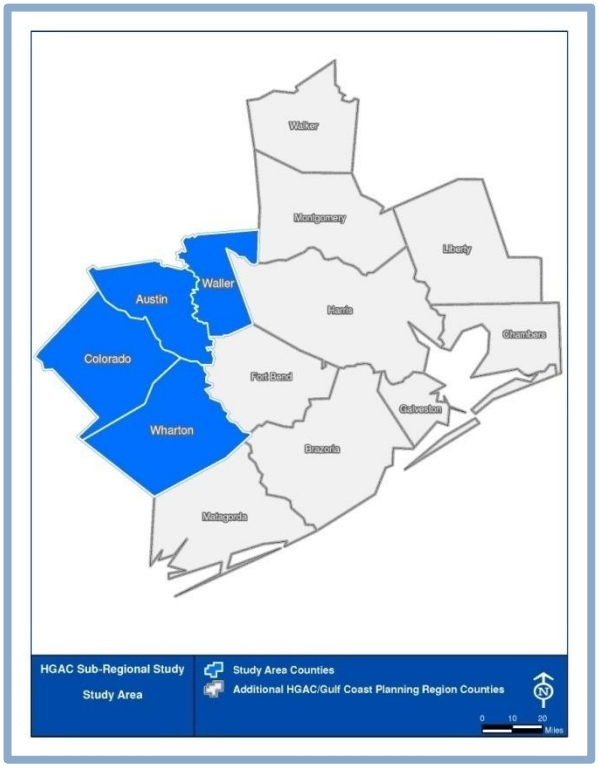
Introduction

The 2010 H-GAC Sub-Regional Transit Service Planning and Coordination is an update to the 2006 Gulf Coast Region Coordinated Regional Public Transportation Plan (GCRPTP), which addressed the entire 13–county H-GAC region. The purpose of this Sub-Regional Study is to evaluate the existing conditions within the Colorado Valley Transit District (CVTD) service area (Austin, Colorado, Waller, and Wharton Counties), including demographic characteristics, travel and commuting trends, and to identify sustainable funding resources and transit alternatives that are most effective and efficient for CVTD to implement and operate.

CVTD provides weekday demand response and deviated fixed route transit services within and between each county in the service area. In addition, CVTD provides scheduled trips on selected weekdays from Austin County, Colorado, and Waller Counties to the Katy area.

Identifying Transit Needs

Through the interviews and meetings with elected officials and other stakeholders, the primary mobility problems facing the CVTD service area were identified, along with potential transit service improvements to be considered for future implementation. This information provided a foundation for the development of the study recommendations. Socio-demographic conditions and characteristics of the four-county service area were also evaluated to fully understand the existing need for public transit.



Population in the four-county service area is expected to grow 49 percent with Waller County having the highest growth by doubling in size by 2035. Employment growth is expected to grow by 29 percent with Waller County experiencing the greatest growth. Persons with disabilities and vehicle availability are two characteristics that have shown to have a propensity to use transit. In the four-county service area 16 percent of persons have a disability and nine percent have no vehicle available.

Existing Conditions

CVTD currently operates demand response service in all four counties and operates nine deviated fixed routes in Austin, Colorado, and Wharton counties. In addition, CVTD provides scheduled trips to medical facilities and the Katy area.

Funding for CVTD's service is provided primarily through the Federal Transit Administration (FTA) and other programs administered by the Texas Department of Transportation (TxDOT). Local revenues from Title 3 and Title 19 funds are received from aging programs, United Way, local Economic Development Corporation partnerships, private grants, and each of the four county governments. CVTD applies for and receives funds each year from FTA through TxDOT. These funds are for non-urbanized area programs (5311), Elderly and Persons with Disabilities Program (5310), and Job Access and Reverse Commute (JARC) program (5316). They are also eligible for other federal funding grants including but not limited to, New Freedom (5317). These grants depend on the qualifying projects being implemented.

Although CVTD receives funding from various sources, sustainability of service is of major concern to the transit district. Historically, pilot services have been initiated by CVTD with funds having limited timeframes, such as grants administered through the Congestion Mitigation and Air Quality (CMAQ). Potential alternative funding strategies are recommended in Chapter 6 of this report.

Proposed System

Recommendations for future service implementation was developed after a thorough study of the existing transit conditions in the four-county service area, review of current ridership trends and development of a forecast methodology as well as personal interviews with CVTD staff, local elected officials, and other groups, as described in Chapter 2 of this report. When these projects are implemented as funding becomes available, the proposed recommendations will refine the existing network of services and provide new services to better fit current and projected travel needs of the residents served by CVTD.

Short-Term Recommendations

Short-term recommendations are based on previous costs, system performance (2008) and include adjustments to existing service as well as proposed new transit investments for implementation if financially feasible. Proposed short-term service improvements are as follows:

- Frequency improvements to existing service;
- Implementation of several routes in Waller County, specifically those serving Prairie View A&M ;

- Provide weekend service; and
- Expand vanpool services.

Long-Term Recommendations

Long-term recommendations include proposed new transit investments for implementation over the six to ten years and beyond if funding resources are available and recommendations are applicable to current needs. Long Term recommendations are as follows:

- Implement additional LOOP and LINK
- Implement commuter service with connections to the Katy area, and other area service providers; and
- Develop transfer facilities for commuter services.

Costs and Benefits of Proposed CVTD System Improvements

Costs associated with short- and long-term recommendations must be supported through local match and community investment. Although the annual costs will increase, there are many benefits to supporting the development of transit in the CVTD service area. Costs and benefits associated with service improvements are listed in **Table ES.1** below.

Table ES.1: Transit Costs and Benefits Matrix

Service Improvement	Cost	Benefit
Keep existing deviated fixed route service and increase existing frequency on each route	$1,735,306	▪ Improve the efficiency and effectiveness of the existing service ▪ Expected increase in ridership for this proposed improvement in 2035: 41,200 riders annually or 46 percent of existing ridership.
Proposed new service	$1,000,000 - $2,500,000	▪ Increase ridership ▪ Provide service to areas that do not currently have service ▪ Enhance mobility ▪ Economic development opportunities ▪ Expected increase in ridership for this proposed improvement in 2035: 60,950 riders annually or 80 percent of existing ridership.

Funding

Transportation agencies generally use federal monies for capital projects and local tax monies for operation and maintenance, however there are funding opportunities available that go beyond the traditional sources, such as federal grants and state sales tax. The determination of funding is recognized as an issue that needs to be addressed at the local level.

CVTD has plans to continue the current demand response service and deviated fixed route in Austin, Colorado, and Wharton counties, reinstate the cancelled deviated fixed route service in Waller County, and further invest in improved service in the three remaining counties if the funds are available.

The new services will require additional capital investment in vehicles, shelters and Park & Ride or transfer facilities. Capital costs may average approximately $4.8 million, inclusive of 12 vehicles and two facilities which include, three bus bays, minimal (10-20 spaces) parking, a canopy and facilities for the bus drivers.

CVTD currently utilizes most federal and state funds as well as in-kind contributions, but there is federal funding available that either CVTD has never applied for (New Freedom) or does not have the local investment available to continue (CMAQ). It is recommended that CVTD explore the alternative funding strategies as a means to assist with local match from the community and continue to seek federal funds for which their projects qualify.

Final Recommendations

1) CVTD's service area consists of two colleges, one major University, and several major employers. As was mentioned earlier in this report, five new services that are proposed to serve the students of Prairie View A&M University could potentially be paid for with the imposition of a $46/semester transit fee. This new service would be open to everyone, but if implemented, Prairie View A&M students would ride for free and other passengers would pay the established fare. This fee is small by comparison to other colleges and universities in Texas and is a good example of what could be accomplished in the area of funding if the colleges and major employers that require service would be asked to contribute toward funding the transit they need.

2) All new services are proposed with the understanding that they will be implemented as funds become available.

3) Increasing the frequency of existing services and providing service to Prairie View A&M appears to hold the most promise for the short-term. Much of this service is in Waller County which is the County that has the highest need.

Conclusion

Recommendations were based on transit needs identified throughout the planning process. With Waller County expected to double in size by 2035 deviated fixed route and commuter services will be an important asset. For all transit agencies funding can be a challenge so the implementation of recommended services will only be initiated if local stakeholders are willing to financially commit to transit.

Chapter 1
Introduction

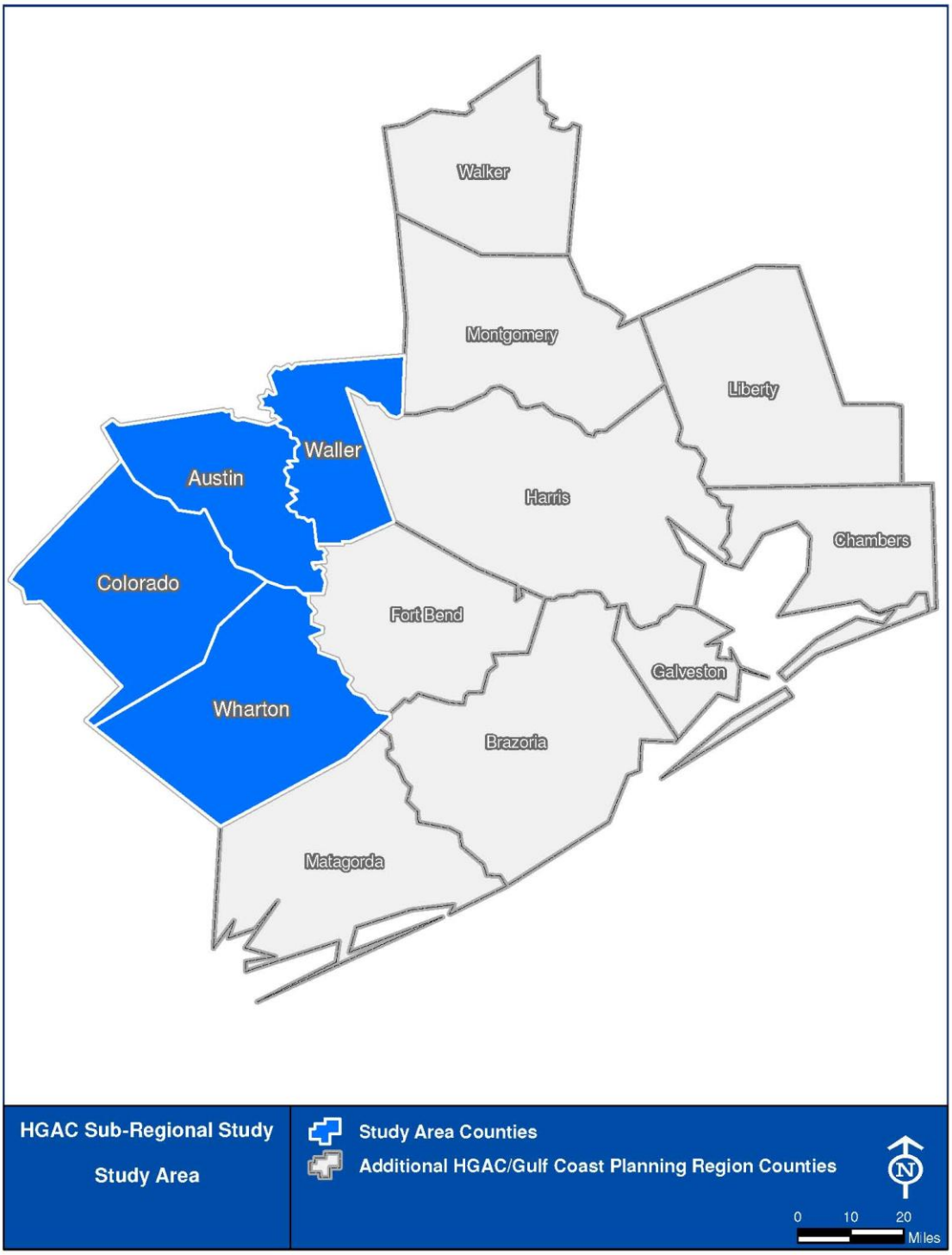
Colorado Valley Transit District (CVTD) is a public transportation provider which serves a four-county rural region located west of the Houston area within the 13-county Houston-Galveston Area Council (H-GAC) planning region. CVTD's service area covers 3,220 square miles in Austin, Colorado, Waller, and Wharton Counties. According to 2009 U.S. Census estimates, there are approximately 125,000 persons within CVTD's service area.

CVTD provides weekday demand response and deviated fixed route transit services within and between each county in the service area. In addition, CVTD provides scheduled trips on selected weekdays from Austin County, Colorado, and Waller Counties to the Katy area. Since its inception in 1986, the regional transit service has had an increasing role in providing public transportation throughout the four-county region.

Project Study Area

The study area for the H-GAC Sub-Regional Transit Service Planning and Coordination is the CVTD service area, which consists of Austin, Colorado, Waller, and Wharton Counties, as shown in **Figure 1.1**. The CVTD service area is partially included within the western portion of the Houston-Sugarland-Baytown Metropolitan Statistical Area (MSA), which is comprised of ten counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, San Jacinto, and Waller. This MSA is the sixth largest and fastest growing urban center in the United States. As the fourth most populous city and the largest in the southwest, Houston is the economic center of the region. The Houston-Sugarland-Baytown MSA is home to approximately 4.7 million people according to the 2000 U.S. Census, and it is expected to grow to 8.7 million people by 2035.

Figure 1.1: Sub-Regional Study Area



H-GAC Sub-Regional Transit Service Planning and Coordination

The 2011 H-GAC Sub-Regional Transit Service Planning and Coordination is an update to the 2006 Gulf Coast Region Coordinated Regional Public Transportation Plan (GCRPTP), which addressed the entire 13–county H-GAC region. The purpose of the Sub-Regional Study is to evaluate the existing conditions within the CVTD service area, including demographic characteristics and travel and commuting trends, and to identify sustainable funding resources and transit alternatives that are most effective and efficient for CVTD to implement and operate.

H-GAC is also conducting the Regional Transit Framework Study during the same time period. The Regional Transit Framework Study's main focus is to provide a unified long-range vision for future public transit investments in Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties through the year 2040. Only a portion of the CVTD service area is within the Regional Transit Framework Study's focus area; however, coordination between the two studies is essential to maximizing regional interconnectivity. Relevant elements of the proposed transit network for the CVTD service area identified in this study have been incorporated into the final transit network for the Regional Transit Framework Study.

The four-county CVTD service area includes a small portion of the Katy Independent School District (KISD) area. The KISD area has specific needs regarding coordination, connectivity, and the enhancement of transit service in Katy, as well as the need for coordination among transit service providers in the Katy area. A detailed sub-area analysis of the Katy area, which was undertaken as part of the Regional Transit Framework Study, identified and analyzed the needs and preferences of existing and potential transit users in that area. Results from the Katy sub-area analysis study was included as part of the Regional Transit Framework Study.

Why is this Study Important?

The purpose of the Sub-Regional Transit Service Planning and Coordination Study is to:

- Evaluate the existing CVTD transit services and recommend adjustments that will better serve the growing needs of Austin, Colorado, Waller, and Wharton Counties.
- Provide an update to the 2006 GCRPTP to take into account continued growth within the CVTD service area in terms of population and vehicular traffic, as well as in the number of residents who need assistance traveling to and from basic quality-of-life needs, such as work and doctors visits. Since the development pattern and population demographics have changed, it is important for CVTD to be prepared to address new demand for service.

In order to accomplish this, the study includes the following tasks:

- Analyze the performance of CVTD's deviated fixed route and demand response services.
- Examine the efficiency and effectiveness of the current system.
- Understand the existing and potential markets for transit service that help increase ridership and market share.
- Provide recommendations that will improve productivity and potentially add new riders to the system.
- Develop a service plan that best meets the needs of CVTD's current and future passengers.
- Identify future sustainable funding resources.

Report Organization

This report documents the recommended transit service improvements and provides a summary of the methodology used to evaluate CVTD's transit service needs. The report is organized to reflect the overall planning process, which included public and stakeholder involvement, identification of CVTD's socio-demographic and development characteristics, and an analysis of the transit system existing conditions and performance.

Chapter 2

Community and Stakeholder Outreach

The ultimate beneficiaries of the recommended enhancements of the transit services operated by CVTD will be the residents and visitors. During the study process, stakeholder interviews and meetings were conducted to identify the issues and needs of the CVTD transit system, assess the perception of existing services, and identify goals and objectives for the CVTD system. The stakeholder meetings also focused on the identification of opportunities and challenges for expansion and enhancement of CVTD services and on significant issues affecting public transit in the service area.

Stakeholder Meetings

Numerous meetings were held throughout the service area to inform the stakeholders of the study's purpose and provide interested stakeholders the opportunity to offer input. The consensus of meeting participants was that transit is a priority, as well as being a needed, desired, and preferred mode of transportation. Issues that were identified included the pressures of continued outward expansion and new development, a growing population base, and educational and employment opportunities, as well as the continued increase in the price of fuel; all of which combine to make transit a necessary alternative within the CVTD service area. **Table 2.1** provides a list of the stakeholder meetings that were held.

Table 2.1: Stakeholder Meetings

Meeting	Date	Place
Kickoff Meeting	8/21/09	United Way Service Center – Brookshire
Prairie View A&M University	9/22/09	Prairie View A&M University
Katy Area Chamber of Commerce	10/27/09	Katy Area Chamber of Commerce
Waller County Planning Commission	11/4/09	Waller County Annex
City of Sealy City Manager, Chris Coffman	3/3/10	Sealy City Hall
Austin County Judge Carolyn Bilski	3/9/10	Austin County Courthouse
Blinn College, Sealy Campus	3/31/10	Blinn College-Sealy Campus
City of Hempstead, Mayor Michael S. Wolfe, Sr.	4/21/10	Hempstead City Hall
Colorado County Judge A.G. Jamison	4/22/10	Colorado County Courthouse
Wharton County Judge John Murrile	4/27/10	Wharton County Courthouse
Waller County Judge Owen Ralston	6/2/10	Waller County Courthouse
Transportation Committee Meeting	9/10/10	Waller County United Way

Source: HDR, 2010

Transit Operations

Meetings were held periodically over the course of the study with the Executive Director of CVTD to discuss transit service operations, as well as on-the-road and day-to-day experiences with the operation of CVTD system. Discussions also included the efficiency and effectiveness of current and future routes, future plans, methods to increase ridership, and potential funding options. Comments were recorded and incorporated into the planning process.

Identification of Issues and Needs

Through the interviews and meetings with elected officials and other stakeholders, the primary mobility problems facing the CVTD service area were identified, along with potential transit service improvements to be considered for future implementation. This information provided a foundation for the development of the study recommendations.

Mobility Challenges Faced by CVTD

The transportation mobility challenges faced by CVTD are not unlike those faced by other rural transit districts across Texas. The challenges that were indentified include the following:

- New development has occurred that is beyond the areas served by deviated fixed routes transit service. This has created a greater demand for demand response service.
- Demand for trips to the Katy area, the new Western Medical Center along I-10 and other cities in the study area has grown, while demand for trips to Houston and the Texas Medical Center have decreased, due in part to a substantial increase in the number of high quality medical facilities and services in the CVTD service area.
- There is a lack of transportation alternatives for students attending the colleges and universities in the study area.
- Serving more passengers in a greater area has caused travel times to increase and frequencies to decrease.

Potential Additional Transit Service to be Considered

Stakeholder input was critical in identifying potential transit service improvements for the purposes of this study. Proposed improvements included the following:

- Increase service frequencies of selected bus routes in the system.
- Provide deviated fixed route service to Waller County.
- Provide service to the Katy area that is more frequent and better coordinated.
- Provide expanded bus service and connections to METRO Park & Ride lots located near the fringes of the CVTD service area.
- Provide service to Fort Bend County.

Chapter 3

Characteristics of the Colorado Valley Transit Region

An important first step in evaluating the market demand and potential for existing and future transit service within the counties served by CVTD is the understanding of existing and projected socio-demographic conditions and other characteristics. Familiarity with the characteristics of the transit market is useful to continuing to provide an attractive transportation alternative, especially for those with no other form of transportation available, while identifying potential new transit service markets.

Socio-Demographic Analysis Methodology

To fully understand the existing need for public transit, it is necessary to assess the socio-demographic conditions and characteristics of the four-county service area. Questions relating to population growth or decline, employment projections, vehicle availability, and other demographic attributes must be answered prior to assessing transportation service demand and needs.

To analyze the population in the CVTD service area, the 1990 and 2000 US Decennial Census was used as base socio-economic and demographic data. Given the demographic changes to the region over the past decade, more recent estimates and data forecasts were needed to perform accurate socio-demographic characteristics analysis. To complement the 1990 and 2000 Census data, the 2006 and 2009 U.S. Census Bureau's Annual Population Estimates data and H-GAC's 2005 and 2035 forecasted population and employment data were collected and analyzed.

The Census Bureau's Population Estimates Program publishes population numbers between censuses. Estimates from the Population Estimates Program are for the past, meaning in general, estimates released in a given year refer to the population on July 1 of the previous year. These estimates are consistent with the decennial census residence definition of usual residence and represent the Census Bureau's official estimates of updated census counts for these areas. H-GAC forecasted population and employment data represents the Metropolitan Planning Organization's future year projections. The 2005 and 2035 projections were based on 2000 U.S. Census base data and local data that were collected and analyzed. Projections for socio-demographic attributes are also based on past trends and may not be indicative of the actual change in population that will be seen in the 2010 U.S. Census. To monitor the population change, it will be important for CVTD to update the projection analysis on a periodic basis.

Data concerning certain population attributes, including vehicle available and age groups, are available at the County level from 1990 and 2000 Census data only. Other data sets, such as

ethnicity/race, and income, are also available as 2006 Estimates. There are no 2009 Estimates for these data sets presently available.

Specific data attributes in the CVTD socio-demographic analysis include the following:

- Population
- Ethnicity/racial composition
- Age characteristics
- Persons with Disabilities
- Employment
- Average household income
- Vehicle availability

Socio-Demographic Analysis

Population

Change in population from 1990 to 2009 for each of the four counties in the CVTD service area is shown in **Table 3.1**. The existing population for the CVTD study area is currently more than 125,000 people. The population has grown by almost 24,000 people (24 percent) in the past 19 years, which is lower than the historic rate of growth for the Houston region; during that same period the Houston region grew by 56 percent. The growth in Waller County (56 percent) has outpaced growth in the other three counties, with Austin County being the next fastest growing (37 percent), followed by Colorado County (12 percent), and Wharton County (3 percent).

Table 3.1: Historic Population Growth – 1990 to 2009

Year	Austin County	Colorado County	Waller County	Wharton County	Total CVTD
1990	19,832	18,383	23,390	39,955	**101,560**
2000	23,590	20,390	32,663	41,188	**117,831**
2006	26,407	20,824	35,185	41,475	**123,891**
2009	27,248	20,650	36,530	41,000	**125,428**
Total Estimated Growth 1990-2009	**7,416 (37%)**	**2,267 (12%)**	**13,140 (56%)**	**1,045 (3%)**	**23,868 (24%)**

Source: U.S. Census Bureau, 1990 and 2000 Census data; 2006 and 2009 estimates

As shown in **Table 3.2**, the CVTD service area is projected to grow by an estimated 60,000 people (49 percent) from 2005 to 2035. By comparison, this projected rate of population growth is less than the Houston region, which is projected grow by 67 percent during that same period. Waller County

is projected to be the fastest growing County within the study area (113 percent), followed by Austin County (36 percent), Colorado County (20 percent), and Wharton County (15 percent).

Table 3.2: Projected Population Growth – 2005 to 2035

Year	Austin County	Colorado County	Waller County	Wharton County	Total CVTD
2005	26,100	20,800	35,600	41,100	**123,600**
2035	35,600	25,000	75,700	47,300	**183,600**
Total Projected Growth 2005-2035	**9,500 (36%)**	**4,200 (20%)**	**40,100 (113%)**	**6,200 (15%)**	**60,000 (49%)**

Source: H-GAC 2005 and 2035 projections (rounded)

Figures 3.1 through 3.4 illustrate the existing (2005) and projected (2035) population for each county and the total CVTD service area, by Census tract.

Employment

As shown in **Table 3.3**, employment in the CVTD service area is projected to increase by approximately 18,900 (29 percent) from 2005 to 2035. During that same period, employment is projected to grow by 60 percent for the Houston region. Waller County is projected to have the fastest growth in employment within the study area (79 percent), followed by Austin County (34 percent), Colorado County (20 percent), and Wharton County (13 percent).

Table 3.3: Employment Projections – 2005 to 2035

Year	Austin County	Colorado County	Waller County	Wharton County	Total CVTD
2005	16,000	11,800	13,000	21,600	64,400
2035	21,500	14,100	23,300	24,400	83,300
Total Projected Growth 2005-2035	**5,500 (34%)**	**2,300 (20%)**	**10,300 (79%)**	**2,800 (13%)**	**18,900 (29%)**

Source: H-GAC 2005 and 2035 projections (rounded)

Figures 3.5 through 3.8 illustrate the existing (2005) and projected (2035) employment for each county and the total CVTD service area, by Census tract.

Figure 3.1: Austin County 2005 & 2035 Population by Census Tract

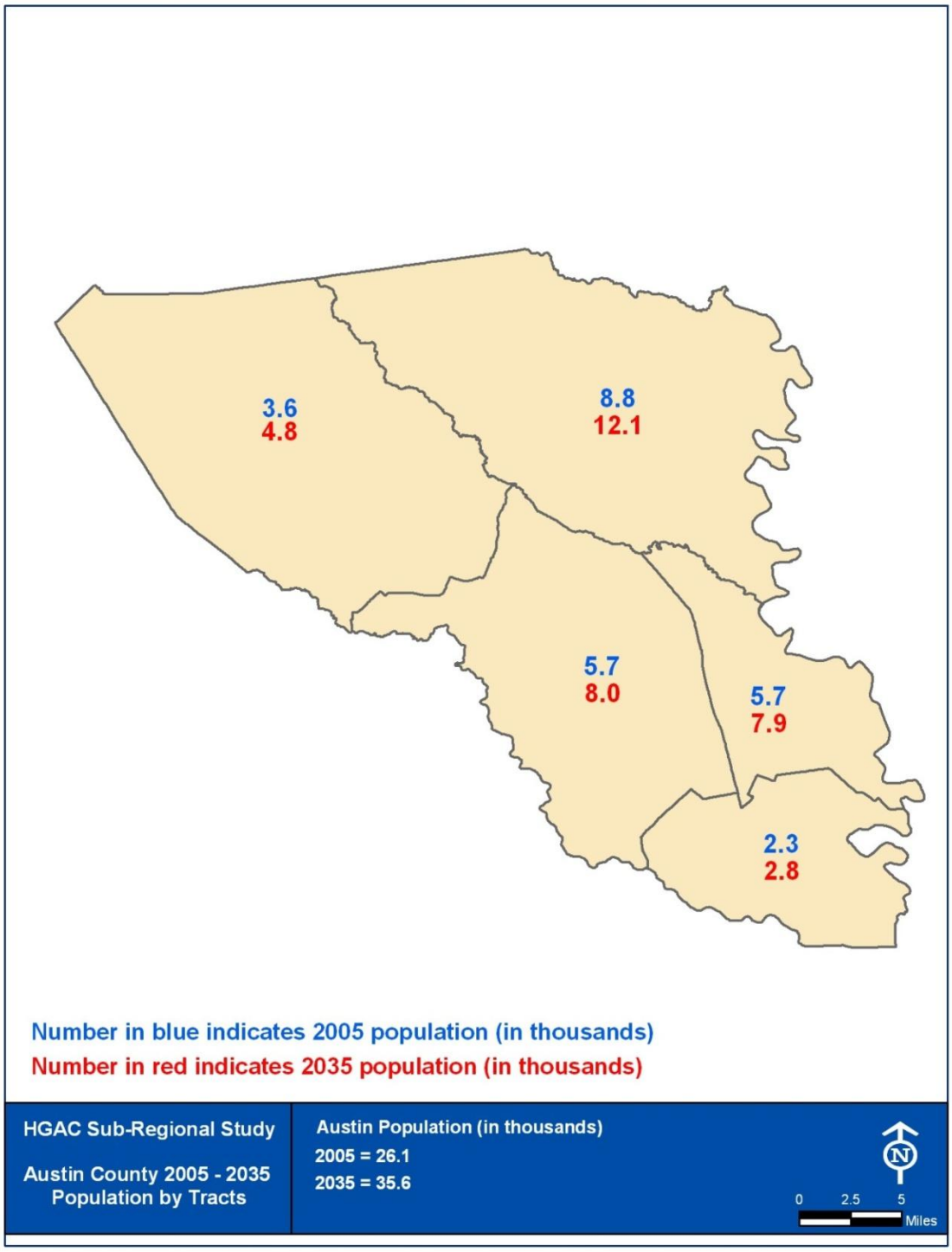


Figure 3.2: Colorado County 2005& 2035 Population by Census Tract

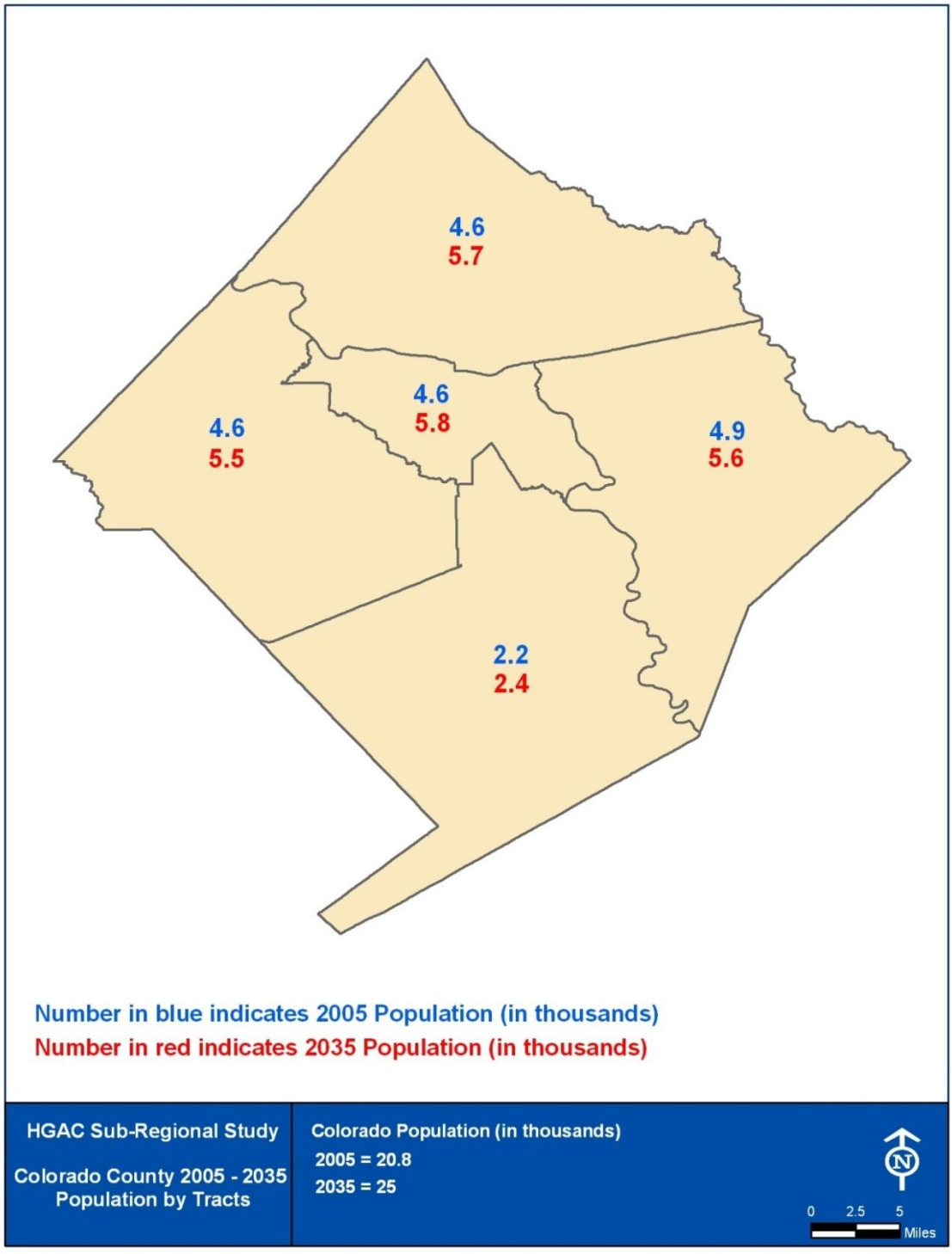


Figure 3.3: Waller County 2005 & 2035 Population by Census Tract

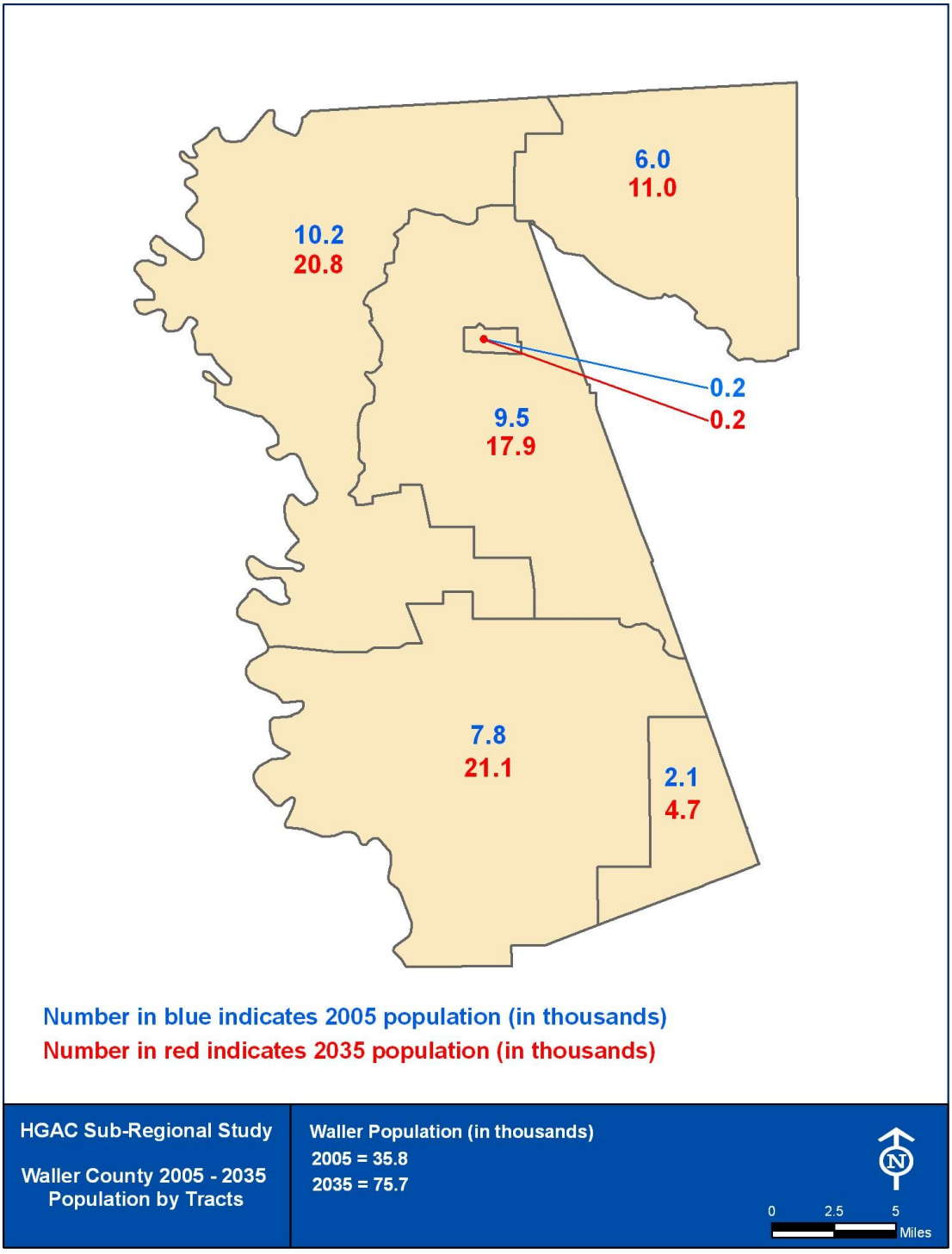


Figure 3.4: Wharton County 2005 & 2035 Population by Census Tract

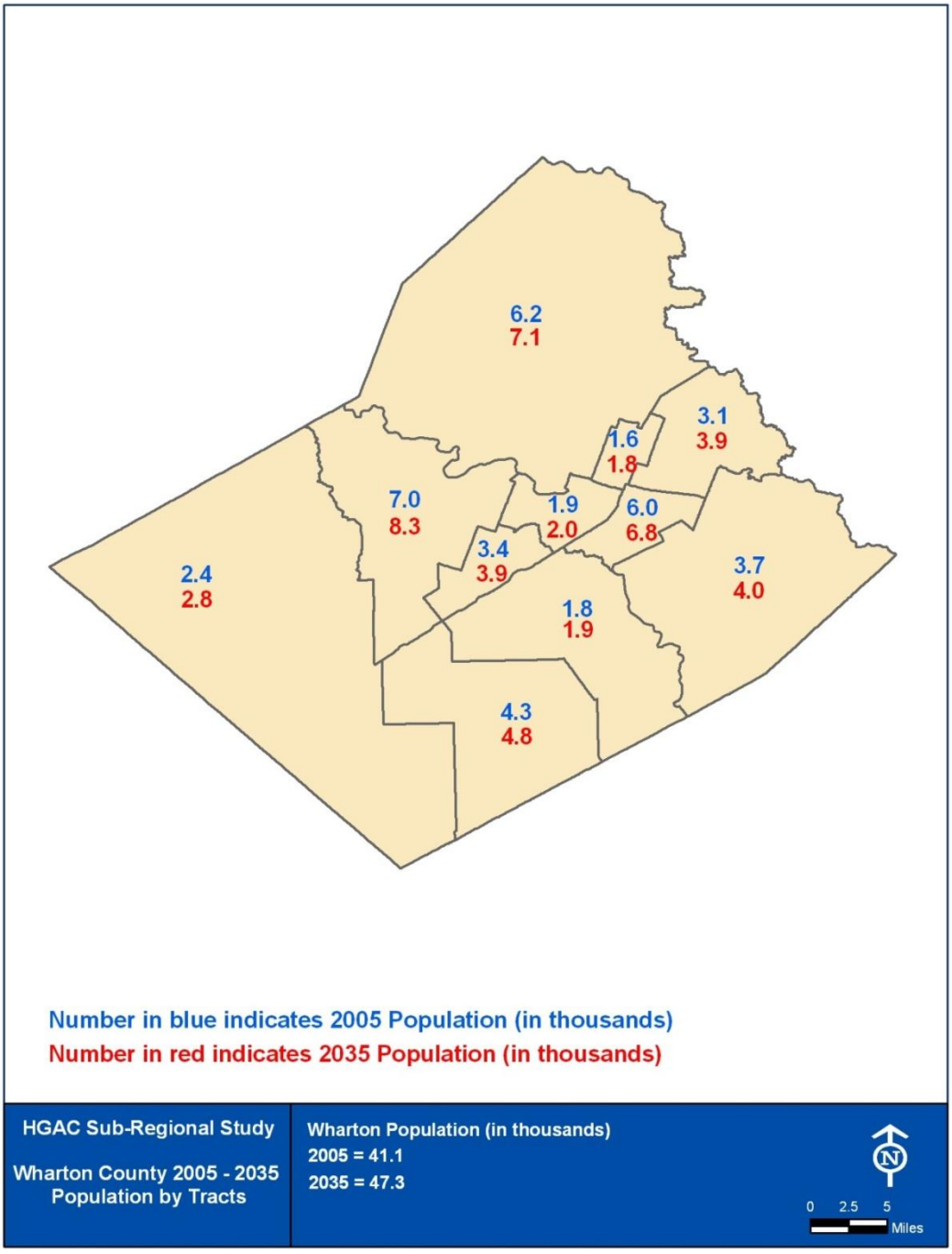


Figure 3.5: Austin County 2005-2035 Employment by Tracts

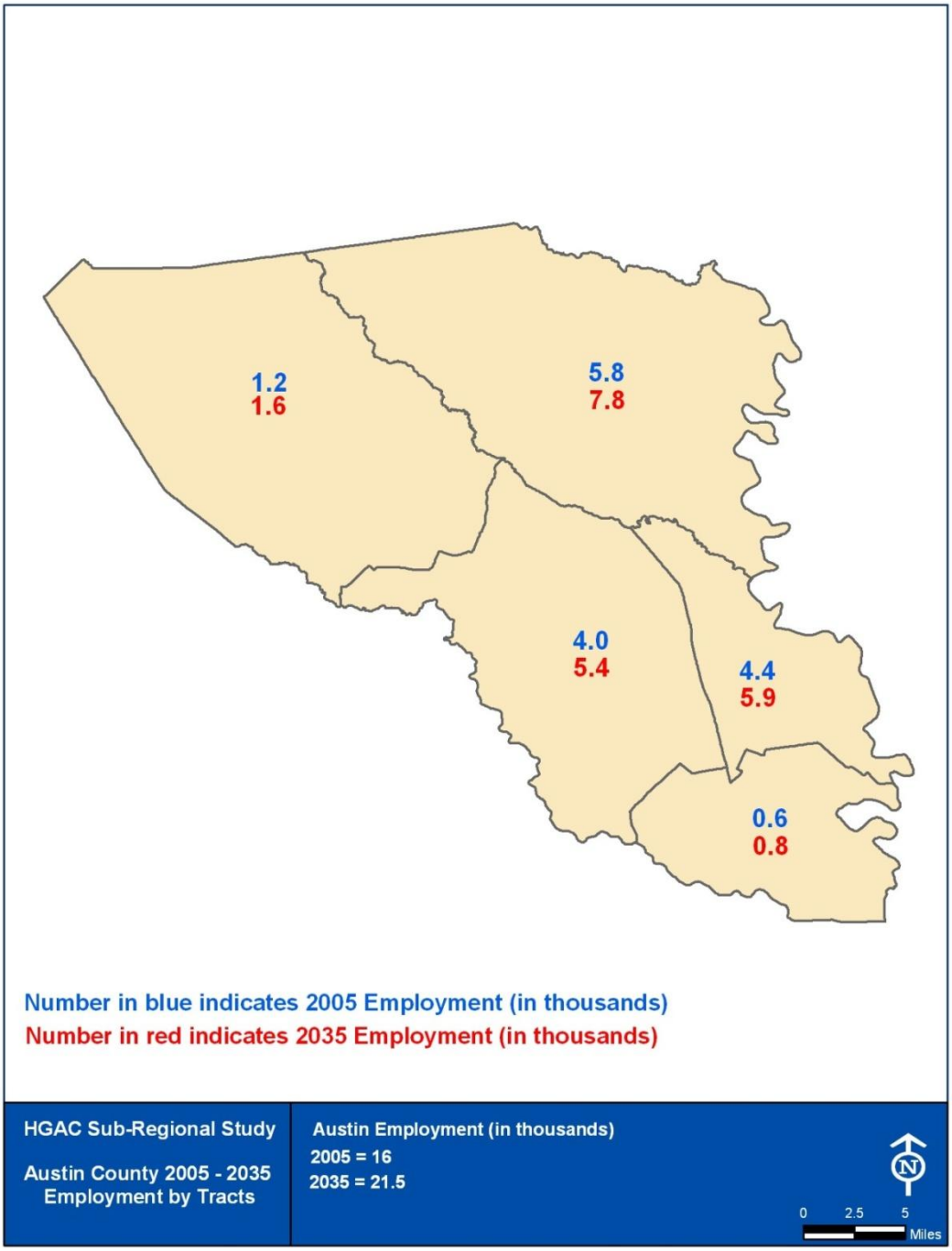


Figure 3.6: Colorado County 2005-2035 Employment by Tracts

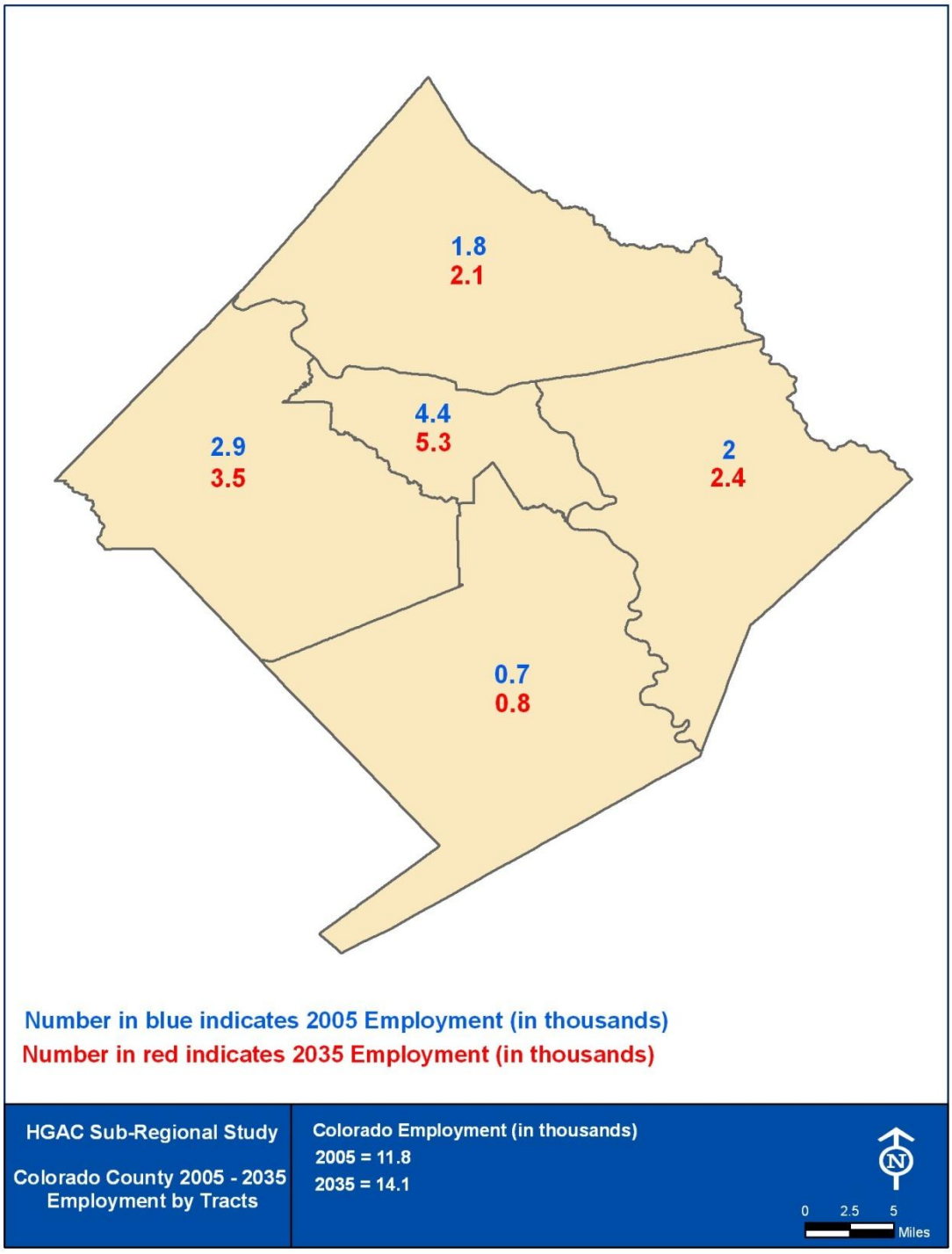


Figure 3.7: Waller County 2005-2035 Employment by Tracts

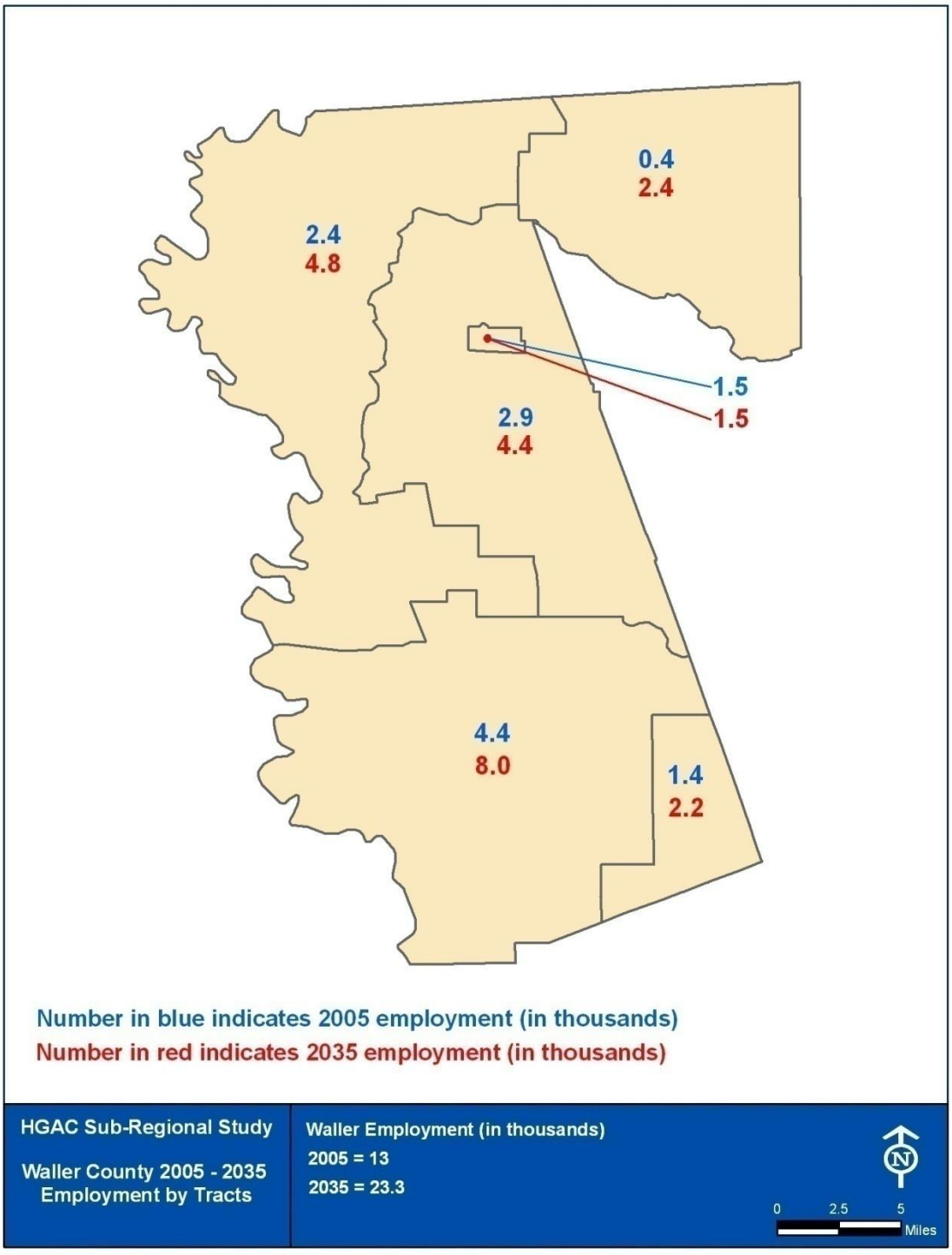
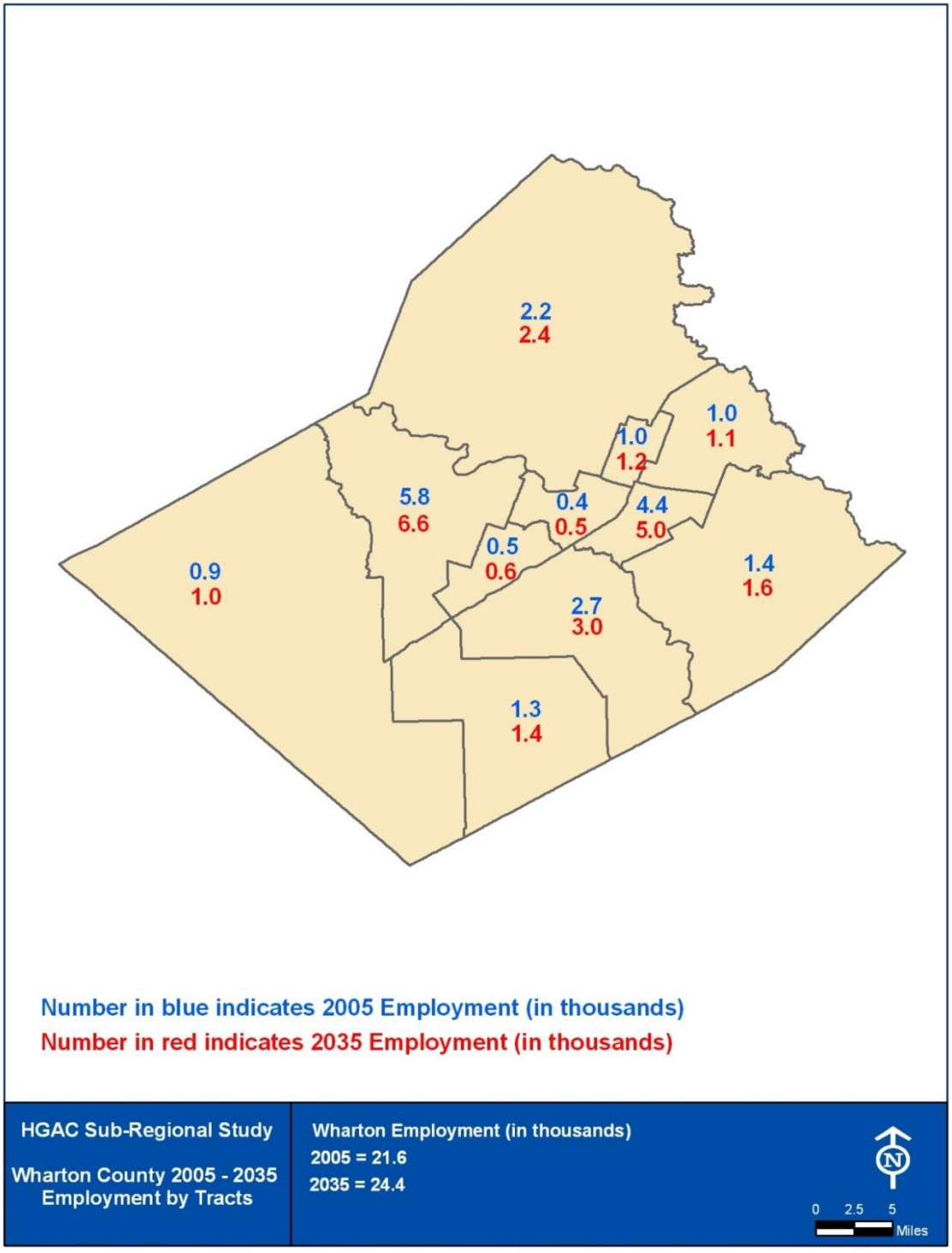


Figure 3.8: Wharton County 2005-2035 Employment by Tracts



Ethnic/Racial Composition

The largest ethnic/racial group within the CVTD service area is currently White (56 percent), followed by Hispanic (26 percent), and Black (16 percent). Since 1990, the ethnic/racial composition of the population in the area has changed, primarily in the following ways:

- The Hispanic population is growing faster than other groups; from representing 17 percent of the study area population in 1990, to 28 percent in 2009.
- The White population is growing more slowly than other groups. In 1990, White represented 62 percent of the population and by 2009 this had dropped to 54 percent.
- The proportion of the Black population within the study area declined from 20 percent to 16 percent. It is the only group which saw a decline in number, from 20,693 to 20,430.

Table 3.4 summarizes the ethnic/racial composition data for the CVTD service area.

Table 3.4: Ethnicity/Racial Composition

	White	Black	Hispanic	American Indian	Asia/Pacific Islander	Other	Total
1990	63,209 (62%)	20,693 (20%)	17,214 (17%)	128 (0.1%)	196 (0.2%)	120 (0.1%)	**101,560 (100%)**
2000	68,364 (58%)	20,993 (18%)	27,023 (23%)	112 (0.1%)	384 (0.3%)	955 (0.8%)	**117,831 (100%)**
2006	69,265 (56%)	20,280 (16%)	32,659 (26%)	254 (0.2%)	571 (0.5%)	862 (0.7%)	**123,891 (100%)**
2009	67,475 (54%)	20,430 (16%)	35,698 (28%)	263 (0.2%)	645 (0.5%)	917 (0.7%)	**125,428 (100%)**

Source: U.S. Census Bureau, 1990 and 2000 Census data; 2006 and 2009 estimates

Age Characteristics

Table 3.5 provides the breakdown of the population by age group for each of the four counties and the total CVTD service area. The population that tends to be the most transit dependent, those under 16 and over 64, represents approximately 37 percent of the total population in the study area (43,766 people). Wharton County has the greatest number of people under 16 and over 64 (16,045), followed by Waller County (10,468), Austin County (8,986), and Colorado County (8,267).

Table 3.5: Population by Age Group

Age Group	Austin County	Colorado County	Waller County	Wharton County	Total
0 - 15	5,490 (23%)	4,480 (22%)	7,391 (23%)	10,370 (25%)	**27,731 (24%)**
16-19	1,567 (7%)	1,417 (7%)	3,146 (10%)	2,943 (7%)	**9,073 (8%)**
20-24	1,253 (5%)	1,110 (5%)	3,731 (11%)	2,308 (6%)	**8,402 (7%)**
25-34	2,563 (11%)	1,939 (10%)	3,980 (12%)	4,570 (11%)	**13,052 (11%)**
35-44	3,684 (16%)	2,923 (14%)	4,606 (14%)	6,231 (15%)	**17,444 (15%)**
45-54	3,275 (14%)	2,665 (13%)	4,168 (13%)	5,424 (13%)	**15,532 (13%)**
55-64	2,262 (10%)	2,069 (10%)	2,564 (8%)	3,667 (9%)	**10,562 (9%)**
65-74	1,774 (8%)	1,932 (9%)	1,771 (5%)	3,021 (7%)	**8,498 (7%)**
75+	1,722 (7%)	1,855 (9%)	1,306 (4%)	2,654 (6%)	**7,537 (6%)**
Total	**23,590 (100%)**	**20,390 (100%)**	**32,663 (100%)**	**41,188 (100%)**	**117,831 (100%)**

Source: US Census Bureau, 2000 Census data

Persons with Disabilities

For persons with disabilities, a lack of available transportation options that accommodate their disabilities could be a challenge that demands unique transit services. According to the CVTD study area, the average for persons with disabilities is approximately 16 percent of the population. Colorado County has the highest percentage of persons with disabilities; approximately 18.1 percent.

The 1990 census data tracked disabled population differently than in 2000 and because of the inconsistencies between the data collection methods, only 2000 numbers are presented in **Table 3.6** below.

Table 3.6: Disability Data

Age Group	Austin County	Colorado County	Waller County	Wharton County	Total
5 to 15 years:	159	115	255	314	**843**
16 to 20 years:	150	185	479	395	**1,209**
21 to 64 years:	2,377	1964	3,888	4,284	**12,513**
65 to 74 years:	609	653	548	1,053	**2,863**
75 years and over:	878	832	744	1,431	**3,885**
Total Population (% disabled)	**23,590 (7.7%)**	**20,390 (18.3%)**	**32,663 (18.1%)**	**41,188 (18.1%)**	**(18.1%)**

Source: US Census Bureau, 2000 Census Data

Median Household Income

The median household income for each of the four counties and the total CVTD service area is shown in **Table 3.7.** In 1990, the average total median household income was $23,017, increasing to $46,763 by 2006. Overall, the median household income more than doubled between 1990 and 2006. Austin County has the highest median income ($53,186) and saw the greatest increase (112 percent). Conversely, Colorado County exhibits the lowest median income ($38,486) and saw the lowest increase (85 percent).

Table 3.7: Median Household Income

	Austin County	Colorado County	Waller County	Wharton County	Total
1990	$25,043	$20,795	$22,334	$23,896	**$23,017**
2000	$38,615	$32,425	$38,136	$32,208	**$35,346**
2006	$53,186	$38,486	$46,382	$48,996	**$46,763**
Change 1990 - 2006	**$28,143 (112%)**	**$17,691 (85%)**	**$24,048 (108%)**	**$25,100 (103%)**	**$23,746 (103%)**

Source: U.S. Census Bureau, 1990 and 2000 Census data; 2006 estimates (2009 estimates are not yet available for income)

Vehicle Availability

Data relating to the availability of vehicles is an important factor in terms of identifying individuals or potential market sectors that rely on alternate forms of transportation. In some cases, an individual is able to walk or share a ride to their destination; however, a well-coordinated transit network may be able to help meet an individual's overall transportation needs.

Of the total 41,744 households in the CVTD service area, approximately nine percent (3,556) of households reported "no-vehicle available". Without available public transportation, transportation options for these households are to walk, cycle, share a ride with a friend or family, or hire a private taxi other transportation service if available.

As is shown in **Table 3.8**, Wharton County reported the highest incidence of households without a vehicle available (1,407 households). Colorado County reported the second highest number of households without a vehicle (765).

Table 3.8: Vehicle Availability per Household

	Austin County	Colorado County	Waller County	Wharton County	Total
No Vehicles	635 (7%)	765 (10%)	749 (7%)	1,407 (10%)	**3,556 (9%)**
1 Vehicle	2,481 (28%)	2,398 (31%)	3,659 (35%)	5,408 (37%)	**13,946 (33%)**
2 Vehicles	3,670 (42%)	3,070 (40%)	4,354 (41%)	5,601 (38%)	**16,695 (40%)**
3 or more Vehicles	1,961 (22%)	1,408 (18%)	1,795 (17%)	2,383 (16%)	**7,547 (18%)**
Total Households	**8,747 (100%)**	**7,641 (100%)**	**10,557 (100%)**	**14,799 (100%)**	**41,744 (100%)**

Source: US Census Bureau, 2000 Census data

Potential High Demand Areas

Trip Attractors and Generators

Trip attractors and generators are origins and destinations which represent significant concentrations of potential transit trips within the CVTD four-county area. Examples of trip attractors include major employment centers such as hospitals, shopping malls, and commercial retail centers. Trip generators include complexes and facilities which generate a significant number of trips due to a high concentration of potential transit users, such as multiple family apartment complexes, nursing homes and retirement centers, university housing complexes, and other densely populated areas. All four counties have major attractors that are sparsely scattered throughout each county. Understanding the relationship between attractors and generators is important for identifying potential transit service adjustments for CVTD.

Major Employers

Major employers have a critical economic impact and are vital to the sustainability of the community. Employment centers are important local trip destinations for employees that may utilize transit services, if provided. The major employers within the CVTD service area are defined as companies with 100 or more employees and include the agricultural, manufacturing, education, medical, and retail sectors. The major employers in the study area are identified in **Table 3.9**.

Austin County Major Employers

Company	Type
BAE Systems	Engineering
Brazos ISD	Education
Belliville ISD	Education
Sealy ISD	Education
Systems Painters & Drywall LP	Construction
Bellville Tube Co	Manufacturing
Colonial Bell Sealy Nursing Home	Health Services
Austin County Courthouse	Government
Bellville General Hospital	Health Services
Hydro Conduit	Manufacturing
River Ridge Golf Club	Entertainment
San Bernard Electric	Utilities
Wal-Mart	Retail
Western International Gas	Utilities
Weyerhaeuser Co.	Manufacturing

Colorado County Major Employers

Company	Type
Colorado-Fayette Medical Center	Health Services
Columbus Community Hospital	Health Services
Diversitech Corp	Manufacturing
Drymalla Construction CO Ltd	Construction
Hanover Compressor Co	Manufacturing
Rice Medical Center	Health Services
River Oaks Health Care Ctr	Health Services
Walmart	Retail
Weimar ISD	Education
Weimer Manufacturing	Manufacturing
Columbus ISD	Education

Waller County Major Employers

Company	Type
Prairie View A & M University	Education
Paco Pumps Inc.	Manufacturing
Orizon Industries Inc.	Manufacturing
Brookwood Community	Health Services
Waller ISD	Education
Waller Village Shopping Center	Retail
Holiday World of Houston	RV Dealership
Hempstead ISD	Education
Monier Life Tile	Construction
Bettis Corp.	Manufacturing
Brookshire Nursing Center	Medical
HDH Instruments	Manufacturing
JW Williams Inc.	Manufacturing
Magnolia Gardens Nursery	Nursery
Sulzer Pumps USA Inc.	Manufacturing
Walmart	Retail
Rooms To Go	Distribution
Royal ISD	Education
Igloo	Distribution

Wharton County Major Employers

Company	Type
Boling ISD	Education
Cardell Cabinets	Carpentry
El Campo ISD	Education
El Campo Memorial Hospital	Medical
Garden Villa Nursing Home	Medical
Greenleaf Nursery	Nursery
East Bernard ISD	Education
Gulf Coast Medical Center	Medical
HEB Foods	Food Stores
IC Manufacturing Co.	Manufacturing
Key Energy Svc.	Utilities
Leedo Manufacturing	Manufacturing
Walmart Supercenter	Retail
Wharton ISD	Education
Tree Town USA Ltd.	Nursery
South Texas Medical Clinics	Medical

Table 3.9: Major Employers

Travel Demand and Transportation Corridors

Travel Demand

There is significant influence on the commuting patterns of travel in both directions between Houston and the CVTD service area. Journey-to-work data from the 2000 U.S. Census indicates that there are approximately 13,106 daily one-way trips from the CVTD service area into either Harris or Fort Bend Counties. There is also a reverse commuting trend, though to a much lesser degree. Approximately 4,451 one-way trips are made from Harris or Fort Bend Counties into Austin, Colorado, Waller, or Wharton Counties. The more substantial commuting patterns are found between counties that share a common boundary. However, there are trips that traverse more than one county as well. In addition to the employment-based commutes, are trips made for medical, social service, shopping, and entertainment.

Transportation Corridors

There are numerous transportation corridors that traverse the CVTD service area, which provide local access as well as regional connections to the Houston metropolitan area and beyond. These transportation routes include Interstate Highways, U.S. Highways, State Highways (SH), and numerous State Farm-to-Market (FM) and County maintained roads. Major transportation corridors in the study area include:

- Interstate 10 (I-10) – Traverses Colorado, Austin, and Waller Counties and passes through Katy, Harris County and the city of Houston;
- US 59 – Travels along a southwest to northwest path through Wharton and Fort Bend Counties, passing through Harris County;
- US 290 – Begins in Harris County at the North Loop I-610, passes through Waller County, and extends to the city of Austin, Texas.
- US 90A – Traverses Colorado, Wharton, Fort Bend, and Harris Counties.
- SH 36 –Traverses Austin and Fort Bend Counties.

The FM and county roads generally serve as feeder routes to the highly traveled highways serving CVTD's four counties and connecting to the city of Houston and other areas.

Most or all of the transportation corridors approaching Houston either exceed or are nearing their traffic carrying capacity during the am peak period (6:00am – 9:00am). For this and numerous other reasons (i.e. the need to reduce congestion, vehicle emissions, travel time, and travel expense) there is a substantial reason for a comprehensive regional commuter transportation system and a system of interconnecting bus transit lines. Given the existing commuting conditions, a regional urban light rail/commuter rail/park and ride system in addition to a well planned and coordinated system of

public transit could ultimately provide a much needed service for daily commuters while helping to eliminate growing parking, congestion, and air quality concerns.

Chapter 4

Existing Transit System Overview

Transit Operations Characteristics

As part of this study, the project team reviewed the 1996 Multi-County Commuter Service Study in addition to performing research, fieldwork, and stakeholder interviews as previously indicated. Currently CVTD operates service in Austin, Colorado, Waller, and Wharton Counties, and while most service provided is consistent between the four counties there are some variations. CVTD currently provides two types of service: demand responsive and deviated fixed route/link.

Demand responsive service is provided in all four counties, Monday through Friday from 8:00 am to 5:00 pm. CVTD's demand responsive operation is a door-to-door service that requires a 24 hour advanced reservation. In addition, CVTD provides scheduled trips to medical facilities and the Katy area.

Deviated fixed routes are comprised of LOOP circulators, which is service offered within the city, and LINK intra-county service, which is service that provides connections between 2 or more cities, connecting and currently operating in three counties: Austin, Colorado, and Wharton. Waller County currently only has demand response service; however, future deviated fixed route LOOP service is planned for the cities of Brookshire, Hempstead, Prairie View, and Waller. In Austin County, deviated fixed route service is provided in Sealy and Bellville with LINK service provided between Bellville, Sealy, Wallis, and San Felipe. In Colorado County deviated fixed route service is provided in Columbus, Eagle Lake, and Weimar. Wharton County deviated fixed route service is provided in El Campo and Wharton, and LINK service operates between El Campo and Wharton. Of the current routes in service four were recommended in the 1996 Multi-County Commuter Service Study.

Table 4.1 shows the operating characteristics for each of the nine deviated fixed route/link routes in the CVTD system. Each route generally operates between nine and 11 hours each weekday. There is currently no service on Saturdays or Sundays. Trip frequency for each route is 60 minutes, except for the Austin – Bellville LOOP, which has a 30 minute trip frequency, and the Austin County LINK service, which has a 90 minute trip frequency. In total, the CVTD system operates 98 hours of service per day. The locations and route alignments of each of the nine fixed routes are shown in **Figures 4.1 to Figure 4.9.**

Table 4.1: Existing CVTD Deviated Fixed Route\Link Service – Operating Characteristics

Deviated Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Peak Buses	Head way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Bellville LOOP	23.4	6	35,802	120	1	120	6:30am - 5:30pm	11	$34.72	$381.92	2,805	$97,389.60
Wallis to San Felipe LINK	69.3	7	123,700	90	1	90	7:30am - 5:30pm	10	$34.72	$347.20	2,550	$88,536.00
Sealy LOOP	9.5	12	29,070	60	1	60	6:00am - 6:00pm	12	$34.72	$416.64	3,060	$106,243.20
Columbus LOOP	9.9	11	27,770	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Eagle Lake LOOP	10.4	11	29,172	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Weimar LOOP	8.6	11	24,123	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
El Campo LOOP	20.3	11	56,942	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Wharton LOOP	14.2	11	39,831	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
El Campo to Wharton LINK*	37.8	6	57,834	90	1	90	7:30am - 5:30pm	10	$34.72	$347.20	2,550	$88,536.00
TOTAL FIXED ROUTE		**86**	**424,244**					**98**		**$3,402.56**	**24,990**	**$867,652.80**
TOTAL DEMAND RESPONSE	All Counties											$465,540.20
2008 Operating Expenses												$1,333,193
Demand Response per County												$116,385.05

$34.72 from 2008 TXDOT PTN

255 Operating Weekdays per year

* El Campo to Wharton LINK route not posted on CVTD website so cycle time and span of service was derived using similar service (Wallis to San Felipe LINK)

Figure 4.1: Existing Service – Austin County Bellville LOOP

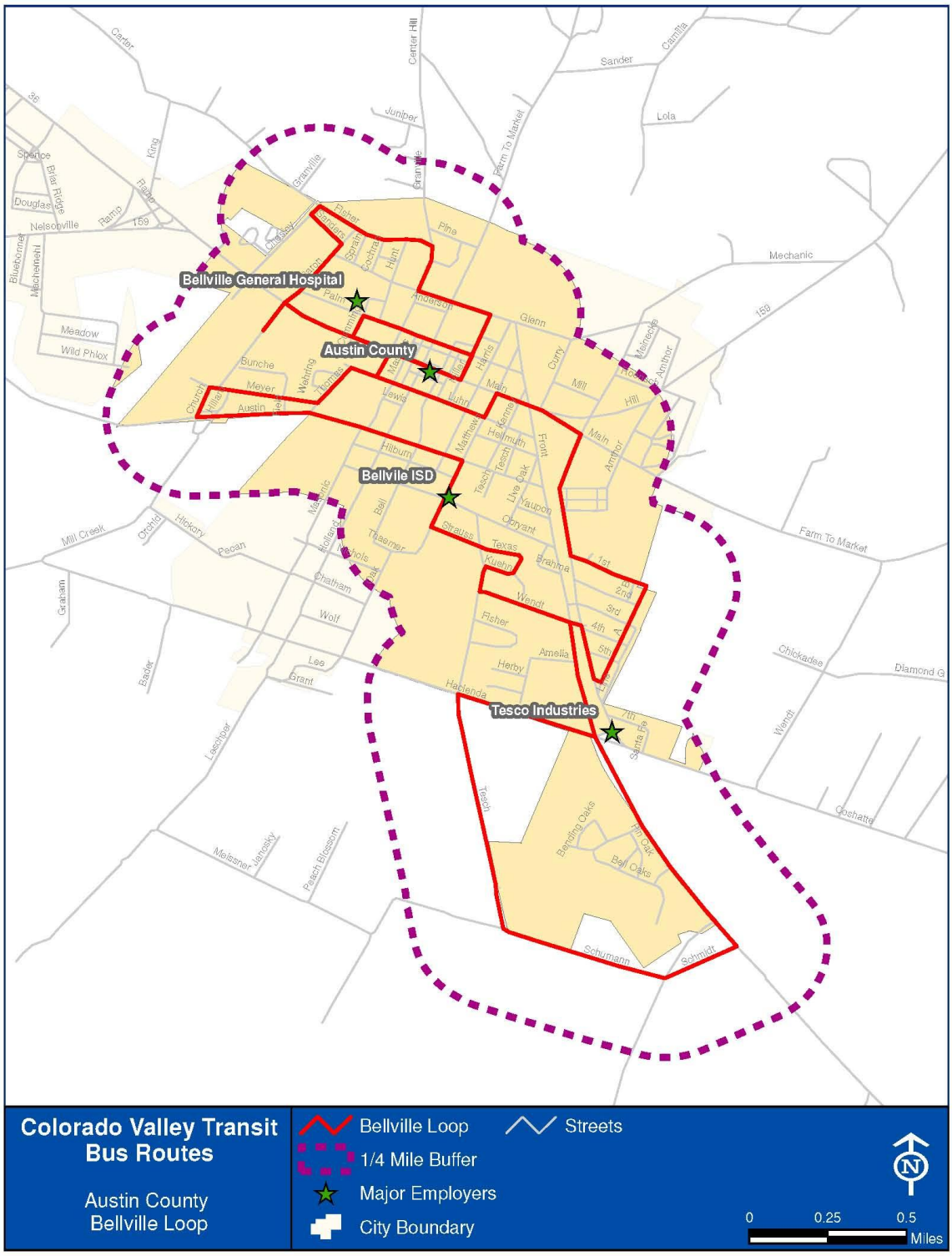


Figure 4.2: Existing Service – Austin County LINK Wallis – San Felipe

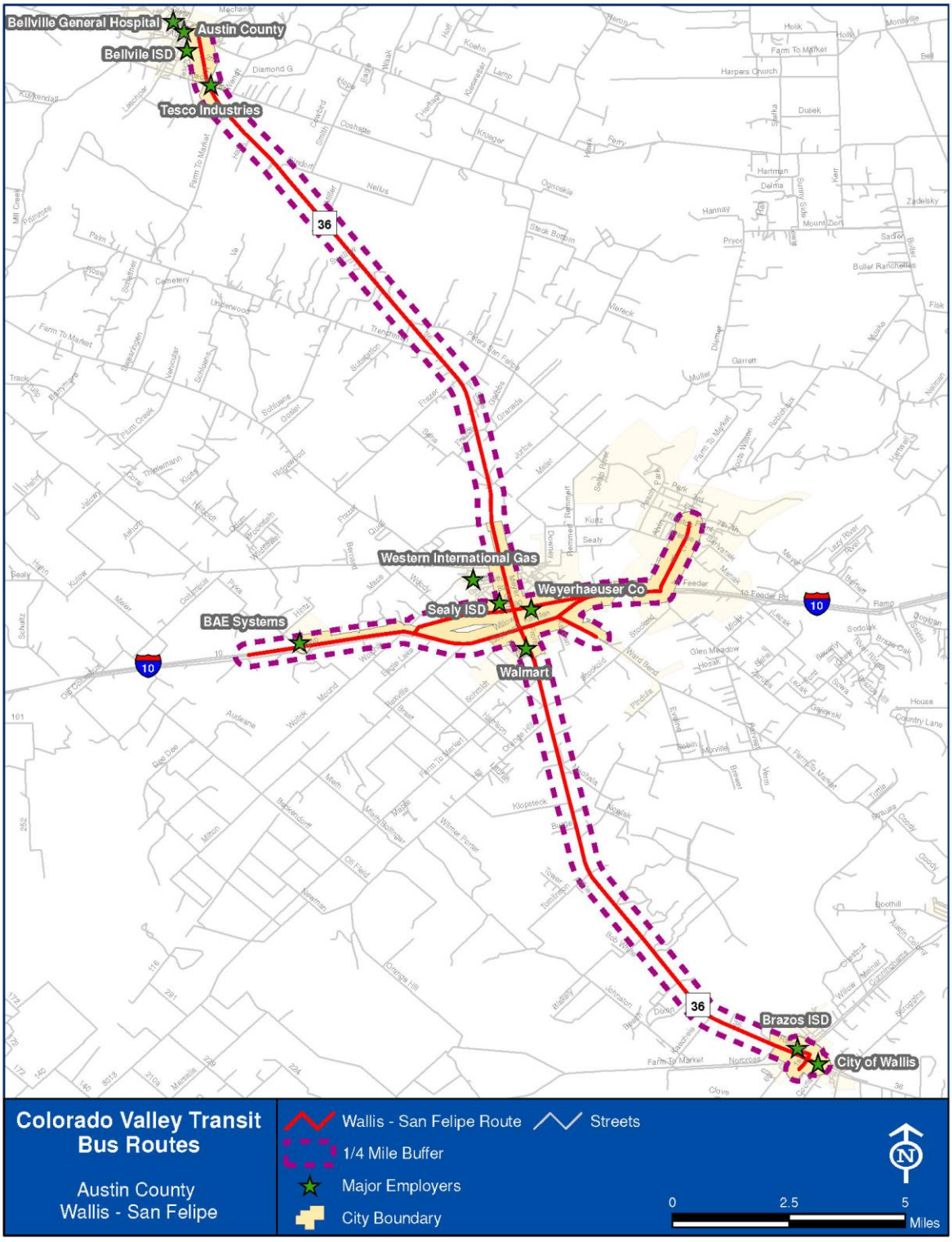


Figure 4.3: Existing Service – Austin County Sealy LOOP

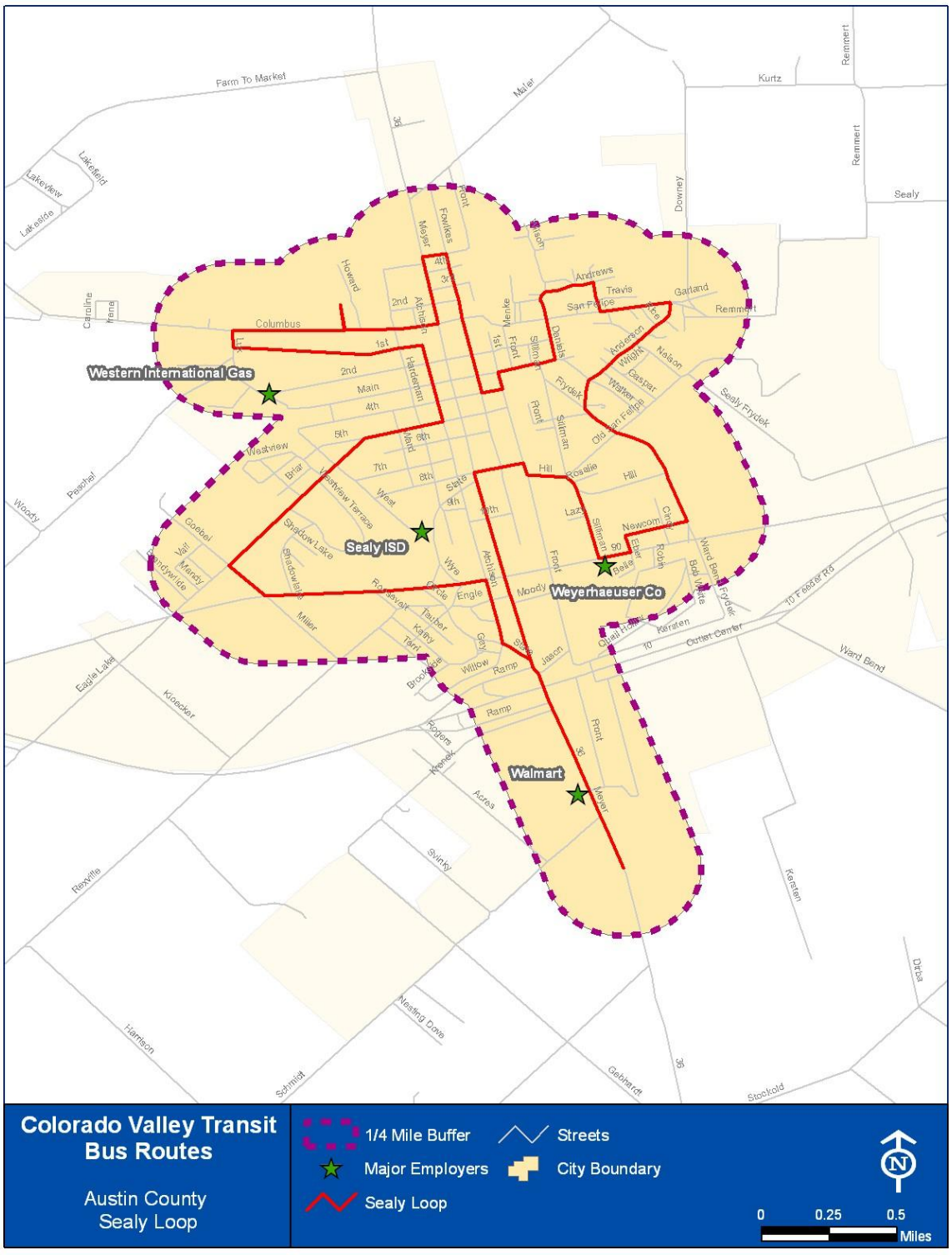


Figure 4.4: Existing Service – Colorado County Columbus LOOP

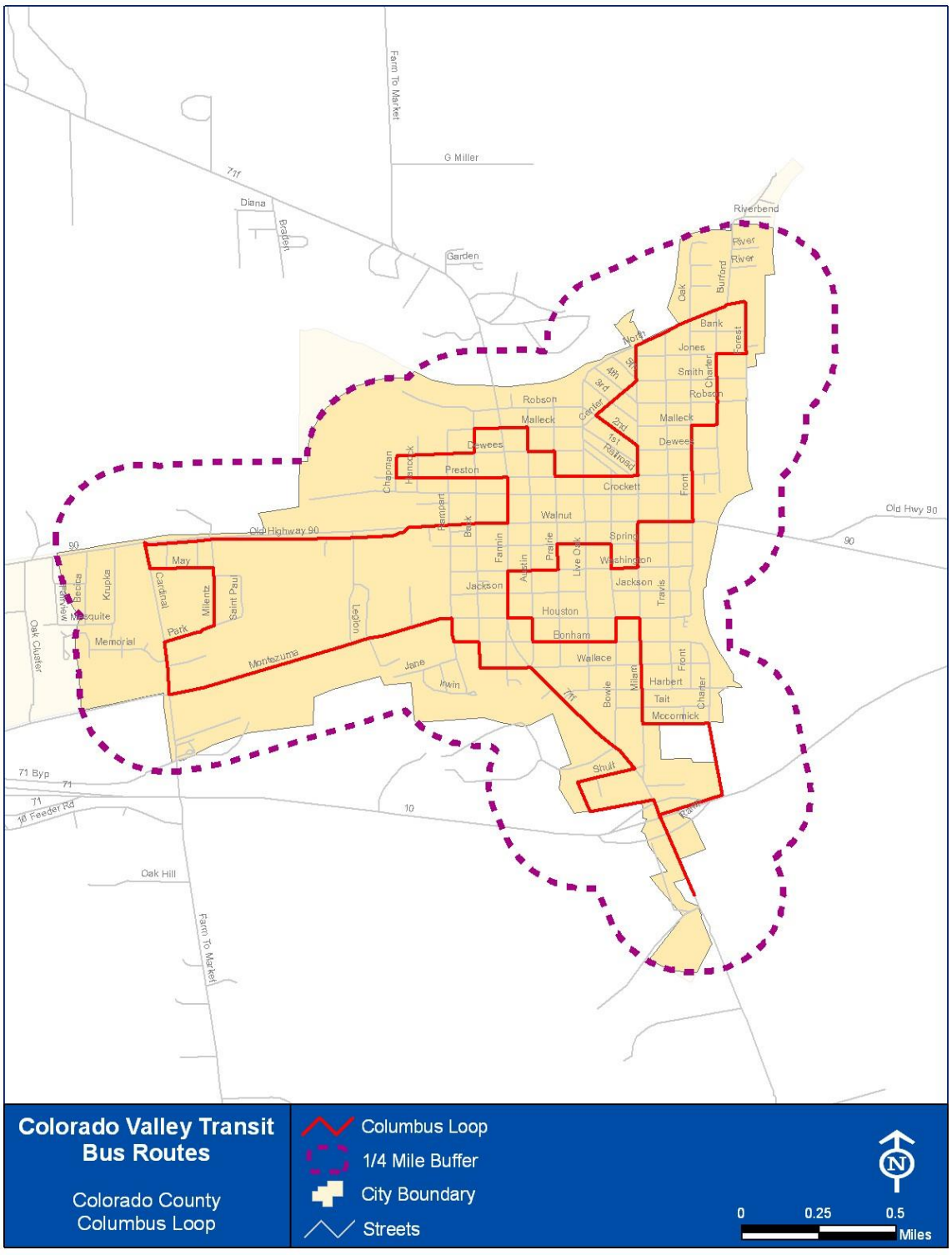


Figure 4.5: Existing Service – Colorado County Eagle Lake LOOP

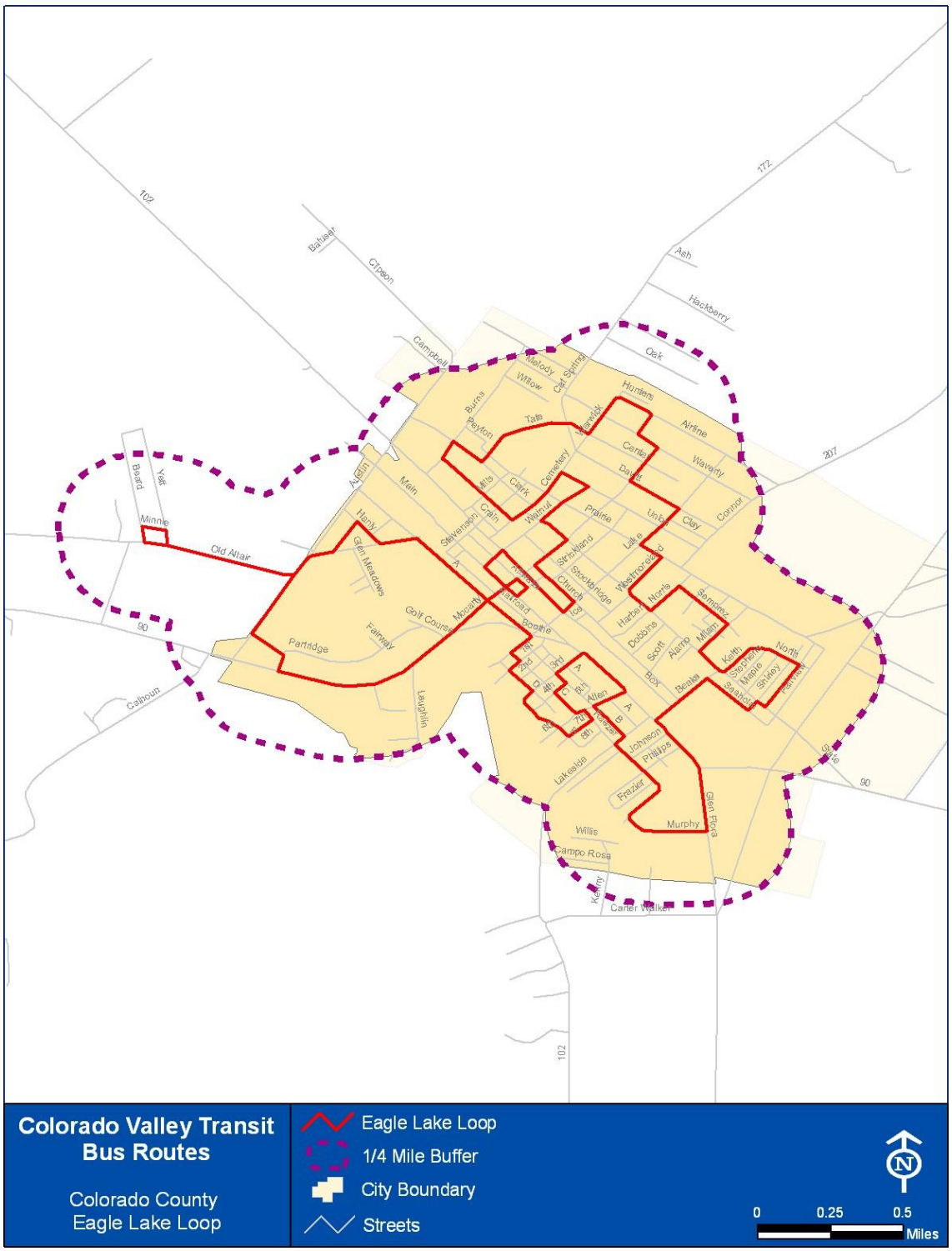


Figure 4.6: Existing Service – Colorado County Weimar LOOP

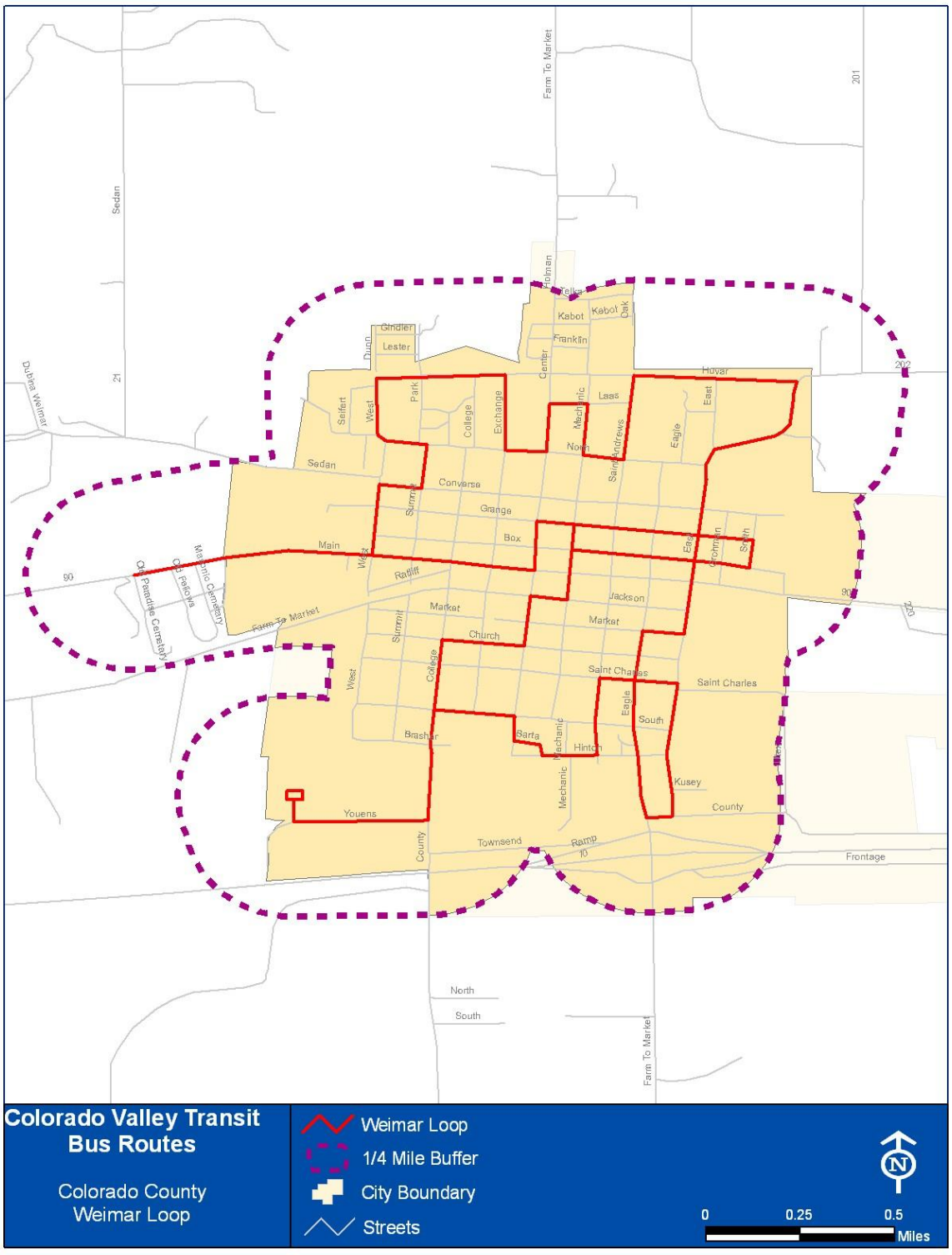


Figure 4.7: Existing Service – Wharton County El Campo LOOP

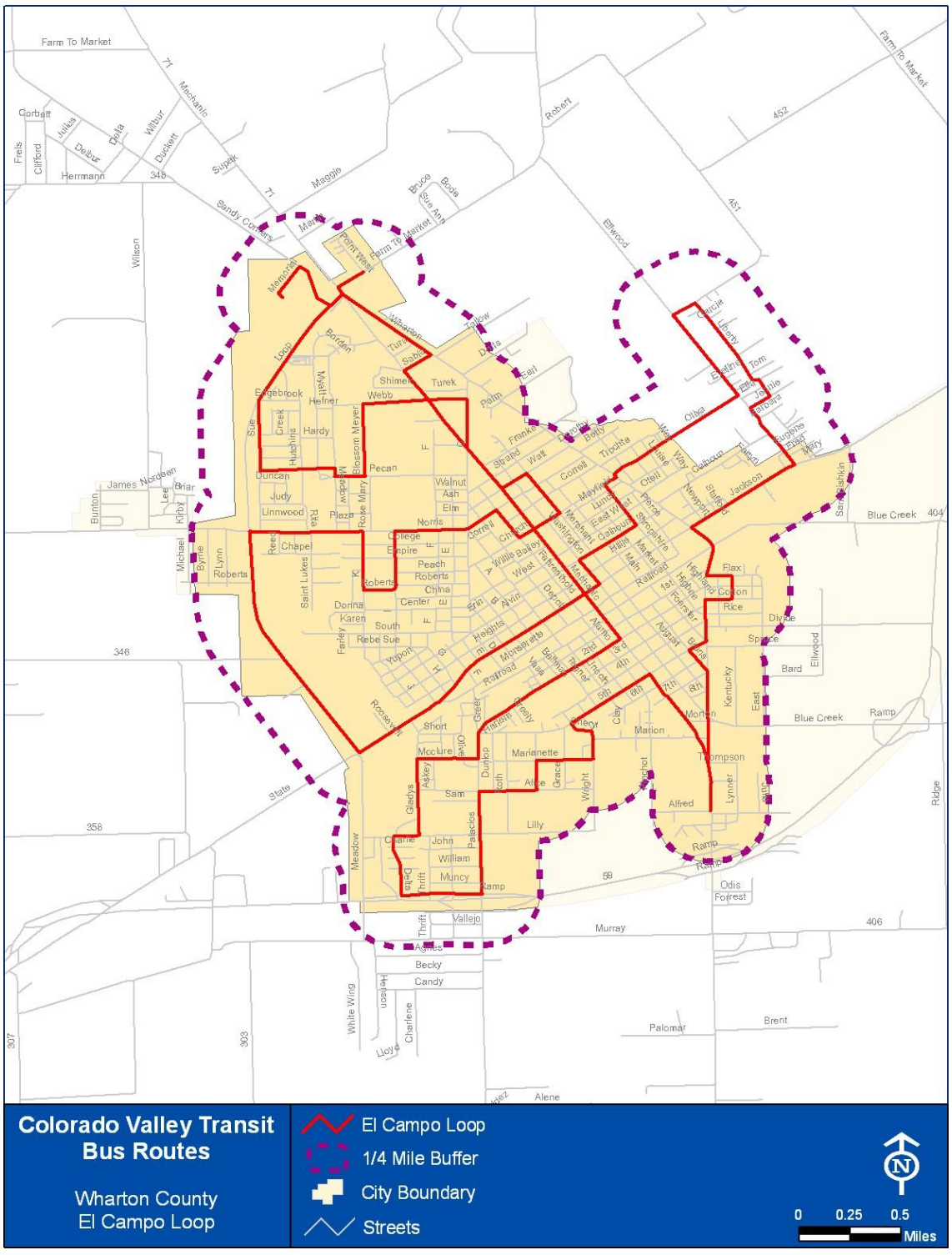


Figure 4.8: Existing Service –Wharton LOOP

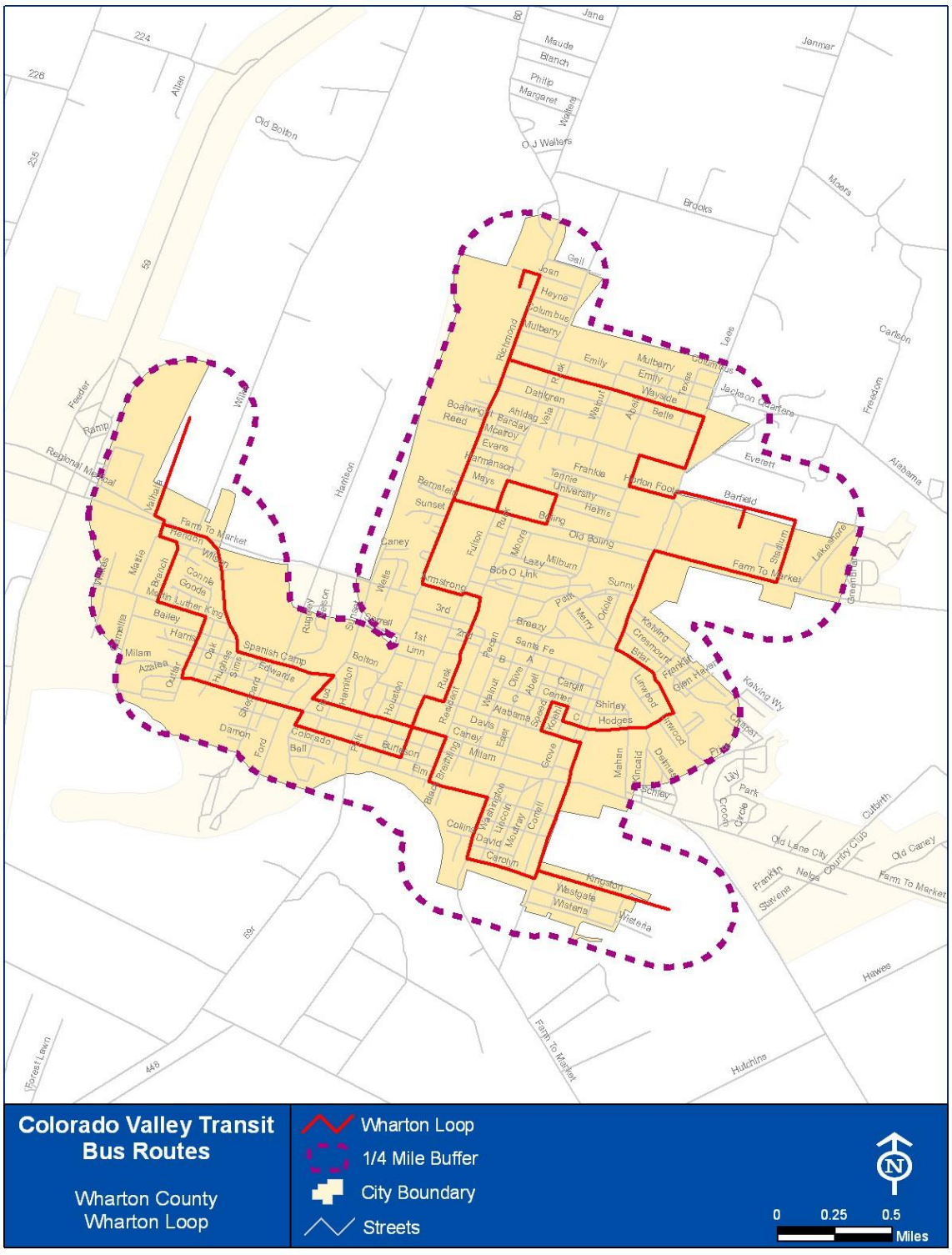
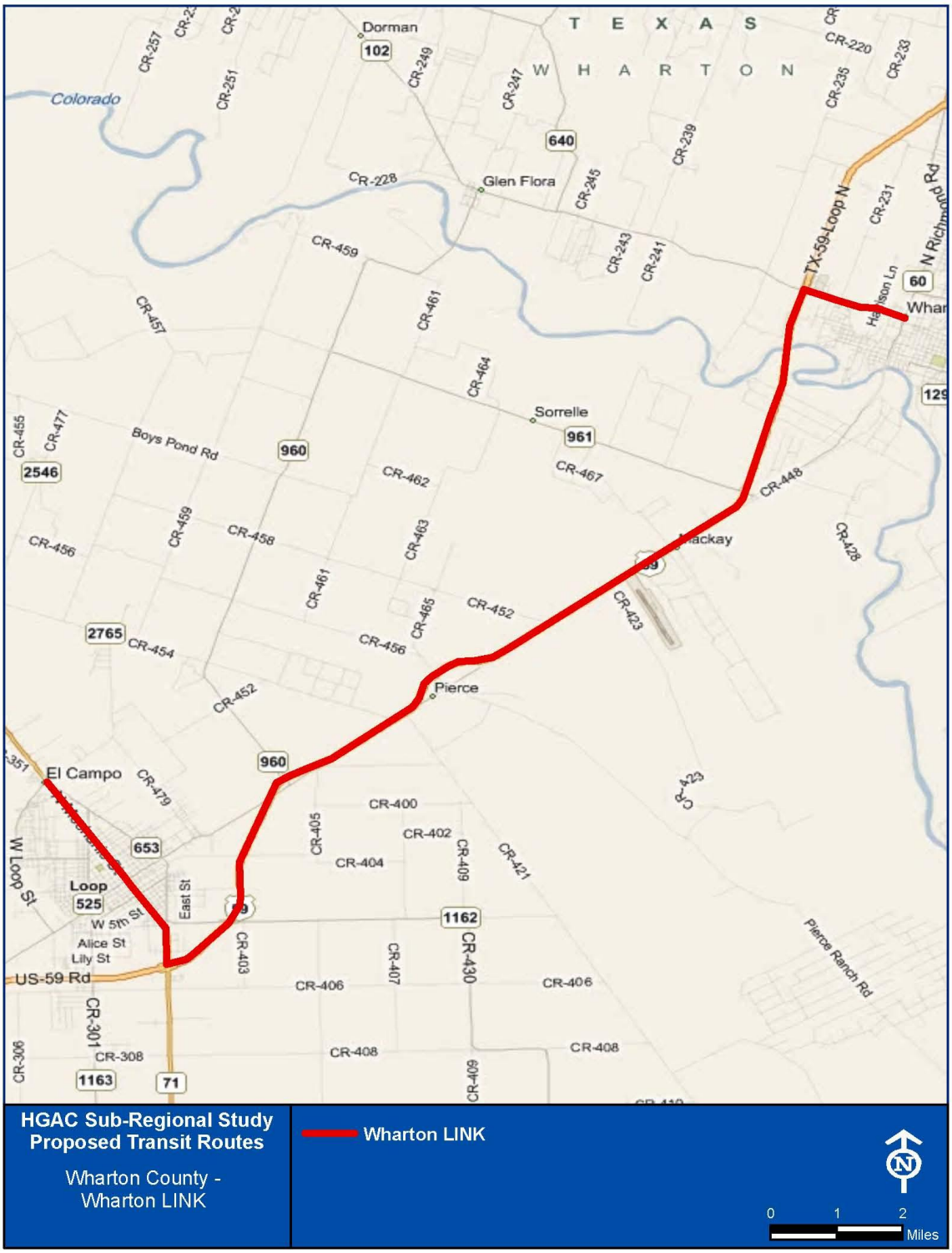


Figure 4.9 Existing Service: – Wharton LINK



Transit Fleet

Service is provided by CVTD's fleet of 29 vehicles, as summarized in **Table 4.2.** All 29 vehicles are para-transit type vehicles. While most of the vehicles in the fleet seat 20 passengers; the inventory also includes seven, 14, and 16 passenger vehicles. Each vehicle has surveillance cameras and mobile data computers with a fare card system for security and driver-dispatcher communication. Manual fare boxes with a vault are also installed in each vehicle for fare collection. Approximately one-third (33 percent) of the fleet is older than five years.

Table 4.2: CVTD Vehicle Inventory

Vehicle Year & Make	Quantity	Number of Seats	Lift Equipped
2003 Ford	1	20 passenger	Yes
2004 Chevrolet	7	7 passenger	No
2004 Ford	1	20 passenger	Yes
2005 Ford	4	20 passenger	Yes
2007 Ford	4	16 passenger	Yes
2008 Ford	5	14 passenger	Yes
2010 Ford	7	20 passenger	Yes
Total	**29**		

Source: CVTD, 2010

Administration and System Management

The administrative and maintenance operations for CVTD are located at the main transit center in Columbus, Texas. This 3,691 square foot facility was constructed in 1993 and includes offices for administrative, dispatch, and scheduling staff, maintenance bay with hydraulic lift, bus washing bay with manual equipment, storage, fueling, and parking. The facility bay was designed and constructed to accommodate future expansion, including automatic wash apparatus and improved mechanical service equipment. Currently, major repairs of vehicles are serviced on site by agency mechanics.

In addition to the facility in Columbus, CVTD maintains a field office in El Campo which provides a maintenance bay, manual vehicle wash equipment, storage, parking, and staff accommodations.

The main transit facility in Columbus is staffed with an Executive Director, Assistant Director, three full-time dispatchers, and several drivers. The centralized scheduling and dispatching of CVTD

service is managed at the main transit facility in Columbus. CVTD uses Trapeze's scheduling software.

Revenue and Expenditures

Funding for CVTD's service is provided primarily through the Federal Transit Administration (FTA) and other programs administered by the Texas Department of Transportation (TxDOT). Local revenues from Title 3 and Title 19 funds are received from aging programs, United Way, local Economic Development Corporation partnerships, private grants, and each of the four county governments.

Passenger fare revenue is another source of CVTD's funding. In FY 2008, a total of $89,163 was collected from the 76,306 passengers system-wide. Passenger fares are based on the origin and destination of each trip, as shown in the fare schedule in **Table 4.3**. Trips within a city are $1.00, trips within the same county are $2.00, and trips from one county to another county are $5.00. Passengers currently can purchase advance tickets in books of 20 or books of 10. However, a fare system will be installed in buses. Pre-registered senior citizens (age 60 and over) in Austin and Waller Counties ride free.

Table 4.3: CVTD Fare Schedule

Local One-Way Trip	Fare per Stop
Intra City	$1.00
Intra County	$2.00
Inter County	$5.00
Inter Regional	Varies

Source: CVTD, 2010

In FY 2008 TxDOT allocated $175,530 in grants for CVTD vehicle procurement, $759,955 in Federal Section 5311funds (non-urbanized area transportation program) and state general revenue funds, and $117,020 in Federal Section 5310 funds (elderly and disabled persons transportation program).

CVTD reported to TxDOT's Public Transportation Division (PTN) the following sources of revenue for FY 2008:

- Fare revenues $89,163
- State funds $387,030
- Federal funds $516,325

- Contract Revenue $541,215
- Other Revenue (Local) $128,052

The total revenue received during FY 2008 was **$1,661,785**.

A summary of local revenue collected between 2002 and 2008 is provided in **Table 4.4**.

Table 4.4: CVTD Local Revenue

	2002	2003	2004	2005	2006	2007	2008
Annual Farebox Revenue	$32,864	$38,133	$33,644	$40,414	$52,887	$66,982	$89,163
Annual Local Revenue (Other)	NR	NR	$523,889	$548,744	$633,195	$88,597	$669,267
Annual Revenue	$32,864	$38,133	$557,533	$589,158	$686,082	$155,579	$758,430

Source: TxDOT, Texas Transit Statistics Reports, 2002 – 2008

CVTD applies for and receives funds each year from FTA. These funds are for non-urbanized area programs (5311), Elderly and Persons with Disabilities Program (5310), and Job Access and Reverse Commute (JARC) program (5316). They are also eligible for other federal funding grants including but not limited to New Freedom (5317). These grants depend on the qualifying projects being implemented.

Although CVTD receives funding from various sources, sustainability of service is of major concern to the transit district. Historically, pilot services have been initiated by CVTD with funds having limited timeframes, such as grants administered through the Congestion Mitigation and Air Quality (CMAQ). Potential alternative funding strategies are recommended in Chapter 6 of this report.

Transit system expenditures are typically summarized in three categories: administration, operations, and capital. Generally operations is the highest expense associated with most transit systems as a result of the extensive labor needs to fulfill daily operations requirements such as operating and maintaining vehicles. Unless there are significant transit service adjustments, operations and administration costs are generally constant year after year, with some small incremental changes due to inflation and other economic factors. Capital expenses can fluctuate from year to year depending upon a transit operator's capital needs and available funding resources. Capital needs may include new facility construction or rehabilitation, as well as new transit vehicles either for replacement or service expansion. CVTD operating expenditures are provided in **Table 4-5**.

Table 4.5: CVTD Operating Expenditures Summary

Fiscal Year	Total Operating Expense
2002	$ 807,911
2003	$ 904,700
2004	$ 1,555,469
2005	$ 1,377,325
2006	$ 1,661,246
2007	$ 1,036,588
2008	$ 1,333,193

Source: TxDOT, Texas Transit Statistics Reports, 2002-2008

Chapter 5

Existing Transit System Performance Evaluation

Goals and Objectives

CVTD has identified the following goals and objectives, which will provide a basis for evaluating existing transit service:

Goal 1: Provide efficient, reliable, and convenient transit service to persons with no means of transportation available.

Objectives

- Evaluate the existing route structure to identify target areas to provide transit service.
- Make necessary adjustments to the routes in the service area to improve coverage and ridership.
- Monitor ridership changes resulting from route adjustments/consolidations and make further refinements as necessary to maximize ridership.

Goal 2: Provide convenient access to major activity centers and special transit attractors/generators.

Objectives:

- Preserve and enhance the service coverage of routes throughout the four-county service area.
- Align routes with close proximity to major activity centers and special transit attractors and generators.
- Continue reciprocal agreements with activity centers and special transit attractors and generators.
- Continue provisions for bus stops and shelters, bus circulation, and pedestrian amenities.

Goal 3: Utilize CVTD resources in a sound and fiscally responsible manner.

Objectives:

- Continue TxDOT service standards and performance measures to maintain acceptable cost-effectiveness ratios.
- Closely monitor and manage fare revenues relative to operating expenses.
- Utilize local funding to leverage the maximum amount of federal and state funding assistance.
- Implement innovative funding strategies identified within the CVTD Transit Plan.
- Establish partnership with local agencies to solicit sponsorship and funding assistance.

Goal 4: Enhance regional mobility for elderly and disabled persons.

Objectives:

- Continue to provide convenient and reliable transportation services to meet the health, public, and social service needs of elderly and disabled persons.
- Ensure that all capital improvements adhere to the Americans with Disabilities Act (ADA) requirements and increase the accessibility of the system to persons with disabilities and mobility concerns.
- Continue a program to attract and encourage ADA passengers to utilize the deviated fixed route system, such as passenger education, driver training, and enhanced accessibility.
- Continue partnerships with health and social service agencies to sponsor marketing and incentive programs for transit ridership.
- Continue to provide ridership incentives through agency-sponsored monthly or annual bus passes and other ridership programs.

Existing Transit Service Performance

The performance evaluation of the existing CVTD transit system was competed at the system-level, based upon the following TxDOT performance measures:

- ***Total annual unlinked passenger trips*** – Total number of passengers that board a CVTD vehicle during the fiscal year.
- ***Operating expense per unlinked passenger trip*** – Total cost to operate the route divided by the number of boardings in the fiscal year.
- ***Passengers per revenue mile*** – Total sum of passengers to board a bus divided by the sum of revenue miles operated on the route.
- ***Operating expense per revenue mile*** – Value calculated by dividing the total cost to operate the route divided by the total number of revenue miles.
- ***Passengers per revenue hours***– Value calculated by dividing the total number of passengers by the total number of revenue hours needed to operate the route.
- ***Operating cost per revenue hour*** – Total dollars needed to operate the service divided by the number of revenue hours provided.
- ***Total annual operating cost*** – Operating cost per revenue hour multiplied by the total number of hours needed to provide the service.
- ***Total revenue vehicles*** – Quantity of vehicles needed to operate daily service;

Most of the operating data analyzed as part of this study are drawn from the TxDOT Public Transportation Division's 2002-2008 Texas Transit Statistics Reports.

System-Level Performance

System-level ridership has increased since CVTD was initially established in 1986. From its first partial operating year in 1986, annual system ridership has grown from 1,919 passenger trips

provided to more than 76,000 passenger trips in 2008. While CVTD has historically been able to provide service to the vast majority of persons requesting service, area growth has resulted in increased demand which has lead to increasing difficulties in meeting all needs.

CVTD serves a variety of trip purposes ranging from scheduled health or medical-related appointments to employment, education, shopping, and other personal matters. CVTD's key role has traditionally been to provide the much needed public transportation access to human service agencies and private providers.

While ridership has grown since CVTD's inception, recent trends indicate a fluctuation and overall decline in annual ridership. The ridership fluctuation is due to demand response, which is a constant variable and CVTD's ability to secure Medicaid contracts. Medicaid contracts are competitively bidded and the lengths of time on Medicaid contracts vary. As shown in Tables **5.1 and 5.2**, during the years with the highest ridership; the increases were largely attributable to the provision of Medicaid trips. Ridership decreased by 20 percent between FY 2002 and FY 2008, an average of approximately three percent per year

Table 5.1: CVTD Total Annual Passengers Served
(FY 2002 to FY 2008)

Fiscal Year	Total Trips	Annual Percent Change
2002	95,295	
2003	102,329	7%
2004	95,178	-7%
2005	112,484	18%
2006	79,746	-29%
2007	60,938	-24%
2008	76,306	25%
	Total Change	**-20%**

Source: CVTD, 2010

Table 5.2: CVTD Historical Operating Statistics

Fiscal Year	Revenue Vehicles in Fleet	Unlinked Passenger Trips	Vehicle Revenue Miles	Vehicle Revenue Hours
2002	16	95,295	457,257	NR
2003	27	102,329	511,483	NR
2004	26	95,178	658,453	47,561
2005	24	112,484	754,137	61,342
2006	25	79,746	677,600	94,632
2007	26	60,938	534,179	28,780
2008	26	76,306	598,510	38,397

Source: TxDOT, Texas Transit Statistics Reports, 2002-2008

Performance Comparison with Statewide Transit Providers

To better understand the performance of the CVTD's transit service it is helpful to compare the agency's performance with other similar transit providers. Using statewide statistics for non-urbanized transit services from the 2002 -2008 Texas Transit Statistics Reports, several observations were made as follows:

- The average operating expense per vehicle revenue mile in 2008 for CVTD was $2.23, which was lower than the Texas average, which was $2.85.
- CVTD experienced less of an overall increase in operating expense per vehicle revenue mile between 2002 and 2008, but this expense had greater fluctuation than the Texas average. This was due to CVTD's high variability of Medicaid revenue from year-to-year.
- The average operating expense per unlinked passenger trip for Texas was $18.93 in 2008. For the same year, CVTD had a lower than average operating expense per unlinked passenger trip of $17.47.
- The average unlinked passengers per vehicle revenue mile for all non-urbanized transit providers in Texas were 0.21 in 2008. During the same year CVTD had 0.13 unlinked passengers per vehicle revenue mile, which is lower than the Texas average.
- CVTD had an average operating expense per vehicle revenue mile and per revenue vehicle hour that is less than the statewide average.

A detailed comparison between CVTD and other non-urbanized transit providers in Texas for fiscal years 2002 through 2008 is provided in **Table 5.3**.

Table 5.3: Statewide Average Non-urbanized Area Program (5311) Performance Summary

Fiscal Years 2002-2008 for State of Texas and CVTD	2002	2003	2004	2005	2006	2007	2008
Service Efficiency Operating Expense per Mile							
Statewide Average	$1.68	$1.85	$1.72	$2.17	$2.30	$2.52	$2.85
CVTD	$1.77	$1.77	$2.36	$1.83	$2.45	$1.94	$2.23
Service Efficiency Operating Expense per Hour							
Statewide Average	NR	NR	$24.00	$26.29	$38.17	$46.29	$51.00
CVTD	NR	NR	$32.71	$22.45	$17.55	$36.02	$34.72
Service Effectiveness Unlinked Passenger Trips per Vehicle Revenue Mile							
Statewide Average	0.22	0.23	0.20	0.22	0.22	0.21	0.21
CVTD	0.21	0.20	0.14	0.15	0.13	0.11	0.13
Service Effectiveness Unlinked Passenger Trips per Vehicle Revenue Hour							
Statewide Average	NR	NR	5.01	3.28	3.67	3.92	3.82
CVTD	NR	NR	2.0	1.84	1.19	0.47	1.99
Cost Effectiveness Operating Expense per Unlinked Passenger Trips							
Statewide Average	$10.11	$10.45	$11.53	$12.42	$13.61	$16.19	$18.93
CVTD	$8.48	$8.84	$16.34	$12.24	$20.83	$17.01	$17.47
Cost Effectiveness Farebox Recovery Ratio							
Statewide Average	11%	10%	9%	8%	7%	6%	5%
CVTD	4%	4%	2%	3%	3%	6%	7%

Source: TxDOT, Texas Transit Statistics Reports, 2002 – 2008

Chapter 6

Proposed System

This chapter describes the forecasting methodology and the short- and long-term recommended service changes for CVTD. These recommendations were developed after a thorough study of the existing transit conditions in the four-county service area, review of current ridership trends and development of a forecast methodology as well as personal interviews with CVTD staff, local elected officials, and other groups, as described in Chapter 2 of this report. If implemented, the proposed recommendations will refine the existing network of services and provide new services to better fit current and projected travel needs of the residents served by CVTD.

Subregional Study Ridership Forecasting Methodology

The methodology used for forecasting transit ridership in the study area (Waller, Austin, Wharton and Colorado counties) employs two different sketch planning techniques. The first approach is used to calculate the increase in ridership that would result from the planned service improvements on the existing routes. This approach uses the results of H-GAC's regional travel model to draw some inferences on the level of ridership sensitivity with respect to service changes. This was done by first identifying a number of local bus routes in the metro area that operate outside of Beltway 8 (to simulate rural operations), increasing their levels of service by 25%, 50%, 75% and 100% and measuring the corresponding increase in ridership on the rural segment of those routes. From this data, the sensitivity of the model with respect to level of service was estimated. Our results showed the ridership increase associated with doubling the level of service would be approximately 45 percent. Using this information, the current ridership was updated to obtain the most likely ridership increase associated with the proposed service improvement. The resulting ridership was adjusted to account for the effect of demographic growth in the study area.

The second sketch planning approach was used to estimate the ridership on new routes proposed in the study area. This approach assumes that the current level of "**passenger trip per revenue mile**" will be sustained on the new routes through the forecast year. The first step in this method involves estimating an average "passenger trip per revenue mile" **(PTPRM)** ratio using ridership and level of service data for the past few years (see **Table 6.1**). The next step involves applying that ratio to the revenue miles supplied on each proposed new route in the forecast year and estimating the new ridership. The new ridership is then adjusted to account for the effect of demographic growth in the study area. It should be noted that the **PTPRM** ratio was applied only to the "productive" portion of the revenue miles as opposed to the entire route since many of the proposed new routes are extremely circuitous by virtue of the fact they need to connect key locations in all the four counties. Only a small percent of the new routes traverses through trip generating areas and therefore deemed "productive". The "productive" revenue miles for each route were carefully determined by studying

the underlying land use and demographic area that each route would serve. In this study, ridership projections for the new routes were estimated using a **PTPRM** ratio of 0.12.

Table 6.1 Historical Ridership and Revenue Miles Data

Year	Annual Unlinked passenger trips	Annual roundtrip Revenue miles	PTRM Ratio
2002	95,295	457,257	0.21
2003	102,329	511,483	0.20
2004	95,178	658,453	0.14
2005	112,484	754,137	0.15
2006	79,746	677,600	0.12
2007	60,938	534,179	0.11
2008	76,306	598,510	0.13
Total	**622,276**	**4,191,619**	**0.15 Average**

Source: HDR Eng

Table 6.2 shows a summary of travel model results for different scenarios. As seen, we are projecting there would be about 41,200 additional transit trips annually if the current level of transit service is doubled. The ridership associated with new bus routes planned for Waller County is projected to be 52,300 annually. The projected annual ridership on the Prairie View A&M services is 8,650. The total annual ridership resulting from all the new bus services planned for the study area is projected to be 88,600. Note the ridership numbers reported above are in addition to the current ridership.

Table 6.2 Ridership Forecasts (year 2035)

Scenario	Projected 2035 Annual Ridership
Existing Condition	76,300
Scenario 1 ▪ **Proposed Service Improvements on existing routes through 2035**	41,200
Scenario 2 **Proposed new service in Waller County only** ○ **Waller LOOP** ○ **Prairie View LOOP** ○ **Brookshire LOOP** ○ **Hempstead LOOP**	52,300
Scenario 3 ▪ ***Proposes new service in Waller County only*** ○ ***Hempstead / Prairie View / Waller / SH6 Northwest Station P&R*** ○ ***Hempstead / Prairie View / Willowbrook Mall***	8,650
Scenario 4 ▪ **Proposed new service in all four counties**	88,600

Source: HDR Eng

Improvements to Existing Deviated Fixed-Route Service

Typically when transit service is implemented in new areas (especially in rural areas and small towns), funding for service is usually limited. As a result, frequencies are set wide apart (usually greater than one hour) in order to provide service but remain within budget.

As transit service matures, it is usually necessary to increase frequencies of service in order for that service to become more attractive to existing riders and to gain new riders to the system. CVTD has been providing the same level of service for a number of years in their existing deviated fixed-route system. Current frequencies are not conducive to maintaining existing riders and to provide for growing demand in the four-county area. It is recommended as a short-term improvement that CVTD increase level frequencies in its deviated fixed-route system to provide new levels of service that will carry CVTD into the future.

The short-term (2-5 years) and long-term (6-10 years) recommendations are outlined in the sections below. The short term recommendations consist of improvements to the existing service and the implementation of several routes in Waller County, specifically those relating to Prairie View A&M University. The long term recommendations consist of additional LOOP, LINK, and commuter service. Recommendations will be implemented at the discretion of CVTD, if financially feasible.

Cost Assumptions

Cost assumptions were developed based on the 2008 costs reported in PTN, which provides the known cost per hour. Based on the known cost per hour, the deviated fixed cost per route was developed by multiplying the number of hours from the span of service by the cost per hour; this calculation provides a cost per day. Annual costs were developed by multiplying the cost per day by the total annual revenue hours (based on the industry standard of 255 operating days per year).

Demand response service can be unpredictable from year to year. Demand response service will also increase the number of hours and miles that CVTD provides. Due to the variance in the type of service, the actual number of hours and miles will vary year to year and was not addressed as part of this study. However, **Table 6.3** shows the existing service for CVTD inclusive of the demand response budget estimates.

The budget for demand response service was calculated by subtracting the known cost of the deviated fixed-route service from the total operating budget. The total amount was divided by four, evenly distributing the service between the four counties in the service area.

Improvements to the existing service, which increase the frequency on each route and calls for a 100 percent increase in service, are shown in **Table 6.4.** The improvements to existing service are the base for the short-and long-term recommendations to service. Operating characteristics for proposed weekend service are shown in **Tables 6.5 - 6.7**, respectively which show the additional amount that would be necessary to add weekend service to the existing service level as in **Table 6.6** and to add weekend service to the proposed new service levels as shown in **Table 6.7.**

The demand for imminent improvements and increase in service is in accordance with CVTD's goals for their service area as well as the forecast methodology prepared in this chapter which assumes that the current level of *passenger trip per revenue mile* will be sustained through the 2035 forecast year.

Currently, CVTD has little available operating funds to fund new projects or improvements immediately. It is expected that it will take some time to gain sufficient operating dollars for CVTD to implement the following recommended new routes and service enhancements.

Short-Term Recommendations

Short-term recommendations are based on previous costs and system performance (2008) and include adjustments to existing service as well as proposed new transit investments for implementation if financially feasible are as follows:

- **Austin County**:
  - Increase frequency of local LOOP service in Sealy from 60 minutes to 30 minutes and Bellville from 120 minutes to 60 minutes.
  - Increase frequency on intra-county route between Wallis, San Felipe, and Sealy from 90 minutes to 45 minutes.
  - Establish a new LINK intra-county route between Austin Co. /Waller Co. /Prairie View A&M University.
  - Provide evening/late night and weekend service if feasible.
  - Continue installing additional bus shelters at bus stops that are located at key activity centers.
  - Continue the expansion of vanpool services.
  - Continue to expand service for the disabled community.
  - Continue to work with Fort Bend County Transit to coordinate service from Austin County to Fort Bend County Transit's Express service.

- **Colorado County:**
  - Increase frequency of local LOOP service in Weimar, Columbus, and Eagle Lake from 60 minutes to 30 minutes.
  - Provide evening/late night and weekend service if feasible.
  - Continue installing additional bus shelters at bus stops that are located at key activity centers.
  - Continue the expansion of vanpool services.
  - Continue to expand service for the disabled community.

- **Waller County**:
  - Establish a new LINK intra-county route between Waller, Prairie View, Hempstead, Brookshire and Katy.
  - Establish new commuter service from the city of Hempstead through Prairie View at Prairie View A&M University, through the city of Waller along US 290, with connections to SH 6 and Houston METRO Northwest Station Park & Ride.
  - Establish new commuter service from Hempstead to Prairie View A&M University to Willowbrook Mall.
  - Establish a new LOOP route in the City of Prairie View and Prairie View A&M University.
  - Establish new commuter service between Austin County/Waller County/Prairie View A&M University.

- Establish an agreement with Prairie View A&M University to provide service to the campus (see Financial Plan)
- Provide evening/late night and weekend service if feasible.
- Continue installing additional bus shelters at bus stops that are located at key activity centers.
- Continue expansion of vanpool services.
- Continue to expand service for the disabled community.

- **Wharton County**:
  - Increase frequency of local LOOP service in El Campo from 60 minutes to 30 a minute frequency.
  - Increase frequency of local LOOP service in Wharton from 60 minutes to a 30 minute frequency.
  - Increase LINK intra-county route service between El Campo and Wharton from 90 minutes to 45 minute frequency.
  - Provide evening/late night and weekend service if feasible.
  - Continue installing additional bus shelters at bus stops that are located at key activity centers.
  - Continue to expand service for the disabled community.
  - Support expansion of vanpool services.

Long-Term Recommendations

Long-term recommendations include proposed new transit investments for implementation over the next six to ten years and beyond if funding resources are available and recommendations are applicable to current needs, as follows:

- **Austin County:**
  - Establish a new daily bus route from Austin County to the Grand Parkway P&R on I- 10.
  - Establish a new daily bus route from Austin County to Fort Bend County.
  - Establish weekend service on existing deviated fixed routes.
  - Develop new transfer facilities and park & ride services along I-10 to accommodate future rail, local buses, and interstate carriers.
  - Develop staff and maintenance facilities for housing of local buses and other needs.
  - Support Livable Communities objectives.

- **Colorado County:**
  - Establish a new daily route from Colorado County to Wharton County that includes service to Wharton County Junior College.

- Establish a new daily route between the cities of Weimar/Columbus/Altair/Eagle Lake.
- Establish a new daily route between Colorado County and the Grand Parkway P&R at I-10.
- Establish weekend service on existing deviated fixed routes.
- Develop transfer facilities and park & ride services along I-10 to accommodate future rail, local buses, and interstate carriers.
- Support Livable Communities objectives.

- **Waller County:**
  - Establish new LOOP service in the cities of Waller, Brookshire, and Hempstead.
  - Establish new commuter service from Brookshire/Katy to the Grand Parkway Park & Ride.
  - Establish new weekend service on existing deviated fixed routes.
  - Establish transfer terminals with park & ride facilities along US 290 and I-10 to accommodate future commuter rail, local bus routes, and interstate carriers.
  - Establish transit connectivity to Katy area transit providers.
  - Develop staff and maintenance facilities for housing of local buses and other needs.
  - Support Livable Communities objectives.

- **Wharton County:**
  - Develop transfer facilities and park & ride services along U.S. 59 to accommodate future rail, local buses, and interstate carriers.
  - Establish a new daily bus route from and to Louise/ EL Campo/Egypt and Hungerford/East Bernard.
  - Establish a new daily bus route from Wharton County to Fort Bend County.
  - Support Livable Communities objectives.

All new routes recommended herein (short-term and long-term) are described in greater detail in the *Route Description of Recommended New Routes* section of this chapter which follows, along with maps that illustrate the recommended routes. .

The recommended routes and implementation schedule are subject to operational and financial constraints and the operator has final say in routing and implementation. Invariably, issues arise between the time the route is planned and the time the proposed changes are implemented by the transit operator. As a result, recommended routes of operation shown in this document are not assumed to be the final routing that will eventually be operated on the street.

Table 6.3: Existing Deviated Fixed-Route Service

Deviated Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Peak Buses	Headway	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Bellville LOOP	23.4	6	35,802	120	1	120	6:30am - 5:30pm	11	$34.72	$381.92	2,805	$97,389.60
Wallis to San Felipe LINK	69.3	7	123,700	90	1	90	7:30am - 5:30pm	10	$34.72	$347.20	2,550	$88,536.00
Sealy LOOP	9.5	12	29,070	60	1	60	6:00am - 6:00pm	12	$34.72	$416.64	3,060	$106,243.20
Columbus LOOP	9.9	11	27,770	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Eagle Lake LOOP	10.4	11	29,172	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Weimar LOOP	8.6	11	24,123	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
El Campo LOOP	20.3	11	56,942	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
Wharton LOOP	14.2	11	39,831	60	1	60	7:00am - 6:00pm	11	$34.72	$381.92	2,805	$97,389.60
El Campo to Wharton LINK*	37.8	6	57,834	90	1	90	7:30am - 5:30pm	10	$34.72	$347.20	2,550	$88,536.00
TOTAL FIXED ROUTE		**86**	**424,244**					**98**		**$3,402.56**	**24,990**	**$867,652.80**
TOTAL DEMAND RESPONSE	All Counties											**$465,540.20**
2008 Operating Expenses												**$1,333,193**
Demand Response per County												**$116,385.05**

$34.72 from 2008 TXDOT PTN
255 Operating Weekdays per year
* El Campo to Wharton LINK route not posted on CVTD website so cycle time and span of service was derived using similar service (Wallis to San Felipe LINK)

Table 6.4: Existing Deviated Fixed-Route with Proposed Service Improvements

Deviated Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Peak Buses	Headway	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Bellville LOOP	23.4	12	30,906	120	2	60	6:30am - 5:30pm	22	$34.72	$763.84	5,610	$194,779.20
Wallis to San Felipe LINK	69.3	14	294,882	90	2	45	7:30am - 5:30pm	20	$34.72	$694.40	5,100	$177,072.00
Sealy LOOP	9.5	24	58,140	60	2	30	6:00am - 6:00pm	24	$34.72	$833.28	6,120	$212,486.40
Columbus LOOP	9.9	22	55,539	60	2	30	7:00am - 6:00pm	22	$34.72	$763.84	5,610	$194,779.20
Eagle Lake LOOP	10.4	22	58,344	60	2	30	7:00am - 6:00pm	22	$34.72	$763.84	5,610	$194,779.20
Weimar LOOP	8.6	22	48,246	60	2	30	7:00am - 6:00pm	22	$34.72	$763.84	5,610	$194,779.20
El Campo LOOP	20.3	22	113,883	60	2	30	7:00am - 6:00pm	22	$34.72	$763.84	5,610	$194,779.20
Wharton LOOP	14.2	22	79,662	60	2	30	7:00am - 6:00pm	22	$34.72	$763.84	5,610	$194,779.20
El Campo to Wharton LINK	37.8	12	212,058	90	2	45	7:30am - 5:30pm	20	$34.72	$694.40	5,100	$177,072.00
TOTAL FIXED ROUTE		**172**	**951,660**		**18**			**196**		**$6,805.12**	**49,980**	**$1,735,305.60**

Table 6.5: Proposed New Service - Weekday

New Fixed Route	Round Trip Miles	Annual Revenue Miles	Cycle Time	Peak Buses	Head way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Austin Commuter to Grand Parkway P&R	75.6	173,502	100	1	100	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Austin County to Fort Bend County	88.6	169,448	120	1	120	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Austin Co/Waller Co/Prairie View A&M University	72.0	165,240	100	1	100	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Weimar/Columbus/ Altair /Eagle Lake	68.4	156,978	100	1	100	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Colorado Commuter to Grand Parkway P&R	94.8	167,358	130	1	130	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Colorado County/Wharton County Junior College	85.6	163,710	120	1	120	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Waller LOOP	7.6	58,140	30	1	30	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Prairie View LOOP	8.2	94,095	40	2	20	6:30am - 9:30pm	30	$34.72	$1,041.60	7,650	$265,608.00
Brookshire LOOP	14.7	112,455	60	2	30	6:30am - 9:30pm	30	$34.72	$1,041.60	7,650	$265,608.00
Hempstead LOOP	15.0	114,750	60	2	30	6:30am - 9:30pm	30	$34.72	$1,041.60	7,650	$265,608.00
Waller/Prairie View/Hempstead/ Brookshire/Katy	88.2	168,683	120	1	120	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00

Table 6.5 (con't): Proposed New Service – Weekday

New Fixed Route	Round Trip Miles	Annual Revenue Miles	Cycle Time	Peak Buses	Head way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Hempstead/Prairie View/Waller/SH6/ Northwest Station P&R	76	145,350	120	1	120	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Brookshire/Katy/ Grand Parkway P&R	21.6	165,240	30	1	30	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Hempstead/Prairie View/Willowbrook Mall	81.2	155,295	120	1	120	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Louise/El Campo/Egypt/ Hungerford/East Bernard	115.4	165,527	160	1	160	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
Wharton County to Fort Bend County	99.6	175,832	130	1	130	6:30am - 9:30pm	15	$34.72	$520.80	3,825	$132,804.00
TOTAL FIXED ROUTE		**2,351,603**		**19**			**285**		**$9,895**	**72,675**	**$2,523,276.00**

Table 6.6: Existing Service Adding Weekend

Deviated Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Headway	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours*	Annual Cost
Bellville LOOP	23.4	6	14,321	120	120	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Wallis to San Felipe LINK	69.3	7	49,480	90	90	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Sealy LOOP	9.5	12	11,628	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Columbus LOOP	9.9	12	11,628	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Eagle Lake LOOP	10.4	12	12,118	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Weimar LOOP	8.6	12	10,526	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
El Campo LOOP	20.3	12	24,847	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Wharton LOOP	14.2	12	17,381	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
El Campo to Wharton LINK	37.8	6	23,134	90	90	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,497
Existing Fixed Routes Adding Weekend Service		**91**	**175,063**				**108**		**$3,753**	**11,016**	**$382,473**

*Assume 102 weekend days of service

Table 6.7: Proposed New Service Adding Weekend

New Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Head -way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Austin Commuter to Grand Parkway P&R	No weekend P&R service										
Austin County to Fort Bend County	88.6	6	54,223	120	120	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Austin Co/Waller Co/Prairie View A&M University	72.0	7	51,408	100	100	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Weimar/Columbus/ Altair /Eagle Lake	68.4	7	48,838	100	100	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Colorado Commuter to Grand Parkway P&R	No weekend P&R service										
Colorado County/Wharton County Junior College	85.6	6	52,387	120	120	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Waller LOOP	7.6	24	18,605	30	30	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Prairie View LOOP	8.2	18	15,055	40	40	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Brookshire LOOP	14.7	12	17,993	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Hempstead LOOP	15.0	12	18,360	60	60	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Waller/Prairie View/Hempstead/ Brookshire/Katy	88.2	6	53,978	120	120	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534

Table 6.7 (con't): Proposed New Service Adding Weekend

New Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Head-way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Hempstead/Prairie View/Waller/SH6/ Northwest Station P&R	No weekend P&R service										
Brookshire/Katy/ Grand Parkway P&R	No weekend P&R service										
Hempstead/Prairie View/Willowbrook Mall	81.2	6	49,694	120	120	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Louise/El Campo/Egypt/ Hungerford/East Bernard	115.4	5	58,954	160	160	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
Wharton County to Fort Bend County	99.6	6	60,955	130	130	7:00am - 7:00pm	12	$34.72	$417	1,224	$42,534
TOTAL FIXED ROUTE		**115**	**500,450**				**144**		**$5,004**	**14,688**	**$510,408**

Description of Recommended New Routes

The recommended transit services for CVTD include inter- and intra-city fixed routes in all four counties that will serve the cities of Bellville, San Felipe, Sealy, Wallis, Columbus, Eagle Lake, Weimar, El Campo, Wharton, Brookshire, Hempstead, Prairie View, and Waller. The new routes have been developed to complement the existing demand response system and existing deviated response system to provide improved coverage within the CVTD service area.

Service is proposed for each daily, with headways ranging from 20 to 80 minutes for the inter- and intra-city circulator routes. The proposed routes (names are for descriptive purposes only, the naming conventions of any implemented routes will be determined by CVTD) and schedules will require field testing prior to implementation and potential refinement based on operating results. The proposed new short- and long-term inter- and intra-city circulator routes are described below and are illustrated in **Figures 6.1** through **6.16.**

- **Austin County**
  - **Austin Commuter to Grand Parkway P&R –** As shown in **Figure 6.1**, this service would operate from the city of Bellville through the city of Sealy via SH 36 along I-10 to Katy to the Houston METRO Grand Parkway Park & Ride.
  - **Austin County/Waller County/Prairie View A&M University** – As shown in **Figure 6.2**, this service would operate from Austin County to Waller County with a terminus at Prairie View A&M University. Service is proposed to operate from the city of Sealy, then north to the cities of Bellville, Hempstead, and Prairie View via SH 36 and FM 159 and US 290.
  - **Austin County to Fort Bend County -** As shown in **Figure 6.3**, this service would operate from the city of Bellville in Austin County to the Fort Bend County Transit Fairgrounds via SH 36. This service would connect with Fort Bend County Transit.

- **Colorado County**
  - **Weimar/ Columbus /Altair/Eagle Lake** – As shown in **Figure 6.4**, this route is proposed to operate as an inter-county route from the city of Weimar to the cities of Columbus, Altair, and Eagle Lake via I-10 and Highway 71. This service also operates between the cities of Eagle Lake and Altair and between the cities of Weimar and Columbus.
  - **Colorado Commuter to Grand Parkway P&R –** As shown in **Figure 6.5,** this route is proposed to operate as a commuter route from the city of Columbus via I-10 to Katy to the Houston METRO Grand Parkway Park & Ride. Connections may also be provided to Fort Bend County Transit and Harris County Rides.
  - **Colorado County/Wharton County/Wharton County Jr. College** – As shown in **Figure 6.6**, this route is proposed to operate as an inter-county service from Colorado County to Wharton County, with connections to Wharton County Junior College and other local generators.

- **Waller County**
  - **Brookshire** – As shown in **Figure 6.7**, this route is proposed to operate as new deviated fixed route LOOP service in the city of Brookshire.
  - **Prairie View–** As shown in **Figure 6.8,** this route is proposed to operate as new deviated fixed route LOOP service in the city of Prairie View.
  - **Hempstead –** As shown in **Figure 6.9,** this route is proposed to operate as new deviated fixed route LOOP service in the city of Hempstead.
  - **City of Waller** – As shown in **Figure 6.10,** this route is proposed to operate as new deviated fixed route LOOP service in the city of Waller.
  - **Waller/Prairie View/Hempstead/Brookshire/Katy** – As shown in **Figure 6.11**, this route is proposed to operate as new intra-county service proposed to operate between the cities of Waller, Prairie View, Hempstead, Brookshire, and Katy, via FM 359 and US 290.
  - **Hempstead/Prairie View/Waller/SH6/Northwest Station** – As shown in **Figure 6.12**, this proposed route will operate as a new commuter service from the city of Hempstead through Prairie View, at Prairie View A&M University, through the city of Waller along US 290, with connections to SH 6 and Houston METRO Northwest Station Park & Ride.
  - **Brookshire/Katy/Grand Parkway P&R** – As shown in **Figure 6.13**, this route is proposed to operate as a new commuter service from Brookshire along I-10 to the Katy area and Houston METRO Grand Parkway Park & Ride.
  - **Hempstead/Prairie View A&M/Willowbrook Mall** – As shown in **Figure 6.14**, this route is proposed new commuter service from the city of Hempstead through Prairie View A&M University to Willowbrook Mall via US 290 and SH 249.

- **Wharton County**
  - **Louise/El Campo/Egypt/Hungerford/East Bernard** – As shown in **Figure 6.15,** this route is a proposed new inter-county bus service to serve Louise, El Campo, Egypt, Hungerford, and East Bernard via U.S. 59, SH 60, and FM 183.
  - **Wharton County to Fort Bend County** – As shown in **Figure 6.16**, this route is a proposed new commuter route from Wharton County, along U.S. 59 to Fort Bend County Transit at University of Houston –Sugarland. This service would connect with Fort Bend County Transit.

Figure 6.1: Austin County – Austin Commuter to Grand Parkway P&R

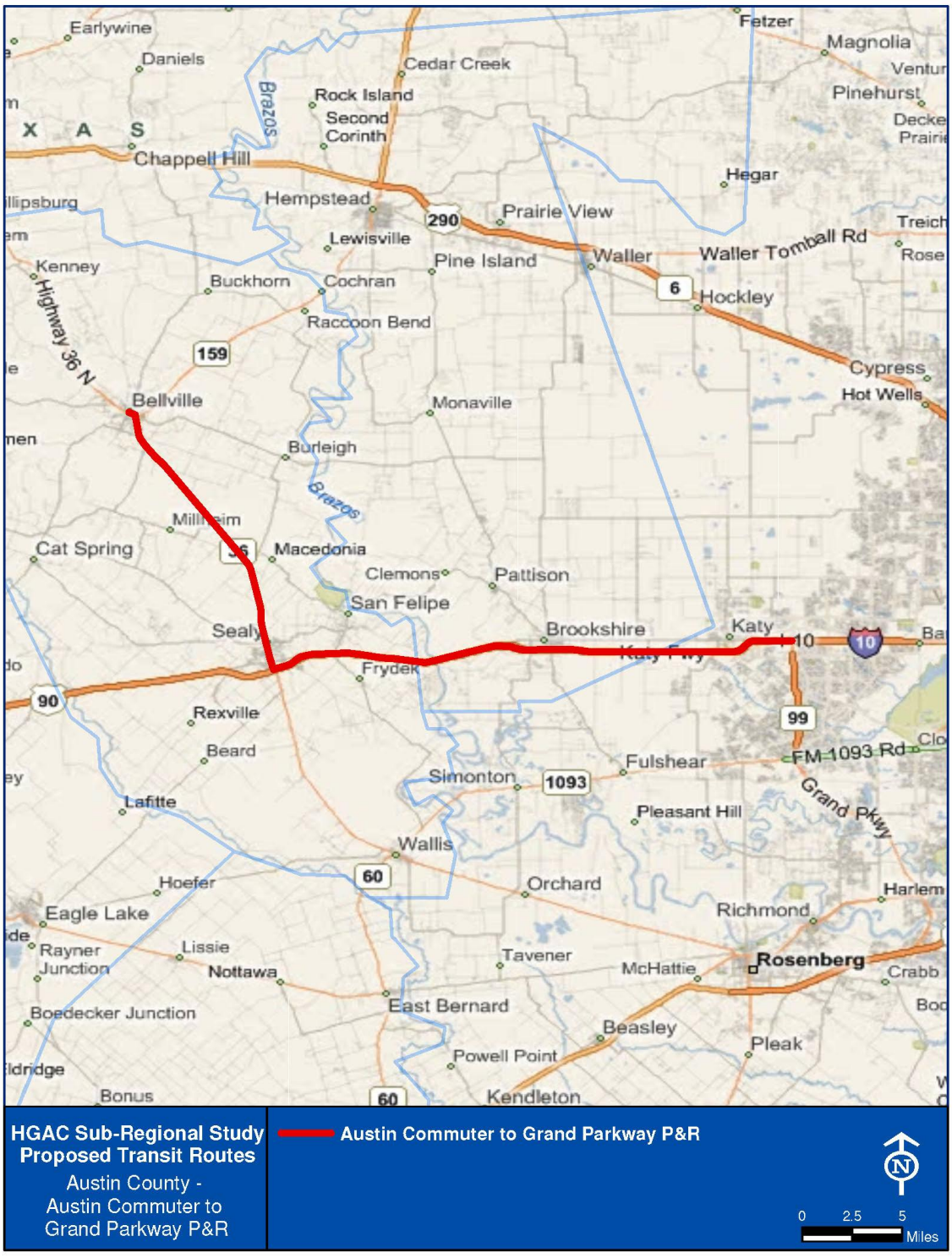


Figure 6.2: Austin County – Austin County/Waller County/ Prairie View A&M University

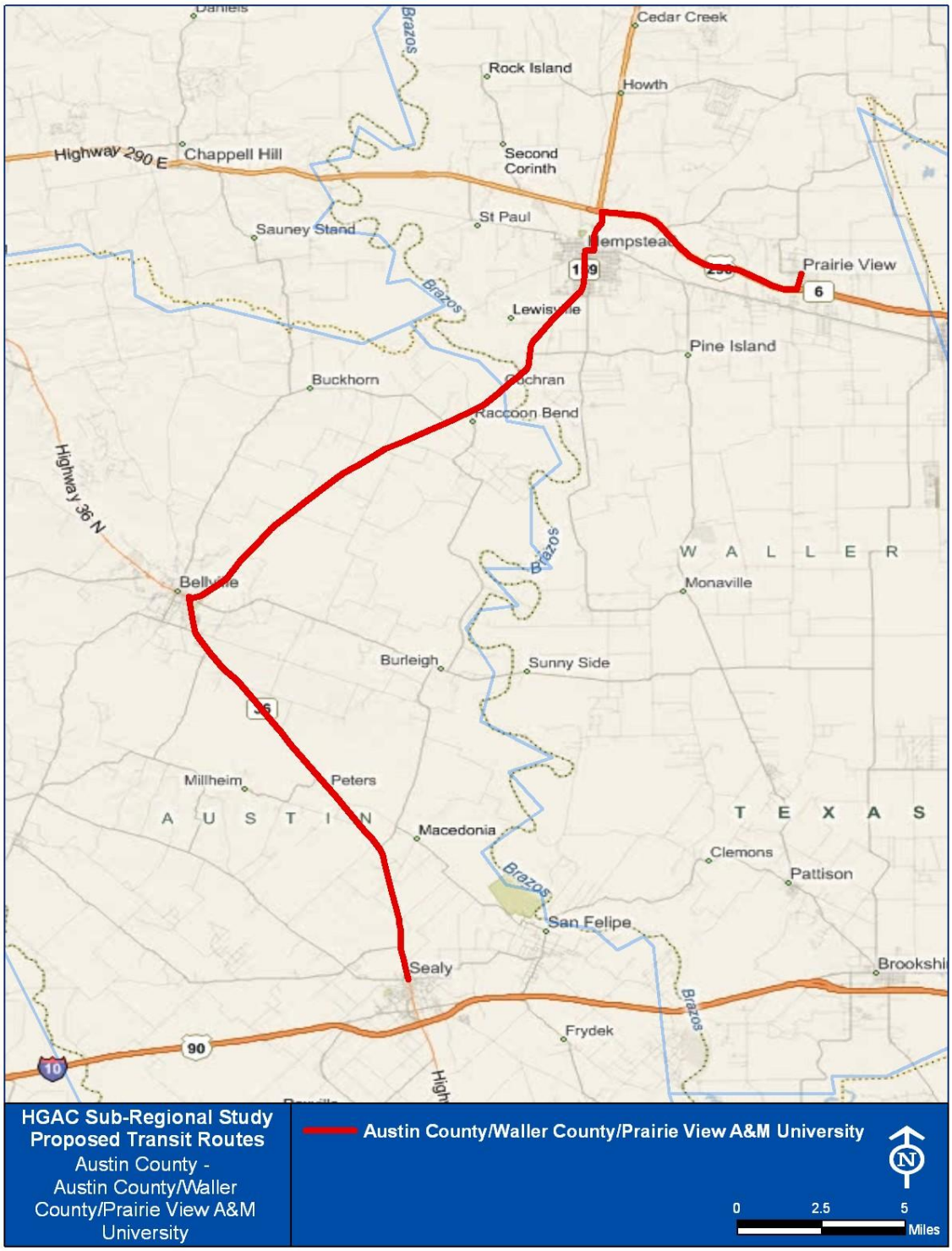


Figure 6.3: Austin County to Fort Bend County

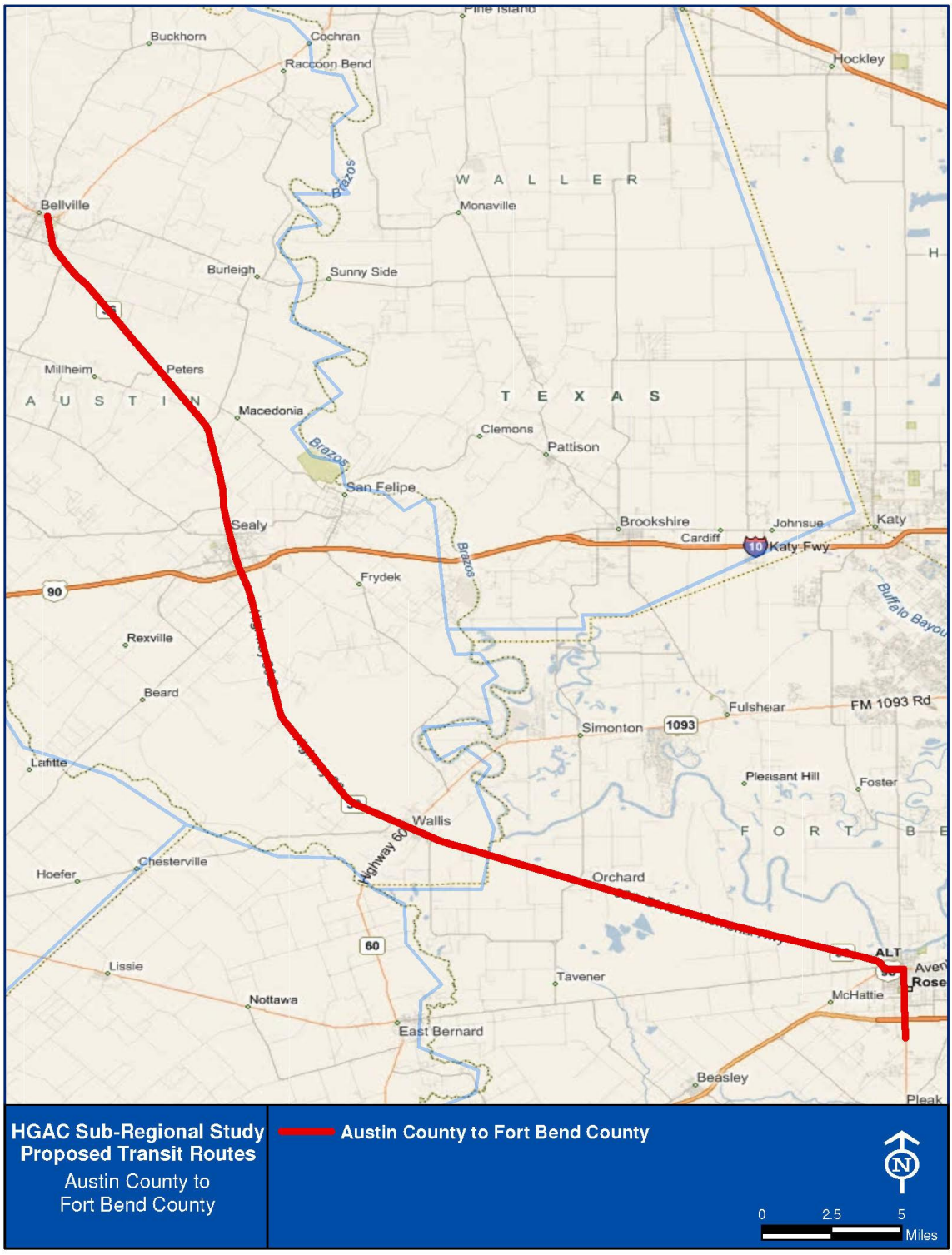


Figure 6.4: Colorado County – Weimar/Columbus/Altair/Eagle Lake

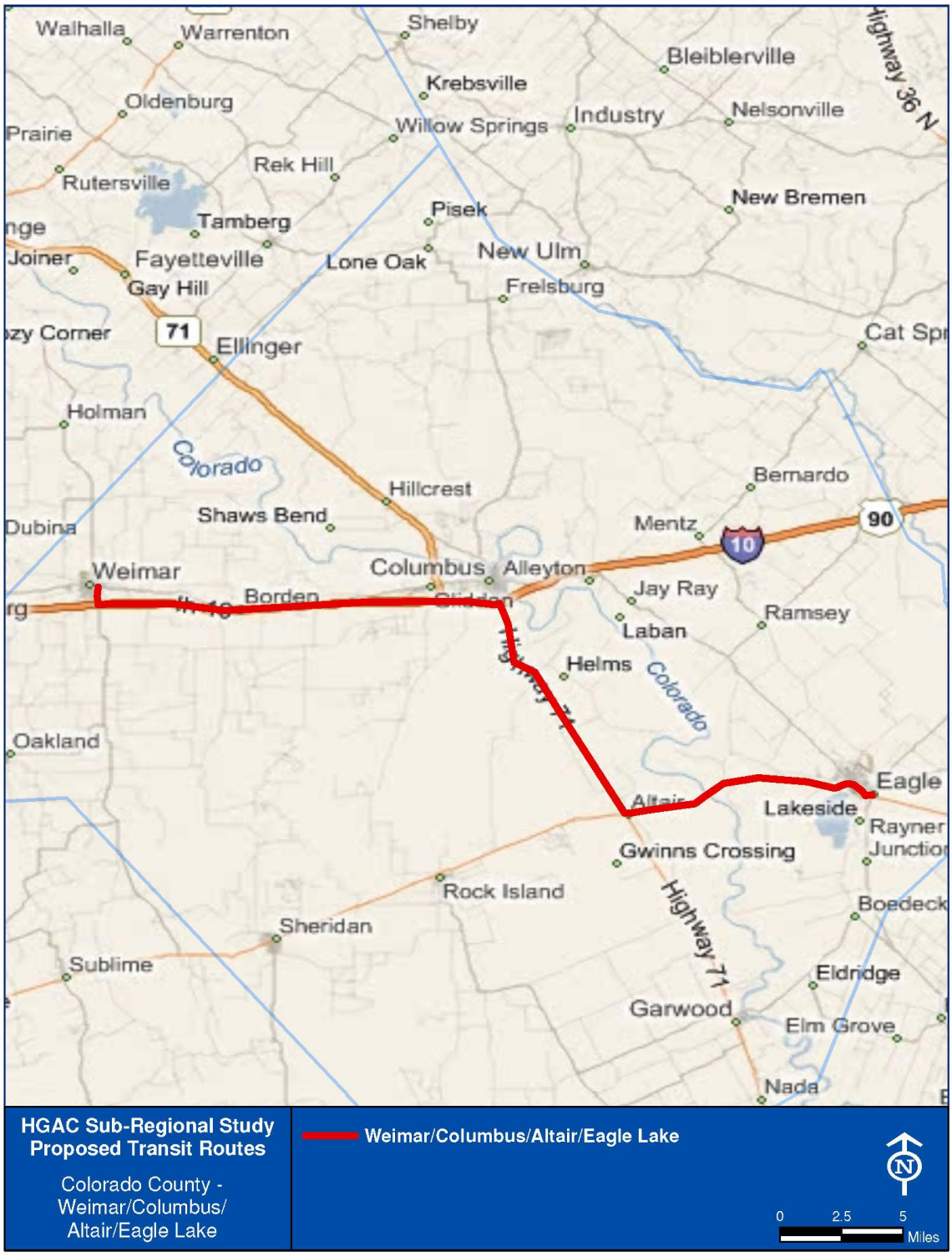


Figure 6.5: Colorado County – Colorado Commuter to Grand Parkway

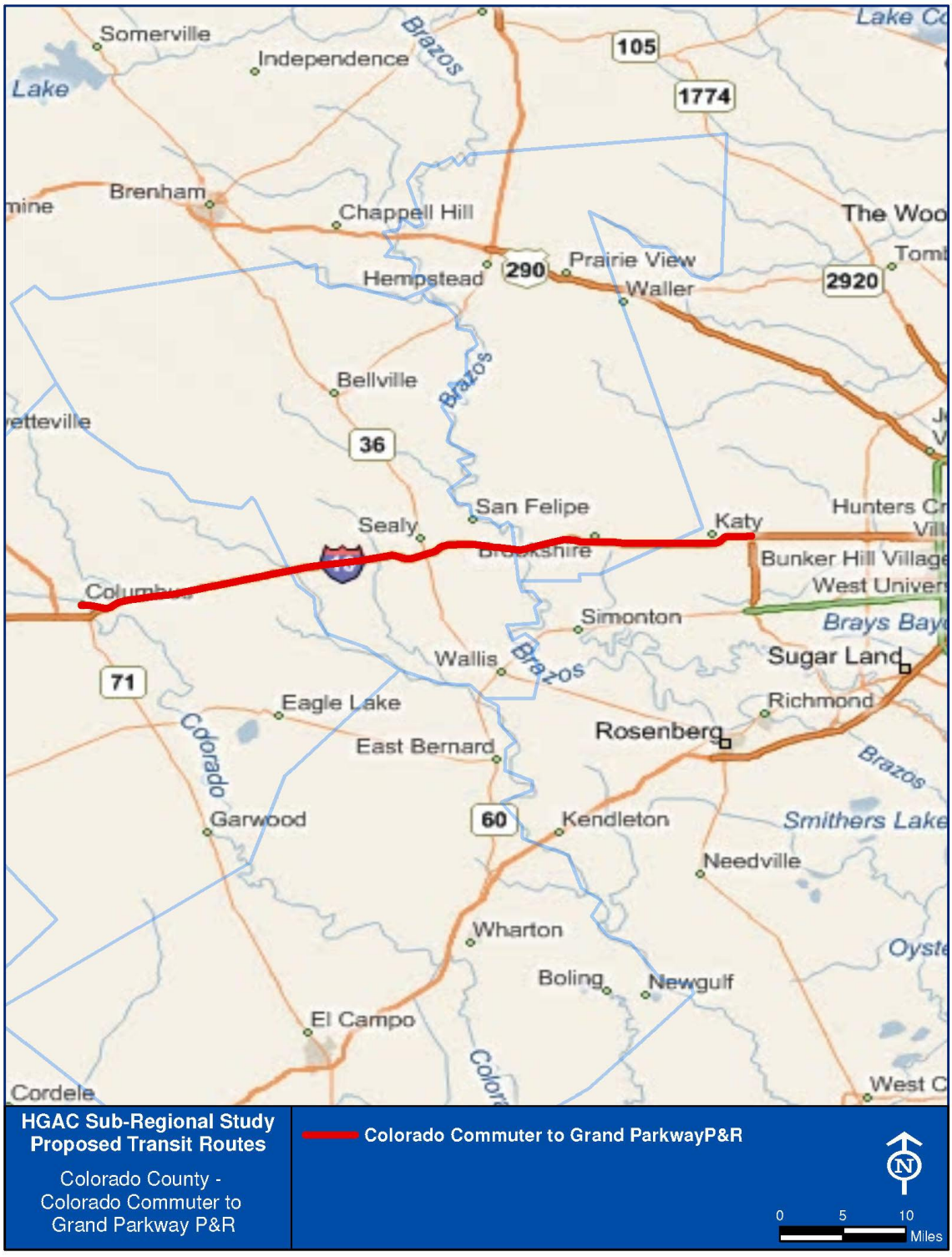


Figure 6.6: Colorado County – Colorado County/Wharton County/Wharton County Jr. College

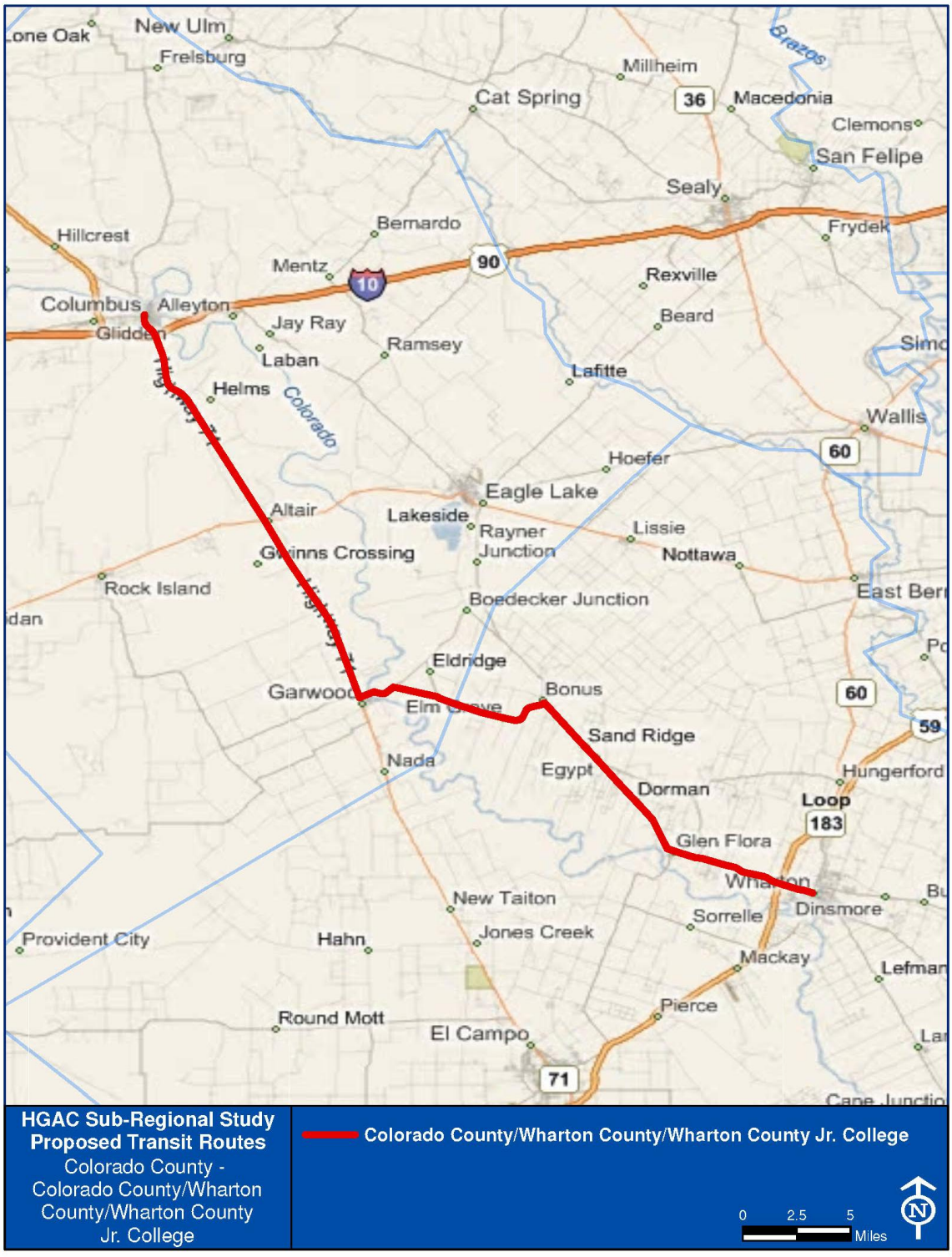


Figure 6.7: Waller County – Brookshire LOOP

Figure 6.8: Waller County – Prairie View LOOP

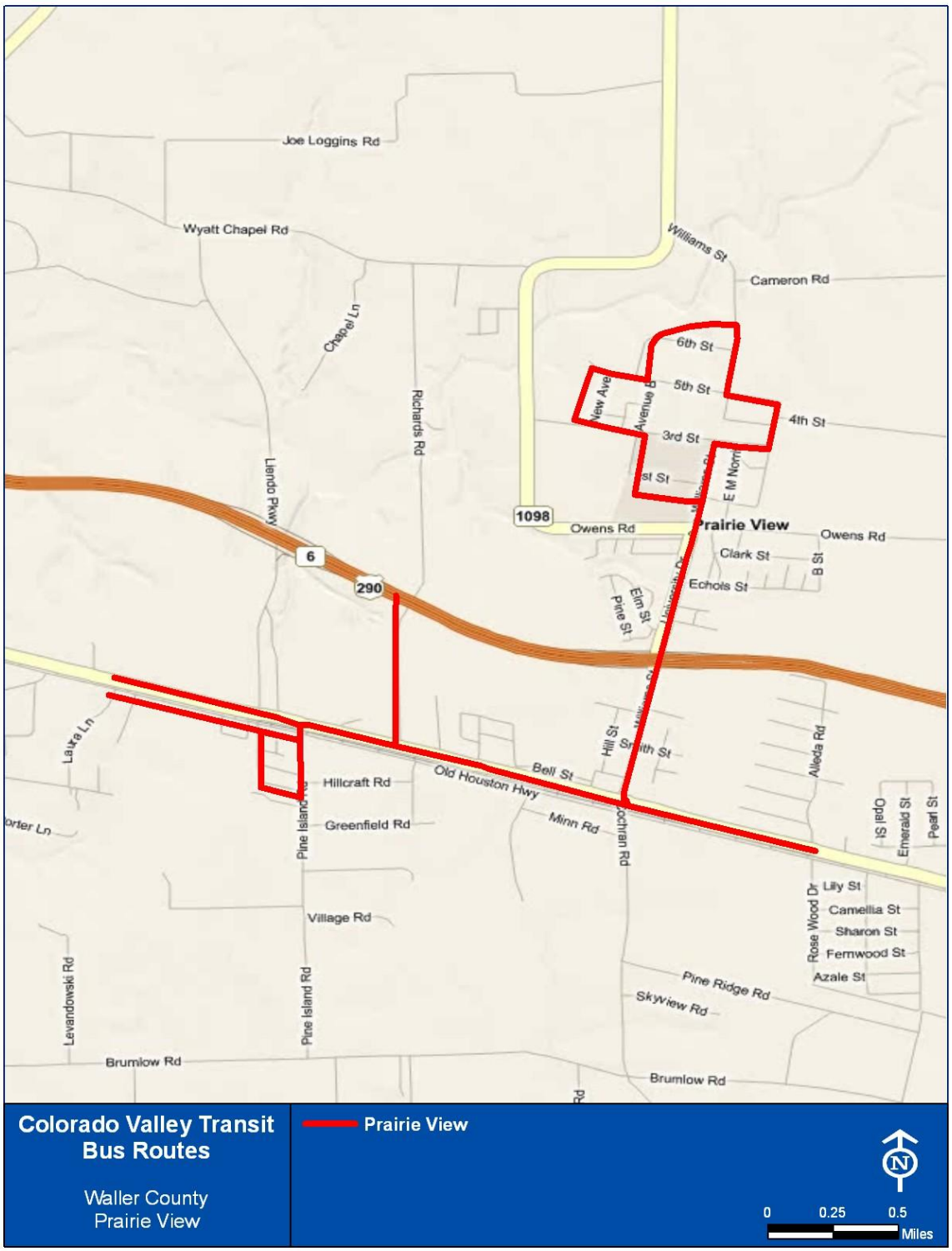


Figure 6.9: Waller County – Hempstead LOOP

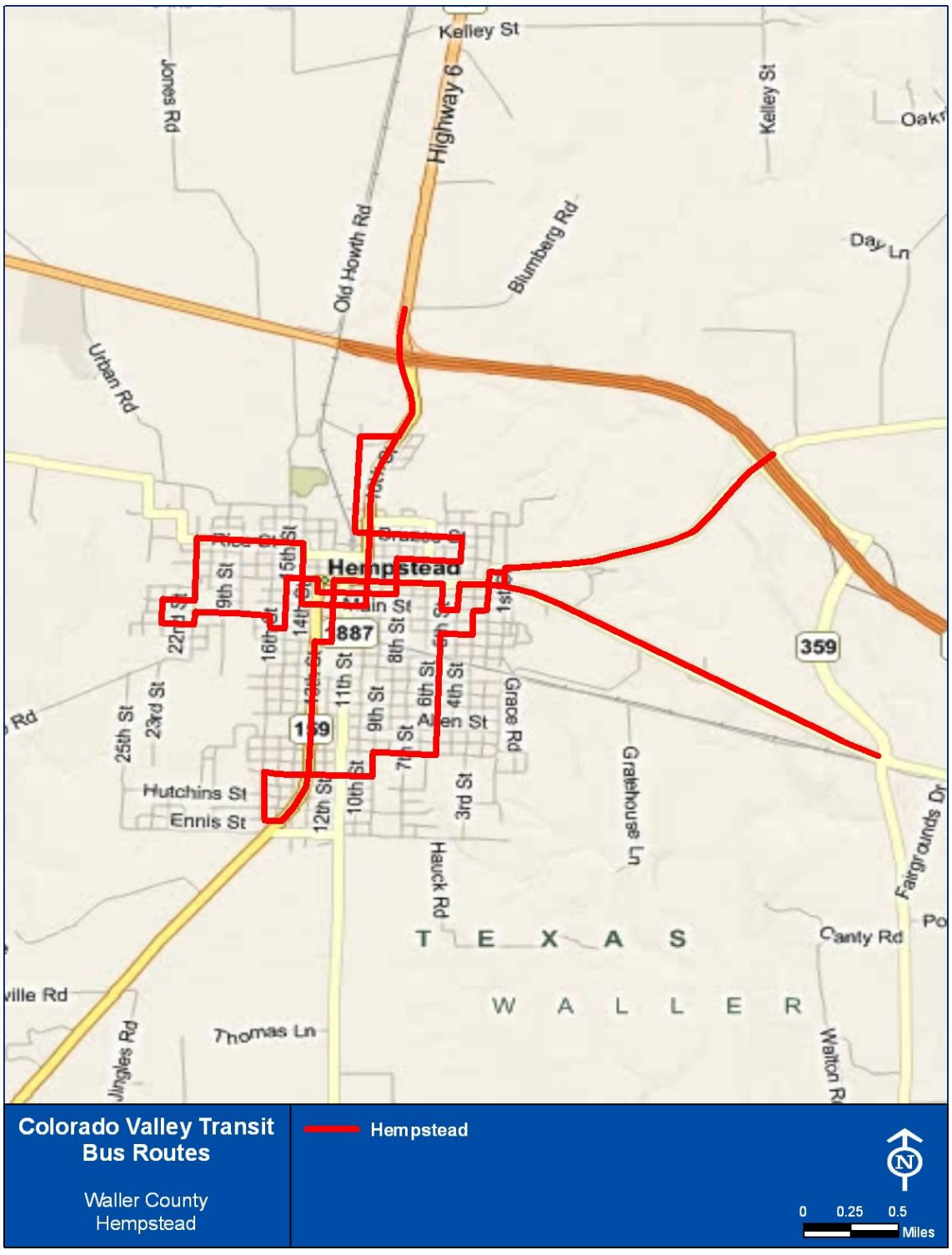


Figure 6.10: Waller County – City of Waller LOOP

Figure 6.11: Waller County –Waller/Prairie View/Hempstead/Brookshire/Katy

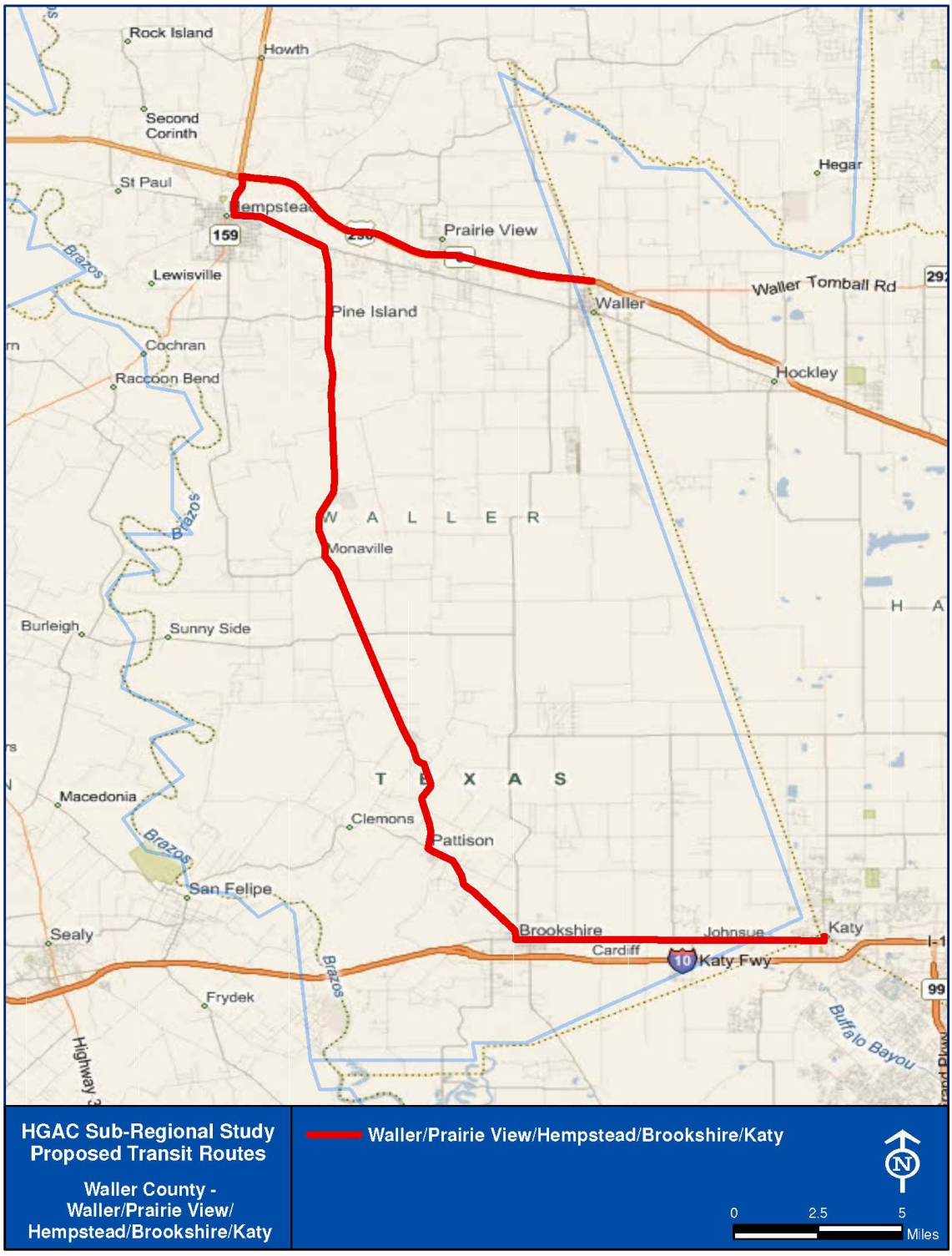


Figure 6.12: Waller County – Hempstead/Prairie View/Waller/SH 6/Northwest Station

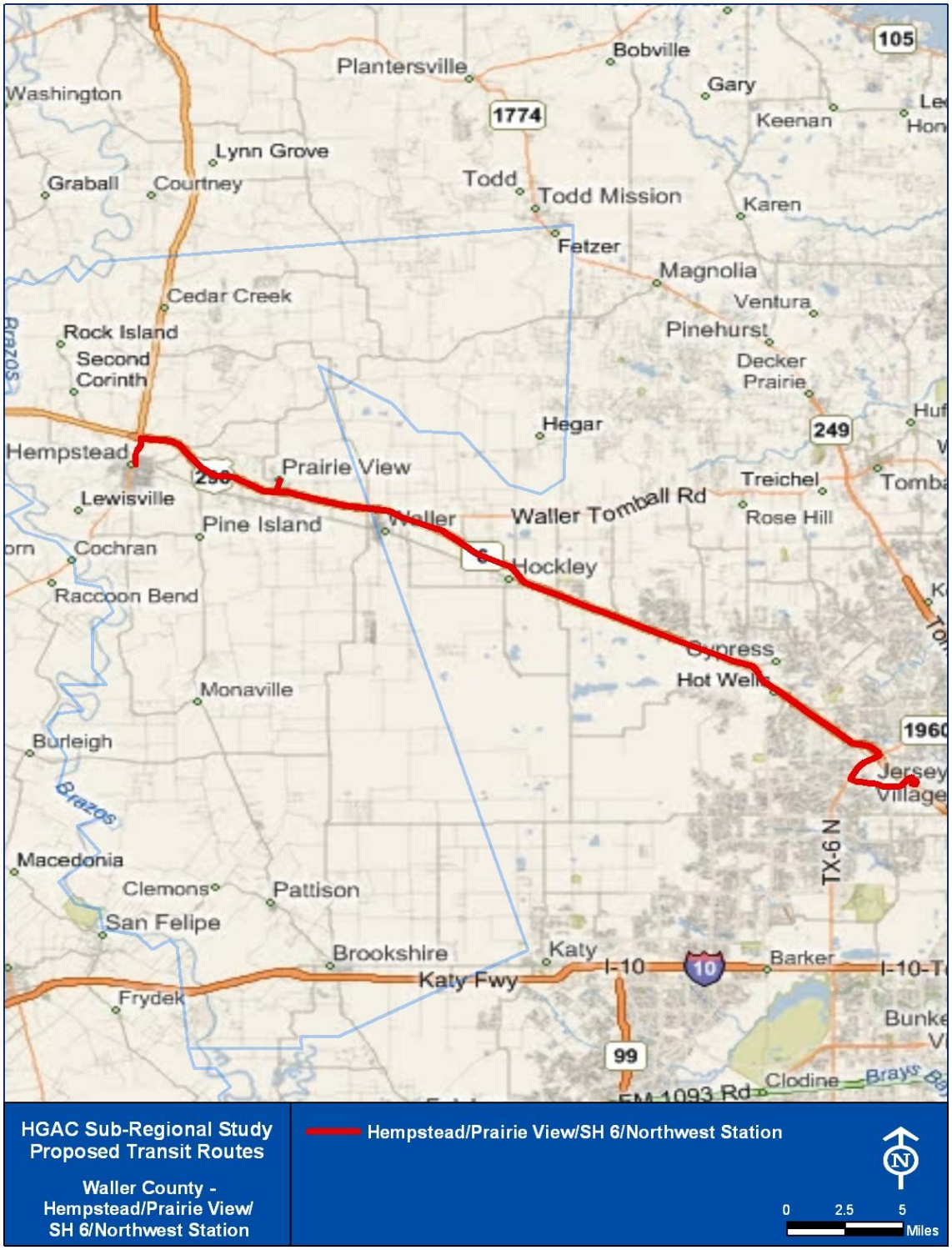


Figure 6.13: Waller County – Brookshire/Katy/Grand Parkway P&R

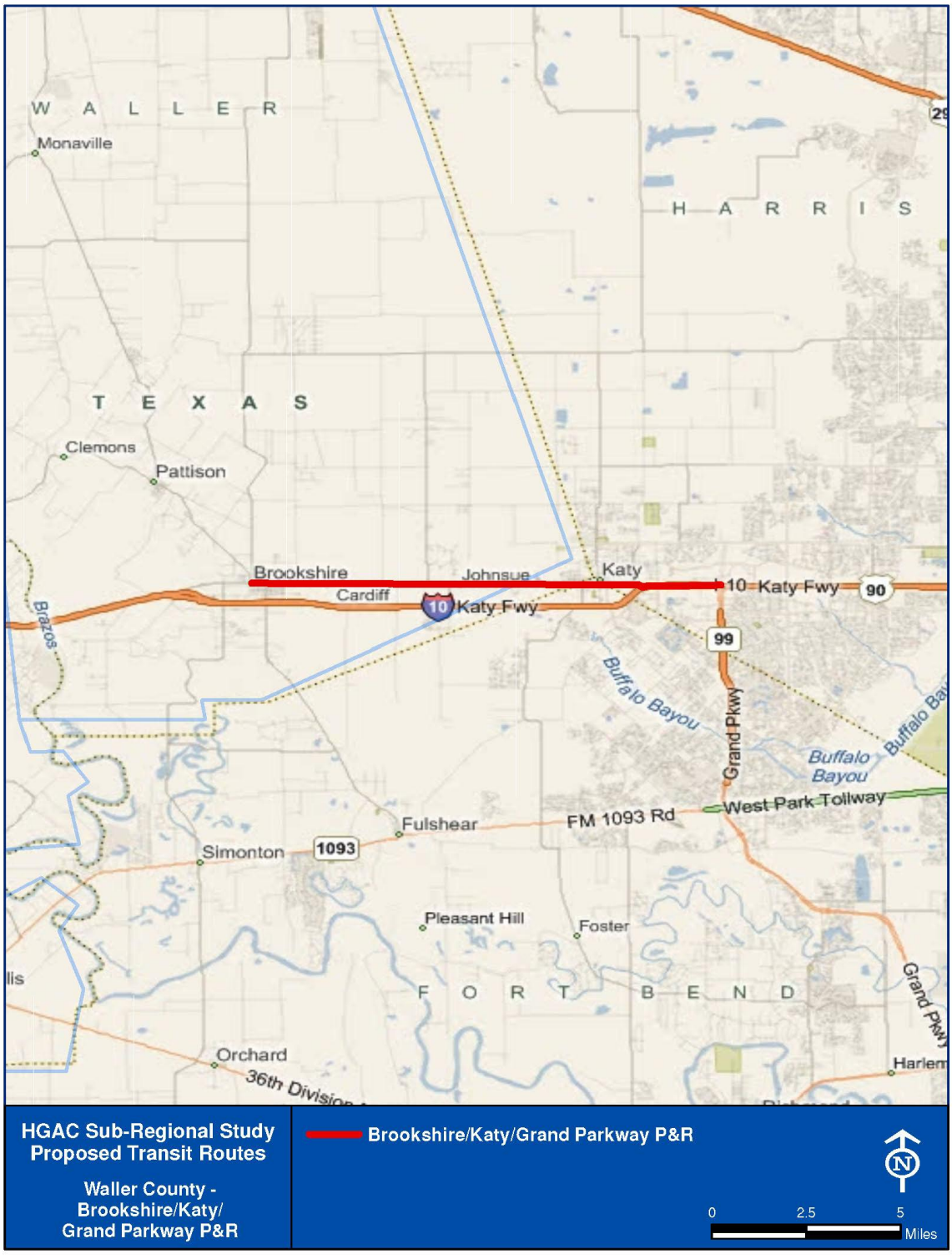


Figure 6.14: Waller County – Hempstead/Prairie View A&M/ Willowbrook Mall

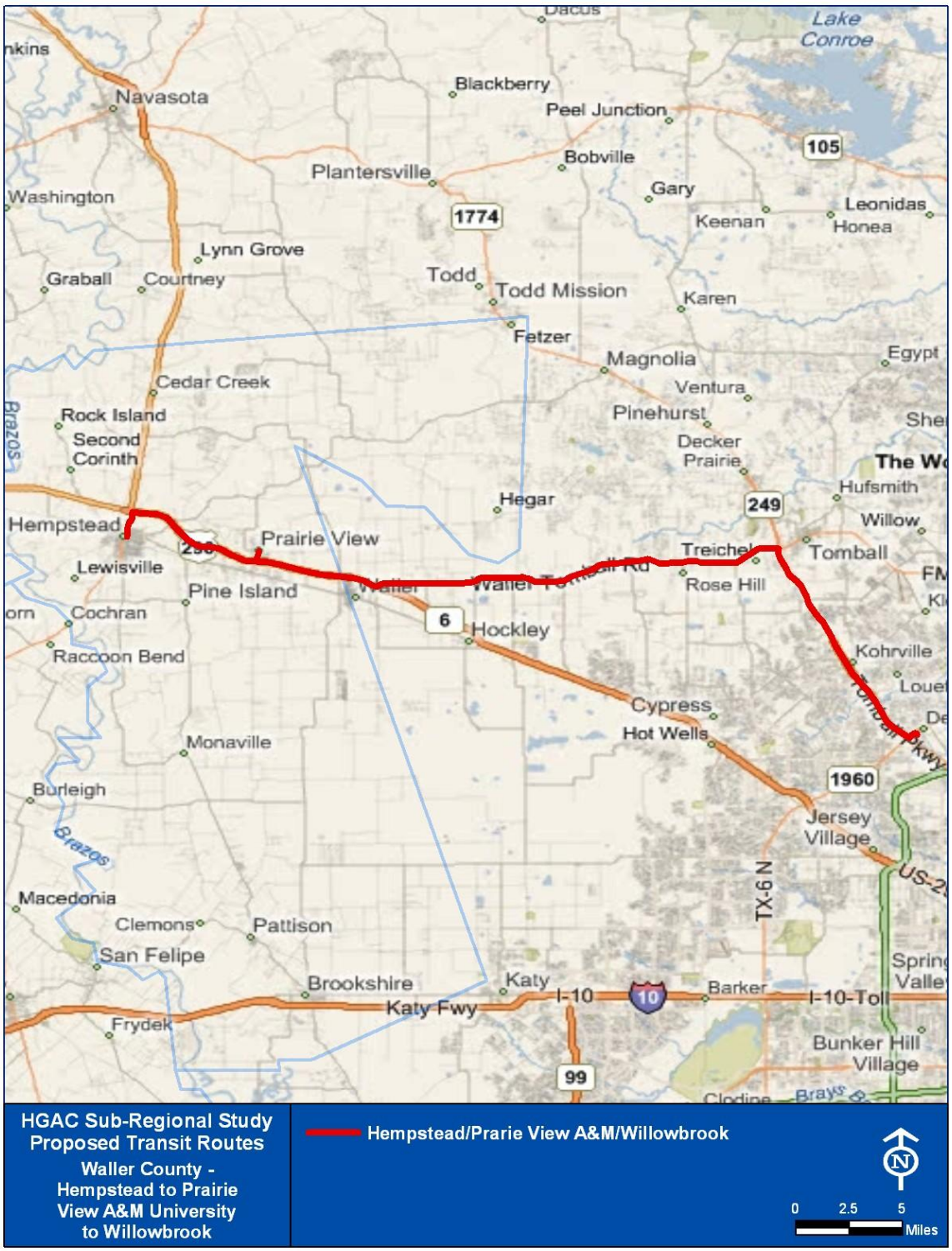


Figure 6.15: Wharton County – Louise/El Campo/Egypt/Hungerford/East Bernard

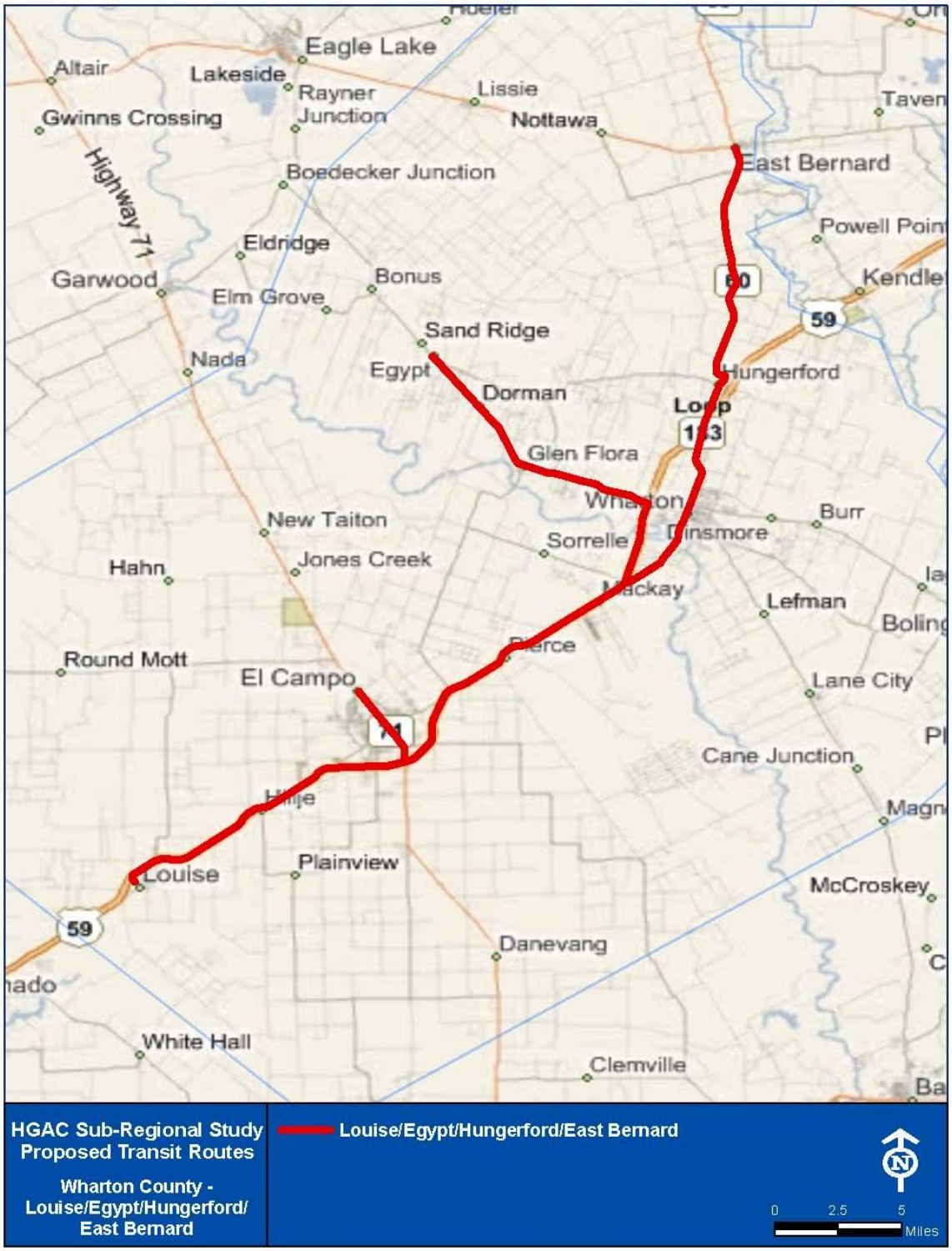
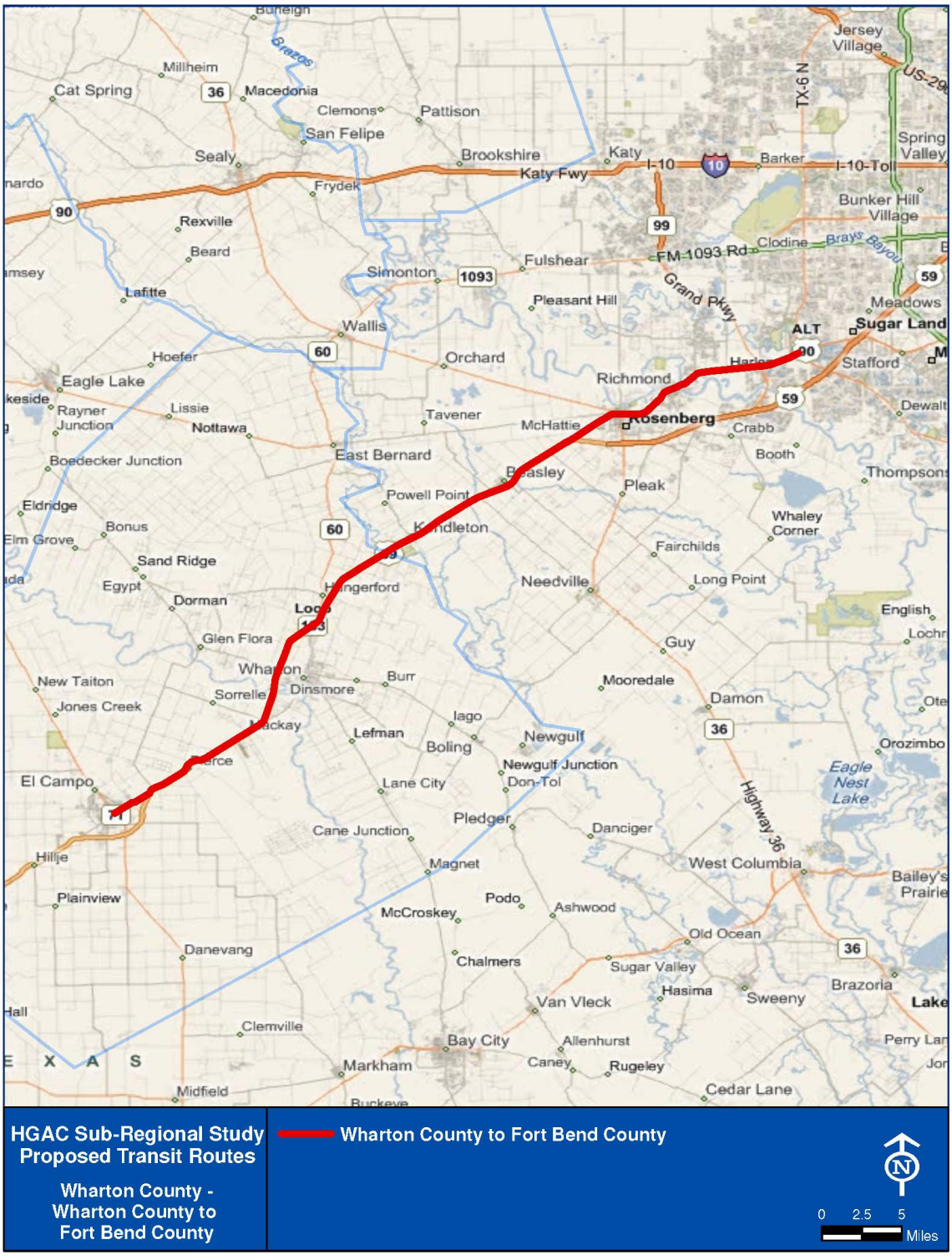


Figure 6.16: Wharton County – Wharton County to Fort Bend County



Recommended Performance Measurement Program

It is recommended that CVTD continue to use the TxDOT Statewide Performance Measurement Program to track and evaluate transit service performance on an annual basis. Continuing the on-going performance measurement program would help CVTD objectively evaluate existing services, as well as the new services recommended by this study. Further, it is recommended that CVTD continue utilize the same TxDOT performance measures reported in Chapter 5, *Existing Transit System Performance Evaluation*, along with some additional measures to help measure and monitor safety, maintenance, and passenger satisfaction. The recommended continuance of performance measures used by TxDOT and CVTD include:

- Total annual unlinked passenger trips.
- Operating expense per unlinked passenger trip.
- Passengers per revenue mile.
- Operating expense per revenue mile.
- Passenger per revenue hours.
- Operating cost per revenue hour.
- Total annual operating cost.
- Total revenue vehicles.
- On-time performance.

A complete list of the current performance standards are identified in **Table 6.8.** CVTD is encouraged to continue to review the performance standards at least once a year to determine current applicability.

Table 6.8: Current Performance Standards

Standard Category	Actual 2008 Data	Recommended Performance Standard	Difference
Service Effectiveness			
Passengers/mile	0.13	0.19	0.06
Passengers/hour	1.99	3.82	1.83
Cost Effectiveness			
Cost per Revenue Hour	$34.77	$34.77	+/- $0
Cost per revenue Mile	$2.23	$2.23	+/- $0
Cost Efficiency			
Cost/passenger	$17.47	$17.47	+/- $0

Source: TxDOT, Texas Transit Statistics Report, 2008 and HDR, 2010

Financial Plan

Transportation agencies generally use federal monies for capital projects and local tax monies for operation and maintenance, however there are funding opportunities available that go beyond the traditional sources, such as federal grants and state sales tax. As mentioned in Chapter 1, the results of this study are directly related to the H-GAC Regional Transit Framework Study and funding strategies developed through that study have been provided as guidance for CVTD.

The State of Texas has not increased its Public Transit Trust Fund support statewide for several years, which has resulted in an increasing demand for local funds and other resources to match federal and available state resources. Local match can range from approximately 20-50 percent, depending on the type of federal funding and the total cost to operate and maintain service. Local match is also required to support on-going or new transit service. The match can be met through the support of stakeholders in the local community who have a vested interest in the public transit services.

CVTD has plans to continue the current demand response service and deviated fixed route in Austin, Colorado, and Wharton counties, reinstate the cancelled deviated fixed route service in Waller County, and further invest in improved service in the three remaining counties if the funds are available. The services proposed in the short and long-term plans were described earlier in this chapter with short-term services proposed for implementation in years two through five and long term proposed for implementation in years six through ten. There are no new routes or enhancements to existing routes scheduled for the first two years of the service plan as it is expected that it will take some time to secure funding resources.

Capital Expenditures

The new services will require additional capital investment in vehicles, shelters and Park & Ride or transfer facilities. Capital costs may average approximately $4.8 million, inclusive of twelve vehicles and 2 facilities which include, 3 bus bays, minimal (10-20 spaces) parking, a canopy and facilities for the bus drivers.

As stated in Chapter 4, CVTD applies for and receives funds each year from FTA through TxDOT. These funds are for non-urbanized area programs (5311) and Elderly and Persons with Disabilities Program (5310), and Job Access and Reverse Commute (JARC) program (5316). They are also eligible for other federal funding grants, including but not limited to, New Freedom (5317). These grants depend on the qualifying projects being implemented.

Although CVTD receives funding from various sources, including in-kind contributions, sustainability of service is of major concern to the transit district. Historically, pilot services have been initiated by CVTD with funds having limited timeframes, such as grants administered through the Congestion Mitigation and Air Quality (CMAQ). Potential alternative funding strategies are recommended in the section below.

Recommended Funding Strategy

There are a variety of funding opportunities which go beyond the traditional sources, such as federal grants and state sales tax. This section will briefly discuss the types of funding sources but does not identify how revenue will be generated to support the proposed transit service and capital investments. The determination of funding is recognized as an issue that needs to be addressed at the local level. To better understand how future transit investments can be funded, potential alternative revenue sources have been identified and are as follows:

- **Property Tax -** revenue collected based upon the value of property and buildings. Some transit agencies throughout the United States utilize property taxes as well as sales tax and other local revenue.
- **Motor Fuel Tax-** distributed between the federal government and the states. Currently 2.86 cents of the 18.4 cent federal fuel tax that is collected on a gallon of gas goes towards the Mass Transit Account. Several states have utilized the motor fuel tax to help fund transportation projects. In Texas, motor fuel taxes are collected by the State Comptroller's Office. The taxes are put into several state funds, including the school fund, state highway fund, county and road district highway fund, and for farm-to-market road maintenance, construction, and improvements.
- **Public Private Partnership** - The National Council for Public Private Partnership defines Public-Private Partnership (PPP) as "a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the

use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and or facility."

- **Value Capture** – initiatives include a variety of financing tools which are locally based but not as easily quantified to project future revenue streams. These include Tax Increment Financing (TIF) and Transit Development Districts (TDD).
    - TIFs are used by municipalities to help improve specified areas within a city or county for improvement purposes. When a TIF district is established, the current valuation on the property is established as a "base" and taxes collected on the base value continue to be collected by the municipality. As the value of the properties increases, the amount collected over and above the base rate is deposited into a special fund to be reinvested in the area for infrastructure or other improvements to encourage further investment into the area. With new investments in an area, including residential, retail, and office, the area benefits from increased public transit uses, increased sales tax revenue, and increased property values.
    - TDDs are special districts which are established to construct transportation-related projects. These districts have the authority to tax property, levy tolls, and sell bonds.

- **Vehicle Safety Inspection Fees** - Vehicle inspection fees are required for all licensed vehicles which operate on Texas highways. According to the Texas State Comptroller's office, there were 26 million vehicles registered in Texas in 2006. Currently there are two types of inspection fees: one is the general inspection fee, which is $14.50 for one year, $23.75 for two years, $62.00 for a commercial vehicle, and $14.50 for trailers and motorcycles. The Texas Department of Public Safety is responsible for certifying inspection facilities.

Other Funding Options

CVTD's service area consists of several major employers, two colleges and one major university. These stakeholders are vital to the community and could provide a significant increase in ridership for CVTD. In addition to providing ridership, these stakeholders may serve as a financial resource for the transit district. Employers may be willing to subsidize a portion of the transit service if the service is viable to their employees and serves as a reliable resource for getting their employees to and from work in the form of local service, commuter service, local shuttle, etc.

Colleges and universities may be willing to charge their students a transit fee to provide service for the faculty and students attending the campus. The fee would have to be approved by the governing student body but could serve as a viable option to either assist as a local match or fully fund transit service through a contract with CVTD.

For example, Prairie View A&M University has demonstrated a demand for new service that would allow students without vehicles to travel to areas near to the main campus in Prairie View and to destinations that are important to the students at Prairie View A&M University such as the Northwest Station Park and Ride, FM 1960/SH 6/ U.S. 290 and satellite Prairie View A&M University facilities.

Waller County has an immediate need for transit and five routes have been identified that would serve Prairie View A&M University specifically. Based on 2009 estimates, the current student enrollment at the university is approximately 8,600. The cost estimated for the five routes that specifically serve Prairie View A&M University is approximately $664,020. Based on this information, Prairie View could charge their students approximately $39.00 per semester to fund all five routes. **Table 6.9** below shows the detailed analysis of this funding option.

Even though the students at Prairie View A&M could be charged a modest student fee that in theory could cover all or most of the cost to operate proposed transit services in the Prairie View A&M area, it may not be realistic to expect student fees to completely fund these services. All of the routes offered by CVTD in Waller County will be in effect open to all persons – not solely to those attending Prairie View A&M. One possible policy that could be implemented would be to allow Prairie View A&M students to ride for free, and charge other passengers the established fare.

Table 6.9: New Service Weekday

New Fixed Route	Round Trip Miles	Daily Trips	Annual Revenue Miles	Cycle Time	Peak Buses	Head -way	Span of Service	Revenue Hours per Day	Cost per Hour	Cost per Day	Annual Revenue Hours	Annual Cost
Austin Co/Waller Co/Prairie View A&M University	75.6	9	173,502	100	1	100	6:30am - 9:30pm	15	$34.72	$521	3,825	$132,804
Prairie View LOOP	8.2	21	94,095	40	2	20	6:30am - 9:30pm	30	$34.72	$1,042	7,650	$265,608
Waller/Prairie View/Hempstead/ Brookshire/Katy	88.2	9	168,683	120	1	120	6:30am - 9:30pm	15	$34.72	$521	3,825	$132,804
Hempstead/Prairie View/Waller/SH6/North west Station P&R	76	9	145,350	120	1	120	6:30am - 9:30pm	15	$34.72	$521	3,825	$132,804
Hempstead/Prairie View/Willowbrook Mall	81.2	9	155,295	120	1	120	6:30am - 9:30pm	15	$34.72	$521	3,825	$132,804
TOTAL FIXED ROUTE												
Prairie View Service Weekday		**57.0**	**736,925**		**6**			**90**		**$3,126**	**22,950**	**$796,824**
Number of Students at Prairie View*	8,600											
Dollar Amount Needed to Fund Service	$796,824											
Amount Prairie View could charge each student per semester ($93.00 per year)	$46											

*Based on 2009 estimates

Source: Prairie View A&M University website

CVTD currently utilizes most federal and state funds as well as in-kind contributions, but there is federal funding available that either CVTD has never applied for (New Freedom) or does not have the local investment available to continue (CMAQ). It is recommended that CVTD explore the aforementioned funding strategies as a means to assist with local match from the community and continue to seek federal funds for which their projects qualify. **Table 6.10** lists the strengths and weaknesses of each strategy.

Table 6.10: Possible Funding Sources – Strengths and Weaknesses

Funding Type	Strengths	Weaknesses
Property Tax	▪ Tap into larger revenue base ▪ Small additional amount may generate larger revenue for transit project	▪ Citizen/political objection to additional property taxes
Motor Fuel Tax	▪ Parity. Fuel Tax can be used for transit projects to relieve congestion on roadways	▪ Opposition to transit projects by special interest groups; roadway projects will be pushed aside for transit projects
PPP	▪ New source of funding ▪ Reduce costs and construction schedule	▪ Increase costs for users ▪ Limit public planning process
Value Capture	▪ General tax base growth ▪ Land value growth ▪ Transit ridership growth	▪ Re-gentrification of target area (TIF) ▪ May not generate as much revenue as projected ▪ Subject to economy factors, such as the general economy
Vehicle Safety Inspection Fees	▪ Tapping into a larger sector of funding ▪ Parity issue regarding user of transportation facilities paying for congestion management/mitigation project (i.e. transit)	▪ Consumer reluctance to additional fees/taxes to these fees ▪ Political reluctance to raise taxes

Source: H-GAC Regional Transit Framework Study, draft December 2010

CVTD should also continue to stay abreast of the State of Texas-State Legislative Initiatives that Senator John Carona introduced through S.B. 855, in 2009, Texas Local Option Transportation Act, to allow local municipalities to choose different fees to use for transportation projects. The fees that were included in this bill were New Resident Impact Fee, Mobility Improvement Fee, Drivers License Fee, Local Option Gas Tax, Parking Fee, and Emissions Fee. While this legislation failed, Senator Carona is still investigating methods to finance transportation projects[1].

Final Recommendations

1) CVTD's service area consists of 2 colleges, 1 major University, and several major employers. As was mentioned earlier in this report, five new services that are proposed to serve the students of Prairie View A&M University could potentially be paid for with the imposition of a $46/semester transit fee. This fee is small by comparison to other colleges and universities in Texas and is a good example of what could be accomplished in the area of funding if the colleges and major employers that need service would be asked to contribute toward funding transit. If these routes are implemented using funds supplied by the student population, policies should be implemented that would allow university students to ride CVTD routes for free. Regular published fares would be charged to everyone else.
2) All new services are proposed with the understanding that they will be implemented as funds become available.
3) Increasing the frequency of existing services and providing service to Prairie View A & M appears to hold the most promise for the short-term. Much of this service is in Waller County which is the County that has the highest need.

[1] Incorporated from the H-GAC Regional Transit Framework Study

ADDENDUM

CVTD Plan Public Meeting and Board Approval

H-GAC coordinated a Public Meeting for the CVTD Transit Plan on June 17, 2011 at 10:00 am at the United Way Waller Center in Brookshire, Texas. The meeting coincided with a public comment period that started on May 25, 2011 and ended June 30, 2011. Two comments were received as summarized below;

- One commenter was not aware that the transit service still operated and requested updated contact information for the CVTD.
- The second commenter requested that a hard copy of the plan document be mailed to her home.

No adverse public comments were received.

The CVTD Plan was approved by the Colorado Valley Transit District Board of Directors at its meeting on August 3, 2011.

NOTICE OF MEETING
OF
COLORADO VALLEY TRANSIT DISTRICT
Wednesday, August 3, 2011, 12:00 P.M. CST

Notice is hereby given that Colorado Valley Transit Board will meet at **12:00 P.M. CST, Wednesday, August 3, 2011** at 108 Cardinal Ln., Columbus, Texas. The notice for this meeting has been posted at the Transit Administration office at the address above.

Said meeting will be a regular meeting for transacting the routine business of the Transit and to consider and take possible action on any of the following agenda items:

BOARD MEETING AGENDA

1. Call meeting to order — Chairman Obie Rhodes
2. Roll Call
3. Public Comment
4. Approve minutes of previous Board meeting
5. Review, approve & update the following:
   - A. HGAC Sub-Regional Transit Service Planning & Coordination Report
   - B. Funding
   - C. Personnel Policy: Nepotism exclusions
   - D. Reports:
     - #1. Texas Department of Transportation Reviews/Monitors
     - #2. HGAC
     - #3. Vanpool Launching
     - #4. TXDOT Financials
     - #5. Executive Director's Update
6. Adjourn

I, Obie Rhodes, Chairman of the Board, do hereby certify that the above notice of meeting of Colorado Valley Transit was posted in a place convenient to the general public in compliance with Chapter 551, Texas Government Code.

Chairman of Board, Colorado Valley Transit District

OFFICIAL MINUTES OF COLORADO VALLEY TRANSIT AUTHORITY
COLUMBUS, TEXAS 78934
Wednesday, August 3, 2011, 12:00 p.m. CST

The Colorado Valley Transit Authority Board met in regular session at 108 Cardinal Lane, Columbus, Texas, August 3, 2011 at 108 Cardinal Ln., Columbus, Texas.

BOARD MEMBERS PRESENT: Obie Rhodes, Marilyn Sebesta, Phyllis Toliver, Sammy Miller, Michelle Allen, Elva Smith, and Angela Wallace.

BOARD MEMBERS ABSENT:	None
VISITORS PRESENT:	None
STAFF PRESENT:	Vastene Olier & Claudia Wicks

I. **CALL MEETING TO ORDER/ROLL CALL/PUBLIC COMMENTS....** Chairman, Obie Rhodes called the meeting to order, called the roll with a quorum present and none were present for comments.

II. **APPROVE MINUTES FROM PREVIOUS BOARD MEETING...** Angela Wallace made a motion to approve the minutes of the previous Board meeting. The motion was seconded by Phyllis Tover Allen and carried.

III. **REVIEW, UPDATE, & APPROVE THE FOLLOWING:**

Houston Galveston Area Council ... The Board approved the Houston Galveston Area Council Sub-Regional Transit Service Planning & Coordination for CVTD, date march 2011. Sammy Miller made a motion to approve the Sub-Regional Transit Service Plan as presented. Marilyn Sebesta seconded the motion and the motion carried

Funding ... The Board received a report on Federal, State, and TXDOT overbilling closeout.

Nepotism Policy ... The Board approved the suggest Nepotism revisions.

TXDOT Reviews/Monitors ... the Board approved the reports presented by staff.

Houston Galveston Area Council ... The Board received an update on the Quality Assurance performance review.

Financial reports ... the Board approved the financials reports presented by staff.

Executive Director's Update ... The Board received an updated on current activities which included IT project update, Vanpool project, shelters, staff, EEOC, issue with school transportation, and future projects.

Sammy Miller made a motion to accept the staff updates and reports as presented. Marilyn Sebesta seconded the motion and the motion carried.

Meeting adjourned.