El Paso County
REGIONAL TRANSIT INSTITUTIONAL OPTIONS FEASIBILITY STUDY

For El Paso County in cooperation with
Texas Department of Transportation

CSJ (0924-06-527)

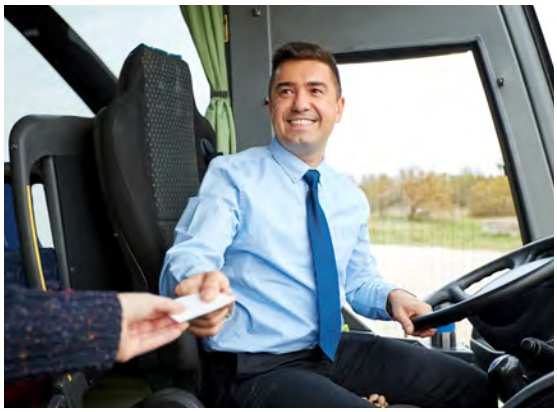












Texas A&M Transportation Institute

July 2018/ Updated April 2019

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Final Report

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July 2018 / Updated April 2019

Disclaimer

The Texas A&M Transportation Institute (TTI) performed this study in cooperation with El Paso County. The contents of this report reflect the views of the TTI authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of El Paso County. This report does not constitute a standard, specification, or regulation.

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Chapter 1: Study Background and Purpose

The El Paso County Regional Transit Institutional Options Feasibility Study (El Paso County Transit Study) examines the feasibility of a single, seamless, transit system in El Paso County, serving and connecting rural communities and urban areas in the county and the city of El Paso. The study identifies service, governance, and financial alternatives for countywide transit. The Texas A&M Transportation Institute (TTI) provided technical assistance and planning support to El Paso County in conducting the study. The study team was comprised of TTI and El Paso County staff. The Texas Department of Transportation (TxDOT) provided funding for the study.

This study builds upon previous planning in the region, including *The Far West Texas/El Paso Regional Human Services-Public Transportation Coordination Plan* (*1*), *Plan El Paso* (*2*), the 2014 Livability Summit (facilitated by TTI), and the 2015 *El Paso Multimodal Plan* (*3*). Each of these plans and initiatives included recommendations to improve and expand transit in the region. The El Paso County Transit Study investigated possible service designs, governance models, and revenue streams for a seamless countywide transit system.

This study began in December 2016 and continued through summer 2018. This report documents the activities of the study and provides information to facilitate discussion about the next steps if El Paso County and regional stakeholders decide to implement a seamless transit system in the county. Figure 1 identifies the major events in the study.

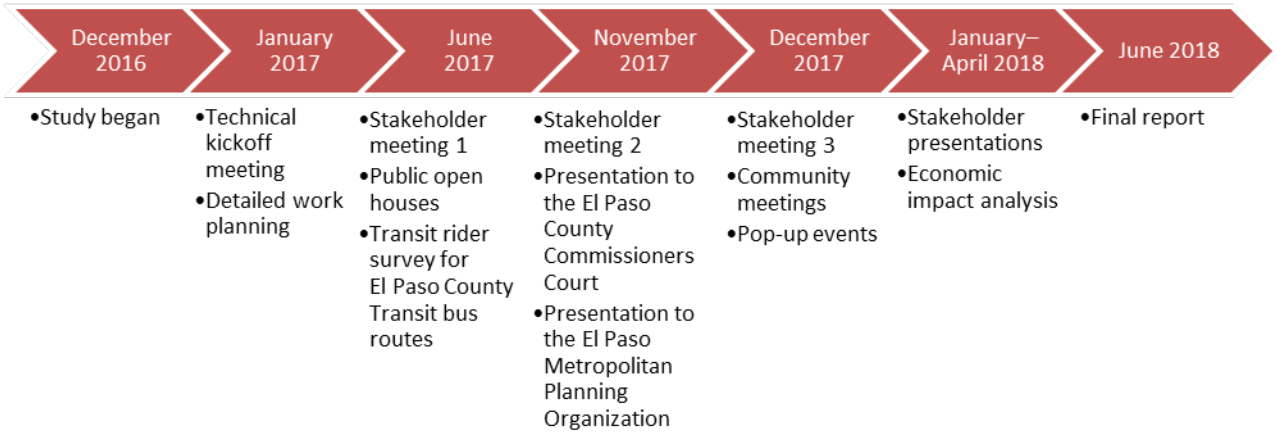


Figure 1. Major Events in the Study.

As shown in Figure 1, the study included opportunities for stakeholders, transit riders, and the public to comment. The stakeholder group was comprised of individuals representing various public and private entities and local governments throughout the El Paso County region. The stakeholder group provided insight and guidance to help ensure the study's relevance to the region and to the entities whose members and constituents would benefit from improvements to regional transit.

This report is organized by chapters that document both the activities and outcomes of study tasks. A brief description of each chapter is as follows:

- "Chapter 1: Study Background and Purpose" describes the background and purpose of the study and discusses how the report is organized.

- "Chapter 2: Existing Transit Services" discusses the current transit services in the El Paso region, particularly the transit services managed by El Paso County.
- "Chapter 3: Geographic and Demographic Analysis" explains the demographic makeup of the region and the distribution of people, jobs, and other important trip generators. The chapter also documents transit need compared to transit supply and identifies areas with transit gaps (where transit need exceeds transit supply).
- "Chapter 4: Governance and Local Funding Options" describes the governance and financial models by which a seamless, countywide transit system could be implemented in Texas.
- "Chapter 5: Peer Transit Agency Comparisons" documents peer transit agencies in Texas, describing statutory authority, governance structure, and taxing capacity. The chapter also discusses peer transit agencies in Texas and nationally to provide a comparative analysis of practices for countywide transit services.
- "Chapter 6: Transit Route Planning Guidance" discusses goals and planning guidance for countywide transit service.
- "Chapter 7: Stakeholder and Public Engagement" documents the location, content, and feedback collected from stakeholder meetings and public engagement opportunities.
- "Chapter 8: Proposed Transit Service Scenarios" presents six proposed service plans for countywide transit, including forecasted ridership, operating and capital expenses, and sources of revenue.
- "Chapter 9: Economic Impact Analysis" describes the process and results of estimating the economic impact of making additional investments in countywide transit.
- "Chapter 10: Multimodal Level of Service Index Guidance" provides guidance on how to calculate a multimodal level of service index score to evaluate improvements to transportation facilities and services.
- "Chapter 11: Implementation Strategy" describes the next steps for moving from this study to implementation of countywide transit services.

The methodology descriptions and supporting data are in appendices. Each appendix is numbered according to the chapter number in which the appendix is first mentioned and a letter designation to identify the appendix order in the chapter. For example, Appendix 2-A is the first appendix referenced in Chapter 2.

Chapter 2: Existing Transit Services

Chapter 2 provides an overview of transit in El Paso County, describes the transit services managed by El Paso County, documents the expenses and sources of revenue for El Paso County Transit, and summarizes the findings of a rider survey on El Paso County Transit routes.

Transit in El Paso County

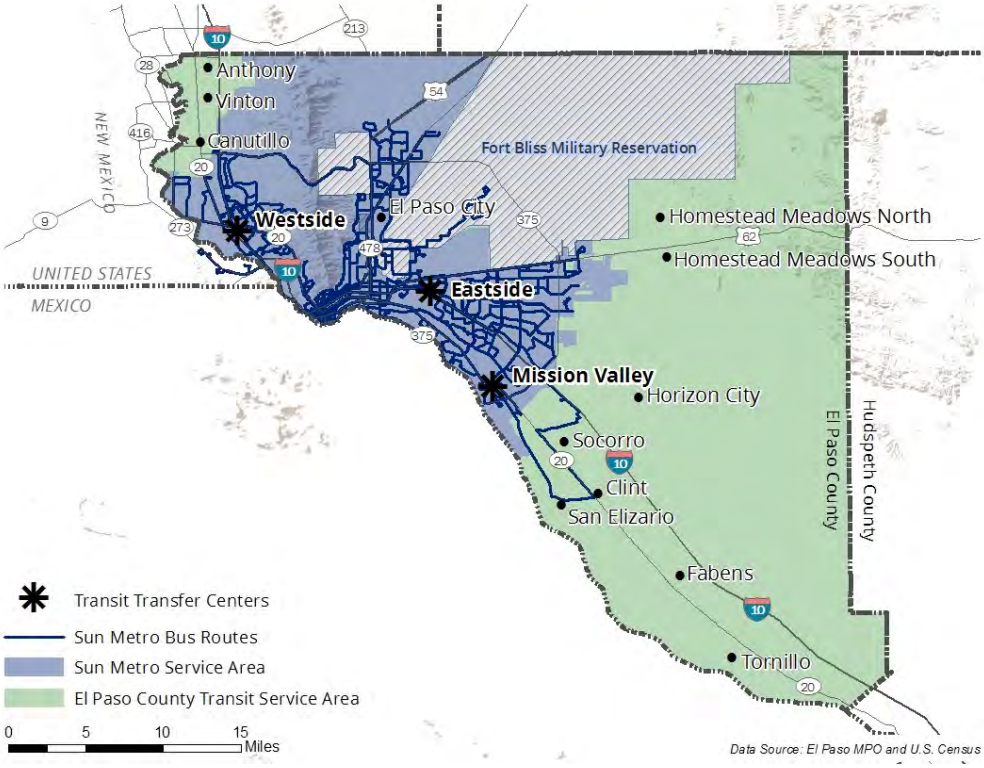
El Paso County is at the western tip of Texas along the United States–Mexico border. Two public transportation providers serve the county—the City of El Paso Mass Transit Department (known as Sun Metro) and El Paso County Transit.

Sun Metro is a municipal transit department established under Texas Transportation Code Chapter 453. Sun Metro operates local bus, rapid transit routes, and complementary paratransit for individuals with disabilities (LIFT) within the city limits of City of El Paso. Sun Metro operates two transit routes outside the city limits in partnerships with Sunland Park, New Mexico, (Route 83) and El Paso County (Route 84).

El Paso County is a rural transit district established under Texas Transportation Code Chapter 458. El Paso County Transit provides transit services in communities that are within El Paso County but outside the city limits of El Paso. The El Paso County Transit service area includes Anthony, Canutillo, and Vinton in the northwest; Homestead Meadows North and Homestead Meadows South in the east; and Clint, Fabens, Horizon City, San Elizario, Socorro, and Tornillo in the southeast.

Fort Bliss Military Reservation is in north-central El Paso County. El Paso County Transit does not operate transit services on Fort Bliss.

Figure 2 displays the service areas of Sun Metro and El Paso County Transit, the location of Fort Bliss Military Reservation, and fixed bus routes operated by Sun Metro.



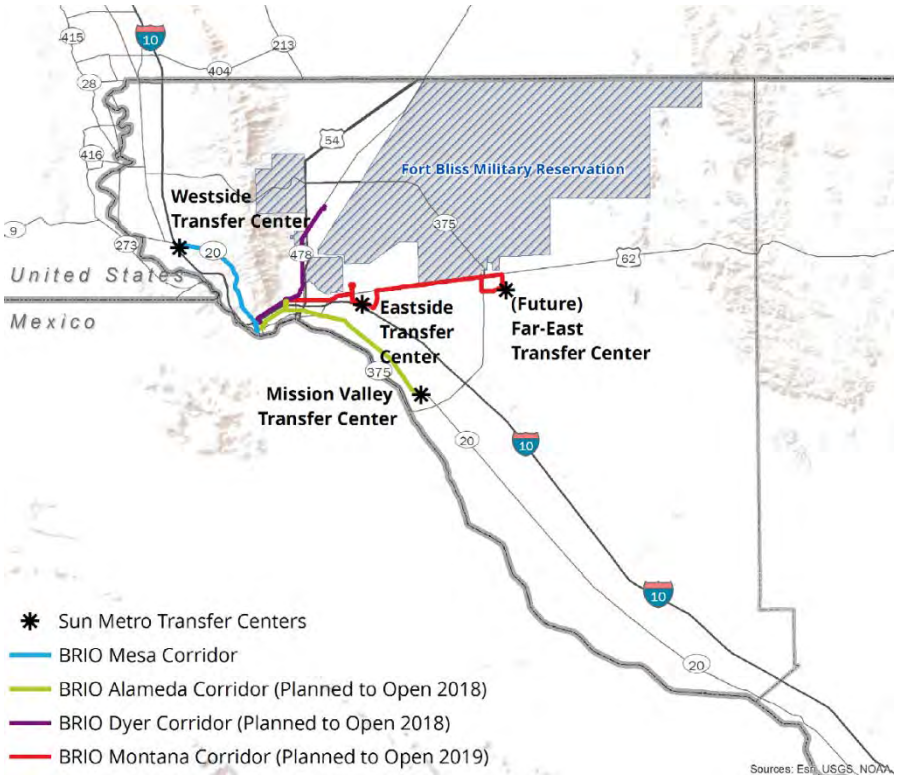
Source: Sun Metro General Transit Feed Specification as of May 20, 2016, and El Paso County Transit.

Figure 2. Current Public Transit Providers in El Paso County.

The Sun Metro and El Paso County Transit services currently connect at Sun Metro's Westside, Eastside, and Mission Valley Transfer Centers.

Sun Metro is building a rapid transit system, branded as Brio. The system will provide high-frequency transit service along four corridors. Brio uses higher-capacity buses, an advanced fare collection system, and controlled traffic signals to move riders more efficiently. Sun Metro launched Brio service in the Mesa corridor in 2014, connecting downtown and the Westside Transfer Center. Construction on the Alameda and Dyer corridors is underway. Brio service along Alameda will connect downtown to the Mission Valley Transfer Center and will open in late 2018 or 2019. Brio in the Dyer corridor will open after Alameda. The Montana corridor will connect downtown with the Eastside Transfer Center and a planned Far-East Transfer Center. The Montana corridor will open in 2020 or later.

Figure 3 displays Sun Metro's Brio routes and transfer centers that are relevant to El Paso County Transit's services.



Source: Sun Metro.

Figure 3. Sun Metro Brio Routes and Transfer Centers.

Current El Paso County Transit Services

El Paso County Transit currently sponsors three types of service:

- county bus service;
- Gold Route intercity bus; and
- the Vámonos Vanpool program.

The county bus service consists of six scheduled, fixed-route bus services connecting urban and rural communities to Sun Metro transfer centers.

El Paso County Transit contracts with First Transit to operate five bus routes (Route 10, 20, 30, 40, and 50) and has a partnership with Sun Metro to operate Route 84. Table 1 displays approximate service hours and headways for the six routes.

Table 1. El Paso County Transit Days of Service, Service Hours, and Frequency.

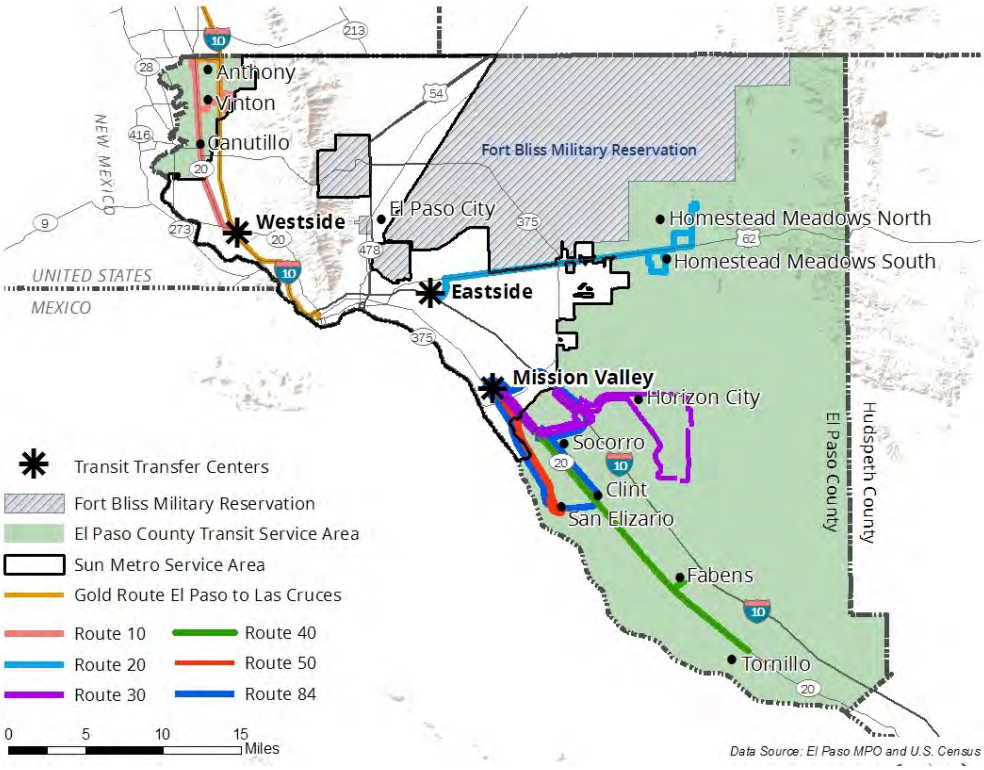
	Weekday		Saturday		Sunday		Frequency (Minutes)	
Route	Start	End	Start	End	Start	End	Peak	Off-Peak
10 Anthony/Canutillo	6:00 AM	7:30 PM	6:00 AM	7:30 PM	No service	No service	50	70
20 Montana Vista	6:00 AM	8:00 PM	6:00 AM	8:00 PM	No service	No service	50	50
30 Horizon	6:30 AM	8:00 PM	6:30 AM	8:00 PM	No service	No service	85	180
40 Fabens/Tornillo	7:00 AM	6:00 PM	7:00 AM	6:00 PM	No service	No service	85	90
50 Mission Trail	8:00 AM	6:00 PM	10:00 AM	6:00 PM	10:00 AM	6:00 PM	60	60
84 EPCC Mission del Paso	6:30 AM	7:30 PM	8:00 AM	6:00 PM	No service	No service	90	90

Source: El Paso County Transit schedules.

The passenger fare on El Paso County Transit is $1.50 for a one-way trip, and monthly passes are available for purchase. All six routes are flag-stop routes. Drivers pick up and drop off passengers at safe locations along the route when signaled by passengers.

The Gold Route is a service of the New Mexico Department of Transportation (NMDOT), partially funded by TxDOT through El Paso County. The Gold Route links downtown El Paso; the Westside Transfer Center; Anthony, Texas; and downtown Las Cruces, New Mexico. The intercity bus service is available in morning and afternoon peak hours Monday through Friday. One-way fare is $3.00, and monthly passes are available.

Figure 4 shows the six county bus routes and the Gold Route in El Paso County.



Source: El Paso County Transit.

Figure 4. El Paso County Transit County Bus Routes and Gold Route.

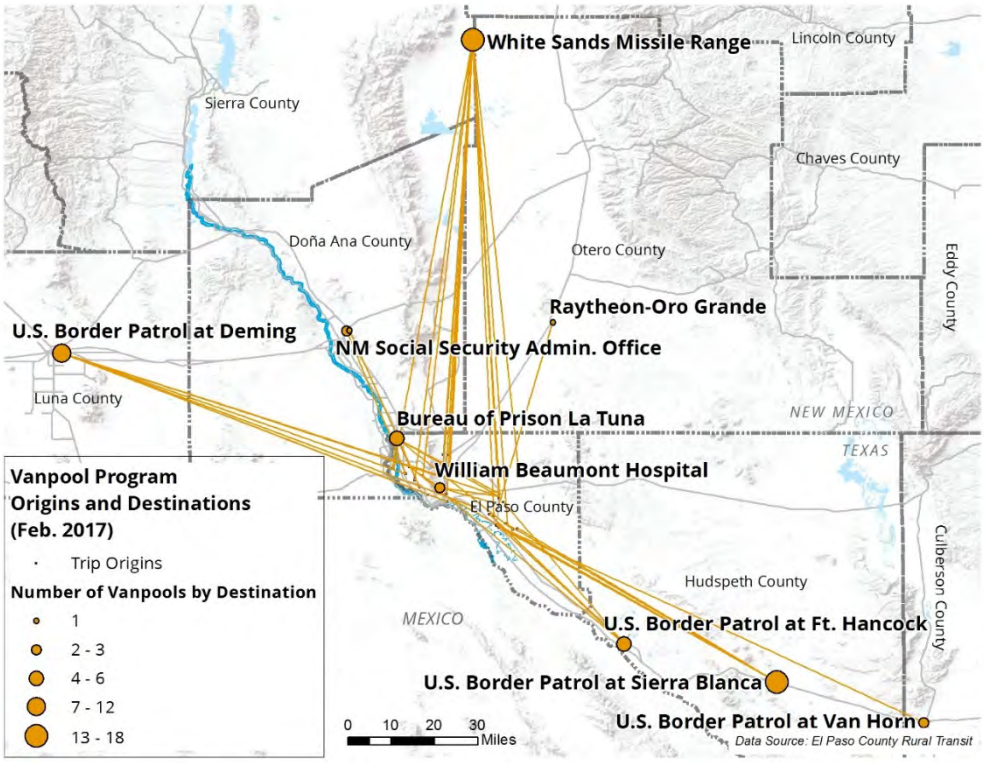
El Paso County Transit offers a vanpool program, known as Vámonos Vanpool, to match commuter groups with similar origins and destinations to travel to and from work on weekdays. The vanpool program provides vans and subsidies to reduce commuting costs. El Paso County Transit administers this program and contracts with Enterprise, Inc. to operate. The cost per individual depends on the length of the commute and the number of participants in the vanpool. Enterprise, Inc. estimates that the approximate cost per passenger is $2.45 per one-way trip (*4*).

Table 2 presents key operational metrics for the vanpool program as of March 2017, and Figure 5 shows the primary destinations for vanpools (by number of vanpools) in February 2017 (*5*).

Table 2. El Paso County Vanpool Program Statistics in March 2017.

Operational Statistics	Number
Active vanpools	69
Average monthly commute mileage	3,271
Average trip length (entire route)	130
Average Trip length (El Paso County portion only)	47
Average seating capacity	8
Average ridership	6
Commuter trips (monthly cumulative)	9,328
Passenger trips eliminated (monthly cumulative)	10,155

Source: Enterprise, Inc.



Source: El Paso County Transit data.

Figure 5. El Paso County Transit Vanpool Program Origins and Destinations in February 2017.

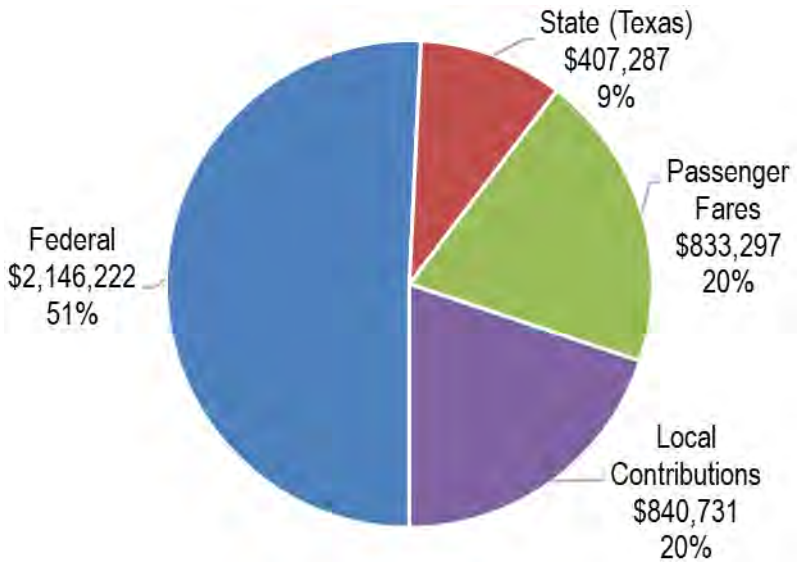
Expenses and Sources of Revenue

El Paso County receives revenue from federal, state, and local sources. In fiscal year (FY) 2017, El Paso County applied $3,557,827 in revenue to operating expenditures and $669,710 to capital expenditures for a total of $4,227,537. Table 3 identifies revenues by service, and Figure 6 illustrates the relative share of each source (federal, state, local, and passenger fares).

Table 3. Revenues Applied to El Paso County Transit Operating and Capital Expenses in FY 2017.

Source	County Bus Routes	Vámonos Vanpool	Gold Route Intercity Bus	Total
Total federal funds	$1,373,531	$352,511	$420,180	$2,146,222
Section 5311 Rural	$866,959	—	—	$866,959
Section 5311(f) Intercity Bus	—	—	$420,180	$420,180
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	$506,572	$352,511	—	$859,083
State funds (Texas transit rural)	$407,287	—	—	$407,287
Total local investment	$127,146	—	$713,585	$840,731
NMDOT	—	—	$713,585	$713,585
El Paso County	$127,146	—	—	$127,146
Passenger fare revenue	$191,605	$491,580	$150,112	$833,297
Total	$2,099,569	$844,091	$1,283,877	$4,227,537

Source: El Paso County Transit and TxDOT PTN-128 FY 2017.



Source: El Paso County Transit and TxDOT PTN-128 FY 2017.

Figure 6. El Paso County Transit Revenues Applied in FY 2017.

Federal Assistance

El Paso County Transit applies revenues from three federal sources:

- Federal Transit Administration (FTA) Section 5311 Formula Grants for Rural Areas;
- FTA Section 5311(f) Intercity Bus Program; and
- Flexible Funding Program CMAQ.

The TxDOT Public Transportation Division (PTN) is responsible for allocating Section 5311 to rural transit districts and distributing Section 5311(f) funds based on a competitive call for projects. The El Paso Metropolitan Planning Organization (El Paso MPO) approves use of CMAQ funds for the region.

Section 5311 and CMAQ funds support the six current county bus routes. Revenue from Section 5311(f) supports the Gold Route, and CMAQ funding supports the Vámonos Vanpool program.

Table 3 shows the different federal revenues as applied to El Paso County Transit services. In FY 2017, El Paso County applied $2,146,222 in federal funds to operating and capital expenses for county bus routes, vanpools, and the Gold Route.

State Assistance

As a rural transit district, El Paso County is eligible to receive state public transportation funds under Texas Transportation Code Chapter 456. PTN allocates state funds based on need (65 percent) and performance (35 percent). The allocation factors for need are population (75 percent) and land area (25 percent). The allocation factors for performance are three equally weighted measures: passengers per revenue mile, revenue miles per operating expense, and local investment per operating expense. In FY 2017, El Paso County applied $407,287 in state public transportation funds to county bus routes. State funds helped to match FTA grants.

Local Investment

Local investments consist of funding from local government and non-government sources. The largest local contribution is from NMDOT for the Gold Route. Other local government contributions include El Paso County contributions for Route 50 and Route 84 to fulfill local match requirements for CMAQ revenue. Applied local investment totaled $840,731 in FY 2017.

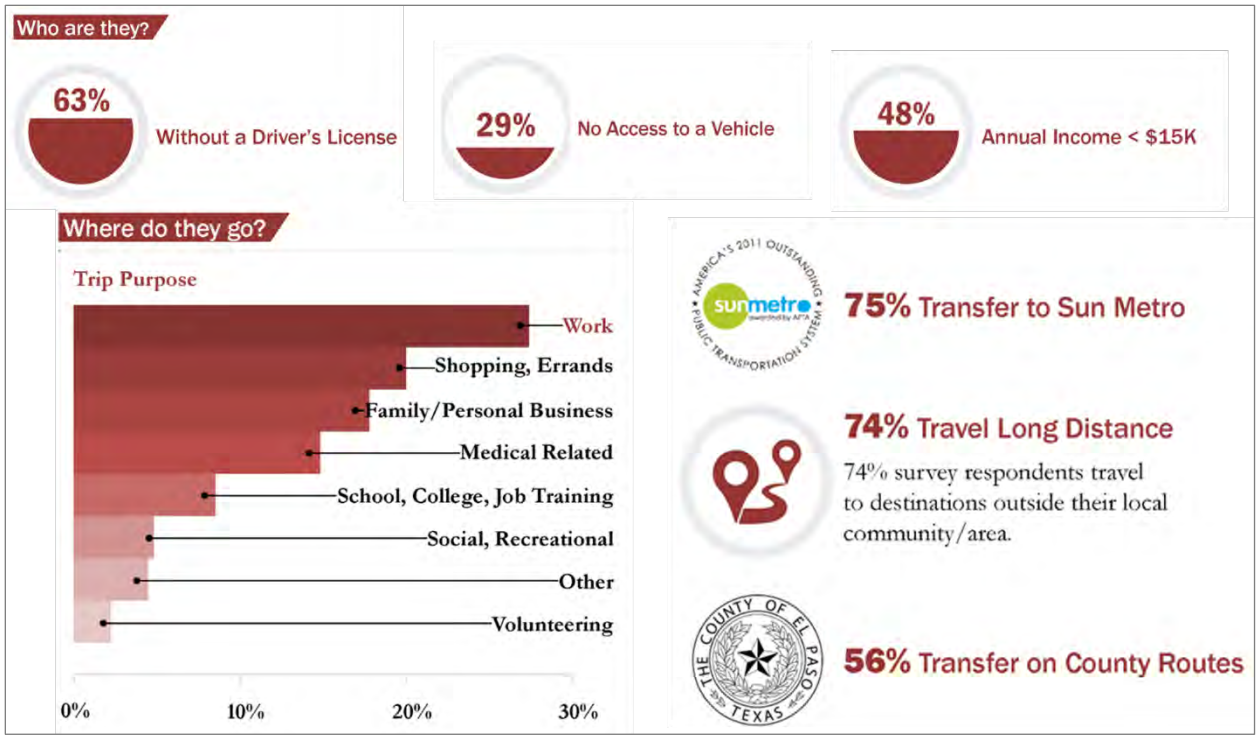
Passenger Fares

All income received directly from passengers, including payments from vanpool riders, is included in passenger fares. Total revenue from passengers in FY 2017 was $833,297.

County Bus Route Passenger Characteristics

In a project sponsored by TxDOT in 2017, TTI conducted a rider survey for several urban and rural transit districts in Texas, including El Paso County Transit. Surveyors rode a sample of bus trips on each of the six El Paso County Transit routes to ask riders to complete a self-administered rider survey. The total number of returned surveys was 179. Copies of the survey in English and Spanish are in Appendix 2-A. Tabulations for survey responses by question are in Appendix 2-B.

Survey results showed that 63 percent of El Paso County Transit's county bus riders do not have a driver's license, 48 percent of riders reported an annual household income of less than $15,000, and 29 percent of riders do not have a working vehicle available to the household. El Paso County Transit's county bus riders take buses to work, go shopping, run errands, and visit family or personal business. Transfers are usual for El Paso County Transit's riders—either between county routes or to Sun Metro, or both. Sixteen percent of county bus riders would have no other travel option without El Paso County Transit services (could not make the trip), and 43 percent would have to ask family or a friend for a ride. Forty-two percent of El Paso County Transit's riders consider transit to be absolutely essential to quality of life, and 41 percent consider transit highly important to quality of life. Figure 7 presents the key results of the rider survey in an infographic format.



Source: El Paso County Transit Rider Survey June 2017, conducted by TTI.

Figure 7. Summary of Key Results from the 2017 Texas Rider Survey for El Paso County Transit.

Chapter 3: Geographic and Demographic Analysis

Geographic and Demographic Characteristics

According to the 2015 U.S. Census Bureau American Community Survey 5-Year Estimates, the City of El Paso had a population of 676,325 and a land area of 257 square miles with an approximate density of 2,634 persons per square mile. Outside the city limits of El Paso, El Paso County Transit served a total population of 154,770 over a land area of 758 square miles with an approximate density of 205 persons per square mile (*6*).

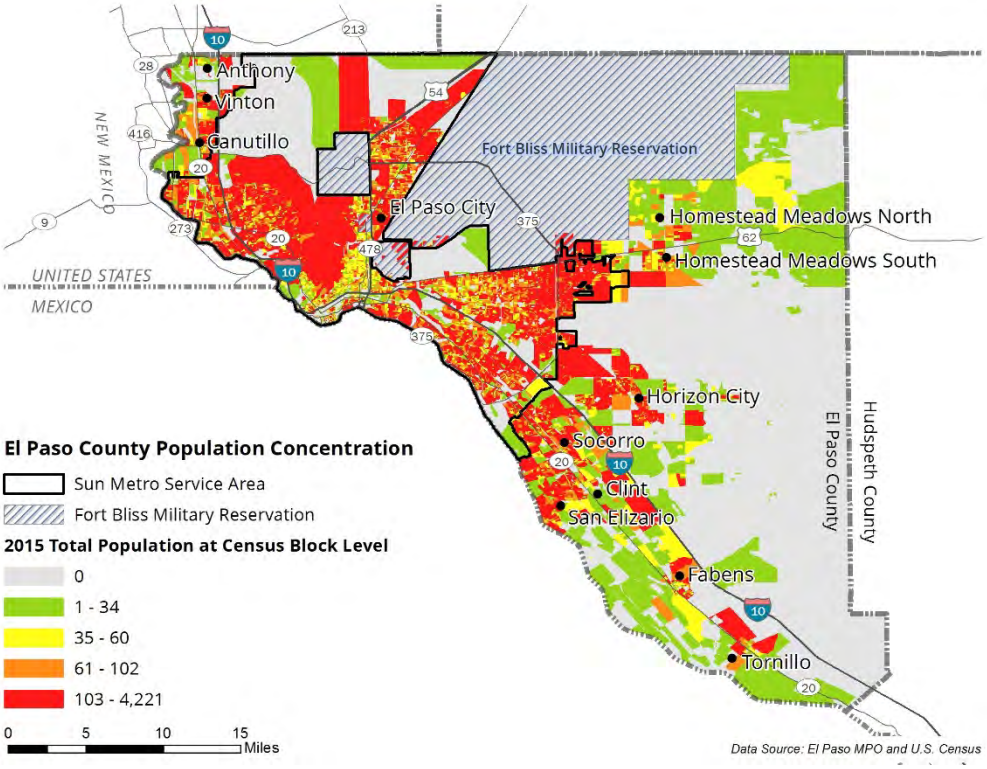
Three key findings that are important considerations when examining the feasibility of countywide transit are the following:

- Although the county population density outside of the City of El Paso is lower, there are many areas of population concentration.
- The El Paso urbanized area extends significantly beyond the city limits of El Paso and has grown with each decennial census.
- Most of the jobs in El Paso County are within El Paso.

Population Density

Figure 8 displays the population in each census block in El Paso County. Several areas outside the city limits of El Paso have relatively high population concentrations, including Canutillo and Vinton in the northwest; Clint, Fabens, Horizon City, San Elizario, and Tornillo in the southeast; and Homestead Meadows South in the east. Population concentration is a consideration in planning transit services in the following two aspects:

- Transit service can be more effective in densely populated areas.
- People are more likely to use transit when they live within walking distance of transit services.



Source: U.S. Census data, analysis by TTI.

Figure 8. El Paso County Population Concentration.

Urbanized Area Growth

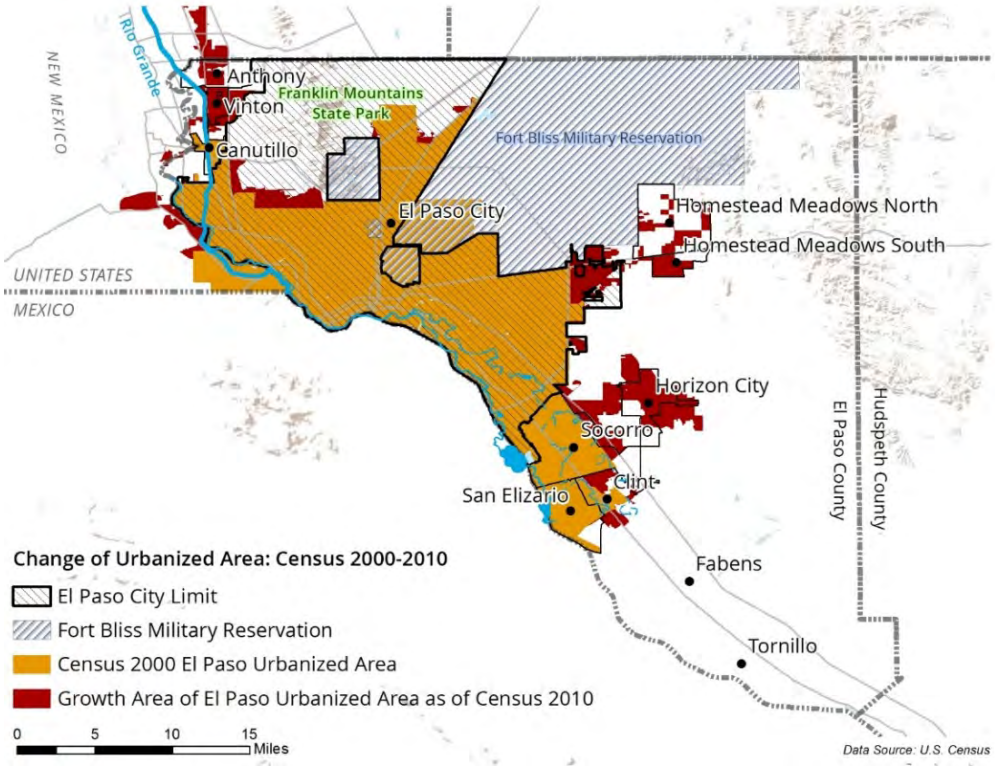
The Census Bureau defines an urban area as densely developed territory, encompassing residential, commercial, and other non-residential urban land uses. An urban area is comprised of a core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses.

The Census Bureau delineates urban areas after each decennial census by applying specified criteria to decennial census and other data. The Census Bureau identifies two types of urban areas:

- urbanized areas of 50,000 or more people; and
- urban clusters of at least 2,500 and less than 50,000 people.

Non-urbanized or rural areas encompass all population, housing, and territory not included within an urban area.

El Paso County contains a single urbanized area (UZA), the El Paso UZA, which crosses the Texas–New Mexico state boundary. As of the 2010 Census, the El Paso UZA had a population of 803,086, with 772,374 people living within the Texas portion of the UZA (7). A portion of the UZA lies outside the city limits of El Paso (e.g., in the urban areas of Socorro, San Elizario, and Clint). Between 2000 and 2010, the UZA grew to include additional areas of El Paso County. Figure 9 illustrates the UZA in El Paso County and the change in the UZA boundaries between 2000 and 2010.



Source: U.S. Census data, analysis by TTI.

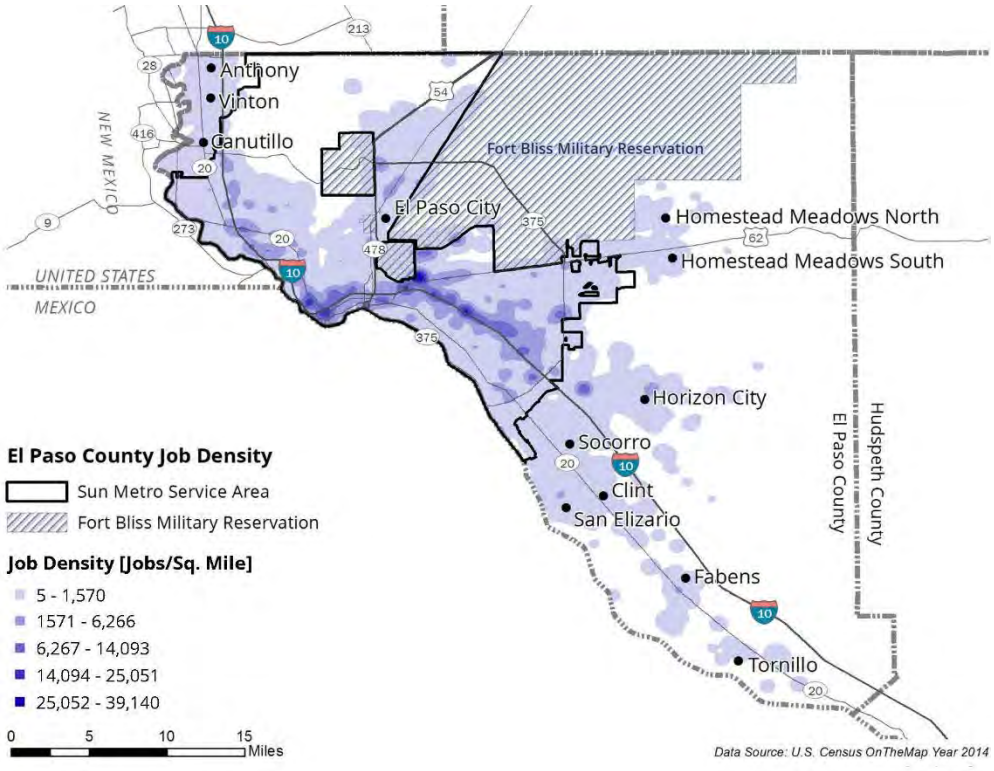
Figure 9. Urbanized Area Change in 2000–2010 in El Paso County.

FTA apportions transit funding based on urbanized and non-UZAs. The growth in the UZA population results in increased FTA apportionments under urban formula grants programs. The City of El Paso is the designated recipient for FTA urban formula grants. Figure 9 identifies communities that are included in the El Paso UZA but outside the city limits of El Paso. El Paso County Transit currently provides transit services in the urban areas outside the City of El Paso. These communities include parts of Anthony, Canutillo, and Vinton northwest of El Paso; parts of Homestead Meadows North and Homestead Meadows South east of El Paso; and Horizon City, Clint, San Elizario, and Socorro southeast of El Paso.

Job Density

Figure 10 shows job density in El Paso County. Jobs are concentrated along the Interstate Highway 10 corridor within the City of El Paso. In El Paso County outside the city limits of El Paso, job density is generally low (up to 1,570 jobs per square mile). However, some areas of Horizon City (Eastlake High School), Fabens (central business district), and San Elizario (San Elizario Elementary School) show higher concentrations of employment.

A countywide transit system needs to accommodate work trips by facilitating connections to centers of employment.



Source: U.S. Census Bureau OnTheMap Year 2014.

Figure 10. Job Density in El Paso County.

Transit Need, Transit Supply, and Transit Gaps

The study team developed a transit need index (TNI) and a transit supply index (TSI) to identify the transit gaps in El Paso County. This section presents details on the TNI and TSI methodology and areas that were identified as transit gaps.

Transit Need Index

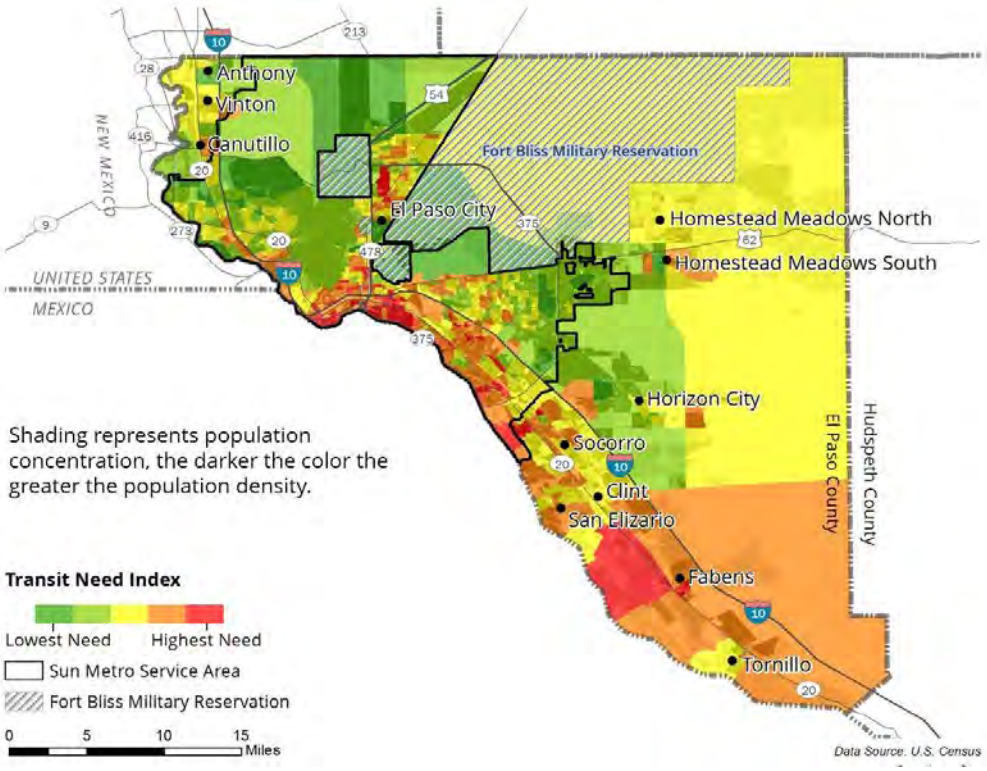
The TNI is based on demographic statistics at the census block group level to identify concentrations of transit need. TNI is comprised of four measures to identify transportation-disadvantaged populations or populations more likely to benefit from and use transit. The four measures are as follows:

- *Elderly population* is the percentage of the population age 65 and older in a census block group. The elderly population has a higher need for transit due to an increasing loss of mobility, requiring the assistance of others.
- *Households with an individual with a disability* is the percentage of housing units in a census block group in which at least one household member is a person with a disability. People with disabilities are more likely to have mobility limitations, need assistance with transportation, and generally have lower incomes.
- *People living below the poverty level* is the percentage of the population in a census block group with income below the poverty level. Individuals living in poverty have a higher need for transit due to limited financial means for personal transportation.

- *Households with no vehicle available* is the percentage of households in a census block group with zero vehicles available in the household. Households without vehicles have a higher need for transit because of a lack of personal transportation.

Appendix 3-A presents a summary description of how the TNI was calculated for each census block group and each measure's distribution across El Paso County.

Figure 11 illustrates the TNI in El Paso County. Canutillo, Fabens, Homestead Meadows South, San Elizario, and Vinton have the highest TNI in the county.



Source: U.S. Census data, analysis by TTI.

Figure 11. El Paso County Transit Need Index.

Transit Supply Index

As described in Chapter 2, El Paso County Transit operates six scheduled, fixed-route bus services connecting urban and rural communities to Sun Metro transfer centers. The TSI is based on three measures of transit service provided at the census block group level:

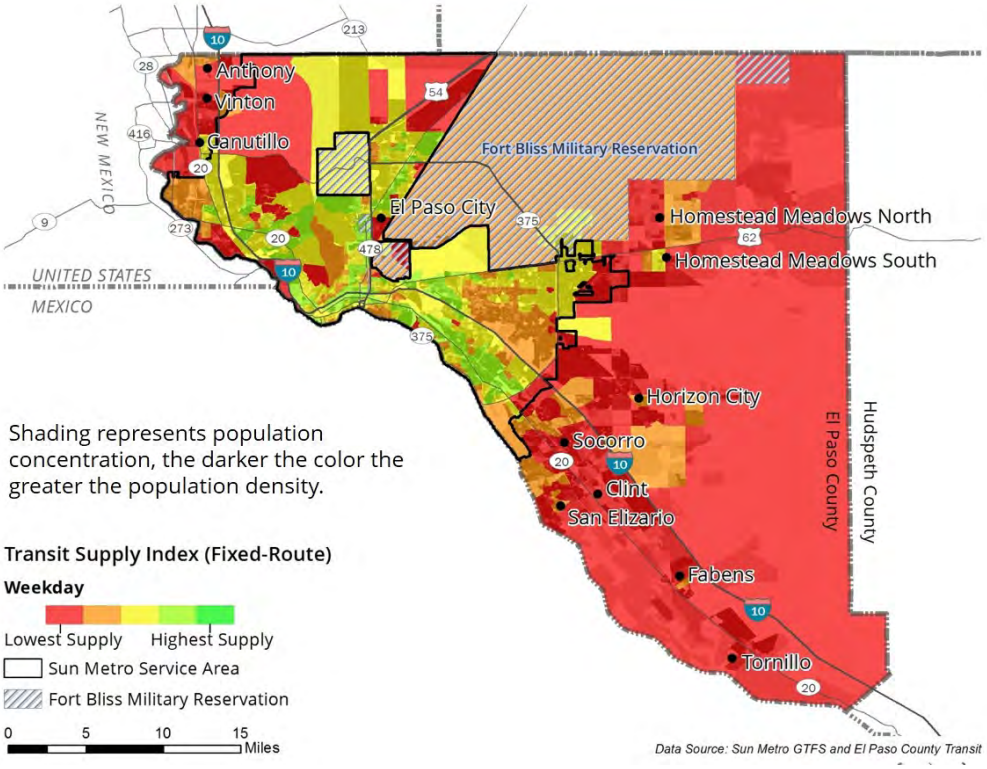
- *Service coverage* measures the census blocks with a housing unit density greater than three units per acre (transit supportive) that are served by transit. *Served by transit* means the transit-supportive census block is within a half mile of a transit route. The higher percentage of transit-supportive census blocks served in a census block group, the better the service coverage in the census block group. Housing unit data came from the 2015 U.S. Census Bureau American Community Survey 5-Year Estimates.
- *Service frequency* is the average number of bus trips per bus stop within each census block group. For the data for this measure, The study team digitized El Paso County Transit schedules and

downloaded Sun Metro's General Transit Feed Specification data (version May 20, 2016) that contains stops, trips, and schedules (*8*).

- *Hours of service* is calculated using the starting time of the earliest service and ending time of the latest service at each stop within each census block group. Following the recommendations of the *Transit Capacity and Quality of Service Manual*, Third Edition (*9*), The study team classified service span into six levels, from Level 1 indicating the longest hours of service to Level 6 representing the shortest.

Appendix 3-B presents additional details about the TSI methodology and results for each measure.

Figure 12 maps the results of the TSI in El Paso County. Areas ranked with high TSI values (sufficient supply to excellent supply) are in green, while areas with insufficient or inefficient transit service are in red and orange. Transit supply in most of El Paso County is low compared to areas within the City of El Paso.



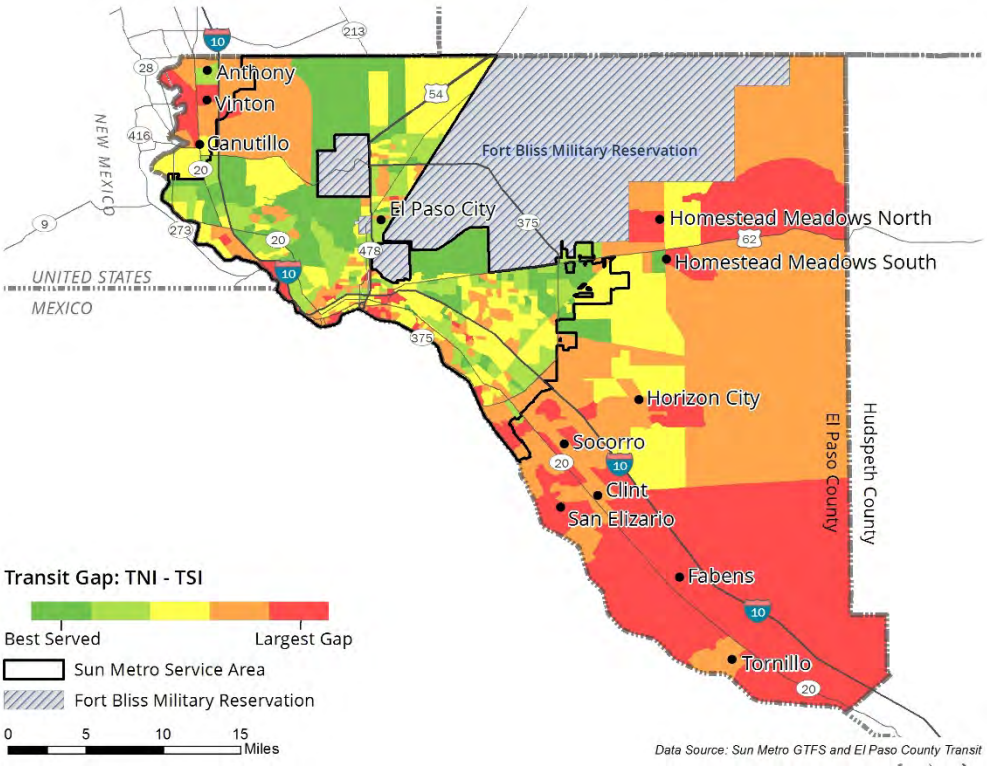
Source: Sun Metro General Transit Feed Specification (GTFS) and El Paso County Transit, analysis by TTI.

Figure 12. El Paso County Transit Supply Index.

Transit Gaps

A transit gap is an area where relative transit need is higher than relative transit supply.[1] The study team compared TNI and TSI scores for each census block group to identify locations where a transit gap exists (Figure 13). The study team identified that Fabens, Homestead Meadows North, San Elizario, and Vinton have the largest transit gap, followed by Clint, Horizon City, Homestead Meadows South, Socorro, and Tornillo. These areas are candidates for improved or additional transit service.

[1] The study team also performed a fixed-route transit supportive area analysis. The results are in Appendix 3-C.



Source: U.S. Census data, Sun Metro GTFS, and El Paso County Transit, analysis by TTI.

Figure 13. Transit Gaps in El Paso County.

Chapter 4: Governance and Local Funding Options

This section describes the regulatory framework for transit in Texas and governance options for El Paso County to provide a countywide transit system. The options for governance are a county mass transit authority, an interlocal agreement(s) between local governments, a local government corporation (LGC), and a regional mobility authority (RMA). Each option is described and discussed considering its feasibility for El Paso County under federal regulations and Texas statutes.

Two appendices provide useful background for this chapter. Appendix 4-A describes each transit authority and transit district in Texas. Appendix 4-B provides a description of federal, state, and local funding sources for transit in Texas.

Regulatory Framework for Transit in Texas

Texas statutes provide for three categories of public transit systems, and each is eligible to receive federal transit funds:

- Transit authorities and municipal transit departments. Texas has six metropolitan or regional transit authorities, two municipal transit departments, and one county transit authority (Texas Transportation Code Chapters 451, 452, 453, and 460). Voters authorize each authority or municipal transit department to impose a sales tax dedicated to transit. The authorities and the City of El Paso municipal transit department (Sun Metro) are not eligible to receive state public transportation funds. The City of Laredo municipal transit department is eligible to receive state funds.
- Urban transit districts. An urban transit district is a local governmental body or political subdivision of the state that operates a public transportation system in an UZA. In January 2017, Texas had 29 urban transit districts. Urban transit districts receive state public transportation funds but do not have a local tax dedicated to transit as a source of local funds (Texas Transportation Code Chapters 456 and 458).

  Laredo is a municipal transit department with a local sales tax dedicated to transit and is also an urban transit district eligible to receive state public transportation funds. Laredo had a population less than 200,000 when voters approved the municipal transit department with a 0.25 percent sales tax dedicated to transit in 1991. By statute, Laredo is eligible to continue receiving state public transportation funds (Texas Transportation Code Sections 456.003 and 456.006[a]).
- Rural transit districts. A rural transit district is a political subdivision of the state that provides and coordinates rural public transportation in its territory. In January 2017, Texas had 37 rural transit districts. Rural transit districts receive state public transportation funds but do not have a local tax dedicated to transit as a source of local funds (Texas Transportation Code Chapters 456 and 458). El Paso County is a rural transit district.

Transit Authorities and Municipal Transit Departments

In Texas, large urban areas are eligible under state statute to ask voter approval for a local option general sales tax dedicated to transit. The Texas state sales and use (sales) tax rate is 6.25 percent, but local taxing jurisdictions (cities, counties, special purpose districts, and transit authorities) may also impose local sales taxes up to 2 percent for a total maximum combined rate of 8.25 percent. Voters in nine urban areas in Texas have approved a local option sales tax for a transit authority or municipal transit department.

Table 4 shows the metropolitan area or county and the tax rate for the local sales tax dedicated to transit. The references to the Texas Transportation Code identify the statutory authority for each local government entity.

Table 4. Texas Metropolitan Areas with Approved Local Option Sales Tax for Transit.

Type of Authority or Governmental Entity	Principal City or County	Agency	Sales Tax Rate
Metropolitan rapid transit authorities (Transportation Code Chapter 451)	Houston	Metropolitan Transit Authority of Harris County (METRO)	1.00%
	San Antonio	VIA Metropolitan Transit (VIA) San Antonio Advanced Transportation District*	0.50% 0.25%
	Austin	Capital Metropolitan Transportation Authority (Capital Metro)	1.00%
	Corpus Christi	Regional Transportation Authority (CCRTA)	0.50%
Regional transportation authorities (Transportation Code Chapter 452)	Dallas	Dallas Area Rapid Transit (DART)	1.00%
	Fort Worth**	Fort Worth Transportation Authority (Trinity Metro)	0.50%
Municipal transit departments (Transportation Code Chapter 453)	El Paso	El Paso Mass Transit Department	0.50%
	Laredo	Laredo Transit Management, Inc. (El Metro)	0.25%
Coordinated county transportation authority (Transportation Code Chapter 460)	Denton County: Denton, Lewisville, and Highland Village	Denton County Transportation Authority (DCTA)	0.50%

** Revenues generated from a 0.25 percent sales tax in San Antonio are dedicated to advanced transportation projects in that city.*

*** The City of Grapevine dedicates a part of the municipal sales tax (0.375 percent) to fund the TEXRail commuter rail service in Grapevine. The City of North Richland Hills provides funding from available sources equal to a 0.375 percent municipal sales tax to fund TEXRail commuter rail service in that city.*

Source: Texas Comptroller of Public Accounts, Transit Sales and Use Tax. (10)

Urban Transit Districts

An urban transit district is a local governmental body or political subdivision of the state that operates a public transportation system in an UZA with a population of 50,000 or more (Texas Transportation Code Chapter 458). For purposes of federal and state funding, there are two categories of urban transit districts—small urban transit districts in UZAs with a population less than 200,000 and large urban transit districts in UZAs with a population 200,000 or more. Urban transit districts do not have a local sales tax dedicated to transit (with one exception, the City of Laredo). There are 24 urban transit districts in the state, including four urban transit districts in the Dallas–Fort Worth UZA that receive state funds under specific legislation (Texas Transportation Code Section 456.006).

Rural Transit Districts

A rural transit district is a political subdivision created pursuant to the provisions of Texas Transportation Code Chapter 458 to provide and coordinate rural public transportation in a rural area. Rural transit districts receive federal and state funds for transit through TxDOT.

El Paso County is one of 37 rural transit districts in the state. Although El Paso County is a rural transit district, El Paso County Transit currently serves the UZAs in the county outside the city limits of El Paso. The UZAs are not eligible for state funds. Neither the UZAs outside the City of El Paso nor the rural areas of El Paso County have a locally dedicated source of revenue to provide local funds to match federal grants and fund operating and capital costs.

Texas Transportation Code Chapter 457—County Mass Transit Authority

The Texas Legislature passed specific legislation in 1997 to make it possible for the citizens of El Paso County to create a county mass transit authority. Texas Transportation Code Chapter 457 applies only to a county containing a municipality with a population 500,000 or more that has created a mass transit department under Texas Transportation Code Chapter 453. Only El Paso County meets these criteria.

Creating a County Mass Transit Authority under Chapter 457

Resolution to Create the Authority

The first step in creating a county mass transportation authority under this chapter requires the county commissioners court, the governing body of the principal municipality, and the governing body of at least one other municipality in the county to adopt a resolution finding the creation of an authority would be in the public interest and benefit to persons residing in the county (Texas Transportation Code Section 457.051).

Board Authority and Composition

The next step is to create a board for the authority that will then decide if an election should be called. The board shall administer and operate the authority. The board of the county authority consists of seven members. The board members are appointed as follows:

- two members by the county commissioners court;
- four members by the governing body of the principal municipality; and
- one member by the governing bodies of all municipalities that adopt the resolution described by Section 457.051 (Texas Transportation Code Section 457.052).

Service Plan and Tax Rate

If a county authority is created under Section 457.051, the board shall propose a service plan and an initial tax rate for the authority. The jurisdiction of an authority is coextensive with the territory of the county. The initial tax rate must be the same rate as that collected by the city transit department created by the principal municipality (Texas Transportation Code Section 457.053). The El Paso County transit tax rate must be the tax collected by the City of El Paso for Sun Metro (0.5 percent).

Election

After proposing a service plan and an initial tax rate, the board shall call an election in the county to approve the creation of the authority and the tax rate. The election is not held in the territory of the principal municipality. At the election, the ballots shall be printed to permit voting for or against the following proposition: “The creation of the El Paso County Transit Authority and the imposition of a 0.5 percent sales tax in El Paso County” (Texas Transportation Code Section 457.053).

Majority Votes for Approval

If a majority of the votes cast at the election approve the proposition, the board shall adopt an order implementing the service plan; and on the day the sales tax takes effect in the authority, the city transit department created by the principal municipality under Chapter 453 is dissolved, and its assets, personnel, and obligations are transferred to the authority (Texas Transportation Code Section 457.053).

Majority Does Not Vote for Approval

If a majority of the votes cast at the election do not approve the proposition, the board shall adopt an order dissolving the county authority, and the city mass transit department of the principal municipality is not affected (Texas Transportation Code Section 457.053).

Maximum Local Sales Tax Rate

A board may not adopt a sales tax rate that when combined with the rates of all sales taxes imposed by all political subdivisions in the county exceeds 2 percent in any location in the county (enacted by the 57th Legislature effective September 1, 1961; Texas Transportation Code Section 457.302).

As shown in Table 5, the current local sales tax in several jurisdictions in El Paso County meets the allowable maximum rate of 2 percent.

Table 5. Current Local Sales Tax Rate by Jurisdiction in El Paso County.

Jurisdiction	El Paso County	El Paso County Emergency District 2	City	Transit	Current Total Local
City of El Paso	0.5%	—	1.0%	0.5%	2.0%
El Paso County	0.5%	0.5%	—	—	1.0%
Anthony	0.5%	0.5%	1.0%	—	2.0%
Borderland	0.5%	0.5%	—	—	1.0%
Canutillo	0.5%	0.5%	—	—	1.0%
Clint	0.5%	0.5%	1.0%	—	2.0%
Fabens	0.5%	0.5%	—	—	1.0%
Horizon City	0.5%	—	1.5%	—	2.0%
San Elizario	0.5%	0.5%	1.0%	—	2.0%
Socorro	0.5%	0.5%	1.0%	—	2.0%
Tornillo	0.5%	0.5%	—	—	1.0%
Vinton	0.5%	0.5%	1.0%	—	2.0%
Westway	0.5%	0.5%	—	—	1.0%

Source: Texas Comptroller of Public Accounts.

Feasibility

Texas imposes a 6.25 percent state sales tax on all retail sales, leases, and rentals of most goods, as well as taxable services. Local taxing jurisdictions (cities, counties, and special purpose districts) can also impose up to a 2 percent sales tax for a maximum combined rate of 8.25 percent.

This effectively means Texas Transportation Code Chapter 457 is not feasible unless local jurisdictions with an existing 2 percent rate agree to roll back another tax to make room for the 0.5 percent transit tax. The only other resolution is for the Texas Legislature to raise the permissible local sales tax maximum rate.

Texas Government Code Chapter 791—Interlocal Agreement

El Paso County could enter into interlocal agreement(s) with other local governments to provide countywide transit services.

An interlocal agreement is a contract between a local governmental entity and another local government that complies with the statutory requirements of Texas Government Code Chapter 791. Interlocal agreements may be referred to by other names, including memoranda of understanding, cooperative agreements, or joint powers agreements. If the agreement is between two or more governmental entities,

the agreement is subject to the requirements of the Texas Government Code Chapter 791—Interlocal Cooperation Act (*11*).

Purpose of Interlocal Agreement

The purpose of Chapter 791 of the Texas Government Code is to increase the efficiency and effectiveness of local governments by authorizing them to contract, to the greatest extent possible, with one another and with the agencies of the state (Texas Government Code Section 791.001). The act is the statutory authority for local governmental entities to enter into contractual agreements with each other, with the State of Texas, with administrative agencies, and with similar entities in other states.

Interlocal agreements may be used for such government services and functions as streets, roads, and drainage; public health and welfare; planning; administrative functions such as tax assessment and collection, personnel services, purchasing, etc.; and other government functions in which the contracting parties are mutually interested, such as providing public transportation services (Texas Government Code Section 791.003[3]).

Entities Authorized to Enter into Interlocal Agreements

Counties, cities, special districts, or other political subdivisions of the state or another state may enter into interlocal agreements. Other entities can include local government corporations, local workforce development boards, or a combination of two or more entities described in the code. Political subdivision includes any corporate and political entity organized under state law, for example transit authorities, transit districts, and regional mobility authorities (Texas Government Code Section 791.003[4]).

An interlocal agreement must be authorized by the governing body of each party (e.g., the city council or commissioners court) even if the agreement is within the delegated authority of the city manager, purchasing manager, etc. The agreement should name the governmental entity as the contracting party.

An interlocal agreement may not confer authority that neither party in the contract has otherwise. This statutory requirement is in keeping with the rule that a government body may only commit to an expenditure of current revenue and avoids an unconstitutional lending of the governmental entity's credit (Texas Constitution Article XI, Section 3).

There is precedent for an interlocal agreement to extend transit services beyond the existing service area of a transit authority. Capital Metro has two interlocal agreements to provide public transportation service in the Cities of Round Rock and Georgetown, both outside the Capital Metro service area. Appendix 4-C provides a copy of each interlocal agreement.

Feasibility

Under Government Code Chapter 791, the City of El Paso on behalf of Sun Metro and El Paso County on behalf of the rural transit district could enter into an interlocal agreement for the city to provide countywide transit services in El Paso County. Other municipalities (e.g., Anthony, Clint, Horizon City, San Elizario, Socorro, and Vinton) could agree to join an interlocal agreement to ensure public transportation services in the respective city, town, or village.

Funding for Countywide Transit

As discussed previously, although El Paso County is a rural transit district, El Paso County Transit serves the UZAs in the county outside the city limits of El Paso. FTA federal funds for the UZAs outside the city limits of El Paso are apportioned to the City of El Paso as the designated recipient for a large UZA. The El

Paso UZA is not eligible for an allocation of state public transportation funds. Neither the UZAs outside the City of El Paso nor the rural areas of the county have a locally dedicated source of revenue for transit.

Local funds are necessary to match federal grants and to fund operating and capital costs not covered by federal and/or state funds. Participants in an interlocal agreement to provide countywide transit services would need to identify a source(s) of local funding support for UZAs of the county outside the city limits of El Paso and rural areas of the county. The following is a list of possible sources of local revenue:

- Local government contributions. Local government contributions are funds allocated to transit out of the general revenues of another entity. These funds are often part of the government's annual budgeting process from general revenues rather than dedicated funds for transit. El Paso County can allocate general revenues to contribute to countywide transit services in rural areas of the county. Other local government stakeholders (e.g., Anthony, Clint, Horizon City, San Elizario, Socorro, and Vinton) may wish to contribute to local funds necessary to match federal grants and to fund operating and capital costs not covered by federal and/or state funds in exchange for countywide transit services. Local governments could also provide contributed services (non-cash), as described next.
- Contributed services. Contributed services are receipt of non-cash assets or services from another entity that benefit the transit operator. In-kind services are a type of contributed service, reported as contributed services only if there is no obligation to pay for the services. Contributed services include physical assets or services that the agency has objective control of and that have value that benefits people outside the contributor's organization, such as building space or staff time.
- Other transportation revenues. Other transportation revenues include transportation services that are not open to the general public, such as charter service. Specific FTA approvals are required if a public transit agency seeks to provide transportation services not open to the general public.
- Contracts for providing service. Contracts for service include revenues from a regularly provided transit service or route(s). Contracts include funds earned from non–department of transportation federal contracts or another sponsor. Contracts can be from a privately funded source.
- Auxiliary transit revenues. Auxiliary transit revenues are generated from the by-products of the transit service, such as advertisements on vehicles, concessions in station areas, fees paid for transit identification cards, or fines paid for fare evasion.
- Non-transit-related revenues. Non-transit-related revenues are funds earned from activities not associated with the provision of transit service. The sources of these funds can include investment earnings, sales of maintenance services, rentals of revenue vehicles, rentals of transit agency buildings and property, parking fees, non-specified donations or grants, development fees, or rental car fees.

Texas Transportation Code Chapter 431—Local Government Corporation

El Paso County could create an LGC with other local governments to provide countywide transit services.

An LGC is a corporate entity formed by a municipality or county to act on behalf of the government. LGCs are used to fund transportation, water and sewer infrastructure, economic development ventures, and other projects that will benefit the public. Chapter 431 of the Texas Transportation Code sets specific guidelines

for the creation and operation of LGCs within the state for transportation improvements. These entities are formed specifically to promote and develop transportation facilities and systems.

Benefits of Creating an LGC

There are numerous benefits to creating an LGC. By creating a separate corporation, the LGC limits the financial risk that a local government would otherwise take on. Additionally, the local government is protected from lawsuits or claims that may be brought against the LGC. By creating an LGC, local elected officials can concentrate on other local issues and allow the LGC to focus on its specific goals and objectives.

Steps Involved to Form an LGC in Texas

The following steps would be involved to form an LGC for El Paso County:

1. The local government(s) adopt a resolution supporting the formation of the LGC, as well as articles of incorporation that specify details such as the name, duration, purpose, and number of directors in the LGC.
2. The secretary of state of Texas approves the resolution and articles of the LGC and issues a certificate of incorporation.
3. The LGC board of directors consists of three or more non-compensated directors. The LGC board may appoint advisory directors to promote the transportation facilities and services. The advisory directors, however, do not vote on the board and are not compensated for their participation.
4. The LGC board adopts bylaws to guide its operation and governance.

Upon its formation, the LGC may work directly with state and local governments and elected officials to promote and develop the transportation project. The LGC may employ staff or purchase services to provide technical expertise and skills.

Depending on the structure of the LGC, numerous resources may be used to help the corporation operate in an efficient and effective manner. The LGC should develop a business plan that lays out the structure of the LGC to help guide the board.

There is precedent for an LGC to be developed to extend transit services beyond the existing service area of a transit authority. An LGC was created by DART and the City of Mesquite (not part of the DART service area) to implement public transportation services in that city to connect to a DART light-rail station.

Feasibility

Under Texas Transportation Code Chapter 431, the City of El Paso, on behalf of Sun Metro and El Paso County on behalf of the rural transit district, could establish an LGC to provide countywide transit services in El Paso County. Other local governments (e.g., Anthony, Clint, Horizon City, San Elizario, Socorro, and Vinton) may wish to join the LGC to ensure public transportation services in the respective city, town, or village.

An LGC is feasible on the same basis as an interlocal agreement. The advantage of an LGC over an interlocal agreement is the LGC is more formal and requires a financial plan and budget to fund countywide transit. The LGC board may require an annual operating budget and five-year capital budget. The annual budget process would project and commit federal, state, and local funds for transit in the UZAs outside the City of El Paso and the rural areas of the county.

Funding for Countywide Transit beyond Sun Metro

Neither the UZAs outside the City of El Paso nor the rural areas of the county have a locally dedicated source of revenue to provide local funds to match federal grants and fund operating and capital costs.

Local funds are necessary to match federal grants and to fund operating and capital costs not covered by federal and/or state funds. Participants in an LGC would need to identify a source(s) of local funding support for UZAs of the county outside the city limits of El Paso and rural areas of the county. The previous discussion about interlocal agreements provides a list of possible sources of local revenue.

There is precedent for an LGC to extend transit services beyond the existing service area of a transit authority. DART created an LGC to provide public transportation service in the City of Mesquite, outside the DART service area. Appendix 4-D provides the DART Local Government Corporation for transit service in Mesquite. Appendix 4-E provides the subsequent interlocal agreement between DART, the City of Mesquite, and STAR Transit (a rural transit district serving the counties east of Dallas) to provide COMPASS.

Texas Transportation Code Chapter 370—Regional Mobility Authority

An RMA is an independent local government agency that the Texas Transportation Commission (TTC) may authorize at the request of one or more counties or certain cities. The purpose of an RMA is to finance, acquire, design, construct, operate, maintain, expand, or extend transportation projects, including toll roads.

RMAs have flexibility regarding funding options for transportation projects. RMAs are authorized to issue bonds, levy tolls, apply for grants and loans, and receive assets from any source (Texas Transportation Code Section 370.172).

Camino Real RMA

TTC authorized the creation of the Camino Real RMA in June 2006. Since inception, the Camino Real RMA has taken on projects such as added highway capacity, roadway operational improvements, transit/streetcars, and bikeshare.

Scope of the RMA Authority

RMAs are authorized to implement, within a defined set of parameters, a wide range of transportation projects. Under Texas Transportation Code Chapter 370, RMAs have the authority to construct transportation systems that include:

- passenger and freight rail facilities;
- bridges;
- ferries;
- airports;
- pedestrian and bicycle facilities;
- border crossing inspection stations;
- air quality improvement initiatives;
- public utility facilities;
- transit systems;
- parking areas, structures, or facilities or collection device for parking fees; and
- port security.

RMAs submit major projects to TTC for approval. RMAs must also coordinate with other transportation entities. Projects must be included in the plan approved by the applicable metropolitan planning organization (MPO) and must be consistent with the statewide transportation plan and the statewide transportation improvement program.

If an RMA is interested in providing transit services, the RMA must first consult with the transit provider in the service area, including a transit provider operating under Texas Transportation Code Chapter 458 (an urban transit district or rural transit district). An RMA is ineligible to participate in the formula or discretionary program under Chapter 456 (state funds for transit) unless there is no other transit provider, including a transit provider operating under Texas Transportation Chapter 458, providing public transportation or mass transit services in the service area (Texas Transportation Code Section 370.033). Transit providers in El Paso County include Sun Metro in the City of El Paso and El Paso County Transit.

Transfer of a Transit Provider to an RMA

The terms for transfer of a transit provider to an RMA are described in Texas Transportation Code Section 370.361 and briefly summarized as follows.

An RMA may request in writing that a transit provider transfer the provider's transit system and taxing authority to the RMA if the RMA board determines that the traffic needs of the counties in which the RMA operates could be most efficiently and economically met by the transfer.

On receipt of a written request, the governing body of the transit provider may authorize the RMA to solicit public comment and conduct at least one public hearing on the proposed transfer. The transit provider may participate fully with the RMA in conducting a public hearing.

After considering public comments, the governing body of the transit provider may order an election to dissolve the transit provider and transfer all services, property, funds, assets, employees, debts, and obligations to the RMA. The governing body of the transit provider shall submit to the qualified voters in the units of election in the transit provider's service area a proposition that reads substantially as follows: "Shall (name of transit provider) be dissolved and its services, property, funds, assets, employees, debts, and obligations be transferred to (name of RMA)?"

The election on the transfer shall be conducted so that votes are separately tabulated and canvassed in each participating unit of election in the transit provider's service area. The governing body of the transit provider shall canvass the returns and declare the results of the election separately with respect to each unit of election. If a majority of the votes received in a unit of election are in favor of the proposition, the proposition is approved in that unit of election. Only if the proposition is approved in every unit of election is the transit provider dissolved and its services, property, funds, assets, employees, debts, and obligations transferred to the RMA. If the proposition is not approved in every unit of election, the proposition does not pass, and the transit provider is not dissolved.

The RMA shall assume all debts or other obligations of the transferred transit provider in connection with the acquisition of property.

If an RMA acquires a transit provider that has taxing authority, the RMA may impose a sales tax at a permissible rate that does not exceed the rate approved by the voters residing in the service area of the transit provider's transit system. The RMA may call an election for the increase or decrease of the sales tax to a permissible rate.

Feasibility

Under Texas Transportation Code Chapter 370, the Camino Real RMA could take on responsibility for a countywide transit system in El Paso County if other local government entities agreed. Options for Camino Real RMA to provide countywide transit include the following:

- The Camino Real RMA may enter into a contract, interlocal agreement, LGC, or other similar arrangement under which the RMA may acquire, plan, design, construct, maintain, repair, or operate a transportation project on behalf of another governmental entity (city or county) if the transportation project is located in the RMA's area of jurisdiction or in an adjacent county (Texas Transportation Code Section 370.033).
- The Camino Real RMA could request transfer of the existing municipal transit department and rural transit district (Texas Transportation Code Section 370.361).
    - The Camino Real RMA could request a transfer of the Sun Metro transit system to the RMA. The transfer would include the 0.5 percent local sales tax dedicated to transit that applies to the City of El Paso.
    - The Camino Real RMA could request a transfer of the El Paso County rural transit district to the RMA. With the concurrence of the county and TxDOT, the transfer could include eligibility for state funds for transit in the rural area.

Chapter 370 does not speak to expanding the service area of an acquired transit provider.

Funding for Countywide Transit

If the Camino Real RMA took on the responsibility for a countywide transit system in El Paso County, the RMA could be named the designated recipient for FTA transit funds for the El Paso UZA. Designated recipients are authorized through agreement between local government entities, concurrence by the MPO, and approval by the governor as specified by federal regulation.

Eligibility as the TxDOT grantee for rural federal and state funding will require transfer of the rural transit district from El Paso County to the RMA.

Neither the UZAs outside the City of El Paso nor the rural areas of the county have a locally dedicated source of revenue to provide local funds to match federal grants and fund operating and capital costs. Local funds are necessary to match federal grants and to fund operating and capital costs not covered by federal and/or state funds. Camino Real RMA would need to identify a source(s) of local funding support for UZAs of the county outside the city limits of El Paso and rural areas of the county. The previous discussion about interlocal agreements provides other possible sources of local revenue.

Cities, counties, transit authorities, special districts, and other local taxing jurisdictions may levy local sales taxes subject to the restriction that the total local rate cannot exceed 2 percent. An RMA may not adopt a sales tax rate, including a rate increase, that when combined with the rates of all sales taxes imposed by all political subdivisions in the service area of the transferred transit system exceeds 2 percent in any location in the service area (Texas Transportation Code Section 370.363).

Chapter 5: Peer Transit Agency Comparisons

The purpose of Chapter 5 is to describe how peer counties attempt to provide countywide transit services in urban/rural counties. This chapter presents a summary of transit service in eight peer Texas counties—Bexar, Dallas, Denton, Harris, Nueces, Tarrant, Travis, and Webb—and documents practices from national peers—Dona Ana County, NM; Fresno County, CA; Indianapolis/Marion County, IN; and Pima County, AZ.

Texas Peers

Including El Paso County, Texas has nine counties with countywide transit service provided by multiple providers. This section documents each county's statutory authority, taxing and funding structure/capacity, governance structure, and the number and level of governmental entities participating. Table 6 presents each county's population according to the 2010 U.S. Census. The reference to the 2010 Census is because federal and state funding formulas use these data. The 2010 population data include three subcategories for each county:

- the population within the UZA in the county;
- the population within the UZA that is *not* within the service area of a transit authority or urban transit district, referred to as the *urban gap* (the population within this area may not have access to transit services); and
- the population in the non-urbanized (rural) area.

Table 6. Texas Peer 2010 Population.

County	Total	Urbanized Area		Urban Gap		Non-urbanized Area	
	Population	Population	Percent of County Total	Population	Percent of UZA Total	Population	Percent of County Total
Bexar County	1,714,773	1,634,008	95.3%	57,047	3.5%	80,765	4.7%
Dallas County	2,368,139	2,351,839	99.3%	269,046	11.4%	16,300	0.7%
Denton County	662,614	587,465	88.7%	260,770	44.4%	75,149	11.3%
El Paso County	800,647	772,374	96.5%	128,651	16.7%	28,273	3.5%
Harris County	4,092,459	4,042,806	98.8%	655,982	16.2%	49,653	1.2%
Nueces County	340,223	303,181	89.1%	—	0.0%	37,042	10.9%
Tarrant County	1,809,034	1,785,397	98.7%	302,252	16.9%	23,637	1.3%
Travis County	1,024,266	953,643	93.1%	140,395	14.7%	70,623	6.9%
Webb County	250,304	235,730	94.2%	1,447	0.6%	14,574	5.8%

Source: 2010 U.S. Census, calculations by TTI.

Table 7 presents each county's land area according to the 2010 U.S. Census. The 2010 land area data include three subcategories for each county:

- the land area within the UZA of the county;
- the land area within the UZA that is not within the service area of a transit authority, referred to as the *urban gap;* and
- the land area in the non-urbanized (rural) area.

Table 7. Texas Peer 2010 Land Area in Square Miles.

County	Total	Urbanized Area		Urban Gap		Non-urbanized Area	
	Square Miles	Square Miles	Percent of County Total	Square Miles	Percent of UZA Total	Square Miles	Percent of County Total
Bexar County	1,240	517	0.9%	29	5.6%	723	58.3%
Dallas County	871	691	0.3%	115	16.6%	180	20.6%
Denton County	878	223	0.1%	126	56.4%	655	74.6%
El Paso County	1,013	234	0.2%	73	31.2%	779	76.9%
Harris County	1,703	1,216	0.2%	289	23.8%	487	28.6%
Nueces County	838	113	13.5%	—	0.0%	725	86.5%
Tarrant County	864	664	0.2%	165	24.9%	200	23.1%
Travis County	990	349	0.2%	91	26.2%	641	64.7%
Webb County	3,361	66	4.5%	2	3.4%	3,296	98.0%

Source: 2010 U.S. Census, calculations by TTI.

Bexar County

Transit Services

VIA is the sole transit operator in Bexar County, providing service in 98 percent of the county. VIA's service area does not include the small enclave cities in the UZA and in the rural area that are not VIA member cities or the portions of the San Antonio UZA that fall in Guadalupe and Comal Counties. VIA operates fixed-route, complementary paratransit, and vanpool services, as well as park-and-ride service for special events. Figure 14 presents a map of VIA's service area and the San Antonio UZA.

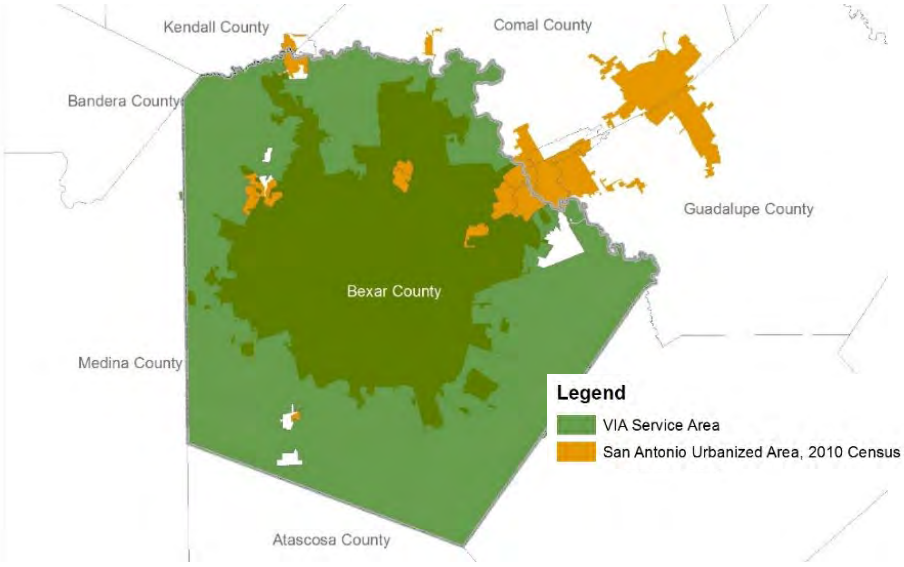


Figure 14. Transit Service Area and Urbanized Area in Bexar County.

Governance

Under Texas law, VIA is a metropolitan transit authority, established under Texas Transportation Code Chapter 451. An advanced transportation district was created in 2004 after voters in the City of San Antonio approved its creation and the implementation of the sales tax dedicated to expanding/improving VIA transit service within the city limits of San Antonio.

VIA is governed by a board of trustees that consists of 11 members. Members are appointed to represent the San Antonio City Council (five), Bexar County Commissioners Court (three), and Greater Bexar County Council of Cities (two); and the board chairperson is elected by the other members. The VIA Board of Trustees also acts as the governing board for the advanced transportation district in San Antonio.

Funding

VIA receives revenue from the voter-approved 0.5 percent sales tax that is levied in the Cities of San Antonio, Alamo Heights, Balcones Heights, Castle Hills, China Grove, Converse, Elmendorf, Kirby, Leon Valley, Olmos Park, Shavano Park, Sandy Oaks, St. Hedwig, and Terrell Hills; the Bexar County portion of Cibolo; and the unincorporated areas of Bexar County. VIA also receives revenue from the 0.125 percent sales tax levied by the advanced transportation district in the City of San Antonio.

VIA's federal funding comes from Section 5307 funds for the UZA. The transit agency does not receive Section 5311 funds for the rural area in Bexar County. VIA is not eligible for state public transportation funds. VIA allocates Section 5307 funds to the Alamo Area Council of Governments (the rural transit district in the counties surrounding Bexar County) to provide demand-response service for the general public for the cities in the UZA that are in Guadalupe and Comal Counties. The cities provide the local share from general revenues to match the Section 5307 federal funds.

Dallas County

Transit Services

Three entities provide transit service in Dallas County—DART, the City of Mesquite, and the City of Grand Prairie. Dallas County does not have a rural transit district. Figure 15 presents a map of each of the three service areas and the Dallas–Fort Worth–Arlington (DFWA) UZA in Dallas County. The following sections document each entity's service.

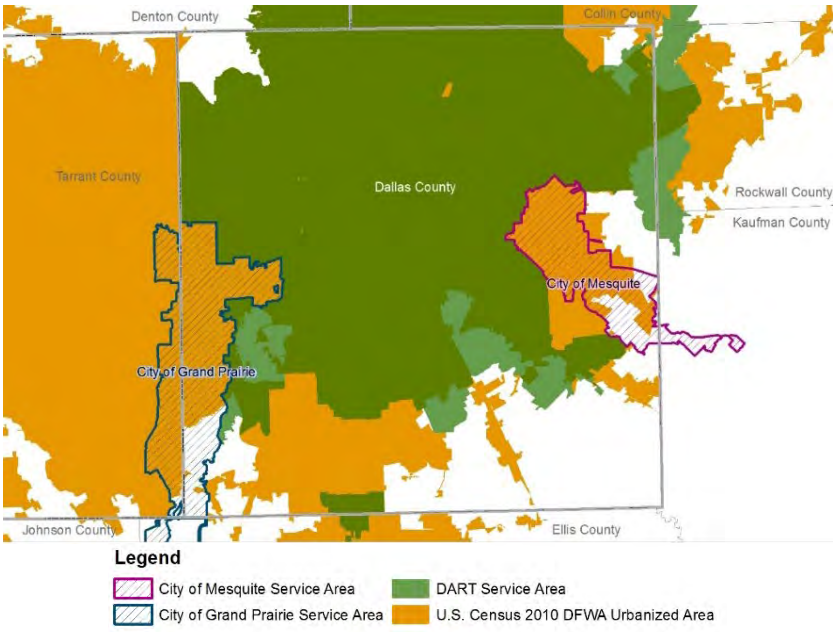


Figure 15. Transit Service Areas and Urbanized Area in Dallas County.

Dallas Area Rapid Transit

DART provides transit service in 13 member cities, including Addison, Carrollton, Cockrell Hill, Dallas, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Richardson, Rowlett, Plano, and University Park. DART provides bus, light-rail, vanpool, demand-response, and demand-response taxi services. DART directly operates bus and light-rail service in each of the transit agency's 13 member cities. DART's demand-response services include community connector service (DART On-Call), Americans with Disabilities Act (ADA) paratransit service, and flex-route service (FLEX). On-Call is available in select areas within DART's service area including East Rowlett, Farmers Branch, Glenn Heights, Lake Highlands, Lakewood, North Central Plano, North Dallas, and Park Cities. ADA paratransit service offers curb-to-curb service that begins and ends in any of DART's 13 member cities. FLEX service is available in downtown Irving/Heritage Crossing, Buckner, East Plano, Telecom Corridor, South Plano, and Rowlett. Vanpool service is provided in coordination with the North Central Texas Council of Governments (NCTCOG) and allows vanpool trips of any length in any direction if the trip either originates or terminates within the DART service area.

DART also owns and operates the Trinity Railway Express (TRE) commuter-rail system in partnership with Trinity Metro.

Mesquite

The City of Mesquite was a limited eligibility transit provider until 2015 when STAR Transit (a rural transit district) assumed responsibility to operate general public demand-response service in Mesquite. The City of Mesquite's demand-response service area is the city limits, crossing Dallas and Kaufman Counties.

Commuter bus service provides service between the Mesquite park-and-ride and DART's Green Line light-rail service at the Lawnview Station. DART established a local government corporation and entered into an interlocal agreement with the City of Mesquite and STAR Transit to permit access for Mesquite residents to light rail. The City of Mesquite contracts with STAR Transit to operate the commuter bus service.

Grand Prairie

Grand Prairie's transit program, Grand Connection, provides demand-response service for people who are elderly and people with disabilities within the city limits of Grand Prairie. In 2015, the city opened its first park-and-ride facility on the eastbound side of Interstate Highway 30 to facilitate carpooling to Dallas; however, as of June 2017, transit service from the park-and-ride facility has not been implemented. Grande Prairie's service area crosses Dallas, Ellis, and Tarrant Counties, and is largely part of the urbanized DFWA area.

The City of Grand Prairie's Transportation Department administers Grand Connection service under the governance of the Grand Prairie City Council.

Governance

The Cities of Mesquite and Grand Prairie serve as urban transit districts for the parts of the DFWA UZA that are within those cities' limits. Transit in the Cities of Mesquite and Grand Prairie is governed by each city's city council.

DART is a regional transit authority established under Texas Transportation Code Chapter 452, and voters approved a 1 percent transit-dedicated local sales tax within the transit authority's jurisdiction. DART is governed by a 15-member board of directors. Eight members represent the City of Dallas, and seven members represent the other cities within DART's service area. All board members are appointed by their respective city councils and serve two-year terms without a limit on the number of terms they can serve.

Funding

DART is funded by the dedicated 1-cent local sales tax, federal grant funds, investment income, fare revenue, and various financing packages. DART receives federal Section 5307 funds for the DART service area. DART does not receive Section 5311 funding and is not eligible for state public transportation funds.

The MPO (NCTCOG) allocates Section 5307 revenues for the Dallas–Fort Worth UZA in three funds: West (Trinity Metro), East (DART), and those transit districts not part of Trinity Metro or DART, including Mesquite and Grand Prairie. NCTCOG is the designated recipient for Section 5307 funds for transit districts other than Trinity Metro or DART. As urban transit districts, the City of Mesquite and the City of Grand Prairie receive state funding from TxDOT for urban transit services.

Denton County

Transit Services

Denton County includes the jurisdictions of four transit agencies—DCTA, Span, Inc., Trinity Metro, and DART. Figure 16 presents a map of transit district boundaries and the UZA in Denton County. The following sections document the services provided by DCTA and Span, Inc. DART's service is described in a previous section, and Trinity Metro's service will be described in the Tarrant County section.

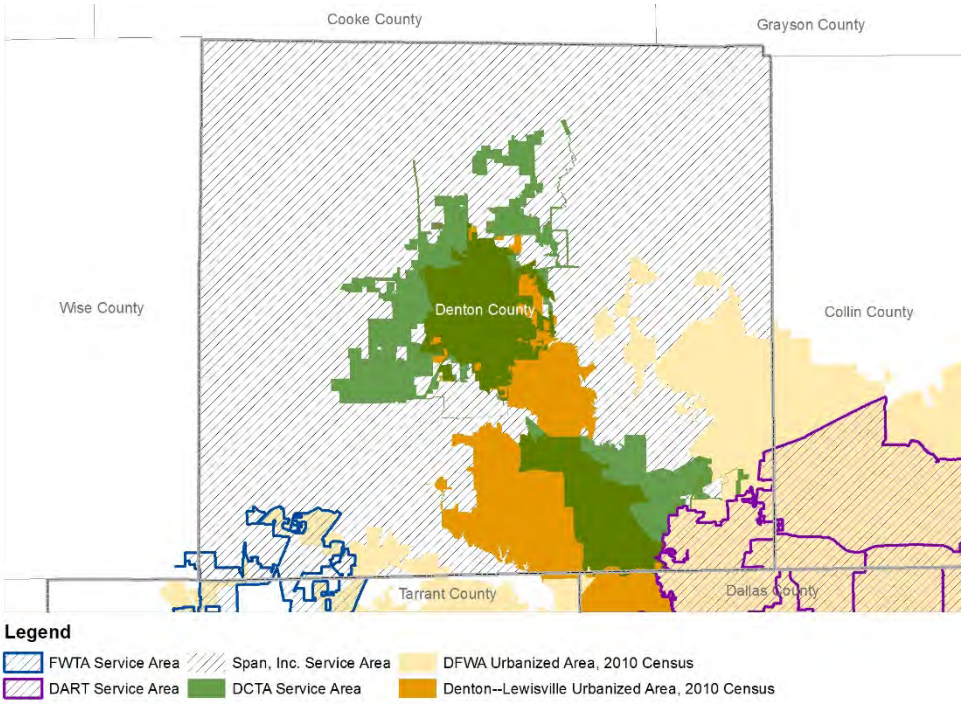


Figure 16. Transit Service Areas and Urbanized Areas in Denton County.

Denton County Transportation Authority

DCTA is responsible for transit services in the Denton-Lewisville UZA and provides the following transit services:

- commuter-rail service between Denton and Dallas County with connection to DART at Trinity Mills and Carrollton (Green Line) (riders can then transfer from the Green Line to other DART rail lines and the TRE at Union Station in downtown Dallas);
- local fixed-route bus service in Denton and Lewisville;

- ADA paratransit service in Denton and Lewisville and non-ADA demand-response service for people with disabilities and people age 65 and over in Denton, Lewisville, and Highland Village;
- shuttle, general public demand-response, and discounted transportation network company service in Highland Village;
- commuter bus service between Denton and Fort Worth (a joint operation between DCTA and Trinity Metro);
- demand-response service in Frisco for eligible riders including an option for taxi vouchers (riders' choice, dependent upon mobility status); and
- vanpools for service area residents.

DCTA facilitates a subsidized taxi voucher program in Collin County under contract with the City of McKinney and the McKinney Urban Transit District to provide a transportation option for citizens of McKinney, Lowry Crossing, Melissa, Princeton, and other McKinney Urban Transit District cities.

Span, Inc.

Span, Inc. is the rural transit district for rural Denton County and provides service in the rural areas of Denton County outside the DCTA service area. Under an interlocal agreement between Span, Inc. and NCTCOG, the transit agency provides transit in the parts of the DFWA UZA that fall in Denton County.

Span, Inc. operates general public demand-response service and requires that trips originate in Span, Inc.'s service area. Trip destinations may be any location in Denton County. Span, Inc. provides non-emergency medical transportation (NEMT) under contract with the Medicaid NEMT broker LogistiCare and other local human service programs.

Governance

DCTA is a transit authority under Texas Transportation Code Chapter 460 and is empowered by voter approval to impose a 0.5 percent transit-dedicated sales tax within the city limits of the transit agency's member cities (Denton, Highland Village, and Lewisville). Additionally, some transit in Denton County is provided through coordination between multiple entities:

- Under an interlocal agreement with DCTA, Span, Inc. provides demand-response transit service in the Cities of Frisco and Flower Mound for people with disabilities and people age 65 and over.
- DCTA's commuter bus is a joint operation of DCTA and Trinity Metro.

DCTA is governed by a 14-member board that consists of representatives from large cities and small cities as well as at-large members.

Span, Inc. is the rural transit district in Denton County and is governed by an 11-member board of directors.

DCTA is considering establishing an LGC to provide the flexibility to provide services outside the transit authority's existing taxing jurisdiction (Denton, Highland Village, and Lewisville). The LGC would permit other cities such as Frisco, McKinney, and possibly new partners to participate on the board of the LGC. Each partner will provide local match from general revenues to leverage Section 5307 funds.

Funding

The MPO (NCTCOG) allocates the Section 5307 UZA funds for both the Denton-Lewisville UZA and the DFWA UZA. DCTA receives federal Section 5307 funds for the Denton-Lewisville UZA. DCTA is not eligible for state public transportation funds.

Span, Inc. receives Section 5311 and state funds from TxDOT for service in the rural areas of Denton County and Section 5307 from NCTCOG for transit service in the DFWA UZA.

Harris County

Transit Services

Two entities provide transit service in Harris County—METRO and Harris County Transit. Figure 17 presents a map of METRO's service area and the Houston UZA. Harris County Transit's service area consists of the areas not included in the METRO service area but within Harris County. The following sections document the services provided by METRO and Harris County Transit.

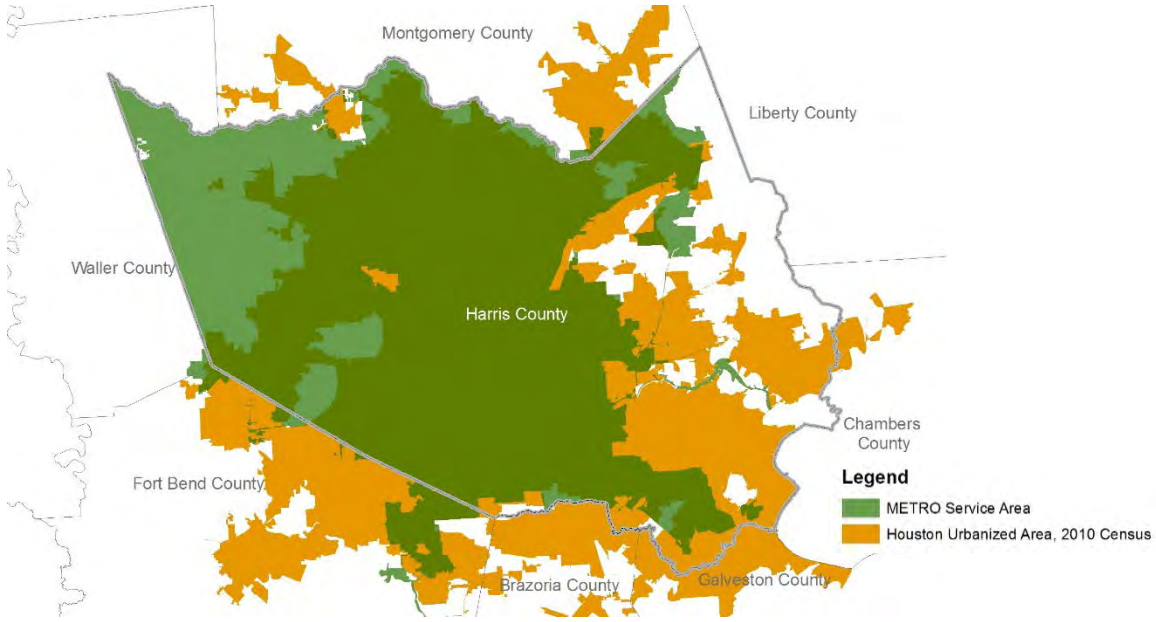


Figure 17. Transit Service Area and Urbanized Area in Harris County.

Metropolitan Transit Authority of Harris County

METRO is the metropolitan transit authority in Harris County and provides transit service in Bellaire, Bunker Hill Village, El Lago, Hedwig Village, Hilshire Village, Houston, Humble, Hunters Creek, Katy, Missouri City, Piney Point, Southside Place, Spring Valley, Taylor Lake Village, West University Place, and portions of west and north Harris County. METRO service includes fixed-route bus, light rail, ADA paratransit, commuter bus service from park-and-ride facilities, vanpools, and high-occupancy vehicle/toll lanes.

Harris County Transit

Harris County Transit, a department of Harris County, provides residents that reside within Harris County but outside of METRO's service area with transportation alternatives including park-and-ride, fixed-route, and shared-ride services.

Harris County has an interlocal agreement with METRO to operate park-and-ride service on behalf of the City of Baytown—the service operates between Baytown and downtown Houston. Harris County Transit also operates fixed-route service with complementary ADA paratransit through contracts with the Cities of Baytown, La Porte, Crosby, and Highlands. Harris County Transit's RIDES program is a shared-ride service for people age 65 (seniors) and older and people with disabilities in Harris County (primarily areas outside the METRO service area). Harris County contracts with providers in rural Montgomery County,

Friendswood, League City, and Pearland to offer shared-ride services in those locations. RIDES allows eligible riders and participating agencies to purchase transportation. Harris County Transit's medical transportation program supplements the RIDES program by providing an alternative solution for seniors and people with disabilities to access medical appointments.

Governance

METRO is a metropolitan transit authority, established under Texas Transportation Code Chapter 451. With voter approval, the authority levies a 1 percent dedicated sales tax in the METRO service area. METRO is governed by a nine-member board of directors that includes representatives from the City of Houston, the Harris County Commissioners Court, and the cities within METRO's service area. The METRO service area includes most of central and west Harris County, including a large rural area; however, there are cities within east Harris County that are in the UZA but not a part of the METRO service area.

Harris County Transit is a service of Harris County intended to provide transportation service to county residents that reside outside the METRO service area. Harris County Transit is governed by the Harris County Commissioners Court.

Harris County established an interlocal agreement with METRO to provide commuter bus service from Baytown to Houston.

Funding

METRO receives revenue from its transit-dedicated sales tax and federal Section 5307 funds. METRO is the designated FTA funding recipient in the Houston UZA. METRO is not eligible for state public transportation funds. METRO allocates a portion of Section 5307 funds to Harris County Transit (and to Fort Bend County) for service in portions of the UZA not served by METRO.

Harris County Transit receives federal funding as a sub-allocation from METRO. Harris County Transit provides local share funds from Harris County general revenues to match federal grants. Harris County Transit is not a transit district and does not receive state public transportation funds. Harris County Transit earns some revenue for services provided under contract.

Nueces County

Transit Services

CCRTA provides transit service throughout Nueces County and in the Cities of Gregory and San Patricio in San Patricio County. CCRTA is a metropolitan transit authority, established under Texas Transportation Code Chapter 451. CCRTA operates fixed-route, complementary ADA paratransit, commuter bus, flexible-route, rural demand-response, and vanpool services.

Fixed-route and complementary ADA paratransit services are available in and around the Corpus Christi city limits (some routes operate outside the city for a portion of the route) and offer connections to other regional providers in adjacent counties (REAL, Inc. and Paisano Express). A flexible-route service, Flexi-B, provides service between Port Aransas and Corpus Christi with scheduled stops at key destinations (educational and shopping/cultural destinations) and flexibly scheduled stops (one-day advanced notice) for other needs. Figure 18 presents a map of CCRTA's service area and the Corpus Christi UZA.

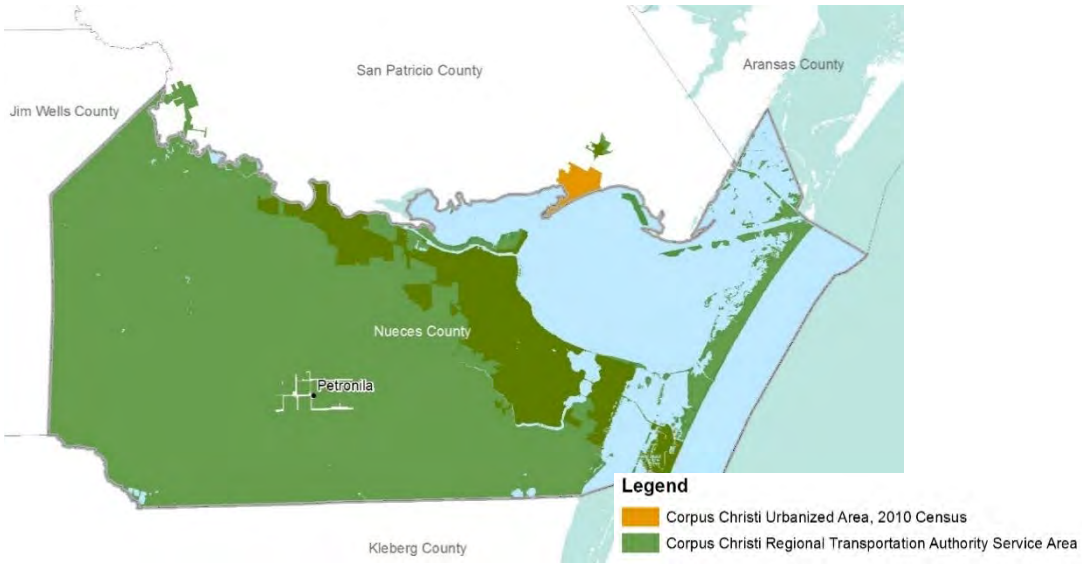


Figure 18. Transit Service Area and Urbanized Area in Nueces County.

Governance

CCRTA is a metropolitan transit authority with voter approval for a 0.5 percent transit-dedicated sales tax within its jurisdiction. CCRTA's jurisdiction includes all of Nueces County and the Cities of Gregory and San Patricio in San Patricio County.

CCRTA's board of directors consists of 11 members including a chairperson: five representatives from the City of Corpus Christi, three representatives from Nueces County, and two representatives appointed by small city mayors.

Funding

CCRTA receives federal funding as well as revenue from the 0.5 percent sales tax. CCRTA is not eligible for state public transportation funds. Del Mar College and Texas A&M University–Corpus Christi contribute funds to cover fares for students, faculty, and staff with valid identification.

CCRTA's federal funding comes from Section 5307 for the UZA. The transit agency does not receive Section 5311 funds for the rural area of Nueces County.

Tarrant County

Transit Services

Four entities provide transit service in Tarrant County—Trinity Metro, Northeast Transportation Services (NETS), and the City of Arlington. Trinity Metro also sponsors Tarrant County Transportation Services (TCTS). Figure 19 presents a map of the service areas for Trinity Metro, NETS, the City of Arlington, and the DFWA UZA. TCTS provides service in areas of Tarrant County that are not included in the service areas of other providers.

On November 8, 2016, residents of Richland Hills voted to withdraw from Trinity Metro. The City of Richland Hills transitioned from Trinity Metro to a third-party provider of demand-response service for people age 65 and older and people with disabilities.

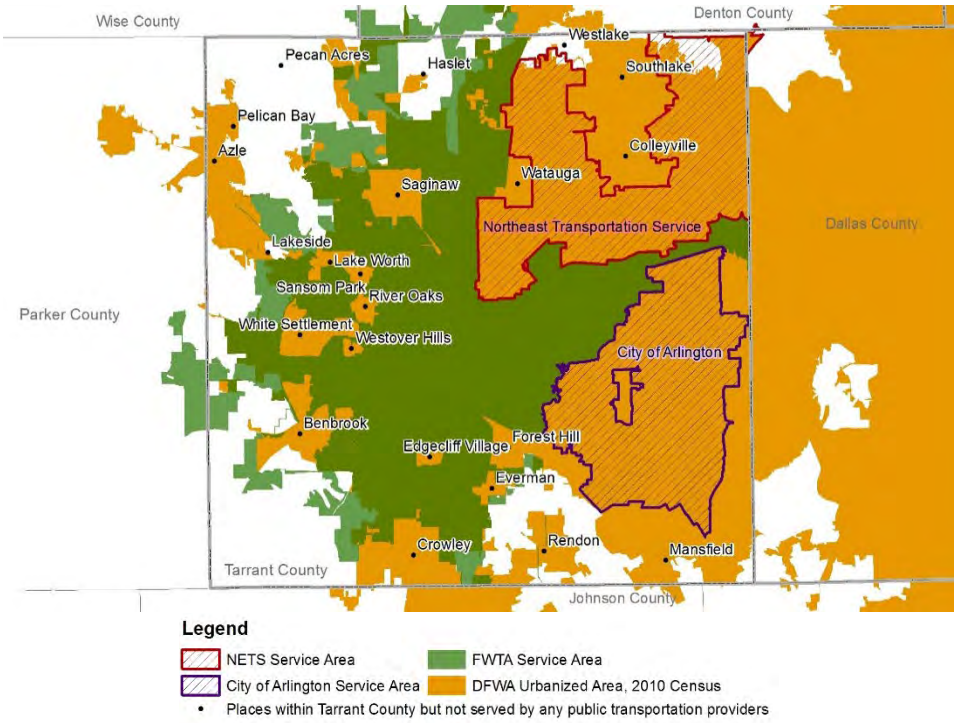


Figure 19. Transit Service Areas and Urbanized Area in Tarrant County.

The following sections document the services provided by Trinity Metro, NETS, the City of Arlington, and TCTS.

Fort Worth Transportation Authority

Trinity Metro provides transit service in UZAs of Tarrant County including the Cities of Fort Worth and Blue Mound. The transit agency operates fixed-route, complementary ADA paratransit, a downtown circulator trolley, and TRE commuter-rail (in partnership with DART) services. In January 2019, Trinity Metro opened TEXRail commuter-rail service from southwest Tarrant County, through downtown Fort Worth, to the Dallas–Fort Worth Airport.

Northeast Transportation Services

NETS provides transit service in an urban transit district that is comprised of seven cities in northeast Tarrant County: Bedford, Euless, Grapevine, Haltom City, Hurst, Keller, and North Richland Hills. NETS provides demand-response service for people age 65 and older and people with disabilities. The NETS service area is the municipal boundaries of the cities in the transit district.

City of Arlington

The City of Arlington provides demand-response service for people who are age 65 and older and people with disabilities. The City of Arlington's demand-response service allows riders to transfer to the TRE at Bell Spur and Centreport stations, and to one Trinity Metro bus stop in northwest Arlington.

Tarrant County Transportation Services

Trinity Metro uses Section 5310 funds to provide transit service in the cities in Tarrant County that are not part of Trinity Metro, NETS, or Arlington service areas. The transit agency provides demand-response service for people aged 65 and older and people with disabilities. TCTS is a collaboration between the

TxDOT Fort Worth District, Trinity Metro, and 10 participating cities, including Azle, Benbrook, Crowley, Everman, Lakeside, Mansfield, Saginaw, Sansom Park, Southlake, and Westworth Village. The participating cities contribute funding to subsidize transit fares for city residents. Residents of other cities that do not contribute to TCTS directly must pay a premium fare for transit service.

Governance

Trinity Metro is Tarrant County's regional transit authority, established under Texas Transportation Code Chapter 452. Voters within its district approved a 0.5 percent sales tax dedicated to transit. An 11-member board of directors governs Trinity Metro. The Fort Worth City Council appoints eight members, and the Tarrant County Commissioners Court appoints three members.

NETS and the City of Arlington operate as urban transit districts. TCTS is a service provided by Trinity Metro through a local non-profit transportation provider, Catholic Charities of Fort Worth. Catholic Charities is a 501(c)(3) non-profit governed by a seven-member board of directors.

The governing body of NETS is the board of directors of the NETS Urban Transit District, which is comprised of the city manager of each member city. To provide service, NETS has an interlocal agreement with Trinity Metro. Trinity Metro then contracts with Catholic Charities of Fort Worth to operate the NETS service and maintain the NETS vehicles.

The City of Arlington's transit department is a city department and is governed by the Arlington City Council. A seven-member Special Transit Advisory Board reviews operations and complaints.

Funding

Trinity Metro receives revenues from the 0.5 percent sales tax dedicated to transit and federal Section 5307 allocated by NCTCOG. Trinity Metro is not eligible for state public transportation funds. TCTS, through Trinity Metro, receives Section 5310 funds to provide transit service in areas within Tarrant County.

The MPO (NCTCOG) allocates the Section 5307 revenues in three areas: West (Trinity Metro), East (DART), and those transit districts not part of Trinity Metro or DART. NCTCOG is the designated recipient for Section 5307 funds for transit districts not part of Trinity Metro or DART, including NETS and the City of Arlington. As urban transit districts, NETS and the City of Arlington receive state funds for public transportation.

Travis County

Transit Services

Two entities provide transit service in Travis County—Capital Metro and the Capital Area Rural Transportation System (CARTS). Figure 20 presents a map of CARTS's and Capital Metro's service areas and the Austin UZA.

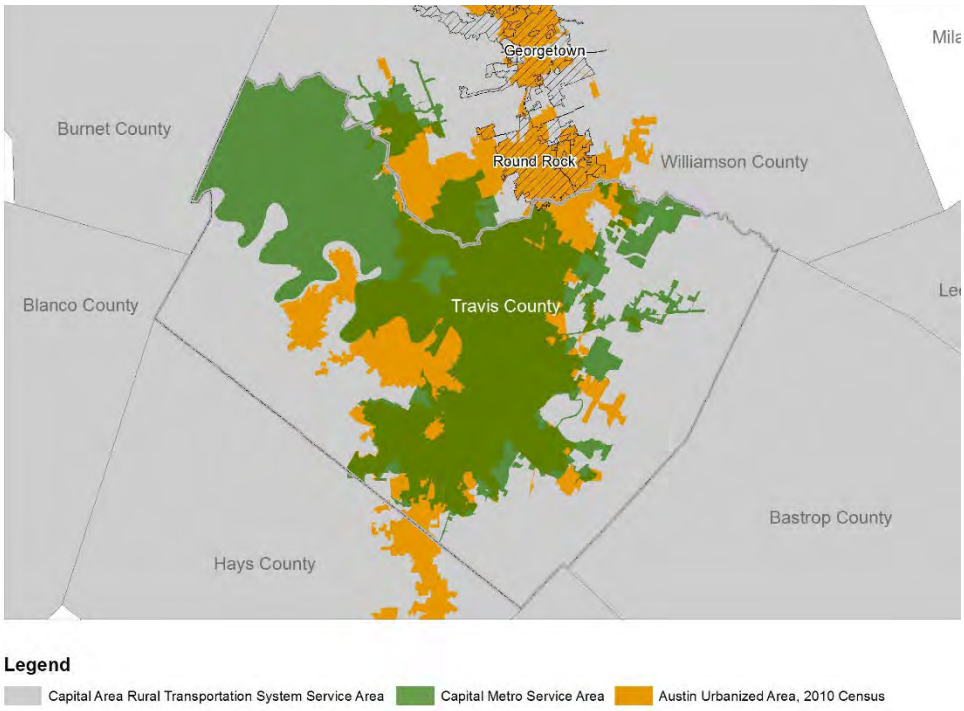


Figure 20. Transit Service Areas and Urbanized Area in Travis County.

The following sections document the services provided by Capital Metro and CARTS.

Capital Metropolitan Transportation Authority

The Capital Metro service area includes parts of Travis and Williamson Counties but does not include the entire Austin UZA. Capital Metro provides fixed-route, commuter (bus and rail), and ADA paratransit transportation services. In the rural areas of Capital Metro's service area, CARTS provides flexible transit service under contract to Capital Metro. Capital Metro is a metropolitan transit authority, established under Texas Transportation Code Chapter 451. With voter approval, the authority levies a 1 percent sales tax dedicated to transit in the Capital Metro service area.

Capital Area Rural Transportation System

CARTS provides service in nine counties in central Texas: Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Travis, and Williamson Counties. In 2012, the U.S. Census Bureau designated San Marcos as a UZA based on the results of the 2010 U.S. Census. The City of San Marcos is an urban transit district for the San Marcos UZA. The city entered into an interlocal agreement with CARTS to provide transit service within the urban transit district.

In Travis County, CARTS provides flexible, commuter, interurban, and NEMT services (under contract to the Medicaid broker). CARTS also provides fixed-route transit services for Georgetown, Del Valle, Northeast Austin, and Jonestown/Lago Vista; and a commuter service between Elgin and Austin. Fixed-route and Elgin/Austin commuter service is part of interlocal governmental agreements with Capital Metro and Travis County. For Travis County, services are provided to the rural portion of Travis County to enable access to county-sponsored services such as congregate meal centers. CARTS's commuter and interurban transit services provide transfers to Capital Metro services.

Governance

Capital Metro and CARTS work together, via interlocal agreements and strategic service planning, to provide transit service throughout Travis County.

Capital Metro is governed by an eight-member board of directors that is appointed by the Capital Area Metropolitan Planning Organization (three members), smaller cities within the Capital Metro service area (one member), Travis and Williamson County commissioners (one member each), and the Austin City Council (two members, one an elected official).

CARTS is governed by a board of directors that consists of a member from each of the commissioners courts in the nine counties served by CARTS and an appointed representative from the San Marcos City Council.

Funding

As the FTA designated recipient for the Austin UZA, Capital Metro sub-allocates Section 5307 funds to the Cities of Round Rock and Georgetown. Round Rock contracts with a private provider for transit service within the city limits, and Georgetown contracts with CARTS to provide transit service within city limits. To contribute to the cost of service, the cities provides local share funds from general revenues.

Capital Metro receives federal Section 5307 funds for the UZA but does not receive Section 5311 funds for rural areas in its jurisdiction.

CARTS is a rural transit district and receives Section 5311 federal funds and state public transportation funds from TxDOT to support transit service in the agency's rural service area. The City of San Marcos (in Hays County) is an urban transit district and therefore receives small urban Section 5307 dollars and state public transportation funds from TxDOT. The City of San Marcos uses the federal and state funds to fund transit services by CARTS.

Webb County

Transit Services

Two entities provide transit service in Webb County: the City of Laredo and the Webb County Community Action Agency. Figure 21 presents a map of the City of Laredo's and the Webb County Community Action Agency's service areas and the Laredo UZA.

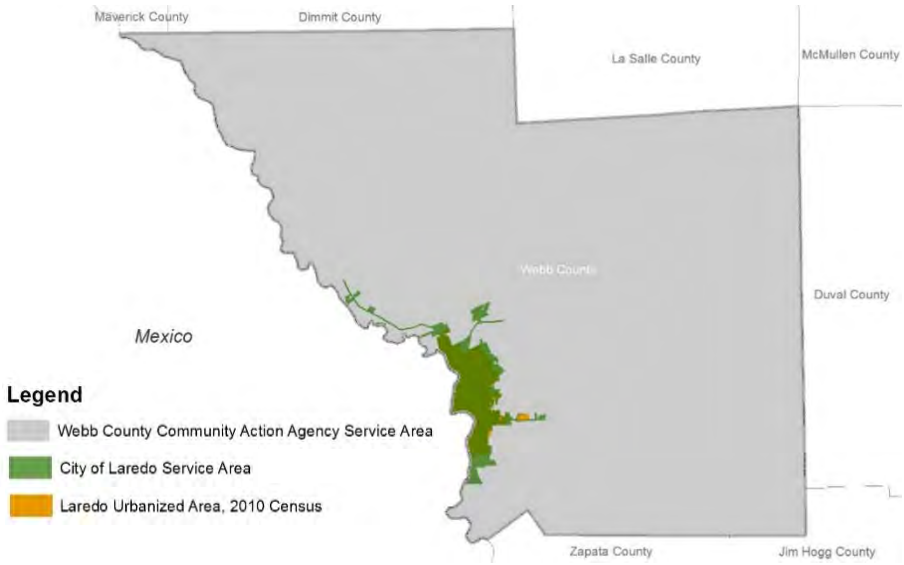


Figure 21. Transit Service Areas and Urbanized Area in Webb County.

The following sections document the services provided by the City of Laredo and Webb County.

City of Laredo

The City of Laredo provides transit service, called El Metro, which includes fixed-route bus service and ADA paratransit service throughout the city. El Metro's service is available to 99.4 percent of the population and 96.6 percent of the land area of the Laredo UZA.

Webb County Community Action Agency

The rural area of Webb County is served by El Aguila Rural Transit System—a service of the Webb County Community Action Agency. El Aguila's service area includes the Cities of Aguilares, Bruni, El Cenizo, Mirando, Oilton, and Rio Bravo as well as the unincorporated areas of Webb County. El Aguila provides fixed-route and demand-response service.

Governance

The City of Laredo's El Metro transit service is designated as an urban transit district and a municipal transit department under Texas Transportation Code Chapter 453. El Metro is governed by the nine-member Laredo Mass Transit Board, which is also the City of Laredo City Council.

El Aguila is governed by the 17-member Webb County Community Action Agency Governing Board, with members representing the Webb County Commissioners Court (six members), elected by the service area residents (seven members), and community stakeholders (non-profits, civic clubs, etc.) as appointed by the Webb County Commissioners Court.

Funding

The City of Laredo receives federal Section 5307 funding and revenue from a 0.25 percent local sales tax dedicated to transit. Laredo also receives state funding for transit because the Laredo UZA had a population fewer than 200,000 prior to the 2010 U.S. Census and was eligible for state transit funding per the Texas Transportation Code. Webb County receives federal Section 5311 and state public transportation funding from TxDOT to support transit service.

National Peers

This section documents national peer transit agencies in counties with countywide transit service in other states. Peers counties include Dona Ana County, NM; Fresno County, CA; Indianapolis/Marion County, IN; and Pima County, AZ.

Dona Ana County, NM

Transit Services

Transit in Dona Ana County is provided by multiple entities that are managed by the South Central Regional Transit District (SCRTD). SCRTD is the regional transit district (RTD) in Dona Ana, Sierra, and Otero Counties. SCRTD was certified by NMDOT in 2006, received approval for a service plan in 2015, and began providing service in 2016.

SCRTD provides transit service in the Cities of Las Cruces, Hatch, Mesilla, Sunland Park, Elephant Butte, Truth or Consequences, Williamsburg, and Alamogordo, NM. SCRTD service is also available throughout the rural areas of Doña Ana and Sierra Counties. Beyond transit operation, SCRTD's responsibilities include development of single, seamless transit system for member area residents from existing fragmented systems, coordination of transit with other existing modes/services within its jurisdiction, management of service contracts, and consolidation of transit services that existed prior to the creation of SCRTD. Services that SCRTD either provides or coordinates include the following:

- SCRTD sponsors service, operated by ZTrans, between Alamogordo and Las Cruces.
- ZTrans operates intercity bus service in Otero and Dona Ana Counties, connecting Alamogordo to Tularosa, Mescalero, and Las Cruces with some intermediate stops in Organ.
- NMDOT's park-and-ride service operates two routes within the Las Cruces/Dona Ana region, providing connections from Las Cruces to El Paso, TX, and White Sands Missile Range.
- Roadrunner Transit, a service of the City of Las Cruces, provides fixed-route bus service and complementary ADA paratransit service in Las Cruces, and shuttles to the Doña Ana Community College East Mesa Campus and two shuttles within New Mexico State University.
- In Socorro, NM, the city provides general public demand-response service.
- Sun Metro, the transit operator in El Paso, TX, provides service into Sunland Park, NM, that connects with SCRTD services.

Governance

In New Mexico, RTDs are transit management entities tasked with streamlining existing transit service. RTD-enabling legislation empowers RTDs to request that voters within the RTD's jurisdiction approve the implementation of a sales tax (up to 0.5 percent) to support transit service. New Mexico has four RTDs: North Central, Rio Metro, Southwest, and South Central RTD (*12*). SCRTD has eight member cities in Dona Ana County that receive transit service in exchange for contributing tax revenue. As stated previously, an RTD is responsible for coordinating existing transit systems within a region to create a seamless transit system and coordinating service with other transportation modes to facilitate mobility. SCRTD's specific responsibilities include (*13*):

- management of operating contracts and pilot projects;
- consolidation of existing transit services in the following communities: Mesilla, San Pablo, San Miguel, La Mesa, Chamberino, Anthony, La Union Santa Teresa, Sunland Park, Brazito, Mesquite,

Vado, Anthony, Chaparral, Garfield, Hatch, Rody, Rincon, Radium Springs, Doña Ana Elephant Butte, Truth or Consequences, and Williamsburg;
- development of partnerships that involve multiple government entities within the region to achieve regional transit options;
- expansion of transit service in unserved areas of the RTD's jurisdiction; and
- reduction of congestion and air pollution.

Funding

SCRTD receives funding from tax revenue, federal transit program grants, state resources, and other local revenues. New Mexico Statutes describe an RTD's ability to impose taxes as follows (*14*):

> Upon a request by resolution of the board of directors of a regional transit district, a majority of the members of the governing body of each county that is within the district shall impose by identical ordinances an excise tax at the rate specified in the resolution, but not to exceed one-half percent of the gross receipts of any person engaging in business in the district for the privilege of engaging in business.
>
> A tax imposed pursuant to this section may be imposed by one or more ordinances, each imposing any number of tax rate increments, but an increment shall not be less than one-sixteenth percent of the gross receipts of any person engaging in business in the district and the aggregate of all rates shall not exceed one-half percent of the gross receipts of any person engaging in business in the district. The tax may be referred to as the "county regional transit gross receipts tax."

Fresno County, CA

Transit Services

Transit in Fresno County is provided by three agencies—two operating in urban areas (the Cities of Fresno and Clovis) and one providing service to rural residents throughout the county.

The Cities of Fresno (Fresno Area Express [FAX]) and Clovis provide fixed-route and complementary ADA paratransit service.

In rural areas, the Fresno County Rural Transit Agency (FCRTA) provides fixed-route and reservation-based demand-response services with unique, city/region-specific branding. FCRTA contracts with service operators for all its service and, in total, manages 25 unique transit operations that provide service in 13 cities and 28 unincorporated communities in rural areas of Fresno County.

Governance

To facilitate countywide transportation, FCRTA provides service that connects with FAX in downtown Fresno, and the City of Clovis accepts FAX monthly passes. There is not an official coordination agreement between the transit providers in Fresno County.

FAX and City of Clovis transit services are provided through city departments, and each is governed by the city council in each city.

FCRTA is a joint powers authority. A board of directors, consisting of 14 members representing the cities in FCRTA's service area (13 members) and the County of Fresno (one member), governs FCRTA.

Funding

FAX receives federal Section 5307 funding, and FCRTA receives federal Section 5311 funds. The City of Clovis does not receive federal funding for transit. Each transit provider in Fresno County receives state funding from California's Transportation Development Act Local Transportation and State Assistance Funds. FAX and the City of Clovis receive additional funding from a local half-cent sales tax (Measure C) (*15*).

Indianapolis/Marion County, IN

Transit Services

IndyGo operates transit in the City of Indianapolis and throughout Marion County. IndyGo provides fixed-route transit service in Indianapolis and surrounding cities and demand-response paratransit service throughout Marion County. The Central Indiana Regional Transportation Authority (CIRTA) provides mobility management service to assist people to ride transit throughout the region and facilitate carpool/vanpool, cycling, and walking. CIRTA also operates the Plainfield Connector to provide transit service to the Plainfield industrial area with a connection to/from IndyGo fixed routes.

Governance

IndyGo, a municipal corporation of Indianapolis–Marion County, is governed by a seven-member board of directors that includes three members appointed by the mayor of Indianapolis and four members appointed by the City-County Council.

CIRTA is a quasi-governmental organization that is governed by a 17-member board of directors representing CIRTA's region (10 counties). According to Indiana's Transportation Portal, quasi-governmental agencies are typically "created by statute, but separate from the state in their corporate and sovereign capacity; they carry out some public function" (*16*).

Funding

Funding for IndyGo service comes from federal transit program grants, state sales tax, and locally generated funds (Marion County property and income tax revenues). In February 2017, the City-County Council voted to adopt a transit-dedicated tax (previously approved by voters, with 59 percent of Marion County in favor). The new tax will dedicate 0.25 percent of Marion County income tax receipts to transit. Using the additional revenue generated by this tax, IndyGo proposes to increase service by approximately 70 percent.

CIRTA receives funding from federal Section 5307 as well as other grants.

Pima County, AZ

Transit Services

The regional transportation authority manages transit service throughout Pima County (both urban and rural areas) and receives financial assistance from the county (*17*). Sun Tran is the urban transit service in Tucson, and Sun Shuttle provides rural transit service throughout Pima County. Sun Tran operates fixed-route, ADA paratransit, and streetcar service. Paratransit service is available in Tucson, the Tohono O'Odham Nation, the Paqua Yaqui Tribal area, south Tucson, and parts of Pima County. Sun Shuttle operates fixed routes (some routes offer flexible service through pre-arrangement) in rural areas including Marana, Oro Valley, Catalina, Sahuarita, Green Valley, San Xavier, Tucson Estates, and Ajo.

Other transit services in Pima County include the Ajo Community Circulator Service, Sun RideShare vanpool/carpool, volunteer transportation services for people age 65 and older and people with disabilities, and a ride-matching service.

Governance

Arizona state statutes (Title 48, Chapter 30 Regional Transportation Authority) empower RTA to create a 20-year plan focused on improving transportation in the region and collect tax revenue to fund the plan. In 2006, voters in Pima County approved RTA's 20-year plan and the necessary half-cent sales tax to provide funding for the plan through 2026 (*18, 19*).

The Pima Association of Governments, the MPO in the Tucson area, manages day-to-day operations at RTA. A nine-member board of directors governs RTA. The board includes a representative from Pima County, the Arizona State Transportation Board, the Pascua Yaqui Tribe, the Tohono O'odham Nation, and each of the Cities of Tucson, South Tucson, Matana, Oro Valley, and Sahuarita.

Funding

Sun Tran, Sun Shuttle, and the other services receive funding from RTA as generated through sales tax revenue and federal and state transit funds.

RTA manages approximately $2 billion dedicated to funding transportation, as generated from the half-cent sales tax. The State of Arizona is responsible for collecting the tax revenue and transferring it to RTA's regional transportation fund account (*19*).

Peer Comparison

Table 8 provides a summary comparison of how peer counties attempt to provide countywide transit services in urban/rural counties. The information provided in the table includes the following:

- the peer county;
- the transit authority or urban/rural transit district operating in each peer county;
- whether there is countywide service in the peer county and, if so, whether the service is seamless to riders; and
- the tools to coordinate transit services in each peer county.

Table 8. Peer Comparison of Countywide Transit Services.

County	Transit Authority or Urban/Rural District	Countywide Service, Seamless to Riders	Tools to Coordinate Transit Services
Texas Peers			
Bexar County	VIA	VIA is the only transit provider in Bexar County	Sub-allocation 5307 to cities in the UZA in adjacent counties
Dallas County	DART Mesquite/STAR Transit Grand Prairie	Transit service is not available countywide	Sub-allocation 5307 Local government corporation Interlocal agreements
Denton County	DCTA Span, Inc.	DCTA and Span, Inc. work cooperatively, but services are not seamless	Sub-allocation 5307 Interlocal agreements Local government corporation
Harris County	METRO Harris County Transit	METRO and Harris County Transit work cooperatively, but services are not seamless	Sub-allocation 5307 Interlocal agreements
Nueces County	CCRTA	CCRTA is the only transit provider in Nueces County	CCRTA jurisdiction is all of Nueces County
Tarrant County	Trinity Metro NETS Arlington	Transit service is not available countywide. Through TCTS, Trinity Metro offers some safety net service to non-member cities and works cooperatively with NETS and Arlington, but services are not seamless.	Sub-allocation 5307 TCTS use of Section 5310 Interlocal agreements
Travis County	Capital Metro CARTS	Countywide but not seamless to riders	Sub-allocation 5307 Interlocal agreements
Webb County	El Metro in Laredo El Aguila Rural Transit	Countywide but not seamless to riders	Urban and rural districts have complementary boundaries
National Peers			
Dona Ana County, NM	SCRTD ZTrans Las Cruces Roadrunner New Mexico DOT Gold	RTDs are tasked to streamline existing services	Overlay regional transit district
Fresno County, CA	Fresno Clovis FCRTA	There is not an official coordination agreement between the transit providers in Fresno County	FCRTA is a joint powers authority
Indianapolis/ Marion County, IN	IndyGo CIRTA	Yes, seamless to riders	City-county government Regional mobility manager
Pima County, AZ	Sun Tran, Sun Van, Sun Link in Tucson Sun Shuttle by RTA	RTA's goal is to develop seamless transit within the service area	Overlay regional transit authority

Chapter 6: Transit Route Planning Guidance

This chapter discusses the transit route planning guidance developed by the El Paso County study team to create and evaluate different transit service scenarios for a seamless, countywide transit system. The study team evaluated transit planning computer programs, set guidelines and goals for service planning, established planning performance measures, and generated five proposed transit service scenarios to demonstrate options for countywide transit.

Chapter 6 contains four sections, with each explaining the steps the study team took to develop transit route planning guidance. The sections of the chapter include:

- "Transit Service Planning and Ridership Estimation Software Evaluation" discusses the study team's investigation and evaluation of several different transit planning and ridership estimating software packages that could be used for countywide transit service planning.
- "Transit Service Planning Guidelines" presents the goals, service standards, and route planning standards for countywide transit service.
- "Preparatory Data Collection for Route Planning Recommendations" discusses the study team's methods for collecting initial ridership data and important origins and destinations information to inform the planning process.
- "Revenue, Ridership, and Expenses Forecast" discusses the study team's methodology for forecasting revenues, expenses, and ridership for transit service scenarios.

Transit Service Planning and Ridership Estimation Software Evaluation

The study team examined software options for facilitating the identification of potential transit demand and for maximizing ridership while considering the requirements and constraints of different funding sources identified. Specifically, the study team evaluated:

- TransCAD;
- VISUM;
- Transit Boarding Estimation and Simulation Tool (TBEST);
- Transit Tools;
- ArcGIS Business Analyst;
- ArcGIS Network Analyst; and
- Remix.

The study team's evaluation is included in Appendix 6-A.

Transit Service Planning Guidelines

Establishing transit service planning guidelines is a critical first step in transit service planning because there are many possible solutions when planning transit service. Planning transit without guidelines can result in too many options and no standardized method by which to evaluate them. This section discusses the scenario goals, service standards, and route-planning standards established by the study team and used to develop proposed service scenarios. However, several transit service planning terms should be defined first.

Transit Service Planning Terms

There are several different types of transit service; Figure 22 displays and defines the service types that were included in at least one of the proposed transit service scenarios.

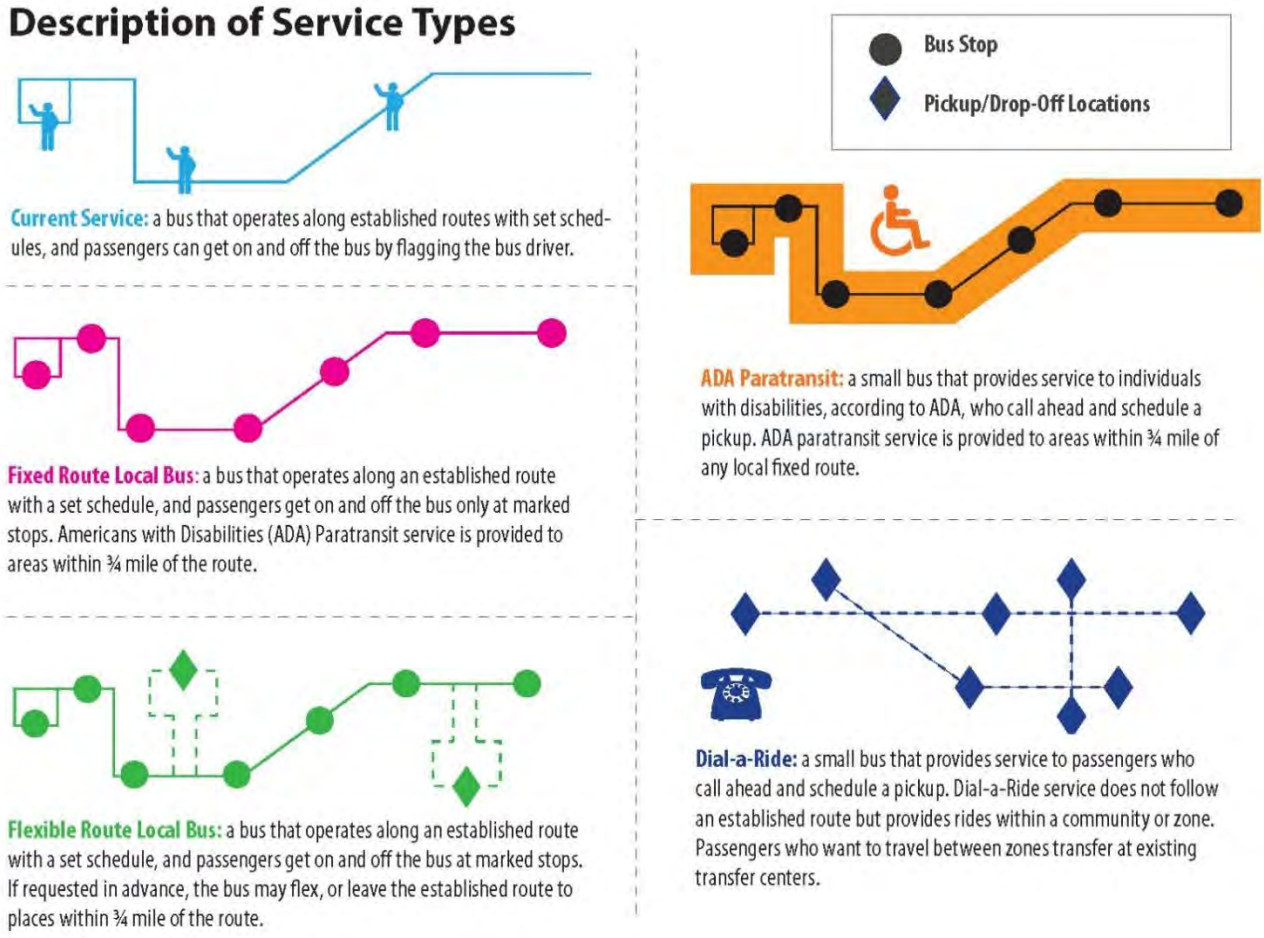


Figure 22. Description of Transit Service Types.

Several key service planning terms define characteristics of a transit route or service:

- Coverage: transit service provided to a certain geographic area. If an area has coverage, people living in the area have access to transit.
- Span: how long a transit service or route operates on a certain day. For example, a bus route's span on weekdays (Monday through Friday) may be from 6:00 a.m. to 8:00 p.m. *Span* is also known as hours of service.
- Headway: the amount of time between buses on the same route heading in the same direction. Headway is usually expressed in minutes. For example, a bus route may have one bus headed eastbound every 60 minutes; this is a 60-minute headway. A decrease in headway means that buses will come more often.
- Peak: the times of day when more people travel, usually requiring more transit service; also commonly known as rush hour. In the proposed service scenarios, peak time periods are 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m.

- Off-peak: the times of day when travel is lower than peak, usually requiring less transit service. In the proposed service scenarios, off-peak time periods are all the hours of service that are not in the peak time periods.

Transit Service Planning Goals

The study team established five service scenario goals both to help guide service planning and to evaluate service scenarios. Table 9 presents each goal by title, a description, some examples of planning strategies by which to achieve the goal, and a quantitative performance measure.

Table 9. Transit Service Planning Goals, Planning Strategies, and Performance Measures.

Goal Title	Description	Planning Strategies	Performance Measure
Rural area coverage	Provide transit service to all residents in the rural areas of El Paso County	Serve rural areas with dial-a-ride (or similar) transit	Percent of rural population with transit access
Urban area coverage	Provide transit service to all residents in the urban areas of El Paso County	Serve urban areas with flexible- and fixed-route transit	Percent of urbanized county population with transit access
Utility	Improve the utility of transit to serve many passenger trip purposes	Provide high service availability, including both span and frequency of service (if applicable); avoid one-way loops	Number of scheduled vehicle trips added to dial-a-ride revenue hours
Effectiveness	Improve the effectiveness of transit service	Match service levels with anticipated demand; keep routes as direct as possible; vary service levels by time of day	Passengers per revenue hour
Complement Sun Metro	Improve connections between El Paso County and Sun Metro transit service	Connect county routes and rural services to Sun Metro transfer centers; improve timing of transfers between all services, where possible	Percent of routes serving non-downtown Sun Metro transfer centers and presence of pulsed-timed transfers

The performance measures are operationally defined as follows:

- Percent of rural population with transit access: the percentage of the El Paso County population living outside both the El Paso UZA and the City of El Paso that has access to at least one of the proposed transit services in the service scenario.[2]
- Percent of urban population with transit access: the percentage of the non–El Paso County population living within the UZA but outside of the City of El Paso that has access to at least one of the proposed transit services in the service scenario.
- Number of scheduled vehicle trips added to dial-a-ride revenue hours: the *number of scheduled vehicle trips* refers to the total annual number of scheduled one-way trips on fixed- or flexible-route local bus routes in the proposed service scenario. *Dial-a-ride revenue hours* refers to

[2] *Having access* means living within the dial-a-ride service area or living within a ½-mile buffer of a fixed route or a ¾-mile buffer of a flexible-route local bus route.

the total annual estimated revenue hours for dial-a-ride service. The estimate was based on the dial-a-ride span of service multiplied by the number of dial-a-ride vehicles in operation.

- Passengers per revenue hour: the total annual estimated ridership for the Gold Route, vanpool program, and any proposed transit services divided by the total annual revenue hours for the same services.
- Percent of routes serving non-downtown Sun Metro transfer centers and presence of pulsed-timed transfers. This measure is scored between 0 and 2 by adding two separate scores together.
  - First, the study team calculated the percent of El Paso County flexible or fixed bus routes in the scenario that connect directly to a Sun Metro transfer center. In all scenarios except Scenario 1, 100 percent of proposed El Paso County bus routes connect to a transfer center, so this part of the score was 1.0.
  - For the second part of the score, the study team scored the convenience of the transfer between El Paso County bus routes and to and from Sun Metro bus routes. The study team scored dial-a-ride services operating without fixed or flexible bus routes as a score of 0.5 because trips must be requested in advance. The study team gave Scenarios 3 through 5 a transfer convenience score of 1.0 (the highest score) because for all these scenarios, routes meet at the same times at Sun Metro transfer stations for convenient passenger transfers.

Transit Service Standards

Service standards establish the baseline characteristics of transit services. The study team set service standards for spans and headways (if applicable) that varied by day of the week, time of day, and type of service (Table 10).

Table 10. Standards for Headways and Span of Service.

Service Characteristic	Day of Week	Type of Service		
		Dial-a-Ride	Flexible-Route Local Bus	Fixed-Route Local Bus
Minimum span*	Weekday	14 hours	14 hours	14 hours
	Saturday	12 hours	12 hours	12 hours
Maximum headway	Weekday (≥ 4.5 households/acre)	N/A	60 minutes	60 minutes
	Weekday (< 4.5 households/acre)	N/A	120 minutes	120 minutes
	Saturday	N/A	120 minutes	120 minutes
Preferred maximum peak headway**	Weekday (6–9 AM and 3–6 PM)	N/A	30 minutes	30 minutes

**The minimum span standard was relaxed for Route 50 because of its unique purpose, partially as a tourism-focused route.*

**Preferred maximum peak headway *refers to the desired headway during peak time periods; however, the preferred headway was prioritized for routes operating in denser areas and only applied when budgetary resources allowed.*

Route Planning Guidelines

Route planning guidelines help guide route-level planning decisions to help the final planning route and network design to meet the established goals. The study team established and applied the route planning guidelines contained in Table 11 during the creation of the proposed transit service scenarios.

Table 11. Route Planning Guidelines.

Guideline Title	Guideline Description	Rationale	Related Goal
Avoid one-way loops	Where possible, avoid one-way loops in routes	Bus routes that are one-way loops significantly increase passenger travel time in at least one direction, forcing the passenger to travel longer than if the route were bi-directional.	Utility
Maintain route directness	The fixed portions of routes should be as direct as possible and avoid deviations and circuitous routing	Bus routes that leave the main through street and meander through neighborhoods add to the cost of the route and travel time for onboard passengers. Unless there is a specific street network or adequate ridership demand to necessitate the deviation, deviations should be avoided.	Utility and effectiveness
Prioritize frequency using density and transit need	Areas with higher population density, commercial density, or transit need should receive higher frequencies	All things being equal, high density and transit need predict higher ridership, especially when transit service is available and more convenient.	Utility and effectiveness
Facilitate transfers	Ensure transfers between El Paso County Transit routes and to or from Sun Metro routes are convenient	A large portion of El Paso County Transit passengers transfer when they make their trip—either to other El Paso County Transit routes or to Sun Metro routes. Facilitating transfers—both geographically and temporally—benefits riders and makes the service more convenient to use.	Utility and complement Sun Metro
Service existing passengers	Proposed transit routes, to the extent feasible, continue to serve existing passengers	The proposed transit service scenarios are not meant to adversely affect any current passengers, unless absolutely necessary to achieve planning goals and stay within budget. Any loss of transit access should impact the fewest number of passengers possible.	Coverage (rural and urban)

Preparatory Data Collection for Route Planning Recommendations

The study team collected some very basic data on ridership patterns on El Paso County's current county bus routes because El Paso County did not have any geospatial data about what parts of routes have the most or least passenger activity. The study team collected these data by developing a basic survey that was distributed to bus operators who operated each current route. The survey had two main sections:

- estimating ridership activity; and
- determining important origins and destinations.

To gather estimates of ridership activity along the El Paso County routes, the study team divided each route into segments using the current route maps and major stops. The study team then asked bus drivers for their best estimate about how many people get on their bus along each segment. The study team averaged the estimates from the drivers who responded to the survey and used these data to help guide the route planning process.

The study team asked bus drivers to name the most important locations (with the most ridership), the least important locations (with the least ridership), and places that riders request or would like service (areas of expansion).

Ridership, Revenue, and Expenses Forecast

The study team developed methodologies to forecast ridership, revenues, and expenses for each proposed transit service scenario. This section describes the methodologies used.

Ridership Estimation

The study team tested several different types of ridership estimation models and examined existing literature before selecting the final estimation methodology. The ridership estimation methodology for weekdays (Monday through Friday) and Saturdays for proposed fixed and flexible bus routes required four steps:

1. Using data from current El Paso County routes, establish the statistical relationship[3] between passengers per revenue hour and the population and jobs with access to the routes. The study team used different statistical relationships for weekday service and Saturday service.
2. Using the statistical relationship identified in the previous step, predict baseline daily passengers per revenue hour for a given proposed route based on population and employment with access to the route.
3. Adjust the daily passengers per revenue hour estimate by comparing the proposed route's frequency of service to a comparable current route's frequency of service. If the proposed route has a different frequency than the comparable current route, adjust the daily passengers per revenue hour using industry-standard elasticities.
4. Multiply the proposed route's frequency-adjusted passengers per revenue hour by the hours of service of the proposed route to generate a total estimated average daily ridership.

Sunday ridership was only estimated for Route 50; the study team used Route 50's Saturday passengers per revenue hour to estimate Sunday ridership.

In scenarios where Route 84's alignment was not changed, the study team used Route 84's current passengers per revenue hour as the baseline instead of predicting a new baseline based on population and employment with access to the route. The study team chose this approach for Route 84 because Route 84's operating characteristics and ridership patterns were significantly different from other El Paso County Transit routes, and Route 84's passengers per hour did not conform to the statistical relationship that was reliable for the other current routes.

A detailed explanation of the methodology is in Appendix 6-B.

Revenue Forecasts from Fares

The study team forecasted fare revenue for each of the six transit service scenarios based on the ridership estimation methodology discussed previously. For flexible- and fixed-route services, the study team assumed a base fare of $1.50 per boarding and a discounted fare of $0.75 per passenger boarding for people age 65 and older (seniors) and people with disabilities. The study team assumed El Paso County will receive some 5307 funds from its service that operates in the UZA, and 5307 rules required that recipients have a discounted off-peak fare for seniors and people with disabilities. The study team applied the off-peak discounted fare to 25 percent of the estimated off-peak-period ridership of flexible-route and fixed-route services. (The 25 percent assumption was based on data from the El Paso County onboard rider survey, which indicated that 17.2 percent of passengers were eligible for Medicare and that 6 percent of passengers used a mobility aid.) The study team assumed a base fare of $1.50 per boarding for dial-a-ride and $3.00 per boarding for ADA paratransit services.

[3] The term *statistical relationship* refers to the linear regression equation that reliably predicted passengers per revenue hour as a function of population and jobs with access (within ½ mile) to transit routes.

The study team did not forecast fare revenue for the Gold Route or vanpool services; instead, the team kept these values constant across all service scenarios.

Revenue Forecasts from Federal and State Grants

As discussed in Chapter 2, El Paso County receives revenue from several sources including federal and state grants, and local revenues. In order to understand the potential amount of revenue available to cover projected operating costs, the study team developed a revenue forecasting model to forecast state and federal formula funding allocations for El Paso County under the different transit service scenarios. The forecasted revenue sources included State Rural (formula), 5311 Formula Grants for Rural Areas, and 5307 Urbanized Area Formula Grants. Other sources of federal revenue (e.g., 5311[f] Intercity Bus Program and CMAQ funds) were not put through the forecasting model and were assumed to remain constant across all scenarios.

Assumptions

Formula funding for both federal and state sources use service data that are submitted and certified two fiscal years prior to the funding award. The study team used service data from FY 2017 to calculate the revenue forecasts, disregarding which fiscal year the forecasted revenue would actually materialize. FY 2019 is the year in which the forecasts have the highest confidence because FY 2019 will also use FY 2017 service data.

The study team also assumed that the FY 2017 service data of all other rural transit districts in Texas would not change from year to year. In reality, transit district service levels increase or decrease from year to year, sometimes significantly. Changes in service data affect the allocation of dollars from federal and state rural formula grants because rural transit districts are all competing for a fixed amount of funds in each grant program. For example, if Transit District X experiences a significant drop in revenue miles, the district would have less 5311 funding based on revenue miles. The other rural transit districts would have more funding available, assuming other transit districts' revenue miles did not change.

Last, the study team disregarded the funding stability rule, which guarantees that state formula funds and federal sub-allocated funds from the 5311 program will be within 90 percent of what a transit district received in the prior fiscal year.

Data Used

The study team used FY 2017 service data from TxDOT PTN-128. All population-based data are from the 2010 Decennial Census. This is consistent with data used at the federal and state levels. Population within transit districts is from 2015 PTN-128 data, the latest update based on changes to a few transit district boundaries. At the federal level, formula multipliers are based on FY 2017 formula funding spreadsheets.

Operating Expense Forecasts

The study team forecasted operating expenses for each of the proposed transit service scenarios using a single-variable cost model based on El Paso County's estimated average operating cost per revenue hour for its county bus routes in FY 2017 ($66.14).[4] However, the study team set the operating cost per revenue hour to $65.00 to be more in line with FY 2016 and to be a simpler number for estimation purposes.

[4] The county bus average cost per revenue hour was obtained from El Paso County's disaggregated PTN-128 reporting spreadsheets, which separate the Gold Route data from the county bus route data.

For each proposed transit service scenario, the study team estimated the total number of revenue hours and multiplied the revenue hours by $65.00 to estimate the total estimated operating expenses for any fixed-route local bus route, flexible-route local bus route, ADA service, and dial-a-ride service. Operating expenses for the Gold Route and the vanpool program were kept constant across all service scenarios. A description of how the study team estimated revenue hours is in Appendix 6-B.

Capital Expense Forecasts

The proposed service scenarios use two capital expense categories: vehicles and passenger facilities (i.e., bus stops and shelters). The study team estimated the capital costs of both categories for each of the proposed transit service scenarios using the methodologies discussed as follows.

Vehicle Capital Costs

Vehicle capital costs were calculated by first estimating the number of vehicles needed to meet the vehicle requirements of each of the service scenarios. The study team calculated the peak vehicle requirements for each scenario based on the scenario's service plan and then added a 40 percent spare ratio to ensure El Paso County would have enough spare vehicles to handle the maintenance downtime expected from the relatively high vehicle utilization rates (estimated daily mileage). The study team then multiplied the number of vehicles by the Texas median transit vehicle cost ($78,000). Finally, to display the vehicle capital costs in terms of annual expenses, the study team divided the vehicle purchase costs by the expected vehicle life of six years.

Passenger Facilities Capital Costs

The study team estimated capital costs for passenger facilities to ensure that there would be bus stops for all proposed transit service scenarios. The study team estimated the number and cost of adding bus stops using the following steps:

1. Estimate the directional route miles within each scenario after removing double-counted shared route miles (i.e., when two bus routes share the same right of way, the study team only counted that right of way once).
2. Estimate the number of bus stops assuming a ¼-mile stop spacing along each directional route mile.
3. Estimate the percentage of bus stops needing sidewalk improvements to make the bus stop ADA compliant by visually inspecting Google satellite imagery along all the bus routes.
4. Estimate the number of bus stops needing a shelter. Shelters were prioritized at transfer locations and boarding areas adjacent to major trip generators.
5. Establish an expected bus stop service life and estimated cost for bus stop installation, sidewalk improvements, and shelter installation based on a review of available literature on bus stop design cost factors. (Appendix 6-B provides documentation of the study team's review.) The study team used the standard costs presented in Table 12. The results were as follows:
    - The expected service life of a bus stop or shelter was 10 years.
    - The study team multiplied the estimated cost of the passenger facilities by the estimated number of facilities to calculate the total estimated capital costs for passenger facilities. The study team divided the total cost by 10 years for purposes of presenting an annual amortized capital cost of passenger facilities.

Table 12. Estimated Costs for Each Type of Passenger Facility.

Facility Type	Estimated Cost
Standard stop	$3,892
Standard stop needing sidewalk improvements	$4,703
Shelter add-on cost	$13,700

Note: The shelter cost included the cost of a shelter, a bench, and related sidewalk improvements to make the stop suitable for a shelter.

Excluded Expenses and Additional Considerations

The study team did not include expenses for any of the following:

- improvements to or additional administration or maintenance facilities;
- improvements to or additional transfer centers or other passenger facilities more robust than a bus stop and shelter; and
- resources that may be necessary or helpful to support dial-a-ride or flexible-route local bus service (e.g., software, computer hardware, tablets, or other technology).

In general, the study team assumed that additional service would be supported by a ratio of administration, maintenance, and operations personnel similar to the current ratio of personnel and service hours at El Paso County Transit.

Last, the costs for each scenario should not be confused with implementation costs or cash-flow estimates. The costs are snapshots of expected annualized operating and capital costs assuming service is already in operation. (For example, the scenario vehicle capital cost estimates are annual amortized expenses, not lump-sum payments for purchasing new vehicles.)

Chapter 7: Stakeholder and Public Engagement

The feasibility of any transit service relies on the support of the people it is designed to serve. An integral component of the El Paso County Transit Study was to design and implement a robust public involvement program that provided information and collected data from county residents and a committee of advisors. In this context, the public outreach component of the El Paso County Transit Study operated at the *inform, consult, involve,* and *collaborate* levels of the International Association for Public Participation Spectrum of Public Involvement (*20*).

The study team developed a robust public involvement plan based on discussions with the El Paso County staff directing the feasibility study. The public involvement plan centered on the following objectives:

- Ensure project materials are accessible to the audience(s): provide technical information in a format that is user friendly for a lay audience and in a language they prefer.
- Make events accessible and engaging: schedule events at times and locations that are convenient for the audience, including current and potential transit users. Present information in a manner that allows participants to engage with the study team.
- Describe to the public how their input will be used: include information about the study process and how public input will be used in decision-making.
- Provide several mechanisms to allow the public to engage: offer multiple means and methods for input and discussion.
- Endeavor to be as inclusive as possible: proactively reach out to audiences that are traditionally underrepresented in these processes.

A stakeholder committee provided oversight and input into the public engagement activities.

Stakeholder Committee

The public involvement strategy began with the creation of a stakeholder advisory committee. This committee was comprised of approximately 60 individuals representing 27 public and private entities as well as state, regional, and local government agencies. The stakeholder group was curated to include individuals who have a vested interest in the outcome of the study (e.g., elected officials, individuals that advocate for users of the system, and special interest groups). The following shows the representation of agencies/entities in the stakeholder group:

- Area Agency on Aging;
- Camino Real Regional Mobility Authority;
- City of Anthony, NM;
- City of El Paso;
- City of El Paso Mass Transit (Sun Metro);
- City of San Elizario;
- City of Socorro;
- City of Sunland Park, NM;
- Dona Ana County, NM;
- El Paso County;
- El Paso County Transit;
- El Paso County Veterans;

- El Paso MPO;
- Far West Texas/El Paso Regional Transportation Coordination Committee;
- NMDOT;
- Project Amistad;
- Rio Grande Council of Governments;
- SCRTD;
- Town of Anthony;
- Town of Clint;
- Town of Horizon City;
- TxDOT El Paso District;
- TxDOT Transportation Planning and Programming Division;
- TxDOT PTN;
- United Advocacy of El Paso;
- University of Texas at El Paso;
- Village of Vinton;
- Volar Center for Independent Living;
- Workforce Solutions Borderplex; and
- Ysleta Del Sur Pueblo.

The stakeholders provided insight into how, when, and where to best reach their constituencies. They suggested meeting times and locations. They offered feedback on outreach materials and suggested additional audiences and opportunities. The stakeholder group met three times:

- Stakeholder Meeting 1 at 10:00 a.m. on June 7, 2017;
- Stakeholder Meeting 2 at 1:30 p.m. on October 19, 2017; and
- Stakeholder Meeting 3 at 1:30 p.m. on December 7, 2017.

Each two-hour meeting was held at the El Paso MPO offices. The project team sent meeting notices and reminders via email to the stakeholder group. In some cases, telephone calls were made to remind stakeholders of the meetings and encourage attendance. Not all invited stakeholders attended each meeting. However, meeting materials such as handouts and PowerPoint presentations were emailed to the stakeholders. Appendix 7-A documents the presentations shared at each of the three stakeholder meetings and provided by email to each person invited to the meeting.

The following information outlines the activities undertaken for the stakeholders and the public in a chronological order.

Chronology of Stakeholder and Public Involvement

Stakeholder Meeting 1

The first stakeholder meeting introduced the stakeholders to the project and its purpose. The study team outlined the scope of the project and presented information on existing conditions in the El Paso region. Specifically, information was presented about current transit service and providers, where people live and work, current and future demographics, current transit supply and need, and opportunities for expanded and improved service. The presentation provided background information to the stakeholders about previous studies that identified transit needs and gaps in service.

Based on the information provided in the presentation and their own unique perspectives, stakeholders were asked to provide input on four general questions:

- Who are the target markets with needs for expanded transit service?
- Where are areas within El Paso County with needs for expanded transit service?
- What are the priority travel corridors for transit?
- Is there enough transit supply in rural areas?

Stakeholders offered input about a number of issues in response to the questions. Some mentioned the growth that is occurring in their towns and how increased transit can provide better access to jobs. Several commented on the need for students to have access to move easily throughout the county, especially to access higher education opportunities. The majority agreed that the current system and fare policies were not effective for facilitating transfers. Many stakeholders commented on specific routing that needs improvement in addition to additional transfer locations. Representatives from the City of El Paso and Sun Metro were able to add information about future transit projects and planning efforts. Several of the small cities described the need for better transportation options for people with disabilities, people age 65 and older, and low-income populations. In some instances, these municipalities are completing their own studies; the stakeholder meeting provided an opportunity to make others aware of these studies and provide synergy between the ongoing studies.

The stakeholders were also educated on the current regulatory framework, funding mechanisms, and coordination challenges for countywide transit. Finally, the stakeholders were briefed on the first round of public involvement, which included open houses for the public.

Public Open Houses

The purpose of the first outreach efforts was to facilitate a series of open houses throughout El Paso County to allow members of the public and other stakeholders the opportunity to learn about the study and allow the study team to gather input on transit connectivity issues and opportunities throughout El Paso County. County project staff identified and secured locations for the open houses to be held at four county facilities in the region:

- Fabens: El Paso County Road and Bridge Warehouse, 1331 Fabens Street, Fabens, at 6:00 p.m.–8:00 p.m. on Wednesday, June 7, 2017;
- Vinton: El Paso County Northwest Annex Community Center, 432 East Vinton Road, Vinton, at 6:00 p.m.–8:00 p.m. on Thursday, June 8, 2017;
- Socorro: Rio Vista Community Center, 901 North Rio Vista Road, El Paso, at 9:00 a.m.–11:00 a.m. on Saturday, June 10, 2017; and
- El Paso County: El Paso County Sheriff's Office Headquarters, 3850 Justice Road, El Paso, Saturday, at 2:00 p.m.–4:00 p.m. on June 10, 2017.

Open House Notifications

The study team created a flyer to advertise the open houses. County staff distributed the flyer to their email lists. The flyer was also provided to the stakeholder committee for distribution to their contacts.

Open House Format

The open houses were designed as informal events, where participants could visit numerous exhibits, talk with project representatives to learn about the study, and provide input about transit connectivity challenges

and opportunities in their area. Each open house provided information and opportunities for input organized around five components:

- Project background and goals: described the reason for the study and the role that the public plays in the study.
- Existing conditions: illustrated the existing El Paso County transit system and information about where people live and work in El Paso County.
- Transit need index and transit supply index: displayed the study team's analysis of where transit need and transit supply are high or low in the county.
- Potential transit corridors and opportunities: mapped potential transit corridors and opportunities based on existing conditions and the transit need and supply indices.
- Input: asked attendees to answer three questions about transit services in El Paso County. Large pieces of paper were provided for their input. The three questions were:
  - What do you love about transit service in your area?
  - What parts of the transit system need improvement?
  - What does an ideal transit system look like to you?

Several large display boards were situated throughout the venues to allow participants to read the information as they wished. Several project staff members were available to answer questions. Bilingual staff were available for participants who preferred to speak in Spanish. Participants were encouraged to note issues of concern on the large pieces of paper, but they were also welcome to draw directly on the maps or ask a staff member to help them record their comments.

In addition to the display boards, a station included surveys that individuals could complete and leave at the open house or take and return later. A small table of children's activities was also available. Participants were encouraged to sign in and provide contact information so they could be kept informed about project activities. Figure 23 is a photo collage of the open houses.



Figure 23. Open Houses Held in June 2017.

Common Themes Identified at the Open Houses

The study team reviewed the input provided by attendees of the open houses and identified the following common themes:

- Dedicated bus stops. Numerous members of the public emphasized that having dedicated bus stops, as opposed to having to flag the bus down, would be an improvement. Some members of the public think it would increase ridership because without stops many people are unaware that service exists. In addition, numerous comments reflected a desire for sheltered bus stops because sitting in the hot sun and waiting for the bus is uncomfortable and potentially dangerous for the elderly.
- Bus fare. Attendees of the open houses expressed frustration with the cost of using the bus. The $2 fare for the county system is perceived as high, and if transfers to the Sun Metro system are needed, passengers often pay $10 or more for a round trip. One member of the public suggested providing a monthly pass to combat this issue.[5]

[5] El Paso County Transit instituted some fare changes that occurred after the open house. In particular, one-way fares were dropped to $1.50, and monthly passes are available.

- Improved access to bus schedules. Many attendees of the open houses explained that it is very difficult to find the bus schedule, and there should be more paper bus schedules available to the public (especially at dedicated stops) and maybe a mobile app (for the younger generation). Members of the public believe that ridership suffers because people are not aware of the bus schedule.
- Elderly population needs transit. The study team received feedback that the communities served by El Paso County Transit have a greater proportion of senior citizens, and these individuals depend on transit service and will continue to need transit in the future.
- One transit entity for El Paso County. Attendees of the open houses mentioned that traveling to transfer centers and paying to transfer to the Sun Metro system is burdensome in terms of both cost and time spent travelling. Many attendees of the open houses believed it would be extremely beneficial to current and potential new transit riders if there were only one transit agency that provided service for the entire region, resulting in lower costs and improved service.

Strategies for Process Improvement for Subsequent Outreach

The open houses during this first round of public outreach were not well attended. The study team compiled a list of suggestions for subsequent study outreach based on the state objectives.

Public Announcement

The following are suggestions for announcing the public meetings or open houses:

- Start public announcement and outreach efforts at least 30 days before events. Send reminders to stakeholders and make sure announcements appear over the course of 30 days leading up to the events because people often have to hear the same thing more than once in order for them to remember.
- Use local stakeholders to distribute flyers to their constituents, clients, etc. Distributing flyers to local libraries, community centers, schools, etc. is an easy way to get the word out about public involvement events.
- Use local newsletters and ultra-local (e.g., neighborhood) newspapers because some members of the public look at events in these types of publications more closely than in a citywide newspaper. Many of these publications have a calendar section where public event announcements are free.
- Use established community social media (e.g., Facebook and Twitter) accounts to announce events. Many of these accounts have numerous followers who look to these outlets for community news.

Ensure Events Are Accessible by Transit

Lack of access is often cited as one of the primary deterrents for people to participate in public involvement events. Open houses should be held at locations that are easily accessible by the existing transit service. Some of the county facilities were not served or were underserved by transit.

Go Where the People Are

Going to where the people are, as opposed to asking them to come to you, is an effective way to improve participation, especially in rural areas. Holding small, informal pop-up open houses in locations where members of the public will already be is an effective strategy for improving participation. The correct locations to hold pop-up open houses depends on the information being shared. For example, county fairs,

neighborhood events, sports events, locations with high foot traffic, and transit stops or transfer centers are locations where holding pop-up open houses may be effective. These events take careful planning but can be extremely effective in improving participation from the public.

Stakeholder Meeting 2

The second stakeholder meeting was held October 19, 2017. At this meeting, stakeholders were reminded of the purpose and scope of the study. Stakeholders were provided more information about current transit needs and supply. This information was augmented by data from the rider surveys. Some of these surveys were filled out at the June open houses, but most surveys were completed by riders on board El Paso County's bus routes. The survey provided more data about current El Paso County transit riders, including trip purposes, travel distances, transfers to Sun Metro, and the necessity of transit to quality of life. The stakeholders were also introduced to specific goals and measures for transit service, developed by the study team. The stakeholders were asked to provide feedback about the appropriateness of the goals and measures.

The bulk of the meeting centered on the development of scenarios of potential transit services. The study team developed five scenarios and compared them to current service. These scenarios were presented to stakeholders for discussion. Chapter 8 contains more details about the five scenarios. Considerable discussion about the scenarios occurred among the stakeholders. The scenarios were subsequently refined based on this stakeholder feedback. Finally, financial feasibility of expanded transit service was discussed. The stakeholders were asked to consider all alternatives for funding expanded service while the study team refined scenarios.

The stakeholders were also briefed on the second round of outreach to the public. They were informed that these would be community meetings where the scenarios would be presented to the public. Additionally, lessons learned from the June outreach efforts would be considered when securing locations and times for the community meetings.

Community Meetings, Pop-Up Events, and Additional Outreach

The second round of public outreach for the project was designed to provide the public with information about the progress of the study and gather feedback on the scenarios developed to enhance and expand transit service in the county. Based on previous outreach efforts and with guidance from the stakeholder committee, the study team designed an outreach effort to include four community meetings as well as a series of pop-up events throughout El Paso County. The events were designed to allow members of the public and other stakeholders the opportunity to learn about each of the five scenarios and provide feedback about the scenarios, including input on the service type, route locations, and scenario preferences.

Community Meetings

The community meetings consisted of a presentation at two different times. This provided an opportunity for people to arrive early or later during the scheduled meeting time. The meeting times and locations were chosen to allow participants to use county transit for transportation to and from the meetings. Table 13 indicates the time, location, and number of attendees of each meeting.

Table 13. Community Meeting Locations, Times, and Attendance.

Area	Location	Day and Time	Session Times	Attendance
Fabens	Rio Valle Women's Club	Tuesday, December 5, 2017	3:30–4:30 4:45–5:45	4
Montana Vista/ Homestead Meadows	Mountainview High School	Wednesday, December 6, 2017	3:30–4:30 4:45–5:45	3
Vinton/Westway	Deanna Davenport Elementary School	Thursday, December 7, 2017	4:30–5:30 5:45–6:45	10
Socorro	El Paso Community College Mission Del Paso Campus	Saturday, December 9, 2017	3:30–4:30 4:45–5:45	2

To increase participation and employ the lessons learned from the first round of engagement, the study team undertook additional efforts to reach potential participants. Flyers were provided to county staff, who distributed them in county buildings and via their mailing lists and social media channels. The El Paso County Transit department also created its own Facebook page to publicize the meetings and to provide informational updates about the meetings. First Transit, the county transit provider, was provided flyers, and bus drivers handed them out to passengers on their routes. A flyer was also provided electronically to the stakeholder committee for distribution through their contacts lists. Many stakeholders representing cities posted the flyer on their social media channels and emailed it to their distribution lists. Flyers were also distributed to interested parties and stakeholders who participated in the first round of open houses held in June.

Community Meeting Format

The community meeting format was designed to be flexible. The purpose was to present an update on the status of the project and to present and gather feedback on the proposed scenarios. To facilitate this exchange, a presentation was created in English and Spanish (shown in Appendix 7-B). The presentation was scheduled to be delivered twice during the community meeting time frame. This increased opportunities for participation and provided flexibility for attendees. The presentation reviews the study progress to date. It highlights the current county transit service program and details the identified gap between service and need, including information about current riders' characteristics and needs, as identified in the transit rider survey. The presentation also explains the types of transit service and introduces the proposed transit service scenarios.

The study team created an informational booklet that presents details about each of the scenarios in an easy-to-understand format. The booklet describes types of transit service and defines transit terms. It illustrates potential transit service coverage areas, highlights expanded service hours and routes, and conveys how well the scenario would perform against the goals and measures that were previously developed. This information is presented graphically using symbols, icons, and infographic style to aid in understanding. The booklets were given to each meeting attendee.

After the presentation was delivered, participants were invited to join breakout groups to discuss the transit service scenarios. The study team led the discussions about each scenario and answered lingering questions. The purpose was to identify the most appealing attributes of each of the scenarios. Likewise, the study team queried the participants about any issues associated with each scenario. After the discussion, participants were asked to identify their first and second preferred scenarios with colored dots labeled #1 and #2.

The meeting attendees were also asked to sign in and provide contact information to continue to build the database of individuals interested in the study. Display boards showed the scenarios in more detail, and project staff were available to answer questions. Additionally, project staff were available to give the presentation and conduct the breakout group in Spanish, if requested. This was done at one community meeting. Figure 24 is a photo collage of the breakout groups at the community meetings.



Figure 24. Breakout Groups at Community Meetings.

Pop-Up Meetings

In addition to community meetings, pop-up events were held at the following locations:

- Sun Metro Westside Transfer Center, 7535 Remcon Circle, El Paso.
  - Handed out approximately 15 informational booklets to passengers.
  - Left 15 informational booklets for distribution with bus drivers (Route 10).
- Sun Metro Eastside Transfer Center, 1165 Sunmount Drive, El Paso.
  - Handed out approximately 10 informational booklets to passengers.
  - Left 15 informational booklets for distribution with bus drivers (Route 20).
- Sun Metro Mission Valley Transfer Center, 9065 Alameda Avenue, El Paso.
  - Handed out approximately 20 informational booklets to passengers.
  - Left 45 informational booklets for distribution with bus drivers (Routes 30, 40, and 50).

- El Paso Community College, Northwest Campus, 6701 South Desert Road, El Paso.
  - Handed out approximately 35 informational booklets to students.
  - Left 20 informational booklets for distribution with the Student Activities Office.
- El Paso Community College, Rio Grande Campus, 100 West Rio Grande Avenue, El Paso.
  - Left 20 informational booklets for distribution with the Student Activities Office.

The pop-up meetings provided the opportunity for the study team to go directly to where current and potential transit riders might be. While at pop-up locations, study team members approached individuals and asked them if they rode El Paso County transit buses and if they were interested in learning about the future of transit in the county. The same informational booklet used in the community meetings was handed to interested people. A study team member described the scenarios to each person or group of people and asked for feedback on each scenario. This information was recorded for further analysis. The study team also pointed out contact information on the booklet so that individuals could provide feedback later via phone or email. The project team was comprised of both English and Spanish speakers so individuals could ask questions and get information in their preferred language. Figure 25 is a photo collage of the pop-up meetings.



Figure 25. Pop-Up Meetings.

Additional Outreach

The study team also sent digital versions of the informational booklet to staff members at the Rio Grande, Northwest, and Mission Del Paso campuses of El Paso Community College. The staff then distributed the booklet via email to faculty and students. The email message included abbreviated information about the project and proposed scenarios, and asked recipients to provide feedback via phone or email.

Stakeholder Meeting 3

The third stakeholder meeting was held December 7, 2017. The agenda for the third stakeholder meeting included the following:

- The study team described the proposed countywide transit service scenarios including service details and financial assumptions.
- Stakeholders discussed each scenario and provided comments.

- Stakeholders proposed additional service considerations and ideas.
- The study team described the Local Government Corporation as a governance option.

The stakeholders were also briefed on the community meetings and pop-up meetings that were held during the same week (December 6 through 9, 2017). The study team described the public feedback:

- The public participating in the community meetings support increased hours of transit service.
- Public comments recognize that regional transit is needed and are supportive of study efforts.
- Transit riders agree with elimination of one-way loops.

Summary of Public Feedback

The study team analyzed the feedback and comments received at each of the outreach events and identified the following common themes:

- Most participants indicated that they preferred flexible routes in more urban areas and dial-a-ride in rural areas.
- The participants in the southern part of the county preferred new routes that would serve their area.
- A rural dial-a-ride service as a standalone service was not well received by most participants because it eliminates service to the urban areas within the county but outside El Paso city limits. However, participants indicated that dial-a-ride coupled with the flexible-route service would be a great improvement to transit in the county, especially for those that have physical issues accessing transit.
- The flexible-route service was a service option that was well received by most participants; however, many indicated concerns about how this might increase time on the bus when it deviated from the route too much. There were also questions about what to do if rides that are arranged for flexible service need to be cancelled.
- Some participants indicated that the flexible-route and dial-a-ride service models might be problematic for individuals who do not have access to telephones.
- While most people indicated that fixed stops and flexible bus routes were preferred, some indicated that they prefer flagging the buses because it allows them to get on and off the bus near their origin and destination. These individuals were especially concerned about where the bus stops would be located.
- Participants indicated that there should be further public involvement opportunities when decisions about actual routes and bus stop locations are made.
- The expanded service hours were well received by participants.
- Some participants indicated that service on Saturdays and Sundays is very important because they need transportation to run errands and attend church on non-work days.
- Some participants from the Vinton/Anthony/Westway part of the county indicated that service on Doniphan Street should not be cut.

The public involvement plan for the El Paso County Transit Study reflects a commitment by county leadership to involve the public in the decisions that impact their daily lives. The study provided numerous

new opportunities and mechanisms for the public to communicate to the study team and project partners about issues that are important to them. The study team analyzed that information and synthesized it to design potential transit scenarios that meet the needs of the public. The stakeholder committee included representatives from the agencies, governments, and entities that will be most directly impacted by changes in the county's current service. The stakeholder committee ensured that input was shared and solutions were devised cooperatively and collaboratively. The efforts of this public outreach have laid the groundwork for meaningful policy discussions about transit service throughout the county in the future.

Chapter 8: Proposed Transit Service Scenarios

As discussed in Chapter 6, the study team originally developed five service scenarios, which were displayed at community meetings in December 2017 to obtain public feedback. Based on the feedback received during the community meetings, the study team developed a sixth scenario to ensure that all parts of the county would have access to transit.

This chapter discusses each of the six final proposed service scenarios. Every scenario includes a ridership, revenue, and expenses forecast, and each scenario is evaluated on how well it performs on the five service planning goals, discussed previously in this report.

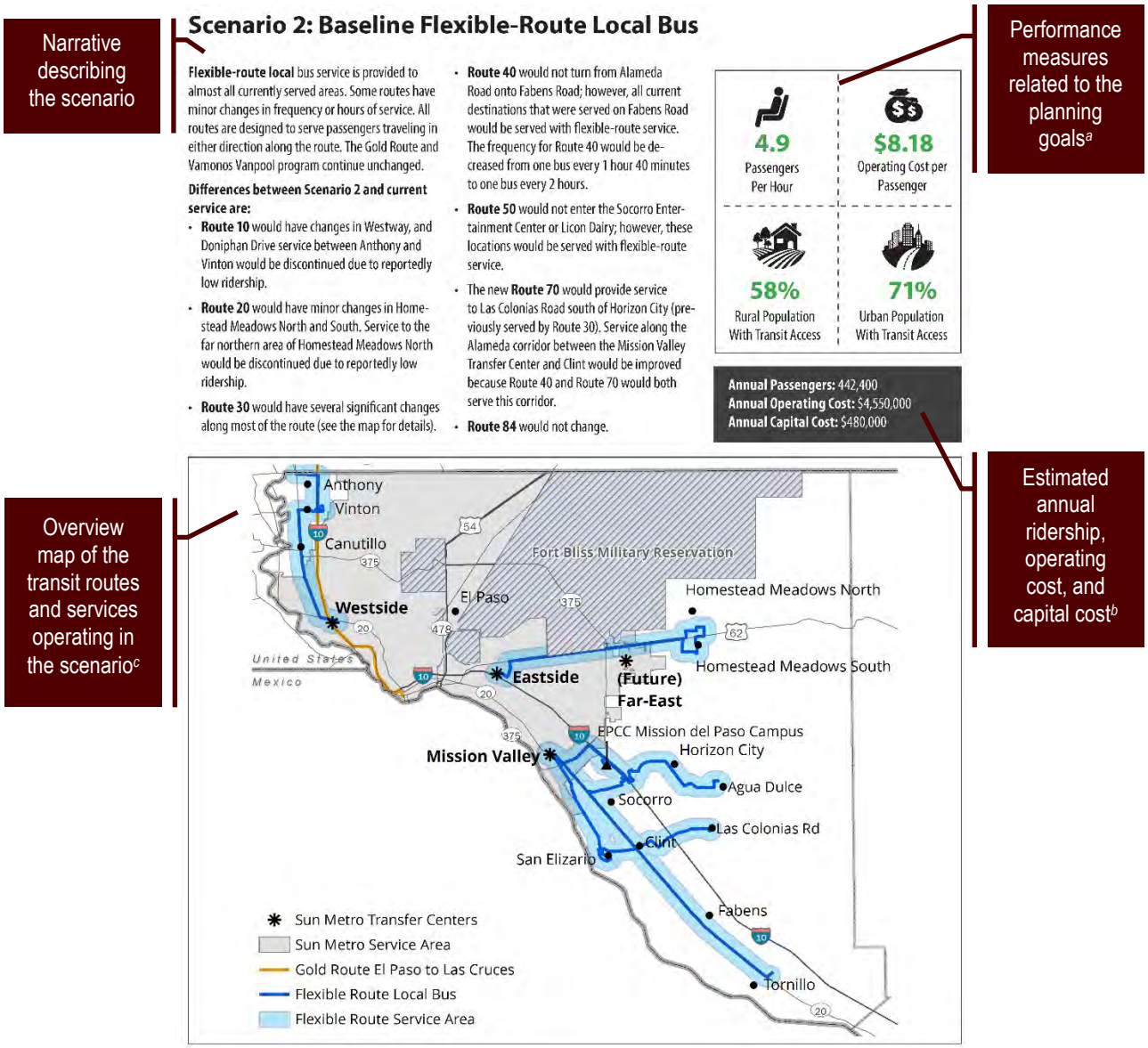
Methodologies for forecasting ridership, revenue, and expenses were discussed in Chapter 6. Table 14 shows the state and federal revenue forecast results for current service levels and for Scenario 1 though Scenario 6. FY 2017 funding is displayed for comparison. The increase in 5311 Formula Grants for Rural Areas from FY 2017 to the current service forecast is largely from an increase in revenue miles from vanpool service that occurred after the FY 2017 funding allocation was calculated by PTN. Revenues that are not part of the forecast, for example 5311(f) Intercity Bus, are not shown in the table. These revenues will be shown during the discussion of the scenarios.

Table 14. Forecasted State and Federal Revenues by Scenario.

Source	FY 2017	Current	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
State Rural	$407,287	$434,821	$443,829	$527,274	$419,016	$504,523	$414,218	$407,267
5311 Rural	$866,959	$1,250,686	$1,198,335	$1,220,775	$1,207,703	$1,208,583	$1,212,857	$1,217,829
5307 Urban	$0	$0	$0	$298,099	$376,871	$475,897	$459,167	$459,167
Total Revenues	$1,274,246	$1,685,507	$1,642,164	$2,046,148	$2,003,590	$2,189,003	$2,086,242	$2,084,263

Organization of Scenario Summary Sheets

The study team developed scenario summary sheets for the December 2017 community meetings and then updated the scenario summary sheets for the final report to include changes in revenue forecasts and to include the new sixth scenario. The study team placed parts of these revised summary sheets into this report to display the key information about each scenario. Figure 26 provides an example of the first page of the summary sheets and quickly explains the sheet's contents to facilitate easy understanding of the summary sheets presented later in the chapter.



Notes:

a *Performance measures are defined in more detail earlier in this chapter.*

b ***Annual ridership** is the total estimated ridership for the Gold Route, vanpool program, and any services proposed in the service scenario; the methodology for estimating ridership for the proposed services is described earlier in this chapter. **Annual operating cost** is the total estimated annual operating cost for the Gold Route, vanpool program, and any services proposed in the service scenario; the methodology for estimating operating costs is described earlier in this chapter. **Annual capital cost** is the annual amortized capital cost of vehicles and passenger facilities for the services proposed in the service scenario; the methodology for estimating capital costs is described earlier in this chapter.*

c *The overview map does not show the vanpool program.*

Figure 26. Example Scenario Summary Sheet (1 of 2).

If the service scenario has fixed or flexible bus routes, then there is an additional summary sheet that compares each current route's service hours (or span) and frequencies to the proposed replacement route. Figure 27 provides an example of this comparison page of the summary sheets and quickly explains the sheet's contents to facilitate easy understanding of the summary sheets presented later in the chapter.

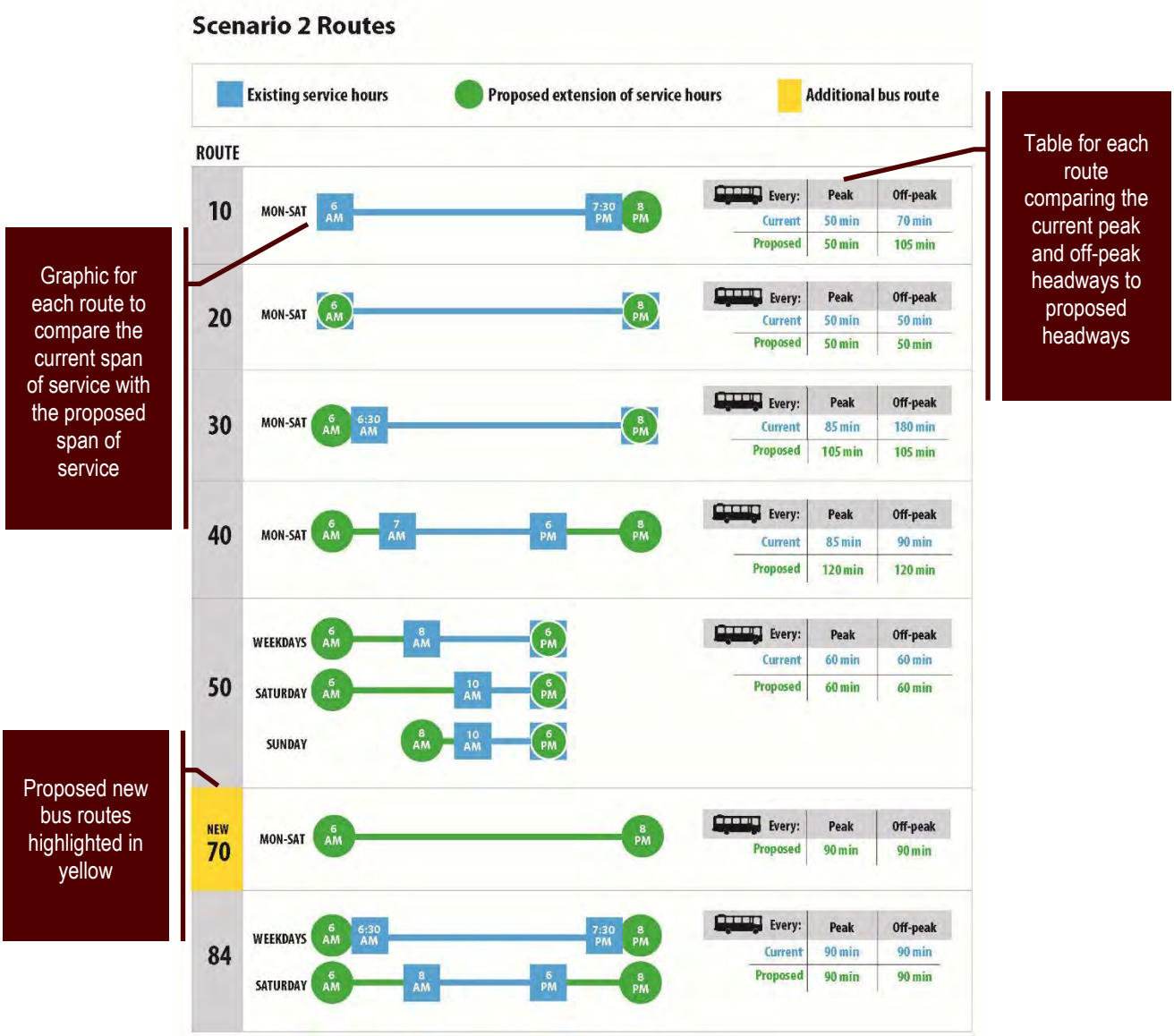


Figure 27. Example Scenario Summary Sheet (2 of 2).

Current Service Summary

Figure 28 summarizes the current service.

El Paso County currently provides service on six county bus routes, the Gold Route intercity bus between Las Cruces, NM, and El Paso, TX, and the Vamonos Vanpool program. The six county bus routes operate along established routes with set schedules, and passengers can get on and off the bus by flagging the bus driver. The county bus routes link communities throughout El Paso County, and all routes connect to a Sun Metro transfer center.

The six county bus routes are:

- **Route 10:** Anthony/Canutillo
- **Route 20:** Montana Vista
- **Route 30:** Horizon
- **Route 40:** Fabens/Tornillo
- **Route 50:** Mission Trail Express
- **Route 84:** El Paso Community College Mission del Paso.

Annual Passengers: 371,400
Annual Operating Cost: $4,220,000
Annual Capital Cost: $ 200,000

4.4
Passengers Per Hour

$9.13
Operating Cost per Passenger

53%
Rural Population With Transit Access

59%
Urban Population With Transit Access

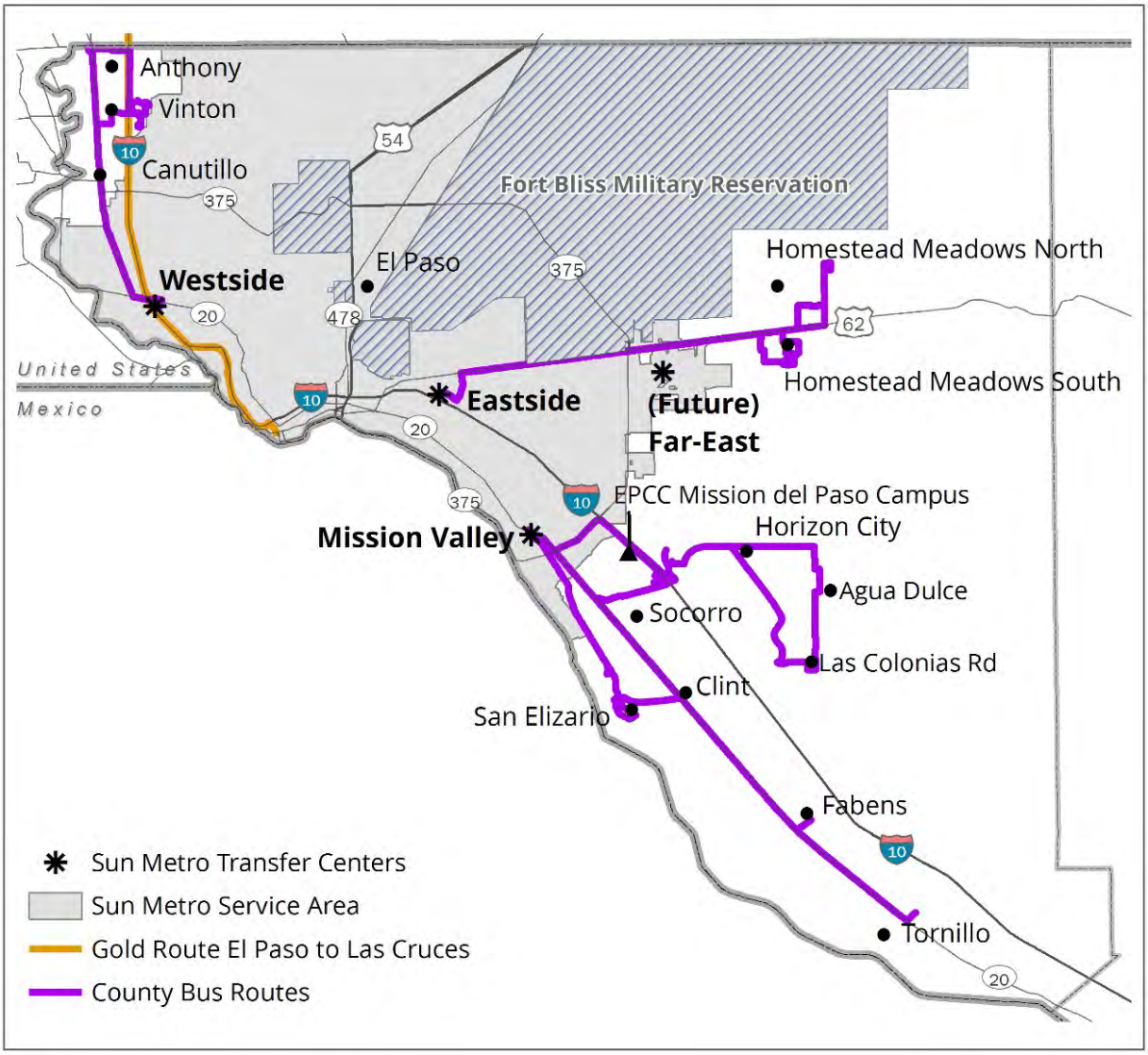


Figure 28. Current Service Summary.

Scenario 1: Rural Dial-a-Ride

Figure 29 provides a summary and overview of Scenario 1, rural dial-a-ride service.

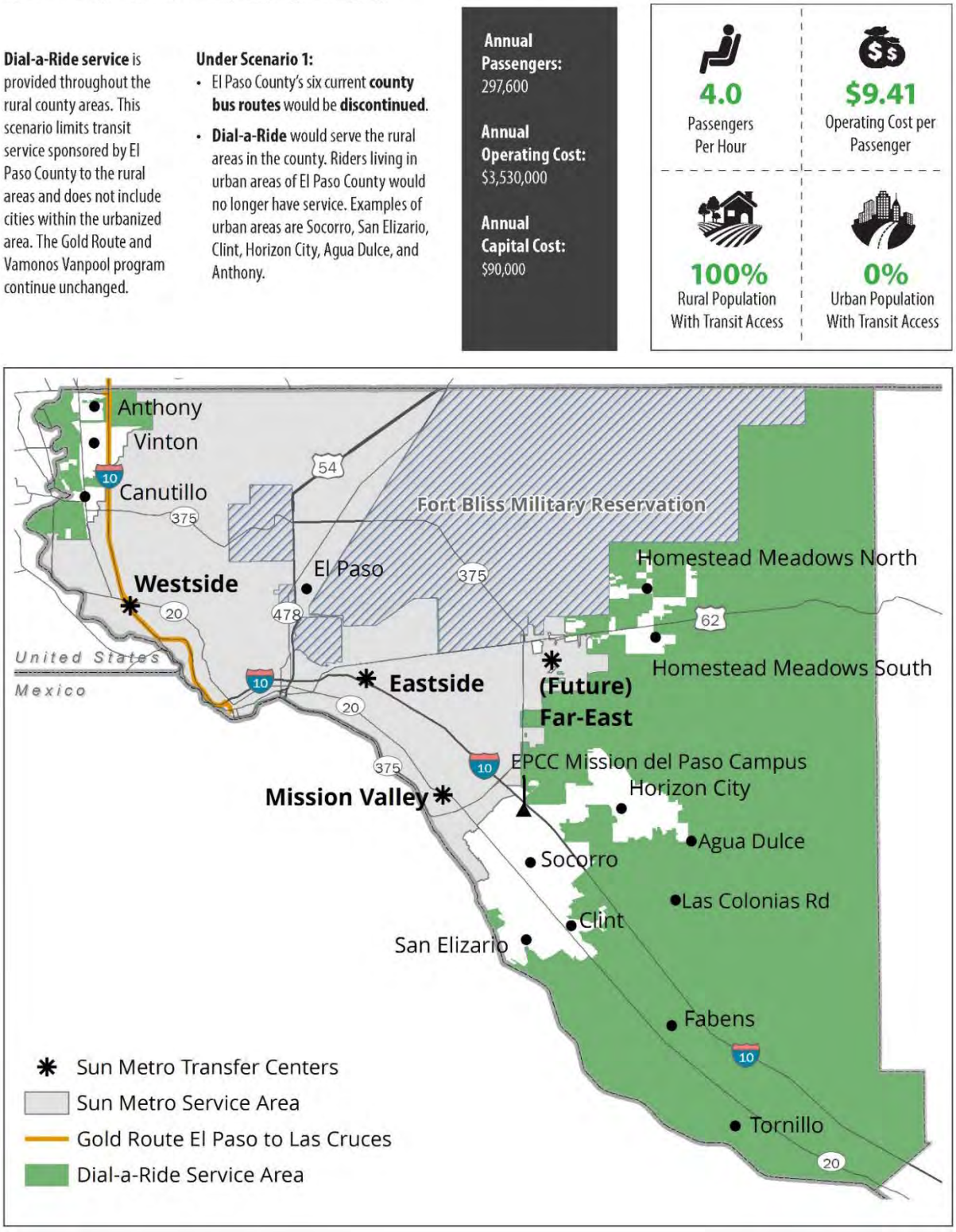


Figure 29. Scenario 1 Summary and Overview.

Scenario 2: Baseline Flexible-Route Local Bus

Figure 30 provides a summary and overview of Scenario 2, baseline flexible-route local bus service.

Flexible-route local bus service is provided to almost all currently served areas. Some routes have minor changes in frequency or hours of service. All routes are designed to serve passengers traveling in either direction along the route. The Gold Route and Vamonos Vanpool program continue unchanged.

Differences between Scenario 2 and current service are:

- **Route 10** would have changes in Westway, and Doniphan Drive service between Anthony and Vinton would be discontinued due to reportedly low ridership.
- **Route 20** would have minor changes in Homestead Meadows North and South. Service to the far northern area of Homestead Meadows North would be discontinued due to reportedly low ridership.
- **Route 30** would have several significant changes along most of the route (see the map for details).
- **Route 40** would not turn from Alameda Road onto Fabens Road; however, all current destinations that were served on Fabens Road would be served with flexible-route service. The frequency for Route 40 would be decreased from one bus every 1 hour 40 minutes to one bus every 2 hours.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy; however, these locations would be served with flexible-route service.
- The new **Route 70** would provide service to Las Colonias Road south of Horizon City (previously served by Route 30). Service along the Alameda corridor between the Mission Valley Transfer Center and Clint would be improved because Route 40 and Route 70 would both serve this corridor.
- **Route 84** would not change.

4.9 Passengers Per Hour	**$8.18** Operating Cost per Passenger
58% Rural Population With Transit Access	**71%** Urban Population With Transit Access

Annual Passengers: 442,400
Annual Operating Cost: $4,550,000
Annual Capital Cost: $480,000

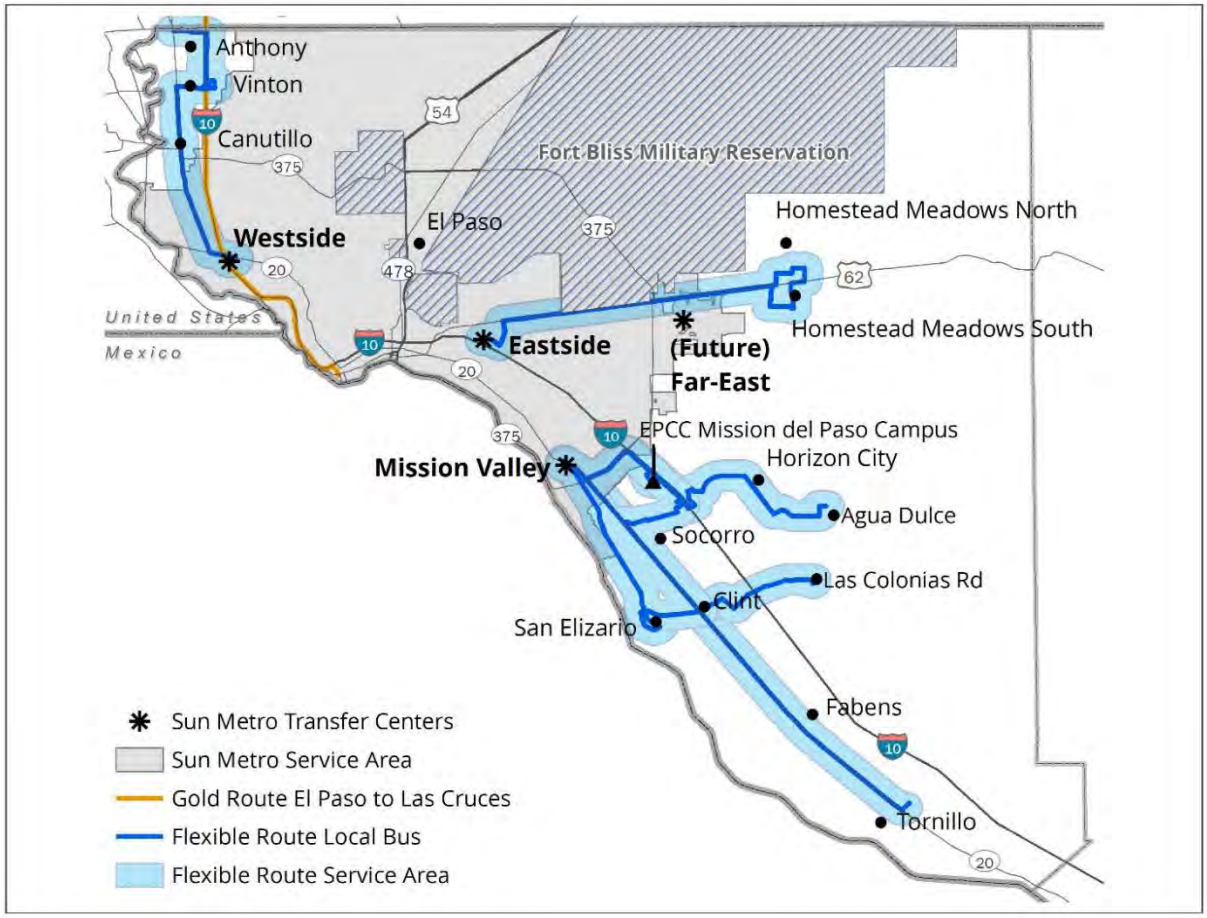


Figure 30. Scenario 2 Summary and Overview.

Figure 31 summarizes routes for Scenario 2, baseline flexible-route local bus service.

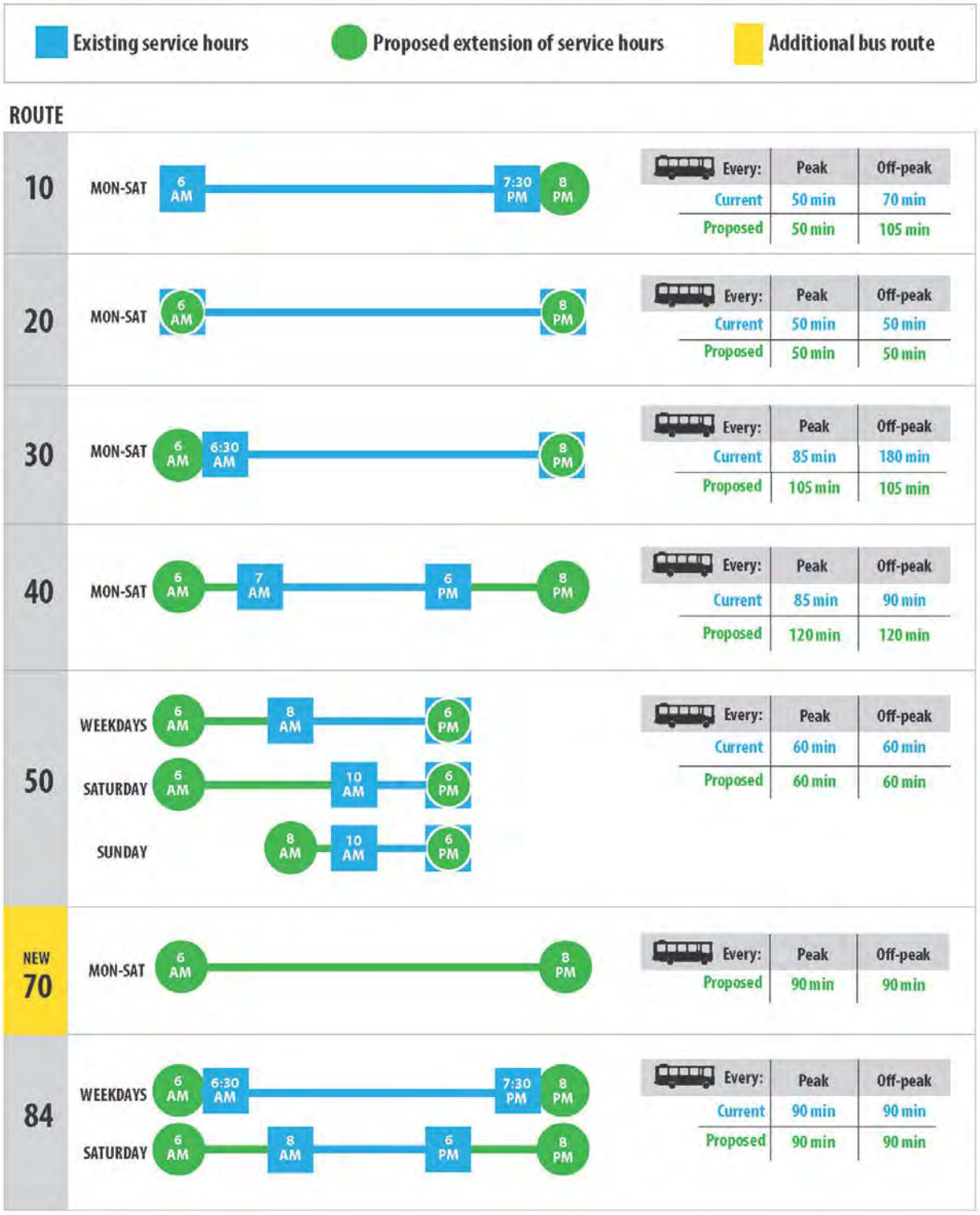


Figure 31. Scenario 2 Summary of Routes.

Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride

Figure 32 provides a summary and overview of Scenario 3, flexible-route local bus and rural dial-a-ride services.

Flexible-route local bus service is provided to almost all currently served areas. Some routes have increased frequency and hours of service. All routes are designed to serve passengers traveling in either direction along the route and are scheduled to improve transfers between routes. Dial-a-ride serves rural areas outside the flexible-route service area. The Gold Route and Vamonos Vanpool program continue unchanged.

Differences between Scenario 3 and current service are:

- **Dial-a-Ride** would serve rural areas outside the flexible-route area.
- **Route 10** would have changes in Westway, Doniphan Drive service between Anthony and Vinton would be discontinued due to reportedly low ridership, and off-peak frequency would increase to one bus per hour.
- **Route 20** would have minor changes in Homestead Meadows North and South. Service to the far northern area of Homestead Meadows North would be discontinued.
- **Route 30** would have several changes along most of the route (see the map for details). Frequency would increase to one bus per hour.
- **Route 40** would not turn from Alameda Road onto Fabens Road; however, all current destinations that were served on Fabens Road would be served with flexible-route service. Frequency on Route 40 would be decreased from one bus every 1 hour and 40 minutes to one bus every 2 hours.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy; however, these locations would be served with flexible-route service.
- The new **Route 70** would provide service to Las Colonias Road south of Horizon City (previously served by Route 30). Service along the Alameda corridor between the Mission Valley Transfer Center and Clint would be improved because Route 40 and Route 70 would both serve this corridor.
- **Route 84** service would increase frequency to one bus per hour.

5.1 Passengers Per Hour	**$8.88** Operating Cost per Passenger
100% Rural Population With Transit Access	**71%** Urban Population With Transit Access

Annual Passengers: 642,200
Annual Operating Cost: $6,910,000
Annual Capital Cost: $610,000

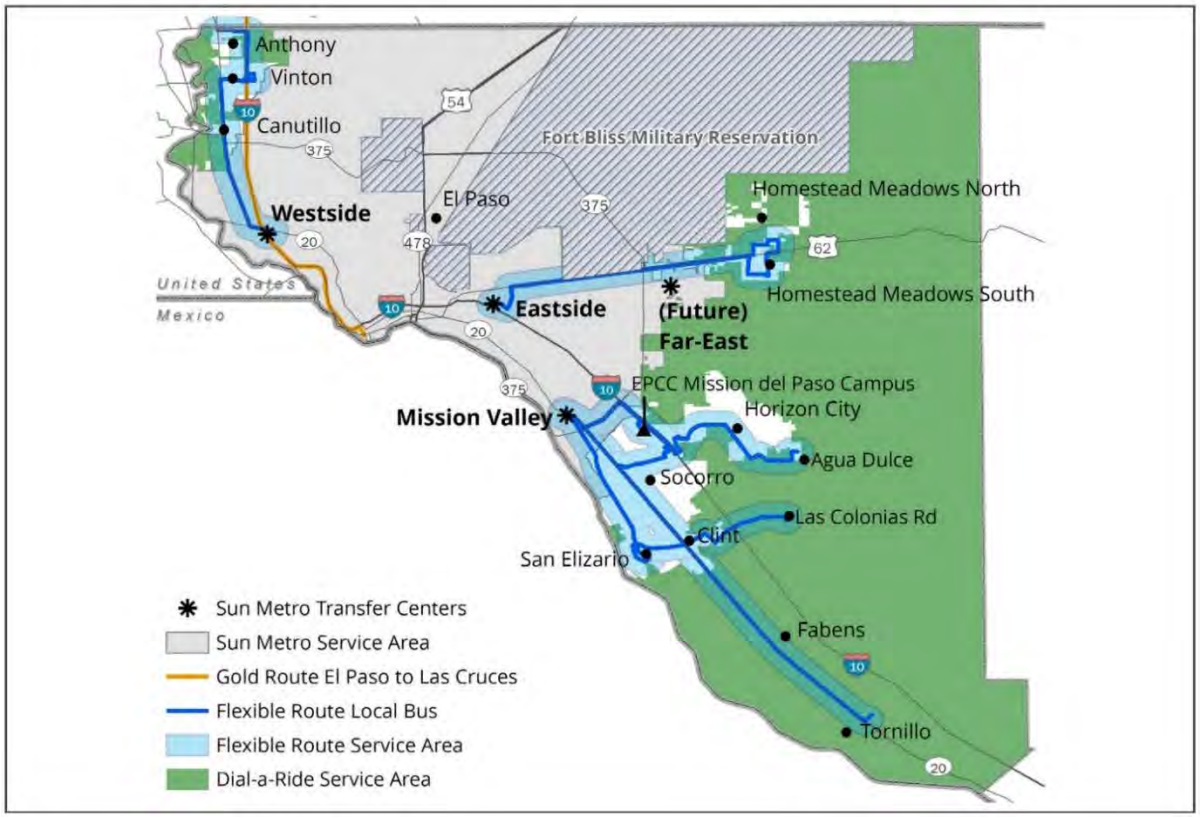


Figure 32. Scenario 3 Summary and Overview.

Figure 33 summarizes routes for Scenario 3, flexible-route local bus and rural dial-a-ride services.

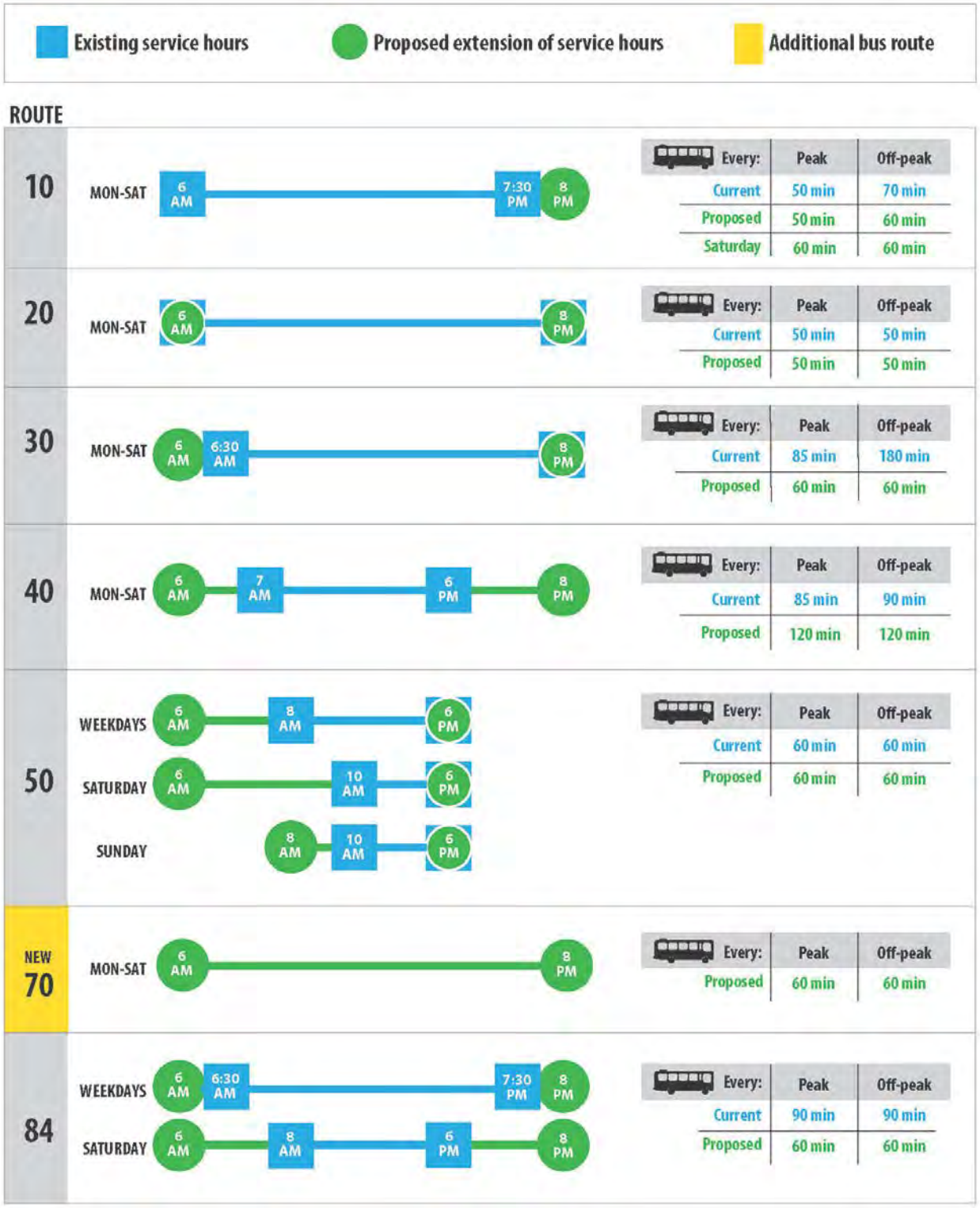


Figure 33. Scenario 3 Summary of Routes.

Scenario 4: Fixed-Route Local Bus and ADA Paratransit

Figure 34 provides a summary and overview of Scenario 4, fixed-route local bus and ADA paratransit services.

Fixed-route local bus service is provided to almost all currently served areas. Some routes have increased frequency and hours of service. All routes are designed to serve passengers traveling in either direction along the route and are scheduled to improve transfers between routes. **ADA paratransit** is provided within ¾ mile of any local fixed route. The Gold Route and Vamonos Vanpool program continue unchanged.

Differences between Scenario 4 and current service are:

- **ADA paratransit** is provided within ¾ mile of any local fixed route.
- **Route 10** would have minor changes in Westway, Doniphan Drive service between Anthony and Vinton would be discontinued due to reportedly low ridership, and off-peak frequency would increase to one bus per hour.
- **Route 20** would have minor changes in Homestead Meadows North and South. Service to the far northern area of Homestead Meadows North would be discontinued. Frequency would increase to a bus every 45 minutes.
- **Route 30** would have several changes along most of the route (see the map for details). Frequency would increase to one bus per hour.
- **Route 40** would not turn from Alameda Road onto Fabens Road. Frequency on Route 40 would be decreased from one bus every 1 hour and 40 minutes to one bus every 2 hours.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy. The fixed route would not serve these locations.
- The new **Route 70** would provide service to Las Colonias Road south of Horizon City (previously served by Route 30). Service along the Alameda corridor between the Mission Valley Transfer Center and Clint would be improved because Route 40 and Route 70 would both serve this corridor.
- **Route 84** service would increase to one bus per hour.

4.7 Passengers Per Hour	**$9.61** Operating Cost per Passenger
44% Rural Population With Transit Access	**57%** Urban Population With Transit Access

Annual Passengers: 549,500
Annual Operating Cost: $6,400,000
Annual Capital Cost: $610,000

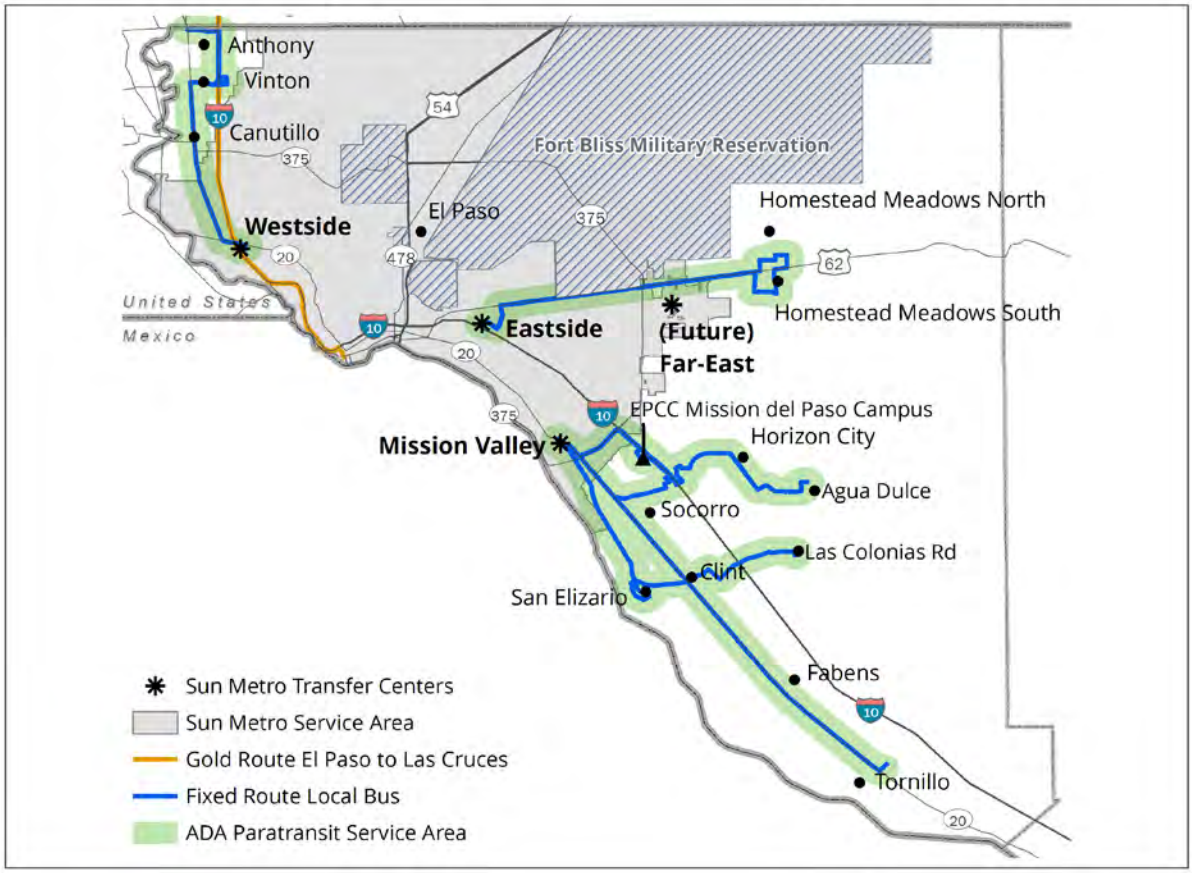


Figure 34. Scenario 4 Summary and Overview.

Figure 35 summarizes routes for Scenario 4, fixed-route local bus and ADA paratransit services.

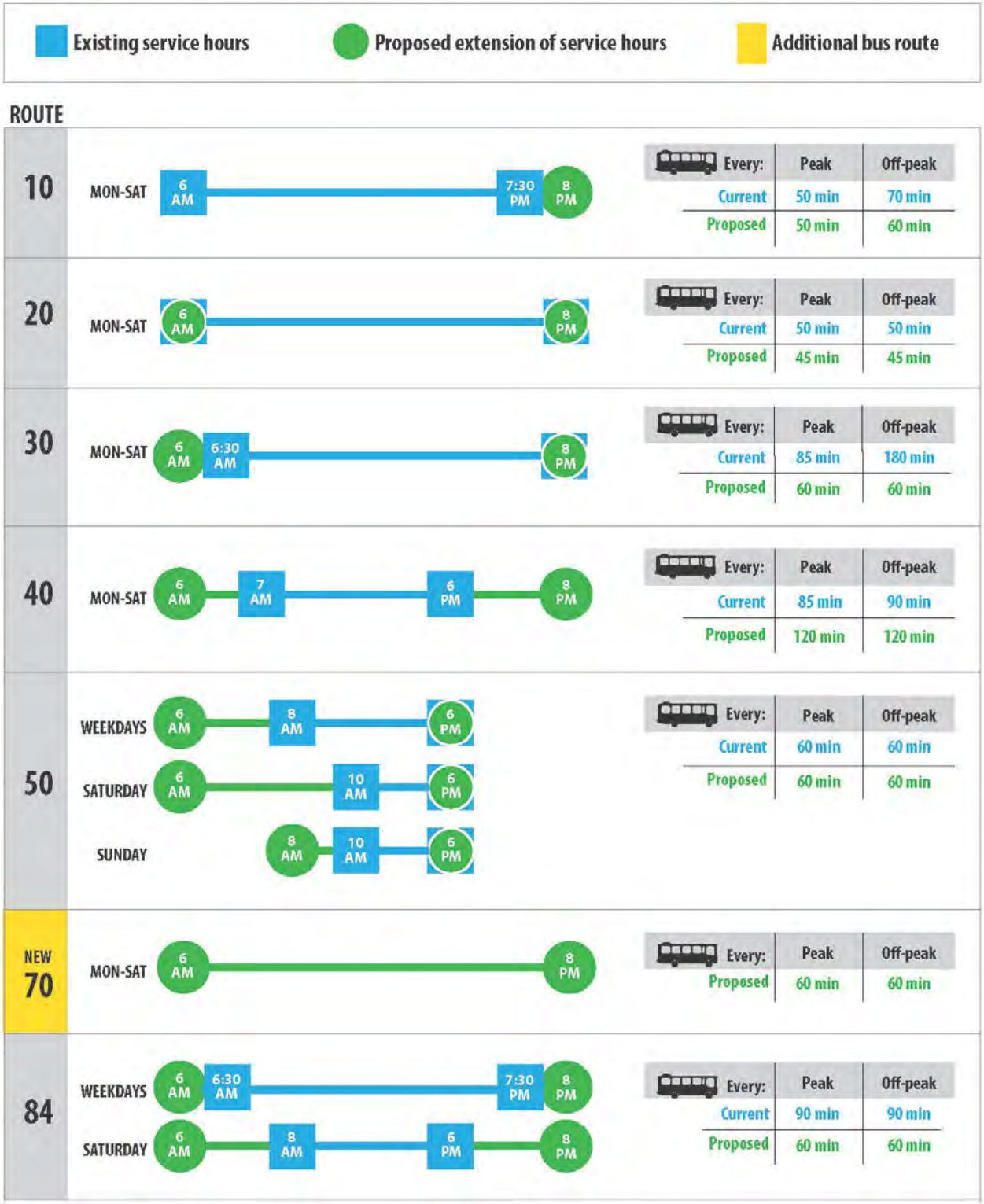


Figure 35. Scenario 4 Summary of Routes.

Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride

Figure 36 provides a summary and overview of Scenario 5, increased flexible-route local bus and rural dial-a-ride services.

Flexible-route local bus service is provided to almost all currently served areas. Some routes have increased frequency and hours of service. All routes are designed to serve passengers traveling in either direction along the route and are scheduled to improve transfers between routes. Dial-a-Ride serves rural areas outside the flexible-route service area. The Gold Route and Vamonos Vanpool program continue unchanged.

Differences between Scenario 5 and current service are:

- **Dial-a-Ride** would serve rural areas outside of the flexible route area.
- **Route 10** would have changes in Westway, Doniphan Drive service between Anthony and Vinton would be discontinued due to reportedly low ridership, and off-peak frequency would increase to one bus per hour.
- **Route 20** would have minor changes in Homestead Meadows North and South. Service to the far northern area of Homestead Meadows North would be discontinued.
- **Route 30** would have a few changes along most of the route (see the map for details). Frequency would increase to one bus per hour.
- The new **Route 31** would connect the Mission Valley Transfer Center to El Paso Community College Mission del Paso and then Horizon City via Eastlake Boulevard.
- **Route 40** would not turn from Alameda Road onto Fabens Road; however, all current destinations that were served on Fabens Road would be served with flexible-route service. Frequency on Route 40 would be decreased from one bus every 1 hour 40 minutes to one bus every 2 hours.
- The new **Route 41** would provide service on North Loop Road between Mission Valley and Clint and connect to San Elizario.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy; however, these locations would be served with flexible-route service.
- The new **Route 70** would provide service to Las Colonias Road south of Horizon City (previously served by Route 30). Service along the Alameda corridor between the Mission Valley Transfer Center and Clint would be improved because Route 40 and Route 70 would both serve this corridor.
- **Route 84** would be replaced by the new Routes 31 and 41.

5.8 Passengers Per Hour	**$7.89** Operating Cost per Passenger
100% Rural Population With Transit Access	**84%** Urban Population With Transit Access

Annual Passengers: 794,500
Annual Operating Cost: $7,690,000
Annual Capital Cost: $880,000

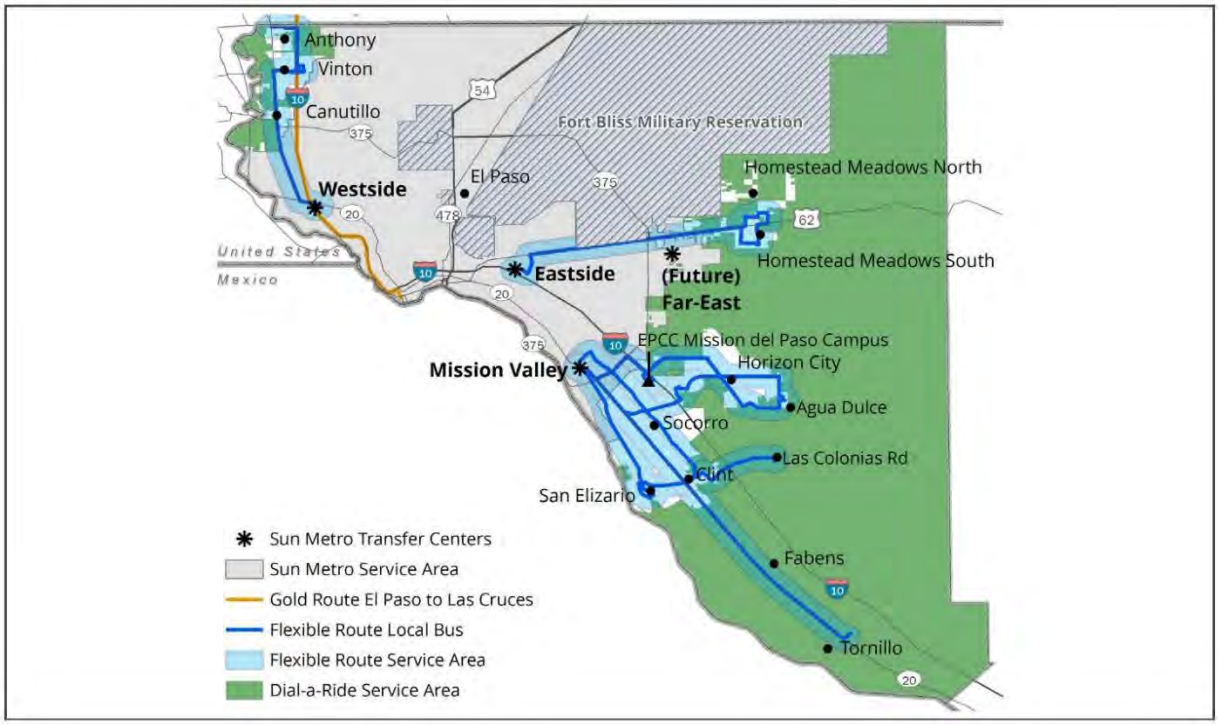


Figure 36. Scenario 5 Summary and Overview.

Figure 37 summarizes routes for Scenario 5, increased flexible-route local bus and rural dial-a-ride services.

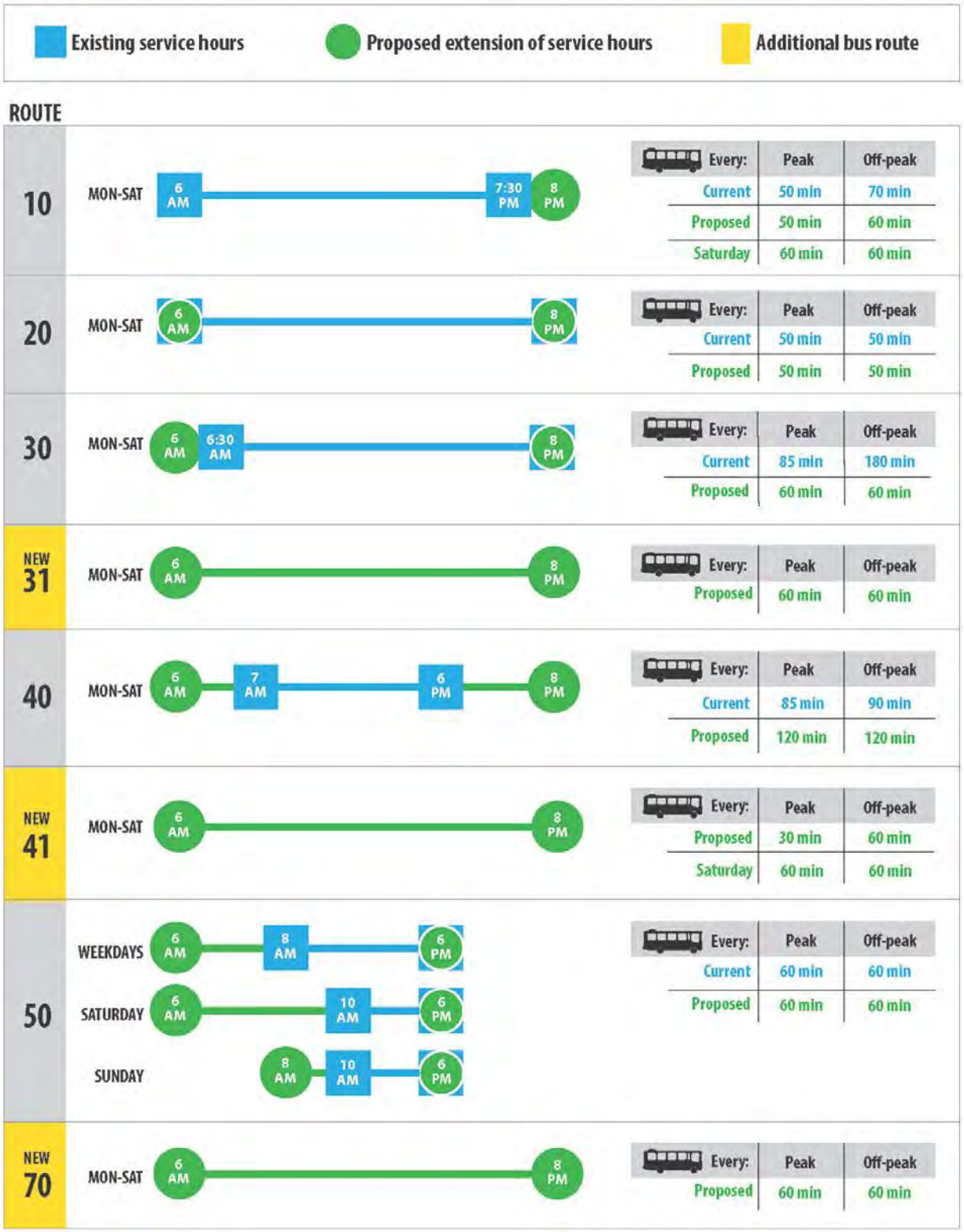


Figure 37. Scenario 5 Summary of Routes.

Scenario 6: Increased Flexible-Route Local Bus and Full County Dial-a-Ride

Scenario 6 is the same as Scenario 5, except that Scenario 6 dial-a-ride service is available to all parts of El Paso County outside the flexible-route service area. Figure 38 provides a summary and overview of Scenario 6, increased flexible-route local bus and full county rural dial-a-ride services.

Flexible-route local bus service is provided to almost all currently served areas. Some routes have increased frequency and hours of service. All routes are designed to serve passengers traveling in either direction along the route and are scheduled to improve transfers between routes. **Dial-a-Ride serves all areas of the county** outside the flexible-route service area. The Gold Route and Vamonos Vanpool program continue unchanged.

Differences between Scenario 5 and current service are:

- **Dial-a-Ride** would serve areas of the county outside of the flexible route area.
- **Route 10** would have minor changes in Westway, and off-peak frequency would increase to one bus per hour.
- **Route 20** would have minor changes in Homestead Meadows North and South. Service to the far northern area of Homestead Meadows North would be discontinued.
- **Route 30** would have a few changes along most of the route (see the map for details). Frequency would increase to one bus per hour.
- The new **Route 31** would connect the Mission Valley Transfer Center to El Paso Community College Mission del Paso and then Horizon City via Eastlake Boulevard.
- **Route 40** would not turn from Alameda Road onto Fabens Road; however, all current destinations that were served on Fabens Road would be served with flexible-route service. Frequency on Route 40 would be decreased from one bus every 1 hour 40 minutes to one bus every 2 hours.
- The new **Route 41** would provide service on North Loop Road between Mission Valley and Clint and connect to San Elizario.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy; however, these locations would be served with flexible-route service.
- The new **Route 70** would provide service to Las Colonias Road south of Horizon City (previously served by Route 30). Service along the Alameda corridor between the Mission Valley Transfer Center and Clint would be improved because Route 40 and Route 70 would both serve this corridor.
- **Route 84** would be replaced by the new Routes 31 and 41.

5.7 Passengers Per Hour	**$8.09** Operating Cost per Passenger
100% Rural Population With Transit Access	**100%** Urban Population With Transit Access

Annual Passengers: 806,700
Annual Operating Cost: $7,970,000
Annual Capital Cost: $910,000

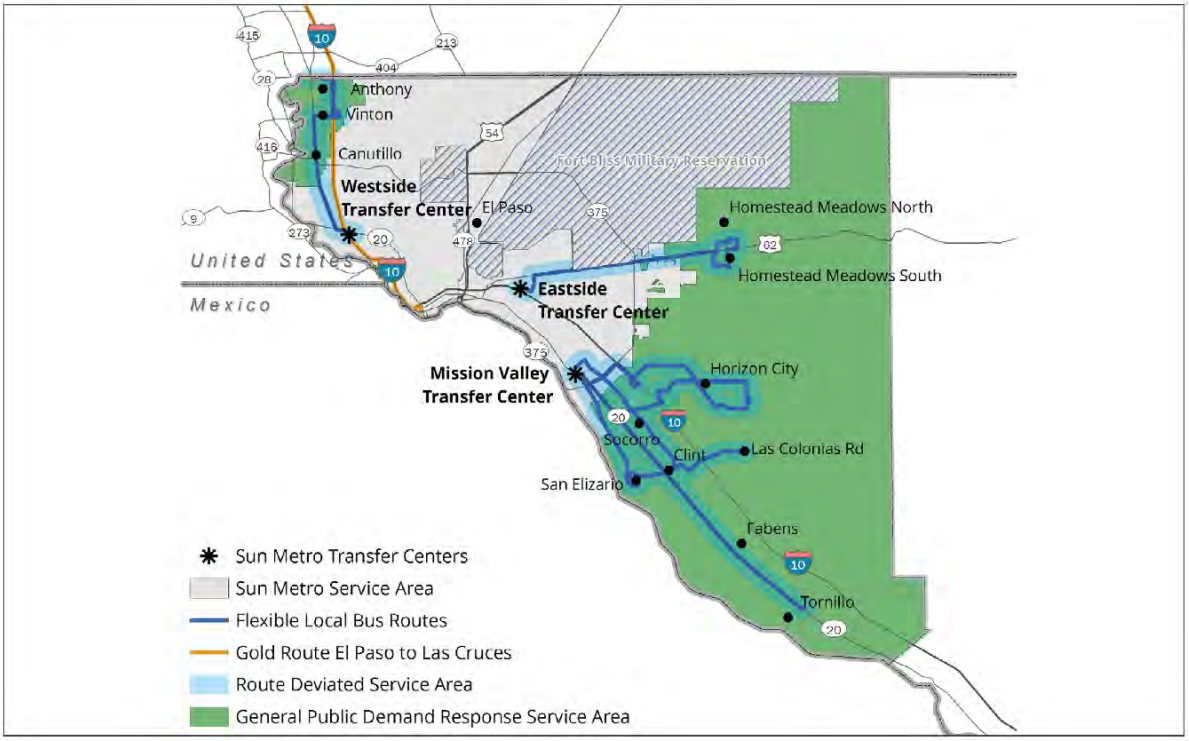


Figure 38. Scenario 6 Summary and Overview.

Figure 39 summarizes routes for Scenario 6, increased flexible-route local bus and full county rural dial-a-ride services.

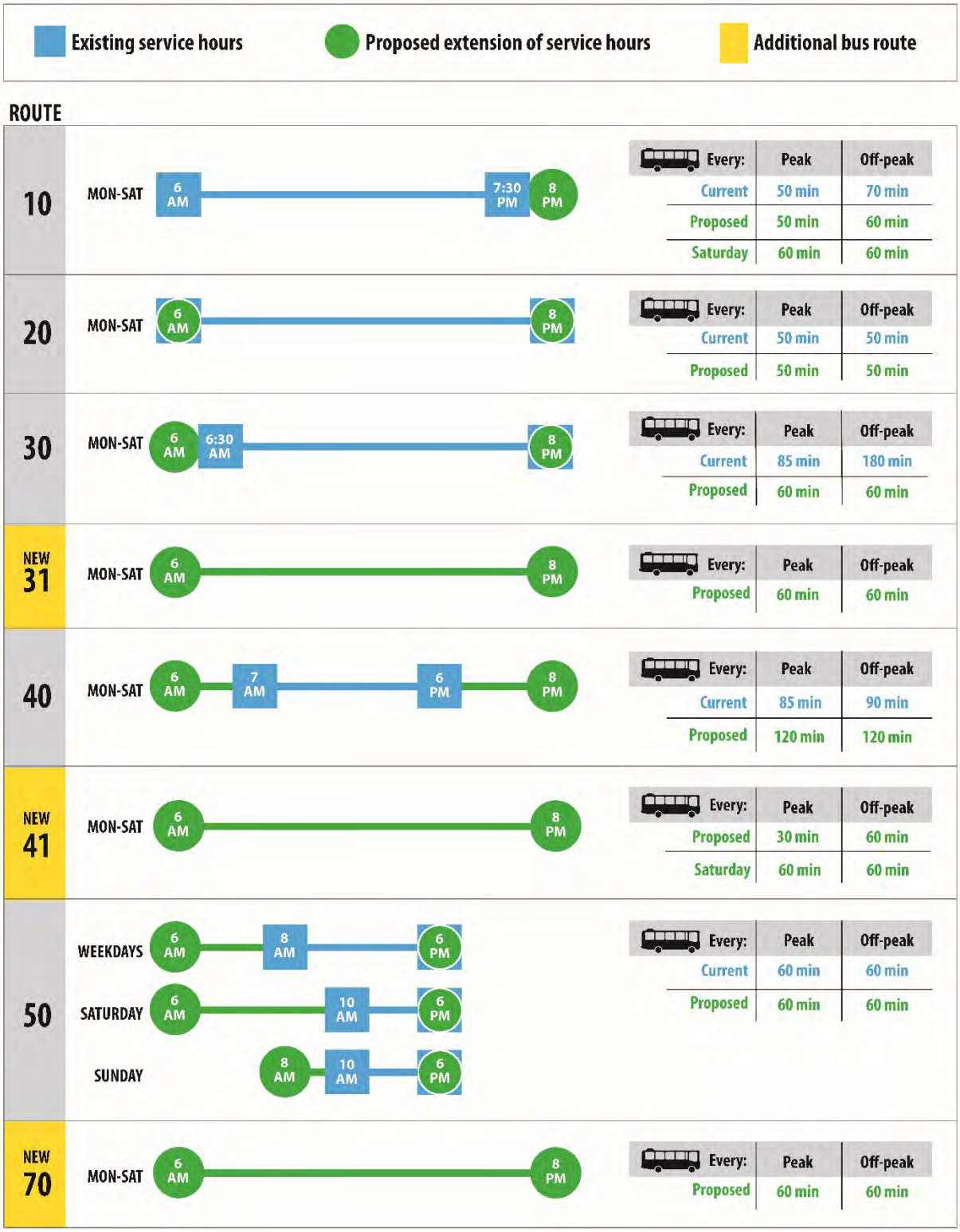


Figure 39. Scenario 6 Summary of Routes.

Summary of Proposed Service Scenarios

This section summarizes key information about the six proposed service scenarios.

Performance Measures and Costs

Figure 40 summarizes the performance measures and costs of the scenarios to allow for easy comparison.

		Transit Service Scenario						
		Current Service	Scenario 1: Rural Dial-a-Ride	Scenario 2: Baseline Flexible-Route Local Bus	Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride	Scenario 4: Fixed-Route Local Bus and ADA Paratransit	Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride	Scenario 6: Increased Flexible-Route Local Bus and Rural/Urban Dial-a-Ride
Performance Measures	Annual Passenger Boardings	371,400	297,600	442,400	642,200	549,500	794,500	806,700
	Passenger Boardings per Revenue Hour	4.4	4.0	4.9	5.1	4.7	5.8	5.7
	Net Operating Cost (Less Fares) per Passenger Boarding	$9.13	$9.41	$8.18	$8.88	$9.61	$7.89	$8.09
	% of Rural El Paso County Population with Transit Access	53%	100%	58%	100%	44%	100%	100%
	% of Urbanized El Paso County Population with Transit Access	59%	0%	71%	71%	57%	84%	100%
Costs	Annual Operating Cost	$4,220,000	$3,530,000	$4,550,000	$6,910,000	$6,400,000	$7,690,000	$7,970,000
	Annual Capital Cost	$200,000	$90,000	$480,000	$610,000	$610,000	$880,000	$910,000
	Total Annual Cost	**$4,420,000**	**$3,620,000**	**$5,030,000**	**$7,520,000**	**$7,010,000**	**$8,570,000**	**$8,880,000**
Sources of Revenue	Federal Funds	$2,340,000	$1,630,000	$2,580,000	$2,860,000	$2,840,000	$2,970,000	$3,060,000
	State Funds (TX and NM)	$1,140,000	$1,150,000	$1,140,000	$1,090,000	$1,110,000	$1,080,000	$1,100,000
	Fare Revenues	$830,000	$730,000	$930,000	$1,210,000	$1,120,000	$1,420,000	$1,440,000
	Additional Local Government Funds	$110,000	$110,000	$380,000	$2,360,000	$1,940,000	$3,100,000	$3,280,000
	Total Annual Revenue	**$4,420,000**	**$3,620,000**	**$5,030,000**	**$7,520,000**	**$7,010,000**	**$8,570,000**	**$8,880,000**

Figure 40. Performance Measures, Costs, and Revenues of Proposed Service Scenarios.

Figure 41 is a visualization depicting each scenario's relative performance on each of the performance measures using Harvey balls to make scenario comparisons even more intuitive.

Scenario	Rural Area Coverage	Urban Area Coverage	Utility	Effectiveness	Complement Sun Metro
Current Service	○	◑	○	○	◑
Scenario 1 Rural dial-a-ride	●	○	○	○	○
Scenario 2 Baseline flexible-route local bus	◑	◑	◑	◑	◑
Scenario 3 Flexible-route local bus and rural dial-a-ride	●	◑	●	◑	●
Scenario 4 Fixed-route local bus and ADA paratransit	○	◑	◑	◑	●
Scenario 5 Increased flexible-route local bus and rural dial-a-ride	●	●	●	●	●
Scenario 6 Increased flexible-route local bus and full county dial-a-ride	●	●	●	●	●

The Harvey balls display the relative performance of each scenario:

- *An empty ball means that the scenario's score is in the lowest third.*
- *A half-full ball means that the scenario's score is in the middle third.*
- *A full ball means that the scenario's score is in the highest third.*

Figure 41. Harvey Ball Visualization of Scenario Performance Measures.

Sources of Applied Revenue

The study team took the forecasted federal and state revenues and applied them to each proposed service scenario's operating and capital expenses. (Appendix 6-B provides a more detailed description of the methodology of generating the revenue forecasts.)

The results of applying forecasted available revenue to each scenario is summarized in Figure 42. More details for each scenario, including how revenues were applied to individual transit services are available in Appendix 8-A.

	Transit Service Scenario						
Cost Element	**Current Service**	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**	**Scenario 6**
Annual Passenger Boardings	371,400	297,600	442,400	642,200	549,500	794,500	806,700
Peak Vehicles	88	83	88	95	95	99	100
Vanpool Vehicles	*78*	*78*	*78*	*78*	*78*	*78*	*78*
Flexible- or Fixed-Route Peak Vehicles	*10*		*10*	*12*	*12*	*16*	*16*
Dial-a-Ride or ADA Paratransit Peak Vehicles		*5*		*5*	*5*	*5*	*6*
Annual Revenue Hours	83,900	73,800	89,400	125,900	117,900	137,900	142,200
Annual Revenue Miles	3,414,600	3,301,900	3,630,800	4,199,100	4,031,600	4,396,600	4,474,500
Passengers per Revenue Hour	4.4	4.0	4.9	5.1	4.7	5.8	5.7
Annual Operating Cost	$4,220,000	$3,530,000	$4,550,000	$6,910,000	$6,400,000	$7,690,000	$7,970,000
Annual Fare Revenue	$830,000	$730,000	$930,000	$1,210,000	$1,120,000	$1,420,000	$1,440,000
Annual Net Operating Cost	$3,390,000	$2,800,000	$3,620,000	$5,700,000	$5,280,000	$6,270,000	$6,530,000
Annual Amortized Capital Cost for Vehicles	$200,000	$90,000	$180,000	$310,000	$310,000	$390,000	$420,000
Annual Amortized Capital Cost for Passenger Facilities	$0	$0	$300,000	$300,000	$300,000	$490,000	$490,000
Total Annual Amortized Capital Cost	$200,000	$90,000	$480,000	$610,000	$610,000	$880,000	$910,000
Total Annual Cost (Net Operating + Capital)	$3,590,000	$2,890,000	$4,100,000	$6,310,000	$5,890,000	$7,150,000	$7,440,000
Sources of Revenue							
Federal Rural	$1,060,000	$860,000	$1,220,000	$1,480,000	$1,380,000	$1,570,000	$1,490,000
Federal Rural Intercity	$420,000	$420,000	$420,000	$420,000	$420,000	$420,000	$420,000
Federal CMAQ	$860,000	$350,000	$860,000	$860,000	$860,000	$860,000	$860,000
Federal Urban	$0	$0	$80,000	$100,000	$180,000	$120,000	$290,000
State Texas	$430,000	$440,000	$430,000	$380,000	$400,000	$370,000	$390,000
State New Mexico	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000
Local	$110,000	$110,000	$380,000	$2,360,000	$1,940,000	$3,100,000	$3,280,000
Total Annual Revenue	$3,590,000	$2,890,000	$4,100,000	$6,310,000	$5,890,000	$7,150,000	$7,440,000
Scenario Performance Measures							
Passenger Boardings per Revenue Hour	4.4	4.0	4.9	5.1	4.7	5.8	5.7
Net Operating Cost per Passenger Boarding	$9.13	$9.41	$8.18	$8.88	$9.61	$7.89	$8.09
% of Rural El Paso Co Population with Transit Access	53%	100%	58%	100%	44%	100%	100%
% of Urban El Paso Co Population with Transit Access	59%	0%	71%	71%	57%	84%	100%

Figure 42. Summary of Costs and Applied Revenues for All Proposed Service Scenarios.

Service Level Data by Jurisdiction

The study team also estimated the amount of service within each jurisdiction in the El Paso County Transit service area for all proposed transit service scenarios (Figure 43). To create Figure 43, the study team allocated fixed- and flexible-route local bus revenue miles based on the number of scheduled trips that would occur within each geographical area. The team allocated rural dial-a-ride and ADA paratransit revenue miles by the percentage of total population able to use the service living within each geographical area. In some cases, cities and geographies that are mostly urbanized have relatively low revenue miles when compared to less populated, rural areas because UZAs were excluded from the proposed rural dial-a-ride service area, reducing the total revenue miles allocable to the area.

Jurisdictional Analysis	Current		Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5		Scenario 6	
	Revenue Miles	% of County Total	Revenue Miles	% of County Total	Revenue Miles	% of County Total	Revenue Miles	% of County Total	Revenue Miles	% of County Total	Revenue Miles	% of County Total	Revenue Miles	% of County Total
Municipalities	**193,022**	**26.5%**	**9,349**	**2.4%**	**226,953**	**30.7%**	**300,722**	**23.1%**	**339,768**	**29.9%**	**398,347**	**26.3%**	**452,153**	**28.4%**
Anthony	23,692	3.3%	5,809	1.5%	22,176	3.0%	33,222	2.5%	33,927	3.0%	34,762	2.3%	29,571	1.9%
Clint	13,094	1.8%	275	0.1%	30,342	4.1%	41,321	3.2%	41,800	3.7%	55,746	3.7%	55,471	3.5%
Horizon City	12,204	1.7%	1,100	0.3%	10,725	1.5%	19,868	1.5%	28,574	2.5%	52,789	3.5%	94,104	5.9%
San Elizario	26,547	3.6%	945	0.2%	29,644	4.0%	33,906	2.6%	40,123	3.5%	34,120	2.2%	45,188	2.8%
Socorro	105,415	14.5%	1,220	0.3%	125,372	17.0%	161,658	12.4%	182,302	16.0%	209,580	13.8%	216,469	13.6%
Vinton	12,070	1.7%	-	0.0%	8,694	1.2%	10,747	0.8%	13,041	1.1%	11,351	0.7%	11,351	0.7%
El Paso County	**340,378**	**46.7%**	**380,199**	**97.6%**	**279,975**	**37.9%**	**727,269**	**55.8%**	**410,010**	**36.1%**	**799,190**	**52.7%**	**823,293**	**51.6%**
Borderland	6,529	0.9%	-	0.0%	5,596	0.8%	6,917	0.5%	8,745	0.8%	7,306	0.5%	7,306	0.5%
Canutillo	33,828	4.6%	206	0.1%	31,061	4.2%	38,601	3.0%	46,307	4.1%	40,758	2.7%	47,485	3.0%
Fabens	17,091	2.3%	132,576	34.0%	8,869	1.2%	141,446	10.8%	14,904	1.3%	143,557	9.5%	21,306	1.3%
Homestead M. N	45,683	6.3%	25,831	6.6%	22,162	3.0%	47,993	3.7%	26,835	2.4%	49,297	3.3%	59,173	3.7%
Homestead M. S	51,458	7.1%	1,856	0.5%	23,858	3.2%	25,714	2.0%	31,325	2.8%	27,117	1.8%	31,351	2.0%
Tornillo	4,728	0.6%	22,497	5.8%	4,137	0.6%	26,634	2.0%	5,177	0.5%	27,619	1.8%	6,584	0.4%
Westway	20,498	2.8%	-	0.0%	11,556	1.6%	14,284	1.1%	18,781	1.7%	15,087	1.0%	15,087	0.9%
Other EP County	160,563	22.0%	197,232	50.6%	172,737	23.4%	425,680	32.6%	257,936	22.7%	488,449	32.2%	635,001	39.8%
El Paso City	**194,982**	**26.8%**	**-**	**0.0%**	**232,329**	**31.4%**	**276,073**	**21.2%**	**386,842**	**34.0%**	**319,184**	**21.0%**	**319,184**	**20.0%**
County Total	**728,382**	**100%**	**389,549**	**100%**	**739,258**	**100%**	**1,304,064**	**100%**	**1,136,621**	**100%**	**1,516,721**	**100%**	**1,594,630**	**100%**

Urban - Rural Analysis	Current		Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5		Scenario 6	
	Rev. Mile	% in Total	Rev. Mile	% in Total	Rev. Mile	% in Total	Rev. Mile	% in Total	Rev. Mile	% in Total	Rev. Mile	% in Total	Rev. Mile	% in Total
Urban (El Paso City)	194,037	26.6%	-	0.0%	230,597	31.2%	274,940	21.1%	386,737	34.0%	317,976	21.0%	317,976	19.9%
Urban (EP County)	390,057	53.6%	-	0.0%	376,757	51.0%	481,725	36.9%	576,194	50.7%	602,197	39.7%	927,261	58.1%
Rural (El Paso City)	595	0.08%	-	0.0%	674	0.09%	674	0.05%	753	0.07%	714	0.05%	714	0.04%
Rural (EP County)	143,695	19.7%	389,549	100.0%	131,230	17.8%	546,725	41.9%	172,936	15.2%	595,834	39.3%	348,680	21.9%
County Total	**728,383**	**100%**	**389,549**	**100%**	**739,258**	**100%**	**1,304,064**	**100%**	**1,136,621**	**100%**	**1,516,721**	**100%**	**1,594,630**	**100%**

Note: Total revenue miles may vary slightly from scenario data due to small differences in bus route traces.

Figure 43. Distribution of Transit Service within Different Jurisdictions and Geographies by Scenario.

Service Costs and Local Share by Jurisdiction

Based on the amount of service provided within each area of the county, the study team estimated the proportion of operating cost, capital cost, and local share attributable to each area. The results are shown in Figure 44 (the figure is available as Appendix 8-B).

The % of County Total columns in Figure 43 are not the same percentages as those used to allocate operating costs, capital costs, and local share to each jurisdiction (Figure 44). Costs and local share are allocated by the percentage of *county only* (incorporated + unincorporated) revenue miles, excluding any revenue miles within the City of El Paso. This methodology allocates revenue miles within the City of El Paso proportionally to the cities and the County outside the Sun Metro service area.

Jurisdictional Analysis	Current			Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5			Scenario 6		
	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source
	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match
Flexible- or Fixed-Route and Dial-a-Ride or ADA Services	**$ 2,100,000**	**$ 200,000**	**$ 110,000**	**$ 1,410,000**	**$ 90,000**	**$ 110,000**	**$ 2,430,000**	**$ 480,000**	**$ 380,000**	**$ 4,790,000**	**$ 610,000**	**$ 2,360,000**	**$ 4,280,000**	**$ 610,000**	**$ 1,940,000**	**$ 5,570,000**	**$ 880,000**	**$ 3,100,000**	**$ 5,850,000**	**$ 910,000**	**$ 3,280,000**
Municipalities	$ 759,930	$ 72,374	$ 39,806	$ 33,841	$ 2,160	$ 2,640	$ 1,087,919	$ 214,897	$ 170,127	$ 1,401,235	$ 178,445	$ 690,379	$ 1,939,517	$ 276,426	$ 879,127	$ 1,852,797	$ 292,722	$ 1,031,180	$ 2,073,860	$ 322,600	$ 1,162,780
Anthony	$ 93,277	$ 8,884	$ 4,886	$ 21,026	$ 1,342	$ 1,640	$ 106,305	$ 20,998	$ 16,624	$ 154,798	$ 19,713	$ 76,268	$ 193,669	$ 27,602	$ 87,785	$ 161,684	$ 25,544	$ 89,986	$ 135,629	$ 21,098	$ 76,045
Clint	$ 51,550	$ 4,910	$ 2,700	$ 995	$ 64	$ 78	$ 145,445	$ 28,730	$ 22,745	$ 192,537	$ 24,519	$ 94,862	$ 238,612	$ 34,008	$ 108,156	$ 259,285	$ 40,964	$ 144,306	$ 254,424	$ 39,577	$ 142,651
Horizon City	$ 48,046	$ 4,576	$ 2,517	$ 3,981	$ 254	$ 311	$ 51,410	$ 10,155	$ 8,039	$ 92,577	$ 11,790	$ 45,612	$ 163,112	$ 23,247	$ 73,934	$ 245,532	$ 38,791	$ 136,652	$ 431,621	$ 67,141	$ 242,003
San Elizario	$ 104,515	$ 9,954	$ 5,475	$ 3,421	$ 218	$ 267	$ 142,102	$ 28,070	$ 22,222	$ 157,990	$ 20,120	$ 77,840	$ 229,037	$ 32,643	$ 103,816	$ 158,698	$ 25,073	$ 88,324	$ 207,259	$ 32,240	$ 116,207
Socorro	$ 415,021	$ 39,526	$ 21,739	$ 4,417	$ 282	$ 345	$ 600,980	$ 118,712	$ 93,980	$ 753,256	$ 95,926	$ 371,124	$ 1,040,646	$ 148,316	$ 471,695	$ 974,803	$ 154,008	$ 542,529	$ 992,865	$ 154,446	$ 556,683
Vinton	$ 47,521	$ 4,526	$ 2,489	$ -	$ -	$ -	$ 41,677	$ 8,232	$ 6,517	$ 50,077	$ 6,377	$ 24,672	$ 74,441	$ 10,610	$ 33,742	$ 52,795	$ 8,341	$ 29,383	$ 52,062	$ 8,099	$ 29,190
El Paso County	$ 1,340,070	$ 127,626	$ 70,194	$ 1,376,159	$ 87,840	$ 107,360	$ 1,342,081	$ 265,103	$ 209,873	$ 3,388,765	$ 431,555	$ 1,669,621	$ 2,340,483	$ 333,574	$ 1,060,873	$ 3,717,203	$ 587,278	$ 2,068,820	$ 3,776,140	$ 587,400	$ 2,117,220
Borderland	$ 25,705	$ 2,448		$ -	$ -		$ 26,826	$ 5,299		$ 32,232	$ 4,105		$ 49,920	$ 7,115		$ 33,982	$ 5,369		$ 33,510	$ 5,213	
Canutillo	$ 133,179	$ 12,684		$ 746	$ 48		$ 148,893	$ 29,411		$ 179,865	$ 22,906		$ 264,339	$ 37,675		$ 189,575	$ 29,951		$ 217,798	$ 33,880	
Fabens	$ 67,286	$ 6,408		$ 479,870	$ 30,630		$ 42,515	$ 8,398		$ 659,076	$ 83,932		$ 85,076	$ 12,125		$ 667,716	$ 105,492		$ 97,722	$ 15,201	
Homestead M. N	$ 179,856	$ 17,129		$ 93,498	$ 5,968		$ 106,234	$ 20,984		$ 223,627	$ 28,479		$ 153,181	$ 21,832		$ 229,289	$ 36,225		$ 271,405	$ 42,219	
Homestead M. S	$ 202,591	$ 19,294		$ 6,718	$ 429		$ 114,363	$ 22,590		$ 119,815	$ 15,258		$ 178,816	$ 25,485		$ 126,128	$ 19,927		$ 143,793	$ 22,368	
Tornillo	$ 18,613	$ 1,773		$ 81,430	$ 5,198		$ 19,830	$ 3,917		$ 124,102	$ 15,804		$ 29,554	$ 4,212		$ 128,461	$ 20,295		$ 30,197	$ 4,697	
Westway	$ 80,703	$ 7,686		$ -	$ -		$ 55,394	$ 10,942		$ 66,559	$ 8,476		$ 107,209	$ 15,280		$ 70,172	$ 11,086		$ 69,198	$ 10,764	
Other EP County	$ 632,138	$ 60,204		$ 713,896	$ 45,568		$ 828,027	$ 163,561		$ 1,983,488	$ 252,595		$ 1,472,389	$ 209,850		$ 2,271,881	$ 358,933		$ 2,912,516	$ 453,058	
El Paso	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Vanpool	**$ 840,000**	$ -		**$ 840,000**	$ -		**$ 840,000**	$ -		**$ 840,000**	$ -		**$ 840,000**	$ -		**$ 840,000**	$ -		**$ 840,000**	$ -	
Gold Route	**$ 1,280,000**	$ -		**$ 1,280,000**	$ -		**$ 1,280,000**	$ -		**$ 1,280,000**	$ -		**$ 1,280,000**	$ -		**$ 1,280,000**	$ -		**$ 1,280,000**	$ -	
County Total	**$ 4,220,000**	**$ 200,000**	**$ 110,000**	**$ 3,530,000**	**$ 90,000**	**$ 110,000**	**$ 4,550,000**	**$ 480,000**	**$ 380,000**	**$ 6,910,000**	**$ 610,000**	**$ 2,360,000**	**$ 6,400,000**	**$ 610,000**	**$ 1,940,000**	**$ 7,690,000**	**$ 880,000**	**$ 3,100,000**	**$ 7,970,000**	**$ 910,000**	**$ 3,280,000**

Figure 44. Service Costs and Local Share by Jurisdiction.

Additional Considerations

The proposed service scenarios are based on a set of assumptions that were accurate when the scenarios were created. Changes to transit services (outside the recommended service scenarios), new land-use patterns or developments, or variations in data supporting underlying assumptions could potentially impact the service recommendations. Specifically, at least two items may impact the proposed service scenarios: the Montana Brio line and the Far-East Transfer Center, and a CMAQ risk assessment.

Montana Brio and the Far-East Transfer Center

Sun Metro intends to build a Brio line along the Montana Avenue corridor. The Brio line would operate along Montana between downtown El Paso and the Far-East Transfer Center, which is near El Paso's eastern city limits. Montana Avenue is also the main part of El Paso County Transit Route 20 between the Eastside Transfer Center and Homestead Meadows (Figure 45).

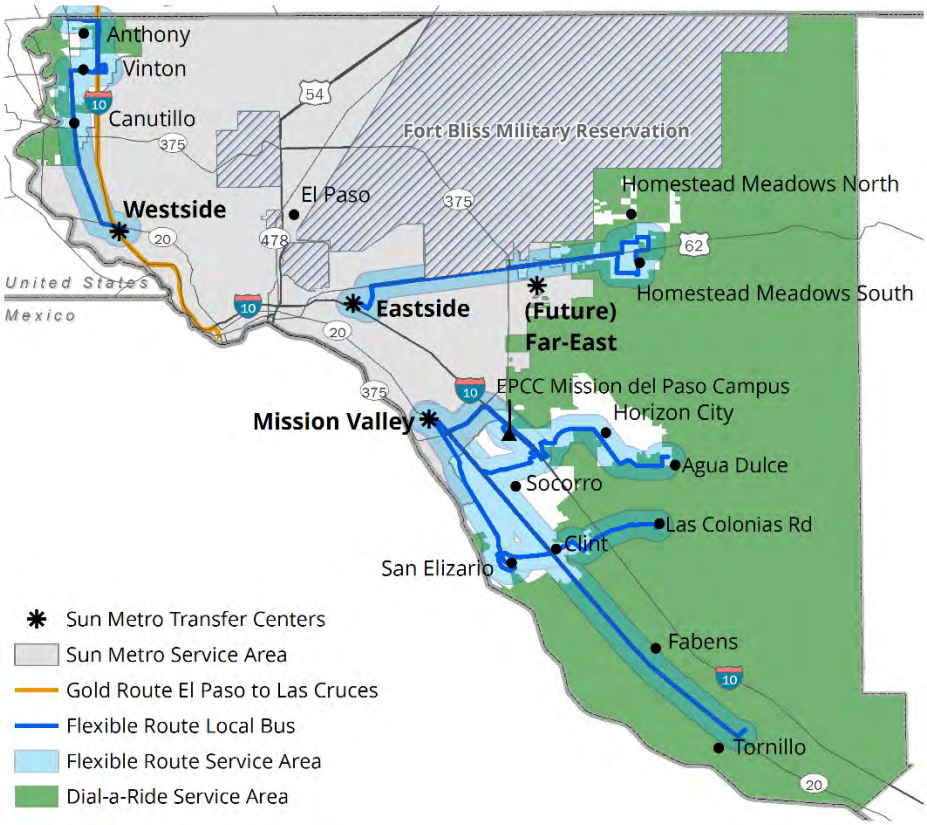


Figure 45. Scenario 3 Map Showing the Future Far-East Transfer Center.

The study team recommends that once the Montana Brio is operating, Route 20 be reduced in length so that the route operates between the Far-East Transfer Center and Homestead Meadows (instead of operating to the Eastside Transfer Center, which is farther west). Reducing Route 20's length saves an estimated $282,000 annually in operating costs and decreases the buses required to operate the route

from two to one.[6] Alternatively, El Paso County could improve the frequency of Route 20 from every 50 minutes to every 30 minutes.[6]

CMAQ Risk Assessment

The CMAQ program provides federal funding for projects that improve air quality and reduce congestion.

In FY 2017, El Paso County applied $859,000 in CMAQ funds to vanpools and to support county bus routes (Routes 50 and 84). Current funding is programmed through 2020. In this study, CMAQ funds were not put through the forecasting model and were assumed to remain constant across all scenarios.

CMAQ funds are discretionary, allocated by TxDOT and the El Paso MPO. Projects are evaluated for the contributed benefit to improve air quality and reduce congestion. The funds may be awarded to fund demonstration projects for a limited number of years.

Expanded services, particularly in the UZA outside the city limits of El Paso, may be eligible for CMAQ funds. Other transit agencies use CMAQ dollars to fund purchase of clean-fuel vehicles.

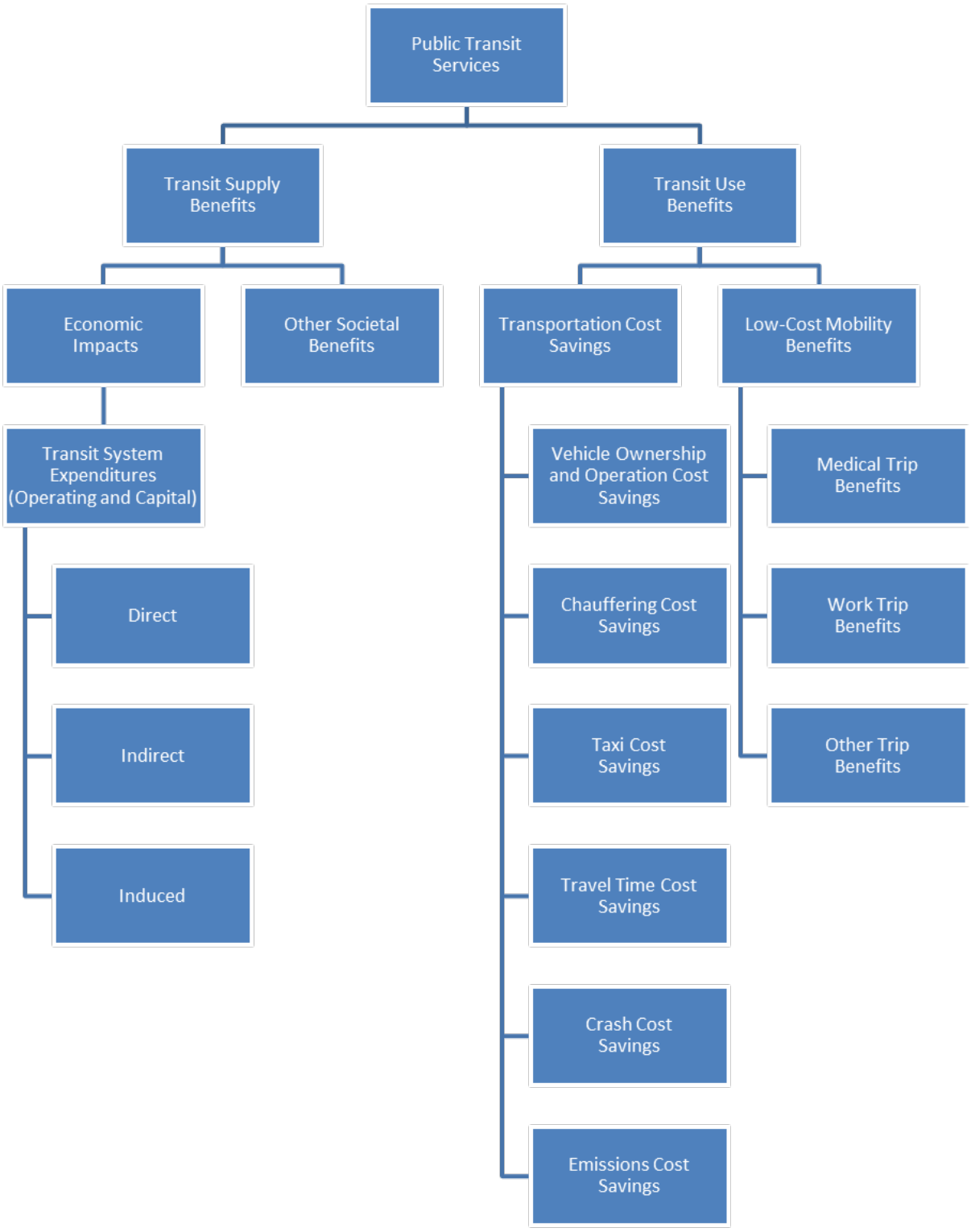
Given the risk of discretionary dollars, El Paso County will need to determine other revenue sources if the estimated level of CMAQ funds ($859,000) is not available. One option is to discuss a sub-allocation of Section 5307 funds based on the population and population density in the UZAs in El Paso County, beyond the city limits of El Paso. The federal Section 5307 funding formula for large urban areas is based on a combination of bus revenue vehicle miles, bus passenger miles, bus operating cost, fixed-guideway revenue vehicle miles, fixed-guideway route miles, and population and population density. The current revenue forecast for El Paso County Transit assumes only the Section 5307 revenues generated by El Paso County Transit bus revenue vehicle miles, bus passenger miles, and bus operating costs in the UZA in the county outside the City of El Paso. No revenues are assumed for the population and population density in the UZA in the county.

[6] These savings estimates are based on operating Scenario 3 flexible-route local bus service levels.

Chapter 9: Economic Impact Analysis

The proposed El Paso County Transit services not only connect populations in urban areas outside the current Sun Metro service area and rural areas to employment opportunities and services, but also create economic impacts from the operation of and construction of new transit vehicles and facilities.

This economic impact analysis is divided into two parts. First, a quantitative analysis is conducted to estimate the impacts of additional capital and operating expenses in terms of employment and value added on the local economy, as well as any marginal regional or state impacts. These impacts are analyzed and compared for each of the proposed transit service scenarios. These are considered the *transit supply benefits.* Second, an analysis is conducted to estimate the mobility-based benefits of increasing transit services, for example, the economic benefit of additional low-cost mobility for medical and work trips. These can be referred to as *transit use benefits*. Figure 46 illustrates the types of benefits under each of these two broad categories. Table 15 summarizes the transit supply and transit use benefits associated with each transit scenario.



Source: Adapted from 21, 22.

Figure 46. Transit Benefits Tree.

Table 15. Transit Supply and Use Benefits for Each Service Scenario.

Scenario	Transit Supply Benefits: Economic Impacts	Transit Use Benefits
Current service	$3,700,493	$555,857
Scenario 1: Rural dial-a-ride	$2,484,617	$387,836
Scenario 2: Baseline flexible-route local bus	$4,767,310	$840,792
Scenario 3: Flexible-route local bus and rural dial-a-ride	$8,925,959	$1,794,270
Scenario 4: Fixed-route local bus and ADA paratransit	$ 8,009,647	$1,314,705
Scenario 5: Increased flexible-route local bus and rural dial-a-ride	$10,607,792	$2,421,675
Scenario 6: Increased flexible-route local bus and full county dial-a-ride	$11,101,191	$2,619,072

The remainder of this chapter discusses the methodology used to calculate the transit supply and use benefits.

Transit Supply Benefits Methodology

For the transit supply portion of the analysis, TTI economists used the input-output (IO) modeling system called Economic Impact of Planning (IMPLAN). The economic analysis model was used to estimate direct, indirect, and induced impacts in each of the applicable topic areas. IMPLAN measures the initial *change* in a local economy. An IO model tracks economic impacts in two directions. These are called backward linkages and forward linkages. Backward linkages represent the upstream impacts in the supply chain from purchases of goods and materials required for a change in production. This is the impact to the supplying industries. On the other hand, forward linkages represent the impacts downstream of the supply chain. These are the predicted impacts to the demanding industries because of the change in production.

IMPLAN also uses regional social accounting matrices (SAMs) to track the flow of goods and services in an economy. The social accounting matrix is a "double entry bookkeeping system capable of tracing monetary flows between industries through debits and credits" (*23*). A SAM provides non-market financial flow information that expands the traditional IO model.

Transit Supply Data Inputs

To use these economic multipliers, IMPLAN requires input from the user. In this case, IMPLAN considers El Paso Transit an industry that produces transit service. As such, the costs to produce this good are considered the inputs, which in this case, would consist of operating expenditures and capital expenditures.

Operating Expenditures

Operating expenditures are the day-to-day expenditures required for operation of the system. The primary difference between operating expenditures and capital expenditures is that operating expenditures are typically annual costs. Regarding economic impact analyses, these expenses occur year after year for the operating life of the system. Examples of operating costs may include, but are not limited to:

- operator salaries and wages;
- fringe benefits;

- fuel and lubricants;
- tires and tubes;
- facility utilities (electricity, water, etc.); and
- causality and liability costs.

For this analysis, total estimated operating expenditures for each scenario were input in the IMPLAN software. These impacts will be seen year after year but are reported in this section as a single-year impact for simplicity of the results.

Capital Expenditures

Capital expenditures for transit operations consist of transit facility construction including stops, stations, and buildings, as well as any purchases of transit vehicles. These expenditures are one-time costs to the transit agencies, meaning that the impacts do not recur year after year. For example, when a new transit station is constructed, those dollars are used to pay a construction firm to construct the facility. Once construction is completed, those workers must move to a different project to continue working and spending their income in the local economy.

Transit infrastructure and buildings, when constructed, result in the impacts being realized at the local level. This is true for direct, indirect, and induced impacts because construction contractors are usually locally sourced. Therefore, the local economy has a direct effect from employment in the construction sectors. The indirect and induced effects also remain local but in part. This is where the social accounting matrices of IMPLAN are used. When purchasing materials for construction, contractors may source concrete locally, but aluminum or prefabricated transit stop amenities may be sourced from outside the region. IMPLAN uses economic data to determine an impact of these indirect and induced purchases.

Transit vehicle purchases have similar impacts as transit infrastructure but differ in one key way. The purchased buses are not being manufactured in El Paso; therefore, the impacts to that sector will not be seen in the local economy. Instead, the impacts will be observed wherever those buses are being manufactured and sold. Employees in those regions are the ones to receive the wage and will spend their earning in their local economy. Therefore, model parameters need to be set to reflect the indirect and induced impacts being realized outside the El Paso region.

Estimations

The study team estimated both the operating and capital expenditures for the various scenarios using a mix of existing data resources and forecasting techniques. The procedures for estimating operating and capital costs are discussed in Chapter 6; however, they are reiterated here for convenience. Operating expenditures were calculated using a single-variable cost model based on El Paso County's estimated average operating cost per revenue hour for its county bus routes. The number of revenue hours per scenario were estimated and multiplied by this average to generate an operating cost for each scenario. For capital expenditures, the study team estimated both vehicle and facility costs. For vehicles, the study team estimated the vehicle needs (including spare vehicles) for each scenario. The number of needed vehicles was multiplied by the Texas median costs for transit vehicles and then divided by 6 years to determine the annual amortized costs. For transit facilities, the study team estimated the number of stops (e.g., bus stops, shelters, etc.) needed for each scenario through a distance multiplier. The number of needed stops was then multiplied by the average costs of these facilities, divided by 10 years to determine annual amortized costs.

These operating and capital expenditures served as the data inputs into the IMPLAN model.

Transit Supply Scenario Results

The following tables show the direct, indirect, and induced economic impacts of each scenario. Direct impacts are the initial impacts that drive the subsequent impacts. Indirect impacts are the effects of purchasing goods and materials used in the production of the direct impacts. Induced impacts stem from the spending of employee wages. For example, increasing transit operations may require the hiring of new drivers, purchasing transit vehicles, and adding support staff. The new workers hired, as well as those being paid to produce the purchased transit vehicles, would be considered the direct impact. These jobs are the direct result of the transit agency's expenditures. Any materials that are required to produce the product (transit service) are considered the indirect impacts. This could include purchasing uniforms, office supplies, transit vehicle parts, fuels, etc. As a result, the producers of those items see a spillover effect from the direct expenditures. The induced impacts are those that occur from workers spending their wages from the direct production. Local restaurants, stores, and property see increased demand from the incomes, and this has positive economic impacts.

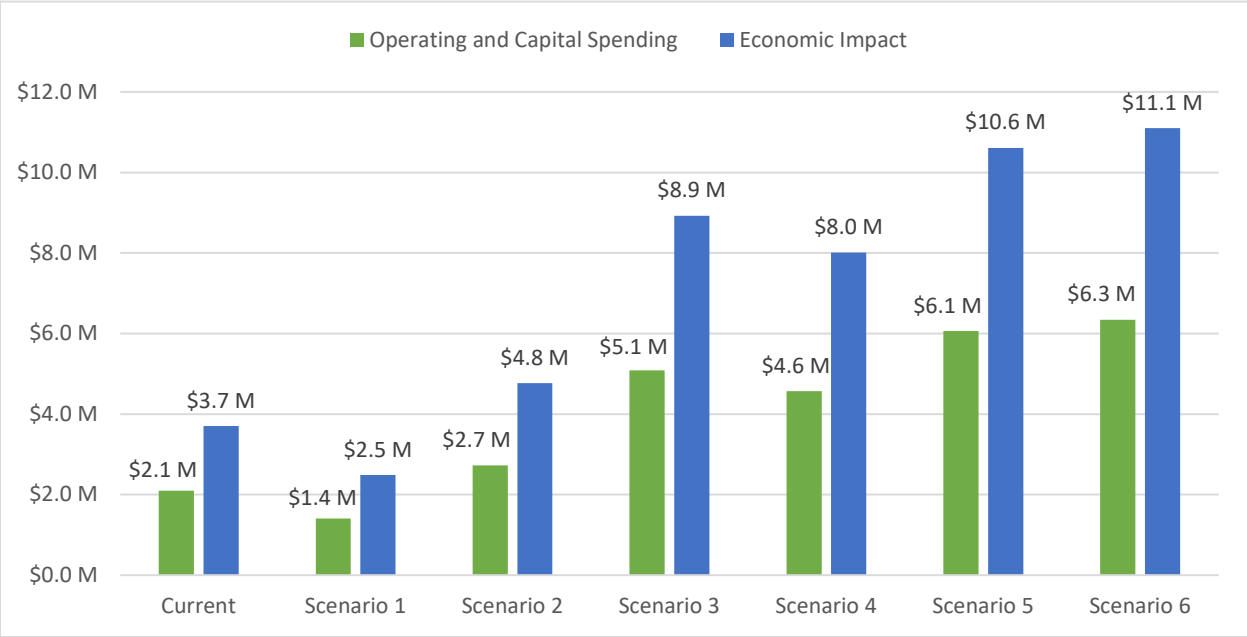
The direct, indirect, and induced impacts are reported as employment, labor income, value added, and total output impacts:

- Employment numbers represent total annual average jobs. This includes self-employed and wage and salary employees, and all full-time, part-time, and seasonal jobs, based on a count of full-time/part-time averages over 12 months (*23*). Therefore, results are reported as individual job-years, not full-time equivalent jobs. A job-year is one year of one job, and part-time positions are included in the count as a single job.
- Labor income is the amount paid to workers within a region. This includes both employee and proprietor income and is the source for induced impact calculations.
- Value added is comprised of labor income, property income, and indirect business taxes. It demonstrates the difference in value of production over the costs of purchasing services and goods to produce a good or product.
- Total output represents the total value added, as well as any intermediate expenditures for materials and services, that is, purchases that go into production.

Table 16 displays the total economic impact of transit supply benefits for all six service scenarios. Figure 47 compares each scenario's annual operating and capital expenses with the annual economic impact.

Table 16. Total Economic Impact for Each Service Scenario.

Scenario	Total Economic Impact	Additional Impact as Compared to Current
Current service	$3,700,493	—
Scenario 1: Rural dial-a-ride	$2,484,617	($1,215,876)
Scenario 2: Baseline flexible-route local bus	$4,767,310	$1,066,816
Scenario 3: Flexible-route local bus and rural dial-a-ride	$8,925,959	$5,225,466
Scenario 4: Fixed-route local bus and ADA paratransit	$8,009,647	$4,309,153
Scenario 5: Increased flexible-route local bus and rural dial-a-ride	$10,607,792	$6,907,298
Scenario 6: Increase flexible-route local bus and full county dial-a-ride	$11,101,191	$7,400,697



Note: Operating and capital spending excludes transit vehicle purchase and replacement, Gold Route, and Vanpool program costs.

Figure 47. Transit Supply Economic Impact versus Operating and Capital Spending for Each Service Scenario.

Table 17 through Table 23 show the detailed transit supply economic impacts for each service scenario.

Table 17. Current Service Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	32.7	$791,519	$1,145,198	$2,100,000
Indirect effect	6.1	$250,401	$410,251	$892,210
Induced effect	5.8	$204,133	$375,657	$708,283
Total effect	44.5	$1,246,053	$1,931,106	$3,700,493

Table 18. Scenario 1: Rural Dial-a-Ride Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	22.0	$531,448	$768,919	$1,410,000
Indirect effect	4.1	$168,127	$275,454	$599,056
Induced effect	3.9	$137,061	$252,227	$475,561
Total effect	29.9	$836,636	$1,296,600	$2,484,617

Table 19. Scenario 2: Baseline Flexible-Route Local Bus Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	40.1	$1,028,462	$1,461,350	$2,730,000
Indirect effect	7.6	$315,500	$519,888	$1,123,882
Induced effect	7.4	$263,257	$484,499	$913,427
Total effect	55.1	$1,607,219	$2,465,737	$4,767,310

Table 20. Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	76.9	$1,917,978	$2,748,335	$5,090,000
Indirect effect	14.4	$596,903	$980,932	$2,126,557
Induced effect	13.9	$492,664	$906,665	$1,709,403
Total effect	105.2	$3,007,545	$4,635,932	$8,925,959

Table 21. Scenario 4: Fixed-Route Local Bus and ADA Paratransit Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	68.8	$1,721,983	$2,464,762	$4,570,000
Indirect effect	12.9	$534,899	$879,346	$1,905,629
Induced effect	12.5	$442,116	$813,645	$1,534,018
Total effect	94.1	$2,698,999	$4,157,754	$8,009,647

Table 22. Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	90.4	$2,283,260	$3,259,950	$6,060,000
Indirect effect	17.0	$706,217	$1,161,918	$2,515,879
Induced effect	16.5	$585,613	$1,077,741	$2,031,913
Total effect	124.0	$3,575,091	$5,499,609	$10,607,792

Table 23. Scenario 6: Increased Flexible-Route Local Bus and Full County Dial-a-Ride Transit Supply Economic Impact Details.

Impact Type	Employment	Labor Income	Value Added	Total Output
Direct effect	94.8	$2,388,796	$3,412,643	$6,340,000
Indirect effect	17.8	$739,604	$1,216,618	$2,634,840
Induced effect	17.3	$612,831	$1,127,829	$2,126,351
Total effect	129.9	$3,741,232	$5,757,090	$11,101,191

Model results are consistent with the total amount of money being spent in a region. Scenario 6 has the highest expected total economic impacts. With the highest capital expenditures and needed operating costs, this scenario will have the biggest impact on the local economy in terms of employment, income, and total value added.

The results shown in this analysis, however, do not tell the full story of economic impacts. There are also several other impacts related to the use of transit, particularly the economic benefits associated with increased low-cost mobility and access to important destinations like work and health care. The following section analyzes the known benefits of rural and urban transit.

Transit Use Benefits

The investment in transit facilities and services can have additional impacts besides the economic activity generated by local spending. These benefits may accrue when individuals have additional mobility options for trips that currently require an automobile or trips that are currently not taken due to a lack of access to an automobile or alternative form of vehicular transportation. These benefits are collectively called *transit use benefits* and are part of the transit benefits tree (Figure 46).

Previous Study of Transit Use Benefits

The methodology for estimating transit use benefits is derived from the 2014 *Cost-Benefit Analysis of Rural and Small Urban Transit,* prepared for the U.S. Department of Transportation by the National Center for Transit Research (*22*). This report incorporated previous economic studies of transit benefits in rural and small urban areas. Transit benefits can be divided into *trip cost savings* and *low-cost mobility benefits* (also known as foregone travel savings). Low-cost mobility benefits are further disaggregated by trip purpose: medical, work, or other.

The primary impact of mobility is the cost savings that occur from providing public transportation options. The cost of transportation plays a key role in a user's decision to make a trip. If the cost is too high (e.g., the only transportation option is to call a taxi), then it will most likely result in a foregone trip. By offering transit service (a low-cost mobility option), the total cost burden to the individual is lowered, and the individual is more likely to make the trip. By offering additional mobility options, transit services provide more equity among socioeconomic groups and a valuable option to those who already have access to an automobile (*21, 22*).

The Transit Use Benefits Model

The benefits analysis methodology relies on specific economic multipliers associated with both new transit trips and meeting latent demand for fixed-route and demand-response transit service in urban and rural areas for different trip purposes.

The model for estimating transit use benefits relies on several inputs and assumptions, including:

- the proportion of passenger trips for each of three trip purposes: medical, work, and other;
- the ridership (i.e., unlinked passenger trips) on each mode (flexible- or fixed-route bus and demand response, or dial-a-ride) and the proportion of passenger trips that would occur in either rural or UZAs; and
- the economic value of each trip taken (including inflation since estimated economic values were calculated).

These inputs and assumptions are discussed in more detail in the following sections.

Trip Purpose

To estimate the proportion of transit trips taken for different trip purposes, the study team used data from the 2017 Texas Transit Rider Survey. TTI administered this survey to riders in 14 fixed-route systems and 10 demand-response systems, gathering 998 responses. The survey included a question on trip purpose, with eight choices including options like medical, shopping, work, and social, recreational trip purposes. Using the trip purpose data, the study team estimated the proportion of trip purposes for additional trips forecasted for each of the service scenarios. For purposes of the transit use benefits estimation, trip purposes were re-categorized into medical, work, and other. For fixed-route trips, the study team used fixed-route trip purpose responses from survey respondents currently using El Paso County's county bus system. For demand-response trips, the study team used the statewide trip purpose distribution, broken down by rural and urban transit systems. Table 24 shows the percentage of trip purposes by service geography and mode. The modes are demand-response (DR), which includes ADA paratransit and dial-a-ride, and fixed or flexible routes (FR).

Table 24. Trip Purpose by Mode and Service Geography.

Purpose	Rural		Small Urban		El Paso County
	DR	FR	DR	FR	Commuter Bus
Medical	55%	16%	55%	14%	15%
Work	3%	30%	6%	31%	27%
Other	42%	54%	38%	55%	58%

Source: Texas Transit Rider Survey 2017.

Ridership Assignment to Area (Urban versus Rural)

As discussed in Chapter 6 of this report and in Appendix 6-B, ridership numbers for each scenario were forecasted for each mode (fixed-route bus or dial-a-ride) using a regression-based ridership forecasting method. However, to estimate the economic benefits of this ridership using the National Center for Transit Research model, ridership had to be labeled as either urban or rural. (There are different economic benefit multipliers used for trips based on whether they occur in rural or urban areas.) The study team followed an urban-rural allocation process similar to the methodology used for the revenue forecast in which a given service's ridership (e.g., the ridership for a single fixed-route or a dial-a-ride service) was allocated to the rural area if the primary intent of the service is to serve people in the rural area and if the service operated at least 5 percent of its revenue miles in the rural area (Appendix 6-B contains the full methodology). Otherwise, a given service's ridership was labeled as urban. The urban-rural allocation methodology was followed for all scenarios, including the current scenario. (In the revenue forecast methodology, current scenario ridership *was not* allocated as urban or rural since all operating data are currently being reported to the rural National Transit Database [NTD]).

Each scenario's forecasted ridership was entered into the model, separated by mode and trip purpose according to the survey results for each mode. Table 25 shows the ridership forecasts by scenario and mode and estimated by trip purpose. These trips were further categorized into latent trips and new trips, assuming a 50 percent split. The ridership numbers for each category were then multiplied by the corresponding trip value, discussed in the next section.

Table 25. Passenger Trips by Scenario and Mode.

Scenario	Service Geography	Mode	Medical Trips	Work Trips	Other Trips	Total Passenger Trips
Current	Urban	FR	3,800	7,030	14,819	25,649
	Rural	FR	16,199	29,969	63,178	109,346
1	Rural	DR	33,795	1,930	25,525	61,250
2	Urban	FR	6,714	12,420	26,183	45,317
	Rural	FR	23,803	44,035	92,831	160,670
3	Urban	FR	11,230	20,776	43,798	75,804
	Rural	FR	39,816	73,660	155,384	268,860
	Rural	DR	33,795	1,930	25,525	61,250
4	Urban	FR	8,923	16,507	34,798	60,228
	Rural	FR	33,566	62,097	130,908	226,571
	Urban	ADA	13,627	1,576	9,508	24,712
	Rural	ADA	870	50	657	1,577
5	Urban	FR	15,457	28,595	60,281	104,332
	Rural	FR	58,146	107,571	226,770	392,487
	Rural	DR	33,795	1,930	25,525	61,250
6	Urban	FR	15,457	28,595	60,281	104,332
	Rural	FR	58,146	107,571	226,770	392,487
	Urban	DR	14,101	29,727	51,450	51,450
	Rural	DR	12,166	695	9,189	22,050

Trip Value

Trip values are derived from the *Cost-Benefit Analysis of Rural and Small Urban Transit* report (22), which used 2011 NTD data from 1,303 rural transit agencies and 351 small urban transit agencies to calculate average operating cost per passenger trip by fixed route and demand response. The report then estimated trip values based on previously documented analytical methods. Trip values are estimated for both trip cost savings and low-cost mobility benefits. Transportation cost savings include savings resulting from taking transit instead of other transportation options. Transportation cost savings include vehicle ownership and operation cost savings, chauffeuring cost savings, taxi cost savings, travel time cost savings, crash cost savings, and emission cost savings. Low-cost mobility benefits are the economic value of trips taken on transit that would have otherwise been foregone, including medical, work, and other trips (22). Trip values are different for different modes (fixed route versus demand response) and service areas (urban versus rural). Table 26 displays the per-trip values in the transportation cost savings and low-cost mobility benefits categories.

Table 26. Transit Use Benefit Values per Passenger Trip for Rural and Small Urban Fixed-Route and Demand-Response Modes.

Mode	Rural		Small Urban	
	DR	FR	DR	FR
Transportation cost savings				
Vehicle ownership and operation cost savings	$0.19	$0.50	$0.22	$0.33
Chauffeuring cost savings	$2.05	$0.72	$2.35	$0.47
Taxi cost savings	$0.93	$1.58	$1.07	$1.03
Travel time cost savings	$(0.88)	$(0.28)	$(1.01)	$(0.44)
Crash cost savings	$(0.32)	$0.42	$(1.03)	$0.13
Emission cost savings	$(1.14)	$(0.10)	$(0.52)	$0.02
Cumulative transportation cost savings	$0.83	$2.84	$1.08	$1.54
Low-cost mobility benefits				
Medical trip benefits	$8.27	$5.68	$5.92	$4.07
Work trip benefits	$6.23	$4.28	$6.04	$4.15
Other trip benefits	$1.03	$0.71	$1.27	$0.48

Note: Negative values (shown in parentheses) indicate that a trip taken on transit results in an economic cost.
Source: Cost-Benefit Analysis of Rural and Small Urban Transit *(22).*

Inflation

The original values in the previous study are based on 2011 NTD data. TTI accounted for inflation from 2011 to 2018 using the Bureau of Labor Statistic's Consumer Price Index (CPI) calculator. The CPI calculator showed that every $1.00 spent in 2011 would be equivalent to $1.13 spent in 2018. TTI calculated the compound annual growth rate of inflation and applied this inflation to all trip value dollar amounts.

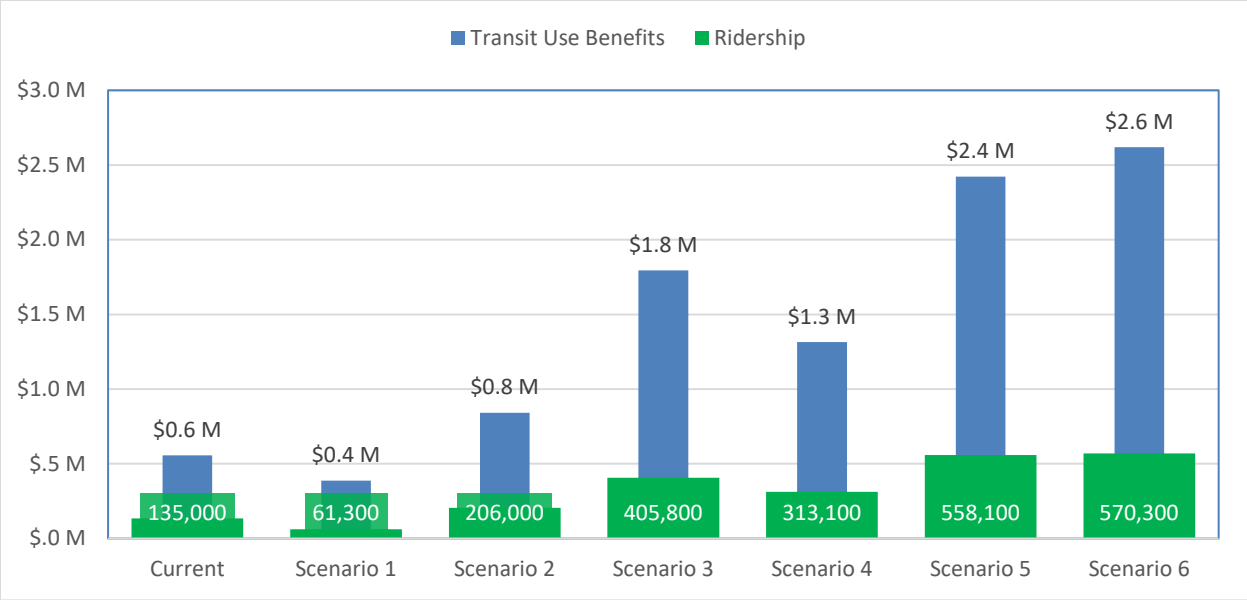
Results

The results show varying levels of economic benefits based on the level of service (and projected ridership) within each scenario. This ranges from $387,836 on the low end to $2,063,215 on the high end. Table 27 shows the results by each scenario and categorized by transportation cost savings and low-cost mobility benefits. The "Additional Benefits as Compared to Current" column shows the difference in benefits between the current scenario and each respective scenario.

Figure 48 displays a graph of the total transit use benefits and ridership by scenario.

Table 27. Transit Use Benefits Results.

Scenario	Transportation Cost Savings	Low-Cost Mobility Benefits	Total Transit Use Benefits	Additional Benefits Compared to Current
Current	$172,960	$382,897	$555,857	$0
Scenario 1	$28,723	$359,113	$387,836	($168,020)
Scenario 2	$260,781	$580,011	$840,792	$284,935
Scenario 3	$464,944	$1,329,326	$1,794,270	$1,238,413
Scenario 4	$380,364	$934,341	$1,314,705	$758,848
Scenario 5	$660,221	$1,761,454	$2,421,675	$1,865,819
Scenario 6	$686,519	$1,932,553	$2,619,072	$2,063,215



Note: Transit use benefits and ridership are based on fixed-route, flexible-route, ADA paratransit, and dial-a-ride services in each scenario; Gold Route and vanpool services are excluded.

Figure 48. Total Transit Use Benefits per Scenario.

Discussion

Providing improved transit service provides increased economic activity from expending dollars on transit capital and operations (transit supply benefits) and economic benefits when low-cost mobility is improved (transit use benefits). The relative magnitude of both benefit types depends significantly on the amount of transit service provided, which significantly impacts the number of dollars expended and the projected riders who will use the service for various trip purposes.

In addition to the quantified benefits, transit service can have other positive impacts on the local economy and communities.

Acute Need for Affordable Transportation

Specific to El Paso County transit, the scenarios explored in this report will have a high impact on those who rely on transit as their primary form of transportation. The transit rider survey conducted during this study indicated that most current transit users ride at least 4 days a week (57.4 percent). In addition, a major reason for individuals to start using the transit service is that they lost access to their vehicles (27.1 percent). Regarding *foregone trips*, individuals were asked what other means of transportation they would use. A significant percentage of respondents noted that they would have asked family or friends for a ride. This is important for those individuals who ride several times a week. While asking family or friends for every ride where transit could have been used if available is possible, it may not be reasonable to assume that those trips will be available on a reliable schedule. For example, a considerable number of riders (15.9 percent) mentioned that they had no other means of transportation. By offering reliable, affordable transportation option to a broad base of the population, transit can help eliminate barriers to mobility and reduce *foregone trips* in transportation-disadvantaged populations.

Economic Development

Many of the economic impacts of transit investment occur from the capital and operating expenditures of a transit system, which result in direct, indirect, and induced impacts to the local and regional economies. These were covered for each scenario previously in this chapter. Other impacts, however, result from increased mobility options.

By offering low-cost mobility options, transit providers offer workers without transportation the ability to access employment markets. According to the transit rider survey results, a majority of El Paso transit riders rely on transit several times a week. In addition, the primary trip purpose averaged among all routes was trips to work (27.4 percent). Simply put, transit allows residents additional options to get to work, possibly residents who did not have options for travel to work before. This has the potential to increase employment economy-wide and increase overall economic output. Analysis that studied these impacts found that the economy saw growth with the increase in mobility efficiency but noted that these results are sensitive to numerous variables (*21*).

Other Societal Impacts

Analysis indicates that public transit also has the added side effect of reducing parking needs in a community (*24*). The literature notes that reduction in parking needs leads to economic, environmental, and aesthetic benefits. This benefit primarily impacts urban areas, such as downtowns, with limited available parking and high congestion (*24*).

Chapter 10: Multimodal Level of Service Index Guidance

This chapter provides El Paso County Transit with methods, data, analysis, and tools to develop a multimodal transportation analysis for alternative transportation modes, also known as multimodal transportation. The fundamental goals of a multimodal transportation system are to achieve support for multiple modes and users, reduce vehicle ownership and usage, and promote mixed-use development (*25*). Although this chapter summarizes several existing methods for measuring multimodal performance and service levels, the recommended method has been built on existing state-of-the-art methodologies already recognized by the El Paso MPO (*26*).

The objective of this chapter is to provide the alternatives to El Paso County Transit to estimate the improvement in multimodality performance (i.e., Multimodal Level of Service Index [MLSI]) at the key centers and corridors and ensures that there is a connected circulation network for all these alternative travel modes. With multimodal transportation improvements, the El Paso rural region gains more efficient and safer transportation choices for travelers.

Literature Reviewed

The primary current mechanism for multimodal transportation planning in the region is the El Paso MPO's 2013 Congestion Management Plan (CMP). The CMP is a way of systematically considering congestion-related issues using a set of technical tools and basing evaluations on a discrete set of locally determined performance measures (*27*). The 2013 El Paso MPO's CMP adopts a set of goals and objectives that promotes multimodal transportation development in the region. Three of four goals (1, 2, and 4) relate to multimodal planning:

1. Provide a transportation system that serves the public with mobility choices, including pedestrians and bicycles.
2. Identify and mitigate congestion on the transportation system.
3. Minimize the air quality impacts of congestion.
4. Promote accessibility to an efficient transportation system for all citizens.

Appendix 10-A presents the CMP's performance measures to assess progress toward the goals and objectives.

In general, planning for multimodal transportation requires consideration for transportation demand, mobility, transportation options, user information, integration, affordability, mobility substitutes, land use factors, transport network connectivity, roadway design and management, prioritization, and inaccessibility (*27*). All these factors are key elements for accessibility provisions made in transportation planning. Thus, to build an efficient multimodal transportation system in the El Paso region, local transit agencies should provide reasonable access to transit stops and stations. Access can often be achieved by making provisions for first- and last-mile modes like walking or biking to stops (*28*). Recent studies reviewed by TTI show that the availability, accessibility, and convenience of public transport are critical for sustaining multimodal commuter trips in a city (*29*). Moreover, studies have shown that most cities and MPOs across the United States are investing in multimodal transportation facilities by providing last-mile connectivity to transit stations through improvements in bike and sidewalk networks.

According to the literature reviewed, one of the recommended starting points for the assessment of the multimodal connectivity improvements is to conduct a preliminary survey and gather information about the

existing physical conditions of the transportation system and concerns of the residents (*30*). However, gathering this type of data requires significant efforts and costly surveys.

Regarding existing multimodal scores, the three most popular scores for measuring performance of infrastructure of a given location are:

- walk score (measures a location's walkability);
- bike score (measures the suitability of the location for bicycling); and
- transit score (measures access to public transit) (*31*).

The disadvantage of using these scores is that they just represent a disaggregated measure for a specific mode of transportation and have limited utility in multimodal transportation evaluations. The ActiveTrans Priority Tool (APT) addresses this shortcoming partially with a systematic methodology for prioritizing pedestrian and bicycle improvements along existing roads (*32*). However, APT is intended to address walking and bicycling separately with no guidance for the integration of the two modes together with public transit. The Bicycle Compatibility Index (*33*) and Bicycle Environmental Quality Index (*34*) are popular methods to evaluate the capability of a variety of roadways to accommodate bicyclists. Again, these two methods do not take into consideration the transport multimodality (walking and public transit access integration) and require an extensive quantitative observational survey of more than a dozen factors to decide on infrastructure improvements as well as several geometric and operational characteristics such as lane widths, speed, and existing volume data for any evaluation.

Several other methods exist to determine objective priorities by providing a multimodal level of service or score. These methodologies are described in the National Cooperative Highway Research Program Report 616 (*35*), the *Highway Capacity Manual* (*36*), and the *Transit Capacity and Quality of Service Manual* (*37*). These methodologies provide a score or level of service for a specific mode at a certain roadway segment location or intersection. The analysis requires a number of inputs such as vehicular, cyclist, and pedestrian counts; roadway and amenity dimensions within the public right of way; and public opinion of the various modes being analyzed. The need for all these data makes these methodologies impractical and expensive if considering multimodal analysis of a region. Moreover, these methodologies are designed for urban streets and do not contemplate specific parameters for rural (transit) areas.

In summary, the existing reviewed methodologies for estimating multimodal level of service are not viable for the El Paso County region because of the following reasons:

- The methodologies are extremely data intensive.
- It would be impractical and very expensive to acquire all necessary data for regional analysis.
- The methodologies lack consideration for a complete multimodal trip-based evaluation.

Chapter 2 of this report presents El Paso County Transit's existing conditions. Through public outreach described in Chapter 2 (rider survey) and Chapter 7 (community meetings), the team gathered the comments and concerns from bus riders and county residents. Unfortunately, for the initial analysis, the rural-area sidewalk infrastructure inventory was not fully available, and data about bicycle roads and lanes are lacking. Chapter 8 proposed transit service scenarios with a combination of different types of services. One of the key requirements for building a suitable methodology to score or rank the multimodality in rural areas is a stop-based transit system. A stop-based system is a transit system that requires a marked stop for all passenger boarding and alighting locations for fixed- or flexible-route local bus services. For all these reasons, TTI recommends the method described in the next section of this chapter to obtain a multimodal index for El Paso County Transit's service area.

Multimodal Level of Service Index Methodology

The MLSI developed in this section captures the entire trip experience involving multiple modes. This is important since independent evaluations of modes neglect operational elements of travel such as waiting times, transfer inconveniences, total travel impedance, etc. (*25*). The MLSI methodology cannot be applied at a regional level due to the extensive amount of roadway and traffic data that would be necessary. The method, however, can be used in rural transit areas only if complete multimodal (bicycle, pedestrian, and transit) data are available (Appendix 10-B has a complete list of variables). The MLSI methodology is based on the connectivity between transit, bicycling, and sidewalks (walking). Through this proposed methodology, TTI generated heat maps that show areas in the region that lack multimodal infrastructure or connections among the various multimodal travel modes. This gap analysis provides additional input to the development of the overall multimodal plan. A pilot project was selected to further explain the application of this MLSI methodology and its relation to multimodal improvements (Appendix 10-C).

The MLSI methodology analyzes a commuter trip as a combination of using modes such as bicycling, walking, and public transit. A trip-based index should consider the following events in sequence: walking/biking from trip origin to a transit stop → waiting at the stop → riding transit → (transfer with walking/biking, if any) → walking/riding to the final trip destination. In developing the MLSI, accessibility is considered the driving force for assessing a performance measure of a multimodal transportation system (*29*). The transit stops serve as the focal point of waiting, boarding, and transfer activities by multimodal commuters. The MLSI, which is the ratio of the actual multimodal component to the ideal multimodal component and varies from 0 to 100, is presented in Equations 1 through 3 in Appendix 10-B. The higher the spatial resolution of data availability, the better the indexes are. The methodology is based on a geographic analysis that requires, at a minimum, data for regional traffic analysis zones (TAZs). In Equations 1 and 2 of Appendix 10-B, it is assumed that the lowest resolution at which data are available is for the TAZ. An index of 0 means a poor multimodal transport facility, and an index of 100 means a high or perfect multimodal facility around the concerned transit stop.

The MLSI methodology also included a supply-demand assessment component. The supply-demand assessment was useful to understand the extent of *supply* provided by an integrated system of sidewalks, bike, and transit facilities to meet the population and employment *demand*. The mean MLSI for all transit stops (not available for the current El Paso County bus routes) within each TAZ is the assumed proxy for supply, and the normalized population (or employment) density for each TAZ is the assumed proxy for demand. Population density (for morning trips) and employment density (for afternoon trips) of a TAZ are normalized over a 0–100 scale. The normalization is carried out for the TAZ that has the highest population density.

The relationship between given demand should be established with corresponding supply to identify deficient and surplus areas needing multimodal improvements. This would require establishing a correlation between the supply and demand proxies using some parameters (e.g., w). Thus, for a given weight w, population (or employment) density and the MLSI would be equal when supply equals demand. To understand this, a sensitivity analysis over w needs to be performed showing the equilibrium point for supply and demand. Figure 49 shows a schematic of the supply-demand assessment.



Figure 49. Supply-Demand Assessment for the MLSI.

Around each transit stop, catchment areas of a ¼-mile threshold for walking were assumed for accommodating the last-mile needs of both potential or latent *choice* and *captive* riders (*38*). Although there has been limited research on the definition of a similar threshold around a stop for bicycling, studies assuming a ½-mile catchment radius around bicycle stations have been quite common in estimating bicycle-parking demand (*39*). With these thresholds for bicycling around the stops in mind, all the multimodal variables and parameters values were estimated. Table 28 summarizes these values.

Table 28. Variable and Parameter Values Estimated from El Paso Travel Demand Data.

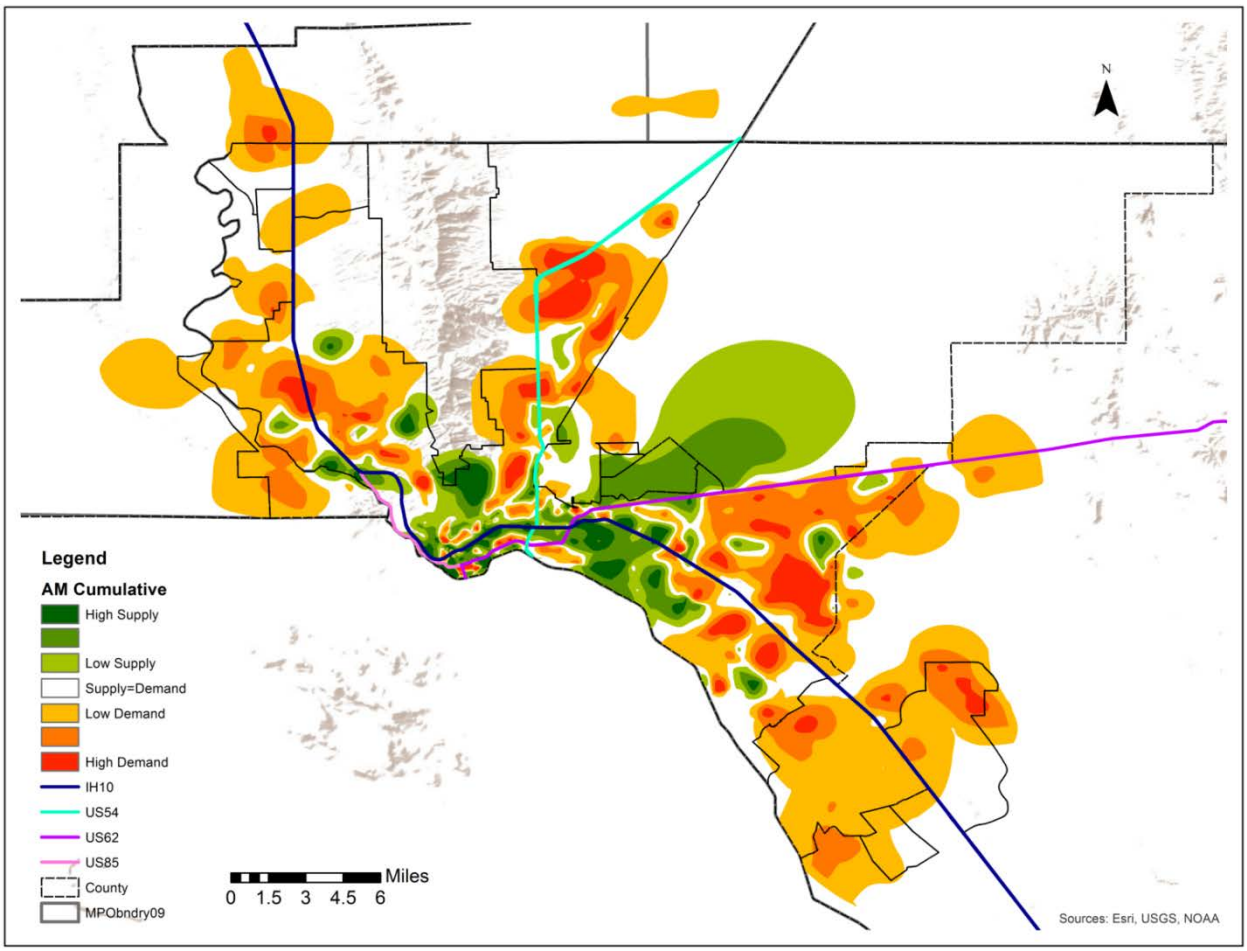
Parameter Symbol/Variable	Mode Affiliation	Estimate/Value	R^2
θ	Bicycling	0.08	0.8948
μ	Walking	0.08	0.8948
φ	Bus transit	0.02 (morning peak hour, 6 a.m.–9 a.m.) 0.04 (afternoon peak hour, 4 p.m.–7 p.m.)	0.6441 0.7977
λ	Bicycling	0.09	0.9058
ρ	Walking	0.09	0.9058
α	Bicycling	3.0*	—
β	Walking	1.9*	—
γ	Bus transit	1.0*	—
R	Bicycling	3 minutes (with 0.5-mile distance threshold and bicycling speed = 10 miles per hour)	—
K	Bicycling	3 minutes (with 0.5-mile distance threshold and bicycling speed = 10 miles per hour)	—
L	Walking	5 minutes (with 0.25-mile distance threshold and bicycling speed = 3 miles per hour)	—
M	Walking	5 minutes (with 0.25-mile distance threshold and bicycling speed = 3.1 miles per hour)	—
J	Bus transit	45 minutes (source: El Paso travel demand data)	—

** Studies have shown that transit users value bicycling and walking time with the following weights α = 3, β = 1.9, and γ = 1 (39), which have been used in this methodology.*

Source: Alternative Transportation Modes and Technology Applications for Multimodal Transportation Planning in the El Paso Region *(26)*.

Finally, the proposed methodology and estimated values of the MLSI were validated with observations from data obtained for El Paso. A sensitivity analysis was carried out on transportation supply and demand assessment of multimodal transportation system for El Paso and its surrounding rural Cities of Socorro, San Elizario, Horizon City, Vinton, and Anthony. Results showed that the supply (multimodal transportation facility) for commuters does not meet the needs of the latent demand (population or employment) for most areas in El Paso and for all five rural cities studied (Figure 50). The disparity between supply and demand

is mainly attributed to the poor last-mile transport connectivity available to bicyclists and pedestrians around transit stops.



Source: Alternative Transportation Modes and Technology Applications for Multimodal Transportation Planning in the El Paso Region *(26)*.

Figure 50. Multimodal (Transit, Bicycle, and Pedestrian Modes) Demand-Supply Assessment for the AM Peak.

Case Study

Accessibility is the base for assessing performance of a multimodal transportation system and developing an MLSI. The transit stops serve as primary origin-destination points for commuters in a multimodal environment. The MLSI is developed with each transit stop as the focal point of waiting, boarding, and transfer activities. The multimodal system considers each transit stop and its connectivity to the other transit stops. The MLSI is a regional aggregate in terms of the connectivity of one transit stop with the rest of the transit system.

A pilot or virtual project was selected to apply the MLSI concept at the single multimodal trip level and its relation to multimodal improvements. An MLSI was calculated before and after multimodal improvements. This single trip approach for the MLSI calculation for this pilot project is simplistic but shows the type of repetitive calculation that is done in the aggregate. The following describes the multimodal trip for this pilot project:

- Trip origin = 1673 Hermit Thrush Place (residence).
- Bus stop origin = Near intersection of Helen of Troy Drive and Nardo Goodman Drive.
- Bus stop destination = Near intersection of Sunland Park Drive and Cadiz Street.
- Trip destination = 5930 Cromo Drive (Sonic Drive-In).

The detailed analysis of these pilot projects is in Appendix 10-C.

Chapter 11: Implementation Strategy

A presentation on the El Paso County Transit Study was given to the El Paso County Commissioners Court on August 23, 2018 (Appendix 11-A). During the presentation, the Commissioners Court discussed the next steps for implementation of a single, seamless transit system in El Paso County, serving and connecting rural communities and urban areas in the county and the city of El Paso. These next steps are:

- Confirm interest in coordination for countywide transit with the City of El Paso and other municipalities in El Paso County.
- Define the goals, objectives, and scope of countywide transit with the partners.
- Evaluate organizational options such as a local government corporation and interlocal agreements, and determine the best approach.
- Determine a feasible approach to funding, and confirm it with the City of El Paso, the El Paso MPO, and TxDOT.
- Request approval of governing bodies as required by statute.
- Incorporate other service planning considerations (e.g., high-priority routes or services) that may emerge during discussions with local partners.
- Before implementing new services, conduct public engagement to confirm specifics for route alignments, location of bus stops, and schedules.

References

1. Far West Texas/El Paso Regional Transportation Coordination Committee. *The Far West Texas/El Paso Regional Human Services—Public Transportation Coordination Plan: September 2017–August 2022*. February 2017. Accessed March 8, 2018, from https://www.regionalserviceplanning.org/texas_regions/coordination_plans/8-upper-rio-grande/coord-plan-2017.pdf.

2. City of El Paso. *Plan El Paso.* March 6, 2012. Accessed March 8, 2018, from https://www.elpasotexas.gov/planning-and-inspections/plan-el-paso.

3. Aldrete, R., and A. Sanchez. *El Paso Multimodal Plan*. 2015. Accessed March 8, 2018, from https://tti.tamu.edu/featured-project/el-paso-multimodal-plan/.

4. Stephens, Kristy, Director of Sales Business Rental, Enterprise Holdings. *Interview by Telephone* May 12, 2017.

5. Enterprise Ridership El Paso. *February 2017 Subsidy Report.* 2017.

6. U.S. Census Bureau. Total Population, 2011–2015 American Community Survey 5-Year Estimates. Accessed March 12, 2018, from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_B01003&prodType=table.

7. U.S. Census Bureau. *Urban and Rural, 2010 Census Summary File 1.* Accessed March 12, 2018, from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_SF1_P2&prodType=table.

8. Sun Metro General Transit Feed Specification. *Sun Metro GTFS.* Accessed March 12, 2018, from https://transitfeeds.com/p/sun-metro/620.

9. Kittelson and Associates, Parsons Brinckerhoff, KFH Group, Inc., Texas A&M Transportation Institute, and Arup. *Transit Capacity and Quality of Service Manual.* TCRP Report 165, 3rd edition, Chapter 5. Transit Cooperative Research Program, 2013, pp. 5–17, 5–19.

10 . Texas Comptroller of Public Accounts, Transit Sales and Use Tax, Accessed January 2017, from https://comptroller.texas.gov/taxes/sales/mta.php.

11. Excerpts from *Interlocal Agreements: An Overview*, written by John C. Grace, assistant city attorney with the City of Lubbock, and delivered by Ray Rike, assistant county attorney with Ellis County for the Government Law Section of the State Bar of Texas, in McAllen, Texas, February 17, 2017.

12. New Mexico Department of Transportation. *New Mexico Transit Guide*. 2016. Accessed May 29, 2017, from http://dot.state.nm.us/content/dam/nmdot/Transit_Rail/NewMexicoTransitGuide2016.pdf

13. South Central Regional Transit District. About Us. Accessed May 26, 2017, from http://scrtd.org/about-us/.

14. New Mexico Statutes, 2016 New Mexico Statutes Chapter 7 – Taxation, Article 20E - County Local Option Gross Receipts Taxes, Section 7-20E-23 - County regional transit gross receipts tax. Accessed May 6,2019, from https://law.justia.com/codes/new-mexico/2016/chapter-7/article-20e/section-7-20e-23/

15. Nelson and Nygaard. *Council of Fresno County Governments: Public Transportation Regional Agency Formation Study*, *Final Report.* May 2007. Accessed June 1, 2017, from https://www.fresno.gov/transportation/wp-content/uploads/sites/13/2016/10/Regional-Agency-Study-Final-Report.pdf.

16. State of Indiana. Indiana Transparency Portal: Quasi-governmental Agencies. Accessed May 6, 2019, from https://www.in.gov/itp/899.htm.

17. Pima County. Pima County Public Transit. Accessed May 6, 2019, from http://webcms.pima.gov/cms/One.aspx?pageId=62747.

18. Regional Transportation Authority. *Regional Transportation Authority: Pertinent Legislation.* April 23, 2004. Accessed May 28, 2017, from http://www.rtamobility.com/stories/pdfs/pertinentlegislation.pdf.

19. Regional Transportation Authority. About RTA. Accessed May 28, 2017, from http://www.rtamobility.com/AboutRTA/tabid/55/Default.aspx.

20. International Association for Public Participation. *IAP2's Public Participation Spectrum*. 2014. Accessed May 28, 2017, from https://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/foundations_course/IAP2_P2_Spectrum_FINAL.pdf.

21. Southworth, F., D. P. Vogt, and T. R. Curlee. Rural Transit Systems Benefits in Tennessee: Methodology and an Empirical Study. *Environment and Planning A*, Vol. 37, No. 5, 2005, pp. 861–875.

22. Godavarthy, R., J. Mattson, E. Ndembe, and National Center for Transit Research. *Cost-Benefit Analysis of Rural and Small Urban Transit.* U.S. Department of Transportation, July 2014.

23. IMPLAN Group, LLC. Introducing the SAM. 2017. https://implanhelp.zendesk.com/hc/en-us/articles/115009674708-Introducing-the-SAM-

24. Litman, T. *Evaluating Public Transit Benefits and Costs.* Victoria Transport Policy Institute, 2015.

25. Chandra, S., M.V. Braughton, L.D. Galicia, A. Sanchez, M. Medina, and R.M. Aldrete. A Multi-modal Transportation Score to Evaluate Infrastructure Supply-Demand for Commuters. International Conference on Sustainable Design, Engineering and Construction. *Elsevier-Procedia Engineering*, Vol. 145, 2016, pp. 304–311.

26. Aldrete, R., T.B. Carlson, L.D. Galicia, T.S. Geiselbrecht, B.L. Ettelman, M.V. Braughton, A. Sanchez, I.N. Sener, S. Chandra, C. Simek, and R.J. Lee. *Alternative Transportation Modes and Technology Applications for Multimodal Transportation Planning in the El Paso Region.* Center for International Intelligent Transportation Research/El Paso Metropolitan Planning Organization, 2016.

27. El Paso Metropolitan Planning Organization. *2013 Congestion Management Process.* El Paso Metropolitan Planning Organization, 2013.

28. Litman, T. *Evaluating Accessibility for Transportation Planning*. Victoria Transport Policy Institute, 2011.

29. Chandra, S., M.E. Bari, P.C. Devarasetty, and S.R. Vidali. Accessibility Evaluations of Feeder Transit Services*. Transportation Research Part A: Policy and Practice*, Vol. 52, 2013, pp. 47–63.

30. Krygsman, S., M. Dijst, and T. Arentze. Multimodal Public Transport: An Analysis of Travel Time Elements and the Interconnectivity Ratio. *Transport Policy*, Vol. 11, 2004, pp. 265–275.

31. City of Evanston. *Multi-modal Transportation Plan.* City of Evanston Division of Transportation, 2009.

32. Pedestrian and Bicycle Information Center. *ActiveTrans Priority Tool.* December 2014. Accessed May 6, 2019, from http://www.pedbikeinfo.org/topics/tools_apt.cfm.

33. Federal Highway Administration. *Bicycle Compatibility Index: A Level of Service Concept, Implementation Manual.* 1998.

34. Program on Health, Equity and Sustainability Environmental Health Section. *Bicycle Environmental Quality Index (BEQI).* San Francisco Department of Public Health, 2010.

35. National Cooperative Highway Research Program. *Multimodal Level of Service Analysis for Urban Streets.* Transportation Research Board, 2008.

36 . Transportation Research Board. *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis*. The National Academies Press, 2016.

37. Transit Cooperative Research Program. *Transit Cooperative Research Program (TCRP) Report 165: Transit Capacity and Quality of Service Manual.* Transportation Research Board, 2013.

38. Cervero, R. B., and M. Duncan. *Land Value Impacts of Rail Transit Services in Los Angeles County.* National Association of Realtors Urban Land Institute, 2002.

39. Krizek, K. J., and E. W. Stonebraker. Bicycling and Transit: A Marriage Unrealized*. Transportation Research Record,* No. 2144, 2010, pp. 161–167.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 2-A:
El Paso County Transit Rider Survey
In English and Spanish

Prepared for:

Texas A&M Transportation Institute

June 2017

English Form ROUTE: _____ am / pm

El Paso County Transit Survey 2017

El Paso County Transit wants to understand how and why riders' use public transit. Participation is voluntary and your responses confidential. The survey takes about 7 minutes to complete. If you have any questions or need assistance taking the survey contact Sal Alonzo at (915) 546-2015.

The survey is available online.

English:

http://survey2017.epcenglish.sgizmo.com/s3/

Español:

http://survey2017.epcespanol.sgizmo.com/s3/

START HERE

1. How often do you ride El Paso County Transit?

- ○ 6 or 7 days per week
- ○ 4 or 5 days per week
- ○ 2 or 3 days per week
- ○ 1 day per week
- ○ 1 or 2 days per month
- ○ Less than once per month
- ○ *I no longer ride transit.*

Your History Riding Transit

2. How long have you been riding El Paso County Transit?

○ Less than a year ○ 1 to 5 years ○ More than 5 years

3. Why did you <u>start</u> riding El Paso County Transit?

Check all that apply.

- ☐ I wanted to be more physically active.
- ☐ I enjoyed the social interaction of riding transit.
- ☐ I decided to use transit for convenience.
- ☐ I no longer had access to a vehicle.
- ☐ I decided to use transit to save money.
- ☐ I decided to use transit to reduce my energy use or protect air quality.
- ☐ I did not want to drive in poor weather (rainy, snowy).
- ☐ I could no longer drive or had difficulties driving.
- ☐ I could not get a ride from others or did not want to.
- ☐ I have a disability that limits my ability to travel other ways.
- ☐ I wanted to avoid congestion.
- ☐ I wanted to make better use of my time while traveling.
- ☐ Other reason(s): _____

About Your Trip

Please answer the following questions about the trip you are on now, or your most recent trip on El Paso County Transit.

4. When was your most recent trip on El Paso County Transit?

- ○ Today
- ○ Another day this week
- ○ Last week
- ○ 2 to 4 weeks ago
- ○ More than 4 weeks ago
- ○ *Not sure*

5. What was the purpose for the trip?

Check all that apply.

- ☐ Work
- ☐ School, college, job training
- ☐ Medical appointments, health care, dental
- ☐ Family, personal business
- ☐ Social, recreational
- ☐ Shopping, errands
- ☐ Volunteering
- ☐ Other: _____

6. Did you make a transfer to complete your trip?

Check one per row.

Yes	No	
○	○	**Transfer between El Paso County Transit routes**
○	○	**Transfer to Sun Metro**

7. How far did you travel?

- ○ **Short distance** (stayed in your local community or area)
- ○ **Long distance** (destination outside your local community or area)

8. How much do you agree or disagree with the following statements? *Check one per row.*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The vehicle arrived on-time.	○	○	○	○	○
The driver was helpful and friendly.	○	○	○	○	○
I felt safe riding transit.	○	○	○	○	○
The vehicle was clean.	○	○	○	○	○
The vehicle was comfortable.	○	○	○	○	○
The fare I paid was reasonable for my trip.	○	○	○	○	○

9. If El Paso County Transit had not been available, which <u>one</u> travel option would you have used to make the trip?

Check only the one option you would have used.

- ○ Drove my vehicle
- ○ Asked friend/family for a ride
- ○ Used church or service organization
- ○ Walked
- ○ Biked
- ○ Used bike-share
- ○ Used taxi-cab
- ○ Used ride-sourcing (e.g., Uber, Lyft)
- ○ Used car-share (e.g., Car2Go, ZipCar)
- ○ Used another travel option: _____
- ○ *I have no other travel options.*

10. How important is El Paso County Transit service to your quality-of-life?

- ○ Absolutely essential
- ○ High importance
- ○ Average importance
- ○ Low importance
- ○ Not important

11. Which fare options do you prefer? *Check all that apply.*

○ Cash ○ Credit card ○ Monthly pass

12. Are the existing hours of operation meeting your needs?

○ Yes ○ No

13. If "No", what are your preferred hours of operation?

_____

14. Are there times that you want to use El Paso County Transit but cannot? Please describe:

_____

_____

_____

_____

CONTINUE ON BACK...

15. If El Paso County Transit operated on Sundays, where would you go?

16. What is your average wait time for El Paso County Transit?
Check one.
- ○ Less than 10 minutes
- ○ 10 to 20 minutes
- ○ More than 20 minutes

17. Are there other areas in the county that would benefit from El Paso County Transit Services? Please explain where and why:

18. On a scale of 1-10, with 1 being Completely Unsatisfied and 10 being Extremely Satisfied, how satisfied are you with the current El Paso County Transit System?

Completely Unsatisfied	1	2	3	4	5	6	7	8	9	10	Extremely Satisfied
	○	○	○	○	○	○	○	○	○	○	

19. Are you? ○ Female ○ Male ○ Not listed:

20. What is your age?
- ○ 17 or under
- ○ 18 to 24 years
- ○ 25 to 34 years
- ○ 35 to 44 years
- ○ 45 to 54 years
- ○ 55 to 64 years
- ○ 65 to 74 years
- ○ 75 to 84 years
- ○ 85 or more years

21. What is the highest degree or level of school you have completed?
- ○ Some grade school (K-12)
- ○ High school graduate (diploma or GED)
- ○ Some college
- ○ Associate's degree
- ○ Bachelor's degree
- ○ Master's, professional, or doctorate degree

22. Are you of Hispanic, Latino, or Spanish origin?
○ Yes ○ No

23. What is your race? *Check all that apply.*
- ☐ White, Caucasian (including Latino/Hispanic)
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ Asian
- ☐ Some Other Race:

24. What is your primary language at home?
○ English ○ Spanish ○ Other:

25. Including yourself, how many people live in your household?

1	2	3	4	5	6 or more
○	○	○	○	○	○

26. How many working vehicles (cars, trucks, and motorcycles) are available in your household?

0	1	2	3 or more
○	○	○	○

27. Do you have a driver's license? ○ Yes ○ No

28. Which of the following best describes your current employment status? *Check all that apply.*
- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Retired
- ☐ Not employed, looking for work
- ☐ Other:
- ☐ Student
- ☐ Homemaker
- ☐ Unable to work due to a disability

29. What is the combined annual income for all people living in your household?
- ○ Less than $15,000
- ○ $15,000 to $24,999
- ○ $25,000 to $34,999
- ○ $35,000 to $49,999
- ○ $50,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000 to $249,999
- ○ $250,000 or more

30. Have you served on active duty in the U.S. Armed Forces, Reserves, or National Guard?
○ No ○ Yes, previously ○ Yes, currently

31. Are you currently covered by either of the following programs? *Check one per row.*

Yes	No	
○	○	**Medicare** (age 65+ or Social Security Disability)
○	○	**Medicaid** (low income or people with disabilities)

32. Do you use a wheelchair or other mobility assistive device to travel outside your residence? ○ Yes ○ No

33. Do you have access to the internet on a mobile device, such as your phone? ○ Yes ○ No ○ *Not sure*

34. Do you have access to the internet at home? ○ Yes ○ No ○ *Not sure*

35. How long have you lived in Texas?
○ Less than 1 year ○ 1 to 5 years ○ More than 5 years

36. What ZIP code do you live in?
__ __ __ __ __

37. Please share any final comments in the space below:

FINISHED. THANK YOU!

RETURN YOUR SURVEY ONE OF TWO WAYS:
1. HAND IT TO A SURVEYOR ON THE BUS.
2. HAND IT TO YOUR BUS DRIVER.

Spanish Form ROUTE: _____ am / pm

El Paso County Transit Encuesta 2017

En El Paso County Transit daseamos comprender cómo y por qué los pasajeros utilizan transporte público. Su participación es voluntaria y sus respuestas son confidenciales. Si tiene preguntas o necesita ayuda para completar la encuesta, puede llamarnos Sal Alonzo al (915) 546-2015.

O tome la encuesta en línea.

Español:

http://survey2017.epcespanol.sgizmo.com/s3/

English:

http://survey2017.epcenglish.sgizmo.com/s3/

Empiece aquí

1. ¿Con qué frecuencia utiliza transporte público?

- ○ 6 o 7 días a la semana
- ○ 4 o 5 días a la semana
- ○ 2 o 3 días a la semana
- ○ 1 día a la semana
- ○ 1 o 2 días al mes
- ○ Menos de una vez al mes
- ○ *Ya no utilizo transporte público.*

Su historial como pasajero de transporte público

2. ¿Cuánto tiempo ha sido pasajero de transporte público?

○ Menos de un año ○ De 1 a 5 años ○ Más de 5 años

3. ¿Por qué comenzó a usar transporte público?

Marque todos los que correspondan.

- ☐ Quería estar más activo físicamente.
- ☐ Me gustaba el intercambio social que resultaba de usar transporte público.
- ☐ Decidí usar transporte público por comodidad.
- ☐ Ya no tenía acceso a un vehículo.
- ☐ Decidí usar transporte público para ahorrar dinero.
- ☐ Decidí usar transporte público para reducir mi consumo de energía y proteger la calidad del aire.
- ☐ No quería conducir en mal tiempo (lluvioso, con nieve).
- ☐ Ya no podía conducir o tenía dificultades para conducir.
- ☐ No pude, o no quise, ir como pasajero en otro vehículo.
- ☐ Tengo una discapacidad que me limita para viajar de otro modo.
- ☐ Quería evitar la congestión de tráfico.
- ☐ Quería usar mejor mi tiempo durante mis desplazamientos.
- ☐ Otros motivos:

Acerca de su viaje

Por favor conteste las siguientes preguntas sobre el viaje en el que usted se encuentra ahora, o su viaje más reciente en El Paso County Transit.

4. ¿Cuándo hizo su desplazamiento más reciente en El Paso County Transit?

- ○ Hoy
- ○ Otro día esta semana
- ○ La semana pasada
- ○ Hace 2 a 4 semanas
- ○ Hace más de 4 semanas
- ○ No estoy seguro

5. ¿Cuál fue el propósito de su viaje?

Marque todos los que correspondan.

- ☐ Trabajo
- ☐ Escuela, universidad, capacitación laboral
- ☐ Citas médicas, atención médica, servicios dentales
- ☐ Familia, cuestiones personales
- ☐ Social, recreativo
- ☐ Compras, mandados
- ☐ Voluntariado
- ☐ Otro:

6. ¿Hizo algún transbordo para completar su desplazamiento?

Marque uno por línea.

Sí	No	
○	○	**Traslado entre las rutas de El Paso County Transit**
○	○	**Transferencia a Sun Metro**

7. ¿Qué distancia viajó?

- ○ **Corta distancia** (dentro de su comunidad o área local)
- ○ **Larga distancia** (con destino fuera de su comunidad o área local)

8. ¿Qué tanto concuerda, o está en desacuerdo, con las siguientes declaraciones?

Marque uno por línea.

	Totalmente en desacuerdo	En desacuerdo	Sin opinión	De acuerdo	Totalmente de acuerdo
El vehículo llegó puntualmente.	○	○	○	○	○
El conductor fue servicial y amable.	○	○	○	○	○
Me siento seguro como pasajero.	○	○	○	○	○
El vehículo estaba limpio.	○	○	○	○	○
El vehículo era cómodo.	○	○	○	○	○
La tarifa que pagué fue razonable para mi trayecto.	○	○	○	○	○

9. Si no hubiera tenido a su disposición El Paso County Transit, ¿qué otras alternativas de transporte habría usado para su viaje?

Marque solamente la alternativa de transporte que habría usado.

- ○ Habría conducido mi vehículo
- ○ Habría pedido a un amigo/familiar que me llevara
- ○ Habría utilizado los servicios de una organización o iglesia
- ○ Habría caminado
- ○ Habría ido en bicicleta
- ○ Habría usado el servicio de bicicleta compartida
- ○ Habría ido en taxi
- ○ Habría usado una red de transporte privado (por ejemplo, Uber, Lyft)
- ○ Habría usado un servicio de vehículo compartido (por ejemplo, Car2Go, ZipCar)
- ○ Habría usado otro modo de transporte:
- ○ *No tengo otras alternativas de transporte.*

10. ¿Qué tan importante es El Paso County Transit para su calidad de vida?

- ○ Absolutamente esencial
- ○ Muy importante
- ○ Importante
- ○ Poco importante
- ○ No es importante

11. ¿Qué opciones de tarifa prefiere? *Marque todos los que correspondan.* ○ Efectivo ○ Tarjeta de crédito ○ Pase mensual

12. ¿El actual horario de servicio cubre sus necesidades?

○ Sí ○ No

13. Si "no", ¿Qué horario de servicio preferiría?

14. ¿Hay veces que usted desea usar El Paso County Transit pero no puede? Por favor describa:

CONTINUAR AL REVERSO... ↘

15. Si El Paso County Transit opera los domingos, ¿a dónde iría usted?

16. ¿Cuál es su tiempo promedio de espera para El Paso County Transit?
- ○ Menos de 10 minutos
- ○ 10 a 20 minutos
- ○ Más de 20 minutos

17. ¿Hay otras áreas en el condado que se beneficiarían de los servicios de El Paso County Transit? Explique dónde y por qué:

18. En una escala de 1-10, con 1 totalmente insatisfecho y 10 satisfecho, ¿qué tan satisfecho está usted con el El Paso County Transit actual?

Completamente insatisfecho	1	2	3	4	5	6	7	8	9	10	Extremadamente satisfecho
	○	○	○	○	○	○	○	○	○	○	

19. ¿Es usted…? ○ Mujer ○ Hombre ○ Otro:

20. ¿Qué edad tiene?
- ○ 17 o menos
- ○ Entre 18 y 24 años
- ○ Entre 25 y 34 años
- ○ Entre 35 y 44 años
- ○ Entre 45 y 54 años
- ○ Entre 55 y 64 años
- ○ Entre 65 y 74 años
- ○ Entre 75 y 84 años
- ○ 85 o más años

21. ¿Cuál es su nivel o grado de estudios más elevado?
- ○ Algún grado de preparatoria (K-12)
- ○ Graduado de preparatoria (diploma o GED)
- ○ Algún curso universitario
- ○ Título asociado
- ○ Licenciatura universitaria
- ○ Título de maestría, profesional o doctorado

22. ¿Es usted de origen hispano, latino o español?
○ Sí ○ No

23. ¿Cuál es su raza? *Marque todos los que correspondan.*
- ☐ Blanco, Caucásico (incluyendo Latinos / Hispanos)
- ☐ Negro o afroamericano
- ☐ Indio americano o autóctono de Alaska
- ☐ Autóctono de Hawaii o de otras Islas del Pacífico
- ☐ Asiático
- ☐ Otra raza:

24. ¿Cuál es su idioma principal en el hogar?
○ Inglés ○ Español ○ Otro:

25. ¿Cuántas personas viven en su hogar, incluido usted?

1	2	3	4	5	6 o más
○	○	○	○	○	○

26. ¿Cuántos vehículos en funcionamiento (autos, camionetas y motocicletas) hay disponibles en su hogar?

0	1	2	3 o más
○	○	○	○

27. ¿Tiene usted licencia de conducir? ○ Sí ○ No

28. ¿Cuál de los siguientes enunciados describe mejor su situación actual de empleo? *Marque todos los que correspondan.*
- ☐ Empleado a tiempo completo
- ☐ Empleado a tiempo parcial
- ☐ Retirado
- ☐ No puedo trabajar debido a una discapacidad
- ☐ Sin empleo, busco trabajo
- ☐ Otro:
- ☐ Estudiante
- ☐ Ama de casa

29. ¿Cuáles son los ingresos anuales combinados de todas las personas que viven en su hogar?
- ○ Menos de $15,000
- ○ De $15,000 a $24,999
- ○ De $25,000 a $34,999
- ○ De $35,000 a $49,999
- ○ De $50,000 a $74,999
- ○ De $75,000 a $99,999
- ○ De $100,000 a $249,999
- ○ $250,000 o más

30. ¿Ha servido en activo en el ejército, en las fuerzas armadas, en la reserva o en la guardia nacional de los Estados Unidos?
○ No ○ Si, anteriormente ○ Sí, actualmente

31. ¿Está cubierto actualmente por alguno de los siguientes programas? *Marque uno por línea.*

Sí	No	
○	○	**Medicare** (mayores de 65 años de edad o Seguridad social para discapacitados)
○	○	**Medicaid** (personas de bajos ingresos o con discapacidades)

32. ¿Utiliza silla de ruedas u otro dispositivo de movilidad asistida para desplazarse fuera de su hogar? ○ Sí ○ No

33. ¿Tiene usted acceso a internet en un dispositivo móvil, tal como su teléfono? ○ Sí ○ No ○ *No estoy seguro*

34. ¿Tiene usted acceso a internet desde su hogar? ○ Sí ○ No ○ *No estoy seguro*

35. ¿Cuánto tiempo lleva viviendo en Texas?
○ Menos de 1 año ○ De 1 a 5 años ○ Más de 5 años

36. ¿Cuál es el CÓDIGO POSTAL de su domicilio?
__ __ __ __ __

37. Le agradecemos sus comentarios finales en el espacio a continuación:

TERMINADO. ¡GRACIAS!

DEVUELVA SU ENCUESTA DE DOS MANERAS:
1. ENTRÉGUELA A UN ENCUESTADOR EN EL AUTOBÚS.
2. ENTREGUE AL CONDUCTOR DE SU AUTOBÚS.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 2-B:
El Paso County Transit Rider Survey Results

Prepared for:

Texas A&M Transportation Institute

June 2017

	QUESTIONS	SURVEY RESULTS		
		Percent of Surveys	Percent of Responses	Count
1	**How often do you ride El Paso County Transit?**			
	6 or 7 days per week	31.8%	32.4%	57
	4 or 5 days per week	24.6%	25.0%	44
	2 to 3 days per week	23.5%	23.9%	42
	1 day per week	7.3%	7.4%	13
	1 or 2 days per month	5.0%	5.1%	9
	Less than once per month	5.6%	5.7%	10
	No Answer	2.2%		4
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	176
2	**How long have you been riding El Paso County Transit?**			
	Less than a year	22.3%	24.8%	40
	1 to 5 years	39.7%	44.1%	71
	More than 5 years	27.9%	31.1%	50
	No Answer	10.1%		18
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	161
3	**What was the purpose of this trip? *Check all that apply***	*Multiple Responses*		
	Work	41.3%	27.4%	74
	Shopping, errands	30.2%	20.0%	54
	Family, personal business	26.8%	17.8%	48
	Medical appointments, health care, dental	22.3%	14.8%	40
	School, college, job training	12.8%	8.5%	23
	Social, recreational	7.3%	4.8%	13
	Other	6.7%	4.4%	12
	Volunteering	3.4%	2.2%	6
	TOTAL SURVEYS	N/A		179
	Total Responses		100.0%	270
4	**Will you make a transfer to complete your trip?**			
4a.	**Transfer between El Paso County Transit routes**			
	Yes	40.2%	55.8%	72
	No	31.8%	44.2%	57
	No Answer	27.9%		50
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	129
4b.	**Transfer to Sun Metro**			
	Yes	54.2%	74.6%	97
	No	18.4%	25.4%	33
	No Answer	27.4%		49
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	130

	QUESTIONS	SURVEY RESULTS		
		Percent of Surveys	Percent of Responses	Count
5	**How much do you agree or disagree with the following statements?**			
5a.	**The vehicle arrived on-time.**			
	Strongly Agree or Agree		82.8%	140
	Neutral		6.5%	11
	Strongly Disagree or Disagree		10.7%	18
5b.	**The driver was helpful and friendly.**			
	Strongly Agree or Agree		82.4%	140
	Neutral		7.6%	13
	Strongly Disagree or Disagree		10.0%	17
5c.	**I felt safe riding transit.**			
	Strongly Agree or Agree		88.2%	149
	Neutral		4.1%	7
	Strongly Disagree or Disagree		7.7%	13
5d.	**The vehicle was clean.**			
	Strongly Agree or Agree		86.4%	146
	Neutral		4.1%	7
	Strongly Disagree or Disagree		9.5%	16
5e.	**The vehicle was comfortable.**			
	Strongly Agree or Agree		82.7%	139
	Neutral		8.9%	15
	Strongly Disagree or Disagree		8.3%	14
5f.	**The fare I paid was reasonable for my trip.**			
	Strongly Agree or Agree		69.4%	118
	Neutral		10.0%	17
	Strongly Disagree or Disagree		20.6%	35
6	**If El Paso County Transit had not been available, which one travel option would you have used to make the trip?**			
	Ask friend/family for a ride	41.3%	43.5%	74
	I have no other travel options (Could not make the trip)	15.1%	15.9%	27
	Walk	10.1%	10.6%	18
	Drive my vehicle	9.5%	10.0%	17
	Bike	5.0%	5.3%	9
	Use another travel option	5.0%	5.3%	9
	Use ride-sourcing (e.g., Uber, Lyft)	3.9%	4.1%	7
	Use a taxi-cab	2.8%	2.9%	5
	Use church or service organization	1.1%	1.2%	2
	Use bike-share	0.6%	0.6%	1
	Use car-share (e.g., Car2Go, ZipCar)	0.6%	0.6%	1
	No Answer	2.8%		5
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	170

	QUESTIONS	SURVEY RESULTS Percent of Surveys	Percent of Responses	Count
7	**How important is El Paso County Transit service to your quality-of-life?**			
	Absolutely essential	40.8%	42.4%	73
	High importance	39.7%	41.3%	71
	Average importance	14.0%	14.5%	25
	Low importance	1.1%	1.2%	2
	Not important	0.6%	0.6%	1
	No Answer	3.9%		7
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	172
8		*Multiple*		
	Which fare options do you prefer? *Check all that apply*	*Responses*		
	Cash	84.9%	72.7%	152
	Monthly pass	21.2%	18.2%	38
	Credit card	10.6%	9.1%	19
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	209
9	**On a scale of 1-10, with 1 being Completely Unsatisfied and 10 being Extremely Satisfied, how satisfied are you with the current El Paso County Transit system?**			
	10 - extremely satisfied	30.2%	36.5%	54
	9	12.8%	15.5%	23
	8	15.6%	18.9%	28
	7	11.7%	14.2%	21
	6	2.2%	2.7%	4
	5	3.9%	4.7%	7
	4	2.2%	2.7%	4
	3	1.7%	2.0%	3
	2	1.1%	1.4%	2
	1 - completely unsatisfied	1.1%	1.4%	2
	No Answer	17.3%		31
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	148
	Weighted Score on scale of 1-10			8.16
10	**Are you?**			
	Female	38.0%	48.6%	68
	Male	40.2%	51.4%	72
	No Answer	21.8%		39
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.7%	140

	QUESTIONS	SURVEY RESULTS Percent of Surveys	Percent of Responses	Count
11	**What is your age?**			
	17 or under	5.0%	6.6%	9
	18 to 24 years	11.7%	15.4%	21
	25 to 34 years	8.9%	11.8%	16
	35 to 44 years	12.3%	16.2%	22
	45 to 54 years	7.8%	10.3%	14
	55 to 64 years	17.3%	22.8%	31
	65 to 74 years	10.1%	13.2%	18
	75 to 84 years	1.7%	2.2%	3
	85 or more years	1.1%	1.5%	2
	No Answer	24.0%		43
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	136
	Median Age			45
12	**What is your race? *Check all that apply***	*Responses*		
	White, Caucasian	72.1%	88.4%	129
	Black or African American	1.1%	1.4%	2
	American Indian or Alaska Native	2.2%	2.7%	4
	Native Hawaiian or Other Pacific Islander	0.0%	0.0%	0
	Asian	1.1%	1.4%	2
	Some Other Race	5.0%	6.2%	9
	No Answer	18.4%		33
	TOTAL SURVEYS	N/A		179
	Total Responses		100.0%	146
13	**Are you of Hispanic, Latino, or Spanish origin?**			
	Yes	70.9%	94.1%	127
	No	4.5%	5.9%	8
	No Answer	24.6%		44
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	135
14	**What is your primary language at home?**			
	English	16.2%	20.3%	29
	Spanish	59.8%	74.8%	107
	Other	3.9%	4.9%	7
	No Answer	20.1%		36
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	143

	QUESTIONS	SURVEY RESULTS		
		Percent of Surveys	Percent of Responses	Count
15	**How many working vehicles (cars, trucks, and motorcycles) are available in your household?**			
	0	21.2%	28.8%	38
	1	34.1%	46.2%	61
	2	12.3%	16.7%	22
	3 or more	6.1%	8.3%	11
	No Answer	26.3%		47
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	132
16	**Do you have a driver's license?**			
	Yes	25.1%	37.5%	45
	No	41.9%	62.5%	75
	No Answer	33.0%		59
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	120
17	**Which of the following best describes your current employment status? *Check all that apply***	*Multiple Responses*		
	Employed full-time	21.2%	24.5%	38
	Employed part-time	16.8%	19.4%	30
	Student	10.6%	12.3%	19
	Homemaker	13.4%	15.5%	24
	Retired	10.1%	11.6%	18
	Unable to work due to a disability	5.6%	6.5%	10
	Not employed, looking for work	6.7%	7.7%	12
	Other	2.2%	2.6%	4
	No Answer	13.4%		24
	TOTAL SURVEYS	N/A		179
	Total Responses		100.0%	155
18	**What is the combined annual income for all people living in your household?**			
	Less than $15,000	29.1%	48.1%	52
	$15,000 to $24,999	18.4%	30.6%	33
	$25,000 to $34,999	7.3%	12.0%	13
	$35,000 to $49,999	2.2%	3.7%	4
	$50,000 to $74,999	1.1%	1.9%	2
	$75,000 to $99,999	0.6%	0.9%	1
	$100,000 to $249,999	1.7%	2.8%	3
	No Answer	39.7%		71
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	108
	Median household income			$25,000

	QUESTIONS	SURVEY RESULTS		
		Percent of Surveys	Percent of Responses	Count
19	**Do you use a wheelchair or other mobility assistive device to travel outside your residence?**			
	Yes	5.0%	5.6%	9
	No	84.9%	94.4%	152
	No Answer	10.1%		18
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	161
20	**Do you have access to the internet on a mobile device, such as your phone?**			
	Yes	59.8%	65.6%	107
	No	29.1%	31.9%	52
	Not sure	2.2%	2.5%	4
	No Answer	8.9%		16
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	163
21	**Do you have access to the internet at home?**			
	Yes	39.1%	43.2%	70
	No	49.2%	54.3%	88
	Not sure	2.2%	2.5%	4
	No Answer	9.5%		17
	TOTAL SURVEYS	100.0%		179
	Total Responses		100.0%	162

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 3-A:
Transit Need Index (TNI)

Prepared for:

Texas A&M Transportation Institute

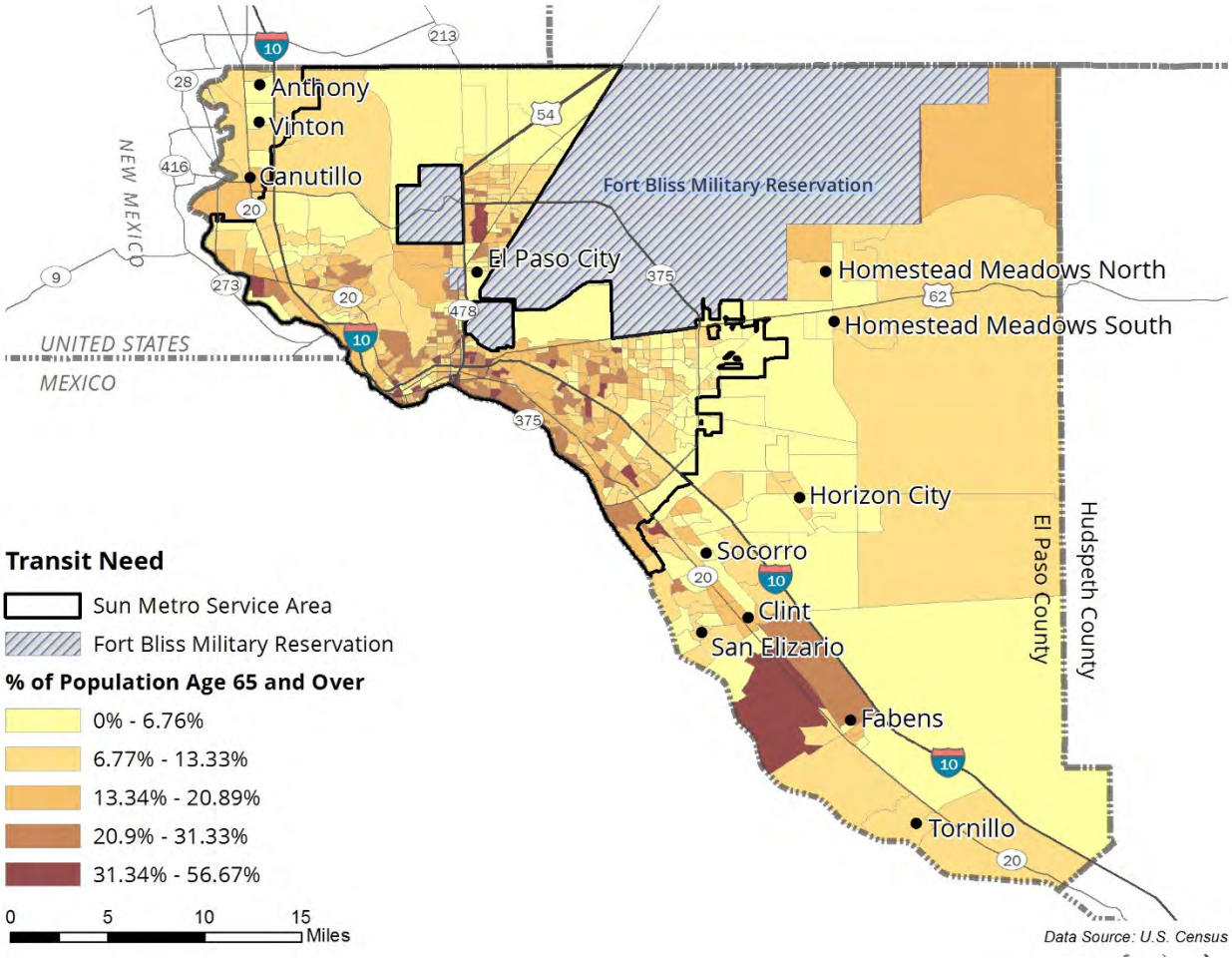
October 28, 2018

TNI Calculation Method

The data sources for the TNI are the 2015 Census Bureau American Community Survey 5-Year Estimates and the Business Analyst 2015 database. The mathematical process of calculating the TNI creates 10 equal groups of census block groups, from 1, indicating lowest relative transit need, to 10, indicating block groups with the greatest relative transit need. The TNI identifies El Paso County block groups with more transit need by comparing each block group to all other block groups in terms of four demographic measures.

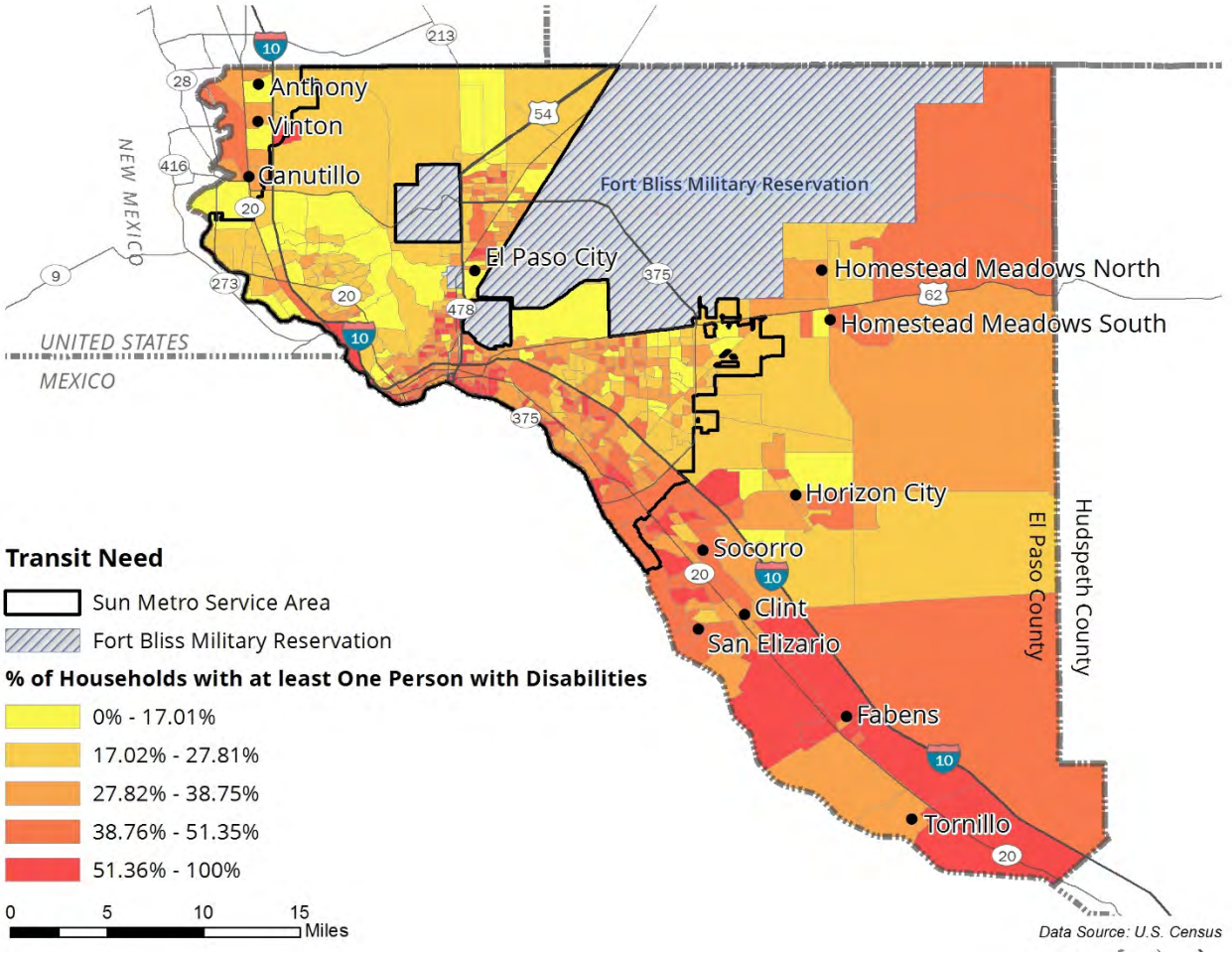
Measure 1: Population Age 65 and Older

Elderly Population is the percent of the population age 65 and older in a census block group. The elderly population is in different areas of El Paso County with a notable concentration in areas near Fabens and Clint.



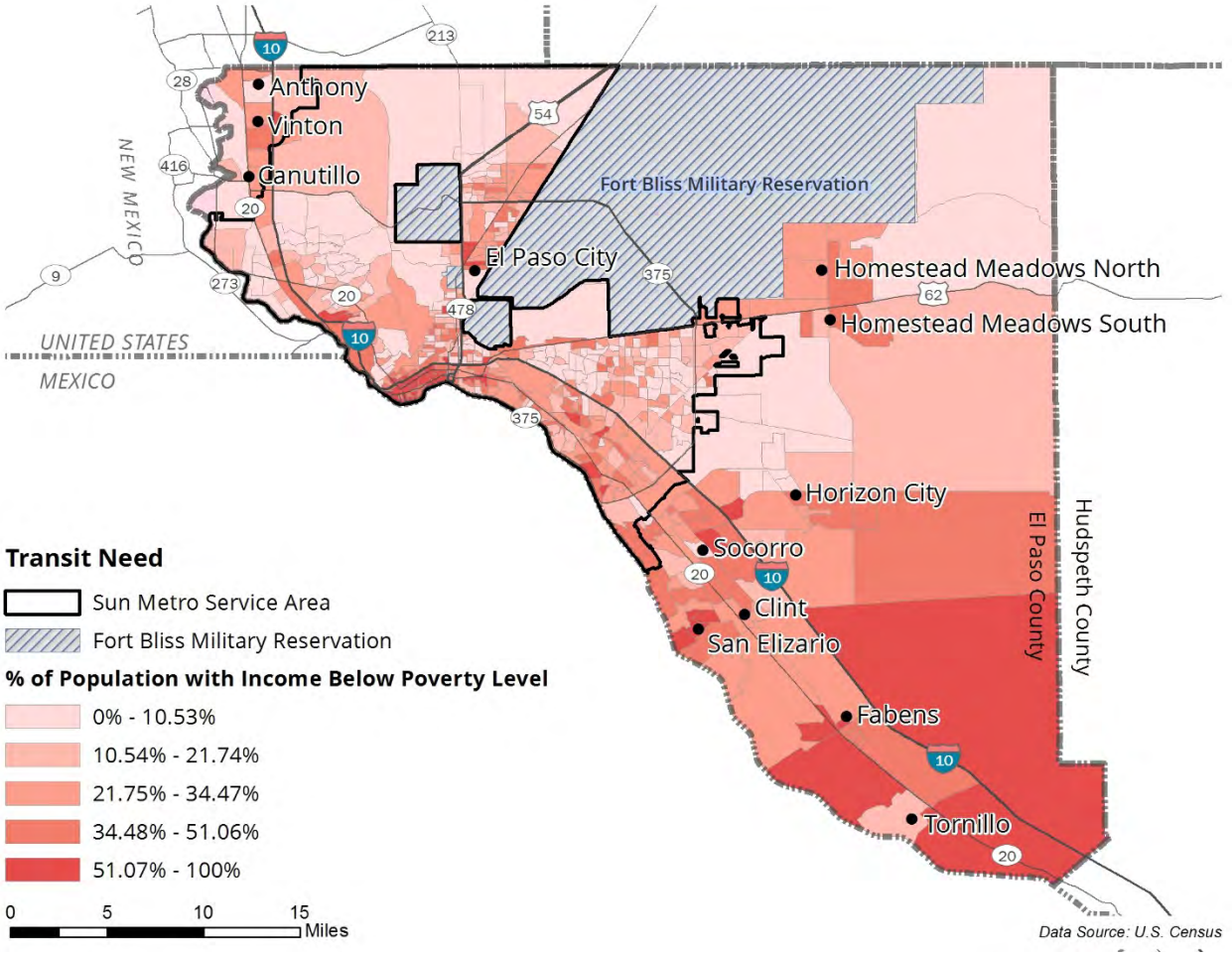
Measure 2: Households with an Individual with a Disability

Households with an Individual with a Disability is the percent of housing units in a census block group in which at least one household member is a person with a disability. The greatest concentration of households with at least one person with a disability in El Paso County is in Tornillo, Fabens, Clint, Socorro, Horizon, and east Vinton.



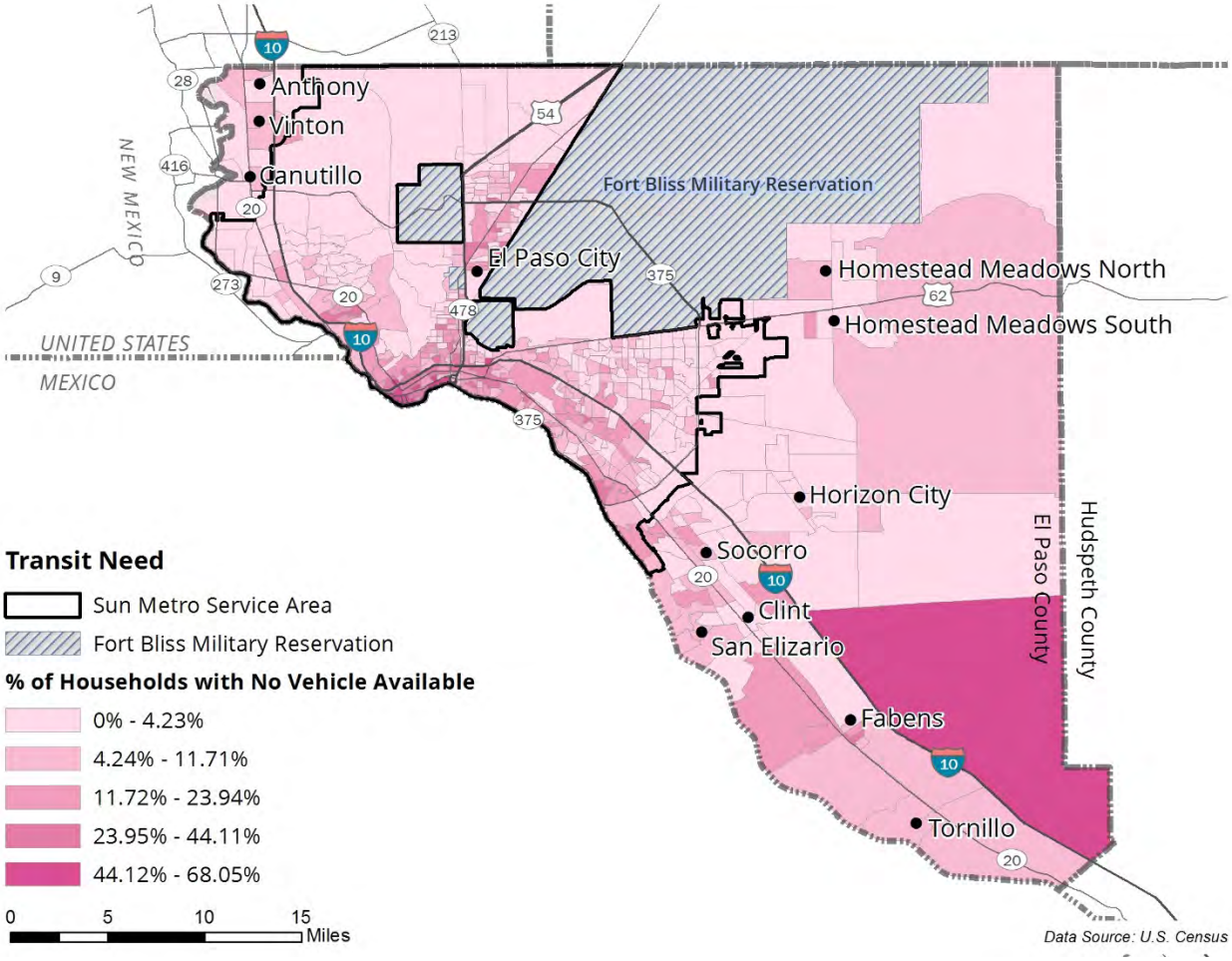
Measure 3: Population below Poverty Level

People Living below the Poverty Level is the percent of the population in a census block group with income below the poverty level. Outside the city limits of El Paso, concentrations of the population living below the poverty level are in southeast El Paso County including areas in Homestead Meadows North, Homestead Meadows South, Horizon City, Socorro, Clint, Fabens, and Tornillo.



Measure 4: Households with No Vehicle Available

Households with No Vehicle Available is the percent of households in a census block group with zero vehicles available in the household. Concentrations of households with zero vehicles are in Clint, Fabens, Tornillo and remote areas of southeast El Paso County.



El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 3-B:
Transit Supply Index (TSI)

Prepared for:

Texas A&M Transportation Institute

October 29, 2018

TSI Calculation Method

The data sources for the TSI are the housing unit data from the 2015 U.S. Census Bureau American Community Survey 5-Year Estimates; El Paso County Transit schedules; and Sun Metro's General Transit Feed Specification (GTFS) data (version May 20, 2016).

The mathematical process of calculating the TSI creates 10 equal groups of census block groups, from 1, indicating lowest relative transit supply, to 10, indicating block groups with the greatest relative transit supply. The TNI identifies El Paso County block groups with more transit supply by comparing each block group to all other block groups in terms of three transit supply measures.

Table 1 summarizes how TTI calculates the transit supply measures required for the TSI.

Table 1. Transit Supply Index Measures.

Transit Supply for Fixed-Route	Measure at Census Block Level
Service coverage	% of transit-supportive census blocks* served
Service Frequency	Average bus trips per stop per day
Hours of service	Operating hours at system level • Level 1: more than 18 hours per day • Level 2: 15–18 hours per day • Level 3: 12–14 hours per day • Level 4: 7–11 hours per day • Level 5: 4–6 hours per day • Level 6: less than 4 hours per day

Source: Transit Capacity and Quality of Service Manual, Third Edition, Chapter 5: Quality of Service Methods.[1]
Note: * Transit-supportive census blocks are blocks with a housing unit density greater than 3 units per gross acre.

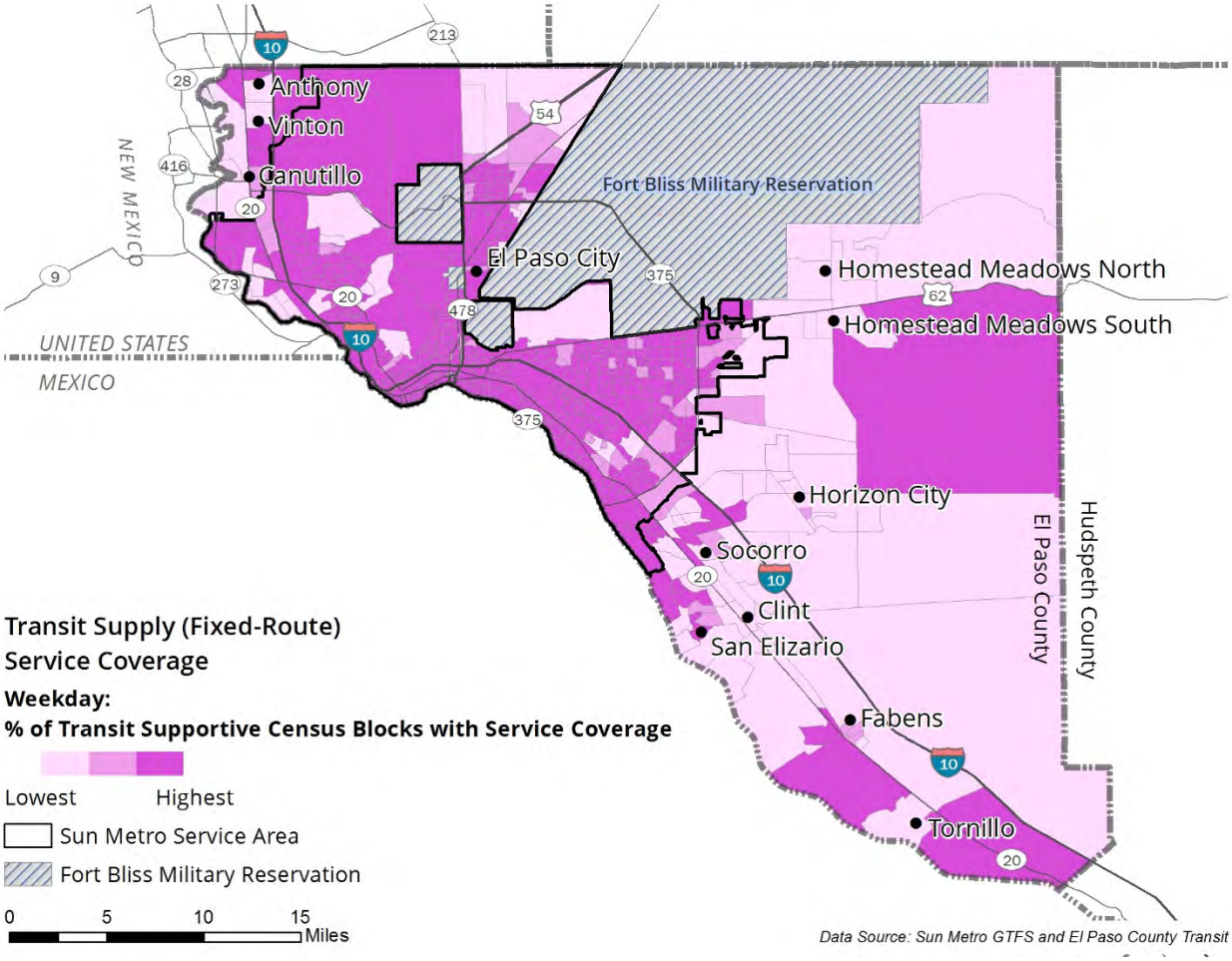
TTI normalized quantitative measures and assigned numbers between 1 and 10 based on the percentile to represent the original value. TTI standardized the format of qualitative measures using a 10-point scale. For example, a fixed-route service operating 12–14 hours per day at Level 3 is rated as a 7 on the 10-point scale. TTI then calculated an index by averaging the values of normalized three measures and finally built an overall TSI for each census block group in El Paso County.

[1] Kittelson & Associates,Parsons Brinckerhoff, KFH Group Inc., Texas A&M Transportation Institute and Arup. *Transit Capacity and Quality of Service Manual. TCRP Report 165, 3rd edition, Chapter 5.* Washington D.C.: Transit Cooperative Research Program. Transportation Research Board, 2013. pp. 5-17, 5-19.

Measure 1: Service Coverage

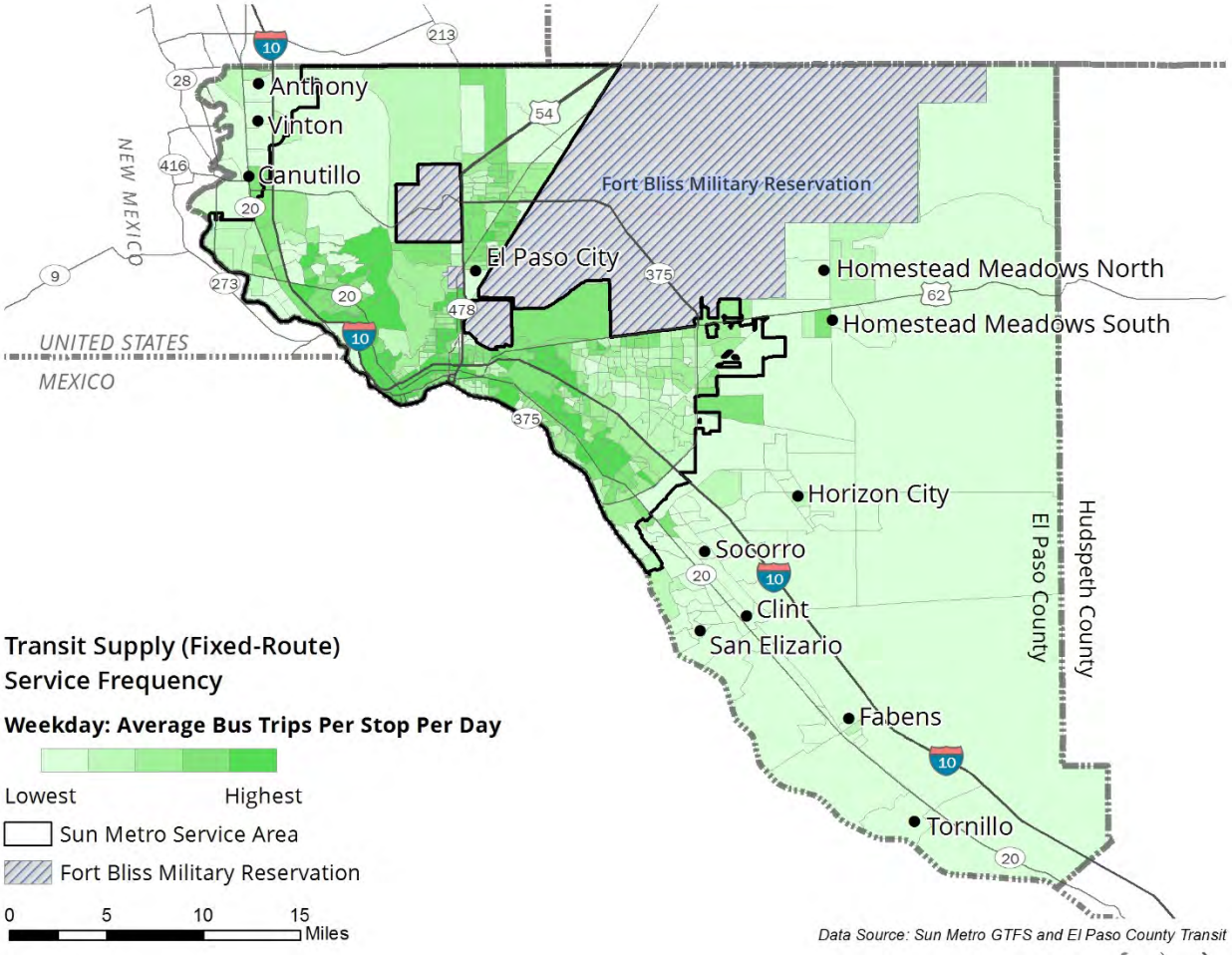
Service Coverage measures a census block with a housing unit density greater than three units per acre (transit supportive) that is served by transit. Served by transit means the transit supportive census block is within ½-mile of a transit route. The higher percentage of transit-supportive census blocks served in a census block group, the better the service coverage in the census block group.

The census block groups with the highest level of service coverage are located within the city limits of El Paso. In contrast, the lowest levels of service coverage are in the remote areas of Fabens, Horizon City, and Socorro.



Measure 2: Service Frequency

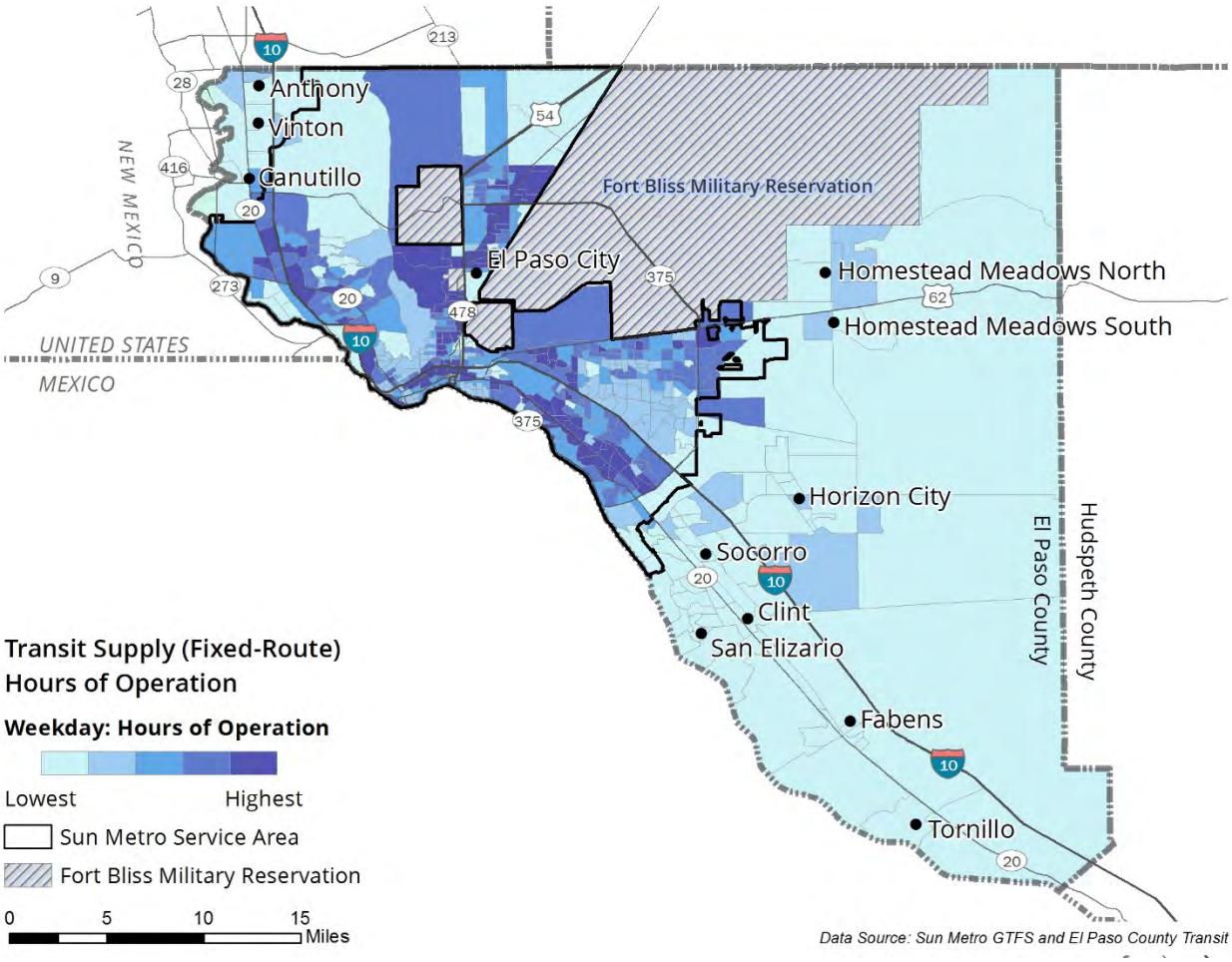
Transit service frequency is relatively high within the City of El Paso. The communities including Anthony, Clint, Fabens, Horizon City, Vinton, San Elizario, Socorro, and Tornillo, are the locations where current transit service reflects the lowest service frequency.



Measure 3: Hours of Service

Hours of Service are calculated using the starting time of the earliest service and ending time of the latest service at each stop within each census block group. Following the recommendations of the *Transit Capacity and Quality of Service Manual*, *3rd Edition*, TTI classified the hours of service into six levels, from Level 1 indicating the longest hours of service and Level 6 representing the lowest (see Table 1).

Central El Paso has the highest values for hours of service. In contrast, communities outside the city limits of El Paso have the lowest values for hours of service.



El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 3-C:
Fixed-Route Transit-Supportive Areas

Prepared for:

Texas A&M Transportation Institute

October 29, 2017

In a first attempt to measure connectivity and accessibility of the fixed-route transit system in the entire county, TTI decided to use the Transit Supportive Area concept (TSA). The estimation of TSA involves key parameters that are directly correlated to the likelihood of using transit: household density (derived from population density), job density, service coverage, and accessibility to transit. *The Transit Capacity and Quality of Service Manual (TCQSM), 3rd Edition* offers a helpful methodology to simplify the analysis of TSAs for fixed-route transit services using GIS software.

The development of this methodology was derived from Chapter 5 Fixed-Route Quality of Service Methods (*Access* Section) included in the TCQSM. Chapter 5 of the TCQSM presents methods and measures for assessing the quality of service of both fixed-route transit and demand responsive-transit provided for the general public. The TCQSM provides service measures and other performance measures for evaluating transit quality of service.

A TSA is derived from among the Traffic Analysis Zones (TAZs). According to the TCQSM, a TSA has a household density of at least 4.5 units per net acre (11 units per net hectare). This is equivalent to a density of at least three units per gross acre (7.5 units per gross hectare). These minimum household density values suggests the feasibility of hourly daytime transit service. An area with employment or job density of at least four jobs per gross acre (10 jobs per gross hectare) produces the same level of ridership as the household density. These minimum job and household density values define transit-supportive areas which are areas that are capable of supporting hourly fixed-route transit service. Other parameters used in this approach to determine transit gaps were the transit coverage area which is measured in route-miles per square mile and the percentage of the TAZ served.

The service coverage (SC) is a measure of the area within walking distance of transit service (pedestrian/bicyclist accessibility to a transit stop). This area is defined by the TCQSM as the "air distance within 0.25 mile (400 m) of a bus stop or 0.5 mile (800 m) of a busway or rail station." The data TTI staff used for calculating SC (accessibility to transit stops) were the GIS layers containing the bus stops and the TAZs.

Following the criteria included in the TCQSM, TTI staff identified the TSAs derived from the most recent official TAZs provided by the El Paso Metropolitan Planning Organization (EP-MPO) for the entire fixed-route transit system in El Paso County.

Figure 1 and Figure 2 show the results of the 2014 (base year) and 2017 (current year). Forecasted year 2020 is shown in Figure 3. TSA analysis is from official data from the EP-MPO TAZs layer. The results of the TSAs approach can be used by local and regional transit agencies to provide transit connectivity between two higher-density TSAs. Current TSAs conditions (Figure 2) suggest that the communities of Anthony (northwest) and Horizon City (east) are the EPC rural areas that can generate enough ridership for a transit route to be feasible. By 2020 (Figure 3), the rural section in Socorro (southeast) is projected to be part of the TSAs in EPC.

TTI staff noticed that a significant limitation of the TSA approach is the lack of application at the micro-level analysis (i.e. geographical areas smaller than TAZs). Since TSAs are based on TAZs, the approach is more suitable for macro level planning purposes rather than a detail identification of transit service gaps. Moreover, the approach for determining TSAs based on zonal demographic and economic data (TAZs) may not lead to the most accurate estimation of transit needs for an area where there is a significant influx of transit passengers from external sources such as across the international border.

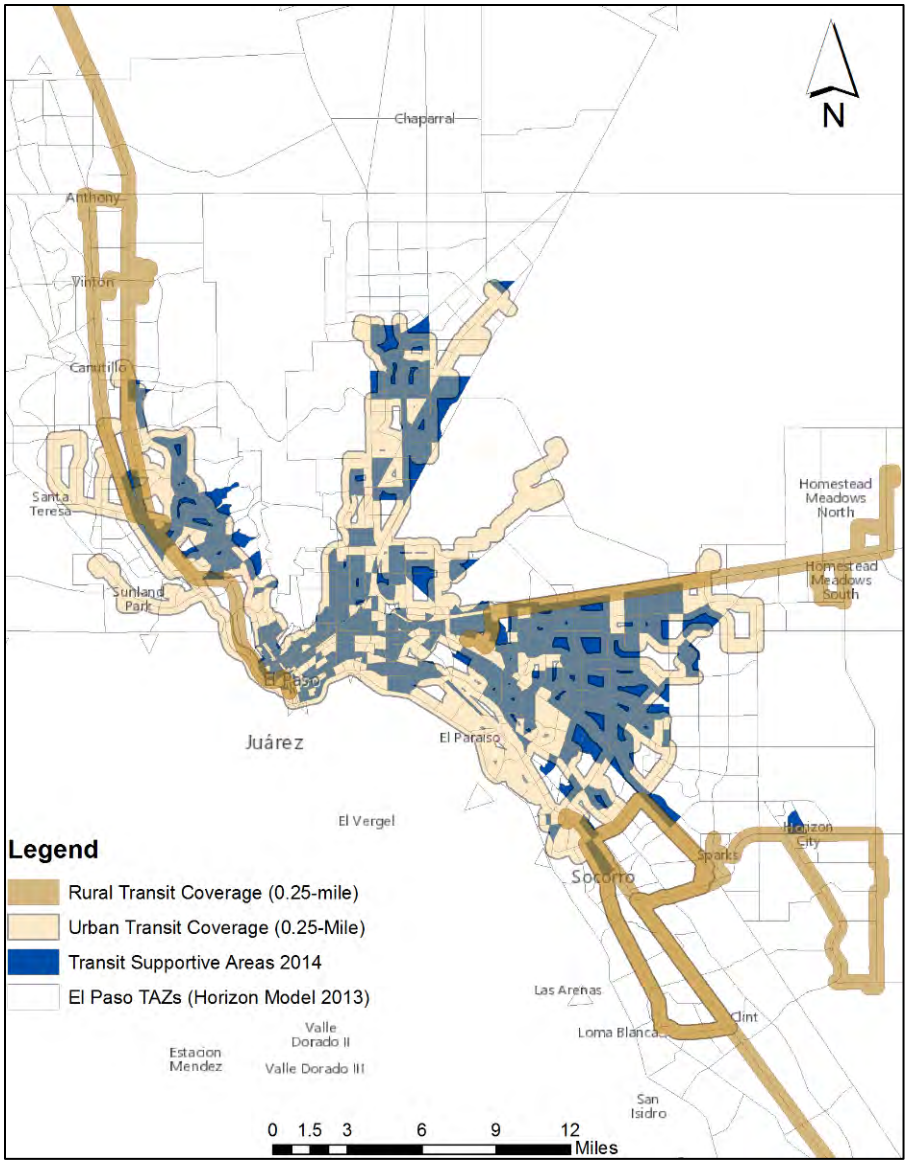


Figure 1. El Paso County TSAs 2014.

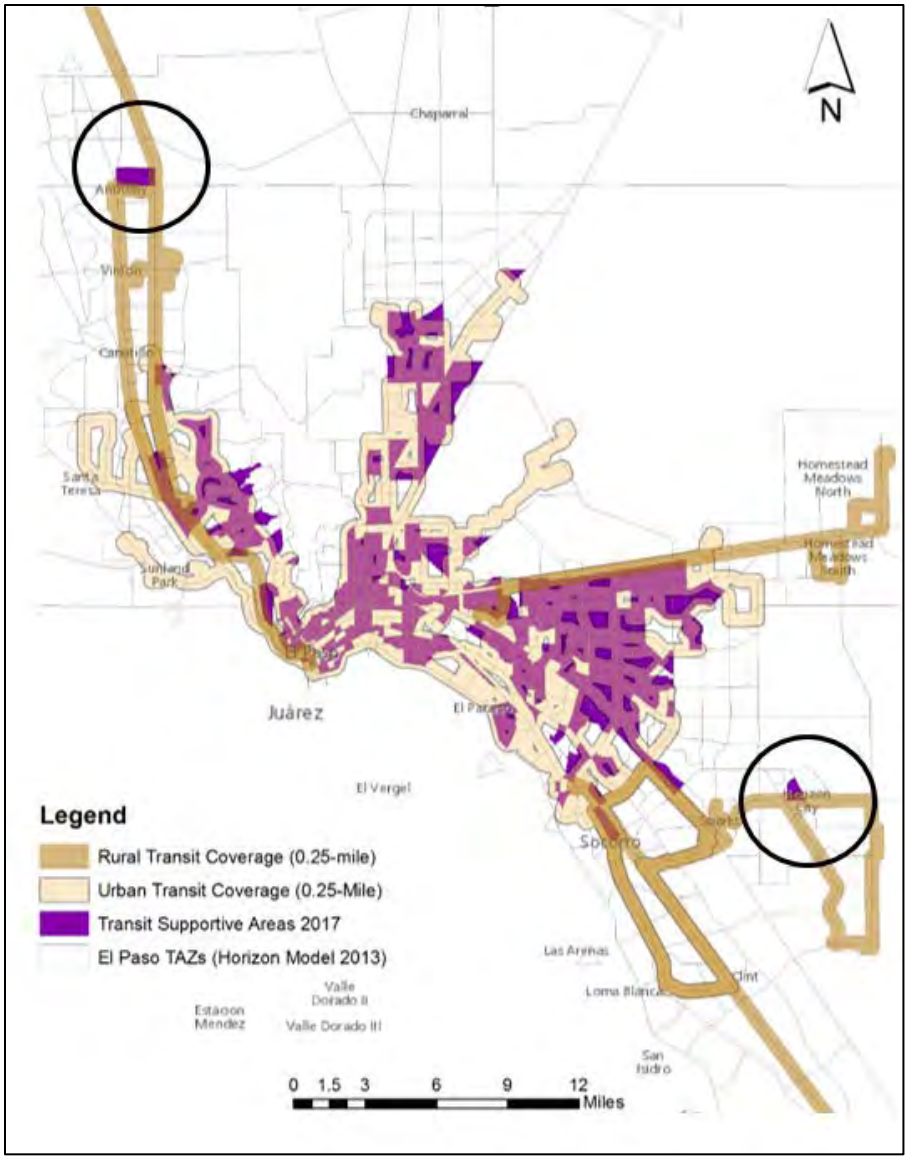


Figure 2. El Paso County TSAs 2017.

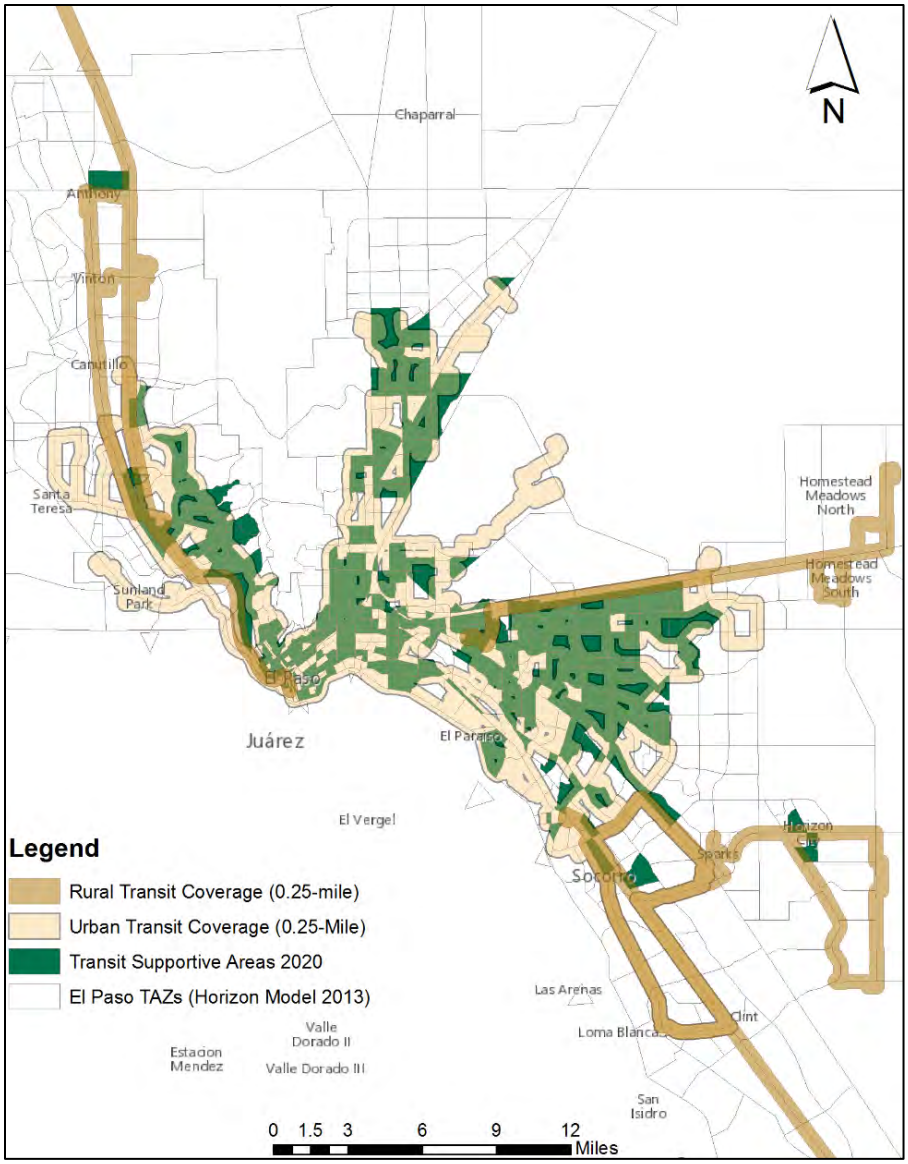


Figure 3. El Paso County TSAs 2020.

El Paso County Regional Transit Institutional Options Feasibility Study

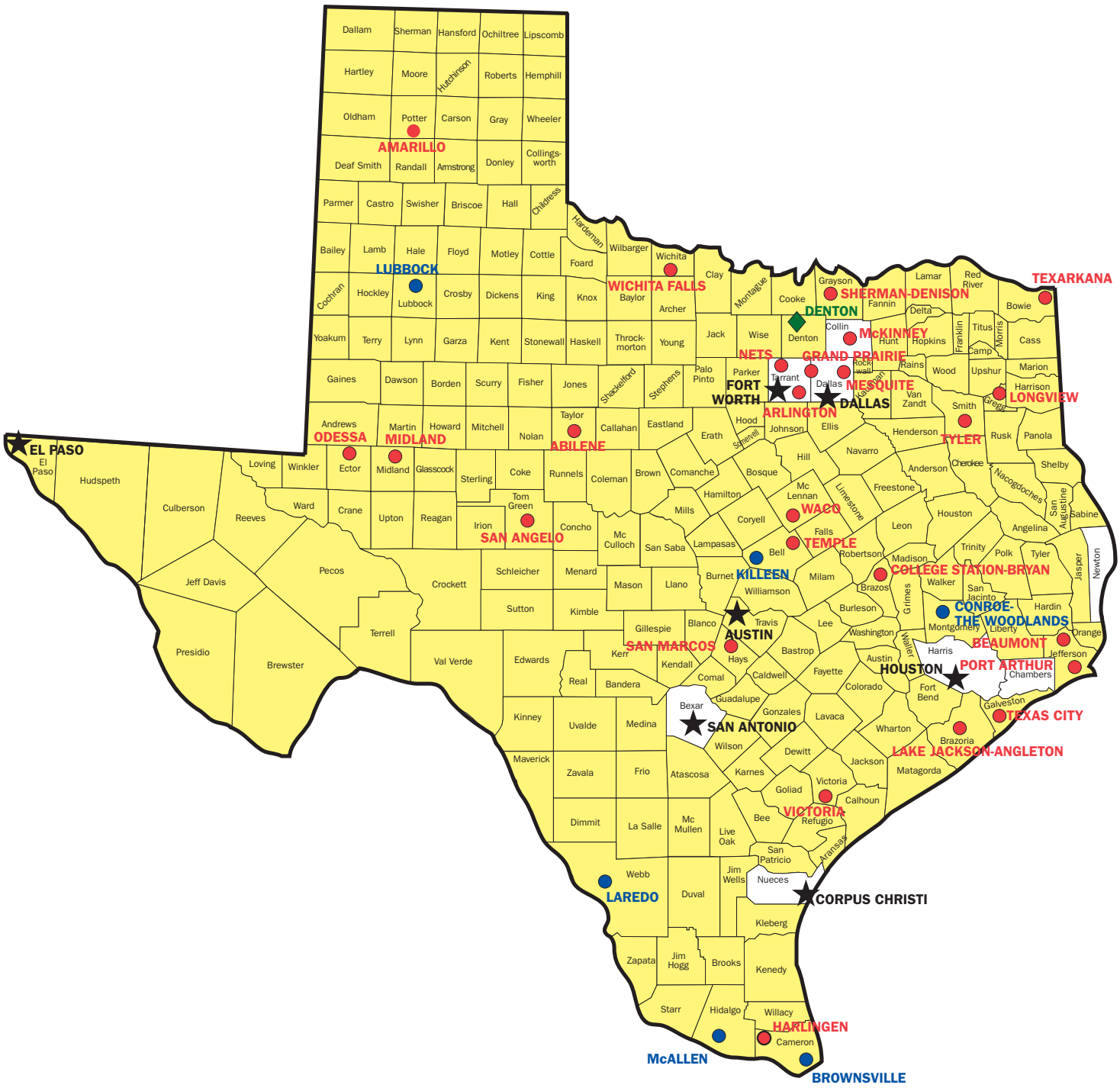
APPENDIX 4-A:

Transit Authorities, Urban Transit Districts, and Rural Transit Districts in Texas

Prepared for:

Texas A&M Transportation Institute

July 2018



★ Cities by metropolitan transportation authorities

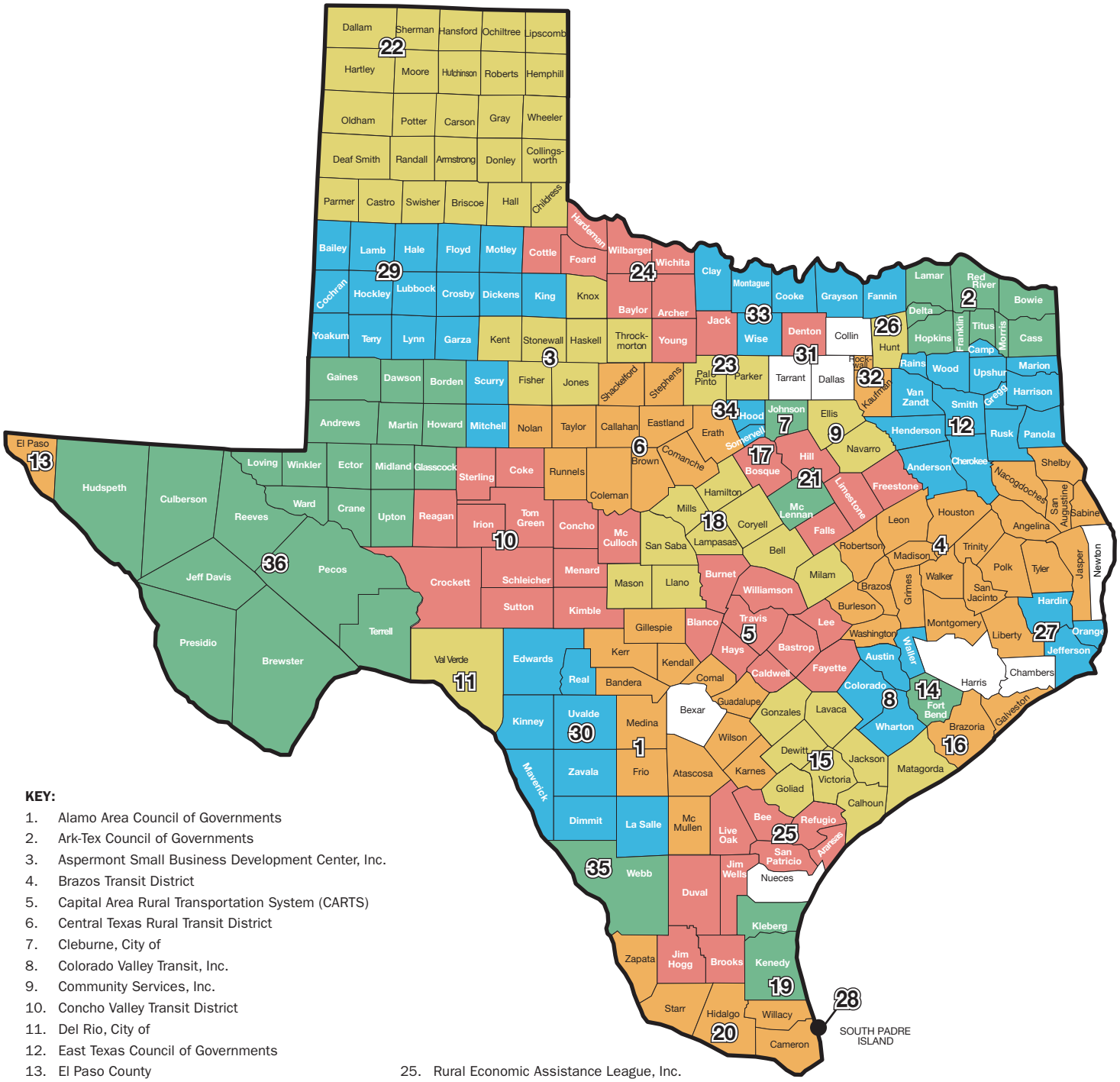
◆ Cities/Counties served by coordinated county transportation authority

● Cities served by large urban area transit districts

● Cities served by small urban area transit districts

□ Counties served by rural transit districts

October 2017



KEY:

1. Alamo Area Council of Governments
2. Ark-Tex Council of Governments
3. Aspermont Small Business Development Center, Inc.
4. Brazos Transit District
5. Capital Area Rural Transportation System (CARTS)
6. Central Texas Rural Transit District
7. Cleburne, City of
8. Colorado Valley Transit, Inc.
9. Community Services, Inc.
10. Concho Valley Transit District
11. Del Rio, City of
12. East Texas Council of Governments
13. El Paso County
14. Fort Bend County
15. Golden Crescent Regional Planning Commission
16. Gulf Coast Center
17. Heart of Texas Council of Governments
18. Hill Country Transit District
19. Kleberg County Human Services
20. Lower Rio Grande Valley Development Council
21. McLennan County Rural Transit District
22. Panhandle Community Services
23. Public Transit Services
24. Rolling Plains Management Corporation
25. Rural Economic Assistance League, Inc.
26. Senior Center Resources & Public Transit, Inc.
27. South East Texas Regional Planning Commission
28. South Padre Island, City of
29. South Plains Community Action Association, Inc.
30. Southwest Area Regional Transit District
31. SPAN, Inc.
32. STAR Transit
33. Texoma Area Paratransit System, Inc.
34. The Transit System, Inc.
35. Webb County Community Action Agency
36. West Texas Opportunities, Inc.

July 1, 2018

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 4-B:
Federal, State, and Local Funding Sources for Transit

Prepared for:

Texas A&M Transportation Institute

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Introduction

This report provides information on the sources of revenue to fund transit in urban and rural areas in Texas—through federal, state, and local sources. All public transit systems are eligible for federal funds from the Federal Transit Administration (FTA). The state agency responsible for allocating state transit funds is the Texas Department of Transportation (TxDOT).

The report is organized by the following topics:

- A discussion of each of the FTA federal funding programs to support transit in urban and rural areas.
- An explanation of the formula used to allocate state transit funds appropriated by the Texas Legislature each biennium to urban and rural transit districts.
- A description of sources of local revenues.

The report provides a summary of the revenues applied for operating and capital expenses in fiscal year (FY) 2016.

Federal Funds for Transit

Federal funds for transportation come primarily through the U.S. Department of Transportation (USDOT) and are administered by agencies according to mode of transportation. The agency responsible for transit funding is FTA. The Federal Highway Administration (FHWA) also administers flexible funding programs that can benefit transit. Authorization bills passed by Congress authorize federal funding for surface transportation investments. Other non-USDOT federal departments make funds available that are eligible to be used for transportation, including public transportation.

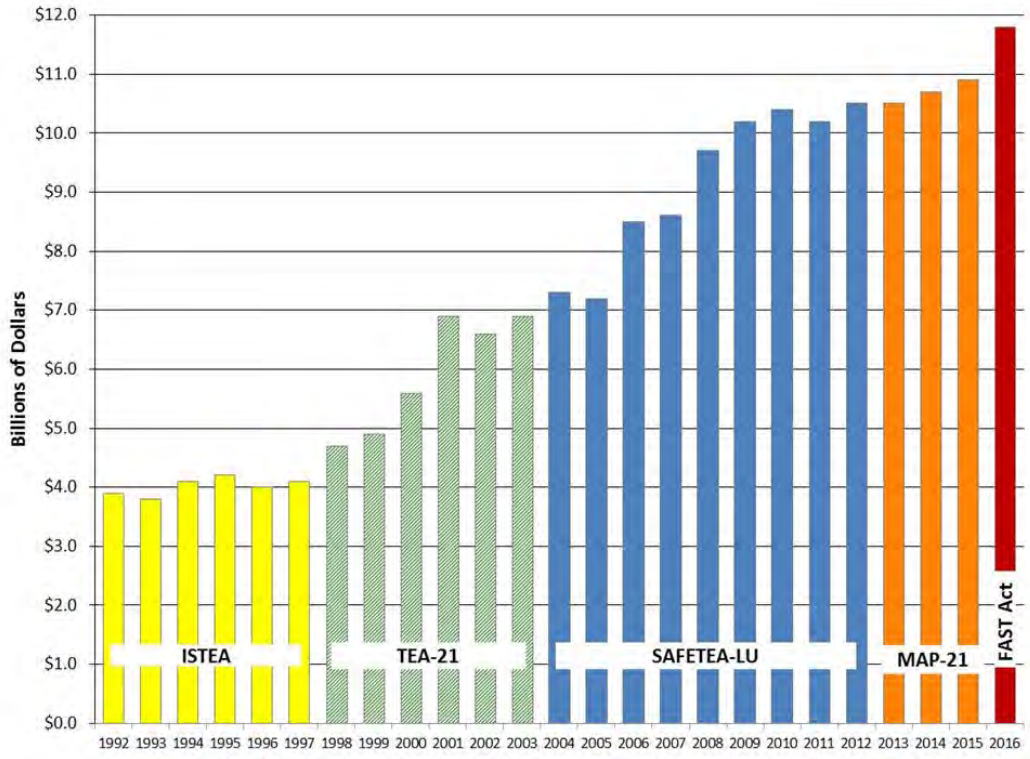
History of Federal Authorization for Surface Transportation

The umbrella legislation known as the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 established many of the current major USDOT funding programs. ISTEA authorized funding levels and programs for transit and highway projects and institutionalized the ability to shift funds from one program to another depending on local priorities. ISTEA expired at the end of FY 1997 and was replaced by new legislation. The Transportation Equity Act of the 21st Century (TEA-21) maintained the previously established programs while generally raising the overall funding levels. TEA-21 was in effect for six years, with specific spending levels established each year as part of the federal budgeting process (*1*).

The Safe, Accountable, Flexible, and Efficiency Transportation Equity Act—A Legacy for Users (SAFETEA-LU) was signed into law in 2005 to fund federal surface transportation programs through FY 2009. The legislation authorized $286.4 billion in surface transportation funding over six years (2004 through 2009), including $52.6 billion (18 percent) for federal transit programs. The funding authorization for transit under SAFETEA-LU represented a 46 percent increase over transit funding guaranteed in the previous TEA-21 authorization bill and more than double the funding provided in ISTEA. The original SAFETEA-LU legislation was a six-year bill, but Congress extended the authorization bill three additional years through 2012 (*1*).

The federal authorization bill Moving Ahead for Progress in the 21st Century (MAP-21) reauthorized surface transportation programs through FY 2014. MAP-21 took effect on October 1, 2012. When another transportation authorization had not been passed in time for FY 2015, Congress extended MAP-21 for an additional (third) year (*1*).

The current federal authorization bill was signed in December 2015. The Fixing America's Surface Transportation Act (FAST Act) reauthorizes surface transportation programs for five years through FY 2020. The FAST Act furthers USDOT goals for safety, state of good repair, performance, innovation, and program efficiency. The FAST Act expands FTA's authority to strengthen the safety of public transportation systems and emphasizes restoring and replacing the nation's aging public transportation infrastructure (*2*). Figure 1 displays the annual total apportionment for FTA federal funding by authorization bill (*1*).



Source: (*1*)

Figure 1. Annual FTA Apportionments by Federal Authorization Bill.

Federal Transit Funds under the FAST Act

Federal authorization bills identify specific dollar amounts for each major funding program. Each year Congress provides an annual appropriation that funds the programs. Upon receiving the annual appropriation, FTA apportions these funds according to formula programs and competitive discretionary programs (*3*).

Table 1 shows the last year of MAP-21 (FY 2015), each of the five years of FAST Act funding, and the sum of FAST Act funds for FY 2016 through FY 2020 by transit funding program (*4*).

Table 1. FAST Act Transit Authorization Levels by Program in Millions of Dollars.

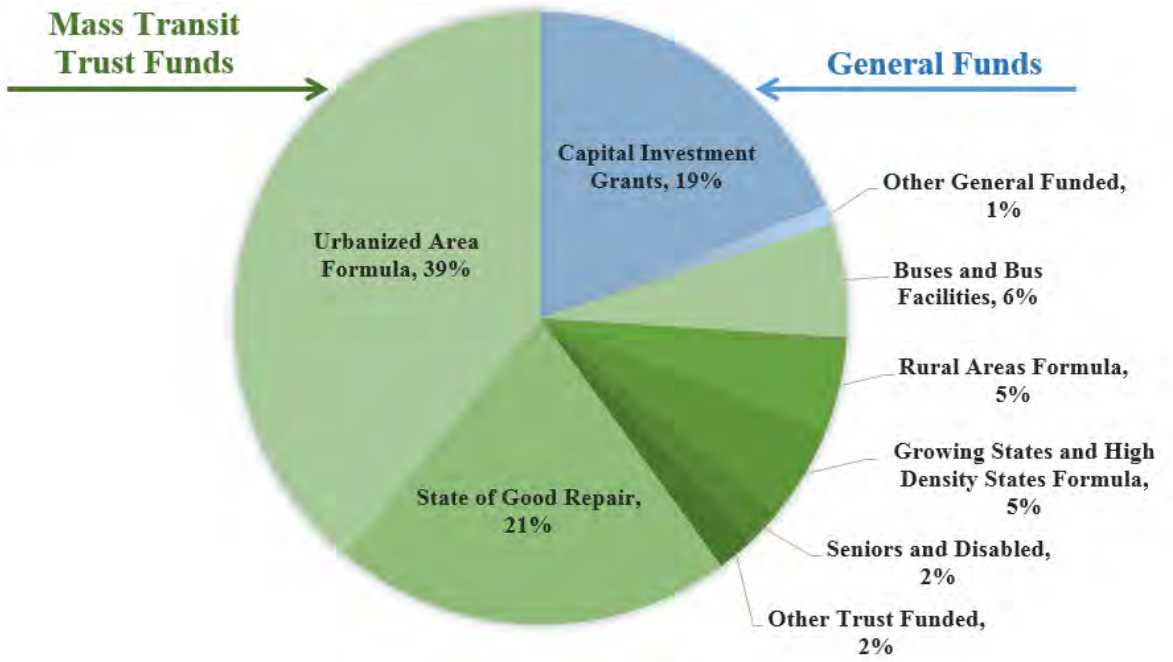
Programs under Section (§) of 49 USC	MAP-21	FAST Act					
	FY 2015 Enacted	FY 2016 Authorized	FY 2017 Authorized	FY 2018 Authorized	FY 2019 Authorized	FY 2020 Authorized	2016–2020 Total
Total all programs	10,858.43	11,789.40	12,175.51	12,175.15	12,381.18	12,592.15	61,113.40
Programs funded from the Mass Transit Account	8,595.00	9,347.60	9,733.71	9,733.35	9,939.38	10,150.35	48,904.39
§ 5305 Transportation Planning Programs	128.80	130.73	133.40	136.20	139.09	142.04	681.46
§ 5307 Urbanized Area Formula	4,458.65	4,538.91	4,629.68	4,726.91	4,827.12	4,929.45	23,652.07
§ 5310 Seniors and Individuals with Disabilities	258.30	262.95	268.21	273.84	279.65	285.57	1,370.22
§ 5311 Rural Areas Total	607.80	619.96	632.36	645.63	659.32	673.30	3,230.57
§ 5312 Public Transportation Innovation**	**	28.00	28.00	28.00	28.00	28.00	140.00
§ 5314 Technical Assistance and Workforce Development**	5.0	9.00	9.00	9.00	9.00	9.00	45.00
§ 5318 Bus Testing Facility	3.0	3.00	3.00	3.00	3.00	3.00	15.00
§ 5335 National Transit Database	3.85	4.00	4.00	4.00	4.00	4.00	20.00
§ 5337 State of Good Repair	2,165.90	2,507.00	2,549.67	2,593.70	2,638.37	2,683.80	12,972.54
§ 5339 Buses and Bus Facilities Formula Program	427.80	427.80	436.36	445.52	454.96	464.61	2,229.25
§ 5339 Buses and Bus Facilities Competitive Grants*	*	268.00	283.60	301.51	322.06	344.04	1,519.22
§ 5340 Growing States	262.95	272.30	279.13	286.13	293.31	300.67	1,431.54
§ 5340 High Density States	262.95	263.96	265.30	266.65	268.00	269.36	1,333.29
§ 3006(b) Coordinated Access and Mobility*	*	2.00	3.00	3.25	3.50	3.50	15.25
§ 3028(a) Positive Train Control*	*		199.00				199.00
§ 20005(b) Program for Transit Oriented Development Planning	10.00	10.00	10.00	10.00	10.00	10.00	50.00
Programs funded from general revenues	2,263.43	2,441.80	2,441.80	2,441.80	2,441.80	2,441.80	12,209.01
§ 5309 Fixed Guideway Capital Investment	2,120.00	2,301.78	2,301.78	2,301.78	2,301.78	2,301.78	11,508.91
§ 5312 Transit Research**	33.00	20.00	20.00	20.00	20.00	20.00	100.00
§ 5314 Technical Assistance and Workforce Development**	4.00	5.00	5.00	5.00	5.00	5.00	25.00
§ 5322 Human Resources and Training** (included in § 5314)	0.50						
§ 5324 Emergency Relief	***	***	***	***	***	***	***
§ 5327 Project Management Oversight	****	****	****	****	****	****	****
§ 5334 FTA Administration	105.93	115.02	115.02	115.02	115.02	115.02	575.10

* New program under the FAST Act
** Modified program under the FAST Act
*** Such sums as are necessary in the case of an emergency.
**** Project Management Oversight funds are a percentage takedown from capital grant programs.

Source: (*4*)

Federal funds for transit are appropriated from either the Highway Trust Fund or the general fund. Receipts for the Highway Trust Fund are derived from federal excise taxes on motor fuels and truck-related taxes. All tax revenues are deposited into the Highway Trust Fund and are then distributed to one of two accounts: the Highway Account or the Mass Transit Account. About 15 percent of revenues from the taxes on motor fuels go into the Mass Transit Account (*1*).

Figure 2 shows FTA funding by program according to FAST Act authorizations in FY 2016 through FY 2020. Eighty percent of funds are provided from the Mass Transit Trust Fund, and 20 percent are provided from the general fund, primarily for competitive Capital Investment Grants (CIGs).



Source: (*5*)

Figure 2. Distribution of FTA Funds by Program for 2016–2020.

FTA Federal Funding Programs

All transit districts, transit authorities, and municipal transit departments receive funds from FTA federal funding programs. FTA federal funds require match from state and/or local funds. Local funds are local government revenues and other funds generated from transit and non-transportation sources. Transit agencies may use revenues from non-USDOT federal programs as match for FTA federal funds.

Under the FAST Act, FTA administers the following programs that provide funding for transit in Texas:

- **Sections 5303–5305 Metropolitan, Statewide, or Nonmetropolitan Transportation Planning Programs:** Provides formula funding and procedural requirements for multimodal transportation planning in metropolitan areas and states.
- **Section 5307 Urbanized Area Formula Program:** Provides formula funding to public transit systems in urbanized areas with a population of 50,000 or more for public transportation capital, planning, and job access and reverse commute (JARC) projects, as well as operating expenses for public transit systems that meet specific criteria.
- **Section 5309 Capital Investment Grants:** Provides discretionary funds for major capital investments for new and expanded rail, bus rapid transit (BRT), and streetcars. The law requires that transit systems seeking CIG funding for a project complete a series of planning steps over several years to be eligible for funding.
- **Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities:** Provides formula funds to states and large urbanized areas for the purpose of meeting the transportation needs of seniors and people with disabilities.
- **Section 5311 Rural Areas Formula Program:** Provides formula funds to states to provide capital, planning, and operating assistance to support public transportation in rural areas with a population of less than 50,000.
- **Section 5337 State of Good Repair Grants Program:** Provides funding through a formula-based program for maintenance, replacement, and rehabilitation of the nation's rail transit systems and high-intensity motor bus systems that use high-occupancy vehicle (HOV) lanes, including BRT.
- **Section 5339 Buses and Bus Facilities Grants Program:** Provides funding through a formula-based program and competitive grant programs to fund bus-related projects. The formula program is to replace, rehabilitate, and purchase buses and related equipment as well as to construct bus-related facilities. The competitive allocation provides funds for major improvements to bus transit systems that would not be achievable through formula allocations.
- **Section 5340 Growing States and High-Density States Formula Program:** Apportions additional funds by formula to Section 5307 and Section 5311 programs in Growing States and High-Density States. Eligible grant recipients in Texas receive funds for Growing States.

Sections 5303, 5404, and 5305 Metropolitan, Statewide, or Nonmetropolitan Transportation Planning Programs

FTA and FHWA jointly administer planning programs that provide funding and procedural requirements for multimodal transportation planning in states and metropolitan areas (*6*).

Eligible Recipients

Eligible recipients of funds for planning include state departments of transportation (DOTs) and metropolitan planning organizations (MPOs). Federal planning funds are first apportioned to state DOTs (in Texas, TxDOT), which are direct recipients of funds. State DOTs then allocate planning funding to MPOs.

Eligible Activities

Funds are available for planning activities that:

- Support the economic vitality of the metropolitan area.
- Increase the safety of the transportation system.
- Increase the security of the transportation system.
- Increase the accessibility and mobility of people.
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between (1) transportation improvements and (2) state and local planned growth and economic development patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.

Apportionment of Funds

Of the funds authorized in Section 5305, 83 percent is made available to the Section 5303 Metropolitan Planning Program, and 17 percent is apportioned to the Section 5304 State Planning and Research Program.

Eighty percent of the Section 5303 funds are apportioned on a statutory basis to the states based on each state's urbanized area population. The remaining 20 percent is provided to the states based on an FTA administrative formula to address planning needs in larger, more complex urbanized areas. Federal planning funds are first apportioned to state DOTs. State DOTs then allocate planning funding to MPOs.

FTA apportions the Section 5304 funds to states based on the state's urbanized area population as compared to the urbanized area population of all states.

Funding Availability

Funds are available for four years.

Federal Share

The federal share is not to exceed 80 percent of the cost of the projects funded under the program, with a required 20 percent match.

Changes under the FAST Act

The performance-based planning process established in MAP-21 continues in the FAST Act. The FAST Act requires MPOs and states to establish performance targets that address national performance measures based on goals outlined in law. The MPO should establish these performance targets in coordination with states and transit providers. MPOs in urbanized areas designated as transportation management areas (populations of 200,000 or more) must include transit officials on policy boards.

Transportation improvement programs (TIPs) must include a description of the anticipated progress toward achieving the targets brought about by implementing the TIP. Additionally, MPOs may undertake scenario development exercises in preparing the long-range transportation plans that consider alternative demographic growth, revenue options, and other factors.

Section 5307 Urbanized Area Formula Program

The largest of FTA's grant programs, the Urbanized Area Formula Program, provides grants to urbanized areas to support public transportation. An urbanized area is an urban area with a population of 50,000 or more that is designated as such by the Bureau of the Census after each decennial census. FTA apportions urbanized area formula funds to designated recipients, which then suballocate funds to state and local governmental authorities, including public transit providers (*7*).

Eligible Recipients

Section 5307 funding is available to designated recipients that must be public bodies with the legal authority to receive and dispense federal funds. Governors, responsible local officials, and publicly owned operators of transit services are responsible for designating a recipient to apply for, receive, and dispense funds for urbanized areas with a population 200,000 or more. For urbanized areas with a population 200,000 or more, FTA apportions Section 5307 funds directly to the designated recipient(s) in each urbanized area.

For urbanized areas with a population of 50,000 to 199,999, FTA apportions Section 5307 funds to the governor or governor's designee as the designated recipient. In Texas, the governor's designee is TxDOT. TxDOT allocates funds to urban transit districts and authorizes each FTA direct recipient to apply for the funds.

Eligible Activities

Eligible activities include:

- Planning, engineering, design, and evaluation of transit projects and other technical transportation-related studies.
- Capital investments in bus and bus-related activities such as replacement, overhaul, and rebuilding of buses; crime prevention and security equipment; and construction of maintenance and passenger facilities.
- Capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software.
- Associated transit improvements and certain expenses associated with JARC and mobility management programs.

All preventive maintenance and some complementary paratransit to meet requirements of the Americans with Disabilities Act of 1990 (ADA) are considered capital costs.

For urbanized areas with populations less than 200,000, operating assistance is an eligible expense. Urbanized areas of 200,000 or more may not use funds for operating assistance unless identified by FTA as eligible under the Special Rule.

Apportionment of Funds

The formula for apportionment of funding is based on the following:

- For areas of 50,000 to 199,999 in population (small urban), the formula is based on population and population density.
- For areas with populations of 200,000 or more (large urban), the formula is based on a combination of bus revenue vehicle miles, bus passenger miles, bus operating cost, fixed guideway revenue vehicle miles, and fixed guideway route miles, as well as population and population density.
- FTA apportions 3.07 percent of the Section 5307 funds to urbanized areas based on the ratio of the number of low-income individuals in each urbanized area to the total number of low-income individuals in all urbanized areas of that state.
- FTA apportions funds for Small Transit Intensive Cities (STIC) to small urban transit systems (in urbanized areas less than 200,000 population) that operate at a level of service equal to or above the industry average level of service for all urbanized areas with a population of at least 200,000 but not more than 999,999. FTA allocates STIC funds (1.5 percent of total Section 5307 in FY 2016, increasing to 2 percent in FY 2019) based on level of service and performance in one or more of six categories: passenger miles

traveled per vehicle revenue mile, passenger miles traveled per vehicle revenue hour, vehicle revenue miles per capita, vehicle revenue hours per capita, passenger miles traveled per capita, and passengers per capita.

Special Rule under the FAST Act

MAP-21 introduced the Special Rule for operating assistance in large urbanized areas:

- Transit systems in large urbanized areas (population of 200,000 or more) that operate 100 or fewer buses in fixed-route services during peak periods may use Section 5307 funds for operating within certain specifications. The FAST Act expanded the eligible modes to include fixed-route and demand-responsive transit. Demand-responsive transit excludes ADA complementary paratransit.
- Transit systems operating between 76 and 100 buses in fixed-route or demand-responsive service during peak service hours may use up to 50 percent of the attributable share of funding for operating expenses.
- Transit systems operating 75 or fewer buses in fixed-route or demand-responsive service during peak service hours may use up to 75 percent of the attributable share of funding for operating expenses.

Attributable share refers to the share of the urbanized area's apportionment that is attributable to a transit system based on the transit system's share of vehicle revenue hours in the urbanized area.[1] Federal operating assistance requires a 50 percent local match.

Funding Availability

Funds are available the year appropriated plus five years.

Federal Share

The federal share is not to exceed 80 percent of eligible capital costs. The federal share may be 90 percent for the cost of vehicle-related equipment attributable to compliance with the ADA and the Clean Air Act (CAA). The federal share may also be 90 percent for projects or portions of projects related to bicycles.

The federal share may not exceed 50 percent of the net project cost of operating assistance.

Changes under the FAST Act

Designated recipients in urbanized areas with populations of 200,000 or more are no longer required to expend 1 percent of the Section 5307 funds apportioned to the urbanized area for associated transit improvements.

[1] Public transportation systems may execute a written agreement with one or more other public transportation systems within the urbanized area to allocate funds by a method other than by measuring vehicle revenue hours.

The FAST Act increases the spending cap for ADA paratransit service to 20 percent of a recipient's annual formula apportionment under certain conditions (previously up to 10 percent under MAP-21).

Section 5309 Capital Investment Grants

The Section 5309 program provides competitive grants for new and expanded rail, streetcars, BRT, and ferry systems that reflect local priorities (*8*).

Eligible Recipients

State and local government agencies, including transit agencies, are the eligible recipients of Section 5309 funds.

Eligible Activities

Under the FAST Act, this program now includes four types of eligible projects:

- **New Starts:** projects with a total estimated capital cost of $300 million or greater or that are seeking $100 million or more in Section 5309 funds.
- **Small Starts:** projects with a total estimated capital cost of less than $300 million and that are seeking less than $100 million in Section 5309 funds.
- **Core Capacity:** projects that expand capacity by at least 10 percent in existing fixed guideway transit corridors that are already at or above capacity today, or are expected to be at or above capacity within five years.
- **Programs of Interrelated Projects:** any combination of two or more New Starts, Small Starts, or Core Capacity projects. The projects in the program must have logical connectivity to one another.

Each type of project has a unique set of requirements under the FAST Act. Funds are allocated on a discretionary basis. All projects must successfully complete steps in the process defined in the Section 5309 Final Interim Policy Guidance and obtain a satisfactory rating under the statutorily defined criteria to become candidates (*9*).

The FAST Act specifies that proposed New Starts projects must be new fixed guideway projects or extensions to existing fixed guideway systems. The FAST Act defines fixed guideway projects as projects "using and occupying a separate right-of-way for the exclusive use of public transportation; using rail; using a fixed catenary system; for a passenger ferry system; or for a bus rapid transit system" (*9*).

This definition eliminates bus service operating on HOV lanes or high-occupancy toll (HOT) lanes from qualifying as fixed guideway service. Under the definition in law, eligible New Starts projects can include heavy rail, light rail, commuter rail, streetcars, trolleybuses, fixed guideway BRT, and ferries.

The FAST Act does not allow corridor-based BRT projects without a separated right of way dedicated for public transportation along the majority of the route to be eligible as New Starts projects. To qualify as a fixed guideway BRT project, the FAST Act specifies that the BRT service must include the following elements (*9*):

- The majority of the project operates in a separated right of way dedicated to public transportation use during peak periods.
- The project represents a substantial investment in a single route in a defined corridor or subarea.
- The project includes features that emulate the services provided by rail fixed guideway public transportation systems including defined stations, traffic signal priority for public transportation vehicles, and short headway bidirectional services for a substantial part of weekdays.

Funding Availability

The FAST Act changes the period of funding availability for Section 5309 from five years to four years.

Federal Share

The FAST Act limits the maximum Section 5309 CIG program federal share to:

- 60 percent for New Starts projects.
- 80 percent for Small Starts projects.

The maximum contribution from all federal sources to a New Starts or Small Starts project is 80 percent.

Changes under the FAST Act

The FAST Act made noticeable changes to the Section 5309 program:

- The FAST Act defines New Starts projects as projects with a total capital cost of $300 million or greater or that are seeking $100 million or more in Section 5309 funding. The FAST Act defines Small Starts projects as projects with a total capital cost less than $300 million and that are seeking less than $100 million in Section 5309 funding. Previously, these thresholds were $250 million and $75 million, respectively.
- Joint public transportation and intercity passenger rail projects are qualified as New Starts or Core Capacity projects.
- The FAST Act removed the requirement to provide substantial, bi-directional service on weekends for corridor-based BRT projects.

- Small Starts projects now qualify for the Program of Interrelated Projects. The FAST Act amends Section 5309 to define a Program of Interrelated Projects as the simultaneous development of two or more New Starts projects, Small Starts projects, or Core Capacity projects or any combination thereof. The projects in the program must have logical connectivity to one another, and construction must begin on the projects in the program in a reasonable timeframe. FTA is required to evaluate and rate a Program of Interrelated Projects as a whole rather than rating the individual projects in the program.

Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities

The Section 5310 program provides formula funding to increase the mobility of seniors and individuals with disabilities. Section 5310 funds can be used for both capital and operating assistance (*10*).

Eligible Recipients

Eligible recipients include designated recipients in large urbanized areas (population of 200,000 or more), states, and a state or local governmental entity that operates a public transportation service and is a direct recipient under Section 5307 or Section 5311.

In Texas, TxDOT is the Section 5310 recipient for all areas less than 200,000 in population. Subrecipients may be local government authorities, private nonprofits, or private operators of public transportation receiving the grant indirectly.

Eligible Activities

At least 55 percent of Section 5310 funds must be used on capital or traditional projects such as:

- Buses and vans.
- Wheelchair lifts, ramps, and securement devices.
- Transit-related information technology systems including scheduling/routing/one-call systems.
- Mobility management programs.

The remainder is for additional traditional or other nontraditional projects, such as a project eligible under the former Section 5317 New Freedom Program.

Projects selected for funding under the Section 5310 program must be included in a locally developed, coordinated public transit–human services transportation plan.

Apportionment of Funds

Section 5310 funds are apportioned on the following basis for the targeted population:

- 60 percent is apportioned among designated recipients for urbanized areas with a population of 200,000 or more.

- 20 percent is apportioned among the states for their urbanized areas with a population of 50,000 to 199,999.
- 20 percent is apportioned among the states for their rural areas with a population less than 50,000.

Funding Availability

Section 5310 funds are available to the states during the fiscal year of apportionment plus two additional years.

Federal Share

The federal share of eligible capital costs may not exceed 80 percent, and the federal share of operating assistance may not exceed 50 percent. The 10 percent that is eligible to fund program administrative costs including administration, planning, and technical assistance may be funded at 100 percent federal share.

Changes under the FAST Act

The FAST Act made the following changes to the Section 5310 program:

- Under the FAST Act, a state or local governmental entity that operates a public transportation service and is eligible to receive direct grants under Section 5307 or Section 5311 is eligible to be a direct recipient for Section 5310 funds.
- Section 3006(b) of the FAST Act creates a new discretionary pilot program for innovative coordinated access and mobility. The pilot program is open to all Section 5310 recipients and subrecipients to improve the coordination of transportation services and non-emergency medical transportation services.
- Section 3006(c) of the FAST Act includes coordinated mobility, which requires FTA to implement the Interagency Transportation Coordinating Council on Access and Mobility's recommendations including creating an updated strategic plan on transportation coordination across federal agencies and developing a cost-sharing policy.

Section 5311 Rural Areas Formula Program

Section 5311 provides capital, planning, and operating assistance to support public transportation in rural areas (defined as areas with less than 50,000 residents). Section 5311 also provides funding for state and national training and technical assistance through the Rural Transportation Assistance Program (*11*).

Eligible Recipients

Eligible recipients include states and federally recognized Indian Tribes. Subrecipients may include state or local government authorities, nonprofit organizations, and operators of public transportation or intercity bus service that receive funds indirectly through a designated recipient.

Funds are apportioned to the state's designated recipient to allocate to providers of public transportation in non-urbanized (rural) areas. In Texas, TxDOT is the designated recipient for Section 5311 funds. TxDOT allocates funds to rural transit districts and operators of public transportation or intercity bus service.

Eligible Activities

Activities eligible for funding are:

- Planning for rural area needs.
- Capital.
- Operations.
- JARC projects, which provide transportation to jobs and employment opportunities for welfare recipients and low-income workers.
- Acquisition of public transportation services.

Apportionment of Funds

Each state must spend no less than 15 percent of its annual apportionment for the development and support of intercity bus transportation, unless it can certify, after consultation with affected intercity bus service providers, that the intercity bus service needs of the state are being met adequately.

FTA apportions the remaining Section 5311 funds by a statutory formula in two tiers:

- **Tier 1:** 83.15 percent of rural formula funds are apportioned based on land area and population.
- **Tier 2:** 16.85 percent of remaining rural formula funds are apportioned based on land area, vehicle revenue miles, and low-income individuals.

Funding Availability

Section 5311 funds are available to the states during the fiscal year of apportionment plus two additional years.

Federal Share

The federal share is 80 percent for capital projects, 50 percent for operating assistance, and 80 percent for ADA paratransit service (up to 20 percent of a recipient's apportionment).

Changes under the FAST Act

The FAST Act made the following changes to the Section 5311 program:

- Revenue from the sale of advertising and concessions may be used as local match.
- All operating and capital costs, with no revenue offset, of an unsubsidized portion of privately provided intercity bus service that connects feeder service can be used as in-kind local match for the intercity bus projects.
- Under MAP-21, recipients that are in compliance with the requirements of the ADA may use 10 percent of their annual formula apportionment for ADA paratransit service, funded at 80 percent federal share. The FAST Act increases the spending cap for ADA paratransit service to 20 percent of a recipient's annual formula apportionment.

Section 5337 State of Good Repair Grants Program

The Section 5337 State of Good Repair (SGR) Grants Program provides capital assistance for maintenance, replacement, and rehabilitation projects of existing high-intensity fixed guideway and high-intensity motorbus systems (including BRT) to maintain a state of good repair (*12*).

Eligible Recipients

State and local government authorities in urbanized areas with fixed guideway public transportation facilities operating for at least seven years are eligible to receive Section 5337 funds. SGR projects need to be included in recipients' transit asset management plans.

Eligible Activities

SGR Grants Program funds are available for capital projects that maintain a fixed guideway or a high-intensity motorbus system in a state of good repair, including projects to replace and rehabilitate:

- Rolling stock.
- Track.
- Line equipment and structures.
- Signals and communications.
- Power equipment and substations.
- Passenger stations and terminals.
- Security equipment and systems.
- Maintenance facilities and equipment.

- Operational support equipment, including computer hardware and software.
- Implementation of transit asset management plans.

Apportionment of Funds

Of the funds appropriated to the SGR Grants Program by Congress, 97.15 percent is apportioned among urbanized areas with fixed-guideway systems, and 2.85 percent is apportioned among urbanized areas with high-intensity motorbus systems.[2]

Fifty percent of the high-intensity fixed-guideway funds are allocated based on the revenue miles and route miles reported by the transit system to the National Transit Database (NTD). The other 50 percent of the apportionment is determined by using the current fixed-guideway definition in the calculation of what the urbanized areas would have received in FY 2011.

The high-intensity motorbus funds are allocated based on the revenue miles and route miles reported to the NTD.

Funding Availability

Section 5337 SGR Grants Program funds are available to FTA for obligation during the fiscal year of appropriation plus three additional years. Any SGR funds that remain unobligated at the end of the period of availability are added to the next year's program apportionment and are reapportioned under the SGR Grants Program's statutory formula.

Federal Share

The federal share is 80 percent for SGR projects.

Changes under the FAST Act

Under the FAST Act, high-intensity motorbus funds are to be used only for vehicle state of good repair costs and may not be used for roadway state of good repair costs.

Section 5339 Buses and Bus Facilities Grants Program

The Section 5339 program provides funding to replace, rehabilitate, and purchase buses and bus-related equipment, and to construct bus-related facilities. This program renames the former Section 5339 Bus and Bus Facilities Program to Section 5339(a) Buses and Bus Facilities Formula Program, and includes two discretionary programs—the Section 5339(b) Buses and Bus Facilities Competitive Grant Program and the Section 5339(c) Low or No Emission Bus Competitive Grant Program (*13*).

Eligible Recipients

Eligible recipients include direct recipients that operate fixed-route bus service or that allocate funding to a fixed-route bus operator, state or local governmental entities, and federally

[2] High-intensity motorbus systems are transit systems that use highway lanes that are exclusive to transit vehicles at some, but not all, times; lanes that are restricted to transit vehicles; and HOV or HOT lanes.

recognized Indian tribes that operate fixed-route bus service that are eligible to receive direct grants under Section 5307 and Section 5311.

In Texas, TxDOT is the Section 5339(a) designated recipient for all areas less than 200,000 in population.

Eligible recipients that receive grant funding under the formula or discretionary programs may allocate amounts from the grant to subrecipients that are public agencies or private nonprofit organizations engaged in public transportation.

Eligible Activities

Eligible activities are projects that maintain, rehabilitate, and replace capital assets, as well as projects to implement transit asset management plans.

Apportionment of Funding

FTA apportions the Section 5339(a) formula funds to states, territories, and designated recipients based on a statutory formula. The Section 5339(a) formula funds are apportioned in three categories:

- Large urbanized (population of 200,000 or more).
- Small urbanized (population of 50,000 to 199,999).
- Non-urbanized (population less than 50,000).

The amount of Section 5339(a) funds for each area is apportioned as follows:

- **Large urbanized:** FTA apportions the large urbanized amount to each large urbanized area. Funds are distributed by a formula based on population, population density, bus vehicle revenue miles, bus passenger miles, and bus operating costs for each large urbanized area.
- **Small urbanized:** FTA apportions the small urbanized amount to each state as a lump sum. Funds are determined by formula based on population and population density for each small urbanized area.
- **Non-urbanized**: FTA apportions the non-urbanized amount to each state as a lump sum. Each state receives a fixed $1.75 million for all non-urbanized areas in the state.

In Texas, TxDOT receives the Section 5339(a) funds for small-urbanized and non-urbanized areas. TxDOT allocates the Section 5339(a) funds to urban transit districts in small urbanized areas and rural transit districts by formula. The formula is based on each transit district's relative share of fleet decrepitude. *Decrepitude* is defined as the condition of being old, worn out, or in poor working order. Decrepitude is measured by the reported mileage for each vehicle compared to the industry-accepted mileage for that vehicle type.

Federal Share

The federal share of eligible capital costs is 80 percent of the net capital project cost, unless the grant recipient requests a lower percentage. The federal share may exceed 80 percent for certain projects related to the ADA, the CAA, and certain bicycle projects.

Changes under the FAST Act

The FAST Act made major changes to the Buses and Bus Facilities Program:

- Under MAP-21, transit agencies and states did not have the ability to pursue discretionary funding for specific projects. The FAST Act amends Section 5339 to include two discretionary programs for buses and bus facilities, and low or no emissions vehicle and related facilities.
- Under MAP-21, FTA apportioned Section 5339 formula funds directly to large urbanized areas with populations of 200,000 or more and to states for all areas with populations less than 200,000. Under the FAST Act, a local governmental entity that operates fixed-route bus service and is eligible to receive direct grants under Section 5307 is also eligible to be a direct recipient for Section 5339 formula funds.
- FTA establishes a pilot program to allow designated recipients in urbanized areas between 199,999 and 1 million in population to elect to pool their Section 5339(a) formula allocations with other designated recipients within their respective states.
- Under the FAST Act, designated recipients are no longer required to obligate grants on behalf of entities that are eligible direct recipients of Section 5307 funds.

Section 5340 Growing States and High-Density States Formula Program

SAFETEA-LU established the Growing States and High-Density States Formula Program to apportion additional funds by formula to Section 5307 and Section 5311 grant recipients. The program continued in MAP-21 and now the FAST Act.

Under the Section 5340 formula, funds are made available under the Growing States factors and under the High-Density States factors. The funds are apportioned as follows:

- **Growing States:** The Growing States funds are apportioned based on state population forecasts for 15 years beyond the most recent decennial census (2025). Each state receives a share of Growing States funds based on the ratio of projected 2025 population to the nationwide projected 2025 population. Amounts apportioned for each state are then allocated to urbanized and rural areas based on the state's urban/rural population ratio.
- **High-Density States:** The High-Density States factors distribute funds to states with population densities equal to or greater than 370 people per square mile.

Texas is eligible for the Growing States factors. As required by statute, FTA apportions Section 5340 funds with the Section 5307 Urbanized Area and Section 5311 Non-urbanized Area Programs.

Responsibility as a Designated Recipient

FTA sets requirements for designated recipients of Section 5307, Section 5310, Section 5311, Section 5337, and Section 5339 funds.

Large Urbanized Areas

For urbanized areas with 200,000 or more in population, Section 5307, Section 5310, Section 5337 (if eligible for SGR grants), and Section 5339 funds are apportioned and flow directly to a designated recipient(s) selected locally to apply for and receive federal funds. The governor, responsible local officials, and publicly owned operators of transit services jointly designate the recipient to apply for, receive, and dispense funds.

The designated recipient (or recipients) in each urbanized area must be a public body and have the legal authority to receive and dispense federal funds in the urbanized area. The Dallas–Fort Worth–Arlington urbanized area has three designated recipients:

- DART.
- Fort Worth Transportation Authority (FWTA).
- North Central Texas Council of Governments (NCTCOG) (for all cities and unincorporated areas in the urbanized area but not part of DART or FWTA).

Other large urbanized areas in Texas have only one designated recipient. For example, VIA Metropolitan Transit is the single designated recipient for the San Antonio urbanized area. Houston METRO is the single designated recipient for the Houston urbanized area.

Small Urbanized Areas

For urbanized areas with a population of 50,000 to 199,999, Section 5307 funds are apportioned to the governor of each state for distribution. The governor or the governor's designee(s) is the designated recipient(s) for small urbanized areas. TxDOT is the designated recipient in Texas. TxDOT allocates funds to the 20 urban transit districts with a population of 50,000 to 199,999 (small-urbanized areas) and has approved a local governmental entity as the FTA direct recipient for Section 5307 grants. In most cases, the direct recipient is also the urban transit district. Under MAP-21, TxDOT retained designated recipient status for Section 5339 Buses and Bus Facilities Grants Program for small urbanized areas.

Under the FAST Act, a local governmental entity that operates fixed-route bus service and is eligible to receive direct grants under Section 5307 is also eligible to be a direct recipient for Section 5339 formula funds.

TxDOT is the Section 5310 designated recipient for all areas less than 200,000 in population.

Rural Areas

Funds are apportioned to the state's designated recipient to allocate to providers of public transportation in non-urbanized (rural) areas. In Texas, TxDOT is the designated recipient. TxDOT allocates Section 5311 and Section 5339 funds to rural transit districts and to operators of intercity bus service for eligible Section 5311 funds.

TxDOT is the Section 5310 designated recipient for all areas less than 200,000 in population.

Direct Recipients and Subrecipients

A designated recipient may authorize another public agency to be the direct applicant for Section 5307. This authorization may be made on a one-time basis or at the time of each application submission, at the option of the designated recipient. Under the FAST Act, a state or local governmental entity that operates a public transportation service and is eligible to receive direct grants under Section 5307 or Section 5311 is eligible to be a direct recipient for Section 5339 funds. TxDOT elects to serve as the Section 5310 designated recipient for all areas less than 200,000 in population.

A designated recipient or direct recipient may choose to pass its grant funds through to another agency to carry out the purposes of the grantee's agreement with FTA (subrecipient). To do this, the grantee must enter into a written agreement with the subrecipient that assures FTA that the grantee will be able to comply with its obligation to satisfy the requirements of the grant agreement. A pass-through arrangement does not relieve the grantee of its responsibilities to carry out the terms and conditions of the grant agreement.

In those urbanized areas with more than one designated recipient, FTA expects local officials, operating through the MPO, and designated recipients to determine the allocations together. The subarea allocation should be determined fairly and rationally through a process agreeable to the designated recipients. FTA may request a written agreement signed by a representative of each entity involved. In North Central Texas, for example, NCTCOG administers the allocation process, and the fund allocation is subject to approval by the Regional Transportation Council.

USDOT Flexible Sources of Funding for Transit

In addition to FTA grant programs, the USDOT sponsors a discretionary grant program and FHWA administers programs that provide the flexibility to transfer funds to FTA for transit projects. This section highlights four of these programs:

- **Transportation Investment Generating Economic Recovery (TIGER) Program**: provides a unique opportunity for the USDOT to invest in road, rail, transit, and port projects that promise to achieve national objectives (*14*).
- **National Highway Performance Program (23 USC 119):** used for transit capital projects that will reduce delays or produce travel time savings on certain highways (*15*).
- **Surface Transportation Program (23 USC 133):** provides flexibility in the use of funds (as capital funding) for public transportation capital improvements (*16*).
- **Congestion Mitigation and Air Quality Improvement (CMAQ) Program (23 USC 149):** provides federal funding for projects that improve air quality and reduce congestion in areas that are in nonattainment of air quality standards (*17*).

TIGER Grants

The TIGER discretionary grant program provides a unique opportunity for the USDOT to invest in road, rail, transit, and port projects that promise to achieve national objectives. Since 2009, Congress has dedicated nearly $4.6 billion for seven rounds of TIGER to fund projects that have a significant impact on the nation, a region, or a metropolitan area (*14*). TIGER grants may also be referred to as BUILD grants.

In each round of TIGER, the USDOT receives hundreds of applications. Applicants must detail the benefits their project would deliver for five long-term outcomes: safety, economic competitiveness, state of good repair, quality of life, and environmental sustainability. The USDOT also evaluates projects on innovation, partnerships, project readiness, benefit cost analysis, and cost share.

The eligibility requirements of TIGER allow project sponsors at the state and local levels to obtain funding for multimodal, multijurisdictional projects that are more difficult to support through traditional USDOT programs. TIGER can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional federal programs that provide funding to very specific groups of applicants (mostly state DOTs and transit agencies).

In 2015, the TxDOT Public Transportation Division won a TIGER award for $20.8 million to fund the Texas Rural Transit Asset Replacement Project (R-TARP). The R-TARP project replaces transit vehicles and assists in funding maintenance and passenger facilities for rural transit districts throughout Texas. In 2016, The City of Brownsville won a TIGER award for $10

million to rehabilitate a regional bus maintenance facility that will also serve as a new passenger transfer station, purchase eight hybrid transit replacement buses, and renovate bus stops to include sidewalks, curb ramps, and benches. The grant will also fund an innovative 2.4-mile long causeway, which will be one of the longest dedicated pedestrian/bike bridge facilities of its kind in the United States and the first of its kind in Texas (*14*).

National Highway Performance Program

The FAST Act continues to allow funding from the National Highway Performance Program to be used for transit capital projects if the following criteria are met (*15*):

- A transit project is in the same corridor as, and in proximity to, a fully access-controlled highway designated as a part of the National Highway System.
- The transit construction or improvements will reduce delays or produce travel time savings on the fully access-controlled highway and improve regional traffic flow.
- The construction or improvements are more cost-effective, as determined by benefit-cost analysis, than an improvement to the fully access-controlled highway.

Surface Transportation Program

The Surface Transportation Program (STP) provides the greatest flexibility in the use of funds. These funds may be used as (*16*):

- Capital funding for public transportation capital improvements, carpool and vanpool projects, fringe and corridor parking facilities, bicycle and pedestrian facilities, public sidewalks improvements to comply with the ADA, and intercity or intracity bus terminals and bus facilities.
- Funding for planning for surface transportation planning activities; wetland mitigation; transit research, development, and technology transfer; and environmental analysis.
- Funding for other eligible projects, including transit safety improvements and most transportation control measures. Transportation control measures are strategies intended to reduce vehicle use or improve traffic flow. These measures include, but are not limited to, improved public transit, traffic flow improvements and HOV lanes, shared ride services, pedestrian/bicycle facilities, and flexible work schedules.

STP funds are distributed among various population and programmatic categories within a state. In Texas, STP Metropolitan Mobility funds are made available to transportation management areas (metropolitan planning areas containing urbanized areas with a population of 200,000 or more). TxDOT programs the STP funds that are set aside for areas with a population less than 200,000 (small urban areas and rural areas).

Congestion Mitigation and Air Quality Improvement Program

Areas that do not meet National Ambient Air Quality Standards for selected air pollutants (carbon monoxide, ozone, and particulate matter) are called nonattainment areas. The U.S. Environmental Protection Agency designates these areas as having air pollution levels that are at times unhealthy for human beings according to standards set by the CAA. When air quality in a nonattainment area improves and meets these federal air quality health standards, the area is no longer designated as nonattainment and becomes a maintenance area. Maintenance areas must continue to take actions to ensure that measured air quality does not become worse and the area continues to meet federal clean air standards (*17*, *18*).

Eligible Recipients and Activities

The CMAQ program provides federal funding to state DOTs for projects that improve air quality and reduce congestion. The CMAQ program improves air quality by funding transportation projects and programs that reduce air emissions from cars, trucks, and buses (mobile sources) in air quality nonattainment and maintenance areas, which are the only areas eligible for CMAQ funding. Congress authorizes and appropriates funding for the CMAQ program, and FHWA then distributes CMAQ funds to state DOTs based on populations living in air quality nonattainment and maintenance areas. The distribution formula takes into account the severity of regional air quality problems. State DOTs are responsible for distributing CMAQ funds.

In Texas, various transit authorities and transit districts in non-attainment areas receive CMAQ funds for transit projects. For example, El Paso County initiated a vanpool program supported by CMAQ funds. Other transit agencies use CMAQ dollars to fund purchase of clean-fuel vehicles and to demonstrate the air quality benefits of commuter bus routes.

Changes under the FAST Act

The FAST Act reauthorized the CMAQ program. The FAST Act continues eligibility for electric vehicle and natural gas vehicle infrastructure and adds priority for infrastructure located on the designated corridors. The reauthorization adds eligibility for verified technologies for non-road vehicles and non-road engines that are used in port-related freight operations located in ozone, PM10, or PM2.5 nonattainment or maintenance areas funded in whole or in part under 23 USC or Chapter 53 of 49 USC. The act also specifically makes eligible the installation of vehicle-to-infrastructure communications equipment. The FAST Act adds the new exemption from PM2.5 set-aside for states with low population density.

Non-USDOT Federal Revenues

In addition to USDOT grant programs, other sources of funding for transit come from a variety of federal agencies, such as:

- Food Stamp Employment and Training Program from the U.S. Department of Agriculture, Food and Nutrition Service.
- Vocational Rehabilitation Grants from the U.S. Department of Education, Rehabilitation Services Administration.
- Medical Transportation Program (Medicaid) for non-emergency medical transportation from the U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services.
- Grants for Supportive Services and Senior Centers (Title III B) from the U.S. Department of Health and Human Services, Administration on Aging.
- Community Development Block Grants from the U.S. Department of Housing and Urban Development, Office of Community Planning and Development.
- Workforce Investment Act programs from the U.S. Department of Labor, Employment and Training Administration.
- Veterans medical care benefits from the U.S. Department of Veterans Affairs, Veterans Health Administration.

In most cases, other sources of funding for transit are available only to the extent that transportation is supportive of the primary purpose of the federal agency. Most of these funds flow from the federal department to a Texas state agency for allocation to programs to fund public transportation services.

Under the FAST Act, federal funds from non-USDOT agencies are eligible as local match for Section 5307, Section 5311, and Section 5310 funds.

State Funds for Transit

Authority for the Texas Transportation Commission to allocate state and federal funds is provided in the Texas Transportation Code, Chapter 456, which was most recently amended in 2017 by the Texas Legislature to differentiate state funds for small urban and large urban transit districts (*19*). Eligible recipients for Texas state transit funds are urban and rural transit districts, as provided in the Texas Transportation Code, Chapter 458. The administrative procedures for the allocation of funds are described in the Texas Administrative Code, Title 43 Transportation, Part 1 Texas Department of Transportation, Chapter 31 Public Transportation (*20*).

Texas Transit Funding Formula

The Texas Legislature appropriates state funding levels each biennium. The amount to which the transit funding formula applies is $69,982,134 per biennium ($34,991,067 per fiscal year) or less as appropriated by the Texas Legislature. TxDOT then allocates these funds according to the Texas transit funding formula, per the Texas Administrative Code. Table 2 provides the values available for each transit district category. State funding is allocated $42,863,386 to rural transit districts ($21,431,693 per fiscal year), $20,118,748 to small urban transit districts ($10,059,374 per year), and $7,000,000 to large urban transit districts ($3,500,000 per fiscal year). Fixed amounts are allocated from the small urban funds to the four urban transit districts in the Dallas–Fort Worth–Arlington urbanized area: Arlington, Grand Prairie, Mesquite, and NETS. The amount allocated to these urban transit districts is $1,541,672 ($770,836 per fiscal year).

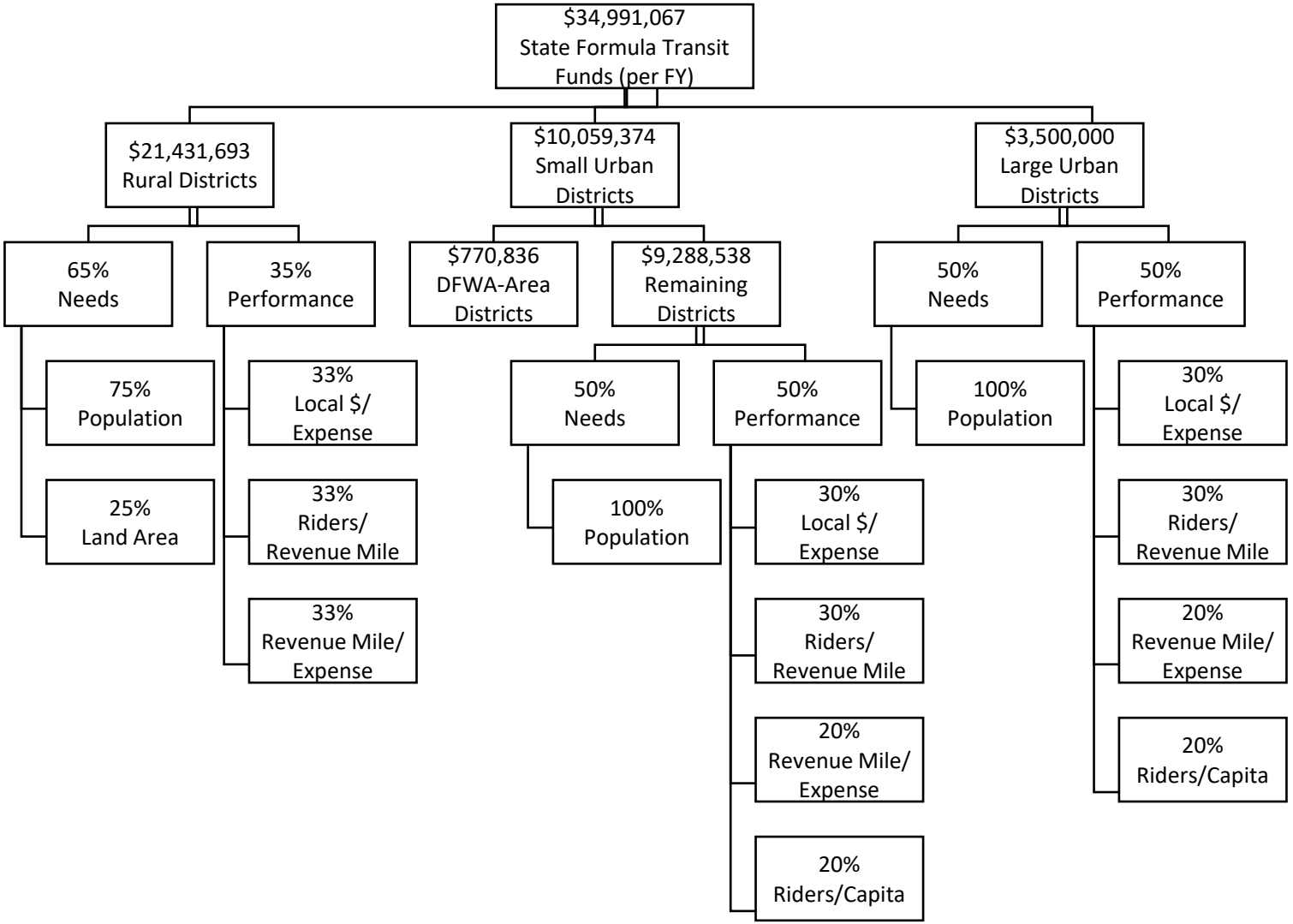
Table 2. Texas State Formula Funding per Biennium and Fiscal Year

Transit District Category	Per Biennium	Per Fiscal Year
Rural	**$42,863,386**	**$21,431,693**
Small Urban	**$20,118,748**	**$10,059,374**
DFWA Urban	$1,541,672	$770,836
Remaining Small Urban	$18,577,076	$9,288,538
Large Urban	**$7,000,000**	**$3,500,000**
Total	**$69,982,134**	**$34,991,067**

Source: Texas Administrative Code, State Financing of Public Transportation (20).

TxDOT allocates a portion of federal Section 5311 funds to rural transit districts using the same formula as the rural state formula. The remaining federal Section 5311 funds are allocated based on the transit district's proportion of vehicle miles out of the total vehicle miles operated by rural transit districts.

The Texas Transit Funding Formula is illustrated in Figure 3.



Source: (*20*)

Figure 3. Texas Transit Funding Formula.

Measures of Need and Performance

The formula allocates funds to each transit district according to need and performance:

- For urban transit districts, the allocation is 50 percent for need and 50 percent for performance.
- For rural transit districts, the allocation is 65 percent for need and 35 percent for performance (*20*).

Need

The portion of the formula attributed to need is allocated based on:

- For urban transit districts, the population in each urbanized area (100 percent).
- For rural transit districts, the population (75 percent) and land area (25 percent) in each rural transit district.

Performance

Funds for performance are allocated based on how well a transit district performs according to specific criteria.

Rural Transit Districts

For rural transit districts, each of three performance measures is weighted equally:

- Passengers per revenue mile: 33.3 percent.
- Revenue miles per operating expense: 33.3 percent.
- Local investment per operating expense: 33.3 percent.

Urban Transit Districts

The same performance measures apply to urban transit districts, and a fourth measure is added: passengers per capita. The four performance measures for urban transit districts are weighted differently:

- Passengers per revenue mile: 30 percent.
- Revenue miles per operating expense: 20 percent.
- Local investment per operating expense: 30 percent.
- Passengers per capita: 20 percent.

The total urban transit district population is used for the passengers-per-capita measure.

Sources of Local Revenue for Transit

FTA federal funds require match from state and/or local funds. Transit authorities and municipal transit departments have access to a local sales tax dedicated to transit as a source of revenue for local match. Urban and rural transit districts may use state funds as match for federal funds; however, the state funds are not sufficient for required match. Urban and rural transit districts do not have access to a local sales tax and must find local funds from other sources.

Summary of Local Revenues for Transit in Texas

This section explains the funding sources for local revenues for transit in Texas for state FY 2016. Table 3 summarizes the sources of local revenues reported by transit authorities and transit districts in Texas. The percent represents the portion of total revenues.

Table 3. Summary of Local Revenues by Source in State FY 2016.

Sources of Local Revenues	Transit Authorities (9)		Urban Transit Districts (29)		Rural Transit Districts (37)	
	Revenues	Percent of Total Revenues	Revenues	Percent of Total Revenues	Revenues	Percent of Total Revenues
Fares	$194,337,000	8.1%	$11,432,000	9.3%	$4,509,000	4.5%
Local Contributions (Cash)	$20,223,000	0.8%	$19,987,000	16.3%	$6,045,000	6.0%
Contributed Services (Non-cash)	$0	0.0%	$7,507,000	6.1%	$1,730,000	1.7%
Sales Tax Dedicated to Transit	$1,783,274,000	74.8%	$0	0.0%	$0	0.0%
Auxiliary Transit Revenues	$23,810,000	1.0%	$1,291,000	1.0%	$83,000	0.08%
Other Transportation Revenues	$6,107,000	0.3%	$505,000	0.4%	$38,000	0.04%
Non-Transit-Related Revenues	$82,475,000	3.5%	$1,212,000	1.0%	$237,000	0.2%
Other Contracts	$14,239,000	0.6%	$5,962,000	4.9%	$8,167,000	8.1%
Local Revenues	**$2,124,465,000**	**89.1%**	**$47,896,000**	**39.0%**	**$20,809,000**	**20.6%**

Note: Data reported by each transit district for state FY 2016 to the TxDOT PTN-128 data reporting system.
Source: (*21*)

Types of Local Revenue

Fares

Fare revenues are revenues earned from carrying passengers, reflecting the amount of fare the passengers pay on their own behalf. Passenger fares include special programs such as reduced passes or ticket prices for students, the elderly, or individuals with disabilities.

Passenger fares do not include subsidies or passenger fare assistance from other entities, such as local governments, to provide a reduced fare or free fare. Subsidies are provided to support the general provision of transit service. Passenger fare assistance is targeted to help specific classes of users (e.g., senior citizens and students) and helps to offset the reduced or free fares offered to

these users. Subsidies and fare assistance are reported in the appropriate state and local government source of funds.

Local Contributions (Cash)

Local contributions are funds allocated to transit out of general revenues of another entity. These funds are often part of the government's annual budgeting process from general revenues rather than dedicated funds for transit. These funds assist with paying the operating and capital costs of providing transit.

Contributed Services (Non-cash)

Contributed services are receipt of non-cash assets or services from another entity that benefit the transit operator. In-kind services are a type of contributed services, reported as contributed services only if there is no obligation to pay for the services. Contributed services include physical assets or services that the agency has objective control of and that have value that benefits people outside the contributor's organization, such as building space or staff time.

Sales Tax

If a transit agency is an independent political entity and has the legal authority to impose a dedicated tax, this tax is called a directly levied tax. If the legal authority of the local or state government levies the tax for transit use, the tax is reported under local or state government sources of funds.

Laredo is the only urban transit district with a local sales tax dedicated to transit.

Auxiliary Transit Revenues

Auxiliary transit revenues are generated from the byproducts of the transit service, such as advertisements on vehicles, concessions in station areas, fees paid for transit identification cards, or fines paid for fare evasion.

Other Transportation Revenues

Other transportation revenues include transportation services that are not open to the general public, such as:

- **Charter service:** a vehicle hired for exclusive use that does not operate over a regular route on a regular schedule and is not available to the general public.
- **Exclusive school bus service:** the use of buses to carry children and school personnel to and from their schools or school-related activities.

Specific FTA approvals are required if a public transit agency seeks to provide transportation services not opened to the general public.

Non-Transit-Related Revenues

Non-transit-related revenues are funds earned from activities not associated with the provision of transit service. The sources of these funds can include investment earnings, sales of maintenance

services, rentals of revenue vehicles, rentals of transit agency buildings and property, parking fees, non-specified donations or grants, development fees, or rental car fees.

Other Contracts

Other contracts include funds earned from non-federal or state contracts. The contracts are typically from a local governmental authority such as a city, county, or other transit agency. Contracts can also be from a privately funded source. As opposed to charter or special service provided through other transportation revenues, other contracts include revenues from a regularly provided transit service or route(s).

References

1. American Public Transportation Association. *Primer on Transit Funding, The Fixing America's Surface Transportation Act and Other Related Laws, FY 2016 through FY 2020.* April 2016. http://www.apta.com/resources/reportsandpublications/Documents/APTA-Primer-FAST-Act.pdf. Accessed December 11, 2016.

2. Federal Transit Administration. FAST Act. https://www.transit.dot.gov/FAST. Accessed December 12, 2016.

3. Federal Transit Administration. *Chapter 53 of Title 49, United States Code, as Amended by Fixing America's Surface Transportation Act, Related FAST and MAP-21 Provisions.* December 1, 2015. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/Chapter%2053%20as%20amended%20by%20the%20FAST%20Act_1.pdf. Accessed February 22, 2017.

4. Federal Transit Administration. *FAST Act Estimated Program Totals 12-1-15*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST_ACT_FTA_Program_Totals.pdf. Accessed December 11, 2016.

5. Congressional Research Service. *Public Transportation Capital Investment Grant (New Starts) Program: Background and Issues for Congress.* June 30, 2016.

6. Federal Transit Administration. *Fact Sheet: Metropolitan and Statewide and Nonmetropolitan Transportation Planning, 49 U.S.C. Chapter 53, Sections 5303, 5304, and 5305*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/5303-5304-5305_Program_Metropolitan_and_Statewide_Planning_Fact_Sheet_FINAL.pdf. Accessed February 26, 2017.

7. Federal Transit Administration. *Fact Sheet: Urbanized Area Formula Program Grants, 49 U.S.C. Chapter 53, Sections 5307 and 5340.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST%20Act%20Section%205307%20Fact%20Sheet.pdf. Accessed February 26, 2017.

8. Federal Transit Administration. *Fact Sheet: Fixed Guideway Capital Investment Grants, Chapter 53 Section 5309.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/5309_Capital_Investment_Grant_Fact_Sheet.pdf. Accessed February 26, 2017.

9. Federal Transit Administration. *Final Interim Policy Guidance: Federal Transit Administration Capital Investment Grant Program.* June 2016. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST_Updated_Interim_Policy_Guidance_June%20_2016.pdf. Accessed February 20, 2017.

10. Federal Transit Administration. *Fact Sheet: Enhanced Mobility of Seniors and Individuals with Disabilities, Chapter 53 Section 5310.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/5310%20Enhanced%20Mobility%20of%20Seniors%20%26%20Disabled%20Fact%20Sheet.pdf. Accessed February 26, 2017.

11. Federal Transit Administration. *Fact Sheet: Formula Grants for Rural Areas, Chapter 53 Section 5311.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/5311%20Rural%20Program%20Fact%20Sheet%20FAST.pdf. Accessed February 26, 2017.

12. Federal Transit Administration. *Fact Sheet: State of Good Repair Grants, Chapter 53 Section 5337.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/5337_State_of_Good_Repair_Fact_Sheet.pdf. Accessed February 26, 2017.

13. Federal Transit Administration. Buses and Bus Facilities Grants Program—5339. https://www.transit.dot.gov/funding/grants/buses-and-bus-facilities-grants-program-5339. Accessed February 26, 2017.

14. About TIGER Grants. U.S. Department of Transportation, https://www.transportation.gov/tiger/about. Accessed March 16, 2017.

15. Title 23, United States Code, Section 119 National Highway Performance Program.

16. Title 23, United States Code, Section 133 Surface Transportation Program.

17. Title 23, United States Code, Section 149 Congestion Mitigation and Air Quality Improvement Program (CMAQ).

18. Federal Highway Administration. *Congestion Mitigation and Air Quality Improvement Program (CMAQ).* https://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.pdf. Accessed December 12, 2016.

19. House Bill 1140. 85th Regular Session of the Texas Legislature. http://www.legis.state.tx.us/tlodocs/85R/billtext/html/HB01140F.htm accessed March 14, 2018.

20. Office of the Secretary of State. Texas Administrative Code, Title 43 Transportation, Part 1 Texas Department of Transportation, Chapter 31 Public Transportation, Subchapter B State Programs, Rule §31.11 Formula Program. https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=43&pt=1&ch=31. Accessed March 14, 2018.

21. Texas Department of Transportation, Public Transportation Division, TxDOT PTN-128 Database, FY 2016 Revenue Report. Accessed March 15, 2017.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 4-C:
Interlocal Agreements
Capital Metro
with the City of Round Rock and the City of Georgetown

Texas A&M Transportation Institute

April 2018

INTERLOCAL AGREEMENT

BETWEEN

CAPITAL METROPOLITAN TRANSPORTATION AUTHORITY
AND
THE CITY OF ROUND ROCK

(Contract Transit Services)

This Interlocal Agreement ("Agreement") is between Capital Metropolitan Transportation Authority, a rapid transit authority and political subdivision of the State of Texas organized under Chapter 451 of the Texas Transportation Code ("Capital Metro"), and the City of Round Rock, a home rule city and municipal corporation, organized under Chapter 9 of the Local Government Code ("City"), each individually referred to as "Party" and collectively referred to as "Parties", pursuant to the provisions of the Interlocal Cooperation Act, Chapter 791 of the Texas Government Code.

RECITALS

WHEREAS, City desires to obtain local fixed routes, commuter service into Austin, and reverse commuter service to Round Rock ("Transit Services") through a partnership with Capital Metro;

WHEREAS, Capital Metro to desires to provide the Transit Services to the City of Round Rock;

WHEREAS, City intends to utilize Federal Transit Administration ("FTA") funding under 49 U.S.C. 5307 ("Section 5307") to partly fund the cost of the Transit Services, as a direct recipient of Section 5307 funds under a separate executed Memorandum of Understanding ("MOU") with Capital Metro, and,

In consideration of the mutual covenants and agreements herein, Capital Metro and the City agree as follows:

AGREEMENT

1. **Services - Capital Metro**. Capital Metro agrees to provide local fixed routes within the City, commuter service into the City of Austin, and reverse commuter service to the City. Capital Metro shall conform to the Scope of Services, hereby made a part of this Agreement as Attachment SOS-1, Scope of Services ("Services"). Capital Metro has no obligation to provide complementary paratransit service.

2. **Services - City**. City agrees to provide complementary paratransit service within the City limits and the City's extraterritorial jurisdiction ("ETJ"), at its sole cost and expense, as required by federal law.

3. **Term**. This Agreement shall be effective upon signature of the last party to sign and shall terminate on July 31, 2022, unless terminated for cause or convenience prior to the expiration date ("Term").

4. **Fees**.

    a) This Agreement shall not exceed $4,669,337, and shall be based on Attachment SFP-1, Schedule of Fees and Payments, attached herein and made part of this Agreement ("Fees").

b) The parties agree Capital Metro's current farebox recovery rate, of 11%, will be deducted from the cost of service, as shown on Attachment SFP-1, Schedule of Fees and Payments. The parties further agree that the City has the right to conduct a farebox recovery audit and request an increase in this deduction and that Capital Metro has the right to request a reduction for this deduction. Any farebox recovery rate adjustment request will be made in writing and accompanied by appropriate justification of the requested increase.

c) The parties acknowledge that Capital Metro's cost of providing the Services increases with increases in the cost of fuel. In the event the cost of fuel rises to exceed 15% of the cost of fuel on the Effective Date, Capital Metro may request an adjustment in the Fees to reflect the increase in the cost of service. Any fee change request will be made in writing and accompanied by appropriate justification of the requested increase.

d) Capital Metro has disclosed that it outsources its bus operations and that Capital Metro intends to go out for bid on a new contract(s) during Capital Metro's Fiscal Year 2019. A new contract(s) may result in an increase in Capital Metro's cost of providing the Services. Capital Metro may request an adjustment in the Fees to reflect the increase. Any fee change request will made in writing and shall be accompanied by appropriate justification of the requested increase.

5. Invoicing and Payment.

a) Invoices may be submitted once per month, and marked "original" to the attention of:

City of Round Rock
ATTN: Transit Coordinator
2008 Enterprise Drive
Round Rock, Texas

b) Payment terms are net thirty (30) days.

c) Capital Metro shall be paid, upon the submission of proper invoices, the prices stipulated in SFP-1, for services rendered and accepted, less deductions, if any, as herein provided.

6. Insurance. Capital Metro shall require its bus contractor to maintain the minimum amounts of insurance and coverages set forth in in Attachment INS-1, Insurance.

7. Independent Contractor. Capital Metro's relationship to City in the performance of this Agreement is that of an independent contractor. The personnel performing Services under this Agreement shall at all times be under Capital Metro's exclusive direction and control and shall be employees or subcontractors of Capital Metro's and not employees of City. Capital Metro shall be fully liable for all acts and omissions of its employees, subcontractors, and their suppliers and shall be specifically responsible for sufficient supervision and inspection to assure compliance in every respect with Agreement requirements. There shall be no contractual relationship between any subcontractor or supplier of Capital Metro and City by virtue of this Agreement. No provision of this Agreement shall be for the benefit of any party except City and Capital Metro. Capital Metro shall pay wages, salaries and other amounts due its employees in connection with this Agreement

and shall be responsible for all reports and obligations respecting them, such as Social Security, income tax withholding, unemployment compensation, workers' compensation and similar matters.

8. **Standards of Performance.** Capital Metro shall perform Services hereunder in compliance with all applicable federal, state, and local laws and regulations. Capital Metro shall use only licensed personnel to perform work required by law to be performed by such personnel.

9. **Licenses and Permits.** Capital Metro shall, without additional expense to City, be responsible for obtaining any necessary licenses, permits, and approvals for complying with any federal, state, county, municipal, and other laws, codes, and regulations applicable to the performance of Services to be provided under this Agreement including, but not limited to, any laws or regulations requiring the use of licensed subcontractors to perform parts of the work.

10. **Notice of Labor Disputes.** If Capital Metro has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Services, Capital Metro immediately shall give notice, including all relevant information, to City.

11. **Excusable Delays.** Except for defaults of subcontractors, Capital Metro shall not be in default because of any failure to perform this Agreement under its terms if the failure arises from causes beyond the control and without the fault or negligence of Capital Metro. Examples of these causes are: acts of God or of the public enemy, acts of City of in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather. In each instance, the failure to perform must be beyond the control and without the fault or negligence of Capital Metro.

12. **Termination for Convenience.** City may, whenever the interests of the City so require, terminate this Agreement, in whole or in part, for the convenience of City. City shall give ninety (90) days' prior written notice of the termination to Capital Metro specifying the part of the Agreement terminated and when such termination becomes effective shall incur no further obligations in connection with the Services so terminated, and, on the date set forth in the notice of termination, Capital Metro will stop the Services to the extent specified; provided, any such termination must align with Capital Metro's three yearly service changes, which occur in January , June, and August.

13. **Equal Employment Opportunity.** In connection with the execution of this Agreement, Capital Metro shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. Capital Metro shall take affirmative action to ensure that applicants and employees are treated fairly without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, promotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

14. **Federal Funding.**

a) The City intends to use federal funds to meet a portion of is financial commitment under Agreement. In recognition of this fact, the Parties agree to conduct all procurements, maintain all records, and otherwise conduct their activities under this Agreement to ensure compliance with all applicable federal statutes, regulations, policies and Agreement requirements necessary to obtain and expend anticipated federal funds and reimbursements.

b) The Parties will specifically comply with the federal contracting requirements as set forth in the 2016 Federal Transit Administration Master Agreement ("Master Agreement") which

may be access at the following link: https://www.transit.dot.gov/sites/fta.dot.gov/files/Bulletin16-06ENCLMasterAgreementFY2016_03-04-16.pdf. In doing so, the Parties will require compliance with the applicable federal contracting provisions in all of their contracts and subcontracts related to the Services. In their contracting processes, the Parties will solicit proposals or bids for all of the contracts in accordance with applicable federal, state and local laws, rules, regulations and funding requirements.

15. **Use of Information.** It shall be the responsibility of each Party to comply with the provisions of the Texas Public Information Act, Chapter 552 of the Texas Government Code ("TPIA"). Neither Party is authorized to receive requests or take any other action under the TPIA on behalf of the other Party. The provisions of this Confidential Information shall be handled in accordance with the provisions of the TPIA. The provisions of this paragraph survive the termination or expiration of this Agreement. If a recipient is under a legal obligation to disclose Confidential Information received under this Agreement, the recipient will use reasonable efforts to promptly provide notice to the other Party, and, to the extent permitted by applicable law and authorized by the Office of the Attorney General of the State of Texas, will cooperate with the disclosing Party to protect Confidential Information.

16. **Examination and Retention of Records.**
City and its representatives shall have audit and inspection rights described below.

a) City and its representatives shall have the right to examine, all books, records, documents, and other evidence and accounting procedures and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of this Agreement. Such right of examination shall include inspection at all reasonable times at Capital Metro offices, or such parts thereof, as may be engaged in or maintain records in connection with the performance of this Agreement.

b) All records shall be made available at the office of Capital Metro at all reasonable times for inspection, audit, or reproduction until the expiration of three (3) years from the date of final payment under this Agreement, except that if this contract is completely or partially terminated, the records relating to the work terminated shall be made available for a period of three (3) years from the date of any final settlement.

17. **Limitation of Liability.** In no event shall either Party, their respective officers, directors, agents or employees be liable in contract or tort, to the other party (or its subcontractors) for special, indirect, incidental or consequential damages, resulting from the performance, nonperformance, or delay in performance of their obligations under this Agreement. This limitation of liability shall not apply to intentional tort or fraud

18. **Claims.** In the event that any claim, demand, suit, or other action is made or brought by any person, firm, corporation, or other entity against City, Capital Metro shall give written notice thereof, to City within three (3) working days after being notified of such claim, demand, suit, or action. Such notice shall state the date and hour of notification of any such claim, demand, suit, or other action; the name and address of the person, firm, corporation, or other entity making such claim or instituting or threatening to institute any type of action or proceeding; the basis of such claim, action, or proceeding; and the name of any person against whom such claim is being made or threatened. Such written notice shall be delivered either personally or by mail as hereinafter provided.

19. **Assignment.** This Agreement shall be binding upon the parties, their successors, and assignees; provided, however, that neither party shall assign its obligations or delegate its duties hereunder without the prior written consent of the other. Any attempted assignment or delegation without written consent shall be void and ineffective.

20. **Point of Contact.** Capital Metro shall provide City with a telephone number to ensure immediate communication with a person (not a recording) anytime during Agreement performance. Similarly, City shall designate a City representative who shall be similarly available to Capital Metro.

21. **Governing Law.** The rights, obligations, and remedies of the parties shall be governed by the laws of the State of Texas. Whenever there is no applicable state statute or decisional precedent governing the interpretation of, or disputes arising under or related to, this contract, then federal common law, including the law developed by federal boards of contract appeals, the United States Claims Court (formerly the Court of Claims), and the Comptroller General of the United States, shall govern. Venue for any action shall lie exclusively in Travis County, Texas.

22. **Incorporation by Reference.** Incorporated by reference the same, as if specifically written herein are the rules, regulations, and all other requirements imposed by the law, including but not limited to compliance with those applicable rules and regulations of the State of Texas and federal government, all of which shall apply to the performance of the Services under this Agreement.

23. **Severance.** Should any one or more provisions of this Agreement be deemed invalid, illegal or unenforceable for any reason, such as invalidity, illegality or unenforceability shall not affect any other provision held to be void, voidable, or for any reason whatsoever of no force and effect, such provision(s) shall be constructed as severable from the remainder of this Agreement and shall not affect the validity of all other provisions of this Agreement, which shall remain of full force and effect.

24. **Headings.** The headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

25. **Notices.** Any notice required or permitted to be delivered under this Agreement shall be deemed delivered in person or when deposited in the United States mail, postage prepaid, certified mail, return receipt requested, addressed to City or Capital Metro, as the case may be, at the addresses set forth below. Notice given by any other manner shall be deemed effective only if and when received by the Party to be notified. A Party may change its address for notice by written notice to the other Party as herein provided.

If to City:

Laurie Hadley, City Manager
City of Round Rock
221 East Main Street
Round Rock, TX 78664

With copy to:

Stephan Sheets, City Attorney
309 East Main Street
Round Rock, TX 78664

If to Capital Metro:

Capital Metropolitan Transportation Authority

Attn: Vice President of Strategic Planning and Development
2910 E. Fifth Street
Austin, Texas 78702

With copy to:
Capital Metropolitan Transportation Authority
Attn: Chief Counsel
2910 E. Fifth Street
Austin, Texas 78702

These writings are intended as the final expressions of the agreement of the parties and as a complete and exclusive statement of the terms of the Agreement.

26. **Performance.** The failure of a Party at any time to require performance by the other Party of any provision of this Agreement shall in no way affect the right of such Party to require such performance at any time thereafter nor shall the waiver by either Party of a breach of any provision be taken or held to be a waiver of any succeeding breach of such provision or as a waiver of the provision itself.

27. **No Waiver.** The Parties to this Agreement are governmental entities under state law and nothing in this Agreement waives or relinquishes the right of the Parties to claim any exemptions, privileges and immunities as may be provided by law.

28. **Amendment.** This Agreement may be amended only in writing by an instrument signed by an authorized representative of CAPITAL METRO and City of Round Rock.

29. **Entire Agreement.** This Agreement represents the complete and entire Agreement between the Parties respecting the matters addressed herein, and supersedes all prior negotiations, agreements, representations, and understanding, if any, between the Parties pertaining to the subject matter herein.

30. **Current Revenues.** All monies paid by the Parties under this Agreement will be paid from current revenues available to the paying Party.

31. **Administrative Approvals**. The City's City Manager and the Capital Metro President/CEO will have the authority to negotiate and execute amendments to this Agreement without further City Council action or action from the Capital Metro Board of Directors, but only to the extent necessary to implement and further the clear intent of the respective City Council and Capital Metro Board of Directors' approval, and not in such a way as would constitute a substantive modification of the terms and conditions hereof or otherwise violate Chapter 791 of the Texas Government Code. Any amendments that would constitute a substantive modification to the Agreement must be approved by the governing bodies of the Parties

CERTIFICATIONS

The Parties certify that: (a) the Transit Services specified herein are necessary and essential and are properly within the statutory functions of the affected governmental entity; (b) the proposed arrangements serve the interest of efficient and economical administration of the governmental function; (c) the Transit Services, supplies or materials contracted for are not required by paragraph 21 of Article 16 of the Constitution of Texas to be supplied under an Agreement given to the lowest responsible bidder not is this Agreement prohibited by Chapter 791 of the Texas Government Code; and (d) this Agreement neither requires nor permits either Party to exceed its duties and responsibilities or the limitations of its authority.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective undersigned duly authorized as of the Effective Date.

Capital Metropolitan Transportation Authority

By:_____

Date: 5/4/17

CAPITAL METRO LEGAL

City of Round Rock

By:_____

Alan McGRAW, Mayor

Date: 3.23.17

CORR. LEGAL

Attachments:

ATTACHMENT SOS-1Scope of Services
ATTACHMENT SFP-1 Schedule of Fees and Payments
ATTACHMENT INS-1 Insurance

ATTACHMENT - SOS-1- Scope of Services

1. GENERAL PURPOSE

This Scope of Services documents the requirements related to the operation of fixed route and commuter express services by Capital Metro for the City of Round Rock:

1.1. Capital Metro shall provide an operationally dependable vehicle service for passenger use, equipped for maximum passenger comfort in a cost-effective manner, and continually maintained and operated in a safe condition as described herein.

1.2. Capital Metro must obtain all required licenses and permits to operate in the Capital Metro's service area within the scope of this contracted service.

1.3. Capital Metro shall furnish all supervision, personnel, passenger vehicles, fuel, materials, supplies, storage and maintenance facilities, tools, equipment, insurance, and incidentals as required to perform an operationally dependable public transportation service.

2. VEHICLE HOURS

Round Rock service will begin with four (4) routes: Round Rock Howard Station, Round Rock Circulator, Round Rock – Austin Express and Round Rock Tech Ridge Limited. The estimated vehicle hours for these routes are:

Route	Estimated Vehicle Hours per Service Year*
Round Rock Howard Route #50	6,072
Round Rock Circulator Route #51	3,036
Round Rock - Austin Express Route #980	506
Round Rock Tech Ridge Limited Route #52	1,012

Vehicle hours for the Round Rock – Austin Express will be shared with Capital Metro service from the Howard Express Station. Round Rock is responsible for the vehicle hours from Round Rock to Howard Express Station. Capital Metro is responsible for vehicle hours from Howard Express Station to downtown Austin. The vehicle hours in the figure above represent only vehicle hours for which Round Rock is responsible.

*Service year is August 1 to July 31.

3. VEHICLE REQUIREMENTS

3.1. Two peak vehicles are required for the Round Rock Howard Station route. Vehicles shall be an accessible and capable of transporting at least thirty-five (35) seated persons.

3.2. One peak vehicle is required for the Round Rock Circulator. Vehicle shall be an accessible vehicle with the ability to transport at least twelve (12) seated persons.

3.3. Two peak vehicles are required for the Round Rock – Austin Express route. Vehicles shall be an accessible and capable of transporting at least forty-six (46) seated persons.

3.4. Two peak vehicles are required for the Round Rock Tech Ridge Limited. Vehicles shall be an accessible and capable of transporting at least thirty-five (35) seated persons.

4. SERVICE PERIOD

The service period shall operate between approximately 6:30 am. — 6:30 p.m. (times may vary within this window, based on the specific route schedule) on weekdays only. The City will not provide service on the following holidays: New Year's Day, Martin Luther King Jr Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

5. VEHICLES

5.1. Fixed route and commuter express vehicles shall have adequate heating and air conditioning; two-way radios, not on citizen band frequency; fare box; adequate interior lighting; interior and exterior signage; and padded, comfortable seating for passengers. All vehicles shall be wheelchair accessible, capable of handling two wheelchair positions.

5.2. All vehicles shall be painted in accordance with Capital Metro's branding program. The City may elect to coordinate with Capital Metro on representation of the City's service inside and outside the buses. Capital Metro must approve the branding.

5.3. All vehicles shall be cleaned inside daily prior to being placed into service. Vehicle exteriors and windows shall be washed weekly. Vehicle interiors shall at all times be kept free of exhaust fumes and engine odors. The interior of the vehicles shall be maintained free from roaches and other vermin.

5.4. Vehicles shall have illuminated destination and block signs that are highly visible and in compliance with ADA regulations.

5.5. Vehicle destination signs shall display the route name of the route operated. The destination signs on routes operated within Round Rock will reflect that service is Round Rock service. All destination signs shall be illuminated for night operation.

5.6. Vehicles shall be equipped with passenger notice holders, and passenger discharge bells.

5.7. Vehicle bodies, frames, and components shall be in sound condition, and free of all damage. Vehicles shall comply with safety and mechanical standards of all state, federal and local governments. All mechanical, electrical, and hydraulic securement systems shall be maintained in proper working condition at all times.

5.8. All vehicles shall be equipped to permit inward and outward wheelchair boarding. Ramps and lifts will comply with ADA standards. Securement for mobility devices shall consist of four securement belts. Additionally, a lap belt will be provided, if desired by the customer.

5.9. The vehicles' air conditioning system shall be of sufficient size and capacity to maintain an inside temperature of 75 degrees Fahrenheit or 20 degrees lower than the outside temperature, whichever is greater. The heating system shall have proportional controls and be of sufficient capacity to maintain an inside constant temperature of 68 degrees Fahrenheit throughout the vehicle.

6. EQUIPMENT CONDITION

6.1. Capital Metro shall maintain each bus in a clean condition throughout, both interior and exterior, at all times that the bus is in service for the City. All buses must be swept, mopped, interiors wiped down (i.e., dashboards, stanchions, bars, etc.). Each vehicle will be detailed at a minimum of once every forty-five (45) days.

6.2. All vehicles placed into revenue service shall have all safety items fully operational (i.e., lights, brakes, horn, tires, etc.).

6.3. Spare buses shall be available to replace any bus that may become disabled or otherwise unavailable for operations.

6.4. Capital Metro shall ensure regular and frequent maintenance checks of bus lifts and ramps and will keep all lifts and ramps are in good running condition.

7. REPORTING

7.1. Capital Metro shall electronically submit, on an annual basis, the required information for the U.S. DOT Drug and Alcohol Testing Management Information System Data Collection Form (MIS report). The information reported, for people working on the City of Round Rock's service, shall be reported under the City's MIS report. The City shall notify Capital Metro, on an annual basis, of their login information so the reporting may be completed.

7.2. Capital Metro shall electronically submit to the City of Round Rock, on a quarterly basis, random drug and alcohol testing reports for the City to provide the proper federally required oversight of drug and alcohol testing.

7.3. Capital Metro shall notify the City of all accidents and incidents within 24 hours. Accident/Incident reports shall be provided to the City within 24 hours after Capital Metro receives the document. The City will be notified immediately, by email, of passengers that receive medical attention.

7.3.1. Notification emails:

- Caren Lee, clee@roundrocktexas.gov
- Gary Hudder, ghudder@roundrocktexas.gov
- Michael Bennett, mbennett@roundrocktexas.gov

7.4. The City shall submit system information to the National Transit Database ("NTD") and FTA, as required by Section 5307.

7.5. Capital Metro shall collect data, keep records and provide reports sufficient to enable the City of Round Rock to meet its NTD reporting obligations as required by federal law and shall coordinate with the City of Round Rock to ensure the data is reported by the proper party and there is no double reporting of NTD data.

7.6. Capital Metro shall submit to the City of Round Rock the following information on a monthly basis:

- Days of service
- Number of passengers
- Total number of boarding' by fare category
- Passengers per hour

- Passengers per mile
- Revenue hours
- Revenue miles
- Vehicle hours
- Vehicle miles
- Vehicle maintenance
- Accident/Incident Reports

8. SERVICE ADJUSTMENTS

8.1. Service adjustments (i.e. changes to schedules) will occur three times per year, and must align with the scheduled service adjustments for all other Capital Metro services.

8.2. Modifications to services may include, but are not limited to, extending, deleting or adding routes, or parts of routes, and expanding or decreasing revenue hours.

8.3. The City may request service re-evaluation and service modifications for low-performing routes. Should low-performing routes be identified, Capital Metro and the City will coordinate to provide implementable options for increasing ridership.

9. TRAINING

9.1. All bus operators performing the service of the City will be properly trained to provide a high quality public transportation service Training will include, at a minimum, the following elements:

9.1.1. Defensive Driving

9.1.2. Customer service, including providing service to persons with disabilities and proper customer communication practices required for polite customer assistance.

9.1.3. Route specific training

9.1.4. Ongoing refresher training

9.2. The City shall have access to audit files upon request.

10. UNIFORM AND APPEARANCE

10.1. All bus operators will wear uniforms branded with Capital Metro logo and consistent with Capital Metro's Uniform Standards.

10.2. At all times while on duty, bus operators shall be well groomed, clean and in complete uniform.

11. PERSONNEL

11.1. Capital Metro shall furnish all operators, mechanics, dispatchers, supervisors, administrative personnel and other personnel services necessary for providing the Contracted Transit Services.

11.2. Capital Metro shall employ a street supervisor to monitor the Contracted Transit Services. Such supervision shall also include responses to and investigation of all accidents.

11.3. Capital Metro shall provide dispatch and radio monitoring personnel during hours of revenue service. Capital Metro shall be able to effectively dispatch assignments and provide prompt responses to driver and/or vehicle problems which could impact service.

11.4. The City shall have access to audit files upon request.

12. FARE COLLECTION

12.1. The City shall retain and deposit all revenues directly collected from sales by the City. Capital Metro shall retain and deposit all revenues directly collected from the sale of passes in the Capital Metro service area.

12.2. Capital Metro shall provide the City with fare media for Round Rock transit services, with the design approved by the City. Round Rock fare media shall be coded for Round Rock service.

12.3. All fares will be honored between the City's services and Capital Metro services.

12.4. All Round Rock proposed fares shall initially align with Capital Metro fares to provide a more seamless system for passengers. For routes that do not connect to Capital Metro services, changes to the fare structure shall be made at the discretion of the City, with a minimum 30-day notification of changes to Capital Metro. It is the ultimate goal of the City and Capital Metro to have a seamless fare structure.

13. MARKETING AND PUBLIC RELATIONS

13.1. Capital Metro and the City of Round Rock will coordinate to furnish all schedules, maps, tickets, transfers, passes and other printed materials required for marketing the service. Capital Metro and the City shall also coordinate to distribute appropriate materials for other routes and services that benefit customers of each service, such as passenger notices, cooperate and participate in marketing, promotion, advertising, public relations, and public education programs and projects.

13.2. All material for Round Rock service will specify that service is provided by the City of Round Rock and operated by Capital Metro.

13.3. Capital Metro will provide system-wide placards on all Capital Metro buses advertising the implementation of Round Rock transit service. Capital Metro and the City will coordinate on the most appropriate time to install the placards.

SFP-1-Schedule of Fees and Payments

Service Year 1

Route	Annual Hours	Hourly Operating Rate	Total Rate	Farebox Recovery Credit	Annual Vehicle Cost per TAM	Total Annual Cost
Local RR to Howard Rail Station	6,072	$ 75.00	$ 455,400	$ 50,094	$ 68,160	$ 473,466
Local RR Circulator	3,036	$ 75.00	$ 227,700	$ 25,047	$ 24,180	$ 226,833
RR to Howard Express	506	$ 75.00	$ 37,950	$ 4,175	$ 3,847	$ 37,623
RR Tech Ridge Limited	1,012	$ 75.00	$ 75,900	$ 8,349	$ 68,160	$ 135,711
Total Annual Estimated Cost			**$ 796,950**	**$ 87,665**	**$ 164,347**	**$ 873,633**

Service Year 2

Route	Annual Hours	Hourly Operating Rate	Total Rate	Farebox Recovery Credit	Annual Vehicle Cost per TAM	Total Annual Cost
Local RR to Howard Rail Station	6,072	$ 77.63	$ 471,369	$ 51,851	$ 69,936	$ 489,455
Local RR Circulator	3,036	$ 77.63	$ 235,685	$ 25,925	$ 24,816	$ 234,575
RR to Howard Express	506	$ 77.63	$ 39,281	$ 4,321	$ 3,948	$ 38,908
RR Tech Ridge Limited	1,012	$ 77.63	$ 78,562	$ 8,642	$ 69,936	$ 139,856
Total Annual Estimated Cost			**$ 824,896**	**$ 90,739**	**$ 168,636**	**$ 902,794**

SFP-1-Schedule of Fees and Payments

Service Year 3

Route	Annual Hours	Hourly Operating Rate	Total Rate	Farebox Recovery Credit	Annual Vehicle Cost per TAM	Total Annual Cost
Local RR to Howard Rail Station	6,072	$ 80.35	487,885	$ 53,667	71,736	$ 505,954
Local RR Circulator	3,036	$ 80.35	243,943	$ 26,834	25,464	$ 242,573
RR to Howard Express	506	$ 80.35	40,657	$ 4,472	4,050	$ 40,235
RR Tech Ridge Limited	1,012	$ 80.35	81,314	$ 8,945	71,736	$ 144,106
Total Annual Estimated Cost			**$ 853,799.10**	**$ 93,918**	**$ 172,986.00**	**$ 932,867**

Service Year 4

Route	Annual Hours	Hourly Operating Rate	Total	Farebox Recovery Credit	Annual Vehicle Cost per TAM	Total Annual Cost to RR
Local RR to Howard Rail Station	6,072	$ 83.16	$ 504,948	$ 55,544	$ 73,608	$ 523,011
Local RR Circulator	3,036	$ 83.16	$ 252,474	$ 27,772	$ 26,124	$ 250,826
RR to Howard Express	506	$ 83.16	$ 42,079	$ 4,629	$ 4,156	$ 41,606
RR Tech Ridge Limited	1,012	$ 83.16	$ 84,158	$ 9,257	$ 73,608	$ 148,509
Total Annual Estimated Cost			**$ 883,658**	**$ 97,202**	**$ 177,496**	**$ 963,951**

SFP-1-Schedule of Fees and Payments

Service Year 5

Route	Annual Hours	Hourly Operating Rate	Total	Farebox Recovery Credit	Annual Vehicle Cost per TAM	Total Annual Cost to RR
Local RR to Howard Rail Station	6,072	$ 86.07	$ 522,617	$ 57,488	$ 75,528	$ 540,657
Local RR Circulator	3,036	$ 86.07	$ 261,309	$ 28,744	$ 26,796	$ 259,361
RR to Howard Express	506	$ 86.07	$ 43,551	$ 4,791	$ 4,264	$ 43,024
RR Tech Ridge Limited	1,012	$ 86.07	$ 87,103	$ 9,581	$ 75,528	$ 153,050
Total Annual Estimated Cost			**$ 914,580**	**$ 100,604**	**$ 182,116**	**$ 996,092**

Total Cost Estimate	**$ 4,669,337**

ATTACHMENT INS-I - Insurance

1. Commercial General Liability Insurance Coverage with limits of not less than One Million Dollars ($1,000,000) each occurrence and not less than Two Million Dollars ($2,000,000) Combined Single Limit of Liability for Bodily Injury and Property Damage including Products Liability.

2. Automobile Liability Insurance covering all owned, hired and non-owned automobiles used in connection with Transit Services with limits not less than One Million Dollars ($1,000,000) and not less than Two Million Dollars ($2,000,000) Combined Single Limit of Liability for Bodily Injury and Property Damage.

3. Workers' Compensation Insurance Statutory Workers' Compensation coverage in the State of Texas. Employers Liability Insurance with minimum limits of liability of One Million Dollars ($1,000,000).

FY18

INTERLOCAL AGREEMENT

BETWEEN

CAPITAL METROPOLITAN TRANSPORTATION AUTHORITY
AND
THE CITY OF GEORGETOWN
(Contract Transit Services)

This Interlocal Agreement ("Agreement") is between Capital Metropolitan Transportation Authority, a rapid transit authority and political subdivision of the State of Texas organized under Chapter 451 of the Texas Transportation Code ("Capital Metro"), and the City of Georgetown, a home rule city and municipal corporation, organized under Chapter 9 of the Local Government Code ("City"), each individually referred to as "Party" and collectively referred to as "Parties", pursuant to the provisions of the Interlocal Cooperation Act, Chapter 791 of the Texas Government Code.

RECITALS

WHEREAS, City desires to obtain local fixed routes and complementary paratransit service in Georgetown through a partnership with Capital Metro; and,

WHEREAS, Capital Metro desires to provide the transit services to the City of Georgetown; and,

WHEREAS, City intends to utilize Federal Transit Administration ("FTA") funding under 49 U.S.C. 5307 ("Section 5307") to partly fund the cost of the transit services.

Now therefore, in consideration of the mutual covenants and agreements herein, Capital Metro and the City agree as follows:

AGREEMENT

1. **Services.** Capital Metro agrees to provide local fixed route and complementary paratransit service within the City. Fixed route and paratransit service shall be provided through a contract between Capital Metro and the Capital Area Rural Transportation System ("CARTS") or other mutually agreed upon transportation provider. Capital Metro shall conform to the Scope of Services ("Services"), set forth in Exhibit A and the Routes, attached as Exhibit B. The City grants Capital Metro the right to use the City's streets to provide the Services.

2. **Complementary Paratransit Services.** The City adopted a paratransit plan ("ADA Plan") on July 25, 2017 in accordance with the American with Disabilities Act (42 U.S.C. chapter 126). CARTS will determine eligibility for complementary paratransit services based on the City's ADA Plan.

3. **Term.** This Agreement shall be effective upon signature of the last party to sign and shall terminate on September 30, 2018, unless terminated for cause or convenience prior to the expiration date ("Term").

4. **Fees.**

a) The fees for Services shall not exceed the sum of $265,383 in FTA Section 5307 funds and the sum of $557,439 in local match funds from the City and shall be based on the hourly rates set forth in Exhibit C ("Fees").

5. **Invoicing and Payment.**

a) Invoices may be submitted once per month and submitted to the attention of:

City of Georgetown
Finance Department
P.O. Box 409
Georgetown, Texas 78627

b) All payments will be processed in accordance with Texas Prompt Payment Act, Texas Government Code, Subtitle F, Chapter 2251.

c) Capital Metro shall be paid, upon the submission of proper invoices, the prices stipulated in Exhibit C, for services rendered and accepted.

d) Invoices shall include data on Key Performance Measures ("Measures") attached as Exhibit D.

6. **Insurance.** Capital Metro shall require its bus contractor to maintain the minimum amounts of insurance and coverages set forth in Exhibit E ("Insurance").

7. **Independent Contractor.** Capital Metro's relationship to the City in the performance of this Agreement is that of an independent contractor. The personnel performing Services under this Agreement shall at all times be under Capital Metro's exclusive direction and control and shall be employees or subcontractors of Capital Metro's and not employees of the City. Capital Metro shall be fully liable for all acts and omissions of its employees, subcontractors, and their suppliers and shall be specifically responsible for sufficient supervision and inspection to assure compliance in every respect with Agreement requirements. There shall be no contractual relationship between any subcontractor or supplier of Capital Metro and the City by virtue of this Agreement. No provision of this Agreement shall be for the benefit of any party except the City and Capital Metro. Capital Metro shall pay wages, salaries and other amounts due its employees in connection with this Agreement and shall be responsible for all reports and obligations respecting them, such as Social Security, income tax withholding, unemployment compensation, workers' compensation and similar matters.

8. **Standards of Performance.** Capital Metro shall perform Services hereunder in compliance with all applicable federal, state, and local laws and regulations. Capital Metro shall use only licensed personnel to perform work required by law to be performed by such personnel.

9. **Licenses and Permits.** Capital Metro shall, without additional expense to the City, be responsible for obtaining any necessary licenses, permits, and approvals for complying with any federal, state, county, municipal, and other laws, codes, and regulations applicable to the performance of Services to be provided under this Agreement including, but not limited to, any laws or regulations requiring the use of licensed subcontractors to perform parts of the work.

10. **Notice of Labor Disputes.** If Capital Metro has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Services, Capital Metro immediately shall give notice, including all relevant information, to the City.

11. **Excusable Delays.** Except for defaults of subcontractors, Capital Metro shall not be in default because of any failure to perform this Agreement under its terms if the failure arises from causes beyond the control and without the fault or negligence of Capital Metro. Examples of these causes are: acts of God or of the public enemy, acts of the City of in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather. In each instance, the failure to perform must be beyond the control and without the fault or negligence of Capital Metro.

12. **Termination for Convenience.** The City may, whenever the interests of the City so require, terminate this Agreement, in whole or in part, for the convenience of the City. The City shall give ninety (90) days' prior written notice of the termination to Capital Metro specifying the part of the Agreement terminated and when such termination becomes effective shall incur no further obligations in connection with the Services so terminated, and, on the date set forth in the notice of termination, Capital Metro will stop the Services to the extent specified; provided, any such termination must align with Capital Metro's three (3) yearly service changes, which occur in January, June, and August.

13. **Equal Employment Opportunity.** In connection with the execution of this Agreement, Capital Metro shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. Capital Metro shall take affirmative action to ensure that applicants and employees are treated fairly without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, promotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

14. **Federal Funding.**

a) The City intends to use federal funds to meet a portion of is financial commitment under Agreement. In recognition of this fact, the Parties agree to conduct all procurements, maintain all records, and otherwise conduct their activities under this Agreement to ensure compliance with all applicable federal statutes, regulations, policies and Agreement requirements necessary to obtain and expend anticipated federal funds and reimbursements, including but not limited to the requirements of 49 C.F.R. section 18.36.

b) The Parties will specifically comply with the federal contracting requirements as set forth in the 2016 Federal Transit Administration Master Agreement ("Master Agreement") which may be access at the following link: https://www.transit.dot.gov/sites/fta.dot.gov/files/Bulletin16-06ENCLMasterAgreementFY2016_03-04-16.pdf. In doing so, the Parties will require compliance with the applicable federal contracting provisions in all of their contracts and subcontracts related to the Services. In their contracting processes, the Parties will solicit proposals or bids for all of the contracts in accordance with applicable federal, state and local laws, rules, regulations and funding requirements.

15. **Use of Information.** It shall be the responsibility of each Party to comply with the provisions of the Texas Public Information Act, Chapter 552 of the Texas Government Code ("TPIA"). Neither Party is authorized to receive requests or take any other action under the TPIA on behalf of the other Party.

16. **Examination and Retention of Records.** The City and its representatives shall have audit and inspection rights described below:

a) The City and its representatives shall have the right to examine, all books, records, documents, and other evidence and accounting procedures and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of this Agreement. Such right of examination shall include inspection at all reasonable times at Capital Metro offices, or such parts thereof, as may be engaged in or maintain records in connection with the performance of this Agreement.

b) All records shall be made available at the office of Capital Metro at all reasonable times for inspection, audit, or reproduction until the expiration of three (3) years from the date of final payment under this Agreement or for the amount of time required under applicable records retention laws, whichever is longer except that if this contract is completely or partially terminated, the records relating to the work terminated shall be made available for a period of three (3) years from the date of any final settlement or for the amount of time required under applicable records retention laws, whichever is longer.

17. **Limitation of Liability.** In no event shall either Party, their respective officers, directors, agents or employees be liable in contract or tort, to the other party (or its subcontractors) for special, indirect, incidental or consequential damages, resulting from the performance, nonperformance, or delay in performance of their obligations under this Agreement. This limitation of liability shall not apply to intentional tort or fraud.

18. **Claims.** In the event that any claim, demand, suit, or other action is made or brought by any person, firm, corporation, or other entity against the City, Capital Metro shall give written notice thereof, to the City within three (3) working days after being notified of such claim, demand, suit, or action. Such notice shall state the date and hour of notification of any such claim, demand, suit, or other action; the name and address of the person, firm, corporation, or other entity making such claim or instituting or threatening to institute any type of action or proceeding; the basis of such claim, action, or proceeding; and the name of any person against whom such claim is being made or threatened. Such written notice shall be delivered either personally or by mail as hereinafter provided.

19. **Assignment.** This Agreement shall be binding upon the parties, their successors, and assignees; provided, however, that neither Party shall assign its obligations or delegate its duties hereunder without the prior written consent of the other. Any attempted assignment or delegation without written consent shall be void and ineffective.

20. **Governing Law.** The rights, obligations, and remedies of the Parties shall be governed by the laws of the State of Texas. Whenever there is no applicable state statute or decisional precedent governing the interpretation of, or disputes arising under or related to, this Agreement, then federal common law, including the law developed by federal boards of contract appeals, the United States Claims Court (formerly the Court of Claims), and the Comptroller General of the United States, shall govern.

21. **Venue.** Venue for any action shall lie exclusively in Travis County, Texas.

22. **Incorporation by Reference.** Incorporated by reference the same, as if specifically written herein are the rules, regulations, and all other requirements imposed by the law, including but not limited to compliance with those applicable rules and regulations of the State of Texas and federal government, all of which shall apply to the performance of the Services under this Agreement.

23. **Severance.** Should any one or more provisions of this Agreement be deemed invalid, illegal or unenforceable for any reason, such as invalidity, illegality or unenforceability shall not affect any other provision held to be void, voidable, or for any reason whatsoever of no force and effect, such provision(s) shall be constructed as severable from the remainder of this Agreement and shall not affect the validity of all other provisions of this Agreement, which shall remain of full force and effect.

24. **Headings.** The headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

25. **Notices.** Any notice required or permitted to be delivered under this Agreement shall be deemed delivered in person or when deposited in the United States mail, postage prepaid, certified mail, return receipt requested, addressed to the City or Capital Metro, as the case may be, at the addresses set forth below. Notice given by any other manner shall be deemed effective only if and when received by the Party to be notified. A Party may change its address for notice by written notice to the other Party as herein provided.

If to City:

David Morgan, City Manager
City of Georgetown
113 E. 8th Street
Georgetown, Texas 78626

With copy to:

Charlie McNabb, City Attorney
City of Georgetown
113 E. 8th Street
Georgetown, Texas 78626

If to Capital Metro:

Capital Metropolitan Transportation Authority
Attn: Vice President of Strategic Planning and Development
2910 E. Fifth Street
Austin, Texas 78702

With copy to:

Capital Metropolitan Transportation Authority
Attn: Chief Counsel
2910 E. Fifth Street
Austin, Texas 78702

These writings are intended as the final expressions of the Agreement of the Parties and as a complete and exclusive statement of the terms of the Agreement.

26. **Performance.** The failure of a Party at any time to require performance by the other Party of any provision of this Agreement shall in no way affect the right of such Party to require such performance

at any time thereafter nor shall the waiver by either Party of a breach of any provision be taken or held to be a waiver of any succeeding breach of such provision or as a waiver of the provision itself.

27. **No Waiver.** The Parties to this Agreement are governmental entities under state law and nothing in this Agreement waives or relinquishes the right of the Parties to claim any exemptions, privileges and immunities as may be provided by law.

28. **Amendment.** This Agreement may be amended only in writing by an instrument signed by an authorized representative of Capital Metro and the City.

29. **Entire Agreement.** This Agreement represents the complete and entire Agreement between the Parties respecting the matters addressed herein, and supersedes all prior negotiations, agreements, representations, and understanding, if any, between the Parties pertaining to the subject matter herein.

30. **Current Revenues.** All monies paid by the Parties under this Agreement will be paid from current revenues available to the paying Party.

31. **Appropriation of Funds.** The obligations of the City under this Agreement to make payments to Vendor are subject to appropriation by the City of funds that are lawfully available to be applied for such purpose. If City fails to make such an appropriation prior to a fiscal period of City for the payments scheduled in such a fiscal period, this Agreement shall terminate at the end of the last fiscal period immediately preceding the fiscal period for which funds have not been appropriated. The City shall deliver notice to Vendor of such termination at least forty-five (45) days prior to such termination, but failure to give such notice shall not prevent the termination of this Agreement.

32. **Administrative Approvals.** The City's City Manager and the Capital Metro President/CEO will have the authority to negotiate and execute amendments to this Agreement without further City Council action or action from the Capital Metro Board of Directors, but only to the extent necessary to implement and further the clear intent of City Council and Capital Metro Board of Directors' approval, and not in such a way as would constitute a substantive modification of the terms and conditions hereof or otherwise violate Chapter 791 of the Texas Government Code. Any amendments that would constitute a substantive modification to the Agreement must be approved by the governing bodies of the Parties.

33. **Exhibits.** The following exhibits are incorporated herein by reference:

A. Services
B. Routes
C. Fees
D. Measures
E. Insurance

CERTIFICATIONS

The Parties certify that: (a) the Services specified herein are necessary and essential and are properly within the statutory functions of the affected governmental entity; (b) the proposed arrangements serve the interest of efficient and economical administration of the governmental function; (c) the Services, supplies or materials contracted for are not required by paragraph 21 of Article 16 of the Constitution of Texas to be supplied under an Agreement given to the lowest responsible bidder not is this Agreement prohibited by Chapter 791 of the Texas Government Code; and (d) this Agreement neither requires nor permits either Party to exceed its duties and responsibilities or the limitations of its authority.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective undersigned duly authorized effective as of the date of the last Party to sign.

Capital Metropolitan Transportation Authority

By: _____

Linda S. Watson
President/CEO

Date: 10/3/17

City of Georgetown

By: _____

Dale Ross
Mayor

Date: 9/28/2017

Exhibit A – Services

1. GENERAL PURPOSE

This Scope of Services documents the requirements related to the operation of fixed route and complementary paratransit services operated by a bus operator through a contract with Capital Metro for the City:

1.1. Capital Metro through its bus operator shall provide an operationally dependable vehicle service for passenger use, equipped for maximum passenger comfort in a cost-effective manner, and continually maintained and operated in a safe condition as described herein.
1.2. Capital Metro through its bus operator shall furnish all supervision, personnel, passenger vehicles, fuel, materials, supplies, storage and maintenance facilities, tools, equipment, insurance, and incidentals as required to perform an operationally dependable public transportation service.
1.3. The bus operator shall provide reservation and dispatch services in response to reservations made by customers or their agents through the bus operator's reservation system for paratransit service. For fixed route information, the bus operator shall provide such information.
1.4. Paratransit service eligibility and scheduling shall be completed by Capital Metro's bus operator in accordance with the City's ADA Plan.

2. VEHICLE HOURS

Annual vehicle hours are not to exceed 7,124 for fixed route and 3,562 for paratransit.

Service will include four (4) fixed routes, as shown in Exhibit B, and complementary paratransit service within the city limits.

3. VEHICLE REQUIREMENTS

3.1. Two peak vehicles are required for fixed route service. Vehicles shall be accessible and have the ability to transport at least twelve (12) seated persons.

3.2. One peak vehicle is required for paratransit service. The vehicle shall be accessible and capable of transporting at least twelve (12) seated persons.

4. SERVICE PERIOD

Service hours for weekdays are approximately 7:00 a.m. to 7:00 p.m. and Saturday 8:00 a.m. to 6:00 p.m. (times may vary within this window based on specific route schedules). The bus operator will not provide service on CARTS' holidays.

5. VEHICLES

5.1. Fixed route and complementary paratransit vehicles shall have adequate heating and air conditioning; two-way radios, not on citizen band frequency; fare box; adequate interior lighting; interior and exterior signage; and padded, comfortable seating for passengers. All vehicles shall be wheelchair accessible, capable of handling two wheelchair positions.

5.2. Vehicles shall have illuminated destination signs that are highly visible and in compliance with ADA regulations.

5.3. Vehicle destination signs shall display GoGeo and the route name or number when operating in Georgetown. The destination signs on routes operated within Georgetown will reflect that service is Georgetown service. All destination signs shall be illuminated for night operation.

5.4. Vehicles shall be equipped with passenger notice holders, and passenger discharge bells.

5.5. Vehicle bodies, frames, and components shall be in sound condition, and free of all damage. Vehicles shall comply with safety and mechanical standards of all state, federal and local governments. All mechanical, electrical, and hydraulic securement systems shall be maintained in proper working condition at all times.

5.6. All vehicles shall be equipped to permit inward and outward wheelchair boarding. Ramps and lifts will comply with ADA standards. Securement for mobility devices shall consist of four (4) securement belts. Additionally, a lap belt will be provided, if desired by the customer.

5.7. The vehicles' air conditioning system shall be of sufficient size and capacity to maintain an inside constant temperature of 75 degrees F. throughout the vehicle, regardless of outside temperature and relative humidity. The heating system shall have proportional controls and be of sufficient capacity to maintain an inside constant temperature of 70 degrees F. throughout the vehicle regardless of outside temperatures.

5.8. All vehicles operated by the bus operator shall be painted in accordance with the Capital Metro's graphic program.

5.9. Vehicles may support graphic content that identifies GoGeo when operating within Georgetown.

6. EQUIPMENT CONDITION

6.1. Capital Metro's bus operator shall maintain each bus in a clean condition throughout, both interior and exterior, at all times that the bus is in service for the City. All buses must be swept, mopped, interiors wiped down (i.e., dashboards, stanchions, bars, etc.).

6.2. All vehicles placed into revenue service shall have all safety items fully operational (i.e., lights, brakes, horn, tires, etc.).

6.3. Spare buses shall be available to replace any bus that may become disabled or otherwise unavailable for operations.

6.4. Capital Metro's bus operator shall ensure regular and frequent maintenance checks of bus lifts and ramps and will keep all lifts and ramps are in good running condition.

7. REPORTING

7.1. Capital Metro shall submit system information to the National Transit Database ("NTD") and FTA, as required by FTA Section 5307.

7.2. Capital Metro shall submit ridership data to the City on a monthly basis in a format mutually agreed to by both parties.

8. TRAINING

8.1. All bus operators performing the service of the City will be properly trained to provide a high quality public transportation service Training will include, at a minimum, the following elements:

8.1.1. Defensive Driving

8.1.2. Customer service, including providing service to persons with disabilities and proper customer communication practices required for polite customer assistance.

8.1.3. Route specific training

8.1.4. Ongoing refresher training

9. PERSONNEL

9.1. Capital Metro's bus operator shall furnish all operators, mechanics, dispatchers, supervisors, administrative personnel and other personnel services necessary for providing the Contracted Transit Services.

9.2. Capital Metro's bus operator shall employ a supervisor to monitor the Contracted Transit Services. Such supervision shall also include responses to and investigation of all accidents.

9.3. Capital Metro's bus operator shall provide dispatch and radio monitoring personnel during hours of revenue service. CARTS shall be able to effectively dispatch assignments and provide prompt responses to driver and/or vehicle problems which could impact service.

10. FARE COLLECTION

10.1. Capital Metro's bus operator shall collect all fare revenue.

10.2. The amount of fares collected will be documented on the City's monthly invoice and deducted from the cost of service.

10.3. Capital Metro's bus operator shall provide the City with fare media for Georgetown transit services.

11. MARKETING AND PUBLIC RELATIONS

11.1 Capital Metro and the City will coordinate on all schedules, maps and other printed materials required for marketing the service. Capital Metro and the City shall also coordinate to distribute appropriate materials for other routes and services that benefit customers of each service, such as passenger notices, cooperate and participate in marketing, promotion, advertising, public relations, and public education programs and projects.

11.2 All marketing material for GoGeo shall be the responsibility of the City.

Exhibit B – Routes

BUS SERVICE

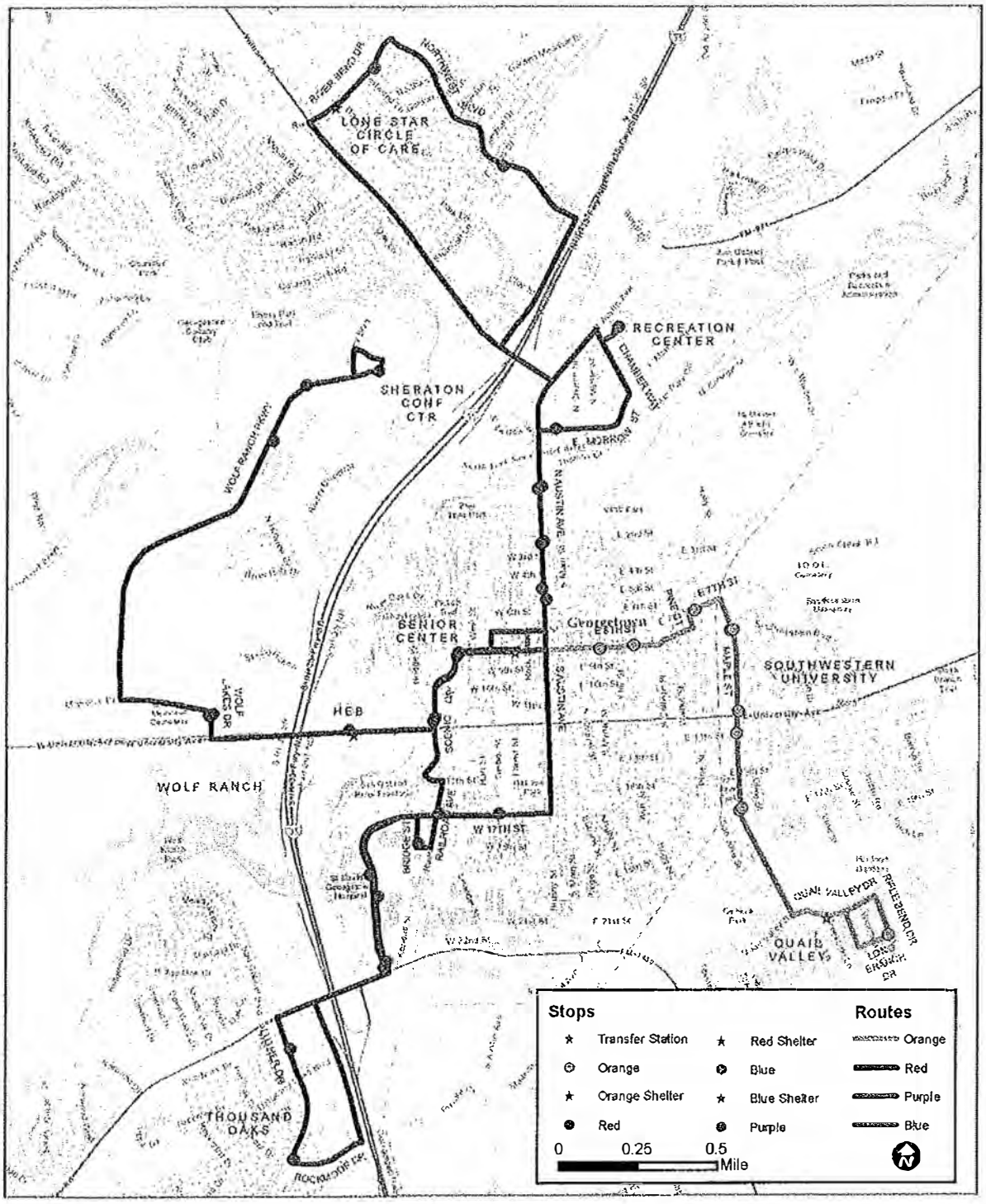


Exhibit C - Fees

Fiscal Year	Estimated Annual Hours	CARTS Hourly Operating Rate	Total Estimated Cost of Service	FTA Funding Section 5307	Local Funding Georgetown
FY 2018	10,686	77.00	$822,822	$265,383	$557,439



City of Georgetown

Fixed-Route Transit Performance Goals and Measures

I. Transit Goals and Objectives

Transit system performance must be measured based on goals and standards that reflect the operating environment and values of the community it serves. The goals and objectives for transit service in Georgetown were established in the 2015 Georgetown Transit Development Plan. The goals and objectives reflect the needs heard from the community, a review of existing conditions, and an analysis of the type of transit service that would meet the community's needs. Below are the four goals developed through this process.

Goal 1: Provide a safe, reliable, efficient, and accessible transportation option for residents and visitors of Georgetown.

Objective: Improve service efficiency and reliability for existing service by meeting or exceeding established standards of performance.

- Strategy: Identify key performance indicators specific to Georgetown; establish standards for these indicators that correlate with effective service delivery.
- Strategy: Establish a schedule for service evaluation and follow-up remedial actions.
- Strategy: Improve productivity in the service area.

Goal 2: Adequately address the mobility needs of Georgetown residents.

Objective: Improve access to employment, healthcare, shopping, and recreation.

- Strategy: Identify locations of employment, healthcare, shopping and recreation locations.
- Strategy: Define delivery times for employment, healthcare, shopping and recreation locations.
- Strategy: Refine routing to provide more direct access to some of the major destinations in the city, within existing resources based on location and delivery time review.

Goal 3: Maximize resource utilization and operational efficiency with respect to system administration and operations.

Objective: Maintain capital assets (vehicles and maintenance materials) in State of Good Repair.

- Strategy: Develop objective standards for measuring conditions of capital assets.
- Strategy: Establish performance measures for capital assets.
- Strategy: Develop policies and standards for replacement and rehabilitation of capital assets.

Goal 4: Develop a local system that operates effectively in the short-term, continues to develop an audience for regional transit options in the mid-term, and will connect the local community to the region in the long-term.

Objective: Provide access to activity centers today with an understanding of where future regional transit infrastructure is proposed to be located.

- Strategy: Submit regional transit projects to the CAMPO Transportation Improvement Plan (TIP).
- Strategy: Develop dedicated funding sources for local transit system.
- Strategy: Promote Project Connect North through city website and biennial Citizen Survey. Coordinate public awareness of Project Connect through public meetings and open houses.

II. Performance Measures

Performance measures are developed to address standards of service effectiveness, cost effectiveness, and cost efficiency. These standards will be used to guide service evaluations, set standards for future service changes, ensure compliance with federal requirements for the city of Georgetown, and ensure that the city's transit goals are being met.

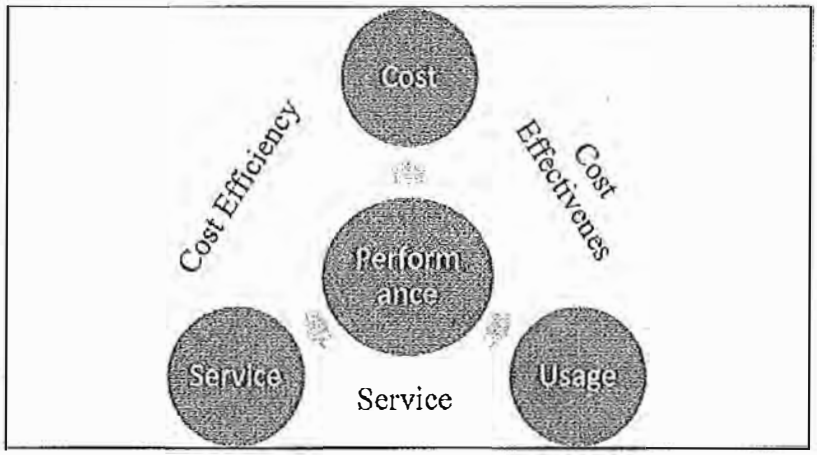
The standards used to measure performance of the Georgetown system are a sub-set of the measures that all federally funded transit agencies are required to provide the National Transit Database (NTD). The NTD was established by Congress to be the Nation's primary source for information and statistics on the transit systems of the United States. Recipients of grants from the Federal Transit Administration (FTA) under the Urbanized Area Formula Program (§5307) are required by statute to submit data to the NTD.

There are several measures that are used for NTD reporting; however, some measures are more helpful in determining success of a route or system. Five measures have been selected to monitor the Georgetown fixed-route service. They are based on the selected measures that peer transit agencies use to monitor transit systems and include:

1. Passengers per revenue hour (service effectiveness/productivity)
2. Fare recovery ratio (cost effectiveness)
3. Cost per passenger (cost effectiveness)
4. Cost per revenue hour (cost efficiency)
5. On-Time Performance (service effectiveness)
6. Total Annual Ridership (service effectiveness)

The six performance measures will be considered in relationship to each other, as success of a system is based on a number of factors, as shown below. The measures will be reported by route and by the system as a whole. Additionally, the measures should be reported to Georgetown City Council at least yearly in order to assist City Council in making decisions about the routes and the system.

Performance Standards and Common Elements



III. Descriptions of Key Performance Measures and Goals for Years One, Two and Three

Below is a description of the performance measures and goals that will be used to assess Georgetown's four core bus routes. Routes one and two are paired, so the goals should be shown in combination for both routes. Routes three and four are also paired, so the goals are paired as well.

1. PASSENGERS PER REVENUE HOUR

Passengers per revenue hour is a key productivity measurement that works as an effective tool for future service planning. Improving ridership is often the goal of planning bus service, however it is just as important to plan for additional ridership with a "right sized" route or system. Passengers per revenue hour is calculated by dividing the total number of passengers by the total number of revenue service hours. It provides a data point for monitoring ridership as it relates to total bus hours operated.

Passenger Per Revenue Hour Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	6	8	10
Routes 3 & 4	6	8	10

2. FARE RECOVERY RATIO

Fare recovery is the fraction of operating expenses that are met by the fares paid by passengers. Fare recovery is calculated by dividing fare revenue by operating costs.

Fare Recovery Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	6%	8%	10%
Routes 3 & 4	6%	8%	10%

3. COST PER PASSENGER

Cost per passenger is designed to track the cost effectiveness for the system as it relates to ridership over time. Cost per passenger is calculated by dividing the total operating expenses by total passengers (unlinked trips) to calculate the cost for each passenger on the service. Cost per passenger does not include fare recovery.

Cost Per Passenger Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	$12	$9	$7
Routes 3 & 4	$12	$9	$7

4. COST PER REVENUE HOUR

Cost per revenue hour is considered a cost efficency measure, focusing on how well an agency uses resources to deliver services, irrespective of usage. Cost per revenue hour is calculated by dividing total operating expenses by revenue hours. Revenue hours represent the hours that vehicles are available for public use. Cost per revenue hour does not include fare recovery.

Cost Per Revenue Hour Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	$75	$77	$79
Routes 3 & 4	$75	$77	$79

5. ON-TIME PERFORMANCE

Schedule adherence or on-time performance refers to the level of success of the bus remaining on the published schedule. On time performance is expressed as a percentage, with a higher percentage meaning more vehicles are on time. The level of on time performance is an important measure of the effectiveness of the system.

On-Time Performance Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	95%	95%	95%
Routes 3 & 4	95%	95%	95%

6. TOTAL ANNUAL RIDERSHIP

Total annual ridership is the actual number of passengers served by the transit routes. The data items are reported as the number of yearly unlinked passenger trips. Unlinked passenger trips are defined as the number of passengers who board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

Total Annual Ridership Goals

	FY 18	FY 19	FY 20
Routes 1 & 2	20,000	28,000	44,000
Routes 3 & 4	20,000	28,000	44,000
Total	40,000	56,000	88,000

Attachment A
Draft Yearly Performance Measure Report

1. PASSENGERS PER REVENUE HOUR

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	6	8	10
Routes 3 & 4	6	8	10

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Observations/Comments			

2. FARE RECOVERY RATIO

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	6%	8%	10%
Routes 3 & 4	6%	8%	10%

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Observations/Comments			

3. COST PER PASSENGER

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	$12	$9	$7
Routes 3 & 4	$12	$9	$7

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Observations/Comments			

4. COST PER REVENUE HOUR

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	$75	$77	$79
Routes 3 & 4	$75	$77	$79

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Observations/Comments			

5. ON-TIME PERFORMANCE

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	95%	95%	95%
Routes 3 & 4	95%	95%	95%

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Observations/Comments			

6. TOTAL ANNUAL RIDERSHIP

Goal			
	FY 18	FY 19	FY 20
Routes 1 & 2	20,000	28,000	44,000
Routes 3 & 4	20,000	28,000	44,000
Total	40,000	56,000	88,000

Actual			
	FY 18	FY 19	FY 20
Routes 1 & 2			
Routes 3 & 4			
Total			
Observations/Comments			

7. SUMMARY

Observations/Comments on overall system performance:
Observations/Comments on unmet goals:
Next Steps:

7. SUMMARY

Observations/Comments on overall system performance:
Observations/Comments on unmet goals:
Next Steps:

Exhibit F - Insurance

1. Commercial General Liability Insurance Coverage with limits of not less than One Million Dollars ($1,000,000) each occurrence and not less than Two Million Dollars ($2,000,000) Combined Single Limit of Liability for Bodily Injury and Property Damage including Products Liability.

2. Automobile Liability Insurance covering all owned, hired and non-owned automobiles used in connection with Transit Services with limits not less than One Million Dollars ($1,000,000) and not less than Two Million Dollars ($2,000,000) Combined Single Limit of Liability for Bodily Injury and Property Damage.

3. Workers' Compensation Insurance Statutory Workers' Compensation coverage in the State of Texas. Employers Liability Insurance with minimum limits of liability of One Million Dollars ($1,000,000).

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 4-D: DART Local Government Corporation for Transit Service in Mesquite, TX

Prepared for:

Texas A&M Transportation Institute

June 2018

FILED
In the Office of the
Secretary of State of Texas
JUL 22 2013
Corporations Section

FIRST AMENDED AND RESTATED ARTICLES OF INCORPORATION OF DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC

Pursuant to the provisions of Chapter 431 of the Texas Transportation Code (the "LGC Act"), the Dallas Area Rapid Transit Mesquite Bus Service, LGC (filing no. 801567341) hereby adopts the following First Amended and Restated Articles of Incorporation, which contains revisions to Article I, Article IV, Article VI, Article X, Article XV, and which restates the entire text of the Articles of Incorporation of Dallas Area Rapid Transit Mesquite Bus Service, LGC. This First Amended and Restated Articles of Incorporation fully conforms with the requirements of the LGC Act and the governing documents of the Corporation, contains amendments that conform to the requirements of the LGC Act and the governing documents of the Corporation, is an accurate copy of the Articles of Incorporation and all amendments that are in effect and all additional amendments made to the Articles, does not contain any other change in any provision thereof, and was approved at a meeting of the Board of Directors on June 6, 2013, subject to the subsequent approval by the Dallas Area Rapid Transit Board of Directors, which approval was given on June 11, 2013. The amendments received a majority vote of the Corporation's directors and the governing body's members in office.

ARTICLE I

The name of the local government corporation is Dallas Area Rapid Transit Bus Service, LGC (the "Corporation").

ARTICLE II

The Corporation is a public nonprofit corporation and a Texas governmental unit.

ARTICLE III

The period of duration of the Corporation shall be perpetual.

ARTICLE IV

The Corporation is created under the LGC Act for the purpose of aiding and acting on behalf of DART in the performance of its governmental purpose of providing a public transportation system by contracting to provide public transportation services solely by bus.

The Corporation shall have all of the powers and privileges of a nonprofit corporation incorporated under the Texas Business Organizations Code and which are necessary or useful to enable the Corporation to perform the purposes for which it is created, including the power to issue bonds, notes or other obligations, and otherwise exercise its borrowing power. Prior to the issuance, sale and delivery of any bonds, notes, or other obligations and any other exercise of its

borrowing power (all of the foregoing is herein collective referred to as "Borrowing"), the Corporation shall obtain the approval thereof from the Board of Directors of Dallas Area Rapid Transit ("DART"), a regional transportation authority created and existing pursuant to Chapter 452 of the Texas Transportation Code. In connection with any Borrowing, the Corporation shall select bond counsel and financial advisors approved by the DART Board of Directors.

The Corporation shall be a governmental unit within the meaning of Subdivision (2), Section 101.001, Texas Civil Practice and Remedies Code. The operations of the Corporation are governmental and not proprietary functions for purposes of the Texas Tort Claims Act, Section 101.001 *et seq.,* Texas Civil Practice and Remedies Code.

The Corporation shall have the power to acquire real property in accordance with the LGC Act as amended from time to time, subject to the approval thereof from of the DART Board of Directors. In the exercise of its powers, the Corporation may enter into agreements as authorized by the LGC Act that are necessary and appropriate to the fulfillment of the public purpose of the Corporation, except as prohibited in any interlocal agreements with DART or other public entity, or as limited or restricted in these Articles of Incorporation.

ARTICLE V

The Corporation shall have no members and shall have no stock.

ARTICLE VI

All powers of the Corporation shall be vested in a Board of Directors consisting of five (5) persons who shall be appointed by the DART Board of Directors. The Chairman and one other member of the DART Board of Directors shall be appointed as Directors of the Corporation. Three DART employees, upon the written recommendation of the President/Executive Director of DART and subject to the approval thereof from the DART Board of Directors, shall also be appointed as Directors of the Corporation. A majority of the Directors must be residents of the DART service area.

The initial Directors are identified in Article VIII below and shall serve until his successor is appointed and qualified as set forth in these First Amended and Restated Articles of Incorporation. Subsequent Directors shall be appointed by the DART Board of Directors and shall serve for the term prescribed in the Bylaws. If a Director ceases to be a member of the DART Board of Directors or an employee of DART, he or she shall be disqualified from serving as a Director. Any Board member may be removed from office at any time, with or without cause, by the DART Board of Directors.

Any vacancy on the Board shall be filled by a majority vote of the DART Board of Directors. Pending a vote by the DART Board of Directors, an interim appointment may be made by the Chair of the DART Board of Directors for any Director who is a DART Board member, and upon recommendation of the President/Executive Director of DART, for any

Director who is a DART employee.

All other matters pertaining to the internal affairs of the Corporation shall be governed by the Bylaws of the Corporation, so long as such Bylaws are not inconsistent with these Articles of Incorporation or the laws of the State of Texas. Such Bylaws may be amended from time to time by the vote of a majority of the Directors, and which majority must include both Directors who are members of the DART Board of Directors.

ARTICLE VII

The street address of the initial registered office of the Corporation is 1401 Pacific, Dallas, Texas 75202, which is within the DART service area, and the name of its initial registered agent at such address is Gary C. Thomas.

ARTICLE VIII

The Corporation shall be governed by a Board of Directors consisting of five (5) Directors. The names and street addresses of the initial Directors, a majority of whom reside within the DART Service Area, and **each of whom shall serve until replaced by the DART Board of Directors**, are:

NAME	ADDRESS
John Danish	1401 Pacific Avenue Dallas, Texas 75202
William Velasco	1401 Pacific Avenue Dallas, Texas 75202
Gary Thomas	1401 Pacific Avenue Dallas, Texas 75202
Jesse Oliver	1401 Pacific Avenue Dallas, Texas 75202
David Leininger	1401 Pacific Avenue Dallas, Texas 75202

ARTICLE IX

The names and street addresses of the incorporators, each of whom resides within the DART service area, are:

NAME	ADDRESS
Gary Thomas	1401 Pacific Avenue Dallas, Texas 75202
David Leininger	1401 Pacific Avenue Dallas, Texas 75202
Hyattye O. Simmons	1401 Pacific Avenue Dallas, Texas 75202

ARTICLE X

A resolution approving the form of these First Amended and Restated Articles of Incorporation has been adopted by the DART Board of Directors on June 11, 2013. The amendments received a majority vote of the Corporation's directors and the governing body's members in office, and have been approved in the manner required by the LGC Act and the governing documents of the Corporation.

ARTICLE XI

No Director shall be liable to the Corporation for monetary damages for an act or omission in the Director's capacity as a Director, except as is authorized by Texas or Federal law for public officials of a Texas governmental entity.

ARTICLE XII

The property of the Corporation, and a transaction to acquire the property, is exempt from taxation.

ARTICLE XIII

DART is entitled at any time to receive income earned by the Corporation that is not needed to pay the Corporation's expenses or obligations. No part of the Corporation's income shall inure to the benefit of any private interests.

ARTICLE XIV

The DART Board of Directors may at any time consider and approve a resolution

directing the Board of Directors to proceed with the dissolution of the Corporation, at which time the Board of Directors shall proceed with the dissolution of the Corporation in accordance with applicable state law. In the event of dissolution or liquidation of the Corporation, all assets shall be turned over to DART or any other corporation created by DART pursuant to the LGC Act, as the DART Board of Directors shall designate, and in accordance with state law.

ARTICLE XV

These First Amended and Restated Articles of Incorporation may not be changed or amended unless approved by the DART Board of Directors.

IN WITNESS WHEREOF, we have hereunto set our hands this 17 day of July, 2013.

DALLAS AREA RAPID TRANSIT

John Danish
Chair

Faye Moses Wilkins
Secretary

DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC

David Leininger
President

Jesse Oliver
Secretary

STATE OF TEXAS §
§
COUNTY OF DALLAS §

Before me, a notary public, on this day personally appeared the above list, known to me to be the person whose name is subscribed to the foregoing document and, being by me first duly sworn, declared that the statements therein contained are true and correct.

Given under my hand and seal of office this 17th day of July, 2013.

NANCY K. JOHNSON
NOTARY PUBLIC STATE OF TEXAS
COMMISSION EXPIRES:
04-11-2015

Nancy K. Johnson
Notary Public
State of Texas

BYLAWS
OF
DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC

ARTICLE I
PURPOSES

Section 1.01 Purposes. Dallas Area Rapid Transit Bus Service, LGC (the "Corporation") is organized for the purpose of aiding and acting on behalf of Dallas Area Rapid Transit ("DART"), a regional transportation authority created and existing pursuant to Chapter 452 of the Texas Transportation Code, in the performance of its governmental functions of providing a public transportation system by contracting to provide public transportation services solely by bus.

The Corporation shall have and exercise all of the rights, powers, privileges, authority, and functions given by the general laws of the State of Texas to non-profit corporations incorporated under the LGC Act, including, without limitation, the Texas Nonprofit Corporation Law, Chapter 22, Business Organizations Code, Section 22.001, *et seq.*

The Corporation shall not create a legal obligation for DART save and except with the express consent of DART. The Corporation shall comply with DART policies and, when applicable, shall comply with all Federal Transit Administration ("FTA") requirements.

The Corporation shall have the power to acquire real property, subject to the approval of the DART Board of Directors. The Corporation may, except as prohibited in any interlocal agreement with DART, contract with any qualified and appropriate person, association, corporation or governmental entity to acquire personal property or to perform and discharge designated tasks which will aid or assist the Corporation in the performance of its duties.

The Corporation shall have the power to accept any contribution or donation from any source and, with the concurrence of DART, shall have the power to request and accept any appropriation, grant, or other form of aid from the federal government or the State or from any other source.

ARTICLE II
DIRECTORS

Section 2.01. Appointment, Number, and Term of Office. All powers of the Corporation shall be vested in the Board of Directors (the "Board"). The Board shall consist of five (5) persons, four (4) of whom shall be appointed by the DART Board of Directors by resolution of the DART Board. The Chairman of the DART Board of Directors shall be deemed appointed as a Director of the Corporation without formal action by the DART Board of Directors. One other member of the DART Board of Directors shall be appointed as a Director of the Corporation. Three DART employees, upon recommendation of the President/Executive Director of DART, shall also be appointed as Directors of the Corporation. If a person ceases to

be a member of the DART Board of Directors or an employee of DART, as applicable, he or she shall be disqualified from serving as a Director.

A majority of the Directors must be residents of the DART service area.[1] A person may not be appointed as a Director if the appointment would result in less than a majority of the Board members being residents of the DART service area. Any Director may be removed from office at any time, with or without cause, by the DART Board of Directors.

The term of office for each initial Director shall extend to December 31, 2014 and he or she shall serve until his or her successor is appointed and qualified as set forth in the Articles of Incorporation. All subsequent terms shall be two (2) years and commence on January 1. Upon the expiration of the term of office of any such Director appointed by resolution of the DART Board of Directors, the DART Board of Directors shall appoint a successor Director, and the term of office for each such successor Director shall also be two (2) years. A Director shall continue to serve until his or her successor is appointed and qualified unless the Director no longer meets the qualifications for serving as Director.

To the extent allowed under Tex. Const. art. XVI, §17 (Officers to Serve Until Successors Qualified), in the event that a Director resigns, is removed or, by moving outside the DART service area, causes the majority of the Directors of the Board to live outside the DART service area or, otherwise is no longer qualified to serve as a Director, then such Director shall be considered removed from the Board and the DART Board of Directors shall provide for the appointment of a new Director to complete the unexpired term of such Director.

Any Director or officer may resign at any time. Such resignations shall be made in writing and shall take effect at the time specified therein, or, if no time be specified, at the time of its receipt by the President or Secretary. The acceptance of a resignation shall not be necessary to make it effective, unless expressly so provided in the resignation.

With the exception of the Chair of the DART Board of Directors, any vacancy on the Board shall be filled by a majority vote of the DART Board of Directors. Pending a vote by the DART Board, an interim appointment may be made by the Chair of the DART Board of Directors for any Director who is a DART Board member, and, upon recommendation of the President/Executive Director of DART, for any Director who is a DART employee.

Section 2.02. Meetings of Directors. The Directors may hold their meetings and may have an office and keep the books of the Corporation at such place or places as the Board may from time to time determine; provided, however, in the absence of any such determination, such places shall be the registered office of the Corporation in the State of Texas.

The Board and any committee of the Board exercising the powers of the Board shall meet in accordance with and file notices of each meeting of the Board as is required by Chapter 551 of the Texas Government Code (the "Open Meetings Act").

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[1] The DART service area consists of 13 cities: Addison, Carrollton, Cockrell Hill, Dallas, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Plano, Richardson, Rowlett, and University Park.

Public information created, collected or maintained by the Corporation, the Board, and any committee of the Board exercising the powers of the Board is subject to Chapter 552 of the Texas Government Code (the "Public Information Act").

Section 2.03. Annual Meetings. The first regular meeting of the Board following the start of each fiscal year shall be the Annual Meeting. The Annual Meeting shall be held at the registered office of the Corporation and shall be for the purpose of transacting such business as may be brought before the meeting.

Section 2.04. Regular Meetings. Regular meetings of the Board shall be held at such times and places as shall be designated, from time to time, by a resolution of the Board.

Section 2.05. Special Meetings. Special meetings of the Board shall be held whenever called by the President of the Board or by a majority of the Directors and shall be in accordance with the provisions of the Texas Open Meetings Act.

Each Director shall be given reasonable notice of each Special Meeting in person, by telephone, electronic transmission (e.g., facsimile transmission or electronic mail) or mail at least seventy-two (72) hours before the meeting. Unless otherwise indicated in the notice thereof, any and all matters pertaining to the purposes of the Corporation may be considered and acted upon at a Special Meeting.

Section 2.06. Quorum. A majority of the Board (which must include a member of the DART Board of Directors) shall constitute a quorum for the consideration of matters pertaining to the purposes of the Corporation. The act of a majority of the Directors present (which must include a member of the DART Board of Directors) and voting at a meeting at which a quorum is in attendance shall constitute the act of the Board.

The affirmative votes of all five Directors shall be required to approve the following matters:

1) The amendment of the Articles of Incorporation;
2) The amendment of these Bylaws.

Section 2.07. Conduct of Business. At the meetings of the Board, matters pertaining to the purposes of the Corporation shall be considered in such order as from time to time the Board may determine.

At all meetings of the Board, the President shall preside, and in the absence of the President, the Vice-President shall preside. In the absence of the President and the Vice-President, an acting presiding officer shall be chosen by the Board from among the Directors present.

The Secretary of the Corporation shall act as secretary of all meetings of the Board, but in the absence of the Secretary, the presiding officer may appoint any person to act as secretary of the meeting.

Section 2.08. Compensation of Directors; Reimbursement for Expenses. Directors shall not receive any salary or compensation for their services as Directors. Directors shall be reimbursed for their actual expenses incurred in the performance of their duties as Directors.

Section 2.09. Director's Liability. No Director shall be liable to the Corporation for monetary damages for an act or omission in the Director's capacity as a Director, except as is authorized by Texas or Federal law for public officials of a Texas governmental entity.

Section 2.10. Director's Reliance on Consultant Information. Unless there is an established rule of law to the contrary, a Director shall not be liable if while acting in good faith and with ordinary care, the Director relies on information, opinions, reports, or statements, including financial statements and other financial data, concerning the Corporation or another person that were prepared or presented by:

(a) one or more officers or employees of the Corporation or employees of DART; or

(b) legal counsel, public accountants, or other persons as to matters the Director reasonably believes are within the person's professional or expert competence.

ARTICLE III
OFFICERS

Section 3.01. Titles and Term of Office. The officers of the Corporation shall be a President, a Vice-President, a Secretary, a Treasurer, and other officers as the Board may from time to time elect or appoint. The initial term of the officers of the Corporation shall extend to December 31, 2014. The subsequent terms of office for each officer shall be two (2) years commencing on January 1.

Any vacancy in the office of any officer shall be filled by a majority vote of the Board. Pending a vote by the Board, an interim appointment may be made by the Chair of the DART Board for any Officer who is a DART Board member, and an interim appointment made by the President/Executive Director of DART for any Officer who is a DART employee.

Section 3.02. Powers and Duties of the President. The President shall be the principal executive officer of the Corporation and, subject to the Board, he or she shall be in general charge of the properties and affairs of the Corporation. In furtherance of the purposes of the Corporation and subject to the limitations contained in the Articles of Incorporation, the President or the Vice-President may sign and execute all bonds, notes, deeds, conveyances, franchises, assignments, mortgages, notes, contracts and other obligations in the name of the Corporation. The President shall have such other duties as are assigned by the Board. The President may call special meetings of the Board.

Section 3.03. Powers and Duties of the Vice-President. The Vice-President shall perform the duties and exercise the powers of the President upon the President's death, absence, disability, or resignation, or upon the President's inability to perform the duties of his or her office. Any action taken by the Vice-President in the performance of the duties of the President shall be conclusive evidence of the absence or inability to act of the President at the time such action was taken. The Vice-President shall have such other powers and duties as may be assigned to him or her by the Board or the President.

Section 3.04. Secretary. The Secretary shall keep or cause to be kept the minutes of all meetings of the Board in books provided for that purpose and he or she shall attend to the giving and serving of all notices. He or she shall have charge of the Corporation's books, records, documents and instruments, except the books of account and financial records and securities of which the Treasurer shall have custody and charge, and such other books and papers as the Board may direct, all of which shall at all reasonable times be open to the inspection of any Director upon application at the office of the Corporation during business hours and he or she shall, in general, perform all duties incident to the office of Secretary subject to the control of the Board.

Section 3.05. Treasurer. The Treasurer shall have custody of all the funds and securities of the Corporation which come into his or her hands. When necessary or proper, he or she may endorse, on behalf of the Corporation, for collection, checks, notes and other obligations and shall deposit the same to the credit of the Corporation in such bank or banks or depositories as shall be designated in the manner prescribed by the Board; he or she may sign all receipts and vouchers for payments made to the Corporation, either alone or jointly with such other officer as is designated by the Board; whenever required by the Board, he or she shall render a statement of his or her cash account; he or she shall enter or cause to be entered regularly in the books of the Corporation to be kept by him or her for that purpose full and accurate accounts of all moneys received and paid out on account of the Corporation; and he or she shall perform all acts incident to the position of Treasurer subject to the control of the Board.

Section 3.06. Compensation and Staff. Officers who are DART directors or employees or who occupy a government office of emolument (as defined under Tex. Const. art XVI, §40) are not entitled to compensation. Staff functions for the Corporation may be performed by DART staff, as directed by the DART President/Executive Director, and the Corporation shall pay the costs for such services as from time to time shall be billed to the Corporation by DART.

Section 3.07. Officer's Liability. No officer shall be liable to the Corporation for monetary damages for an act or omission in the officer's capacity as an officer, except as is authorized by Texas or Federal law for public officials of a Texas governmental entity.

Section 3.08. Officer's Reliance on Consultant Information. Unless there is an established rule of law to the contrary, an officer shall not be liable if while acting in good faith and with ordinary care, the officer relies on information, opinions, reports, or statements, including financial statements and other financial data, concerning the Corporation or another person that were prepared or presented by:

(a) one or more other officers or employees of the Corporation or employees of

DART; or

(b) legal counsel, public accountants, or other persons as to matters the officer reasonably believes are within the person's professional or expert competence.

Section 3.09. Removal from Office. Any officer may be removed from office at any time, with or without cause, by the Board of Directors.

ARTICLE IV
BUDGET

Section 4.01. Budget and Fiscal Year. The fiscal year of the Corporation shall commence on October 1st of each year and end on September 30th of the following year. At least ninety (90) days prior to October 1st of each year, the Board shall prepare and adopt a proposed budget of expected revenues and proposed expenditures for the next ensuing fiscal year. The budget shall contain such classifications and shall be in such form as may be prescribed from time to time by the DART Board of Directors. The budget proposed for adoption shall include the projected expenses, and such other budgetary information as shall be required by the DART Board of Directors for their approval and adoption. The budget shall be considered adopted upon formal approval of the DART Board of Directors.

ARTICLE V
INDEMNIFICATION

Section 5.01. Indemnification: Given that the Corporation has been created as a local government corporation pursuant to the LGC Act and therefore is a Texas governmental unit whose operations are all governmental and not proprietary functions for any purposes, to the maximum extent allowed by Texas law for local governmental entities, the Corporation may indemnify current and former directors, officers, and employees ("Indemnified Person") for acts and/or omissions that occur within the scope and course of their duties with the Corporation.

Section 5.02. Insurance. The Corporation may purchase and maintain insurance, at its expense, to protect itself and any Indemnified Person.

ARTICLE VI
CODE OF ETHICS

Section 6.01. Policy and Purposes.

A. It is the policy of the Corporation that Directors and officers conduct themselves in a manner consistent with sound business and ethical practices; that the public interest always be considered in conducting corporate business; that the appearance of impropriety be avoided to ensure and maintain the public confidence in the Corporation; and that the Board establish policies to control and manage the affairs of the Corporation, fairly, impartially, and without discrimination.

B. This Code of Ethics has been adopted as part of the Board's Bylaws for the following purposes: (a) to encourage high ethical standards in official conduct by Directors and corporate officers; and (b) to establish guidelines for such ethical standards of conduct.

Section 6.02. Unlawful Acts. In addition to any unethical conduct prohibited by Texas or Federal law and/or regulation for a Texas governmental officer or public official, a Director or officer shall not intentionally or knowingly offer, confer or agree to confer on another, or solicit, or agree to accept from another:

(a) any benefit as consideration for the Director or officer's decision, opinion, recommendation, vote, or other exercise of discretion as a Director or officer; or

(b) any benefit as consideration for a violation of a duty imposed by law on the Director or officer.

ARTICLE VII
CONSENT OF DART Board of Directors

Section 7.01. DART Board of Directors Consent. To the extent that these Bylaws refer to approval by DART or refer to advice and consent by DART, such approval or advice and consent shall be evidenced by a resolution duly adopted by the DART Board of Directors.

ARTICLE VIII
DISTRIBUTION OF NET INCOME

Section 8.01. Distribution of Net Income. DART is entitled at the end of each fiscal year to receive income earned by the Corporation that is not needed to pay the Corporation's expenses or obligations.

ARTICLE IX
MISCELLANEOUS PROVISIONS

Section 9.01. Seal. The seal of the Corporation shall be such as from time to time may be approved by the Board.

Section 9.02. Notice and Waiver of Notice. Whenever any notice whatever is required to be given under the provisions of these Bylaws, such notice shall be deemed to be sufficient if given by depositing the same in a post office box in a sealed postpaid wrapper addressed to the person entitled thereto at his or her post office address, as it appears on the books of the Corporation, and such notice shall be deemed to have been given on the day of such mailing. A waiver of notice, signed by the person or persons entitled to said notice, whether before or after the time stated therein, shall be deemed equivalent thereto.

Section 9.03. Amendments. A proposal to alter, amend, or repeal these Bylaws shall be made by the affirmative vote of all the Directors at any annual or regular meeting, or at any special meeting if notice of the proposed amendment be contained in the notice of said special meeting. However, any proposed change or amendment to the Bylaws must be approved by the DART Board of Directors to be effective.

Section 9.04. Gender. References herein to the masculine gender shall also refer to the feminine in all appropriate cases, and vice versa.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 4-E: DART Interlocal Agreement with the City of Mesquite and STAR Transit to Provide City of Mesquite Passenger Shuttle Service (COMPASS)

Prepared for:

Texas A&M Transportation Institute

June 2018

THE STATE OF TEXAS }

} KNOW ALL MEN BY THESE PRESENTS

COUNTY OF DALLAS }

INTERLOCAL PUBLIC TRANSIT SERVICE AGREEMENT

THIS AGREEMENT, ("Agreement") by and between Dallas Area Rapid Transit Bus Service, LGC ("LGC"), a Texas local government corporation organized and existing pursuant to Subchapter D of Chapter 431 of the Texas Transportation Code, STAR TRANSIT ("STAR Transit"), a Texas rural public transportation district and governmental entity organized and existing under Chapter 458 of the Texas Transportation Code, and the City of Mesquite, Texas (hereafter referred to as "CITY") a Texas municipal corporation whose address is 1515 N. Galloway Ave., Mesquite, TX 75149 (collectively, referred as the "the Parties" or individually, as a "Party").

W I T N E S S E T H:

WHEREAS, On the terms provided herein, LGC and STAR Transit are willing to jointly operate a public transit commuter express bus feeder service (known as "DART Route 282" or "Compass Route") between the CITY Park and Ride Lot near Hanby Stadium in downtown Mesquite and the Lawnview Station on the Dallas Area Rapid Transit ("DART") Green Line in the City of Dallas, Texas (hereafter referred to as the "Service"); and

WHEREAS, the CITY is willing to pay the fully burdened cost of the Service, including all costs associated with the Service, as hereinafter described in this Agreement; and

WHEREAS, this Interlocal Public Transit Service Agreement is consistent with the DART Board Policy III.07, Fixed Route Service Beyond Service Area Boundary, as may be revised from time to time (the "DART Board Policy").

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions contained herein, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Term and Termination

1.01. The term of this Agreement shall begin on the 1st day of January 2015 and terminate at midnight on the 31st day of December, 2017 unless earlier terminated as herein provided. Upon termination or expiration of the term, any rights granted herein to access the DART system also terminate.

1.02. In addition to any other termination provision contained herein, any Party shall have the right to terminate this Agreement, at any time without liability, by giving the other Parties

120 calendar days advance written notice of termination. In the case of termination by a single Party, this Agreement shall terminate as to all Parties.

1.03. In the event that any Party shall fail to perform any of their respective material obligations under this Agreement, any non-defaulting Party shall have the right to terminate this Agreement if the defaulting Party has not cured any such failure to perform within 30 days following written notice by any Party of such failure.

1.04. In the event that CITY fails to make any payment required by this Agreement, LGC may require STAR Transit to immediately suspend the Service hereunder for the period(s) related to the lack of payment. The suspension may continue until payments resume.

2. Fees, Fares, Costs and Service Modifications

2.01. The Service shall be between the Hanby Station Park & Ride Lot in Mesquite and the Lawnview Station in Dallas and according to Exhibit A, attached to this Agreement and incorporated herein for all purposes.

2.02. The CITY may request modifications to the route, stops, schedule and Vehicles (as defined below) by giving written notice to LGC and STAR Transit. LGC and STAR Transit shall implement such request from the CITY, provided the Parties have negotiated and agreed to the terms and conditions under which such modifications shall be provided, including any increases in payment due for such additional Service, and provided that: (a) the CITY has made all payments previously due for the Service according to the terms of this Agreement, (b) such modifications have been approved by the DART Board, and (c) all legal requirements related to such modifications (such as, by example and not limitation, any public hearings) have been met.

2.03. The Service provided under this Agreement shall be available to any passenger traveling between the Hanby Stadium and the Lawnview Station, subject to the DART Code of Conduct. Passengers boarding this Service will be required to pay the valid DART system fare for the Service. A copy of the current fare structure for the Service is attached to this Agreement as Exhibit B, and incorporated herein for all purposes. DART reserves the right to increase fares during the term with the result that fares under this Agreement would increase as well.

2.04. STAR Transit and LGC shall provide the Service in partial consideration of: i) the payments made by the CITY as set forth herein in Section 5.06, and ii) fares paid for the Service. Fare revenue, which will be collected by LGC in accordance with this Agreement, will be apportioned annually between LGC and CITY in accordance with the methodology set forth in Exhibit C hereof. The Parties acknowledge and agree that payments shall be made in accordance with Sections 4.12and 5.06 below, to STAR Transit and LGC, respectively, as provided therein.

2.05. The Parties shall participate and cooperate with each other in periodic planning and service evaluation meetings regarding the Service.

3. STAR Transit Duties and Responsibilities

3.01. STAR Transit shall provide at least two lift equipped buses (and spare buses as necessary) with no less than 18 seats each and as otherwise required herein (the "Vehicles").

3.02. DART logos and STAR Transit logos shall be affixed to the Vehicles in a location approved by STAR Transit and LGC.

3.03. Vehicles at all times shall be fully compliant with the Americans With Disabilities Act of 1990 (42 U.S.C. 12101-12213) and relevant regulations applicable thereto (collectively, "the ADA"), licensed for passenger operations by the State of Texas, and equipped with a bicycle rack and two-way radio or comparable communication device.

3.04. Vehicles in Service shall be operated at all times by an operator duly licensed by the State of Texas to operate the Vehicles. Each operator shall wear a uniform with a clearly visible badge designating the employee name and STAR Transit's name and logo.

3.05. No Vehicle operator may have had three or more moving violations within a one-year period.

3.06. STAR Transit shall be responsible for the safe operation of the Vehicles and the reasonable protection of the passengers, operators and all others using or maintaining the Vehicles.

3.07. STAR Transit shall provide (or cause to be provided) all fuel, mechanical repairs, maintenance and upkeep required to keep the Vehicles in a safe and clean condition.

3.08. STAR Transit shall secure (or cause to be secured) all permits and other governmental authorizations required to provide the Service (subject to Section 5.02 hereof).

3.09. STAR Transit (including its agents, employees and contractors) shall at all times comply with all applicable laws, ordinances and regulations of any and all governmental entities having jurisdiction over the Parties or the operation of the Service.

3.10. Exterior and interior advertising on the Vehicles shall be managed by STAR Transit at its sole discretion and within the guidelines and parameters established by the STAR Transit Advertising and Concessions Policy. All revenue generated by the sale of such advertising shall belong to STAR Transit.

3.11. Subject to the provisions of Section 5.05 hereof, STAR Transit acknowledges and agrees that it must comply with the requirements of the ADA, to the extent applicable, in operating the Service without additional cost to LGC or DART.

3.12. STAR Transit shall provide information about the Service on its website (STARTransit.org) and distribute timetables developed and printed by LGC for the Service.

3.13. STAR Transit will collect daily ridership and revenue information by trip, direction and by fare type. This information shall be provided to LGC and CITY in an excel spread sheet report on a weekly basis, on the second business day of the subsequent week for the prior week.

3.14. STAR Transit shall pay all taxes and excise fees, if any, required by the Service or due to use of the Vehicles.

3.15. STAR Transit shall provide the Service in compliance with DART policies for quality of service, including, by example and not limitation, for on-time performance. STAR Transit shall provide LGC with monthly information regarding ridership and on-time performance of the Service.

3.16. STAR Transit shall collect all information necessary for National Transit Database ("NTD") reporting including, but not limited to costs, scheduled and actual revenue and total miles, scheduled and actual revenue and total hours, passengers miles, and passenger boardings. STAR Transit shall annually report Service operated under this Agreement to the NTD. If the DFW regional allocation of 5307 formula funds is increased and allocated to the DFW region based upon the reporting of this Service, and such increased funding is directed to STAR Transit by the Metropolitan Planning Organization, the monies due STAR Transit under this Agreement shall be reduced by the amount of such additional funding in the year that STAR Transit receives this funding.

4. LGC Duties and Responsibilities

4.01. LGC shall provide a bus bay for the Service at the Lawnview Station for passenger loading and unloading, at no cost to the other Parties.

4.02. In addition to the Service as described herein, LGC shall provide demand-responsive access at Buckner Station and Lake Ray Hubbard on terms and locations as determined by LGC in accordance with DART Board Policy IV. 14.

4.03. LGC shall provide access for STAR Transit operators to the crew room at Lawnview Station for the Service.

4.04. LGC shall clean and maintain the bus stop and related amenities at the Lawnview Station consistent with the schedule for other bus stops. Maintenance shall include, by example and not limitation. cleaning and removal of any trash, debris, snow, ice or other hazards and obstacles.

4.05. LGC may, but is not required to, assign DART police officers to ride the Vehicles at any time. In the event STAR Transit notifies LGC of emergency circumstances, LGC will provide emergency DART police service for assistance in those emergency circumstances.

4.06. LGC shall provide customer service and public information during business hours (as determined by LGC) through the DART customer service center, the DART.org website,

DART service alerts, DART and Google trip planners, DART printed timetables and maps, DART stop level information, and other DART public information.

4.07. LGC shall install and maintain bus stop poles and signs at bus stops for the Service. The graphics used for the signs and the locations of the poles and signs shall be approved by STAR Transit and CITY prior to installation.

4.08. LGC shall provide three fare boxes to STAR Transit for use on the Vehicles. LGC shall provide technical assistance to STAR Transit regarding installation, maintenance, and operation of the fare boxes. LGC shall empty the vault of each fare box on a regular schedule as determined by LGC. DART passes shall be honored but may require an additional fee for the Service. LGC shall provide fare and pass media to STAR Transit for sale of fares and passes for the Service. Upon termination or expiration of this Agreement, the three fare boxes shall be returned to LGC in good condition and repair, normal wear and tear excepted.

4.09. LGC shall provide DART logos to STAR Transit for installation on the Vehicles.

4.10. Performance Measures and Reporting. LGC shall provide CITY with monthly information regarding ridership and on-time performance of the Service within 30 days of receipt of such information from STAR Transit.

4.11. LGC will distribute and analyze surveys of the Service to users of the Service. Results of the surveys shall be provided to STAR Transit and CITY. STAR Transit and CITY may provide input regarding the design of the survey instruments.

4.12. Commencing on the second business day of February, 2015, and on the second business day of every month thereafter during the term hereof, LGC shall pay STAR Transit in arrears the amounts corresponding to the monthly Service provided, as shown in Exhibit D hereof and incorporated herein for all purposes. Accordingly, as an example, on February 3, 2015, LGC shall pay STAR Transit the sum of $24,464.42, which is the amount reflected in Exhibit D for Service for the 21 operating days in January, 2015. Payment to STAR Transit is contingent on STAR Transit making the fare boxes available to LGC as required by LGC. LGC shall send payments to STAR Transit electronically to an account identified by Star Transit, or by mail to the following address:

STAR Transit
Business Office
P.O. Box 703
Terrell, TX 75160

It is anticipated herein that all fare revenue will be collected by LGC. To the extent any fare revenue is collected by STAR Transit, however, payments to STAR Transit pursuant to this Section shall be reduced accordingly.

5. CITY Duties and Responsibilities

5.01. CITY shall permit LGC to operate the Service on CITY streets and at approved bus stops and shall provide all maintenance of the streets as necessary and shall be responsible for wear and tear of pavement surfaces.

5.02. CITY shall obtain all permits and permissions required for the Park and Ride Lot at Hanby Stadium.

5.03. CITY, at CITY's expense, shall construct and maintain (or cause to be constructed and maintained) all necessary facilities at the bus stop(s) and Hanby Stadium Park and Ride Lot, including by example and not limitation, any necessary sidewalks, pavement, lighting, or bus shelters. CITY shall ensure that all facilities provided at the bus stop(s) and Park and Ride Lot in CITY comply with the ADA. Maintenance shall include cleaning of any trash, debris, snow, ice or other hazards or obstacles at the Park and Ride Lot and bus stop(s).

5.04. CITY shall assist in marketing and communications regarding the Service to residents using the CITY website, resident newsletters, or other methods of communication controlled by the CITY.

5.05. In the event the Service requires complementary ADA paratransit service, CITY acknowledges and understands it is responsible for compliance and costs with the requirements of the complementary paratransit obligations of the ADA as may be applicable to the Service. Further, CITY shall monitor the transportation needs and special requirements of those persons using the paratransit service provided by CITY and shall provide ADA accommodations as necessary for transitioning into or from the Service. CITY shall assume full responsibility for the accessible paratransit transportation of eligible persons within its jurisdiction and associated costs.

5.06. Commencing January 1, 2015, and on the first day of every month thereafter during the term hereof, CITY shall pay LGC, in advance, the amounts corresponding to the monthly Service to be provided, as shown in Exhibit D hereof and incorporated herein for all purposes. Accordingly, as an example, on January 1, 2015, LGC shall pay STAR Transit the sum of $28,993.84, which is the amount reflected in Exhibit D for Service during the 21 operating days in January, 2015. CITY shall send payments to LGC electronically to an account identified by LGC or by mail to the following address:

Dallas Area Rapid Transit
Accounts Receivable
P.O. Box 840009
Dallas, TX 75284-0009

The amount due hereunder is subject to change in the event that CITY requests a change in miles, hours or Vehicles and such change is approved and implemented as specified above.

6. Joint Marketing and Communications. The Parties acknowledge that marketing and communications regarding the Service may require the use of marks and logos that are owned by each of the Parties. The Parties agree to such limited use of their individually owned or registered marks, logos, and trade names in connection with providing and promoting the Service under this Agreement.

7. Force Majeure. LGC and STAR Transit shall at all times use reasonable commercial efforts to provide or cause the Service to be provided continuously, however, neither LGC nor STAR Transit warrant or guarantee uninterrupted Service and neither shall be liable for any special, direct or consequential damages relating to or arising from an interruption in Service. The obligations of LGC and STAR Transit to perform under this Agreement shall be suspended to the extent that either or both are unable to perform as a result of causes beyond the respective Party's reasonable control and without such Party's fault or negligence, including but not limited to, equipment breakdown, accidents, acts of nature and governmental action. In such event, LGC and STAR Transit shall use reasonable efforts to eliminate the cause as quickly as possible.

8. Payments. Each July 1 during the term of this Agreement, LGC and STAR Transit shall jointly provide a pricing schedule to CITY to be effective the following calendar year during the term. Pricing may be impacted based upon ridership exceeding 55,000 annual boardings as described in Exhibit D. Any payments made under this Agreement shall be made from revenues currently available to the Parties. The provisions of Chapter 2251 of the Texas Government Code shall apply to payments under this Agreement.

9. Audit and Retention of Records. Any Party shall have the right to request an audit of another Party's records related to the operation of the Service. The Parties shall retain adequate records for auditing purposes for a period of three years after final payment hereunder.

10. Insurance. To the extent allowed by Texas Law, STAR Transit shall, at all times during the term of this Agreement, provide and maintain a program of insurance or self-insurance providing automobile and general liability coverage with limits of no less than $500,000 per occurrence. The policies shall be endorsed with an "Indemnification Under Contract" endorsement in favor of DART and LGC. STAR Transit shall provide evidence thereof prior to the beginning of the Service. STAR Transit shall also maintain a program of insurance or self-insurance worker's compensation and employers liability for the benefit of its employees in compliance with the Texas Workers Compensation Act. A waiver of subrogation shall be provided in favor of DART and LGC.

10.01. STAR Transit shall also maintain collision and comprehensive coverage or a self-insured program covering physical damage to the fare boxes installed in the vehicles or any other DART or LGC owned property.

10.02. STAR Transit, its contractor or its Third Party Administrator will handle the administration, monitoring, and resolution of all third party claims arising out of this Agreement. All third party settlements and releases shall include a full and final release in favor of DART and LGC.

11. Indemnifications

11.01. To the extent permitted by applicable law, LGC shall defend, indemnify and hold STAR Transit and CITY, and their officers, employees, visitors and contractors, harmless from all loss, cost and expense by reason of injury (including death), to any person, or damage to property, arising out of or from any accident or other occurrence taking place during the performance of this Agreement, which injury or damage results from negligence on the part of LGC, its agents, employees, or contractors.

11.02. To the extent permitted by applicable law, STAR Transit shall defend, indemnify and hold LGC and CITY, their directors, officers, employees and contractors harmless from all loss, cost and expense by reason of injury, (including death), to any person or damage to property, arising out of or from any accident or other occurrence taking place during the performance of this Agreement, which injury or damage results from negligence on the part of STAR Transit, its agents, employees or contractors.

11.03. To the extent permitted by applicable law, CITY shall defend, indemnify and hold LGC and STAR Transit, their directors, officers, employees and contractors, harmless from all loss, cost and expense by reason of injury, (including death), to any person, or damage to property, arising out of or from any accident or other occurrence taking place during the performance of this Agreement, which injury or damage results from negligence on the part of CITY, its agents, employees or contractors.

11.04. To the extent permitted by applicable law, STAR Transit and CITY hereby release, indemnify, defend and hold DART harmless from all loss, cost and expense by reason of injury, (including death), to any person, or damage to property, arising out of or from any accident or other occurrence taking place during the performance of this Agreement, which injury or damage results from any negligence or misconduct on the part of the indemnifying Party or its agents, employees or contractors, whether now known or otherwise. In the event of any third party claim against DART arising out of the terms of this Agreement, the Parties shall jointly provide any necessary defense with counsel reasonably acceptable to DART so as to eliminate liability on the part of DART, it being acknowledged that DART is not a Party to this Agreement.

11.05. In the event of joint or concurring negligence or fault of two or more Parties, liability, if any, shall be apportioned comparatively in accordance with the law of the State of Texas. The provisions of this Section are solely for the benefit of the Parties hereto and not intended to create or grant any rights, contractual or other vise, to any other person or entity, nor limit the right of LGC, STAR Transit or CITY to assert any governmental immunity defense to any claim of another Party or entity. The provisions of this Section 11 shall survive termination or expiration of this Agreement.

12. Miscellaneous Provisions.

12.01. Notices. Any notice by any Party shall be in writing and shall be deemed to have been duly given only if delivered personally or sent by United States mail, certified, return receipt requested, in a postage paid envelope addressed to the Parties as set out below:

LGC:
c/o DALLAS AREA RAPID TRANSIT
P.O. Box 660163
Dallas, Texas 75266-7213
Attention: Todd Plesko
Vice President, Planning and Development

STAR Transit:
STAR Transit
200 South Virginia
P.O. Box 703
Terrell, Texas 75160
Attention: Omega Hawkins
Executive Director

CITY:
City of Mesquite
1515 N. Galloway Ave.
Mesquite, TX 75149
Attention: Jerry Dittman
Assistant City Manager

With a copy to:

City Attorney
City of Mesquite
1515 N. Galloway Ave.
Mesquite, Texas 75149

A Party may designate another address by giving notice thereof to the other Parties.

12.02. Binding Effect. The provisions of this Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors and permitted assigns. There shall be no third party beneficiaries of this Agreement.

12.03. Fiscal Funding. CITY is a political subdivision of the State of Texas (or creation thereof). CITY shall have the right, upon the failure of the governing body of CITY to appropriate sufficient finances to fund of this Agreement, to terminate this Agreement as of the effective date of such lack of fiscal funding. When exercising this right, CITY shall give notice

to the other Parties of any such failure of funding at the earliest possible time. Furthermore, the Parties recognize that the CITY is obtaining partial federal funding for this Agreement. In the event such federal funding is not available to the CITY, CITY may terminate this Agreement for that reason, but must do so in writing as soon as CITY becomes aware of the lack of federal funding.

12.04. Construction and Drafting. The paragraph headings in this Agreement are intended for convenience only and shall not be taken into consideration in the construction or interpretation of this Agreement. Whenever used herein, unless the context otherwise provides, the singular number shall include the plural, the plural the singular, and the use of any gender shall include all other genders. All Parties have participated in the drafting hereof and accordingly no party shall be given credit therefor in the interpretation of this Agreement.

12.05. Partial Invalidity. Any portion of this Agreement being declared by law to be invalid shall not invalidate the remaining provisions which shall remain in full force and effect.

12.06. Merger and Amendment. This instrument constitutes the entire agreement of the Parties with respect to the matters contemplated herein and it may be modified or amended only in writing, signed by all parties hereto and in accordance with the terms hereof.

12.07. No partnerships or Joint Enterprise. It is mutually understood and agreed that this Agreement is intended by the Parties to establish only an independent contractual relationship and is not intended to create a partnership or joint venture between any or all Parties.

12.08. Use of Contractors. Nothing in this Agreement shall prevent a Party from using a contractor or agent to perform the duties and responsibilities contemplated by this Agreement.

12.09. Exhibits and Attachments. The exhibits attached to this Agreement are incorporated by reference as if written word for word herein. In the event of conflict between the exhibits and this Agreement, the terms of this Agreement shall prevail.

12.10. Assignment. No Party may assign its rights and obligations or either under this Agreement, in whole or in part, without first obtaining the prior written consent of all other Parties, which consent may be withheld for any reason. No assignee or successor may further assign, in whole or in part, its rights and obligations without prior written consent of each remaining Party to this Agreement at the time of further assignment.

12.11. Incorporation of Recitations. The recitations and "whereas" provisions of this Agreement are incorporated herein as part of this Agreement for all purposes.

12.12. DART Board Policy. The Provisions of the DART Board Policy are incorporated herein and binding on the Parties hereto. Any renewal of this Agreement must be approved by each Party and the DART Board of Directors regardless of whether the Agreement complies with DART policies.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in multiple originals as of the 28th day of October, 2014.

DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC

By: _____
David Leininger
President

STAR TRANSIT

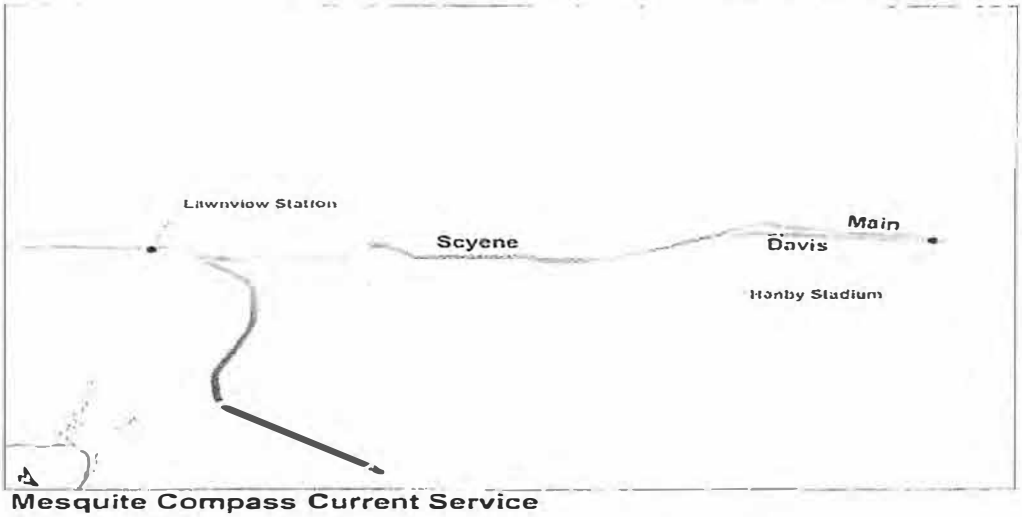
By: _____
Omega Hawkins
President/Executive Director

CITY OF MESQUITE

By: _____
Ted Barron
City Manager

EXHIBIT A

Route and Schedule for Route 282 Compass



Mesquite Compass Current Service

COMPASS SCHEDULE

LV Hanby Stadium	AR Lawnview	LV Lawnview	AR Hanby Stadium
5:02 AM	5:22 AM	5:36 AM	5:54 AM
5:35 AM	5:55 AM	6:06 AM	6:24 AM
6:03 AM	6:25 AM	6:36 AM	6:56 AM
6:32 AM	6:54 AM	7:06 AM	7:26 AM
7:03 AM	7:25 AM	7:36 AM	7:56 AM
7:33 AM	7:55 AM	8:06 AM	8:26 AM
8:03 AM	8:25 AM	8:36 AM	8:56 AM
8:33 AM	8:55 AM		
9:15 AM	9:37 AM	9:40 AM	10:00 AM
10:15 AM	10:37 AM	10:40 AM	11:00 AM
11:15 AM	11:37 AM	11:40 AM	12:00 PM
12:15 PM	12:37 PM	12:40 PM	1:00 PM
1:15 PM	1:37 PM	1:40 PM	2:00 PM
2:15 PM	2:37 PM	2:40 PM	3:00 PM
3:15 PM	3:37 PM	3:40 PM	4:00 PM
		3:58 PM	4:18 PM
4:02 PM	4:24 PM	4:34 PM	4:54 PM
4:29 PM	4:51 PM	5:04 PM	5:24 PM
4:59 PM	5:21 PM	5:34 PM	5:54 PM
5:29 PM	5:51 PM	6:04 PM	6:24 PM
5:59 PM	6:21 PM	6:38 PM	6:58 PM
6:29 PM	6:51 PM	6:58 PM	7:18 PM

DART
FARE STRUCTURE - SYSTEM FARES

DESCRIPTION	DART SHARE	MESQUITE SHARE	TOTAL PASSENGER FARE
Single Ride			
Cash Upgrade	$ -	$ 1.00	$ 1.00
2-Hour			
System (Mesquite)	$ 2.50	$ 1.00	$ 3.50
Reduced	$ 1.25	$ -	$ 1.25
High School	$ 1.25	$ -	$ 1.25
Regional	$ 5.00	$ -	$ 5.00
Day Pass			$ -
System (Mesquite)	$ 5.00	$ 2.00	$ 7.00
Regional	$ 10.00	$ -	$ 10.00
High School	$ 2.50	$ -	$ 2.50
Reduced	$ 2.50	$ -	$ 2.50
Monthly			
System (Mesquite)	$ 80.00	$ 20.00	$ 100.00
Annual			
System (Mesquite)	$ 800.00	$ 200.00	$ 1,000.00

EXHIBIT C

DART

[illegible]

[illegible]

[illegible]

Anticipated Calendar of Operations for Mesquite Service

Mesquite service operates on all days where DART Weekday service is in effect. The following table summarizes the number of anticipated Weekdays per month during the three-year term of the agreement.

Month	2015	2016	2017
January	21	20	21
February	20	21	20
March	22	23	23
April	22	21	20
May	20	21	22
June	22	22	22
July	23	20	20
August	21	23	23
September	21	21	20
October	22	21	22
November	19	20	20
December	22	21	20
Total	255	253	253

Table D 1: Anticipated Weekdays of Operation

Table of Payments from Mesquite for 2015

Based upon an estimated first-year cost of service of $352,068, expected monthly payments for Mesquite for the first year of the agreement are summarized in the following table.

Month	Operating Days	Payment
January 2015	21	$28,993.84
February 2015	20	$27,613.18
March 2015	22	$30,374.49
April 2015	22	$30,374.49
May 2015	20	$27,613.18
June 2015	22	$30,374.49
July 2015	23	$31,755.15
August 2015	21	$28,993.84
September 2015	21	$28,993.84
October 2015	22	$30,374.49
November 2015	19	$26,232.52
December 2015	22	$30,374.49
Total	255	$352,068.00

Table D 2: 2015 Monthly Payments for Mesquite Service

Table of Payments to Star Transit for 2015

Based upon estimated first-year reimbursements of $297,068, expected monthly reimbursements to Star Transit for the first year of the agreement are summarized in the following table.

Month	Operating Days	Reimbursement
January 2015	21	$24,464.42
February 2015	20	$23,299.45
March 2015	22	$25,629.40
April 2015	22	$25,629.40
May 2015	20	$23,299.45
June 2015	22	$25,629.40
July 2015	23	$26,794.37
August 2015	21	$24,464.42
September 2015	21	$24,464.42
October 2015	22	$25,629.40
November 2015	19	$22,134.48
December 2015	22	$25,629.39
Total	255	$297,068.00

Table D 3: 2015 Monthly Reimbursements to Star Transit

Pricing methodology for LGC Costs for DART Service in 2016 and 2017

CITY costs included in the contract with the LGC in 2015 are estimated to be $352,068 assuming service levels and the number or size of vehicles does not change. From this total contract price in 2015, the cost for LGC services is $55,000.

In 2016 and 2017, the cost for Service will be adjusted based on normal operations cost increases. In addition, the $55,000 amount due to LGC may be adjusted upward in the event that total annual ridership is projected to exceed 55,000 boardings as follows: Assume that total boardings in 2016 are projected to reach 60,000 boardings. For each boarding above 55,000, the LGC cost will increase by $1.50. Assuming the base cost for 2016 remained $55,000 (same as 2015) and ridership projected to be 60,000, the 2016 DART cost would be $55,000 plus (5,000 x $1.50) $7,500 for a total of $62,500. In the event that the projected ridership is not met, LGC will rebate the difference to CITY.

SECOND AMENDMENT TO TRANSIT SERVICE AGREEMENT BETWEEN DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC, STAR TRANSIT AND THE CITY OF MESQUITE

This Second Amendment ("Second Amendment") to Interlocal Public Transit Service Agreement by and between Dallas Area Rapid Transit Bus Service, LGC ("LGC"), Star Transit ("STAR") and The City of Mesquite ("CITY") collectively referred to herein as "the Parties" and individually referred to herein as a "Party" is made and entered into as of 11-8, 2017.

WITNESSETH

WHEREAS, as of October 28, 2014, LGC, STAR and the CITY entered into an Agreement ("Agreement") for bus service (referred to herein and in the Agreement as "Service") pursuant to DART Resolution 140107 approved on October 7, 2014; and

WHEREAS, as of January 10, 2017, LGC, STAR and the CITY entered into a First Amendment to the Agreement to provide for funding the comprehensive operational analysis; and

WHEREAS, LGC, STAR and the CITY wish to further amend the Agreement to reflect the Parties' intentions with regard to an extension of the Agreement through September 30, 2018.

NOW THEREFORE, in consideration of the mutual covenants set forth in this Second Amendment, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby amend the Agreement as follows:

Section 1. Amendment to Agreement. The Parties hereby agree to amend and restate the Agreement by amending Sections 1.01 [1] to read as follows:

1.01. The term of this Agreement shall begin on the 1st day of January 2015 and terminate at midnight on the ~~31st day of December, 2017~~ 30th day of September, 2018, unless earlier terminated as herein provided. Upon termination or expiration of the term, any rights granted herein to access the DART system also terminate.

[1] Words in ~~strike through~~ type are deletions from the existing agreement; words in underlined type are additions.

Section 2. No Further Modifications. All other provisions of the Agreement, other than as specifically addressed herein, shall remain in full force and effect, with exception of revised Exhibit D[2], which is attached and incorporated herein, reflecting the additional funding required.

IN WITNESS WHEREOF, the Parties hereto have accepted, made and executed this Second Amendment upon the terms and conditions above stated on the day and year first above written.

Dallas Area Rapid Transit Bus Service, LGC

David Leininger

By: David Leininger
Title: President
Date: 9/22/17

STAR TRANSIT:

By: Mike Starks
Title: Deputy Executive Director
Date: 11-8-17

CITY OF MESQUITE:

By: Cliff Keheley
Title: City Manager
Date: 11-8-17

[2] Words in ~~strike-through~~ type are deletions from the existing agreement; words in underlined type are additions.

Anticipated Calendar of Operations for Mesquite Service

Mesquite service operates on all days where DART Weekday service is in effect. The following table summarizes the number of anticipated Weekdays per month during the three-year term of the agreement.

Month	2015	2016	2017	
January	21	20	21	22
February	20	21	20	20
March	22	23	23	22
April	22	21	20	21
May	20	21	22	22
June	22	22	22	21
July	23	20	20	21
August	21	23	23	23
September	21	21	20	19
October	22	21	22	
November	19	20	20	
December	22	21	20	
Total	255	253	253	191

Table D 1: Anticipated Weekdays of Operation

Table of Payments from Mesquite for 2015

Based upon an estimated first-year cost of service of $352,068, expected monthly payments for Mesquite for the first year of the agreement are summarized in the following table.

Month	Operating Days	Payment
January 2015	21	$28,993.84
February 2015	20	$27,613.18
March 2015	22	$30,374.49
April 2015	22	$30,374.49
May 2015	20	$27,613.18
June 2015	22	$30,374.49
July 2015	23	$31,755.15
August 2015	21	$28,993.84
September 2015	21	$28,993.84
October 2015	22	$30,374.49
November 2015	19	$26,232.52
December 2015	22	$30,374.49
Total	255	$352,068.00

Table D 2: 2015 Monthly Payments for Mesquite Service

Table of Payments to Star Transit for 2015

Based upon estimated first-year reimbursements of $297,068, expected monthly reimbursements to Star Transit for the first year of the agreement are summarized in the following table.

Month	Operating Days	Reimbursement
January 2015	21	$24,464.42
February 2015	20	$23,299.45
March 2015	22	$25,629.40
April 2015	22	$25,629.40
May 2015	20	$23,299.45
June 2015	22	$25,629.40
July 2015	23	$26,794.37
August 2015	21	$24,464.42
September 2015	21	$24,464.42
October 2015	22	$25,629.40
November 2015	19	$22,134.48
December 2015	22	$25,629.39
Total	255	$297,068.00

Table D 3: 2015 Monthly Reimbursements to Star Transit

Pricing methodology for LGC Costs for DART Service in 2016 and 2017

The City of Mesquite costs included in the contract with the LGC in 2015 are estimated to be $352,068 assuming service levels and the number or size of vehicles does not change during 2015. From this total contract price in 2015, the cost for DART services is $55,000.

In 2016 and 2017, the cost of DART services included in the Mesquite pricing will be adjusted based on general cost increases as well as a specific adjustment in the amount of $1.50 per rider above 55,000 in the event that total annual ridership is projected to exceed 55,000 boardings based on available history. For example, if total boardings in 2016 are reasonably projected to reach 60,000, then for each boarding above 55,000 the cost will increase by $1.50. Assuming the base cost for 2016 remained $55,000 (the same as in 2015), with projected ridership at 60,000, the cost would be $55,000 plus $7,500 (5,000 x $1.50) for a total of $62,500.

Pricing for 2018

Months for the Extention	Days	Mesquite Payments to DART	DART Payments to Star Transit
Jan-18	22	$32,808.29	$27,547.52
Feb-18	20	$29,825.72	$25,043.20
Mar-18	22	$32,808.29	$27,547.52
Apr-18	21	$31,317.01	$26,295.36
May-18	22	$32,808.29	$27,547.52
Jun-18	21	$31,317.01	$26,295.36
Jul-18	21	$31,317.01	$26,295.36
Aug-18	23	$34,299.58	$28,799.68
Sep-18	19	$28,334.43	$23,791.04
Extension Period	191	$284,835.62	$239,162.56

FIRST AMENDMENT TO
TRANSIT SERVICE AGREEMENT BETWEEN
DALLAS AREA RAPID TRANSIT BUS SERVICE, LGC, STAR TRANSIT AND THE CITY OF MESQUITE

This First Amendment ("First Amendment") to Interlocal Public Transit Service Agreement by and between Dallas Area Rapid Transit Bus Service, LGC ("LGC"), Star Transit ("STAR") and The City of Mesquite ("CITY") collectively referred to herein as "the Parties" and individually referred to herein as a "Party" is made and entered into as of January 10, 2017.

WITNESSETH

WHEREAS, as of October 28, 2014, LGC, STAR and the CITY entered into an Agreement ("Agreement") for bus service (referred to herein and in the Agreement as "Service") pursuant to DART Resolution 140107 approved on October 7, 2014; and

WHEREAS, LGC, STAR and the CITY wish to amend the Agreement as set forth herein to reflect the Parties' agreements with regard to a Comprehensive Operational Analysis.

NOW THEREFORE, in consideration of the mutual covenants set forth in this First Amendment, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby amend the Agreement as follows:

Section 1. Amendment to Agreement. The parties hereby agree to amend and restate the Agreement by adding the following Section 13[1] to read as follows:

* * * * *

"13. ~~Comprehensive Operational Analysis~~. The Parties shall work together to prepare a Comprehensive Operational Analysis ("Analysis") within the third year of the Agreement resulting in a short and long term transit plan as provided below.

13.01. CITY shall pay $86.953.35 as its share of the total cost of the Analysis, which shall include a short and long term transit system plan and supporting financial plan for the CITY. The CITY

[1] Words in ~~strike-through~~ type are deletions from the existing agreement; words in underlined type are additions.

shall pay $43,476.67 of the cost of the Analysis upon the beginning of the planning work in accordance with notice thereof from LGC to the CITY, and the CITY shall pay LGC $43,476.68 upon completion of the Analysis, in accordance with a similar notice. The total cost of the Analysis, reflected in Exhibit A hereof and incorporated herein for all purposes, is estimated to be $173,906.69, of which the CITY shall pay $86,953.35.

13.02. LGC shall prepare the Analysis resulting in a short and long term transit plan with supporting financial plan as outlined in Exhibit B hereof and incorporated herein for all purposes. The cost of this Analysis is estimated to be $173,906.69 for which DART shall pay $86,953.34 of the expense. In the event the Analysis cost is lesser or greater than reflected herein, the Parties shall share the resulting savings or cost, as applicable, subject to appropriation of sufficient funds."

* * * * *

Section 2. No Further Modifications. All other provisions of the Agreement, other than as specifically addressed herein, shall remain in full force and effect.

(SIGNATURES ON FOLLOWING PAGE)

IN WITNESS WHEREOF, the parties hereto have accepted, made and executed this First Amendment upon the terms and conditions above stated on the day and year first above written.

LGC:

By: _____

David Leininger
(Printed Name)

President
(Title)

Date: 12/6/2017

CITY OF MESQUITE:

By: _____

CLIFF KEHELEY
(Printed Name)

CITY MANAGER
(Title)

Date: 12-5-16

STAR TRANSIT:

By: _____

Omega Hawkins
(Printed Name)

Exec Dir
(Title)

Date: 2-7-17

Exhibit A

Mesquite Service Plan Cost Proposal

DART PROPOSAL COST SUMMARY					FINAL - November 9, 2016
CONTRACTING ENTITY : HDR Engineering, Inc.	TITLE OF PROJECT: Contract No. C-2012668-02 - General Planning Consultant VI (GPC6) Task Order 29 - Mesquite Service Plan				
1. DIRECT LABOR (Specify) (Labor Category or Job Title)	Hours	Rate/Hour	COST		EST. COST ($)
TOTAL HOURS	0		$0.00		$0.00
2. BURDEN (Specify) (Overhead and Payroll Burden)	1.5680			BURDEN	$0.00
3. TOTAL LABOR AND BURDEN (Sum of lines 1 and 2)				TOTAL	$0.00
4. DIRECT COSTS (Total)				TOTAL	$0.00
5. TRAVEL (total)				TOTAL	$0.00
6. CONSULTANTS (Specify)				TOTAL	$0.00
7. SUBCONTRACTS (Specify) Cambridge Systematics, Inc. $94,492.20 Connetics Transportation Group $79,414.49				TOTAL	$173,906.69
8. TOTAL DIRECT COST (Sum of Lines 4 - 7)				TOTAL	$173,906.69
9. FEE				TOTAL	$0.00
10. TOTAL CONTRACT COST (Sum of lines 3, 8 and 9)				TOTAL	$173,906.69

Exhibit B

Mesquite Service Plan Scope of Work

Task 1 – Project Management

This task covers overall project management of this Scope of Work. The following project management activities are anticipated:

- Project kick-off meeting (to include consultant team, DART, City of Mesquite, "Core Team")
- Bi-Weekly Project Management meetings/conference calls. At a minimum the task Project Manager will be available, with other staff as needed based on agenda.
- Monthly progress report with invoices.
- The City of Mesquite Project Manager should be included in all meetings/conference calls and as a recipient of all progress reports.

Deliverables:

- *Project schedule with key milestones identified*
- *Project Management meeting agendas and action item summaries*
- *Monthly progress report/invoice*

Task 2 –Stakeholder Involvement

This task will entail Stakeholder Involvement focused on core team coordination and stakeholder interviews. This task will include development of a brief Stakeholder Involvement Framework Plan (2-3 pages), which should be developed early in the process in cooperation with the City of Mesquite to establish goals, objectives, outreach methods and a schedule tied to key study milestones.

At a minimum the involvement will entail:

- Involvement of the "Core Team" at major milestones (at a minimum)
  - City - Deputy City Manager
  - City - Planning & Development Services Transportation Planner
  - Manager of Economic Development
  - City - Transportation Grant Manager
  - City – Parks Senior Program Coordinator
  - Eastfield College President
  - Town East Mall Manager STAR Transit Executive Director
- Stakeholder Interviews (assume up to 10 stakeholder interviews)
  - "Core Team" members
  - Chamber of Commerce
  - City Convention & Visitors Bureau
  - Eastfield College Student Group
  - Disabled Community Representatives
  - Elderly Community Representatives
  - Representatives of Minority Group Communities
  - Business Community (Hospital, Shopping Centers, restaurants, UPS & FEDEX hubs)
  - Entertainment District (Mesquite Rodeo, AMC 30, Hotels)
- Rider interviews on existing service where there is limited information available

- STAR Transit DART Customers
- COMPASS Customers

Deliverables:

- *Stakeholder Involvement Framework Plan (including schedule of Core Team involvement and interviews)*
- *Meeting and interview summaries*
- *Summary of findings from available surveys and new rider interviews*
- *Development of PowerPoint presentations and/or Display Boards for use at meetings*
- *Development of PowerPoint presentations and/or Display Boards for use at meetings*

Task 3 - Existing and Future Conditions

This task will document a range of existing and future conditions to help establish the transit potential for Mesquite and define key travel patterns and market areas for near and long term transit services. The following conditions will be documented:

3.1 Land Use and Related Plans/Policies

Document existing land use and key activity centers using available City and NCTCOG information in map format. Summarize key City plans or policies related to existing and future land use to highlight key initiatives or changes that could affect the need for transit in the future.

Review NCTCOG's 2014 Eastside Transit Alternatives Study as a baseline for the Mesquite Service Plan work.

3.2 Demographics

Document existing and future demographics for population/employment density (current and 2040) and other socio-economic characteristics such as income, race, age, auto ownership using the latest available NCTCOG or census data. Information should be provided in GIS map format based on TSZ or census tract/block data. Population and employment densities should be scaled appropriately for a transit service assessment to clearly show areas where densities could support fixed route transit service.

3.3 Travel Patterns/Market Analysis

Using the NCTCOG model (current and 2040) and AirSage data (2014 data), map trip density for the region, highlighting the City of Mesquite boundary. Using AirSage data to illustrate specific trip data to/from zones in the City of Mesquite to identify the key destinations/attractions for all trips and HBW trips. After key origin-destination pairs are determined, apply the TCI tool to estimate transit competitiveness and key factors that contribute to or detract from the TCI.

Use LEHD 2012 Data to identify origin-destination patterns for Mesquite residents who are employed and for employees who work within the border of Mesquite to identify the largest possible employment patterns.

3.4 Existing Transit Services and Performance

This task will document existing transit service in Mesquite including COMPASS and the STAR Transit paratransit service. Operations characteristics and performance will be documented to illustrate current conditions as well as trends using available prior year information. This task will help to identify deficiencies and opportunities with these existing services.

3.5 Existing and Future Conditions and Strategy Framework Technical Memorandum

This task will synthesize the findings from the analysis of existing and future market and service conditions. The findings will inform a discussion about the desired role for public transit service in Mesquite's future, which will be affected by how the City of Mesquite plans to grow and develop. These discussions will lead to the development of a framework and strategies that will guide transit service design in Mesquite and ultimately shape the short-term and long-term COA recommendations.

Deliverables:

- *Interim maps/data for discussion for each task*
- *Existing and Future Conditions Technical Memorandum (all tasks)*

Task 4 - Near-Term Mesquite Transit Plan

The plan will be developed over two phases: a short-term plan for the operation beginning August 2016 followed by a phased implementation of a 10-year plan by priority. This follows Service Plan best practice with a phased 10-year plan with an early action element. In accordance with DART policy, the plan should include a 20-year financial plan to sustain the near-term plan into the future. The focus of the near-term plan is to optimize the City's current services and identify near term needs.

Based on the information from Task 3 and stakeholder input, this task will develop a draft Phase 1 near-term transit plan for the City of Mesquite. The following information will be developed.

Service Definition

- Fixed-Route
  - Review viability of the current COMPASS Route 282 operation and recommend whether or not it should be continued
  - Examine feasibility and potential ridership of a new COMPASS route from the Town East Mall area to the Dallas CBD
  - Examine feasibility and potential ridership of an internal fixed-route bus system in Mesquite similar to concepts identified in the Eastside Transit Alternatives Study
  - Frequency and Days, Service Span
  - Draft Schedules
  - Bus Stop Identification
  - Vehicle Requirements (Number, type of bus)
- Paratransit
  - Evaluate the cost-effectiveness of STAR Transit's current paratransit operation within the City of Mesquite
  - ADA Paratransit (Define Eligibility requirements)
  - Non-ADA Paratransit (Eligibility)
- Innovative Services
  - Feasibility of a taxi voucher program

- Rental Bikes/Bike Sharing
- Uber et al
- Short Term Vehicle Rental/Car Sharing
- Station Vans/Cars
- Private shuttles

Service Analysis

- Ridership Estimates
- Operating and Capital Costs
- Capital Requirements (vehicles, transit centers, park & rides, operating facilities, bus stops/shelters, sidewalk issues, operating/consumer technology)
- Revenue Sources

Service Implementation

- Management and Operation Options
- Development of Scope of Work for an RFP for Phase I Operation for Mesquite to put out to bid.

Deliverable:

- *Phase 1 Near-Term Transit Plan*

Task 5 - Long-Term Transit Opportunities

This task will assess the need for transit beyond the near-term, highlighting key opportunities to expand services consistent with the travel pattern and market analysis results. This could include more robust intra-Mesquite Fixed Route or Paratransit services as well as enhanced regional system connections using Fixed Route, BRT or Rail. This task is intended to document opportunities for the City of Mesquite to define and explore in a second phase of study.

Deliverable:

- *Phase 2 Long -Term Transit Opportunities*

Task 6 Summary Report

This final task entails compiling all work into a Summary Report.

Deliverable:

- *Mesquite Transit Assessment Summary Report (draft and final)*

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 6-A:
Service Planning Software Evaluation

Prepared for:

Texas A&M Transportation Institute

February 18, 2019

El Paso County Transit Planning Software Evaluation

TRANSCAD

Among the approaches for estimating transit ridership, the most accepted and popular method is the conventional four-step demand estimation process, also known as Travel Demand Model (TDM). The four steps are trip generation, trip distribution, mode split, and assignment. TransCAD offers following three basic transit assignment methods (Caliper 2008):

- All-or-Nothing (AON) assignment, which assigns all travelers for a single O-D pair to the single best transit path.
- Pathfinder, which uses generalized cost as the determinant of the best path. A value of time is used to convert time to money so that it can be combined with fares to set the option with the lowest generalized cost.
- Stochastic User Equilibrium (SUE), which is a probabilistic, multipath method that takes route capacities into account. Travelers select their paths based upon the overall attractiveness which depends on travel time components, transfer penalties, and fares. SUE is an iterative procedure.

The TransCAD Transit assignment procedure has eight optional results but not all outputs are available for all assignment methods. The output availability for each method is summarized in the following table:

Output Report	Description	All-or-nothing	Pathfinder	Stochastic User Equilibrium
Critical Link Analysis	Indicate O-D pairs using a particular portion of transit route	Yes	Yes	Yes
Boarding and Alighting	Table indicating number of riders boarding and alighting at every stop	Yes	Yes	Yes
Aggregate Ridership	Table with combined information for all routes sharing stops (nodes)	Yes	Yes	Yes
Skim Matrices	Matrices which allow to estimate number of transfers, generalized costs, and other attributes	Yes	Yes	Yes
OD Routes	Table of O-D trips for selected routes	Yes	No	Yes
Stop-to-Stop Trips	A table of stop-to-stop trips	No	Yes	No
Transfer Movements	A table of transfers between routes or at stops	Yes	Yes	Yes
Person Times at Stops	A table of initial or transfer waits, or total walking times at stops	Yes	No	Yes

The method although effective, might represent a high-cost option in the transit planning process since it requires a considerable number of human resources including transportation specialists.

Another concern is that the mode choice process implies the usage of a logit or incremental logit models and they need to be computed using coefficients for utility functions from available models in the area of study or "borrow" coefficients from other similar areas.

VISUM

VISUM software (from PTV Group-Germany) allows users to interact with Geographic Information Systems (GIS) files (shapefiles) and timetable information systems such as DIVA, HAFAS, railML, or Google Transit. VISUM also offers the option of importing data from different sources, such as automatic passenger counting, vehicle tracking and ticketing systems, or MS Office, to help ensure consistent data management. The software can be used by consultants in different processes and as a central platform for public transport authorities and transport associations or operators. The transit assignment methods for ridership forecasting available in VISUM are:

Transit Assignment Technique	Description
Headway-based assignment	used to analyze scenarios that employ a headway-based approach rather than a detailed timetable
Timetable-based assignment	allows for fine-tuned planning and analyses including complex transfers and connections
Transport system-based assignment	models the desired line network from the passengers' perspective and based on demand matrices

In addition, VISUM allows users to model any type of fare (fare analysis) such as short-distance, zone based, distance based, from-to fare zone or combinations of these. In addition, VISIM is able to perform basic line blocking (to estimate the required number of vehicles for a route fleet), and detailed line blocking (optimizing the type of vehicle to ensure a minimum of vehicle deployments).

One of the biggest disadvantages of VISSIM is the network and attribute export/import process. Users typically need a complicated process for import/export existing transit network and attributes to be able to use/visualize them in other platforms.

TBEST

TBEST, which stands for Transit Boarding Estimation and Simulation Tool, uses a GIS interface to develop and integrate a transit demand model with a regional transit feasibility analysis to estimate ridership at the individual stop-level. TBEST also simulates travel demand at individual stops accounting for transit network connectivity.

TBEST can be considered as a "micro-level" model that provides very detailed information regarding ridership estimates at the stop-level. However, it can also be used to obtain a more aggregated route level, segment level, location-based, or system level measures through the aggregation of stop-level outputs. Moreover, this software provides results at specific times of the day (e.g., peak-hour periods) and different days of the week. One of the biggest limitations of the current version of TBEST is that it has been calibrated using year 2000 census and ridership data from Portland, Oregon. Therefore, users cannot directly apply this tool for other cities without a meticulous revision of the results and the establishment of local-condition constraints. Although this software has a great potential for bus ridership forecasting, its

usage is still modest and more experiments (including re-estimation and re-calibration) needs to be performed on other U.S. transit systems before the public transportation community accepts this model as a reliable alternative to the traditional transit model or TDM.

Transit Tools

Transit Tools is a set of products developed by Cambridge Systematics that offer state-of-the-art tools for transit market segmentation analysis, planning, and estimating potential transit share. This tool was designed to be used only with the ArcView platform. Transit Tools is able to estimate transit ridership based on nearly a dozen of characteristics including: headway, walk access time, and in-vehicle time.

The Potential Transit Share (PTS) tool, included in Transit Tools, allows planners to identify potential transit users based on TAZs. Even though this tool is useful for a transit feasibility study, this approach was originally introduced by the Transportation Research Board in the *Transit Capacity and Quality of Service Manual* (TCQSM) and shares the limitation of using census block or TAZ-level data for the analysis (which might not be the best approach to estimate ridership). The disadvantage of this methodology is the assumption of a uniform walking distance for all cases disregarding the geometric distribution of the TAZs. In other words, if the a TAZ covers an extensive area and a group of households lays on the boundaries totally opposite to the transit corridor, these households will be taken into account for ridership projections even if the walking distance is longer than a realistic average walking distance (0.25 to 0.50 mile).

ArcGIS Business Analyst

Business Analyst (BA) desktop software (Environmental Systems Research Institute) is a combination of GIS analysis and visualization capabilities with an extensive data package. Users can gain a better understanding and timely information about the markets they are interested in, the customers' profile, as well as latent competitors. Although the software was initially developed for organizations and businesses to improve decisions about markets changes and economic factors, the potential for estimating transit ridership is vast.

ArcGIS Network Analyst

ArcGIS Network Analyst provides planners network-based spatial analysis tools for complex routing (including transit) problems. It uses a configurable transportation network data model, allowing transit planners to construct their unique network requirements (i.e., network attributes). Network Analyst's users are able to plan routes for transit vehicles, calculate bus driving times, find the shortest path from an origin to a given destination, and other network related problems.

Moreover, Network Analyst's users can take advantage of the tools for analysis with public transit data,[1] which include visualization of transit data in a map using General Transit Feed Specification (GTFS) in ArcGIS, calculation of route or system level of service (LoS), percentage of transit coverage in a community, quantitative measures for access to public transit (e.g., walking distance buffering), and origin-destination cost matrices, among other problem-solving applications for transit systems.

Remix

Remix is a web-based fixed-route transit planning and scheduling platform that allows users to draw routes and stops on a map, update route headways and spans, and receive system operating and capital costs and performance measures (e.g., number of low-income households served by transit) in real-time. Costs

[1] https://blogs.esri.com/esri/arcgis/2016/06/05/cool-tools-for-analysis-with-public-transit-data/

and performance measures are recalculated with every route and stop modification. Remix allows users to add data layers to maps to help transit planners visualize different demographic characteristics of the transit service area.

Remix's transit scheduling product was recently released as an add-on to its planning product. Remix allows transit scheduling to be done using a web browser. Although many agencies have adopted Remix's planning software, the scheduling software is still in early stages of adoption.

Remix does not specifically create ridership projections; however, Remix does calculate access statistics (e.g., number of people served and number of low-income households served) for individual routes and for the network as a whole. Remix also provides a tool called *Jane*, which allows users to visualize how far a person can travel on the transit network in a given amount of time.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 6-B:

Service Scenario Costs, Ridership, and Revenues Methodology

Prepared for:

Texas A&M Transportation Institute

February 2019

Introduction

This appendix presents the study team's approach for estimating the costs, ridership, and revenues for each bus route and service scenario. The appendix is broken into the following topics:

- operating costs,
- capital costs,
- urban/rural service assignment methodology,
- ridership estimation, and
- revenue estimation.

Operating Costs

The foundation of estimating operating costs is determining the number of revenue hours for each bus route and service (e.g., rural dial-a-ride). Revenue hours ultimately drive the estimated operating cost of each proposed transit service scenario. Appendix 6-A is a full example workbook that portrays all the data and steps involved in estimating service operating costs. The study team used the same basic cost estimation methodologies for fixed-route and flexible-route local bus but a different methodology for dial-a-ride and American Disabilities Act (ADA) paratransit services. This operating costs section is broken into two subsections:

- flexible- and fixed-route local bus, and
- dial-a-ride and ADA paratransit.

Flexible- and Fixed-Route Local Bus

The study team used a similar process for estimating the cost of both flexible routes and fixed routes. The process involved the following steps:

1. Establish the basic alignment of the route.
2. Draw one direction (e.g., eastbound) of the draft route on Google Maps. Record the mileage.
3. Estimate the route direction's running time by using Google Maps' *depart at* feature, which allows the user to estimate travel times at different times of the day. Google Maps provides a minimum and maximum travel time based on typical traffic speeds. Calculate the one-way running time in the early AM, AM peak, midday, PM peak, and evening using the average of Google Maps' minimum and maximum time estimates. Figure 1 shows the *depart at* times used for each of the time periods. Weekday running times were estimated using traffic patterns on Wednesdays (assumed representative of typical weekday traffic). Saturday and Sunday running times were estimated using Saturday data from Google Maps; Sunday's running times were set to be equal to Saturday midday running time. The speeds in Figure 1 are calculated automatically based on the distance and running times. Repeat Steps 2 and 3 for the opposite direction of the route.

	Route Facts	Inbound	Outbound	Total	Time	Speed
Pattern A	Trip length	16.7	15.6	32.3		
Weekday Trip Running Time	Early AM	40	35	75	5:00 AM	25.8
	AM Peak	37.5	34	71.5	7:00 AM	27.1
	Midday	42.5	37.5	80	12:00 PM	24.2
	PM Peak	38	37.5	75.5	5:00 PM	25.7
	Evening	40	37.5	77.5	7:00 PM	25.0
Saturday Trip Running Time	Early AM	35	35	70	5:00 AM	27.7
	AM Peak	37.5	35	72.5	7:00 AM	26.7
	Midday	45	40	85	12:00 PM	22.8
	PM Peak	42.5	37.5	80	5:00 PM	24.2
	Evening	42.5	37.5	80	7:00 PM	24.2
SundayTrip Running Time	Early AM	42.5	37.5	80	5:00 AM	24.2
	AM Peak	42.5	37.5	80	7:00 AM	24.2
	Midday	42.5	37.5	80	12:00 PM	24.2
	PM Peak	42.5	37.5	80	5:00 PM	24.2
	Evening	42.5	37.5	80	7:00 PM	24.2

Figure 1. Example Running Time Table for a Single Route.

4. Add buffers to the running time. Four possible types of buffer time were added to the estimated running times from Step 3:

    a. Passenger activity. The passenger activity buffer allows time for passengers to board and alight transit vehicles. The study team increased the estimated round-trip running time by 5 percent to account for passenger activity.

    b. Recovery (only applicable to fixed routes). The recovery buffer allows time for buses to recover at the terminus of the route in order to accommodate fluctuations in traffic or ridership patterns that may make the bus later than scheduled and to provide bus drivers with a chance for a brief break between trips. The study team increased the estimated round-trip running time (including passenger activity time) by 10 percent to account for recovery on fixed routes. (The study team built recovery time into the deviation buffer for flexible routes.)

    c. Deviation (only applicable to flexible routes). The deviation buffer allows time for buses operating on flexible routes to deviate within ¾ mile off the route to pick up or drop off a passenger who requests this service. As per guidance provided by the Transportation Cooperative Research Program (*1*), the study team increased the round-trip running time by 25 percent to account for deviations. This time is assumed adequate to provide recovery.

    d. Pulse (only applicable under Scenarios 3 through 6, in which timed-pulse transfers were instituted). The pulse buffer allows time for buses to sit at the terminus and be there the same time to facilitate passengers' transferring to or from other bus routes. For routes that were at the Mission Valley Transfer Center, the study team added 5 minutes to the total round-trip running time to account for the pulse. For other routes (e.g., Route 10 and Route 20), the study team added 5 percent to the total round-trip running time (rounded up to the next highest whole number) to account for the pulse. In these cases, the pulse usually was between 4 and 6 minutes.

5. Establish headways, vehicle requirements, and revenue hour estimates. Based on the estimated cycle times (round trip running time, plus all buffers added in Step 4), the study team then sought to find the most efficient headway that also aligned with the goals for the scenario and for the route. Headways determine how many buses will be operating on the route and how many round trips will

be made on the route. In some cases, the study team made marginal adjustments to the buffer times to fit the cycle times to the desired headways. Although this is not encouraged in regular transit scheduling, the study team believes it applied enough buffer time to allow flexibility to reduce scheduled waste. The study team calculated the revenue hours for each route and each schedule period (early AM, AM peak, midday, PM peak, and evening) by multiplying the actual cycle time (i.e., scheduled cycle time, which includes the running time, desired buffers, and remaining time due to keeping scheduled headways) by the number of cycles that would occur in the schedule period. The study team calculated the daily revenue hours for weekdays, Saturdays, and (if applicable) Sundays. Figure 2 displays an example of the calculation steps for a single route on a weekday.

Weekday						
Item	**Early AM**	**AM Peak**	**Midday**	**PM Peak**	**Evening**	**TOTAL**
Period Start		6:00 AM	9:00 AM	3:00 PM	6:00 PM	6:00 AM
Period Finish		9:00 AM	3:00 PM	6:00 PM	8:00 PM	8:00 PM
Passenger Activity Buffer	5%	5%	5%	5%	5%	
Deviation Buffer	25%	25%	25%	25%	25%	
Pulse Target	5%	5%	5%	5%	5%	
Round-Trip Length (miles)	32.3	32.3	32.3	32.3	32.3	32.3
Operating Speed	19.8	20.8	18.5	19.6	19.2	
Headway	-	50	60	50	60	
One-Way Trip Time	49.00	47	53	50	50.50	
Round Trip Time	98	93	105	99	101	
Pulse Time	5	5	6	5	6	
Desired Cycle Time	103	98	111	104	107	111
Buses Required	-	2	2	3	2	
Actual Cycle Time	-	100	120	150	120	150
Actual Recovery Time	-	7	15	51	19	
Period Length	-	180	360	180	120	840
One-Way Trips In Period	-	8.0	12.0	8.0	4.0	**32**
Revenue Hours	-	6.67	12.00	10.00	4.00	**32.67**
Revenue Miles	-	129.20	193.80	129.20	64.60	**516.80**
Passenger Boardings	**-**	**28**	**50**	**42**	**17**	**137**
Peak Vehicles						**3**
Base Vehicles						**2**
Operating Cost	$ -	$ 433.33	$ 780.00	$ 650.00	$ 260.00	**$2,123.33**
Fare Revenue	$ -	$ 42.05	$ 66.24	$ 63.08	$ 22.08	**$ 193.45**
avg fare	$ -	$ 1.50	$ 1.31	$ 1.50	$ 1.31	$ 1.41
Passengers/Rev. Hour						4.2

Figure 2. Example Weekday Calculation Tool for Revenue Hours Based on Round-Trip Cycle Time and Headways.

6. Annualize revenue hours. The study team multiplied the daily revenue hours for weekday, Saturday, and Sunday service by an estimated number of weekdays (255), Saturdays (55), and Sundays (55).

Dial-a-Ride and ADA Paratransit

The study team estimated dial-a-ride revenue hours based on the desired number of vehicles operating in each zone across the scheduled span of service. For example, if there are five vehicles in operation from 6:00 a.m. to 8:00 p.m. (14 hours) on weekdays, the scheduled weekday revenue hours equals 70. Figure 3 shows an example of this calculation. The study team then annualized the weekday, Saturday, and Sunday revenue hours by multiplying each by 255, 55, and 55, respectively.

Weekday						
Item	**Early AM**	**AM Peak**	**Midday**	**PM Peak**	**Evening**	**TOTAL**
Period Start		6:00 AM	9:00 AM	3:00 PM	6:00 PM	6:00 AM
Period Finish		9:00 AM	3:00 PM	6:00 PM	8:00 PM	8:00 PM
Zone 1 Veh	0	1	1	1	1	1
Zone 2 Veh	0	1	1	1	1	1
Zone 3 Veh	0	1	1	1	1	1
Zone 4 Veh	0	2	2	2	2	2
Total Vehicles	0	5	5	5	5	5
Period Length		180	360	180	120	
Revenue Hours		15	30	15	10	**70**
Passenger Boardings	0	45	90	45	30	210
Operating Cost	$ -	$ 975.00	$ 1,950.00	$ 975.00	$ 650.00	$ 4,550.00
Fare Revenue	$ -	$ 67.50	$ 118.13	$ 67.50	$ 39.38	$ 292.50
Avg Fare	$ -	$ 1.50	$ 1.31	$ 1.50	$ 1.31	$ 1.39
Passengers/Rev. Hour		3.0	3.0	3.0	3.0	3.0

Figure 3. Example Calculation for Dial-a-Ride Revenue Hours.

Figure 4 shows the weekday calculation for ADA paratransit in Scenario 4.

Weekday						
Item	**Early AM**	**AM Peak**	**Midday**	**PM Peak**	**Evening**	**TOTAL**
Period Start		6:00 AM	9:00 AM	3:00 PM	6:00 PM	6:00 AM
Period Finish		9:00 AM	3:00 PM	6:00 PM	8:00 PM	8:00 PM
Zone 1 Veh	0	3	2	3	1	3
Zone 2 Veh	0	0	0	0	0	0
Zone 3 Veh	0	0	0	0	0	0
Zone 4 Veh	0	0	0	0	0	0
Total Vehicles	0	3	2	3	1	3
Period Length	0	180	360	180	120	
Revenue Hours	0	9	12	9	2	**32**
Passenger Boardings	0	18	24	18	4	64
Operating Cost	$ -	$ 585.00	$ 780.00	$ 585.00	$ 130.00	$ 2,080.00
Fare Revenue	$ -	$ 54.00	$ 72.00	$ 54.00	$ 12.00	$ 192.00
Passengers/Rev. Hour	-	2.0	2.0	2.0	2.0	2.0

Figure 4. Example Calculation for ADA Paratransit Revenue Hours.

Capital Costs

Capital costs in the proposed service scenarios include capital costs for vehicles and for passenger amenities (bus stops and shelters). This section of the appendix describes the study team's approach and assumptions to estimating capital costs for each service scenario. This section is divided into two subsections:

- vehicle costs and
- passenger amenities costs.

Vehicle Costs

Vehicle capital costs were calculated by first estimating the number of vehicles needed for each service scenario. The number of vehicles needed is based on the peak vehicle requirements for each service type plus the desired spare ratio to ensure that El Paso County has enough vehicles available to perform maintenance and still be able to operate full, scheduled service. For flexible- and fixed-route service, the peak vehicle requirement for each scenario were determined by summing the peak vehicle requirements for each flexible or fixed route. A route's peak vehicle requirement is based on the number of vehicles required to operate the route at the busiest (or peak) time of day, when the route has the most buses operating. For dial-a-ride service, the peak vehicle requirement for each scenario was determined by summing the number of vehicles operating in each zone at each time period of the day, and then determining the maximum number of vehicles operating in a given time period on a given day. ADA service peak vehicles was calculated by using the typical ratio of ADA vehicles to fixed-route vehicles and ADA revenue hours per ADA vehicle. Based on typical averages, the study team estimated that the peak vehicle requirement for ADA service was five vehicles.

Once the study team determined the peak vehicle requirement for each service in each scenario, the total vehicles required were calculated by adding the number of spare vehicles to give El Paso County a 40 percent spare ratio. Because El Paso County's fleet in the proposed scenarios is relatively small, and each vehicle accrues mileage rapidly, El Paso County will need a substantial spare ratio. The study team chose 40 percent as the spare ratio for all services to ensure that El Paso County would have enough vehicles to handle reductions in vehicle availability due to maintenance, accidents, or other causes.

The study team then multiplied the number of vehicles by the Texas median transit vehicle cost ($78,000). Finally, to display the vehicle capital costs in terms of annual expenses, the study team divided the vehicle purchase costs by the expected vehicle life of 6 years. Figure 5 displays an example vehicle capital cost estimation table.

Revenue Vehicles Req.	16
Spare Vehicles Req.	7
Total Vehicles	23
Vehicle Service Life in Years	6
Vehicle Cost	$ 1,794,000
Annual Ammortized Vehicle Capital Cost	$ 299,000
Capital Cost/Year/Annual Boarding	$ 0.60

Figure 5. Example Vehicle Capital Cost Estimation Table.

Passenger Amenities Capital Costs (Bus Stops and Shelters)

The study team estimated the capital costs for passenger amenities (i.e., bus stops and shelters) by first establishing recommended design guidelines for bus stops, estimating the capital cost of bus stop installation (including and excluding sidewalk improvements and shelters), and then estimating the number of sheltered and non-sheltered bus stops.

Review of Design Guidelines for Bus Stops

The study team reviewed several bus stop design guideline documents before establishing the recommended elements for El Paso County stops. The following summarizes the study team's review of these documents (*2*, *3*, *4*, *5*). Not all recommendations contained in the guideline documents are incorporated into the final recommended basic elements for El Paso County stops.

Basic Bus Stop

Basic bus stops do not have shelters or other amenities. The stops usually consist of the following elements and may adhere to several possible design guidelines:

- Bus stop sign placed at the boarding area.
- Paved boarding area (for passengers to wait for, board, and alight the bus). Figure 6 shows an example design of a passenger boarding area.
  - The boarding areas for the bus must be minimum 5 feet wide by 8 feet back from the curb (*3*).
  - If possible, a wider passenger waiting area is recommended that is 10 feet wide by 8 feet deep back from the curb (*4*).
  - The ADA Accessible Guidelines of the U.S. Access Board requires that pads installed at bus stops must be at a minimum 5 feet parallel to the curb by 8 feet perpendicular to the curb (*5*).
- Sidewalk connections between stops, nearby cross walks, and the curb.
  - If there is a gap between the sidewalk and the curb (e.g., a strip of grass, stone, or other landscaping), there will need to be a concrete connection added between the sidewalk and curb, at least as long as the minimum passenger boarding area (*4*).
  - If possible, all basic stops should be connected by a paved sidewalk that is at least 4 feet wide (*5*) to the closest cross walk or pedestrian pathway into adjacent development or destinations.
- Street lighting.
  - Practical, adequate lighting should be provided at bus stops and waiting areas for passengers (*4*).
  - Adequate lighting should come from street lights, lights from an adjacent business, or shelter lighting (particularly at stops that are served in the evenings) (*5*).

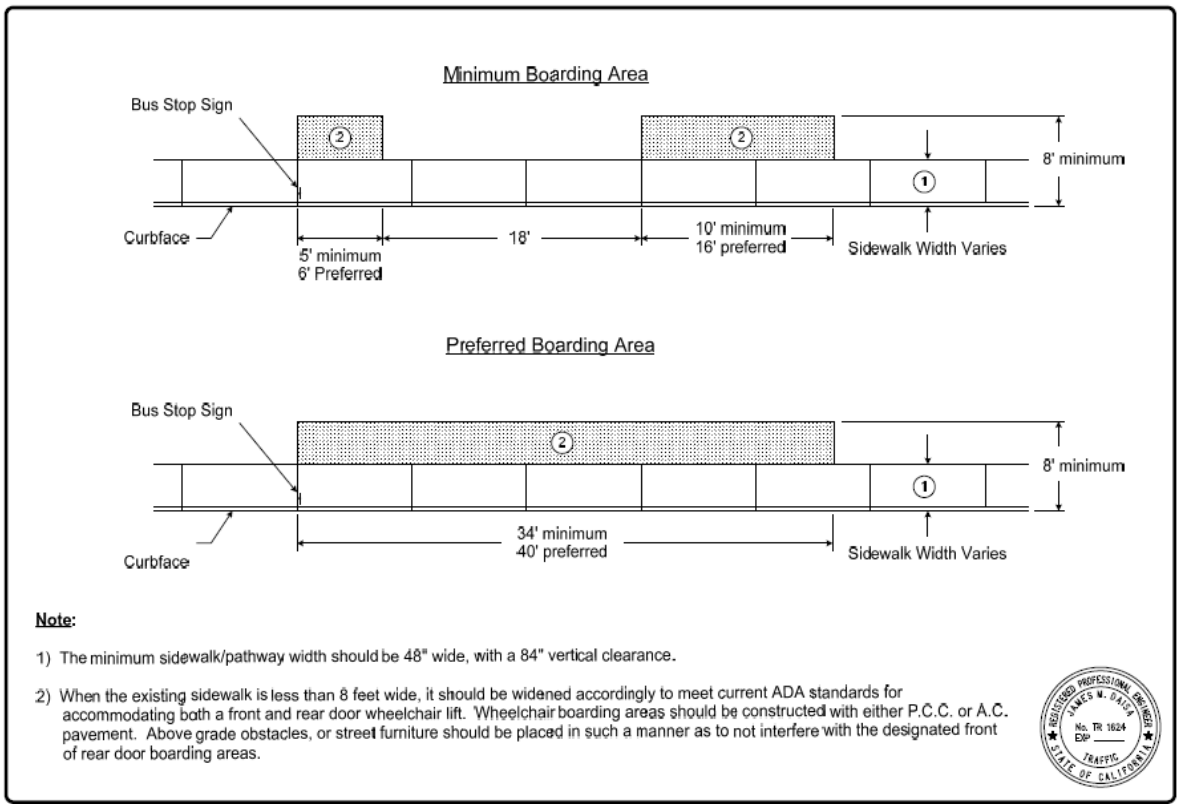


Figure 6. Passenger Boarding Area—Sidewalk Attached to the Curb (*3*).

Sheltered Bus Stop

Sheltered bus stops include a bus shelter and include all the basic bus stop elements with some modifications:

- Bus stop sign (same as the basic bus stop).
- The paved boarding area should be wide enough and deep enough to accommodate the shelter, provide the minimum 5-foot by 8-foot boarding area, and not block the sidewalk. Depending on shelter size, the area is recommended to be 15 to 20 feet wide and 8 feet deep back from the curb. Figure 7 shows an example boarding area design for a sheltered stop.
- Sidewalk connection (same as the basic bus stop).
- Small shelter or seating—The shelter or benches should be placed on the back side of sidewalk a minimum of 6 to 9 feet from the bus sign post, to allow pedestrians to move past the bench or shelter (*3*).
- Trash receptacle, if possible.
    - Trash receptacles should be designed compatible with other bus stop components and with a removable plastic liner with a 35-gallon minimum capacity (*3*).
    - Trash receptacles should be installed where they do not create an obstruction or interfere with the accessibility of the bus stop or the adjacent sidewalk (*5*).
- Lighting is the same as for the basic stop, except that, if possible, the interior of the shelter should be lit.

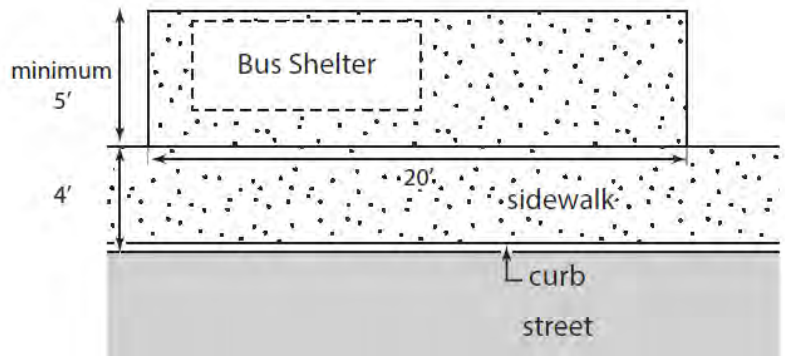


Figure 7. Typical Shelter Pad Specification (*4*).

Bus Stop Element Cost Estimates

The study team estimated the unit price of various bus stop elements based on its review of several sources:

- Bus stop signs: Metropolitan Transit Authority of Harris County (*6*).
- Paved boarding area and sidewalk construction: Texas Department of Transportation (TxDOT) (*7*).
- Other amenities: University of North Carolina Highway Safety Research Center (*8*).

Table 1 provides the unit costs of bus stop elements.

Table 1. Unit Costs of Bus Stop Elements.

	Basic Bus Stop (Existing Sidewalk)				Basic Bus Stop (No Existing Sidewalk)				Sheltered Bus Stop (No Existing Sidewalk)			
	Quantity	Unit	Unit Price	Total Amount	Quantity	Unit	Unit Price	Total Amount	Quantity	Unit	Unit Price	Total Amount
Bus stop sign	1	Each	$162	$162	1	Each	$162	$162	1	Each	$162	$162
Paved boarding area[1]	13	Sq. yd.	$10	$130	13	Sq. yd.	$10	$130	13	Sq. yd.	$10	$130
Lighting	1	Each	$3,600	$3,600	1	Each	$3,600	$3,600	Each	Each	$3,600	$3,600
Sidewalk construction (4 feet)[2]	—				18	Sq. yd.	$45	$811	18	Sq. yd.	$45	$811
Sidewalk construction (5 feet)[3]	—				—				11	Sq. yd.	$50	$550
Shelter	—				—				1	Each	$11,490	$11,490
Bench	—				—				1	Each	$1,660	$1,660
Trash receptacle[4]	—				—				1	Each	$1,330	$1,330
Curb extension[4]	—				—				1	Each	$10,150	$10,150
Bicycle rack[4]	—				—				1	Each	$540	$540
Total bus stop cost	$3,892				$4,703				$30,423 ($18,403 w/o options)			

Notes:

[1] Boarding area is assumed to be 15 feet long by 8 feet deep back from curb.

[2] Sidewalk construction assumed to require installation of 40 feet of sidewalk at 4 feet wide.

[3] Shelter pad is assumed to be 20 feet long by 5 feet deep back from curb.

[4] Optional amenities.

The study team also established the estimated life span for passenger amenities based on the team's review of industry literature (*9*):

- Bus stop signage: 10 years (industry standard).
- Bus shelters: 15 years (industry standard).
- Benches in bus shelter or at a stop: 10 years (typical manufacturer specification).

For purposes of passenger amenities capital cost estimation, the study team assumed a 10-year useful life for all bus stop elements.

Recommended Bus Stop Elements for El Paso County

The study team considered the land use of the service area, the current lack of bus stops, the low level of existing passenger facilities along many of the bus route corridors, and the climate of El Paso County when determining the recommended elements for El Paso County bus stops. The study team specified two types of bus stops: basic bus stops and sheltered bus stops.

Bus stops are assumed to be spaced approximately 0.25 miles part so there are four stops per mile. In general, the study team recommends sidewalks installed, as necessary, to ensure bus stops are connected to adjacent origins and destinations. The study team estimated sidewalk construction would cost $811 for 40 feet of 4-foot-wide sidewalk.[1]

Basic Bus Stop Elements

All bus stops in the El Paso County system will have at least the following elements:

- a bus stop sign,
- a 15-foot-wide by 8-foot-deep passenger boarding area, and
- basic lighting.

The estimated unit cost for a basic bus stop is $3,892.

Sheltered Bus Stop Elements

Select bus stops will have shelters. Sheltered bus stops will be placed at priority locations, where El Paso County routes intersect or where stops are adjacent to significant origins or destinations. Sheltered bus stops will have all the elements of basic bus stops in addition to the following elements:

- a standard bus shelter,
- a bench (likely installed inside the shelter), and
- a 20-foot-wide by 5-foot-deep shelter pad.

The estimated cost for the additional elements in a sheltered bus stop is $13,700, making the unit cost of a sheltered bus stop $18,403 (the unit cost is rounded to the nearest dollar).

[1] The study team assumed that El Paso County would pay for the sidewalk construction immediately adjacent to the bus stop but not for sidewalk facilities that extended beyond 40 feet.

Estimating the Number and Cost of Passenger Amenities

To calculate the cost of passenger amenities, the study team:

1. Estimated the total directional route miles[2] of flexible-route or fixed-route service in the scenario.
2. Identified all street segments where bus routes operated independently (i.e., only one bus route was on that street) and totaled up the independent directional route miles.
3. Calculated the number of bus stops that would be required across the independent directional route miles (assuming four stops per directional route mile).
4. Estimated the percentage of stops that would require sidewalk construction (based on a very cursory review of Google satellite view). In all scenarios, the study team assumed that about 80 percent of bus stops would require sidewalk installation.
5. Estimated the number of bus stops that would have shelters. The study team estimated that Scenarios 2, 3, and 4 would require 25 shelters, and Scenarios 5 and 6 would require 40 shelters.
6. Calculated the total cost of passenger amenities by:
    - Multiplying the number of bus stops that would not require sidewalk construction by $3,892 (the unit cost of a basic bus stop).
    - Multiplying the number of bus stops that would require sidewalk construction by $4,703 (the unit cost of a basic bus stop plus the cost to install 40 feet of sidewalk).
    - Multiplying the number of sheltered stops by $13,700 (the incremental cost of adding a shelter to a basic bus stop).

Figure 8 displays an example of the bus stop cost calculation.

Bus Stop Calculator				
Total One-Way Route Miles				252
Percent Shared Miles				6%
Non-Shared Route Miles				237.0
Standard Stop	Needs Sidewalk		80%	$ 3,566,755
Standard Stop	Has Sidewalk		20%	$ 737,923
Shelters (Additional Cost)			40	$ 548,000
Total Stop Costs				$ 4,852,678

Figure 8. Example Bus Stop Cost Calculation.

To express passenger amenities capital costs as annual expenses, the study team divided the total passenger amenities cost by 10 years (the average useful life of the main bus stop elements).

The cost estimate produced by the study team is adequate for planning-level estimates; however, a much more detailed analysis is needed to determine the appropriate locations of bus stops and actual cost of installing each individual bus stop.

[2] Directional route miles are the total one-way miles of bus routes. For example, in Scenario 5, Route 10 is 15.6 miles long from the Westside Transfer Center to the end of the route in Anthony and is 16.7 miles long from the end of the route in Anthony to the Westside Transfer Center. Route 10 has 32.3 directional route miles.

Urban/Rural Service Assignment Methodology

For purposes of revenue estimation and economic benefit modeling, the study team classified current service and scenario service as either urban or rural based on the type of service (fixed route, dial-a-ride, or ADA). This section explains how each service is classified. Table 2 summarizes each scenario's classification by type of service.

Table 2. Assignment of El Paso County Transit Proposed Service Scenarios to Urban or Rural Classifications.

		Current	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Flexible/ fixed	Urban	19%	N/A	22%	22%	21%	21%	21%
	Rural	81%	N/A	78%	78%	79%	79%	79%
Dial-a-ride	Urban	N/A	N/A	N/A	N/A	N/A	N/A	70%
	Rural	N/A	100%	N/A	100%	N/A	100%	30%
ADA	Urban	N/A	N/A	N/A	N/A	94%	N/A	N/A
	Rural	N/A	N/A	N/A	N/A	6%	N/A	N/A

Flexible or Fixed Routes

The study team classified each flexible or fixed route as either rural or urban according to the primary intent and whether the route operates at least 5 percent of revenue miles in the rural area. The Federal Transit Administration (FTA) Circular 9040.1F for Section 5311 states: "Section 5311 projects may include transportation to or from rural areas" (III.2.a, page III-5) (*10*).

Table 3. Urban and Rural Classification for Flexible or Fixed Routes.

	Current Scenario			Scenarios 2, 3, and 4			Scenarios 5 and 6		
Route	% Urban Rev. Miles	% Rural Rev. Miles	Type	% Urban Rev. Miles	% Rural Rev. Miles	Type	% Urban Rev. Miles	% Rural Rev. Miles	Type
10	93%	7%	Rural	90%	10%	Rural	90%	10%	Rural
20	79%	21%	Rural	84%	16%	Rural	84%	16%	Rural
30	79%	21%	Rural	84%	16%	Rural	86%	14%	Rural
31	Route not in scenario						80%	20%	Rural
40	46%	54%	Rural	49%	51%	Rural	49%	51%	Rural
41 (new)	Route not in scenario						93%	7%	Urban[1]
50	100%	0%	Urban	100%	0%	Urban	100%	0%	Urban
70 (new)	Route not in scenario			71%	29%	Rural	71%	29%	Rural
84	100%	0%	Urban[2]	100%	0%	Urban	Route not in scenario		

[1] Route 41 is classified as an urban route because the route's intended purpose is to serve the urbanized area, filling a gap in service along N. Loop Road.

[2] Route 84 is funded using the Congestion Mitigation and Air Quality Improvement Program (CMAQ).

Table 4. Urban and Rural Classification by Revenue Miles.

Revenue Miles by Scenario	Current Service		Scenario 2		Scenario 3		Scenario 4		Scenarios 5 and 6	
	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
Urban routes	—	0%	158,059	22%	197,396	22%	197,792	21%	229,890	21%
Rural routes	910,274	100%	560,389	78%	699,860	78%	749,547	79%	864,222	79%
Total	910,274	100%	718,448	100%	897,256	100%	947,339	100%	1,094,712	100%

Dial-a-Ride (Scenarios 1, 3, 5, and 6)

Dial-a-ride is allocated to urban or rural based on the percent of population served. For Scenarios 1, 3, and 5, dial-a-ride is provided only in the rural area, so 100 percent of the service is rural. In Scenario 6, Dial-a-ride is provided in the rural area of El Paso County and in urban areas beyond the flex service area for flexible routes. Most of the population (70 percent) served by dial-a-ride in Scenario 6 resides in the urban area.

ADA for Fixed Routes (Scenario 4)

ADA is allocated to urban or rural based on the percent of population within ¾ mile of fixed routes residing in urban or rural areas. Most of the population (94 percent) within ¾ mile of the fixed routes in Scenario 4 resides in the urban area.

Federal and State Funds

Based on the assignment of El Paso County Transit services to urban or rural classifications, the services and corresponding service data are assumed to be reported to the Urban National Transit Database (NTD) or Rural NTD:

- The urban service by El Paso County (revenue miles, passenger miles, and operating expenses for flex/fixed routes and dial-a-ride/ADA) could generate additional Section 5307 funds based on the formula for bus revenue miles and the bus incentive. A portion of the additional Section 5307 funds could be eligible for operating by El Paso County (5307 Special Rule), and all additional funds could be used for capital projects. Service in the urban area of the El Paso urbanized area (UZA) is not eligible for State Urban funds from TxDOT.
- Rural services (flex/fixed routes and rural dial-a-ride/ADA) are eligible for Section 5311 and State Rural funds from TxDOT.

Transit Use Benefits

Transit use benefits will be calculated for flex/fixed routes and demand response (dial-a-ride/ADA) for the urban and rural factors (inflated to 2018) from the National Center for Transit Research report (*11*). Each factor is multiplied by passenger trips:

- The passenger trips for flex/fixed routes are estimated by regression analysis and are assigned by the percent revenue miles urban or rural by scenario in Table 2.
- The passenger trips for demand response are estimated as passengers per revenue hour (three passengers per hour for dial-a-ride and two passengers per hour for ADA) and are assigned by the percent urban or rural service by scenario in Table 2.

Ridership Estimation

This section discusses the study team's methodology for estimating ridership for each bus route or service (e.g., dial-a-ride) in each of the six proposed transit service scenarios. This section is broken into two subsections:

- Flexible- and fixed-route ridership estimation.
- Demand-responsive ridership estimation.

Flexible- and Fixed-Route Ridership Estimation

The study team examined and tested several different ridership estimation methodologies and reviewed existing research on ridership estimation practices. Although there are many different recommended out-of-the-box approaches, most of them were overly complicated or required specialized software. The study team decided to develop a customized approach that would be simple to implement, flexible enough to use across all five service scenarios, and robust enough to produce reliable ridership estimates. The study team's flexible- and fixed-route ridership estimation methodology takes several steps and incorporates variations in a bus route's:

- coverage (i.e., how many people and jobs have access to the route),
- frequency (i.e., how many buses will travel the route within a given time span), and
- revenue hours (i.e., how many hours the route will operate in a week).

In order to account for each of these predictors, the study team's ridership estimation methodology had three steps, each corresponding with one of the ridership predictors, in order. Table 5 summarizes the predictors their input data, data sources, mathematical operation, and output.

Table 5. Ridership Estimation Methodology Predictors, Data Sources, Mathematical Operations, and Outputs.

Predictor	Input Data	Data Source	Mathematical Operation	Output
Coverage	Number of people and jobs with access to the route	People: 2015 American Community Survey 5-Year Estimates Jobs: 2015 Origin-destination employment statistics from the Longitudinal Employer-Household Dynamics Program	Linear regression to predict passengers per revenue hour based on the route's coverage.	Estimated baseline passengers per revenue hour for weekdays and for Saturdays
Frequency	Ratio of proposed route's frequency to a comparable route's frequency	Proposed route: service plan for the proposed transit service scenario Comparable route: daily number of scheduled trips for El Paso County	Ridership elasticity equation based on change in frequency (proposed versus comparable route)	Frequency-adjusted passengers per revenue hour for weekdays and Saturdays
Revenue hours	Number of revenue hours for the proposed route	Service plan for the proposed route in the transit service scenario	Multiply frequency-adjusted passengers per revenue hour by the number of revenue hours	Weekday, Saturday, and Sunday estimated passengers

Each of these steps is discussed in more detail. Appendix 6-B is the Excel-based flexible- and fixed-route ridership estimation model used for each scenario.

Coverage

Ridership is partly explained by the population and jobs in the geographic area adjacent to a transit route (i.e., route coverage). To account for this, the study team used geospatial analysis tools along with data from the 2015 American Community Survey 5-Year Estimates and 2015 Origin-Destination Employment Statistics from the Longitudinal Employer-Household Dynamics program to estimate the statistical relationship between each El Paso County route's actual ridership (passengers per revenue hour) and adjacent population and jobs. The study team applied a ½-mile buffer to capture the number of people and jobs around each fixed route and estimated the population and number of jobs within the buffer. These population and jobs numbers are used to create a linear regression equation to predict each current route's weekday passengers per revenue hour. In the Equation 1, Y is weekday ridership per revenue hour, β_1 is the jobs coefficient, x_1 is the number of jobs within the buffer, β_2 is the population coefficient, and x_2 is the population within the buffer.

$$Y = 0 + \beta_1 x_1 + \beta_2 x_2$$

Equation 1. Structure of the Coverage Regression Equation to Predict Ridership.

The study team did not use this regression equation to predict ridership for Route 84 because of its uniqueness. Route 84 carries far more people per revenue hour than the other El Paso County routes because of many factors. In Scenarios 2 through 4, Route 84 did not change alignment; therefore, the study team estimated Route 84's ridership based on Route 84's current passengers per hour.

Equation 2 and Equation 3 show the regression coefficients for both weekday and Saturday passengers per revenue hour predictions (for non-Route-84 bus routes).

$$Y_{weekday} = 0 + 0.00002525x_1 + 0.00008624x_2$$

Equation 2. Coverage Regression Equation to Predict Weekday Ridership.

$$Y_{Saturday} = 0 + (-0.00002619)x_1 + 0.00008772x_2$$

Equation 3. Coverage Regression Equation to Predict Saturday Ridership.

Table 6 shows the current weekday passengers per revenue hour and the predicted weekday passengers per revenue hour using the weekday ridership estimation regression equation.

Table 6. Predicted Ridership by Route (Current El Paso County Routes) Based on the Coverage Regression Equation.

Route	Average Weekday Passengers/Revenue Hour	Predicted Average Weekday Passengers/Revenue Hour
10	4.4	3.0
20	3.4	4.0
30	3.4	3.4
40	2.3	2.5
50	1.4	2.1

When predicting ridership for flexible routes, the buffer around each route was increased to a ¾-mile area when capturing the number of jobs and population adjacent to the transit route.

Now that the study team identified the jobs and population coefficients to predict passengers per revenue hour on weekdays and Saturdays, the study team used geographic information system analysis to count the number of jobs and population within each proposed route's buffer across all transit service scenarios.

Armed with the predicted baseline passengers per revenue hour for each proposed route, the study team then determined how to adjust this baseline after considering service improvements (e.g., increasing frequency or span of service).

Frequency (or Headway)

The second step in the study team's ridership estimation methodology is to adjust the proposed route's predicted baseline passengers per revenue hour based on whether the proposed route is more or less frequent than its comparable route (i.e., whether the proposed route has a higher or lower average headway). This headway adjustment is necessary because ridership was predicted using the statistical relationship between coverage and ridership for *current* routes operating at *current* service levels. However, as headway decreases, ridership is expected to increase. Conversely, as headway increases, ridership should decrease. To account for this, the study team used an elasticity factor of −0.44 (i.e., as headway increases, ridership is expected to go down [*12*]).

For each proposed route, the study team selected a similar current route and compared the proposed route's average headway to the comparable route's average headway by applying a mid-point (linear) elasticity application formula (Equation 4). Q_2 represents the new passengers per revenue hour number based on n (the headway elasticity), P_1 and P_2 represent the comparable route's headway and proposed route's headway, respectively, and Q_1 represents the current passengers per revenue hour.

$$Q_2 = \frac{(n-1)P_1Q_1 - (n+1)P_2Q_1}{(n-1)P_2 - (n+1)P_2}$$

Equation 4. Ridership Elasticity Formula.

Table 7 contains an example of the results of the adjustment to the predicted baseline passengers per revenue hour after accounting for changes in frequency of service.

Table 7. Example Adjustment of Predicated Weekday Passengers per Revenue Hour Based on Headway Elasticity (from Scenario 3).

Route	Predicted Baseline Weekday Passengers/ Revenue Hour	Comparable Route Headway (min)	Proposed Route Headway (min)	Headway-Adjusted Weekday Passengers/Revenue Hour
10	4.3	51	55	4.1
20	6.7	56	50	7.1
30	4.6	111	60	6.0
40	4.3	83	120	3.7
50	3.5	54	60	3.3
84[a]	14.5	80	60	16.5

[a] *Route 84's predicted baseline weekday passengers per revenue hour is not estimated from the coverage regression equation but instead is Route 84's actual passengers per revenue hour.*

Span

The study team has estimated passengers per revenue hour for each proposed route in each transit service scenario. To translate passengers per revenue hour into a total number of passengers, the study team multiplied the passengers per revenue hour by the number of revenue hours (weekday, Saturday, and

Sunday ridership values were all calculated separately). As a last step, the study team multiplied the weekday, Saturday, and Sunday ridership estimates by 255, 55, and 55, respectively, to estimate the total annual ridership for each route.

Route 84 in Scenarios 5 and 6

In Scenario 5 and Scenario 6, the study team proposed to eliminate Route 84 and to cover its segments with four other routes. The study team equally apportioned Route 84's current passengers per hour to each of the four routes that will be taking over the segments of Route 84, increasing each route's baseline passengers per hour by 3.625 passengers per revenue hour (one-fourth of Route 84's 14.5 passengers per revenue hour). These four routes' new baseline passengers per revenue hour were then adjusted for frequency changes and multiplied by revenue hours.

Demand-Responsive Ridership Estimation

Because El Paso County does not currently have any demand-responsive transit, the study team searched for rules of thumb or standards that could be applied to estimate demand-responsive ridership. Again, there were many complex approaches; however, they were unnecessarily complicated for this study (e.g., see the National Center for Transit Research's report [*13*]).

The study team assumed that dial-a-ride service would have 3.0 passengers per revenue hour on weekdays, which was the average passengers per hour for rural general public demand-responsive systems (*14*). The study team assumed that passengers per revenue hour on Saturdays and Sundays would be 2.0. For any scenario with dial-a-ride service, the study team multiplied the appropriate estimated dial-a-ride revenue hours by the weekday, Saturday, and Sunday passengers per revenue hour values and then annualized the result.

Finally, the study team set the ADA paratransit passengers per revenue hours in Scenario 4 at 2.0 passengers per revenue hour, based on the average passengers per revenue hour for Texas urban demand-responsive service in fiscal year (FY) 2016.[3] The study team used 2.0 passengers per revenue for all days of the week, and multiplied 2.0 passengers per revenue hour by the estimated annual revenue hours for the ADA paratransit service to calculate the estimated annual ridership.

Revenue Estimation

The study team estimated revenues from both fares and from federal, state, and local sources. Fare revenue estimation is discussed in the full report; for convenience, the methodology is again discussed here. Appendix 6-C contains the calculator used to forecast the revenues for each scenario.

Revenues from Fares

The study team forecasted fare revenue for each of the six transit service scenarios based on the ridership estimation methodology discussed previously. For flexible- and fixed-route services, the study team assumed a base fare of $1.50 per boarding and a discounted fare of $0.75 per passenger boarding for seniors and people with disabilities. The study team assumed El Paso County will receive some 5307 funds from its service that operates in the urbanized area, and 5307 rules require that recipients have a discounted off-peak fare for seniors and people with disabilities. The study team applied the off-peak

[3] The study team used urban systems to calculate the average passengers per revenue hour because most rural systems that operate demand-responsive transit operate general public transit, not ADA paratransit. Also, Grand Prairie's data were an outlier and were removed when calculating the statewide average.

discounted fare to 25 percent of the estimated off-peak-period ridership of flexible-route and fixed-route services. (The 25 percent assumption was based on data from the El Paso County onboard passenger survey, which indicated that 17.2 percent of passengers were eligible for Medicare and that 6 percent of passengers use a mobility aid.) The study team assumed a base fare of $1.50 per boarding for dial-a-ride and $3.00 per boarding for ADA paratransit services.

The study team did not forecast fare revenue for the Gold Route or vanpool services; instead, the team kept these values constant across all service scenarios.

Revenues from Federal and State Grants

As discussed in Chapter 2, El Paso County receives revenue from several sources including federal grants, state grants, and locally generated revenues. In order to understand the potential amount of revenue available to cover projected operating and capital costs, the study team developed a revenue forecasting model to forecast state and federal formula funding allocations for El Paso County under the different transit service scenarios. The forecasted revenue sources included State Rural (formula), 5311 Formula Grants for Rural Areas, and 5307 Urbanized Area Formula Grants. Other sources of federal revenue (e.g., 5311[f] Intercity Bus Program and CMAQ funds) were not put through the forecasting model and were assumed to remain constant across all scenarios. The study team also assumed that 5311 discretionary grants would be available to cover the rural portion of amortized vehicle capital costs in each scenario where 5311 and State Rural grants were not enough to cover anticipated vehicle costs.[4]

Assumptions

Formula funding for both federal and state sources uses service data that are submitted and certified two fiscal years prior to the funding award. Revenue formulas often depend on comparing service levels and performance metrics among a group of potential revenue recipients. Transit district service levels increase or decrease from year to year, sometimes significantly. Changes in service data affect the allocation of dollars from federal and state rural formula grants because rural transit districts are all competing for a fixed amount of funds in each grant program. For example, if Transit District X experiences a significant drop in revenue miles, the district would have less 5311 funding based on revenue miles. The other rural transit districts would have more funding available, assuming other transit districts' revenue miles did not change. Except for El Paso County data that change because of proposed services in each service scenario, the study team held service data constant from all other rural transit districts at FY 2017 values.

Also, the total funds available under different grant programs—especially federal grants—change from year to year. However, the study team calculated revenue federal revenue forecasts disregarding which fiscal year the forecasted revenue would materialize, using FY 2017 available funding levels and apportionment factors.

Last, the study team disregarded the funding stability rule, which guarantees that state formula funds and federal suballocated funds from the 5311 program will be within 90 percent of what a transit district received in the prior fiscal year.

Federal Funding

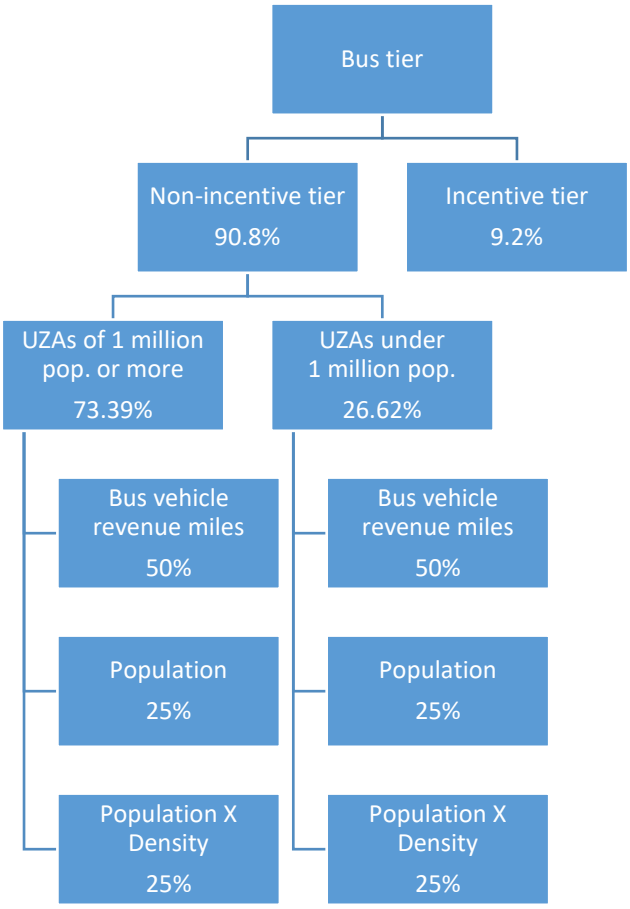
The study team modeled future revenue based on the proposed scenarios for El Paso County. The scenarios included both rural and urban service, and because of this, the study team modeled formula grants for urbanized areas (Section 5307) and rural areas (Section 5311). The key performance measures

[4] 5311 discretionary grants are managed by TxDOT and are usually available every year.

for federal formula funding included total annual revenue miles, total annual passenger miles, total annual operating expenses, and total annual passenger boardings.

Urban Area Formula

Federal grants for urbanized areas in the bus tier are separated into a non-incentive tier and an incentive tier. Figure 9 displays the bus tier flowchart. The non-incentive tier, containing 90.8 percent of apportioned funding, is further allocated to UZAs with a population of over 1 million (73.39 percent) and UZAs with a population of under 1 million (26.62 percent), with the El Paso UZA falling into the former. The funding formula for both categories is based on three calculated measures: bus vehicle revenue miles (50 percent), population (25 percent), and population multiplied by density (25 percent). The remaining 9.2 percent of the apportioned amount is based on the calculation of bus passenger miles squared divided by operating cost.



Source: Federal Transit Administration: Apportionments, FAST ACT Formula Flowcharts

Figure 9. Section 5307 Urban Area Formula Grant Flowchart for Bus Tier.

Rural Area

The study team modeled revenue for service provided outside of the urban area (i.e., the rural areas of El Paso County). Section 5311 Formula Funds for Rural Areas grants use a formula based on a needs section and a performance section. Figure 10 displays the flowchart for the rural formula. The needs section is composed of Census 2010 population and land area information for all transit districts that use Section 5311 funding. The population and land area information is transformed into a proportion based on

the total amount of population and land area for the aforementioned transit districts. Population is weighted at 75 percent and land area at 25 percent to create one Needs Factor. The performance allocation consists of three performance factors: local funds/operating expense, revenue miles/operating expense, and passengers/revenue mile. The performance factors are transformed into a proportion based on the total performance factors of all rural funded transit districts. These three percentage totals are averaged to form the Performance Factor.

The remaining funding is based on the proportion of total annual revenue miles for all modes compared to all rural funded transit districts.

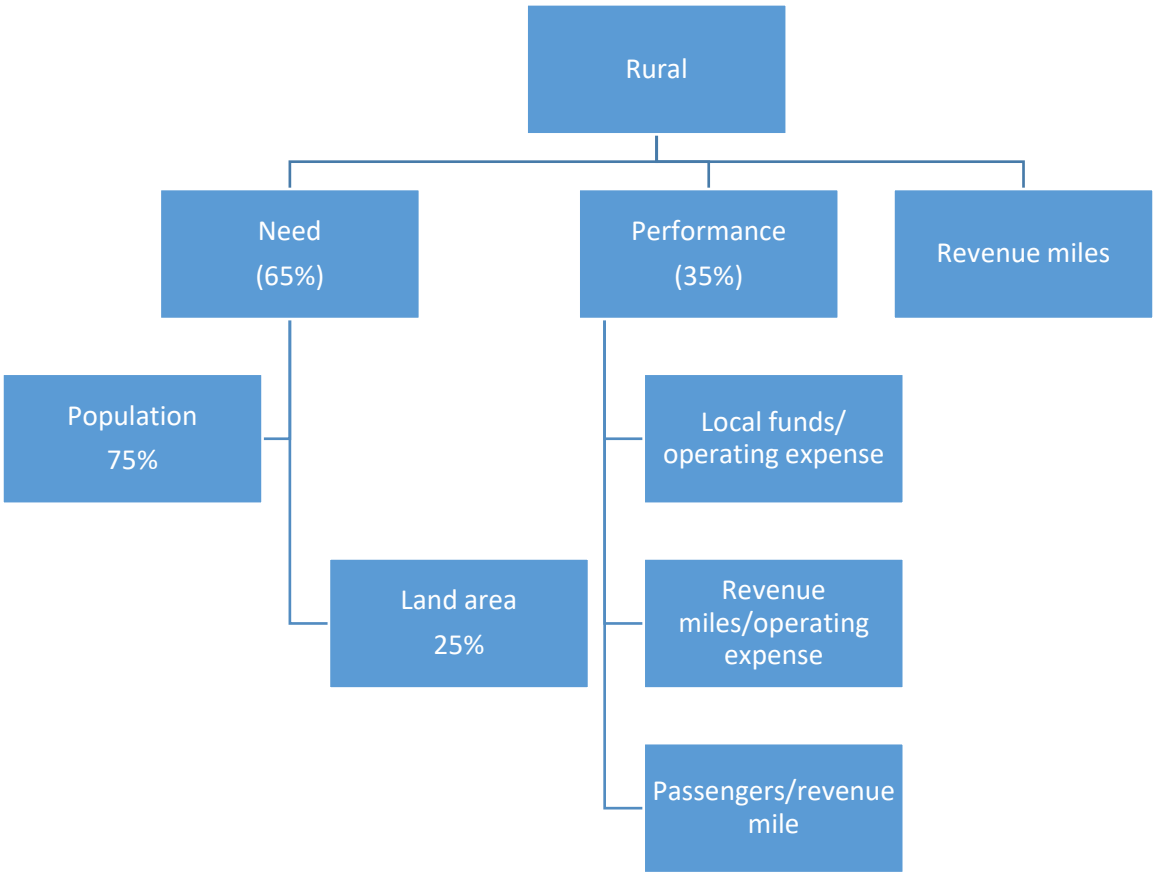


Figure 10. Section 5311 Formula Funding for Rural Areas.

State Funding

The study team modeled state rural funding based on each scenario's amount of service provided to the rural area of El Paso County. The formula calculation is identical to the formula used to calculate Section 5311 Formula Funds for Rural Areas. The one exception is the apportionment of funds. Sixty-five percent of funding is dedicated for needs factors, and 35 percent is dedicated to performance factors. The factors within the needs and performance sections are the same as the federal formula funding ratios.

The state formula funding is published in the Texas Administrative Code, State Financing of Public Transportation. The revenue forecast is based on one fiscal year. The rural biennium amount of $42,863,386 is thus reduced to the one-year amount of $21,431,693.

Data Used

TxDOT PTN-128 Data

The study team used several data sources to produce the revenue forecast results. Most notably, the study team used FY 2017 service data from TxDOT PTN-128 for all rural transit districts. These data included three performance measures used for the rural funding formula, including local funds/total operating expense, revenue miles/operating expense, and passengers/revenue mile. These are pre-calculated within the PTN-128 system. Population within transit districts is from 2015 PTN-128 data, the latest update based on changes to a few transit district boundaries. All population-based data are from the 2010 Decennial Census. This is consistent with data used at the federal and state levels. The 2015 update included any changes to transit district boundaries.

At the federal level, formula multipliers for urban areas are based on FY 2017 formula apportionment data unit values. The unit values are based on the size of the urbanized area. The 2010 Census population for the El Paso, Texas-New Mexico urban area is 803,086, so the unit values used are for urbanized areas under 1,000,000. Table 8 shows the values used in the revenue forecast.

Table 8. Apportionment Values for Urban Area Formula Grants (Section 5307).

Category	Apportionment Unit Value
Population	2.7748882
Population × density	0.0012609
Bus revenue vehicle mile	0.5315370
Bus incentive	0.0115687
Low income	2.2259060

Source: Table 5—FY17 Full Year Apportionment Data Unit Values

Scenario Inputs

The study team ran the revenue forecast model with all six scenarios and the current scenario. The variables used to forecast revenue included unlinked passenger trips (ridership), revenue miles, passenger miles, and operating expenses. As discussed in the report and elsewhere in this appendix, values for these variables were estimated for each scenario; however, the current scenario used actual FY 2017 data. The service data were allocated to the urban and rural area, based on where the primary intent of the service and whether routes operated at least 5 percent of revenue miles in the rural area (discussed in the "Urban/Rural Service Assignment Methodology" section); however, for the current scenario, all service data were allocated to the rural area because currently El Paso County does not report data to the urban NTD. Table 9 shows the inputs used for the revenue forecast model.

Table 9. Revenue Forecast Inputs by Scenario

Scenario	Allocation	Mode	Revenue Miles	Passenger Miles	Operating Expenses	Annual Passenger Boardings
Current (2017)	Rural	MB	910,274	645,729	$3,225,148	186,627
Scenario 1	Rural	DR	389,549	659,544	$1,410,500	61,250
Scenario 2	Urban	MB	158,059	156,797	$533,033	45,317
	Rural	MB	560,389	555,917	$1,889,843	160,670
Scenario 3	Urban	MB	197,396	262,282	$743,743	75,804
	Rural	MB	699,860	929,909	$2,636,907	268,760
	Rural	DR	389,549	659,544	$1,410,500	61,250
Scenario 4	Urban	MB	195,294	208,388	$717,694	60,228
	Rural	MB	734,678	783,936	$2,699,898	226,571
	Urban	ADA	177,925	233,525	$803,134	24,712
	Rural	ADA	11,357	14,906	$51,264	1,577
Scenario 5	Urban	MB	229,890	360,989	$874,010	104,332
	Rural	MB	864,822	1,358,005	$3,287,941	392,487
	Rural	DR	389,549	659,544	$1,410,500	61,250
Scenario 6	Urban	MB	229,890	360,988	$874,010	104,332
	Rural	MB	864,822	1,358,005	$3,287,941	392,487
	Urban	DR	311,136	530,876	$1,126,580	49,301
	Rural	DR	133,344	227,518	$482,820	21,129

Note: In NTD, MB refers to motor bus or fixed/flexible route; DR refers to demand response.

References

1. Potts, J.F., M.A. Marshall, E.C. Crockett, and J. Washington. *TCRP Report 140: A Guide for Planning and Operating Flexible Public Transportation Services.* Transportation Research Board, 2010.

2. Arlington Transit. Bus Stop and Transit Station Types. Accessed March 8, 2018, from https://www.arlingtontransit.com.

3. Kimley-Horn and Associates Inc. *Bus Stop Safety and Design Guidelines.* Orange County Transportation Authority, March 2004. Accessed March 8, 2018, from https://nacto.org/wp-content/uploads/2015/04/bus_stop_safety_design_guidelines_kimley.pdf.

4. Riverside Transit Agency. *Bus Stop Design Guidelines.* August 2015. Accessed March 8, 2018, from https://www.riversidetransit.com/images/stories/DOWNLOADS/PUBLICATIONS/DESIGN_GUIDES/Design%20Guidelines%20-%20Aug%202015.pdf.

5. KFH Group Inc. *Guidelines: Design and Placement of Transit Stops: Washington Metropolitan Area Transit Authority.* Washington Metropolitan Area Transit Authority, December 2009. Accessed March 8, 2018, from https://nacto.org/wp-content/uploads/2015/04/design_and_placement_of_transit_stops_kfh.pdf.

6. Trevino, R. METRO Bus Stop Signage. Metropolitan Transit Authority of Harris County. January 21, 2016. Accessed March 8, 2018, from http://ridemetro.granicus.com/MetaViewer.php?view_id=5&clip_id=1236&meta_id=24263.

7. Texas Department of Transportation. Average Low Bid Unit Prices. January 2017–July 2017 Data. Accessed March 8, 2018, from http://www.txdot.gov/business/letting-bids/average-low-bid-unit-prices.html.

8. Bushell, M. A., et al. *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public.* UNC Highway Safety Research Center. October 2013. Accessed March 8, 2018, from http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf.

9. Department of Rail and Public Transportation. *Minimal Asset Useful Life Standards for FTA Grants.* Accessed March 8, 2018, from https://olga.drpt.virginia.gov/Documents/forms/DRPT%20Asset%20Useful%20Life%20Chart.pdf.

10. Federal Transit Administration. *Nonurbanized Area Formula Program Guidance and Grant Application Instructions.* Circular FTA C 9040.1F. 2007.

11. Godavarthy, R., J. Mattson, E. Ndembe, and National Center for Transit Research. *Cost-Benefit Analysis of Rural and Small Urban Transit.* U.S. Department of Transportation, July 2014.

12. Transit Cooperative Research Program. *TCRP Report 95: Traveler Response to Transportation System Changes Handbook.* Chapter 9: Transit Scheduling and Frequency. Transportation Research Board, 2004.

13. National Center for Transit Research. *Estimating Ridership of Rural Demand-Response Transit Services for the General Public.* 2016.

14. Transit Cooperative Research Program. *TCRP Report 165: Transit Capacity and Quality of Service Manual*, 3rd ed. Chapter 2. 2013.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX **7**-A:
Stakeholder Meeting Presentations
Meeting #1 June 7, 2017 – page 1
Meeting #2 October 19, 2017 – page **25**
Meeting #3 December 7, 2017 – page **41**

Prepared for:

Texas A&M Transportation Institute

December 2017



EL PASO COUNTY
REGIONAL TRANSIT INSTITUTIONAL OPTIONS ASSESSMENT STUDY

CSJ (0924-06-527)

Stakeholder Meeting
Wednesday June 7, 2017 10:00 a.m. to Noon
El Paso MPO, 211 N Florence St, El Paso

EL PASO COUNTY
REGIONAL TRANSIT INSTITUTIONAL OPTIONS ASSESSMENT STUDY

CSJ (0924-06-527)

Sponsored by: El Paso County
Funding Support: Texas Department of Transportation

Technical Assistance to the County:
Texas A&M Transportation Institute (TTI)

Stakeholder Meeting Agenda

- Welcome and Introductions
- Review Study Scope and Expected Outcomes
- Presentation Existing Conditions
  - Discussion Transit Need in El Paso County
- Review Alternatives for Regulatory Framework and Funding for Countywide Transit
  - Discussion Feasible Alternatives
- Next Steps

Overall Project Scope

- Examine the feasibility of a seamless, countywide fixed-route transit system for all of El Paso county
- Identify alternatives for transit within travel corridors throughout El Paso county
  - Service design
  - Organizational structure
  - Funding
- Assess potential to improve transit service for access to jobs, education, medical, shopping , personal business

Expected Outcomes

- Select priority corridors for a seamless, countywide fixed-route transit system and other complementary transit services
- Identify organizational framework that could provide countywide transit
- Identify federal, state, and local financial resources
- Develop implementation plan



Task 4

EXISTING CONDITIONS: TRANSIT AND POPULATION

Existing Conditions

- Current Transit Services in El Paso County
- Where People Live and Work
- Four Views on Needs/Feasibility for Transit
- Discussion

Current Transit Services in El Paso County

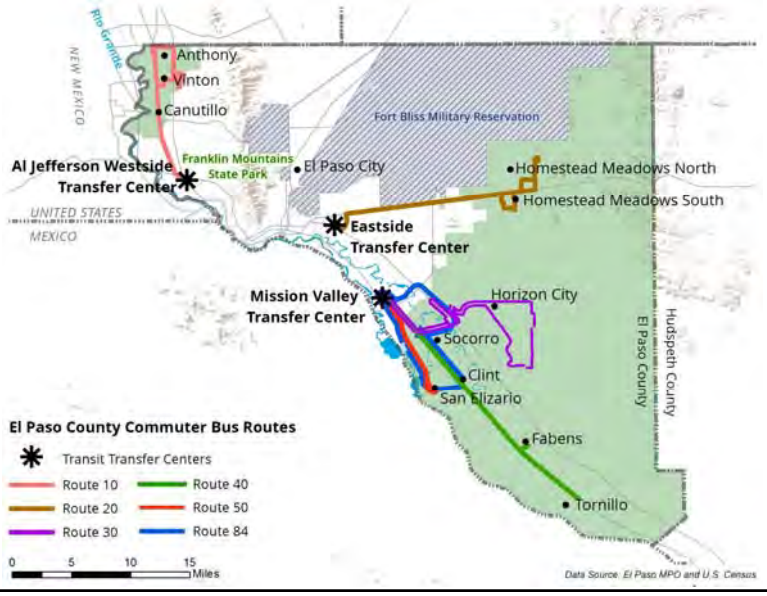
- **Fixed Routes:** Six scheduled, fixed-routes connecting urban and rural communities to Sun Metro at transfer centers
  - Routes 10, 20, 30, 40, and 50 by El Paso County Transit
  - Route 84 is operated by Sun Metro
- **Vanpool:** Program that matches commuter groups with similar origins and destinations, provides vans, and offers incentive for lower commuting costs

Sun Metro and El Paso County Transit Service Areas



9

El Paso County Transit Routes



10

El Paso County Transit Routes

El Paso County is currently analyzing routes and fares.

El Paso County Routes	Hours of Service	Average Frequency in Minutes	Fare
Route 10 Anthony Canutillo	12 Hours Weekday & Saturday	43 peak* 91 off-peak**	$2.00
Route 20 Montana Vista	14 Hours Weekday & Saturday	52 peak 55 off-peak	$2.00
Route 30 Horizon	13 Hours Weekday & Saturday	132 peak and off-peak	$2.00
Route 40 Fabens Tornillo	11 Hours Weekday & Saturday	99 peak and off-peak	$2.00
Route 50 Mission Trail	9 Hours Weekday 7 Hours Saturday, Sunday and Holidays	60 peak and off-peak	$2.00
Route 84 EPCC Mission del Paso	12 Hours Weekday Operated by Sun Metro	90 peak and off-peak	$1.50

*Peak = Peak hours or peak period. morning and afternoon time periods when transit riding is heaviest

**Off-Peak = Off-Peak hours or off-peak period. of the day when less transit service is scheduled

11

El Paso County Transit Vanpools

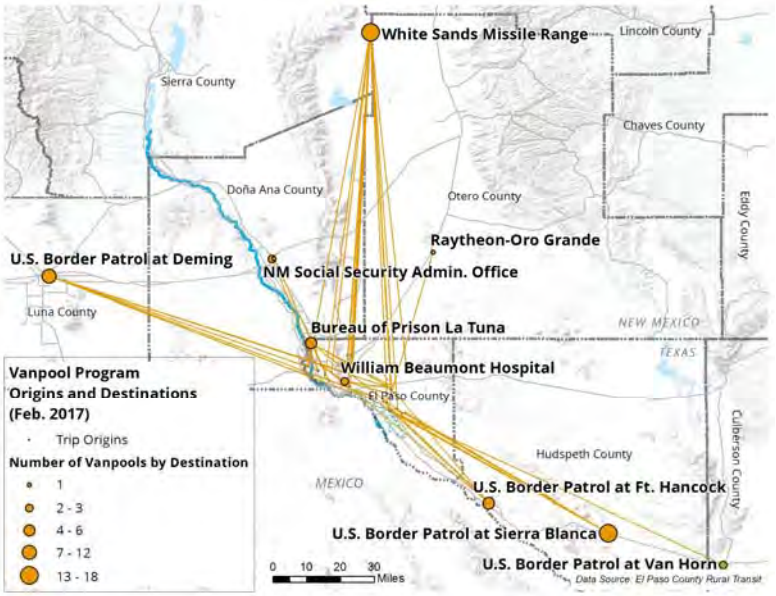
El Paso County sponsors* a vanpool program for commuter groups that are traveling between similar origins & destinations

Monthly Data	March 2017
Active Vanpools	69
Average Monthly Commute Mileage	3,271
Average Trip Length (Entire Route)	130
Average Seating Capacity per Vanpool	8
Average Ridership per Vanpool	6
Commuter Trips (Monthly)	9,328

*Program is operated by Enterprise Inc.

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Origin-Destination of El Paso Vanpools



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Transit Service from New Mexico

South Central Regional Transit

- Service area: Dona Ana and Sierra Counties
- Routes
  - Turquoise Route between Anthony Hwy 404 via Chaparral to El Paso at Sun Metro Northgate Transfer Center
  - Purple Route from Anthony to Sun Metro Westside Transfer Center via Hwy 28 in New Mexico
  - Blue and Red Routes from Las Cruces to Anthony

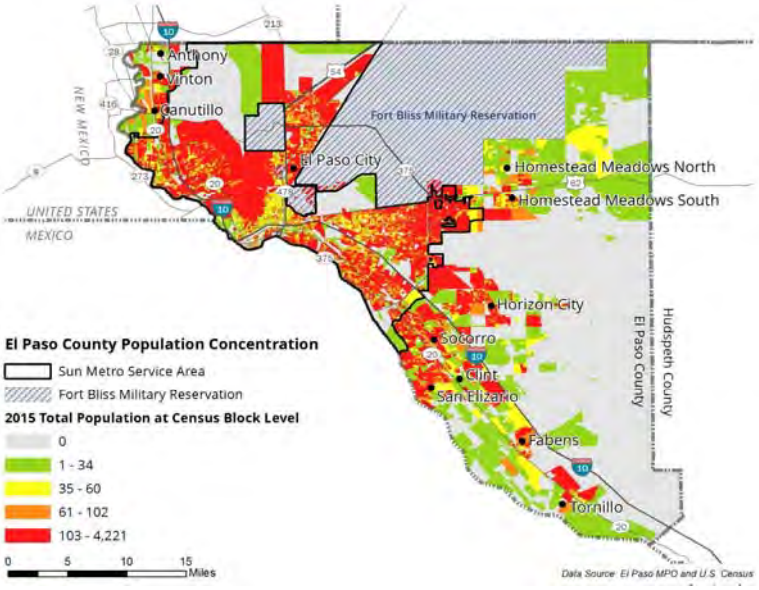
New Mexico Department of Transportation (NMDOT)

  - Gold Route is a Park & Ride service of NMDOT, partially funded by TxDOT through the County of El Paso
  - Stops: Sun Metro Downtown Transfer Center, Westside Transfer Center, NMSU, Downtown Las Cruces Terminal

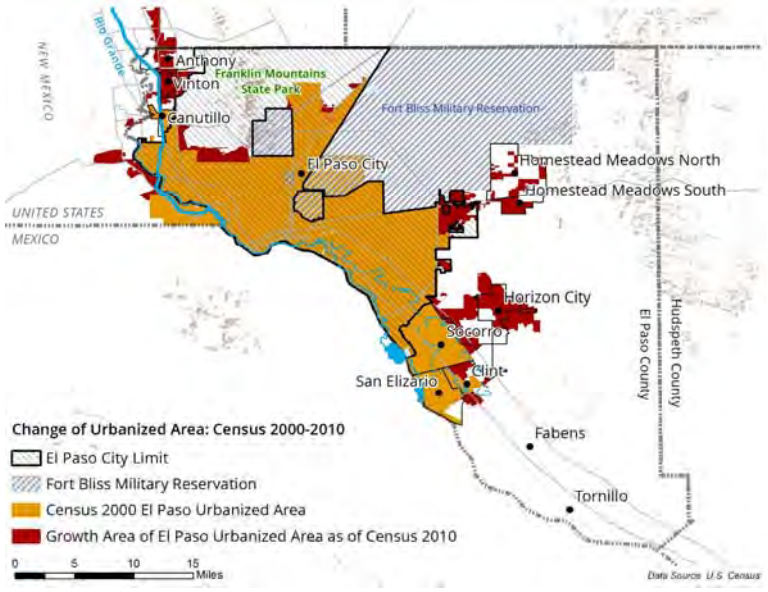
Where People Live and Work

- Concentration of population
- Urban area growth 2000-2010
- Job density

Population Concentration

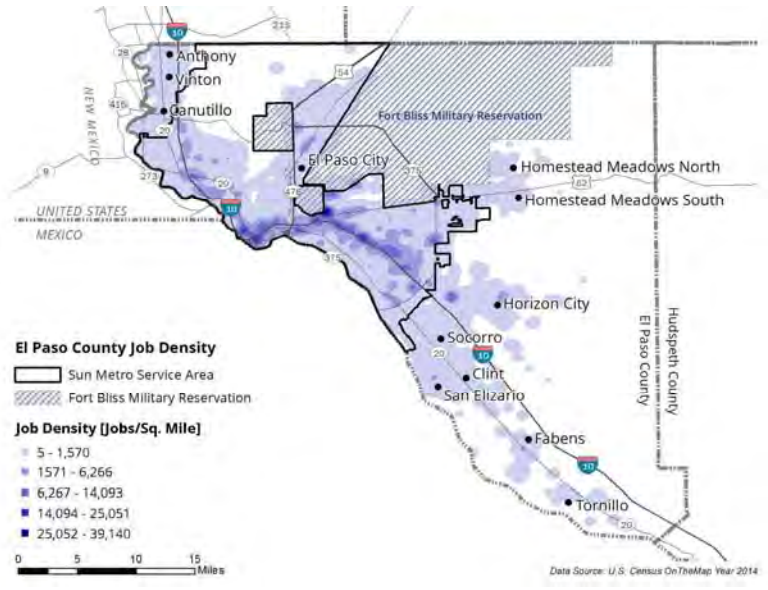


Urban Area Growth 2000-2010



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Job Density



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Four Views on Transit Need and Feasibility

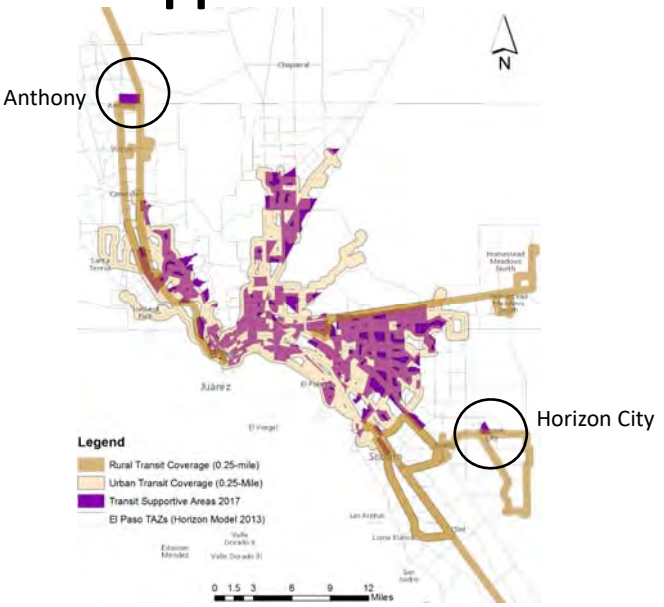
- Transit Supportive Areas (TSA)
  Where is transit likely to be effective or feasible?
- Transit Need Index (TNI)
  Based on population demographics, where is need?
- Transit Supply Index (TSI)
  Based on level of service (day/time/frequency), is current service sufficient to meet need?
- Regionally Coordinated Transportation Plan
  Opportunities to coordinate regional transit?

Transit Supportive Areas

Source: Transit Capacity and Quality of Service Manual

- *Where is transit likely to be effective or feasible?*
- Transportation analysis zones are evaluated to determine if transit supportive for fixed route
- Criteria
  - +3 households/acre, or
  - +4 jobs/acre

Transit Supportive Areas 2017



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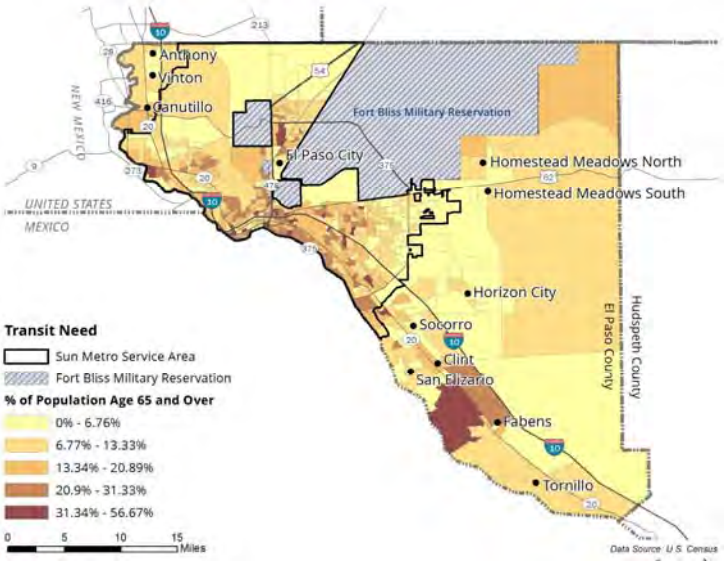
Transit Need Index

- *Based on population demographics, where is transit need?*
- Analysis layers four demographic characteristics to identify areas of transit need for:
  - Population age 65 and older
  - People with a disability
  - Population below poverty level
  - No vehicle available in household

Texas A&M Transportation Institute

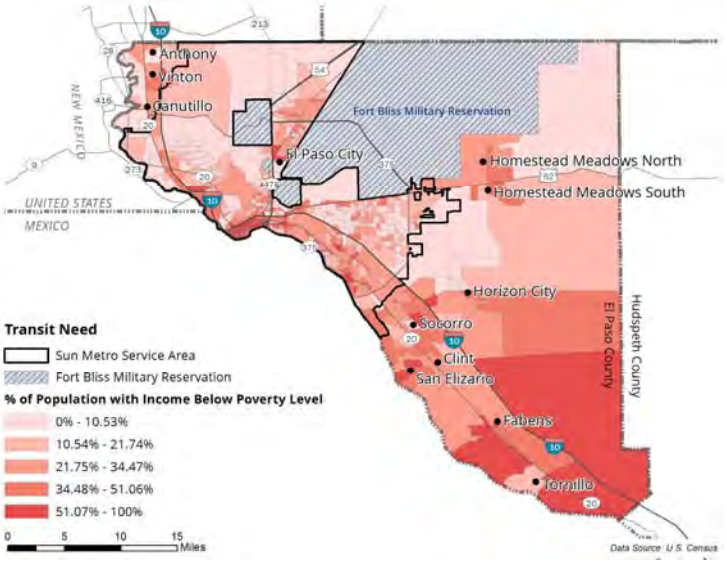
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Example: Population Age 65 and Older



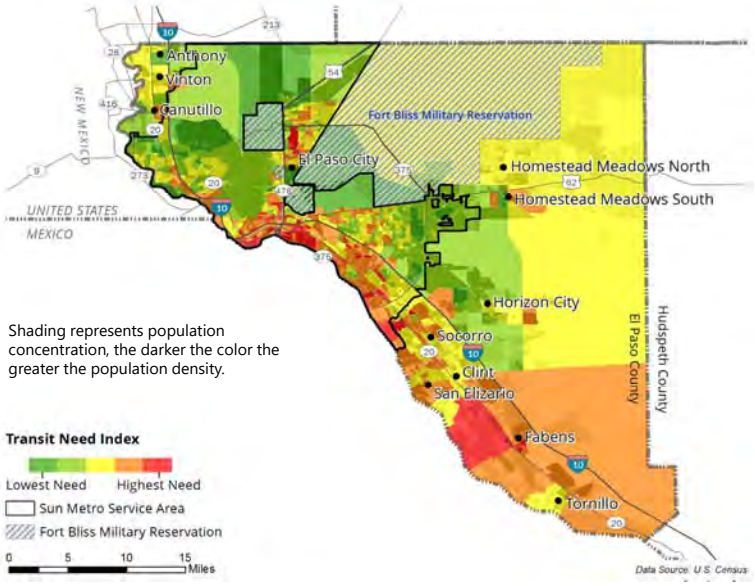
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Example: Population below Poverty Level



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Transit Need Index



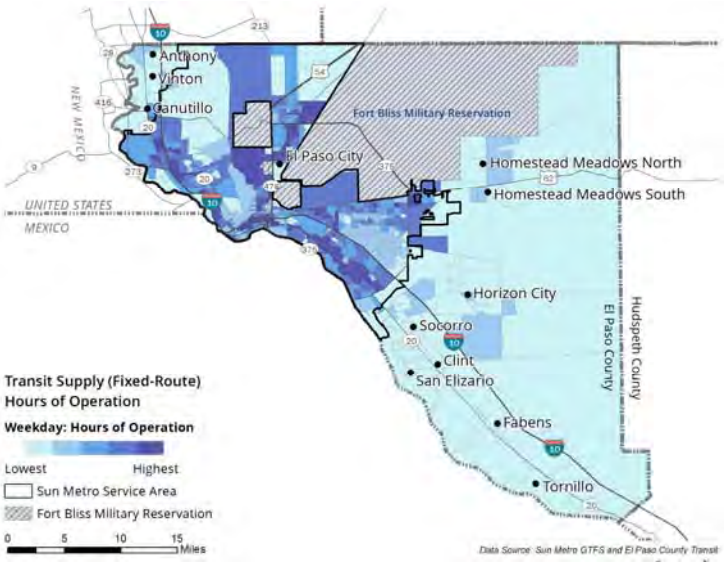
Observations: Transit Need Index

- Tornillo, Fabens, San Elizario, areas in Socorro, Horizon City, and Homestead Meadows have some of the highest transit need in the east
- Vinton Village and Canutillo have some of the highest transit need in the west
- El Paso County rural areas have highest transit need

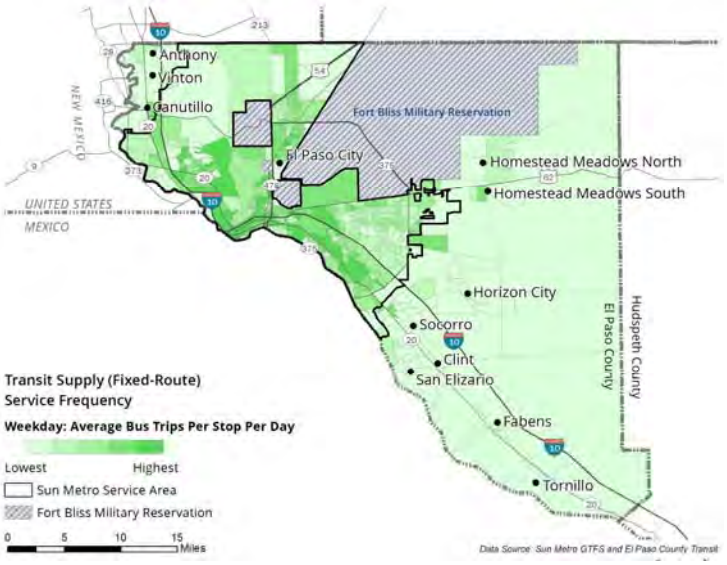
Transit Supply Index (TSI)

- *Based on level of service (days, span of time, frequency), is current service sufficient to meet need?*
- Analysis layers for fixed-route service characteristics to represent transit supply:
  - Service geographic coverage
  - Days of service
  - Hours of operation
  - Frequency (number of bus trips per day)

Example: Hours of Operation

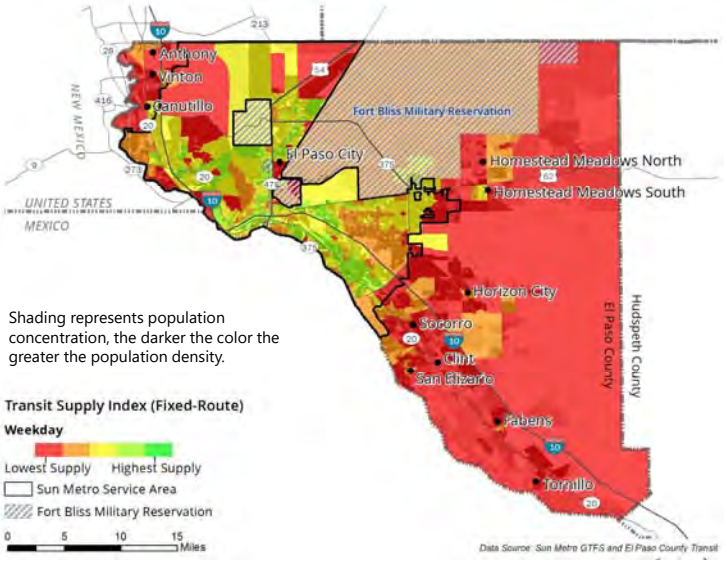


Example: Average Bus Trips Per Stop/Day



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Transit Supply Index

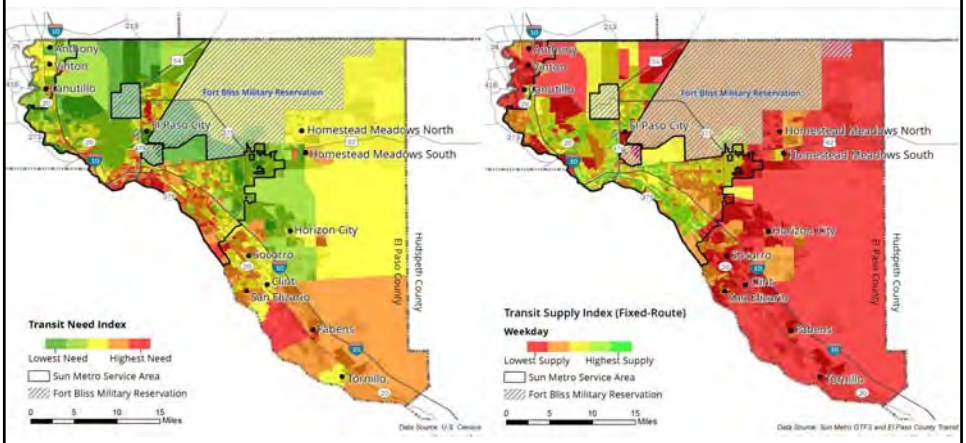


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Observations: Transit Supply Index

- Insufficient neighborhood coverage making distance to nearest route too far
- Fixed-route stops lack passenger shelters
- Limited availability of paratransit or equivalent service outside city limits

Transit Need vs. Transit Supply



Observations: Comparing Need and Supply

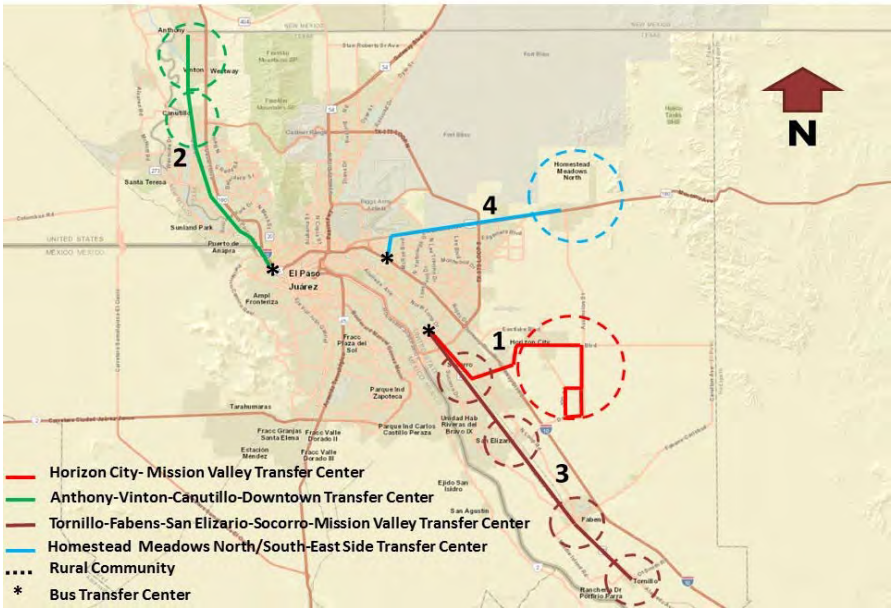
- Communities outside Sun Metro service area have low transit supply
- El Paso County rural areas have highest transit need but lowest transit supply

Regionally Coordinated Transportation Plan*

- *Opportunities to coordinate regional transit?*
- Identified transit gaps/needs:
  - Span of service too late/early for employment
  - Bus fares too high for some with low income
  - Distance to nearest stop too far in some locations
  - Commute time is too long on some routes
  - Transfers required between transit systems

**Far West Texas / El Paso Regional Human Services/Public Transportation Coordination Plan. 2017 –2022*

Potential Transit Corridors



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Stakeholders: What are your thoughts?

- Who are the target markets with needs for expanded transit service?
- Where are the areas within El Paso county with needs for expanded transit service?
- What are the priority travel corridors for transit in El Paso county?
- Is there enough transit supply in rural areas?

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Task 3

REGULATORY FRAMEWORK FOR TRANSIT AND FUNDING

Regulatory Framework for Transit in Texas

- Transit Authorities and Municipal Transit Departments
  - Federal Transit Administration (FTA) Section 5307
  - Local sales tax dedicated to transit (0.25% to 1.00%)
  - No State funds
- Urban Districts
  - FTA Section 5307
  - State Public Transportation Fund/ Urban
- Rural Districts
  - FTA Section 5311
  - State Public Transportation Fund/ Rural

Transit in Texas

- Transit Authorities and Municipal Transit Departments
  - Austin Capital Metro
  - Corpus Christi RTA
  - Dallas DART
  - Denton County DCTA
  - Fort Worth FWTA
  - Houston METRO
  - San Antonio VIA
  - El Paso Sun Metro
  - Laredo El Metro
- Urban Districts
  - 30 urban transit districts
- Rural Districts
  - 37 rural transit districts

Possible Alternatives for Countywide Transit in El Paso County

- County Mass Transit Authority
  Transportation Code Chapter 457
- Interlocal Agreement (ILA)
  Government Code Chapter 791
- Local Government Corporation (LGC)
  Transportation Code Chapter 431
- Regional Mobility Authority (RMA)
  Transportation Code Chapter 370

Feasibility of Sales Tax for Transit

Sales Tax Rates by El Paso County Jurisdiction

Jurisdiction	El Paso County (EPC)	EPC Emergency District 2	City	Transit	Total Local
City of El Paso	0.5%		1.0%	0.5%	**2.0%**
El Paso County	0.5%	0.5%			1.0%
Anthony	0.5%	0.5%	1.0%		2.0%
Borderland	0.5%	0.5%			1.0%
Canutillo	0.5%	0.5%			1.0%
Clint	0.5%	0.5%	1.0%		2.0%
Fabens	0.5%	0.5%			1.0%
Horizon City	0.5%		1.5%		2.0%
San Elizario	0.5%	0.5%	1.0%		2.0%
Socorro	0.5%	0.5%	1.0%		2.0%
Tornillo	0.5%	0.5%			1.0%
Vinton	0.5%	0.5%	1.0%		2.0%
Westway	0.5%	0.5%			1.0%

The combined rates of all sales and use taxes imposed by the taxing authority and all political subdivisions cannot exceed two percent.

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- Local Government Corporation (LGC)
  Transportation Code Chapter 431
- Regional Mobility Authority (RMA)
  Transportation Code Chapter 370

Funding Options?
Operating and Capital Expenses

1. Sales tax dedicated to transit
2. Local government general revenues assigned to transit
3. Vehicle registration fee
4. Revenues from Transportation Reinvestment Zones
5. OTHER?

Stakeholders: What are your thoughts?

- What are the pros and cons for alternatives for countywide transit?
  - Create a county mass transit authority requiring local jurisdictions to adjust sales tax (0.5%) for transit.
  - Negotiate Interlocal Agreement to contract transit services with local funding from general revenues.
  - Establish Local Government Corporation to expand transit services with local funding from general revenues.
  - Assign responsibility for transit system to RMA, identify feasible funding options for operating.

Next Steps

- Public Meetings June 7-10
- Technical work will focus on defining transit alternatives for service, governance/ regulatory and funding

Tentative Schedule

- Stakeholders meet again August 2017
- Stakeholders and Public Meetings November 2017
- Final Stakeholders Meeting December 2017

Public Meetings

- **Wednesday, June 7, 6:00 p.m.**
- **El Paso County Fabens Road & Bridge Warehouse**
- 1331 Fabens St
- Fabens, TX

- **Thursday, June 8, 6:00 p.m.**
- **El Paso County Northwest Annex**
- 435 E. Vinton Road
- Vinton, TX

- **Saturday, June 10, 9:00 a.m.**
- **City of Socorro Rio Vista Community Center**
- 901 North Rio Vista Road
- Socorro, TX

- **Saturday, June 10, 2:00 p.m.**
- **El Paso County Sheriff's Office HQ**
- Main Cafeteria
- 3850 Justice Road
- El Paso, TX

EL PASO COUNTY
REGIONAL TRANSIT INSTITUTIONAL OPTIONS ASSESSMENT STUDY

CSJ (0924-06-527)

Presentation to Stakeholders

October 19, 2017

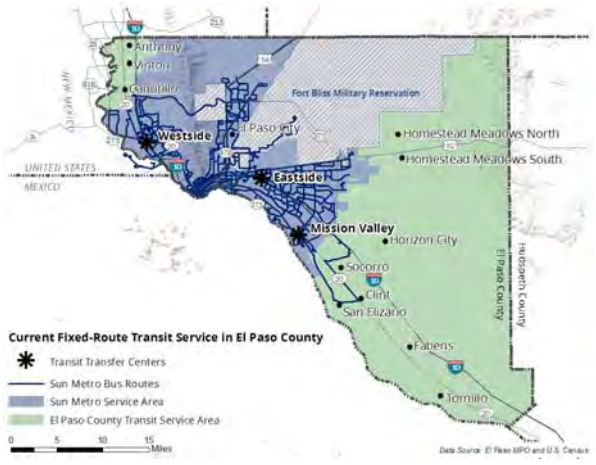
Agenda

- Project Overview
- Current Service
- Transit Service Scenarios
- Governance Options and Funding Sources
- Next Steps

Overall Project Scope

- Examine the feasibility of a seamless, countywide fixed-route transit system for all of El Paso county
- Identify alternatives for transit within travel corridors throughout El Paso county
  - Service design
  - Organizational structure
  - Funding
- Assess potential to improve transit service for access to jobs, education, medical, shopping , personal business

Sun Metro and El Paso County Transit Service Areas



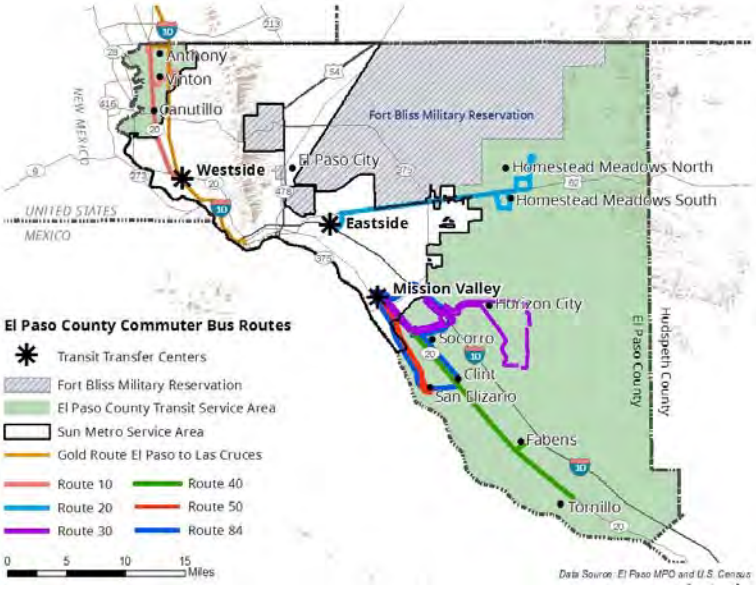


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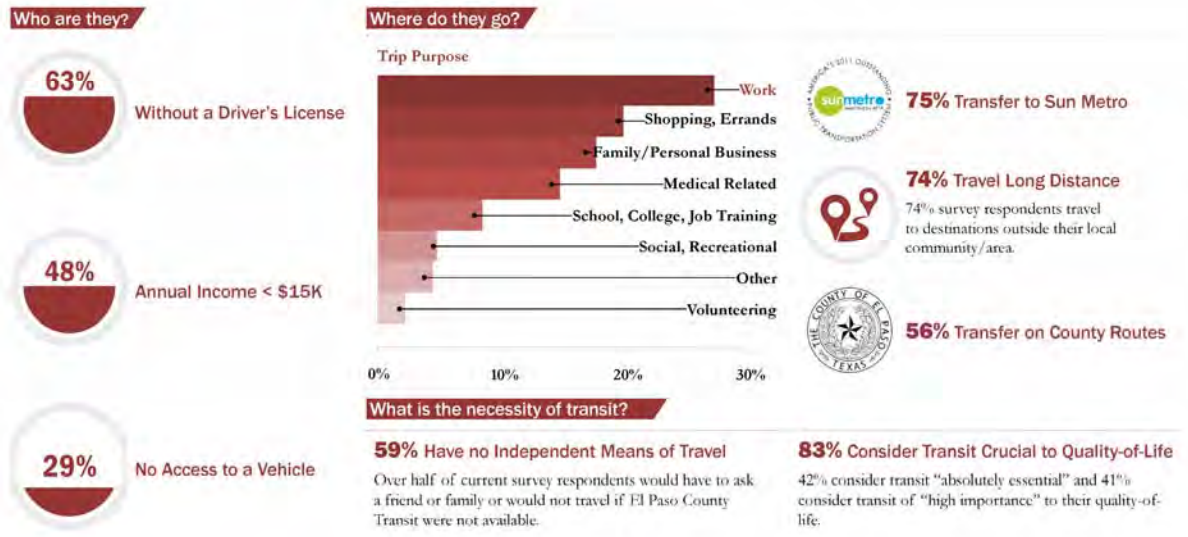
Current Services
El Paso County Transit

- **County Bus Routes:** Six scheduled, fixed-routes connecting urban and rural communities Sun Metro transfer centers
  - Routes 10, 20, 30, 40, and 50 by First Transit
  - Route 84 is operated by Sun Metro
- **Gold Route**: Intercity bus service that operates between Las Cruces and El Paso with stops in Anthony, Westside Transfer Center, and Downtown El Paso.
- **Vanpool:** Program that matches commuter groups with similar origins and destinations, provides vans, and offers incentive for lower commuting costs

El Paso County Transit Routes



El Paso County Transit Riders



El Paso County Transit Vanpools

El Paso County sponsors* a vanpool program for commuter groups that are traveling between similar origins & destinations

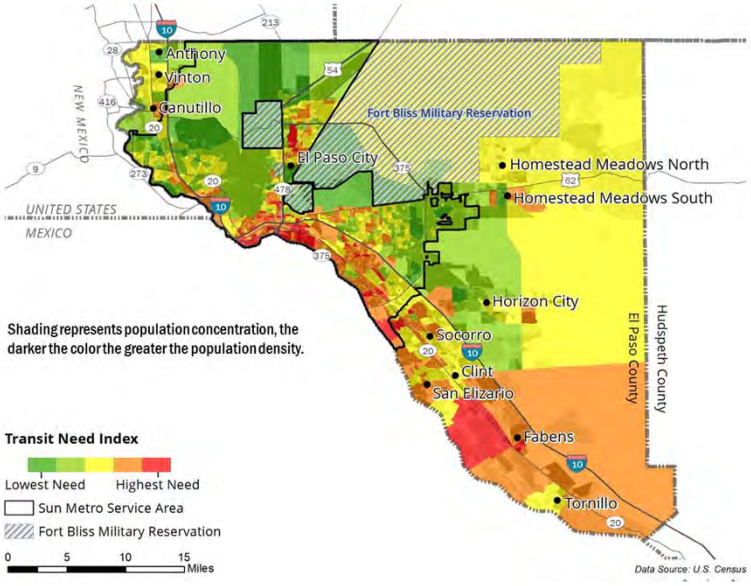
Monthly Data	March 2017
Active Vanpools	69
Average Monthly Commute Mileage	3,271
Average Trip Length (Entire Route)	130
Average Seating Capacity per Vanpool	8
Average Ridership per Vanpool	6
Commuter Trips (Monthly)	9,328

*Program is operated by Enterprise Inc.

Transit Need Index (TNI)

- *Based on population demographics, where is transit need?*
- Demographic characteristics to identify areas of transit need:
  - Population age 65 and older
  - People with a disability
  - Population below poverty level
  - No vehicle available in household

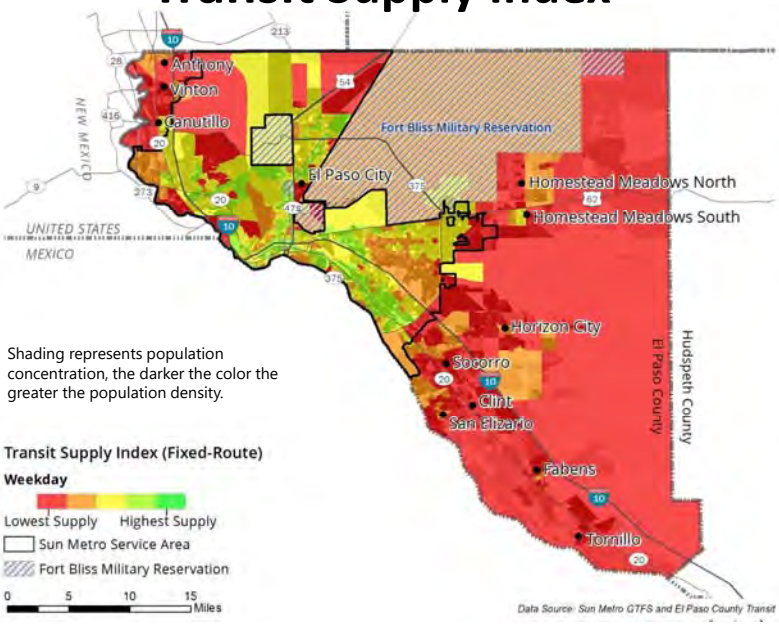
Transit Need Index



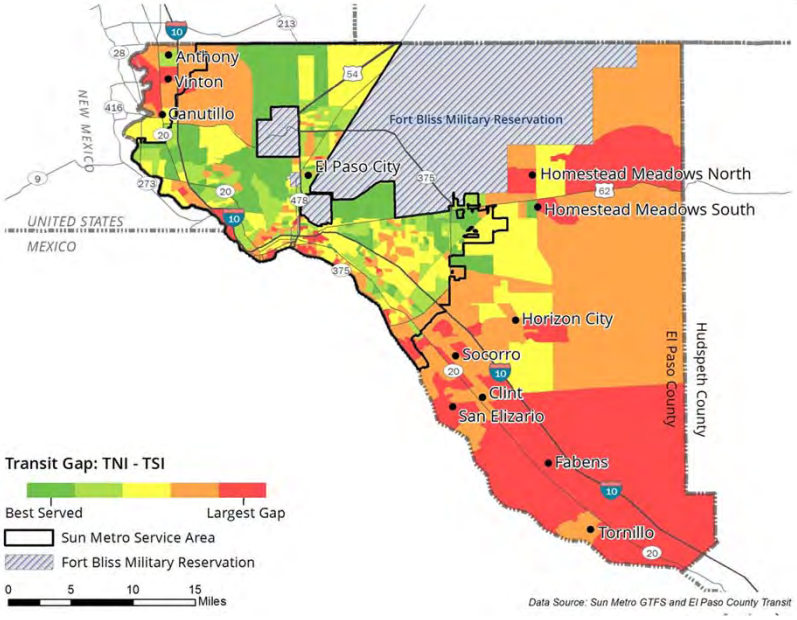
Transit Supply Index (TSI)

- *Based on level of service, does current service meet transit need?*
- Transit service characteristics to represent transit supply:
  - Service geographic coverage
  - Days of service
  - Hours of operation
  - Frequency (number of bus trips per day)

Transit Supply Index



Transit Gap: Transit Need – Transit Supply



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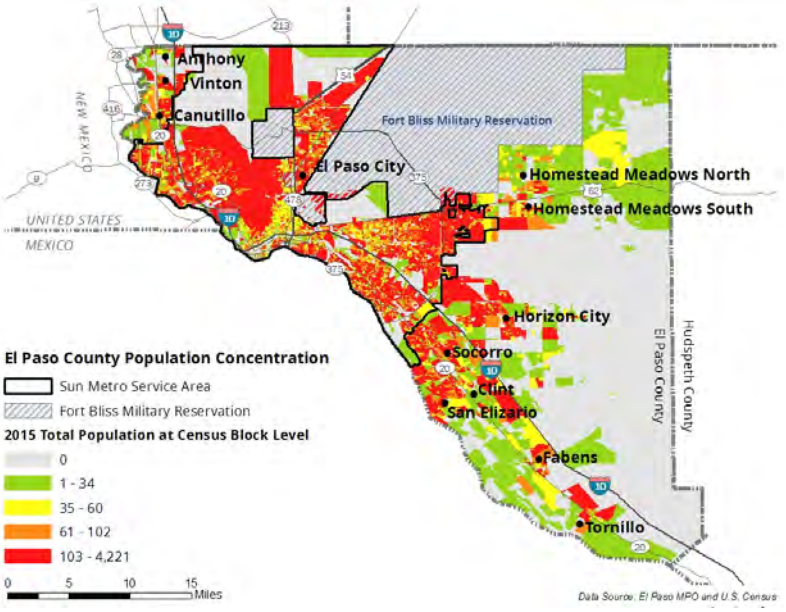
Goals and Measures for Transit Service

Goal	Description	Measure
Rural Area Coverage	Provide transit service to all residents in the rural areas of El Paso County	Percent of rural population with transit access
Urban Area Coverage	Provide transit service to all residents in the urban areas of El Paso County	Percent of urbanized county population with transit access
Utility	Improve the utility of transit to serve many passenger trip purposes	Number of scheduled vehicle trips + demand-response revenue hours
Effectiveness	Improve the effectiveness of transit service	Passengers per revenue hour
Complement Sun Metro	Improve connections between El Paso County and Sun Metro transit service	Percent of routes serving non-downtown Sun Metro transfer centers and presence of pulsed-timed transfers

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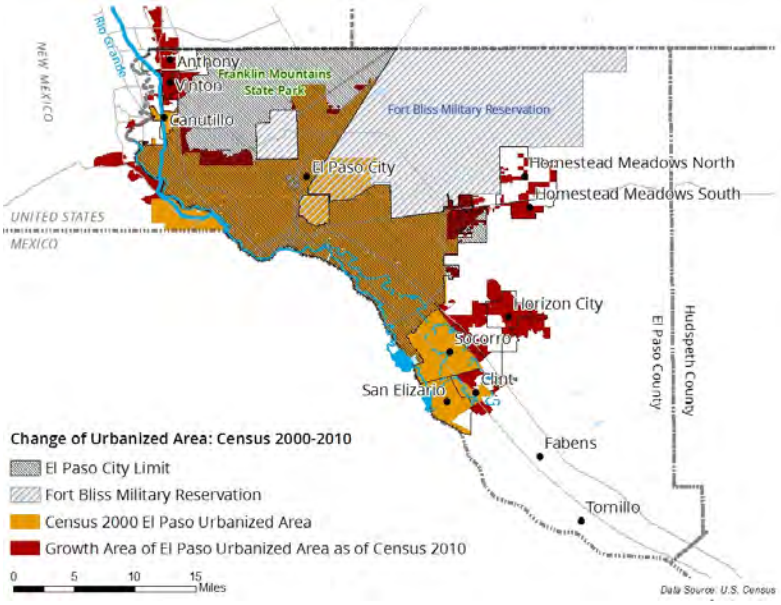
14

Population Concentration



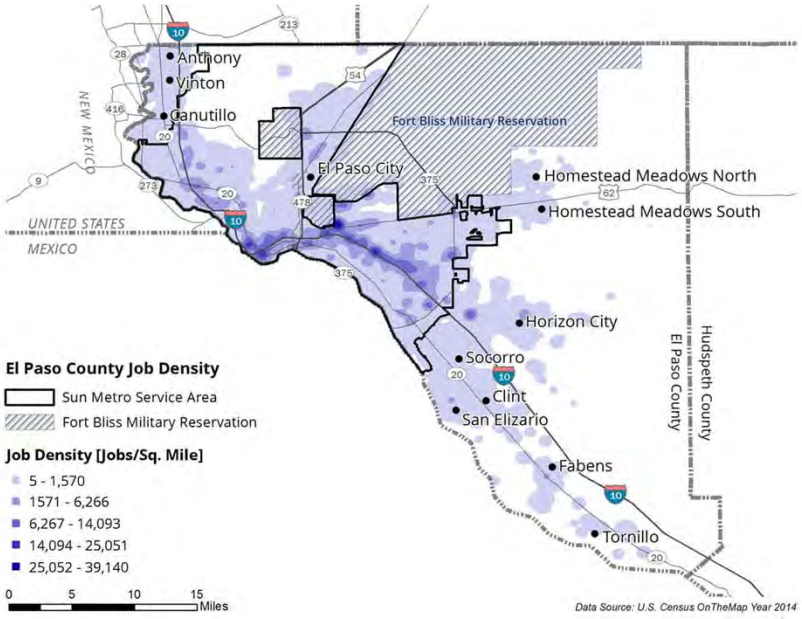
15

Urban Area Growth 2000-2010



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Job Density



Types of Transit Services

Service	Description
Commuter Bus	Local fixed-route bus transportation primarily connecting outlying areas with city center.
General Public Demand Response	Demand-response transit for the General Public (GPDR). Riders call ahead for curbside pickup and also serves transfer points at scheduled times to connect to transit routes.
Flexible Route Local Bus	A bus that operates along an established route with scheduled stops at time points. The bus may deviate or "flex" from the route within 3/4 mile of the set route.
Fixed Route Local Bus	A bus that operates along an established route with a set schedule where passengers board and alight only at marked stops. Must include complementary ADA Paratransit.
Intercity Bus (Gold Route)	Regularly scheduled public service using an over-the-road bus that operates with limited stops between two urbanized areas or that connects rural areas to an urbanized area.
Vanpool	Ride sharing arrangement, providing transportation to a group of individuals traveling between their homes and a regular (work) destination

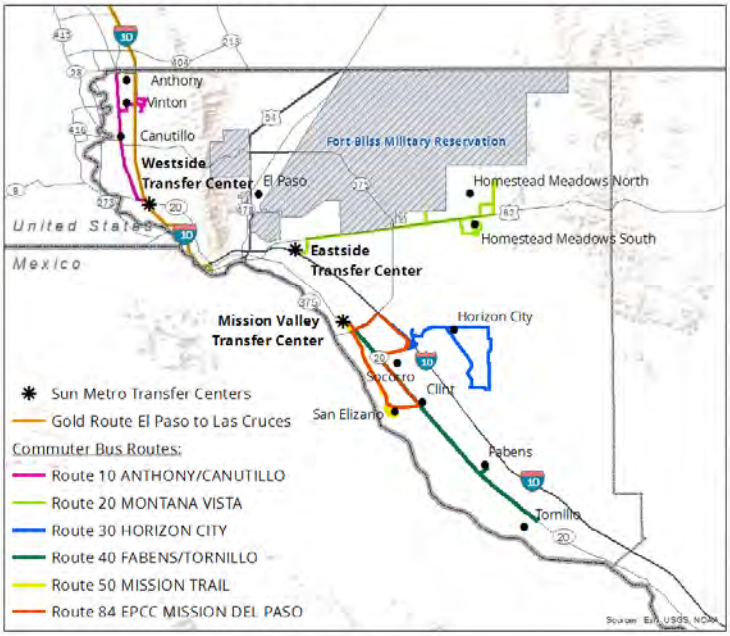
Transit Service Scenarios - Overview

Scenario	Description	Transit Services
Current Service	Commuter bus service to Sun Metro transfer centers	**County Bus:** Commuter **Demand-Responsive:** None **Other:** Vanpool, Gold Intercity
#1 – Rural GPDR	Zone-based rural general public demand responsive (GPDR) that connects rural residents with Sun Metro transfer centers	**County Bus:** None **Demand-Responsive:** GPDR **Other:** Vanpool, Gold Intercity
#2 – Baseline Flexible Route	Flexible-route local bus in most currently-served communities with minimal changes in frequency or span of service. Flexible routes deviate up to 3/4–mile either side of the route	**County Bus:** Flexible **Demand-Responsive:** None **Other:** Vanpool, Gold Intercity
#3 – Flexible Route + GPDR	Flexible-route local bus in most of currently-served communities, improving frequency or span of service. Incorporate timed-pulse transfers. Provide zone-based rural GPDR to serve rural areas outside of the flexible-route service area	**County Bus:** Flexible **Demand-Responsive:** GPDR **Other:** Vanpool, Gold Intercity

Transit Service Scenarios - Overview

Scenario	Description	Transit Services
#4 – Fixed Route + ADA Paratransit	Fixed-route local bus in most of currently-served communities. Improve frequency and span of service, where appropriate. Incorporate timed-pulse transfers. Provide ADA paratransit within ¾-mile of local fixed routes.	**County Bus:** Fixed **Demand-Responsive:** ADA **Other:** Vanpool, Gold Intercity
#5 – Enhanced Flexible Route + GPDR	Flexible-route local bus (with some increased frequencies) in most of currently-served communities. Add new routes to improve coverage in high-need areas. Incorporate timed-pulse transfers. Also provide zone-based rural GPDR service to serve rural areas outside of the flexible-route service area.	**County Bus:** Flexible **Demand-Responsive:** GPDR **Other:** Vanpool, Gold Intercity

Current Service



Description

Commuter bus service to Sun Metro transfer centers.

Mode Operated

• County Bus Service:	Commuter
• Demand Response Service:	None
• Additional Service:	Gold Intercity, Vanpool

Service Data

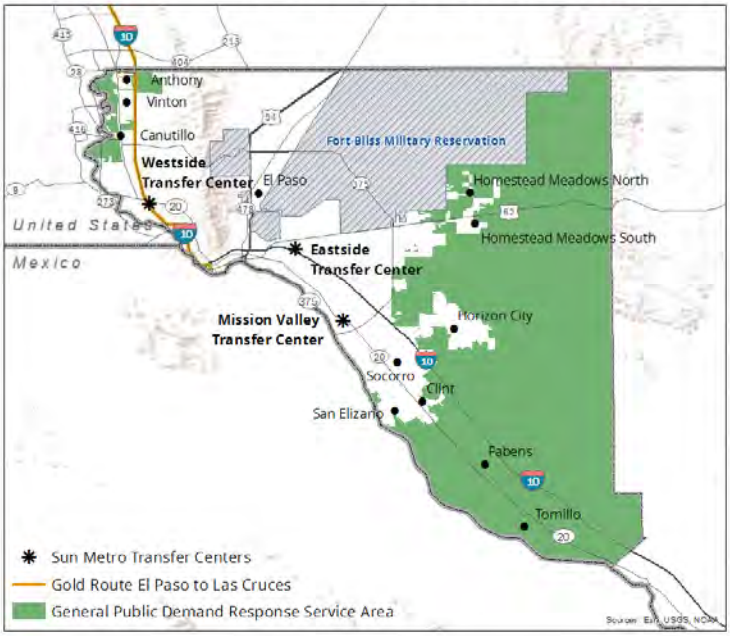
• Annual Operating Cost:	$4,230,000
• Annual Capital Cost:	$200,000
• Passenger Boardings	371,400
• Peak Vehicles :	88

Goals Achieved

Rural Area Coverage	○ 53%
Urbanized Area Coverage	◑ 59%
Utility	○
Effectiveness	○
Complement Sun Metro	◑

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Scenario 1: Rural General Public Demand Responsive (GPDR)



Description

Zone-based rural general public demand responsive (GPDR) that connects rural residents with Sun Metro transfer centers.

Mode Operated

• County Bus Service:	None
• Demand Response Service:	General Public
• Additional Service:	Gold Intercity, Vanpool

Service Data

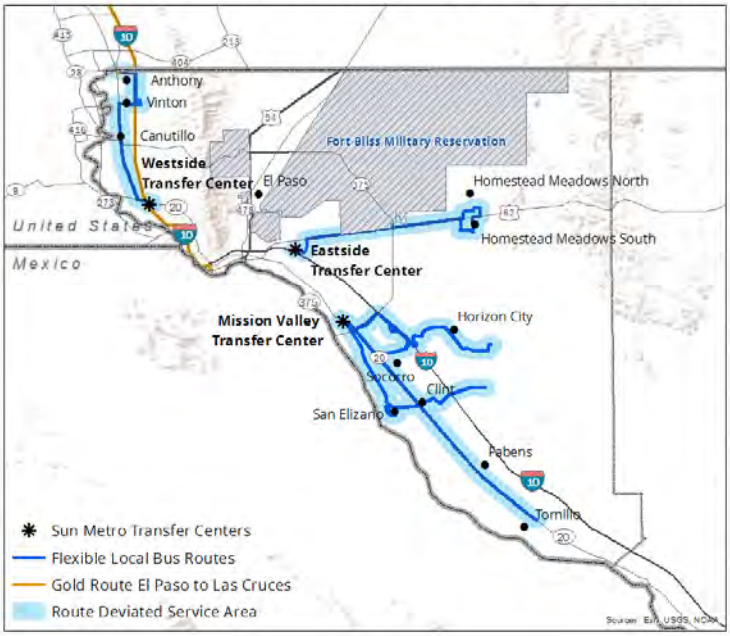
• Annual Operating Cost:	$3,540,000
• Annual Capital Cost:	$90,000
• Passenger Boardings	297,600
• Peak Vehicles :	83

Goals Achieved

Rural Area Coverage	● 100%
Urbanized Area Coverage	○ 0%
Utility	○
Effectiveness	○
Complement Sun Metro	○

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Scenario 2: Baseline Flexible Local Bus



Description

Flexible-route local bus in most currently-served communities with minimal changes in frequency or span of service. Flexible routes deviate up to 3/4–mile either side of the route.

Mode Operated

• County Bus Service:	Flexible Local
• Demand Response Service:	None
• Additional Service:	Gold Intercity, Vanpool

Service Data

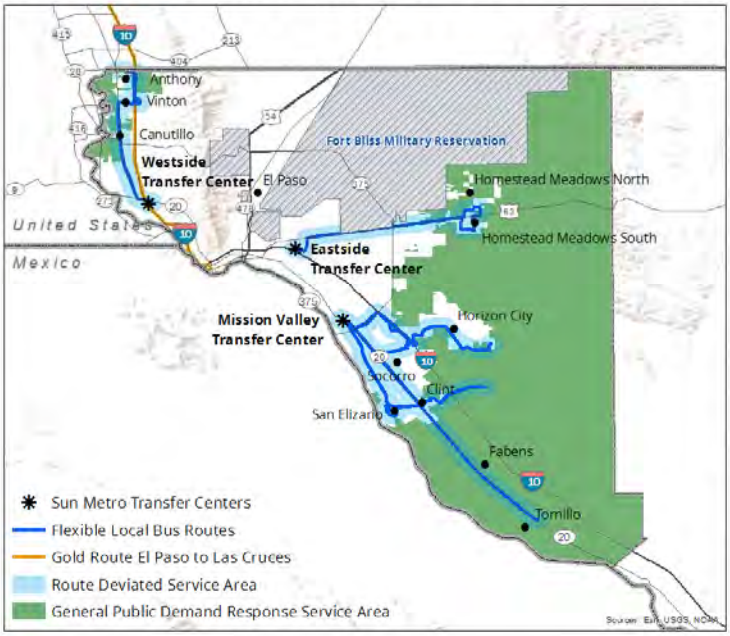
• Annual Operating Cost:	$4,550,000
• Annual Capital Cost:	$480,000
• Passenger Boardings	442,400
• Peak Vehicles :	88

Goals Achieved

Rural Area Coverage	◑ 58%
Urbanized Area Coverage	● 71%
Utility	◑
Effectiveness	◑
Complement Sun Metro	◑

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Scenario 3: Flexible Local Bus + Rural GPDR



Description

Flexible-route local bus in most of currently-served communities, improving frequency or span of service. Incorporate timed-pulse transfers. Provide zone-based rural GPDR to serve rural areas outside of the flexible-route service area.

Mode Operated

• County Bus Service:	Flexible Local
• Demand Response Service:	General Public
• Additional Service:	Gold Intercity, Vanpool

Service Data

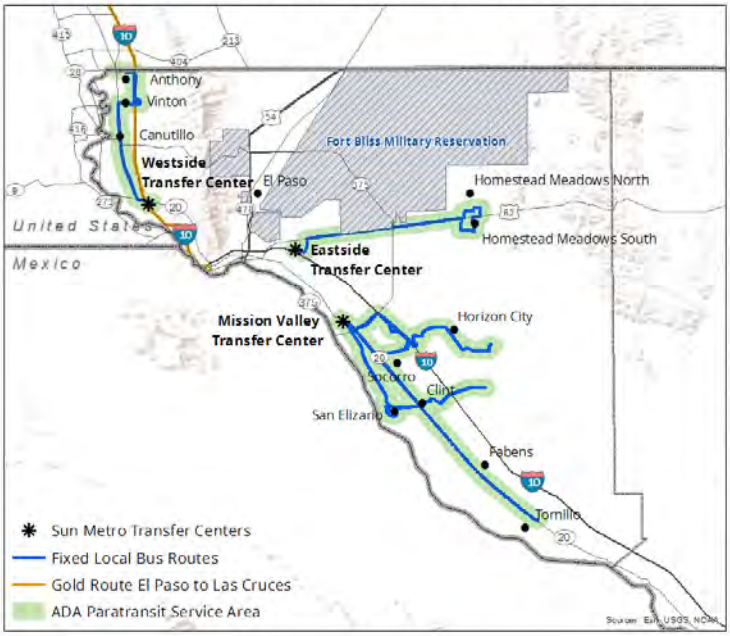
• Annual Operating Cost:	$6,910,000
• Annual Capital Cost:	$610,000
• Passenger Boardings	642,200
• Peak Vehicles :	95

Goals Achieved

Rural Area Coverage	● 100%
Urbanized Area Coverage	● 71%
Utility	●
Effectiveness	◑
Complement Sun Metro	●

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Scenario 4: Fixed Route Local Bus + ADA Paratransit



Description

Fixed-route local bus in most of currently-served communities. Improve frequency and span of service, where appropriate. Incorporate timed-pulse transfers. Provide ADA paratransit within ¾-mile of local fixed routes.

Mode Operated

• County Bus Service:	Fixed-Route Local
• Demand Response Service:	ADA Paratransit
• Additional Service:	Gold Intercity, Vanpool

Service Data

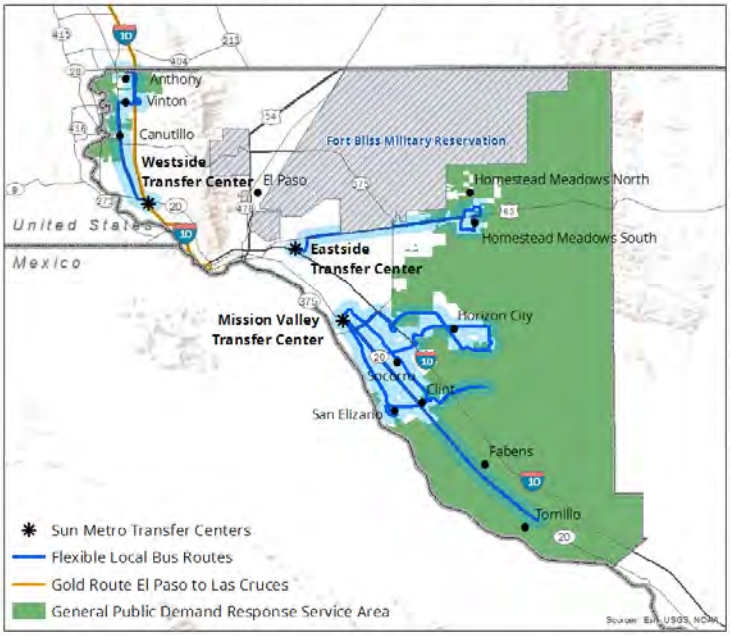
• Annual Operating Cost:	$6,400,000
• Annual Capital Cost:	$590,000
• Passenger Boardings	549,500
• Peak Vehicles :	93

Goals Achieved

Rural Area Coverage	○ 44%
Urbanized Area Coverage	◑ 57%
Utility	◑
Effectiveness	◑
Complement Sun Metro	●

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Scenario 5: Enhanced Flexible Local Bus + GPDR



Description

Flexible-route local bus (with some increased frequencies) in most of currently-served communities. Add new routes to improve coverage in high-need areas. Incorporate timed-pulse transfers. Also provide zone-based rural GPDR service to serve rural areas outside of the flexible-route service area.

Mode Operated

• County Bus Service:	Flexible Local
• Demand Response Service:	General Public
• Additional Service:	Gold Intercity, Vanpool

Service Data

• Annual Operating Cost:	$7,690,000
• Annual Capital Cost:	$880,000
• Passenger Boardings	794,500
• Peak Vehicles :	99

Goals Achieved

Rural Area Coverage	● 100%
Urbanized Area Coverage	● 84%
Utility	●
Effectiveness	●
Complement Sun Metro	●

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Transit Service Scenarios – Performance Measures

Scenario	Rural Area Coverage	Urban Area Coverage	Utility	Effectiveness	Complement Sun Metro	Do any current passengers lose access?	Ops Cost Estimate
Current Service	○	◑	○	○	◑	N/A	$$
#1 – Rural GPDR	●	○	○	○	○	Yes Residents in urban area lose service	$$
#2 – Baseline Flexible Route	◑	●	◑	◑	◑	Yes. A few passengers lose service, because some routes are shortened to allow time for flex deviations	$$
#3 – Flexible Route + GPDR	●	●	●	◑	●	No	$$$
#4 – Fixed Route + ADA Paratransit	○	◑	◑	◑	●	Yes A few passengers lose service, because some routes are shortened	$$$
#5 – Enhanced Flexible Route + GPDR	●	●	●	●	●	No	$$$$

Sources of Funding
Public Transit

- Federal Transit Administration
  - Urban
  - Rural
- Federal Highway Administration
  - Congestion Mitigation and Air Quality (CMAQ)
  - Flexible Funds
- State of Texas
  - Rural Public Transportation Fund
  - Transportation Development Credits
- State of New Mexico
  - Intercity Bus (Gold Route)
- Transit Generated Funds
  - Passenger Fares
  - Advertising/Concessions
  - Revenues for Contracted Services
- Local Funds
  - Sales Tax Dedicated to Transit
  - Local Sales Tax
  - County General Revenue
  - City General Revenue
  - Non-DOT Federal Funds, for example Community Development Block Grants
  - Contributed Services

Organizational Options for Countywide Transit in El Paso County

- County Mass Transit Authority -
  Transportation Code Chapter 457
- Regional Mobility Authority (RMA)
  Transportation Code Chapter 370
- Local Government Corporation (LGC)
  Transportation Code Chapter 431
- Interlocal Agreement (ILA)
  Government Code Chapter 791

Possible Alternatives for Local Funds Countywide Transit in El Paso County

- County Mass Transit Authority
  Sales Tax Dedicated to Transit
- Regional Mobility Authority (RMA)
  Vehicle Registration Fees
  Other Sources of Revenue within RMA Portfolio
- Local Government Corporation (LGC)
  Local Government General Fund or Other Local Revenue
- Interlocal Agreement (ILA)
  Local Government General Fund or Other Local Revenue

Feasibility of Sales Tax for Transit

Sales Tax Rates by El Paso County Jurisdiction

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Westway	0.5%	0.5%			1.0%

The combined rates of all sales and use taxes imposed by the taxing authority and all political subdivisions cannot exceed two percent.

Next Steps

- Evaluate Feasibility of Alternatives for Local Funds
- Hold Open Houses for Feedback from the Public
  - December 5-9, 2017
  - Locations to be Announced
- **Next Stakeholders Meeting, December 7, 2017 @ 1:30 p.m.**
- Report for Review and Discussion
  - End of December 2017
  - **Request for Feedback from Stakeholders**

EL PASO COUNTY
REGIONAL TRANSIT INSTITUTIONAL OPTIONS ASSESSMENT STUDY

CSJ (0924-06-527)

Presentation to Stakeholders

December 7, 2017

Meeting Agenda

- Welcome and Introductions
- Purpose for Today's Meeting
- Community Meetings Update
- Presentation and Discussion of Scenarios 1-5
- Discussion of a Local Government Corporation
- Next Steps

Overall Project Scope

- Examine the feasibility of a seamless, countywide fixed-route transit system for all of El Paso county
- Identify alternatives for transit within travel corridors throughout El Paso county
  - Service design
  - Organizational structure
  - Funding
- Assess potential to improve transit service for access to jobs, education, medical, shopping , personal business

Purpose of Today's Meeting

- *Discussion with Stakeholders*
- To learn more about proposed countywide transit service scenarios
  - Service details
  - Financial assumptions
  - Discuss each scenario
- To discuss additional service considerations and ideas
- To discuss the Local Government Corporation option

Community Meetings and Pop-Up Meetings

PUBLIC ENGAGEMENT UPDATE

Meeting Activities

- Meetings broken into two 1-hour sessions. Session agenda:
- Presentation
- Discussion Groups
  - Facilitated discussion of each scenario
  - Booklet with scenario details (see handout)
- Group Report Out
- Dot Exercise
  - Large-format boards with more detailed maps of each scenario

Pop-Up Meetings

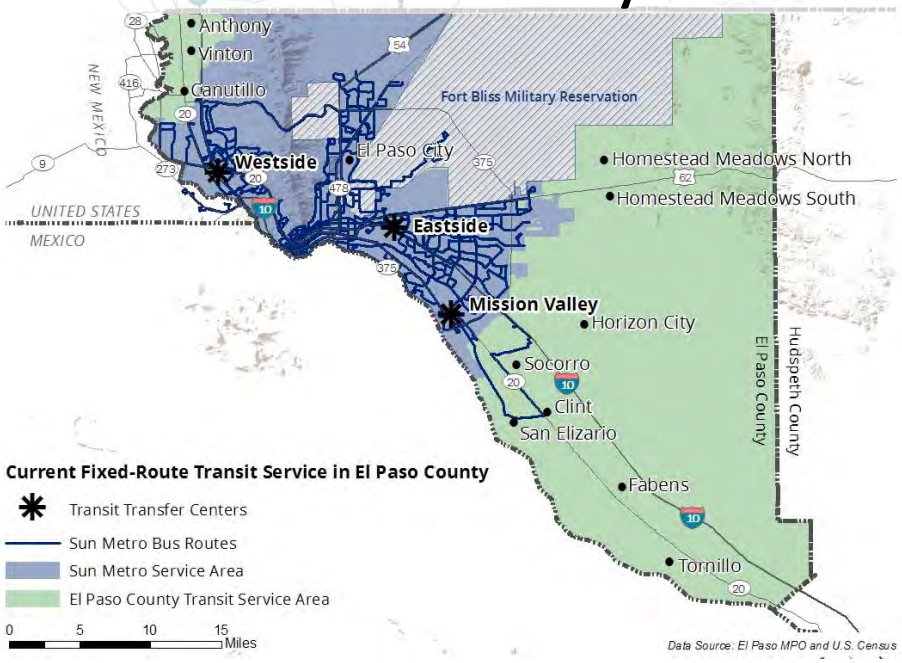
- Engage people where they are
  - Sun Metro transfer centers
  - UTEP
  - EPCC Northwest and Rio Grande campuses
- Present scenario information
- Record thoughts and questions

Feedback to Date

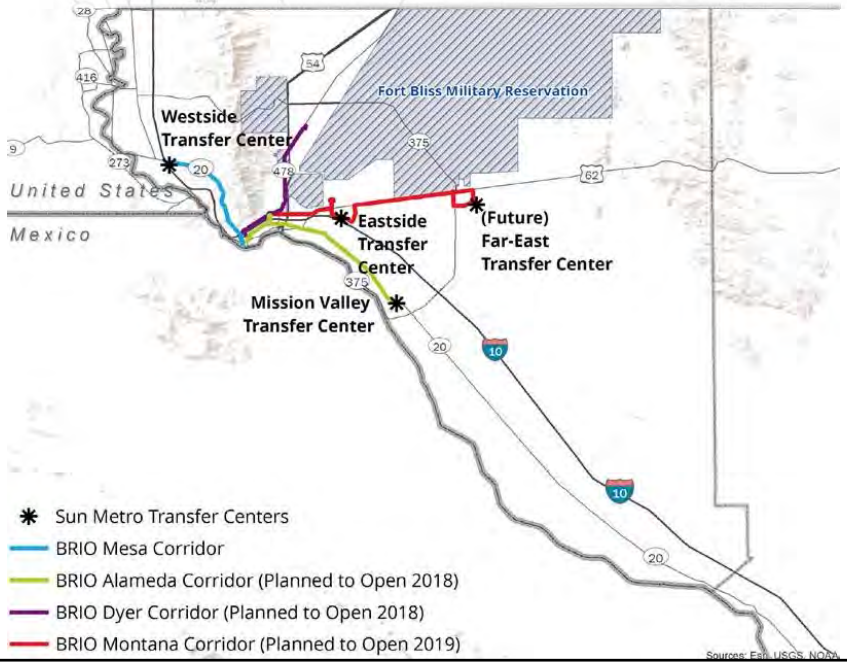
- Support increased hours of service
- Recognize that regional transit is needed and supportive of study efforts
- Agree with elimination of one-way loops
- Preferences for Scenarios

CURRENT TRANSIT SERVICES & NEEDS

Sun Metro and El Paso County Service Areas



Current and Planned Sun Metro BRIO Lines

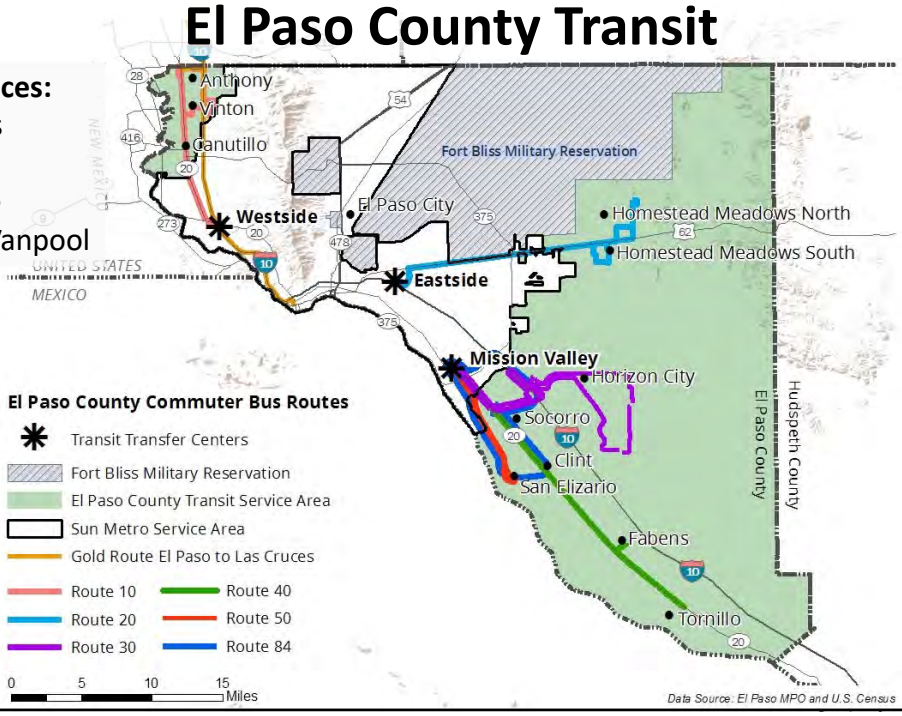


11

El Paso County Transit

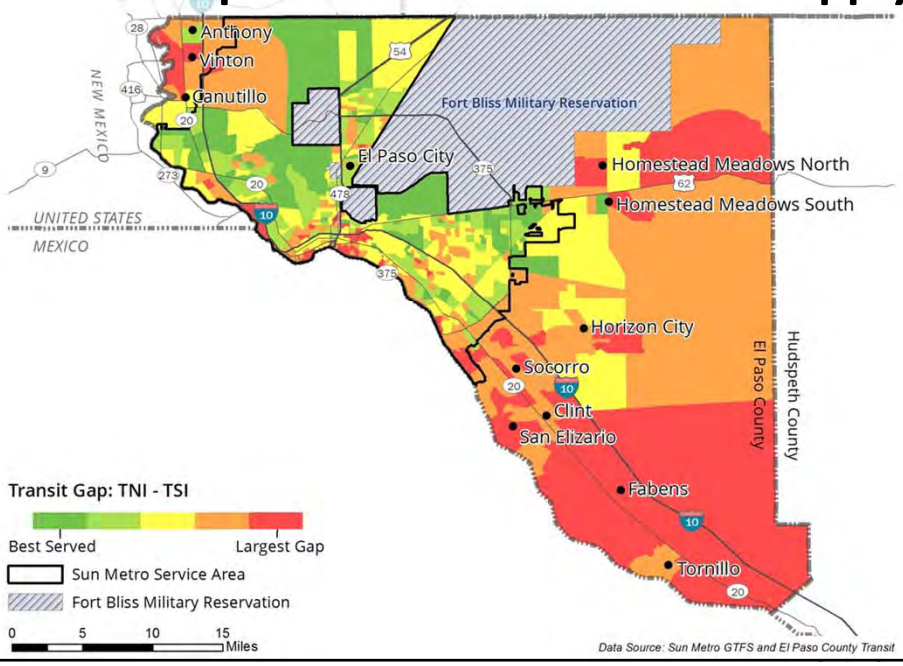
Current Services:

- County Bus Routes
- Gold Route
- Vámonos Vanpool



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Transit Gap: Transit Need – Transit Supply



13

El Paso County Transit Riders

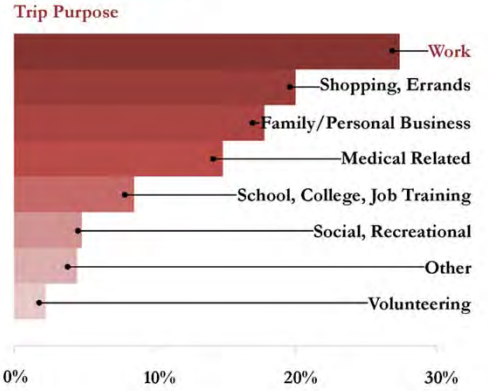
Who are they?

63% Without a Driver's License

29% No Access to a Vehicle

48% Annual Income < $15K

Where do they go?



75% Transfer to Sun Metro

74% Travel Long Distance

74% survey respondents travel to destinations outside their local community/area.

56% Transfer on County Routes

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5 PROPOSED TRANSIT SERVICE SCENARIOS

Transit Service Goals and Guidelines

Transit Service Goals

- **Rural Area Coverage**: provide rural transit access
- **Urban Area Coverage**: provide urban transit access
- **Utility**: make transit useful for many trip purposes
- **Effectiveness**: maintain transit as a productive investment
- **Complement Sun Metro**: maintain and improve connections to Sun Metro

Transit Service Planning Guidelines

- Avoid large one-way loops in bus routes
- Keep bus routes as direct as possible
- Consider population density and transit need

Types of Transit Services in the Scenarios

Current Service



Fixed Route Local Bus



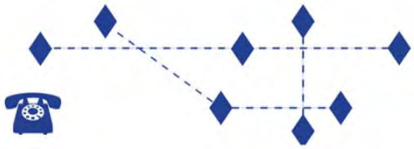
Americans with Disabilities Act Paratransit



Flexible Route Local Bus



Dial-a-Ride



Existing Gold Route Intercity Bus and Vamonos Vanpool do not change in the proposed scenarios.

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Current Service

Description

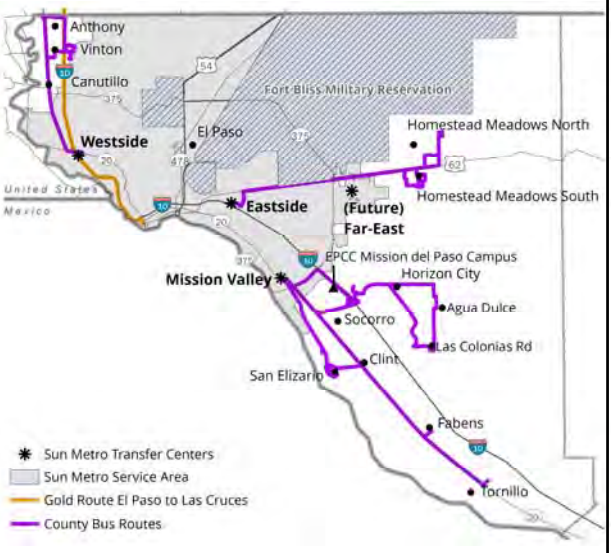
- Six county bus routes.
- Passengers get on the bus by flagging the bus driver.
- Several one-way loops.

Annual Cost

- Operating: $4.2 million
- Capital: $200,000

Performance Measures

- Annual passengers: 371,400
- Passengers per hour: 4.4
- Operating cost per passenger: $9.13
- Rural population with transit access: 53%
- Urban population with transit access: 59%



View financial sheets and detailed map

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Scenario 1: Rural Dial-a-Ride

Description

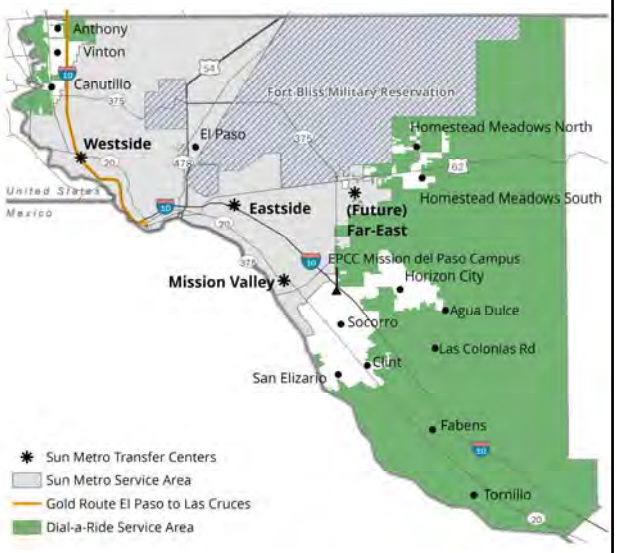
- Dial-a-Ride service throughout the rural county areas.
- Current El Paso County bus routes would be discontinued.
- This scenario limits transit service sponsored by El Paso County to the rural areas and does not include cities within the urbanized area.

Annual Cost

- Operating: $3.5 million
- Capital: $90,000

Performance Measures

- Annual passengers: 297,600
- Passengers per hour: 4.0
- Operating cost per passenger: $9.41
- Rural population with transit access: 100%
- Urban population with transit access: 0%



View financial sheets and detailed map

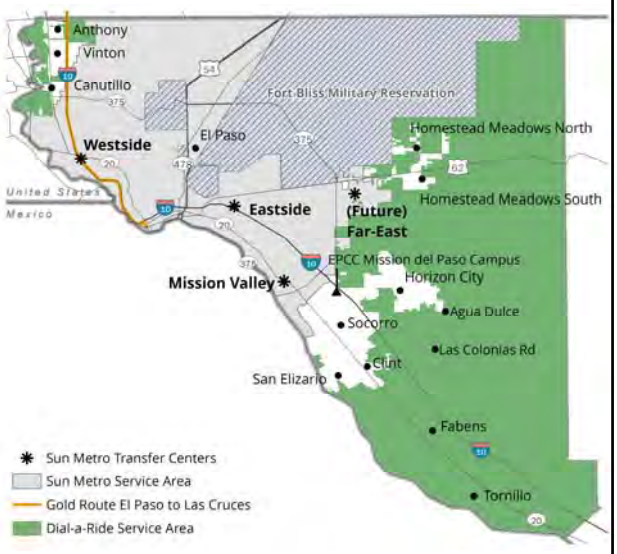
19

Scenario 1: Rural Dial-a-Ride (Discussion)

What are the benefits?

What could improve this scenario?

What are the critical issues or concerns?



View financial sheets and detailed map

20

Scenario 2: Baseline Flexible-Route Local Bus

Description

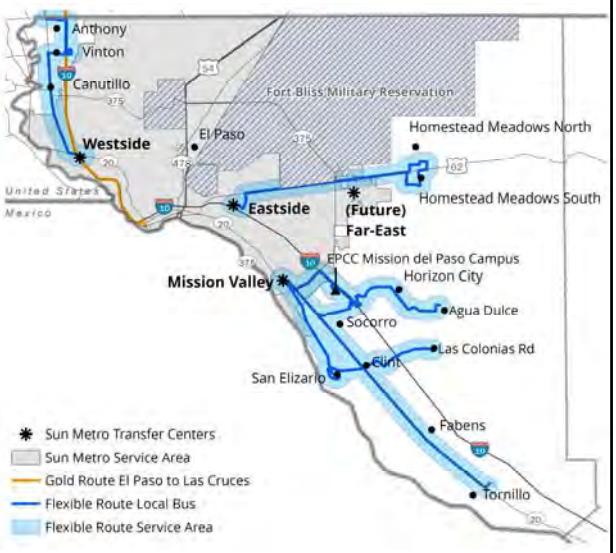
- Flexible-route local bus service to almost all currently served areas.
- Some changes in routing, frequency, or hours of service.
- Passengers can travel either direction on routes.

Annual Cost

- Operating: $4.6 million
- Capital: $480,000

Performance Measures

- Annual passengers: 442,400
- Passengers per hour: 4.9
- Operating cost per passenger: $8.18
- Rural population with transit access: 58%
- Urban population with transit access: 71%



View financial sheets and detailed map

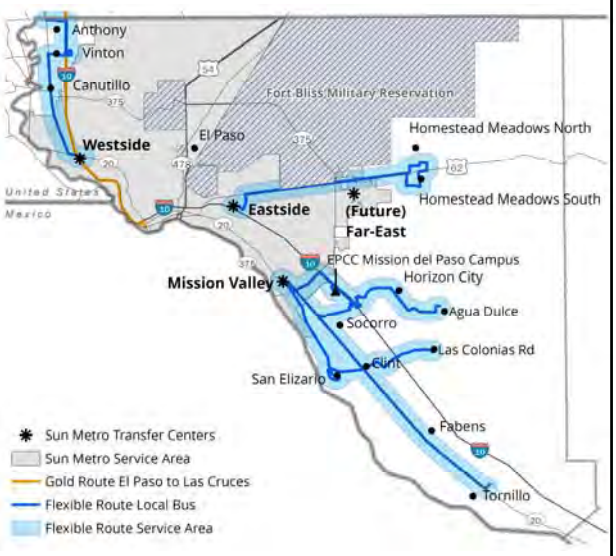
21

Scenario 2: Baseline Flexible-Route Local Bus (Discussion)

What are the benefits?

What could improve this scenario?

What are the critical issues or concerns?



View financial sheets and detailed map

22

Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride

Description

- Flexible-route bus service to most currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride in rural parts of county.

Annual Cost

- Operating: $6.9 million
- Capital: $610,000

Performance Measures

- Annual passengers: 642,200
- Passengers per hour: 5.1
- Operating cost per passenger: $8.89
- Rural population with transit access: 100%
- Urban population with transit access: 71%



View financial sheets and detailed map

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Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride (Discussion)

What are the benefits?

What could improve this scenario?

What are the critical issues or concerns?



View financial sheets and detailed map

24

Scenario 4: Fixed-Route Local Bus and ADA Paratransit

Description

- Fixed-route bus service to most currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- ADA paratransit within ¾ mile of local fixed route.

Annual Cost

- Operating: $6.4 million
- Capital: $590,000

Performance Measures

- Annual passengers: 549,500
- Passengers per hour: 4.7
- Operating cost per passenger: $9.61
- Rural population with transit access: 44%
- Urban population with transit access: 57%



View financial sheets and detailed map

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Scenario 4: Fixed-Route Local Bus and ADA Paratransit (Discussion)

What are the benefits?

What could improve this scenario?

What are the critical issues or concerns?



View financial sheets and detailed map

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Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride

Description

- Flexible-route bus service to most currently served areas.
- New routes, changes in routing, and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride in rural parts of county.

Annual Cost

- Operating: $7.7 million
- Capital: $880,000

Performance Measures

- Annual passengers: 794,500
- Passengers per hour: 5.8
- Operating cost per passenger: $7.89
- Rural population with transit access: 100%
- Urban population with transit access: 84%



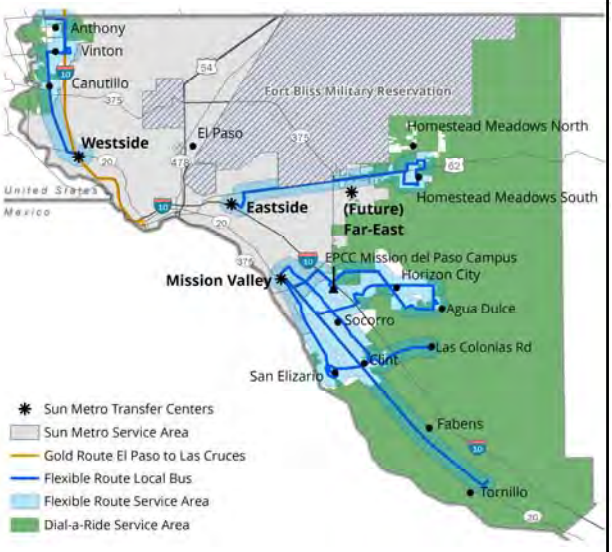
View financial sheets and detailed map

Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride (Discussion)

What are the benefits?

What could improve this scenario?

What are the critical issues or concerns?



View financial sheets and detailed map

Financial Sheets and Detailed Maps

	Financial Sheet	Detailed Map
Current Service	Adobe Acrobat Document	Board_Current v6.png
Scenario 1	Adobe Acrobat Document	Board_Scenario 1 v6.png
Scenario 2	Adobe Acrobat Document	Board_Scenario 2 v6.png
Scenario 3	Adobe Acrobat Document	Board_Scenario 3 v6.png
Scenario 4	Adobe Acrobat Document	Board_Scenario 4 v6.png
Scenario 5	Adobe Acrobat Document	Board_Scenario 5 v6.png

Return to previous slide.

Far-East Transfer Center

- End of Montana Corridor BRIO.
- Located at current R.C. Poe Park & Ride
- Route 20 could be shortened to terminate here
- Possible Route 20 service options
  - Option A: Improve frequency
  - Option B: Save or reinvest resources



Route 20 Far-East Service Options

Far-East Option A: Improve Frequency

Service	Frequency of Service
Scenario 3	Every 50 minutes
Option A (improve frequency)	Every 30 minutes

No increase in cost of vehicles.

Far-East Option B: Save or Reinvest Resources

Service	Route Operating Cost	Peak Vehicles
Scenario 3	$564,200	2
Option B (do not improve frequency)	$282,100	1
Savings	*$282,100*	*1*

Other ideas? Recommendations? Additional thoughts?

OPEN DISCUSSION OF SCENARIOS

LOCAL GOVERNMENT CORPORATION

What is the Purpose of a Local Government Corporation?

Texas Transportation Code §431.101

- A local government corporation (LGC) may be created to aid and act on behalf of one or more local governments to accomplish any governmental purpose of those local governments.
- A local government corporation has the powers of a transportation corporation authorized for creation by the Texas Transportation Commission.
- A local government corporation has the powers of a non-profit corporation under the Texas Business Organizations Code.

What Entities Can Create a Local Government Corporation?

Texas Transportation Code §431.103

- Municipalities
- Counties
- A navigation district, hospital district, or hospital authority
- A regional transportation authority governed by Chapter 452*
- A rapid transit authority governed by Chapter 451
- A coordinated county transportation authority governed by Chapter 460

*Dallas Area Rapid Transit Bus Service LCG

Creating a Local Government Corporation Board of Directors

- Separate legal entity from county or city; therefore, the acts of the LGC are not acts of the county for city
- When more than one creating entity, create separate board with structure that reflects MOU agreements for funding responsibility
- Directors can be appointed by governing bodies of participating entities
- Great flexibility in setting of selection process
- May be commissioners or councilmembers
- Can be any number of directors

Creating a Local Government Corporation for Multiple Entities

- Enter into Memorandum of Understanding among participating entities
- Define purpose for the LGC
- Agree on governance structure
- Agree on division of costs for creating and operating the LGC
- Establish the rights of the governmental entities to terminate participation and funding

Creating a Local Government Corporation Getting Started

- Hold organizational board meeting
- Select temporary board chairman
- Adopt Bylaws
- Elect corporation officers
- Establish official location and schedule for Board meetings
- Set location for where meeting notices will be posted per Open Meetings Act
- Approve initial agreements and/or policies related to operating and funding the LGC

Next Steps

- Submit draft report in January
- Extension to current study
  - Conduct economic impacts analysis
  - Opportunity to review and comment on draft report
  - Additional discussions with Stakeholders
    - Services
    - Funding
    - Governance

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 7-B:
Community Meeting Presentation
December 2017
English – page 1
Spanish – page 11

Prepared for:

Texas A&M Transportation Institute

December 2017

EL PASO COUNTY
REGIONAL TRANSIT STUDY

December 2017 Community Meetings

If you would like this presentation or other meeting materials in alternative formats or languages, please call (915) 521-8100 or email elpasocountytransitplan@tti.tamu.edu.

Si desea esta presentación o algún otro material referente a la reunión en formatos o idiomas alternativos, por favor llame al (915) 521-8100 o envíe un correo electrónico a elpasocountytransitplan@tti.tamu.edu.

What is this study about?

El Paso County is conducting a regional transit study. The study tasks included:

- Research options for a seamless, countywide fixed-route transit system for all of El Paso County
- Identify options for transit within travel corridors throughout El Paso County
- Assess potential to improve transit service for access to jobs, education, medical, shopping , personal business
- Identify organizational options and potential funding sources

Why are we here?

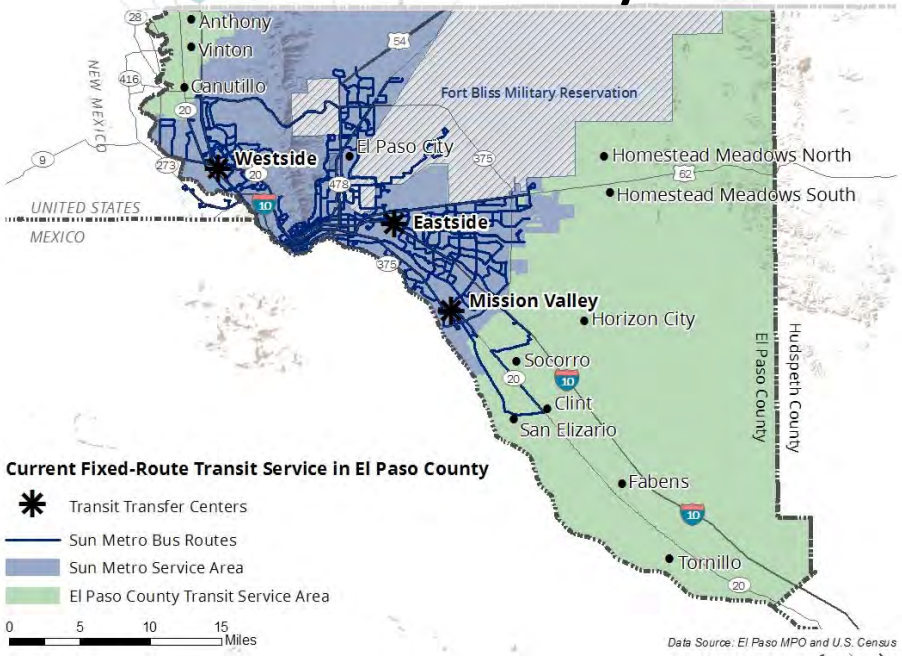
- To learn
  - Study findings
  - Proposed countywide transit service scenarios
- To give feedback

What will happen at this meeting?

- Presentation
  - Current Transit Service and Needs
  - 5 Proposed Transit Service Scenarios
- Breakout Group Discussions
- Open Discussion and Questions and Answers

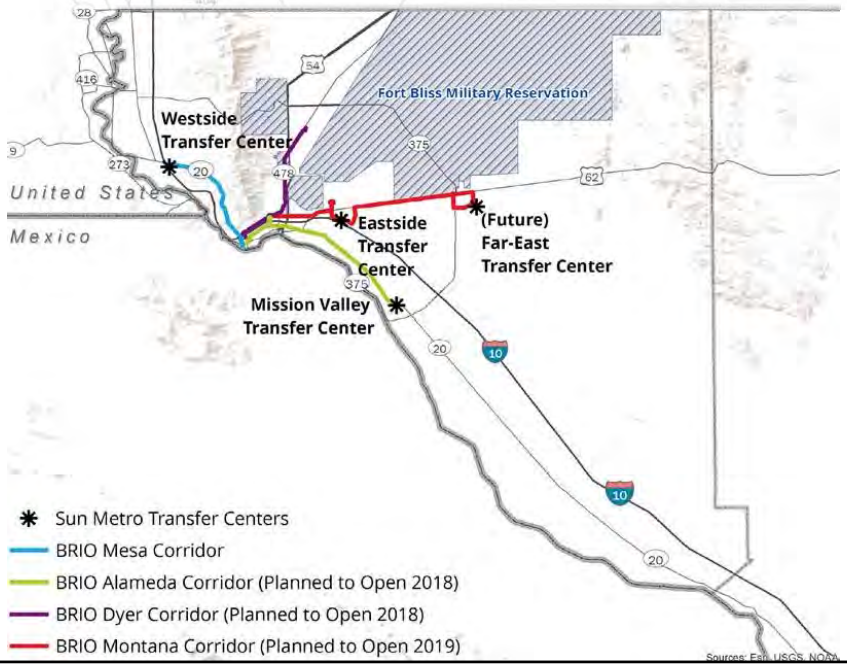
CURRENT TRANSIT SERVICES & NEEDS

Sun Metro and El Paso County Service Areas



5

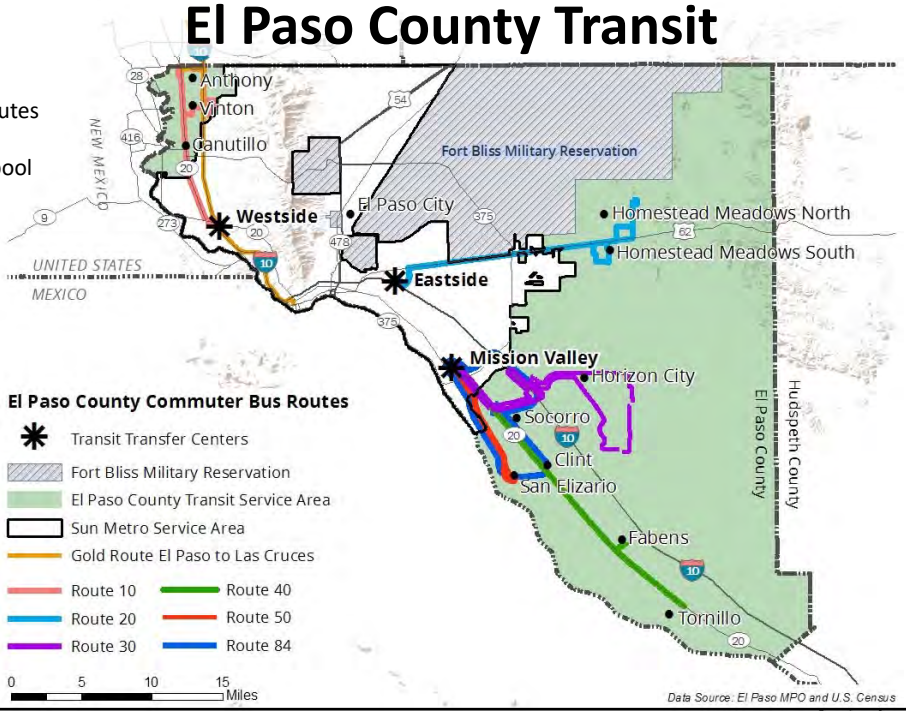
Current and Planned Sun Metro BRIO Lines



6

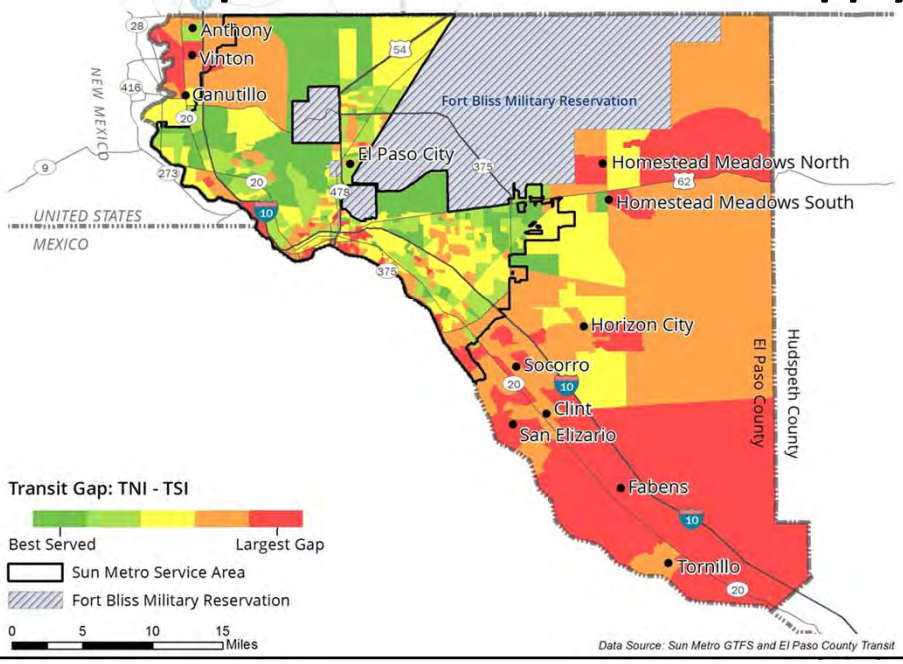
El Paso County Transit

Current Services:
- County Bus Routes
- Gold Route
- Vámonos Vanpool



7

Transit Gap: Transit Need – Transit Supply



8

El Paso County Transit Riders

Who are they?



Without a Driver's License

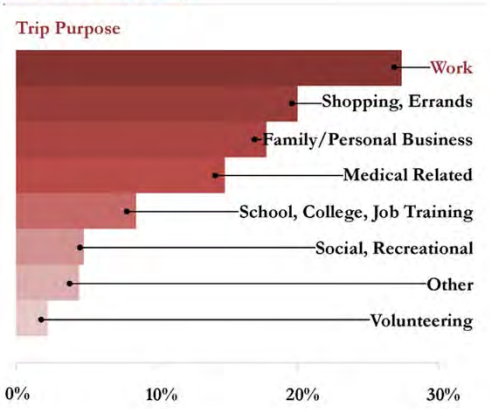


No Access to a Vehicle



Annual Income < $15K

Where do they go?



75% Transfer to Sun Metro

74% Travel Long Distance

74% survey respondents travel to destinations outside their local community/area.

56% Transfer on County Routes

5 PROPOSED TRANSIT SERVICE SCENARIOS

Transit Service Goals and Considerations

Transit Service Goals

- **Rural Area Coverage**: provide rural transit access
- **Urban Area Coverage**: provide urban transit access
- **Utility**: make transit useful for many trip purposes
- **Effectiveness**: maintain transit as a productive investment
- **Complement Sun Metro**: maintain and improve connections to Sun Metro

Transit Service Planning Considerations

- Avoid one-way loops in bus routes
- Keep bus routes as direct as possible
- Consider population density and transit need

Types of Transit Services in the Scenarios

Current Service



Fixed Route Local Bus



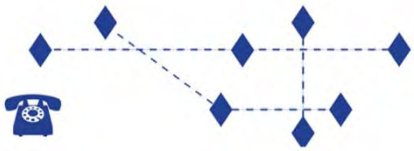
Americans with Disabilities Act Paratransit



Flexible Route Local Bus



Dial-a-Ride



Existing Gold Route Intercity Bus and Vamonos Vanpool do not change in the proposed scenarios.

Current Service

Description

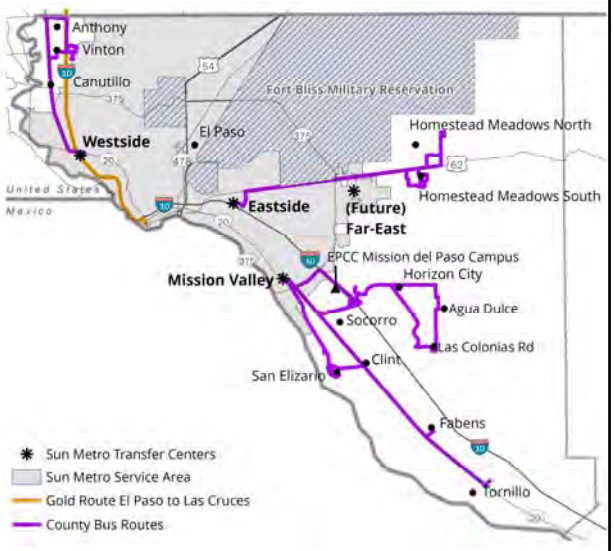
- Six county bus routes.
- Passengers get on the bus by flagging the bus driver.
- Several one-way loops.

Annual Cost

- Operating: $4.2 million
- Capital: $200,000

Performance Measures

- Annual passengers: 371,400
- Passengers per hour: 4.4
- Operating cost per passenger: $9.13
- Rural population with transit access: 53%
- Urban population with transit access: 59%



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Scenario 1: Rural Dial-a-Ride

Description

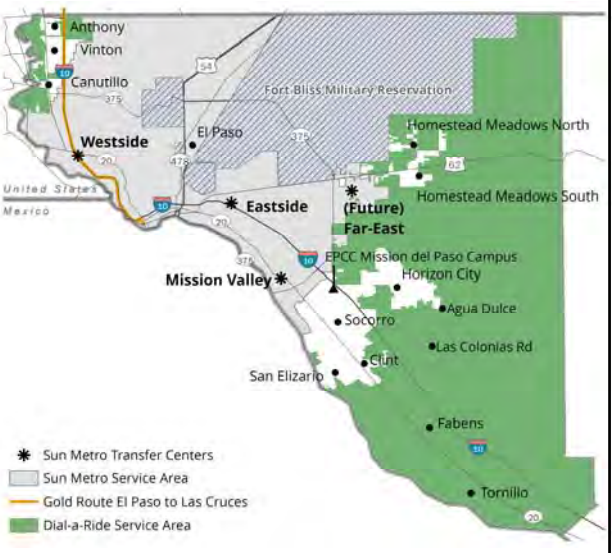
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- Current El Paso County bus routes would be discontinued.
- This scenario limits transit service sponsored by El Paso County to the rural areas and does not include cities within the urbanized area.

Annual Cost

- Operating: $3.5 million
- Capital: $90,000

Performance Measures

- Annual passengers: 297,600
- Passengers per hour: 4.0
- Operating cost per passenger: $9.41
- Rural population with transit access: 100%
- Urban population with transit access: 0%



14

Scenario 2: Baseline Flexible-Route Local Bus

Description

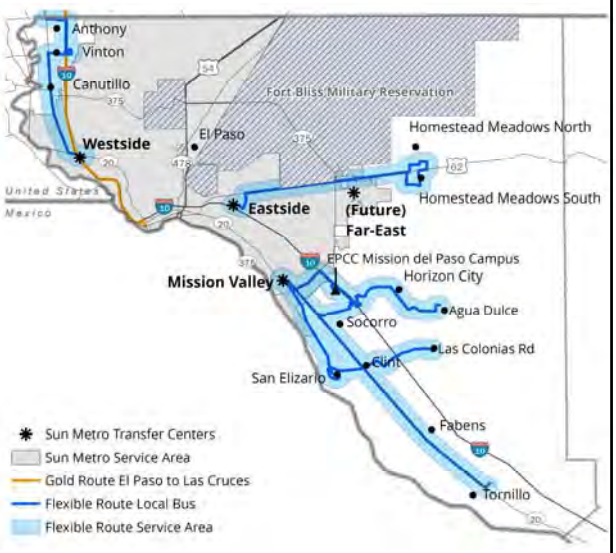
- Flexible-route local bus service to almost all currently served areas.
- Some changes in routing, frequency, or hours of service.
- Passengers can travel either direction on routes.

Annual Cost

- Operating: $4.6 million
- Capital: $480,000

Performance Measures

- Annual passengers: 442,400
- Passengers per hour: 4.9
- Operating cost per passenger: $8.18
- Rural population with transit access: 58%
- Urban population with transit access: 71%



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Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride

Description

- Flexible-route bus service to most currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride in rural parts of county.

Annual Cost

- Operating: $6.9 million
- Capital: $610,000

Performance Measures

- Annual passengers: 642,200
- Passengers per hour: 5.1
- Operating cost per passenger: $8.89
- Rural population with transit access: 100%
- Urban population with transit access: 71%



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Scenario 4: Fixed-Route Local Bus and ADA Paratransit

Description

- Fixed-route bus service to most currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- ADA paratransit within ¾ mile of local fixed route.

Annual Cost

- Operating: $6.4 million
- Capital: $590,000

Performance Measures

- Annual passengers: 549,500
- Passengers per hour: 4.7
- Operating cost per passenger: $9.61
- Rural population with transit access: 44%
- Urban population with transit access: 57%



17

Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride

Description

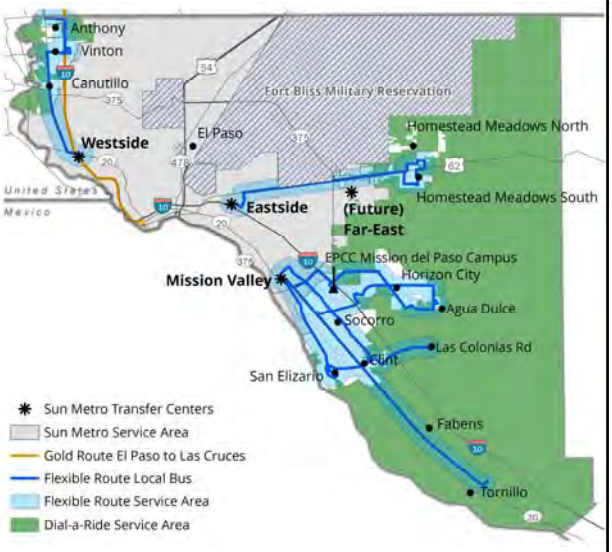
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- New routes, changes in routing, and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride in rural parts of county.

Annual Cost

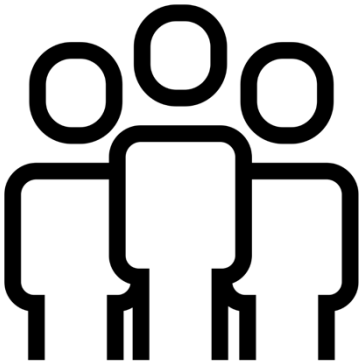
- Operating: $7.7 million
- Capital: $880,000

Performance Measures

- Annual passengers: 794,500
- Passengers per hour: 5.8
- Operating cost per passenger: $7.89
- Rural population with transit access: 100%
- Urban population with transit access: 84%



18



BREAKOUT GROUPS

ESTUDIO DEL TRANSPORTE PÚBLICO REGIONAL DEL CONDADO DE EL PASO

Diciembre 2017 Reuniones Comunitarias

If you would like this presentation or other meeting materials in alternative formats or languages, please call 512-407-1116 or email elpasocountytransitplan@tti.tamu.edu.

IN SPANISH: Si desea esta presentación u otros materiales de reunión en formatos o idiomas alternativos, por favor de llamar al 512-407-1116 o envíe un correo electrónico a elpasocountytransitplan@tti.tamu.edu

¿Sobre qué es este estudio?

El Condado de El Paso está realizando un estudio sobre el transporte público regional. Las tareas del estudio incluidas son:

- Opciones de investigación para un sistema del transporte público de ruta fija para todo el Condado de El Paso
- Identificar las opciones del transporte público dentro de los corredores de viajes en el Condado de El Paso
- Evaluar el potencial para mejorar el servicio del transporte público para el acceso a puestos de trabajo, educación, medicina, compras y negocios personales
- Identificar las opciones organizacionales y las posibles fuentes de financiamiento

¿Por qué estamos aquí?

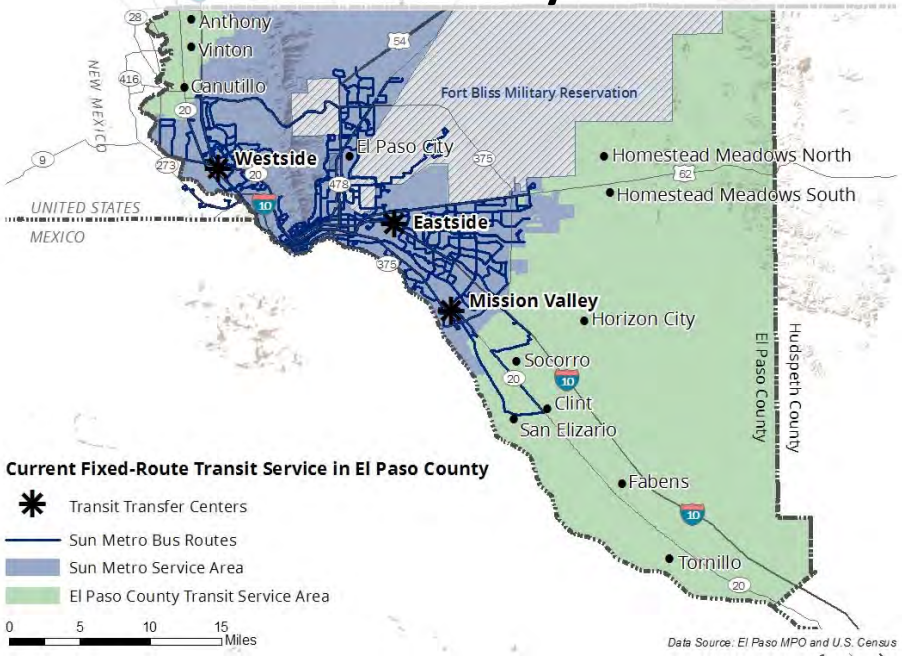
- Para aprender
  - Resultados del estudio
  - Nuevas propuestas de escenarios de servicio del transporte público del Condado
- Para dar comentarios

¿Qué pasará en esta reunión?

- Presentación sobre:
  - El servicio del transporte público y las necesidades actuales
  - 5 escenarios de servicios del transporte público propuestos
- Discusiones grupales
- Discusión abierta, preguntas y respuestas

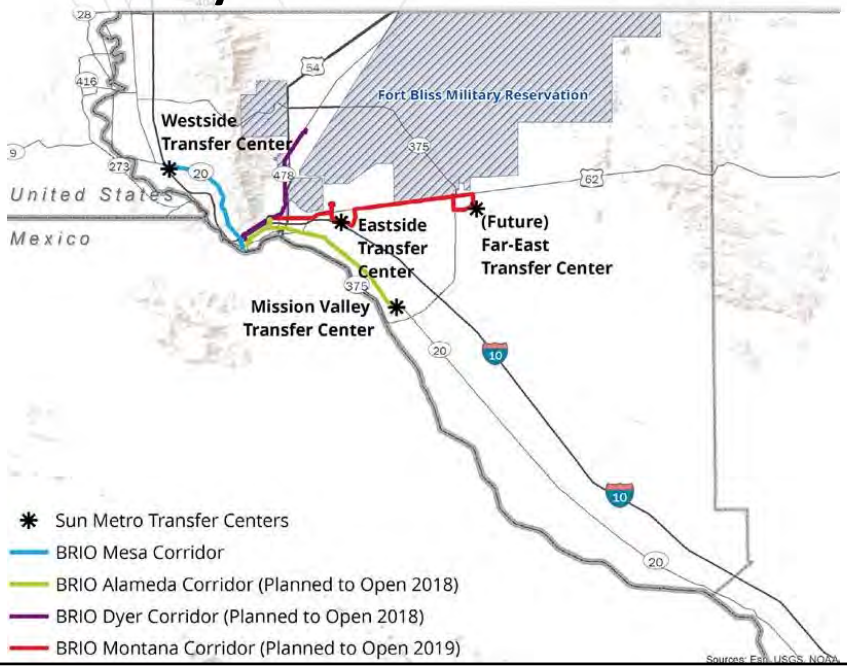
SERVICIOS Y NECESIDADES ACTUALES DEL TRANSPORTE PÚBLICO

Zonas de Servicio de Sun Metro y del Condado de El Paso



5

Rutas Actuales y Planificadas de Sun Metro BRIO

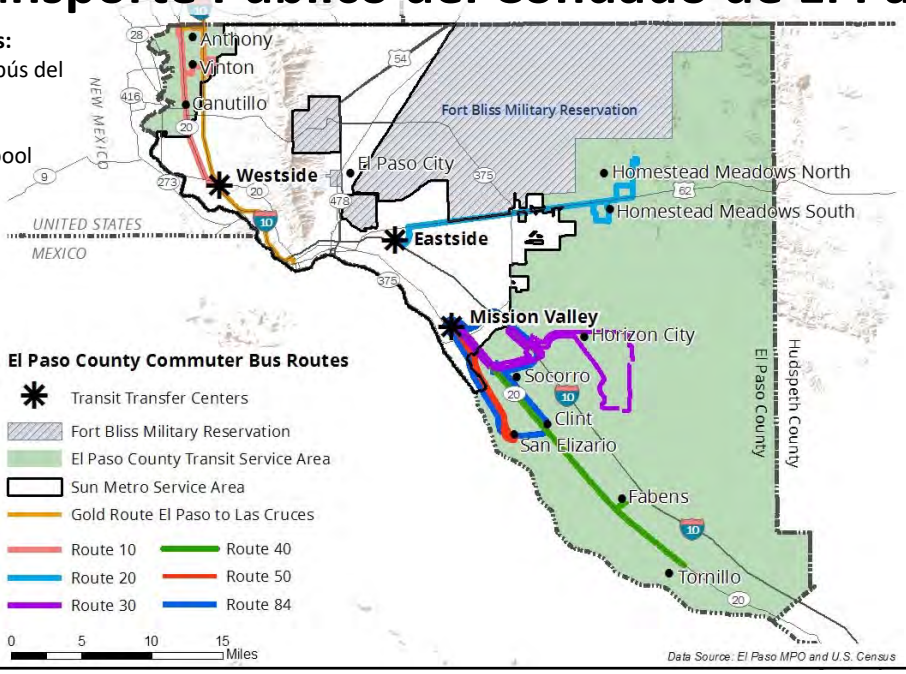


6

Transporte Público del Condado de El Paso

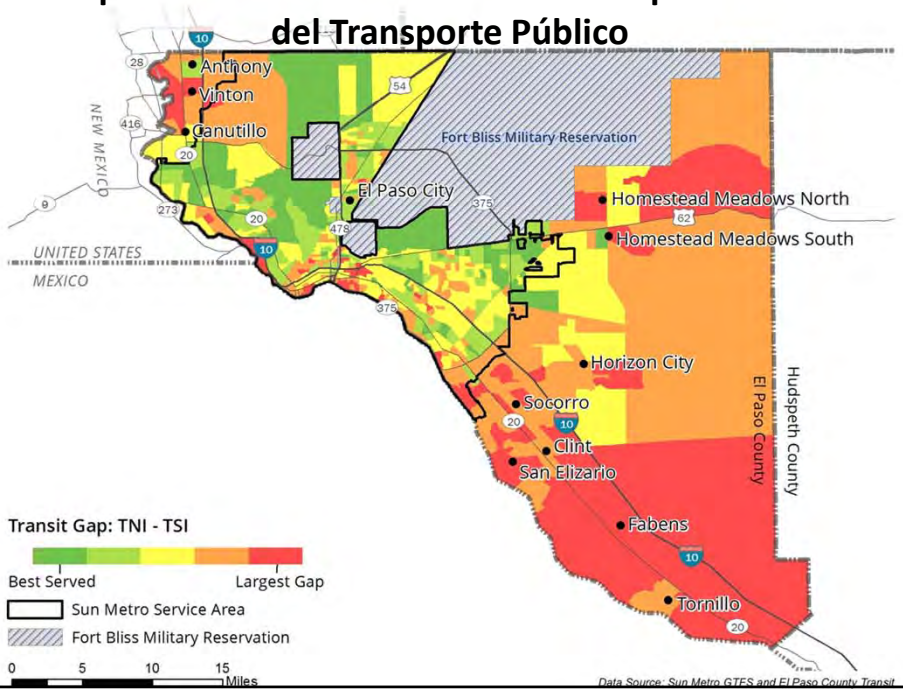
Servicios Actuales:

- Rutas de Autobús del Condado
- Ruta Dorada
- Vámonos Vanpool



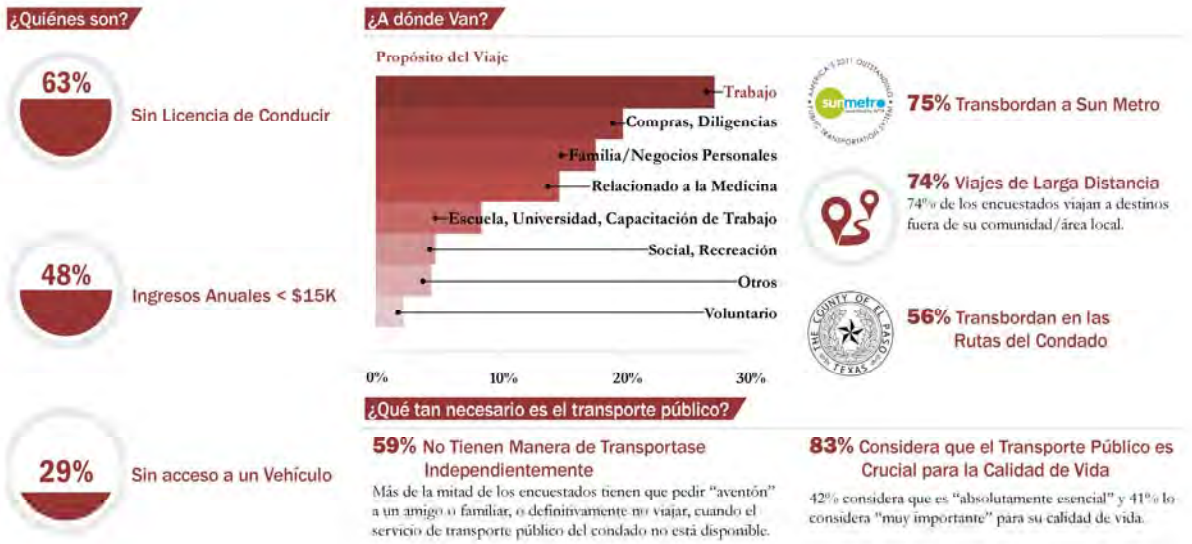
7

Brecha del Transporte Público: Necesidad del Transporte Público– Suministro del Transporte Público



8

Pasajeros de Transporte Público del Condado de El Paso



5 ESCENARIOS DE SERVICIOS DEL TRANSPORTE PÚBLICO PROPUESTOS

Objetivos y Consideraciones del Servicio del Transporte Público

Objetivos del Servicio del Transporte Público

- **Cobertura del Área Rural**: Proporcionar acceso al transporte público rural
- **Cobertura del Área Urbana**: Proporcionar acceso al transporte público urbano
- **Utilidad**: Hacer el transporte público útil para muchos propósitos del viaje
- **Efectividad**: Mantener el transporte público como una inversión productiva
- **Complementar a Sun Metro**: Mantener y mejorar las conexiones a Sun Metro

Consideraciones de Planificación del Servicio del Transporte Público

- Evitar circuitos de un solo sentido en las rutas de autobuses
- Mantenga las rutas de autobús lo más directas posible
- Considerar la densidad de población y la necesidad del Transporte Público

Tipos de Servicios del Transporte Público en los Escenarios

Servicio Actual



Paratránsito para Pasajeros con Discapacidades



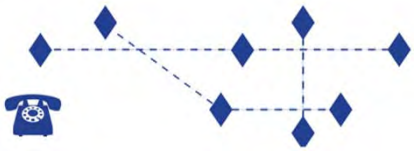
Autobús Local de Ruta Fija



Autobús Local de Ruta Flexible



Dial-a-Ride



La Ruta Dorada de Autobús Interurbano y Vámonos Vanpool no cambian en los escenarios propuestos.

Servicio Actual

Descripción

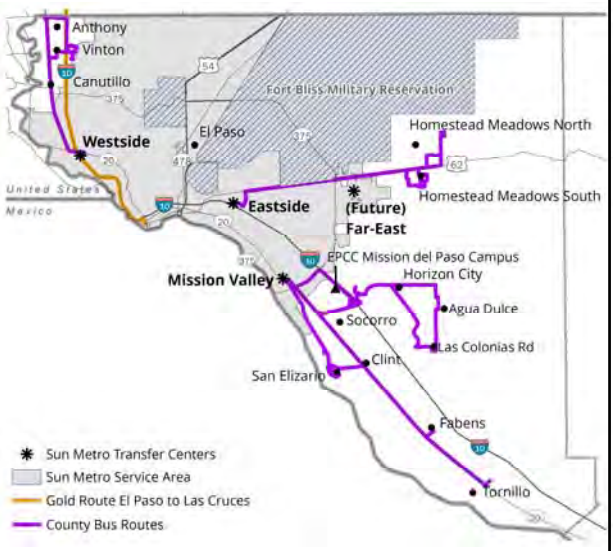
- Seis rutas de autobús del Condado.
- Los pasajeros toman el autobús marcando la parada al conductor del autobús.
- Varios circuitos con vías en un solo sentido

Costo Anual

- Funcionamiento: $4.2 millones
- Capital: $200,000

Medidas de Rendimiento

- Pasajeros anuales: 371,400
- Pasajeros por hora: 4.4
- Costo de operación por pasajero: $9.13
- Población rural con acceso al transporte público: 53%
- Población urbana con acceso al transporte público: 59%



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Escenario 1: Dial-a-Ride Rural

Descripción

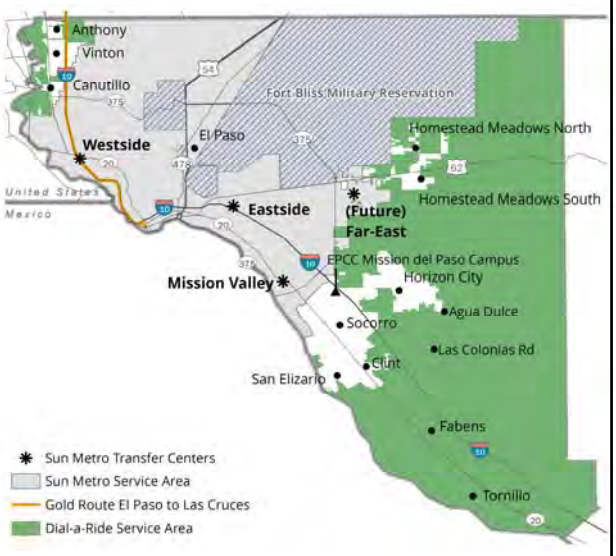
- Servicio de Dial-a-Ride en todas las áreas del Condado Rural.
- Las rutas actuales del autobús del Condado de El Paso serían discontinuadas.
- Este escenario limita el servicio del transporte público patrocinado por el Condado de El Paso a las zonas rurales y no incluye las ciudades dentro del área urbanizada.

Costo Anual

- Funcionamiento: $3.5 millones
- Capital: $90,000

Medidas de Rendimiento

- Pasajeros anuales: 297,600
- Pasajeros por hora: 4.0
- Costo de operación por pasajero: $9.41
- Población rural con acceso al transporte público: 100%
- Población urbana con acceso al transporte público: 0%



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Escenario 2: Base de Ruta Flexible del Autobús Local

Descripción

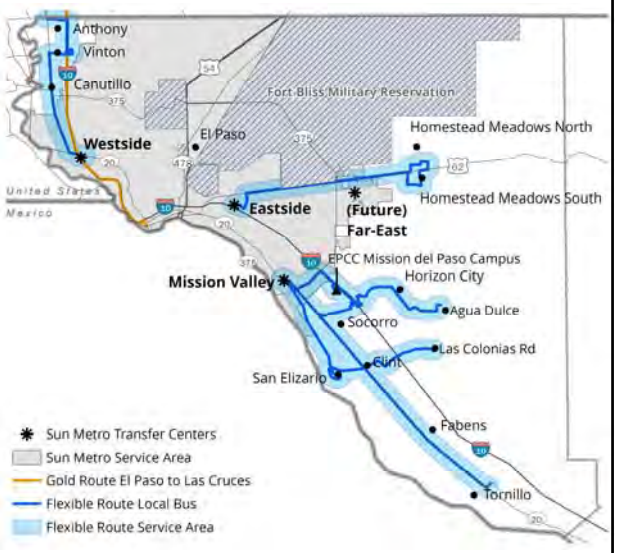
- Servicio de autobús local de ruta flexible a casi todas las área actualmente servidas.
- Algunos cambios en el enrutamiento, la frecuencia o las horas de servicio.
- Los pasajeros pueden viajar en cualquier dirección en las rutas.

Costo Anual

- Funcionamiento: $4.6 millones
- Capital: $480,000

Medidas de Rendimiento

- Pasajeros anuales: 442,400
- Pasajeros por hora: 4.9
- Costo de operación por pasajero: $8.18
- Población rural con acceso al transporte público: 58%
- Población urbana con acceso al transporte público: 71%



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Escenario 3: Ruta Flexible del Autobús Local y Dial-a-Ride Rural

Descripción

- Servicio de autobús de ruta flexible a las zonas mas atendidas.
- Algunos cambios en el enrutamiento y mejoras en la frecuencia y horas de servicio.
- Los pasajeros pueden viajar en cualquier dirección en las rutas.
- Transferencias mejoradas.
- Dial-a-Ride en las partes rurales del Condado.

Costo Anual

- Funcionamiento: $6.9 millones
- Capital: $610,000

Medidas de Rendimiento

- Pasajeros anuales: 642,200
- Pasajeros por hora: 5.1
- Costo de operación por pasajero: $8.89
- Población rural con acceso al transporte público: 100%
- Población urbana con acceso al transporte público: 71%



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Escenario 4: Autobús Local de Ruta Fija y Paratránsito para Pasajeros con Discapacidades

Descripción

- Servicio de autobús de ruta flexible a las zonas mas atendidas.
- Algunos cambios en el enrutamiento y mejoras en la frecuencia y horas de servicio.
- Los pasajeros pueden viajar en cualquier dirección en las rutas.
- Transferencias mejoradas.
- Paratránsito para pasajeros con discapacidades dentro de ¾ de milla de ruta fija local.

Costo Anual

- Funcionamiento: $6.4 millones
- Capital: $590,000

Medidas de Rendimiento

- Pasajeros anuales: 549,500
- Pasajeros por hora: 4.7
- Costo de operación por pasajero: $9.61
- Población rural con acceso al transporte público: 44%
- Población urbana con acceso al transporte público: 57%



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Escenario 5: Aumento de la Ruta Flexible de Autobús Local y Dial-a-Ride Rural

Descripción

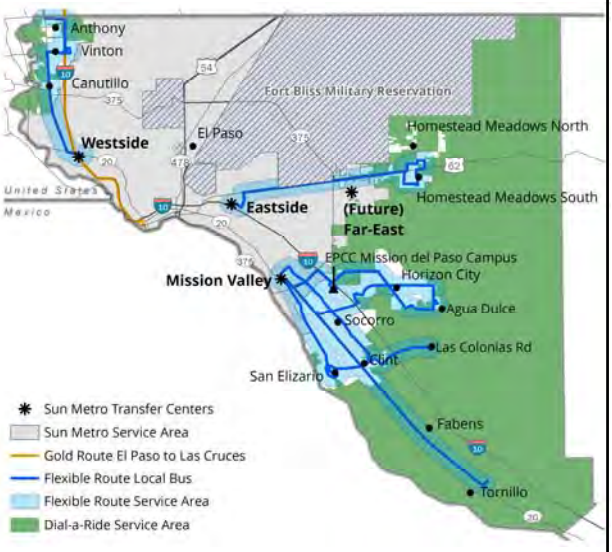
- Servicio de autobús de ruta flexible a las zonas mas atendidas.
- Nuevas rutas, cambios en el enrutamiento y mejoras en la frecuencia y horas de servicio.
- Los pasajeros pueden viajar en cualquier dirección en las rutas.
- Transferencias mejoradas.
- Dial-a-Ride en las partes rurales del Condado.

Costo Anual

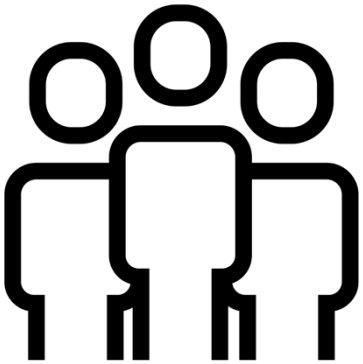
- Funcionamiento: $7.7 millones
- Capital: $880,000

Medidas de Rendimiento

- Pasajeros anuales: 794,500
- Pasajeros por hora: 5.8
- Costo de operación por pasajero: $7.89
- Población rural con acceso al transporte público: 100%
- Población urbana con acceso al transporte público: 84%



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DISCUSIONES GRUPALES

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 8-A:
Financial Summary Sheets

Prepared for:

Texas A&M Transportation Institute

August 2018

El Paso County Transit Study: Financial Summary by Service Scenario

	Transit Service Scenario						
Cost Element	**Current Service**	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**	**Scenario 6**
Annual Passenger Boardings	371,400	297,600	442,400	642,200	549,500	794,500	806,700
Peak Vehicles	88	83	88	95	95	99	100
Vanpool Vehicles	*78*	*78*	*78*	*78*	*78*	*78*	*78*
Flexible- or Fixed-Route Peak Vehicles	*10*		*10*	*12*	*12*	*16*	*16*
Dial-a-Ride or ADA Paratransit Peak Vehicles		*5*		*5*	*5*	*5*	*6*
Annual Revenue Hours	83,900	73,800	89,400	125,900	117,900	137,900	142,200
Annual Revenue Miles	3,414,600	3,301,900	3,630,800	4,199,100	4,031,600	4,396,600	4,474,500
Passengers per Revenue Hour	4.4	4.0	4.9	5.1	4.7	5.8	5.7
Annual Operating Cost	$4,220,000	$3,530,000	$4,550,000	$6,910,000	$6,400,000	$7,690,000	$7,970,000
Annual Fare Revenue	$830,000	$730,000	$930,000	$1,210,000	$1,120,000	$1,420,000	$1,440,000
Annual Net Operating Cost	$3,390,000	$2,800,000	$3,620,000	$5,700,000	$5,280,000	$6,270,000	$6,530,000
Annual Amortized Capital Cost for Vehicles	$200,000	$90,000	$180,000	$310,000	$310,000	$390,000	$420,000
Annual Amortized Capital Cost for Passenger Facilities	$0	$0	$300,000	$300,000	$300,000	$490,000	$490,000
Total Annual Amortized Capital Cost	$200,000	$90,000	$480,000	$610,000	$610,000	$880,000	$910,000
Total Annual Cost (Net Operating + Capital)	$3,590,000	$2,890,000	$4,100,000	$6,310,000	$5,890,000	$7,150,000	$7,440,000
Sources of Revenue							
Federal Rural	$1,060,000	$860,000	$1,220,000	$1,480,000	$1,380,000	$1,570,000	$1,490,000
Federal Rural Intercity	$420,000	$420,000	$420,000	$420,000	$420,000	$420,000	$420,000
Federal CMAQ	$860,000	$350,000	$860,000	$860,000	$860,000	$860,000	$860,000
Federal Urban	$0	$0	$80,000	$100,000	$180,000	$120,000	$290,000
State Texas	$430,000	$440,000	$430,000	$380,000	$400,000	$370,000	$390,000
State New Mexico	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000
Local	$110,000	$110,000	$380,000	$2,360,000	$1,940,000	$3,100,000	$3,280,000
Total Annual Revenue	$3,590,000	$2,890,000	$4,100,000	$6,310,000	$5,890,000	$7,150,000	$7,440,000
Scenario Performance Measures							
Passenger Boardings per Revenue Hour	4.4	4.0	4.9	5.1	4.7	5.8	5.7
Net Operating Cost per Passenger Boarding	$9.13	$9.41	$8.18	$8.88	$9.61	$7.89	$8.09
% of Rural El Paso Co Population with Transit Access	53%	100%	58%	100%	44%	100%	100%
% of Urban El Paso Co Population with Transit Access	59%	0%	71%	71%	57%	84%	100%

Note: Some values may not add correctly due to rounding

Current Service

Cost Element	Transit Service				
	Commuter Route Bus		Vanpool	Gold Route Intercity Bus	Total
Annual Passenger Boardings	135,000		184,800	51,600	371,400
Peak Vehicles	10		78		88
Annual Revenue Hours	31,700		45,500	6,600	83,900
Annual Revenue Miles	679,800		2,504,400	230,500	3,414,600
Passengers per Revenue Hour	4.3		4.1	7.8	4.4
Annual Operating Cost	$ 2,100,000		$ 840,000	$ 1,280,000	$ 4,220,000
Annual Fare Revenue	$ 190,000		$ 490,000	$ 150,000	$ 830,000
Annual Net Operating Cost	$ 1,910,000		$ 350,000	$ 1,130,000	$ 3,390,000
Annual Amortized Capital Cost for Vehicles	$ 200,000		$ -	$ -	$ 200,000
Annual Amortized Capital Cost for Passenger Facilities	$ -		$ -	$ -	$ -
Total Annual Amortized Capital Cost	$ 200,000		$ -	$ -	$ 200,000
Total Annual Cost (Net Operating + Capital)	$ 2,110,000		$ 350,000	$ 1,130,000	$ 3,590,000
Sources of Revenue					
Federal Rural	$ 1,060,000		$ -	$ -	$ 1,060,000
Federal Rural Intercity	$ -		$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000		$ 350,000	$ -	$ 860,000
Federal Urban	$ -		$ -	$ -	$ -
State Texas	$ 430,000		$ -	$ -	$ 430,000
State New Mexico	$ -		$ -	$ 710,000	$ 710,000
Local	$ 110,000		$ -	$ -	$ 110,000
Total Annual Revenue	$ 2,110,000		$ 350,000	$ 1,130,000	$ 3,590,000

Service Characteristics

Commuter Route Bus:
5 bus routes operate Monday - Saturday, at varying spans of service between 11 hours and 14 hours per day. Route 50 operates 9 hours on weekdays and 7 hours on Saturdays and Sundays.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	4.4
Net Operating Cost per Passenger Boarding	$9.13
Percent of Rural El Paso County Population with Transit Access	53%
Percent of Urbanized El Paso County Population with Transit Access	59%

Note: Some values may not add correctly due to rounding

Scenario 1: Rural Dial-a-Ride

		Transit Service			
Cost Element		**Rural Dial-a-Ride**	**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings		61,300	184,800	51,600	297,600
Peak Vehicles		5	78		83
Annual Revenue Hours		21,700	45,500	6,600	73,800
Annual Revenue Miles		389,500	2,681,800	230,500	3,301,900
Passengers per Revenue Hour		2.8	4.1	7.8	4.0
Annual Operating Cost		$ 1,410,000	$ 840,000	$ 1,280,000	$ 3,530,000
Annual Fare Revenue		$ 90,000	$ 490,000	$ 150,000	$ 730,000
Annual Net Operating Cost		$ 1,320,000	$ 350,000	$ 1,130,000	$ 2,800,000
Annual Amortized Capital Cost for Vehicles		$ 90,000	$ -	$ -	$ 90,000
Annual Amortized Capital Cost for Passenger Facilities		$ -	$ -	$ -	$ -
Total Annual Amortized Capital Cost		$ 90,000	$ -	$ -	$ 90,000
Total Annual Cost (Net Operating + Capital)		$ 1,410,000	$ 350,000	$ 1,130,000	$ 2,890,000
Sources of Revenue					
Federal Rural		$ 860,000	$ -	$ -	$ 860,000
Federal Rural Intercity		$ -	$ -	$ 420,000	$ 420,000
Federal CMAQ		$ -	$ 350,000	$ -	$ 350,000
Federal Urban		$ -	$ -	$ -	$ -
State Texas		$ 440,000	$ -	$ -	$ 440,000
State New Mexico		$ -	$ -	$ 710,000	$ 710,000
Local		$ 110,000	$ -	$ -	$ 110,000
Total Annual Revenue		$ 1,410,000	$ 350,000	$ 1,130,000	$ 2,890,000

Service Characteristics

Rural Dial-a-Ride:
Four zones of demand-responsive service operate Monday - Saturday, 14 hours per day. Trips must be reserved in advance and origin and destination of trip must be within the same zone.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	4.0
Net Operating Cost per Passenger Boarding	$9.41
Percent of Rural El Paso County Population with Transit Access	100%
Percent of Urbanized El Paso County Population with Transit Access	0%

Note: Some values may not add correctly due to rounding

Scenario 2: Baseline Flexible-Route Local Bus

	Transit Service				
Cost Element	**Flexible-Route Local Bus**		**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings	206,000		184,800	51,600	442,400
Peak Vehicles	10		78		88
Annual Revenue Hours	37,300		45,500	6,600	89,400
Annual Revenue Miles	718,400		2,681,800	230,500	3,630,800
Passengers per Revenue Hour	5.5		4.1	7.8	4.9
Annual Operating Cost	$ 2,430,000		$ 840,000	$ 1,280,000	$ 4,550,000
Annual Fare Revenue	$ 290,000		$ 490,000	$ 150,000	$ 930,000
Annual Net Operating Cost	$ 2,140,000		$ 350,000	$ 1,130,000	$ 3,620,000
Annual Amortized Capital Cost for Vehicles	$ 180,000		$ -	$ -	$ 180,000
Annual Amortized Capital Cost for Passenger Facilities	$ 300,000		$ -	$ -	$ 300,000
Total Annual Amortized Capital Cost	$ 480,000		$ -	$ -	$ 480,000
Total Annual Cost (Net Operating + Capital)	$ 2,620,000		$ 350,000	$ 1,130,000	$ 4,100,000
Sources of Revenue					
Federal Rural	$ 1,220,000		$ -	$ -	$ 1,220,000
Federal Rural Intercity	$ -		$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000		$ 350,000	$ -	$ 860,000
Federal Urban	$ 80,000		$ -	$ -	$ 80,000
State Texas	$ 430,000		$ -	$ -	$ 430,000
State New Mexico	$ -		$ -	$ 710,000	$ 710,000
Local	$ 380,000		$ -	$ -	$ 380,000
Total Annual Revenue	$ 2,620,000		$ 350,000	$ 1,130,000	$ 4,100,000

Service Characteristics

Flexible-Route Local Bus:
6 bus routes operate Monday - Saturday, 14 hours per day. Route 50 operates 12 hours on weekdays and Saturdays and 10 hours on Sundays.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	4.9
Net Operating Cost per Passenger Boarding	$8.18
Percent of Rural El Paso County Population with Transit Access	58%
Percent of Urbanized El Paso County Population with Transit Access	71%

Note: Some values may not add correctly due to rounding

Scenario 3: Flexible-Route Local Bus + Rural Dial-a-Ride

	Transit Service				
Cost Element	**Flexible-Route Local Bus**	**Rural Dial-a-Ride**	**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings	344,600	61,300	184,800	51,600	642,200
Peak Vehicles	12	5	78		95
Annual Revenue Hours	52,000	21,700	45,500	6,600	125,900
Annual Revenue Miles	897,300	389,500	2,681,800	230,500	4,199,100
Passengers per Revenue Hour	6.6	2.8	4.1	7.8	5.1
Annual Operating Cost	$ 3,380,000	$ 1,410,000	$ 840,000	$ 1,280,000	$ 6,910,000
Annual Fare Revenue	$ 480,000	$ 90,000	$ 490,000	$ 150,000	$ 1,210,000
Annual Net Operating Cost	$ 2,900,000	$ 1,320,000	$ 350,000	$ 1,130,000	$ 5,700,000
Annual Amortized Capital Cost for Vehicles	$ 220,000	$ 90,000	$ -	$ -	$ 310,000
Annual Amortized Capital Cost for Passenger Facilities	$ 300,000	$ -	$ -	$ -	$ 300,000
Total Annual Amortized Capital Cost	$ 520,000	$ 90,000	$ -	$ -	$ 610,000
Total Annual Cost (Net Operating + Capital)	$ 3,420,000	$ 1,410,000	$ 350,000	$ 1,130,000	$ 6,310,000
Sources of Revenue					
Federal Rural	$ 1,070,000	$ 410,000	$ -	$ -	$ 1,480,000
Federal Rural Intercity	$ -	$ -	$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000	$ -	$ 350,000	$ -	$ 860,000
Federal Urban	$ 100,000	$ -	$ -	$ -	$ 100,000
State Texas	$ 220,000	$ 160,000	$ -	$ -	$ 380,000
State New Mexico	$ -	$ -	$ -	$ 710,000	$ 710,000
Local	$ 1,520,000	$ 840,000	$ -	$ -	$ 2,360,000
Total Annual Revenue	$ 3,420,000	$ 1,410,000	$ 350,000	$ 1,130,000	$ 6,310,000

Service Characteristics

Flexible-Route Local Bus:

6 routes operate Monday - Saturday, 14 hours per day. Route 50 operates 12 hours on weekdays and Saturdays and 10 hours on Sundays.

Rural Dial-a-Ride:

Four zones of demand-responsive service operate Monday - Saturday, 14 hours per day.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	5.1
Net Operating Cost per Passenger Boarding	$8.88
Percent of Rural El Paso County Population with Transit Access	100%
Percent of Urbanized El Paso County Population with Transit Access	71%

Note: Some values may not add correctly due to rounding

Scenario 4: Fixed Route Local Bus + ADA Paratransit

	Transit Service				
Cost Element	**Fixed-Route Local Bus**	**ADA Paratransit**	**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings	286,800	26,300	184,800	51,600	549,500
Peak Vehicles	12	5	78		95
Annual Revenue Hours	52,600	13,100	45,500	6,600	117,900
Annual Revenue Miles	930,000	189,300	2,681,800	230,500	4,031,600
Passengers per Revenue Hour	5.5	2.0	4.1	7.8	4.7
Annual Operating Cost	$ 3,420,000	$ 860,000	$ 840,000	$ 1,280,000	$ 6,400,000
Annual Fare Revenue	$ 400,000	$ 80,000	$ 490,000	$ 150,000	$ 1,120,000
Annual Net Operating Cost	$ 3,020,000	$ 780,000	$ 350,000	$ 1,130,000	$ 5,280,000
Annual Amortized Capital Cost for Vehicles	$ 220,000	$ 90,000	$ -	$ -	$ 310,000
Annual Amortized Capital Cost for Passenger Facilities	$ 300,000	$ -	$ -	$ -	$ 300,000
Total Annual Amortized Capital Cost	$ 520,000	$ 90,000	$ -	$ -	$ 610,000
Total Annual Cost (Net Operating + Capital)	$ 3,540,000	$ 870,000	$ 350,000	$ 1,130,000	$ 5,890,000
Sources of Revenue					
Federal Rural	$ 1,360,000	$ 20,000	$ -	$ -	$ 1,380,000
Federal Rural Intercity	$ -	$ -	$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000	$ -	$ 350,000	$ -	$ 860,000
Federal Urban	$ 180,000	$ -	$ -	$ -	$ 180,000
State Texas	$ 390,000	$ 10,000	$ -	$ -	$ 400,000
State New Mexico	$ -	$ -	$ -	$ 710,000	$ 710,000
Local	$ 1,100,000	$ 840,000	$ -	$ -	$ 1,940,000
Total Annual Revenue	$ 3,540,000	$ 870,000	$ 350,000	$ 1,130,000	$ 5,890,000

Service Characteristics

Fixed-Route Local Bus:
6 bus routes operate Monday - Saturday, 14 hours per day. Route 50 operates 12 hours on weekdays and Saturdays and operates 10 hours on Sundays.

ADA Paratransit Service:
Monday - Saturday, 14 hours per day and 10 hours on Sunday, serving customers near Route 50.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	4.7
Net Operating Cost per Passenger Boarding	$9.61
Percent of Rural El Paso County Population with Transit Access	44%
Percent of Urbanized El Paso County Population with Transit Access	57%

Note: Some values may not add correctly due to rounding

Scenario 5: Increased Flexible-Route Local Bus + Rural Dial-a-Ride

	Transit Service				
Cost Element	**Flexible-Route Local Bus**	**Rural Dial-a-Ride**	**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings	496,800	61,300	184,800	51,600	794,500
Peak Vehicles	16	5	78		99
Annual Revenue Hours	64,000	21,700	45,500	6,600	137,900
Annual Revenue Miles	1,094,700	389,500	2,681,800	230,500	4,396,600
Passengers per Revenue Hour	7.8	2.8	4.1	7.8	5.8
Annual Operating Cost	$ 4,160,000	$ 1,410,000	$ 840,000	$ 1,280,000	$ 7,690,000
Annual Fare Revenue	$ 690,000	$ 90,000	$ 490,000	$ 150,000	$ 1,420,000
Annual Net Operating Cost	$ 3,470,000	$ 1,320,000	$ 350,000	$ 1,130,000	$ 6,270,000
Annual Amortized Capital Cost for Vehicles	$ 300,000	$ 90,000	$ -	$ -	$ 390,000
Annual Amortized Capital Cost for Passenger Facilities	$ 490,000	$ -	$ -	$ -	$ 490,000
Total Annual Amortized Capital Cost	$ 790,000	$ 90,000	$ -	$ -	$ 880,000
Total Annual Cost (Net Operating + Capital)	$ 4,260,000	$ 1,410,000	$ 350,000	$ 1,130,000	$ 7,150,000
Sources of Revenue					
Federal Rural	$ 1,160,000	$ 410,000	$ -	$ -	$ 1,570,000
Federal Rural Intercity	$ -	$ -	$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000	$ -	$ 350,000	$ -	$ 860,000
Federal Urban	$ 120,000	$ -	$ -	$ -	$ 120,000
State Texas	$ 240,000	$ 130,000	$ -	$ -	$ 370,000
State New Mexico	$ -	$ -	$ -	$ 710,000	$ 710,000
Local	$ 2,230,000	$ 870,000	$ -	$ -	$ 3,100,000
Total Annual Revenue	$ 4,260,000	$ 1,410,000	$ 350,000	$ 1,130,000	$ 7,150,000

Service Characteristics

Flexible-Route Local Bus:
7 bus routes operate Monday - Saturday, 14 hours per day. Route 50 operates 12 hours on weekdays and Saturdays and 10 hours on Sundays.

Rural Dial-a-Ride:
Four zones of demand-responsive service operate Monday - Saturday, 14 hours per day.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	5.8
Net Operating Cost per Passenger Boarding	$7.89
Percent of Rural El Paso County Population with Transit Access	100%
Percent of Urbanized El Paso County Population with Transit Access	84%

Note: Some values may not add correctly due to rounding

Scenario 6: Increased Flexible-Route Local Bus + Rural/Urban Dial-a-Ride

	Transit Service				
Cost Element	**Flexible-Route Local Bus**	**Rural/Urban Dial-a-Ride**	**Vanpool**	**Gold Route Intercity Bus**	**Total**
Annual Passenger Boardings	496,800	73,500	184,800	51,600	806,700
Peak Vehicles	16	6	78		100
Annual Revenue Hours	64,000	26,000	45,500	6,600	142,200
Annual Revenue Miles	1,094,700	467,500	2,681,800	230,500	4,474,500
Passengers per Revenue Hour	7.8	2.8	4.1	7.8	5.7
Annual Operating Cost	$ 4,160,000	$ 1,690,000	$ 840,000	$ 1,280,000	$ 7,970,000
Annual Fare Revenue	$ 690,000	$ 110,000	$ 490,000	$ 150,000	$ 1,440,000
Annual Net Operating Cost	$ 3,470,000	$ 1,580,000	$ 350,000	$ 1,130,000	$ 6,530,000
Annual Amortized Capital Cost for Vehicles	$ 300,000	$ 120,000	$ -	$ -	$ 420,000
Annual Amortized Capital Cost for Passenger Facilities	$ 490,000	$ -	$ -	$ -	$ 490,000
Total Annual Amortized Capital Cost	$ 790,000	$ 120,000	$ -	$ -	$ 910,000
Total Annual Cost (Net Operating + Capital)	$ 4,260,000	$ 1,700,000	$ 350,000	$ 1,130,000	$ 7,440,000
Sources of Revenue					
Federal Rural	$ 1,340,000	$ 150,000	$ -	$ -	$ 1,490,000
Federal Rural Intercity	$ -	$ -	$ -	$ 420,000	$ 420,000
Federal CMAQ	$ 510,000	$ -	$ 350,000	$ -	$ 860,000
Federal Urban	$ 290,000	$ -	$ -	$ -	$ 290,000
State Texas	$ 320,000	$ 70,000	$ -	$ -	$ 390,000
State New Mexico	$ -	$ -	$ -	$ 710,000	$ 710,000
Local	$ 1,800,000	$ 1,480,000	$ -	$ -	$ 3,280,000
Total Annual Revenue	$ 4,260,000	$ 1,700,000	$ 350,000	$ 1,130,000	$ 7,440,000

Service Characteristics

Flexible-Route Local Bus:
7 bus routes operate Monday - Saturday, 14 hours per day. Route 50 operates 12 hours on weekdays and Saturdays and 10 hours on Sundays.

Rural/Urban Dial-a-Ride:
Four zones of demand-responsive service operate Monday - Saturday, 14 hours per day.

Scenario Performance Measures	
Passenger Boardings per Revenue Hour	5.7
Net Operating Cost per Passenger Boarding	$8.09
Percent of Rural El Paso County Population with Transit Access	100%
Percent of Urbanized El Paso County Population with Transit Access	100%

Note: Some values may not add correctly due to rounding

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 8-B:
Service Cost and Local Share Allocation Analysis

Prepared for:

Texas A&M Transportation Institute

October 2018

Service Cost and Local Share Allocation Analysis

Jurisdictional Analysis	Current			Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5			Scenario 6		
	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source	Cost Element		Rev. Source
	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match	Annual Operating Cost	Annual Amortized Capital Cost	Local Govt. Match
Flexible- or Fixed-Route and Dial-a-Ride or ADA Services	**$ 2,100,000**	**$ 200,000**	**$ 110,000**	**$ 1,410,000**	**$ 90,000**	**$ 110,000**	**$ 2,430,000**	**$ 480,000**	**$ 380,000**	**$ 4,790,000**	**$ 610,000**	**$ 2,360,000**	**$ 4,280,000**	**$ 610,000**	**$ 1,940,000**	**$ 5,570,000**	**$ 880,000**	**$ 3,100,000**	**$ 5,850,000**	**$ 910,000**	**$ 3,280,000**
Municipalities	$ 759,930	$ 72,374	$ 39,806	$ 33,841	$ 2,160	$ 2,640	$ 1,087,919	$ 214,897	$ 170,127	$ 1,401,235	$ 178,445	$ 690,379	$ 1,939,517	$ 276,426	$ 879,127	$ 1,852,797	$ 292,722	$ 1,031,180	$ 2,073,860	$ 322,600	$ 1,162,780
Anthony	$ 93,277	$ 8,884	$ 4,886	$ 21,026	$ 1,342	$ 1,640	$ 106,305	$ 20,998	$ 16,624	$ 154,798	$ 19,713	$ 76,268	$ 193,669	$ 27,602	$ 87,785	$ 161,684	$ 25,544	$ 89,986	$ 135,629	$ 21,098	$ 76,045
Clint	$ 51,550	$ 4,910	$ 2,700	$ 995	$ 64	$ 78	$ 145,445	$ 28,730	$ 22,745	$ 192,537	$ 24,519	$ 94,862	$ 238,612	$ 34,008	$ 108,156	$ 259,285	$ 40,964	$ 144,306	$ 254,424	$ 39,577	$ 142,651
Horizon City	$ 48,046	$ 4,576	$ 2,517	$ 3,981	$ 254	$ 311	$ 51,410	$ 10,155	$ 8,039	$ 92,577	$ 11,790	$ 45,612	$ 163,112	$ 23,247	$ 73,934	$ 245,532	$ 38,791	$ 136,652	$ 431,621	$ 67,141	$ 242,003
San Elizario	$ 104,515	$ 9,954	$ 5,475	$ 3,421	$ 218	$ 267	$ 142,102	$ 28,070	$ 22,222	$ 157,990	$ 20,120	$ 77,840	$ 229,037	$ 32,643	$ 103,816	$ 158,698	$ 25,073	$ 88,324	$ 207,259	$ 32,240	$ 116,207
Socorro	$ 415,021	$ 39,526	$ 21,739	$ 4,417	$ 282	$ 345	$ 600,980	$ 118,712	$ 93,980	$ 753,256	$ 95,926	$ 371,124	$ 1,040,646	$ 148,316	$ 471,695	$ 974,803	$ 154,008	$ 542,529	$ 992,865	$ 154,446	$ 556,683
Vinton	$ 47,521	$ 4,526	$ 2,489	$ -	$ -	$ -	$ 41,677	$ 8,232	$ 6,517	$ 50,077	$ 6,377	$ 24,672	$ 74,441	$ 10,610	$ 33,742	$ 52,795	$ 8,341	$ 29,383	$ 52,062	$ 8,099	$ 29,190
El Paso County	$ 1,340,070	$ 127,626	$ 70,194	$ 1,376,159	$ 87,840	$ 107,360	$ 1,342,081	$ 265,103	$ 209,873	$ 3,388,765	$ 431,555	$ 1,669,621	$ 2,340,483	$ 333,574	$ 1,060,873	$ 3,717,203	$ 587,278	$ 2,068,820	$ 3,776,140	$ 587,400	$ 2,117,220
Borderland	$ 25,705	$ 2,448		$ -	$ -		$ 26,826	$ 5,299		$ 32,232	$ 4,105		$ 49,920	$ 7,115		$ 33,982	$ 5,369		$ 33,510	$ 5,213	
Canutillo	$ 133,179	$ 12,684		$ 746	$ 48		$ 148,893	$ 29,411		$ 179,865	$ 22,906		$ 264,339	$ 37,675		$ 189,575	$ 29,951		$ 217,798	$ 33,880	
Fabens	$ 67,286	$ 6,408		$ 479,870	$ 30,630		$ 42,515	$ 8,398		$ 659,076	$ 83,932		$ 85,076	$ 12,125		$ 667,716	$ 105,492		$ 97,722	$ 15,201	
Homestead M. N	$ 179,856	$ 17,129		$ 93,498	$ 5,968		$ 106,234	$ 20,984		$ 223,627	$ 28,479		$ 153,181	$ 21,832		$ 229,289	$ 36,225		$ 271,405	$ 42,219	
Homestead M. S	$ 202,591	$ 19,294		$ 6,718	$ 429		$ 114,363	$ 22,590		$ 119,815	$ 15,258		$ 178,816	$ 25,485		$ 126,128	$ 19,927		$ 143,793	$ 22,368	
Tornillo	$ 18,613	$ 1,773		$ 81,430	$ 5,198		$ 19,830	$ 3,917		$ 124,102	$ 15,804		$ 29,554	$ 4,212		$ 128,461	$ 20,295		$ 30,197	$ 4,697	
Westway	$ 80,703	$ 7,686		$ -	$ -		$ 55,394	$ 10,942		$ 66,559	$ 8,476		$ 107,209	$ 15,280		$ 70,172	$ 11,086		$ 69,198	$ 10,764	
Other EP County	$ 632,138	$ 60,204		$ 713,896	$ 45,568		$ 828,027	$ 163,561		$ 1,983,488	$ 252,595		$ 1,472,389	$ 209,850		$ 2,271,881	$ 358,933		$ 2,912,516	$ 453,058	
El Paso	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Vanpool	**$ 840,000**	**$ -**		**$ 840,000**	**$ -**		**$ 840,000**	**$ -**		**$ 840,000**	**$ -**		**$ 840,000**	**$ -**		**$ 840,000**	**$ -**		**$ 840,000**	**$ -**	
Gold Route	**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**		**$ 1,280,000**	**$ -**	
County Total	**$ 4,220,000**	**$ 200,000**	**$ 110,000**	**$ 3,530,000**	**$ 90,000**	**$ 110,000**	**$ 4,550,000**	**$ 480,000**	**$ 380,000**	**$ 6,910,000**	**$ 610,000**	**$ 2,360,000**	**$ 6,400,000**	**$ 610,000**	**$ 1,940,000**	**$ 7,690,000**	**$ 880,000**	**$ 3,100,000**	**$ 7,970,000**	**$ 910,000**	**$ 3,280,000**

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 10-A:
Congestion Management Plan
Performance Measures
(2013)

Prepared for:

2013 El Paso MPO Congestion Management Plan (CMP) Performance Measures.

Objective	Performance Measure
1a) Increase and improve bicycling options	Length of bike lanes per corridor mile (system)
	Number of buses with bike racks
	Number of transit facilities with bike parking facilities
1b) Increase and improve pedestrian facilities in the region	Length of sidewalks per corridor mile (system)
1c) Increase and improve transit system and facilities	System/route accessibility and expansion
	Construction of multimodal facilities
1d) Improve the reliability and efficiency of buses	Schedule adherence
1e) Continue ITS improvements in the region	Number of miles of highway and major arterial CMP network with traffic detectors, closed circuit television, and dynamic message sign coverage
2a) Identify, diagnose, and address highway bottlenecks and travel delays	Volume to capacity ratios and delays per link of Highway on CMP Network
2b) Reduce travel delays on major arterial roads for all alternative modes	Volume to capacity ratios and delays per link of major arterial roads on CMP Network
2c) Reduce travel delays at traffic signals	Intersection LOS at peak-hour
2d) Increase and improve the regional incident management program	Number of incidents on state highways, incident response time, incident resolution time
2e) Enhance border crossing road operations to improve facilitation of truck traffic	Average truck border crossing time
2f) Increase efforts to reduce crash rates and improve safety on the system	Number of accidents (e.g., fatalities or injuries) on state highways on the CMP Network (on street network if data available from police department)
2g) Enhance partnerships between regional transportation system providers	Regional incident management program participation
3a) Create and enhance shared ride programs in the region (e.g., carpools, vanpools)	Number of vehicles in vanpool/carpool programs
	Number of riders on vanpool/carpool program
3b) Promote transit options to citizens in the region	System/route accessibility–marketing programs developed and implemented
3c) Promote TDM programs in the region	Number of large employers in the region with official alternative work schedules (e.g., City of El Paso, UTEP)
4a) Improve connectivity between all modes in the system	Number of park and ride lots
	Number of transfer centers
4b) Improve border crossing activities for all users of the system (pedestrian, automobile, trucks)	Border wait times
	Number of pedestrians crossing the border

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 10-B:
Multimodal Level of Service Index Variables

Prepared for:

June 2018

Multimodal Level of Service Index Variables

Actual Multimodal Level of Service Index (MLSI) component at a transit stop *s* =

$$\alpha \times \sum_{r=1}^{R} \frac{P_{b,r,a,s}}{(Biking\ Impedence\ from\ the\ TAZ\ centroid\ r\ to\ the\ trant\ stop\ s)^{\theta}}$$

$$+\beta \times \sum_{l=1}^{L} \frac{P_{w,l,a,s}}{(Walking\ Impedence\ from\ the\ TAZ\ centroid\ l\ to\ the\ trant\ stop\ s)^{\mu}}$$

$$+\gamma \times \sum_{j=1}^{J} \frac{\sum_{r=1}^{R} Z_{b,r,a,s} + \sum_{l=1}^{L} Z_{w,l,a,s}}{(Impedence\ from\ transit\ stop\ i\ to\ stop\ j\ on\ a\ given\ transit\ route\ connecting\ s\ to\ j)^{\varphi}}$$

$$+\alpha \times \sum_{k=1}^{K} \frac{E_{b,k,a,j}}{(Biking\ Impedence\ from\ the\ transit\ stop\ j\ to\ TAZ\ centroid\ k)^{\lambda}}$$

$$+\beta \times \sum_{m=1}^{M} \frac{E_{w,m,a,j}}{(Walking\ Impedence\ from\ the\ transit\ stop\ j\ to\ TAZ\ centroid\ m)^{\rho}} \dots\dots\dots\dots\dots (1)$$

Ideal MLSI component at a transit stop *s* =

$$\alpha \times \sum_{r=1}^{R} \frac{P_{b,r,i,s}}{(Euclidean\ Impedence\ from\ the\ TAZ\ centroid\ r\ to\ the\ trant\ stop\ s)^{\theta}}$$

$$+\beta \times \sum_{l=1}^{L} \frac{P_{w,l,i,s}}{(Euclidean\ Impedence\ from\ the\ TAZ\ centroid\ l\ to\ the\ trant\ stop\ s)^{\mu}}$$

$$+\gamma \times \sum_{j=1}^{J} \frac{\sum_{r=1}^{R} Z_{b,r,i,s} + \sum_{l=1}^{L} Z_{w,l,i,s}}{(Euclidean\ from\ transit\ stop\ i\ to\ stop\ j\ on\ a\ given\ transit\ route\ connecting\ s\ to\ j)^{\varphi}}$$

$$+\alpha \times \sum_{k=1}^{K} \frac{E_{b,k,i,j}}{(Euclidean\ Impedence\ from\ the\ transit\ stop\ j\ to\ TAZ\ centroid\ k)^{\lambda}}$$

$$+\beta \times \sum_{m=1}^{M} \frac{E_{w,m,i,j}}{(Euclidean\ Impedence\ from\ the\ transit\ stop\ j\ to\ TAZ\ centroid\ m)^{\rho}} \dots\dots\dots\dots\dots (2)$$

MLSI =

$$\left(\frac{Actual\ multimodal\ score\ compontent}{Ideal\ multimodal\ score\ component}\right) \times 100 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Where,

$P_{b,r,a,s}$ = Population of TAZ (*r*) around a stop *s* accessible by bicycle (using bike network) for actual case.

$P_{w,l,a,s}$ = Population of TAZ (*l*) around a stop *s* accessible by walking (using sidewalks) for actual case.

$Z_{b,r,a,s}$ = Population or employment of TAZ (*r*) around a stop *s* accessible by biking (using bike network) for the actual case. (Population is used for morning trips [i.e., work-based trips] and employment for evening trips [i.e., home-based trips]).

$Z_{w,l,a,s}$ = Population or employment of TAZ (*l*) around a stop *s* accessible by walking (using sidewalks) for the actual case. (Population is used for morning trips [i.e., work-based trips] and employment for evening trips [i.e., home-based trips]).

$E_{b,k,a,j}$ = Employment of TAZ (*k*) around a stop *j* accessible by bicycle (using bike network) for actual case.

$E_{w,m,a,j}$ = Employment of TAZ (*m*) around a stop *j* accessible by walking (using sidewalks) for actual case.

$P_{b,r,i,s}$ = Population of TAZ (*r*) around a stop *s* accessible by bicycle (using Euclidean metric) for actual case.

$P_{w,l,i,s}$ = Population of TAZ (*l*) around a stop *s* accessible by walking (using Euclidean metric) for actual case.

$Z_{b,r,i,s}$ = Population or employment of TAZ (*r*) around a stop *s* accessible by biking (using bike network) for the ideal case. (Population is used for morning trips [i.e., work-based trips] and employment for evening trips [i.e., home-based trips]).

$Z_{w,l,i,s}$ = Population or employment of TAZ (*l*) around a stop *s* accessible by walking (using sidewalks) for the ideal case. (Population is used for morning trips [i.e., work-based trips] and employment for evening trips [i.e., home-based trips]).

$E_{b,k,i,j}$ = Employment of TAZ (*k*) around a stop *j* accessible by bicycle (using bike network) for ideal case.

$E_{w,m,i,j}$ = Employment of TAZ (*m*) around a stop *j* accessible by walking (using sidewalks) for ideal case.

R and *K* determined for bicycling by a defined threshold around a transit stop.

L and *M* determined for walking by a defined threshold around a transit stop.

J determined by maximum travel distance or travel time threshold around a transit stop for commuters.

α = weight attached with bicycling.

β = weight attached with walking.

γ = weight attached with transit use.

θ = Impedance decay parameter for bicycling from trip origin *to* a transit stop (obtained using calibration from travel demand data).

μ = Impedance decay parameter for walking from trip origin *to* a transit stop (obtained using calibration from trip travel demand data).

φ = Impedance decay parameter for transit use *from* an origin transit stop to a destination transit stop (obtained using calibration from trip travel demand data).

λ = Impedance decay parameter for bicycling to trip destination *from* a transit stop (obtained using calibration from trip travel demand data).

ρ = Impedance decay parameter for walking to trip destination *from* a transit stop (obtained using calibration from trip travel demand data).

Note: In the formulation presented above, the inconvenience caused due to transfers and waiting times can be adjusted within the impedance values used. Alternatively, adjustments in the weights for walking or bicycling can be made to reflect inconvenience caused by transfer and waiting times.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 10-C:

Multimodal Level of Service Index (MLSI) Pilot Project

Prepared for:

Texas A&M Transportation Institute

April 2018

Data Collection and Assessment, MLSI Pilot Project

INTRODUCTION

In this appendix a Multimodal Level of Service Index (MLSI) for a pilot multimodal project is developed virtually. The pilot project is described as well as how the multimodal methodology applies to the case study project. The MLSI is calculated and sensitivity analyses are performed on a few variables to determine if any particular variable has more effect on the MLSI value. The purpose of this pilot projects is to guide planners to collect the necessary data, estimate variables and parameters, and determine the MLSI in a desired area of El Paso region.

OPPORTUNITIES TO IMPROVE CONNECTIVITY WITHIN EXISTING DEVELOPMENT

Increasing connectivity within existing development is a bit more complicated, but several opportunities do exist to accomplish this. There are several utility easements and drainage or irrigation channels that may provide additional sidewalk and bike path connectivity to existing neighborhoods. One such example is seen in Figure 1. This 100ft wide easement is in west El Paso and it extends from 500 ft north of Redd Road to Brays Landing Drive, a total length of approximately 2.2 miles. Portions of this strip are easements and others are owned by El Paso Natural Gas Company[1].



Figure 1, Utility Easement in West El Paso

[1] PdnMapa Interactive Mapping, http://gis.elpasotexas.gov/pdnmapajs/

There are other easements and canals within the El Paso MPO region that provide opportunities to improve pedestrian and cyclist connectivity. Improved connectivity needs to be high priority with new land development and roadway projects to continue to improve multimodal transportation in the region.

DESCRIPTION OF PILOT PROJECT (PILOT PROJECT WITH IMPROVEMENTS AT THE ORIGIN)

The pilot project considers an addition of a multi-use path to the utility easement shown in Figure 1 in west El Paso. The trip considered for the MLSI formulation is the following:

1. Trip Origin = 1673 Hermit Thrush Place
2. Bus stop origin = Near intersection of Helen of Troy Drive and Nardo Goodman Drive
3. Bus stop destination = Near intersection of Sunland Park Drive and Cadiz Street
4. Trip Destination = 5930 Cromo Drive (Sonic Drive-In)

A pedestrian will start this multi-modal trip at 1673 Hermit Thursh Place. Then, the pedestrian will use the existing sidewalk infrastructure to get to the closest bus stop as seen on Figure 2.



Figure 2, Walk from Origin to Bus Stop Using Existing Infrastructure

The pedestrian will then board the bus at the bus stop near the intersection of Helen of Troy Drive and Nardo Goodman Drive. The pedestrian will need to use Sun Metro routes 19 and 14 to get to the destination bus stop near the intersection of Sunland Park Drive and Cadiz Street. The last leg of this multimodal trip is to walk from destination bus stop to trip destination at 5930 Cromo Drive, Sonic Drive-In, as shown in Figure 3.



Figure 3, Walk from Destination Bus Stop to Trip Destination Using Existing Infrastructure

APPLICATION OF MULTI-MODAL METHODOLOGY TO THE PILOT PROJECT

As detailed in a Chapter 8 of the report, the MLSI is made up of an actual and an ideal component. The following will detail the variable values used, including some of the reasoning behind it, for this multimodal pilot project.

Entire TAZ populations of the origin-destination matrix within the MPO Travel Demand model within the parameters of the analysis are used for entire region multimodal calculations. The population data was complemented with employment data from ESRI Business Analyst tool. Arbitrary, small numbers will be used for the pilot projects for population variables to simplify calculations and explanation of MLSI equation application. Since there are no bike lanes in the pilot project's vicinity, the variables related to cycling are removed from the equations.

It will be assumed that a total population of 200 commuters have access to the origin bus stop. These commuters use various modes of transportation to access various parts of the region. The ideal would be for all 200 of these commuters to be multi-modal commuters (walk and use transit). This makes the variable for population, P walking ideal, equal 200 commuters.

Within this total population of 200 commuters that has access to the origin bus stop, 30 commuters are employed within walking distance of the destination bus stop in this example. These commuters also use various modes of travel to reach their destination. The ideal would be for all 30 commuters to be multi-

modal commuters. This makes the variable for employment, E walking ideal, equal 30. Out of these 30 commuters, only 8 actually use transit. This makes the variable for employment, E walking actual, equal 8.

The variable Z in the multi-modal equation represents population for a morning trip and employment for an evening trip. It also represents the mode split between pedestrians and cyclists. In this pilot project example, the multi-modal calculation is being done for a single trip. This being the case, and since no cycling component is being considered, Z walking ideal = E walking ideal. The same applies to Z walking actual. Z walking actual = E walking actual = P walking actual.

The impedance variables of the equation represent the travel times. Figure 2 shows that the travel time from trip origin to origin bus stop for this example using the existing sidewalk infrastructure is 18 minutes; therefore, the variable impedance, IMP walking origin actual = 18 minutes. The ideal impedance is determined by the direct distance between trip origin and origin bus stop as also shown on Figure 2. The ideal path distance is 0.3 mi and at a pedestrian average speed of 3 mph, the ideal variable impedance becomes IMP walking origin ideal = 6.4 minutes. A similar exercise is done between the destination bus stop and trip destination as shown in Figure 3 This figure shows that the travel time from destination bus stop using the existing sidewalk infrastructure is 3 minutes; therefore, the variable impedance, IMP walking destination actual = 3 minutes. The ideal impedance is determined by the direct distance between destination bus stop and trip destination, 0.1 miles, at an average walking speed of 3 mph. The ideal variable impedance becomes IMP walking destination ideal = 2 minutes. Figure 4 shows the travel time for the transit route from origin bus stop to destination bus stop using the roadway infrastructure. The variable impedance for this portion of the trip is IMP transit actual = 35 min. The ideal impedance is determined by the direct distance between the origin bus stop and the destination bus stop, 4.2 miles, at an average speed of 35 mph. The ideal variable impedance becomes IMP transit ideal = 7.3 minutes. The variables and their values are summarized for the MLSI calculations for the existing conditions in

Table 1.



Figure 4, Transit Route from Origin Bus Stop to Destination Bus Stop

Table 1. Variables for MLSI Calculation for Existing Conditions

Variable	Value
P walking ideal	200 commuters
P walking actual	8 commuters
E walking ideal	30 commuters
E walking actual	8 commuters
Z walking ideal	30 commuters
Z walking actual	8 commuters
IMP walking origin actual	18 minutes
IMP walking origin ideal	6.4 minutes
IMP walking destination actual	3 minutes
IMP walking destination ideal	2 minutes
IMP transit actual	35 minutes
IMP transit ideal	7.3 minutes

As mentioned before, this pilot project consists of adding a multi-use path to the existing utility easement as shown in Figure 5. All the variables for the improvement remain the same as the existing conditions except for the new travel time between the trip origin and the origin bus stop. The new path is 0.4 miles. The variable impedance becomes IMP walking origin actual = 8 minutes for the improvement. This cuts the travel time 10 minutes from the original 18 minutes.



Figure 5, Walk from Origin to Bus Stop Using Improved Infrastructure

The variables and their values are summarized in for the MLSI calculations for the improved conditions in Table 2.

Table 2. Variables for MMS Calculation for Improved Conditions

Variable	Value
P walking ideal	200 commuters
P walking actual	8 commuters
E walking ideal	30 commuters
E walking actual	8 commuters
Z walking ideal	30 commuters
Z walking actual	8 commuters
IMP walking origin actual	8 minutes
IMP walking origin ideal	6.4 minutes
IMP walking destination actual	3 minutes
IMP walking destination ideal	2 minutes
IMP transit actual	35 minutes
IMP transit ideal	7.3 minutes

Calculation of Multimodal Level of Service Index

Using the variables from the previous section, the MLSI values are calculated for the existing and improved conditions. Table 3 shows that for existing conditions, MLSI equals 0.0812. MLSI equals 0.0832 for the improved conditions. These indexes are not very high because they are only a component or one trip of the overall MLSI value of a bus stop and all possible connections to the rest of the bus stops in the region. These indexes show that the MLSI may be increased by decreasing the travel time. Table 3 also shows that MLSI increases considerably if this improvement would generate an additional mode shift to transit from 8 to 15 commuters. The MLSI increases to 0.1559

Table 3. MLSI Calculations for Various Scenarios for Pilot Project

Scenario	P walking ideal	P walking actual	E walking ideal	E walking actual	MMS
Existing Conditions	200	8	30	8	0.0812
With Improvement	200	8	30	8	0.0832
With Improvement and additional mode shift	200	15	30	15	0.1559

CONCLUSIONS

The pilot project was used to demonstrate how to apply the MLSI formulation. A single trip analysis was used for the pilot project, as well as arbitrary (smaller) variables, were used to simplify the demonstration. Possible solutions to increase multimodal connectivity within existing communities are adding multiuse paths within existing utility easements and drainage or irrigation channels.

The pilot project shows the benefit of taking advantage of an existing utility easement to improve connectivity and reduce walking (or bicycling if applicable) travel time to transit. It also showed what the variables mean and provided context.

This approach of a single trip MLSI calculation should not be used to compare proposed multimodal projects because it is only one component of what should be an aggregate (regional average) index. The benefit of this MLSI methodology is that it shows the value of a multimodal improvement or group of improvements at a regional level.

El Paso County Regional Transit Institutional Options Feasibility Study

APPENDIX 11-A:
Report to El Paso County Commissioners Court
August 23, 2018

Prepared for:

Texas A&M Transportation Institute

August 2018

EL PASO COUNTY
REGIONAL TRANSIT STUDY

CSJ (0924-06-527)

FUNDING FROM TEXAS DEPARTMENT OF TRANSPORTATION

Report to El Paso County Commissioners Court

August 23, 2018

Study Purpose

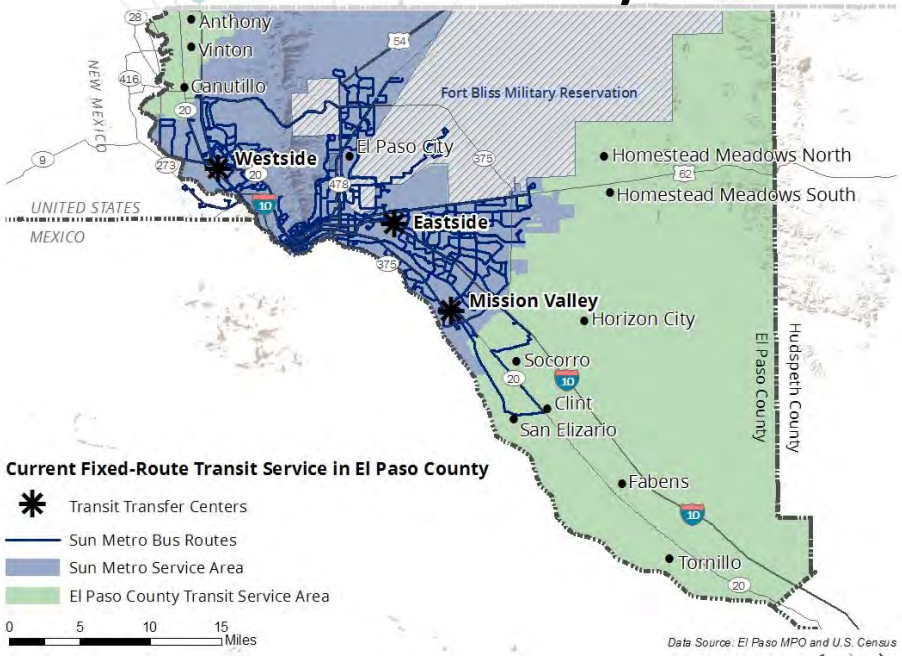
- Define options for a seamless, countywide transit system for all of El Paso County
- Assess economic impact of improved transit for access to jobs, education, medical, shopping, personal business
- Identify organizational options and potential funding sources

Presentation Overview

- Current transit services
- Need for countywide transit
- Scenarios for countywide transit
- Stakeholder and community discussion
- Impact for economy and transit users
- Sources of revenue and organizational options
- Implementation strategies

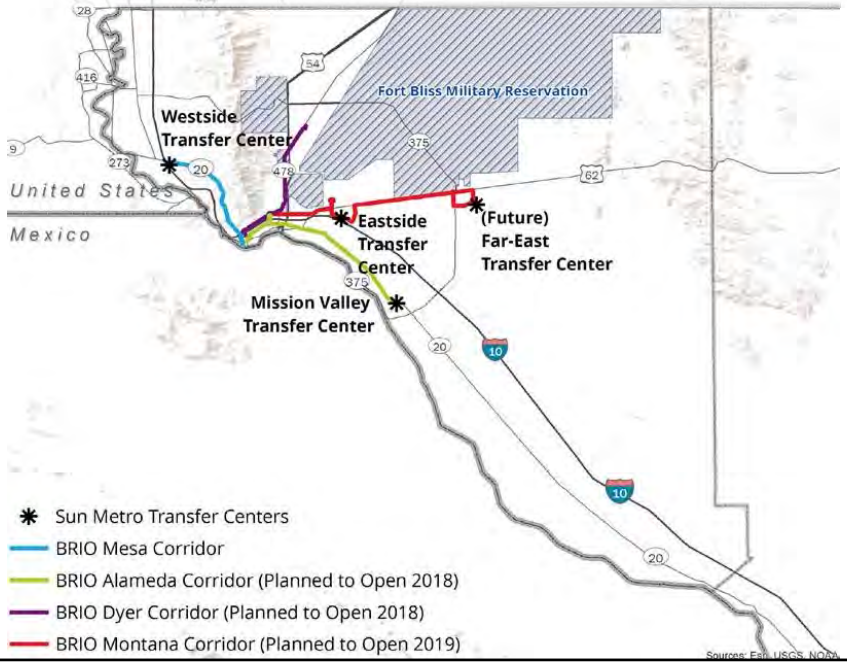
CURRENT TRANSIT SERVICES

Sun Metro and El Paso County Service Areas



5

Sun Metro BRIO Lines and Transfer Centers

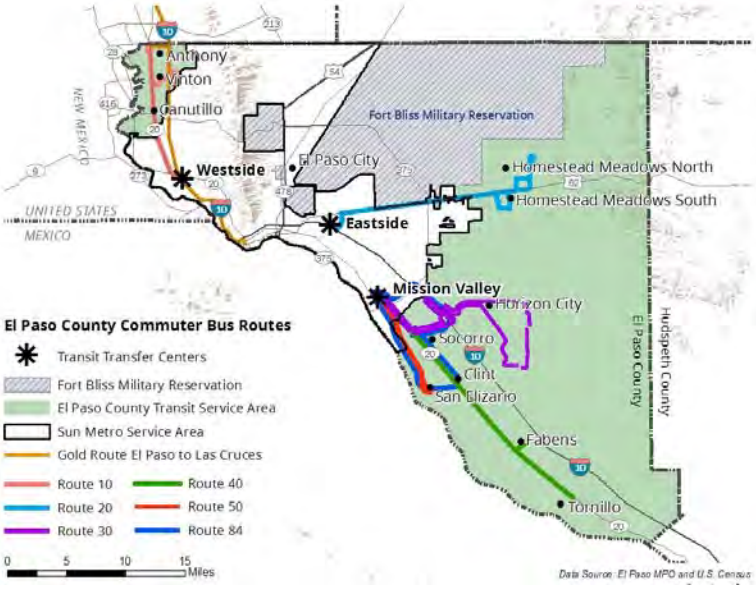


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Current Services
El Paso County Transit

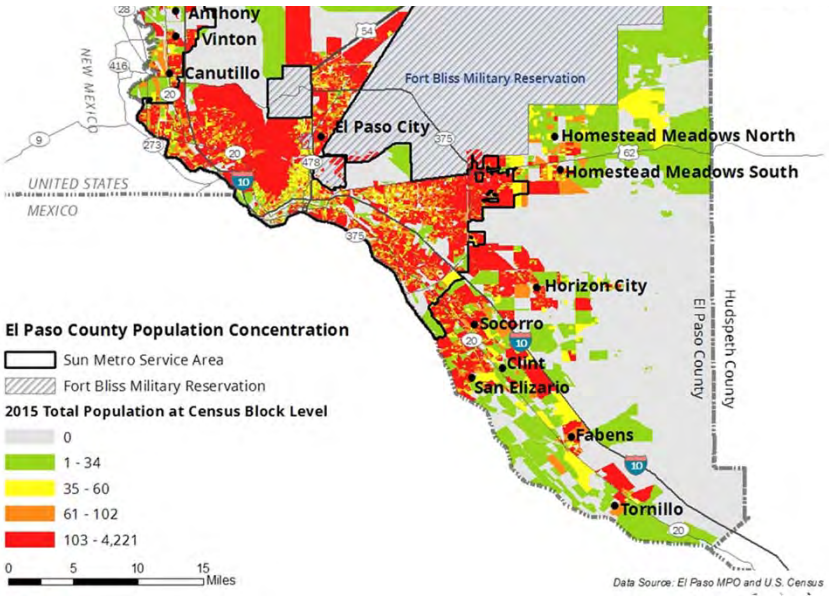
- **County Bus Routes:** Six scheduled, fixed-routes connecting urban and rural communities Sun Metro transfer centers
  - Routes 10, 20, 30, 40, and 50 by First Transit
  - Route 84 is operated by Sun Metro
- **Gold Route**: Intercity bus service that operates between Las Cruces and El Paso with stops in Anthony, Westside Transfer Center, and Downtown El Paso.
- **Vanpool:** Program that matches commuter groups with similar origins and destinations, provides vans, and offers incentive for lower commuting costs

El Paso County Transit Routes

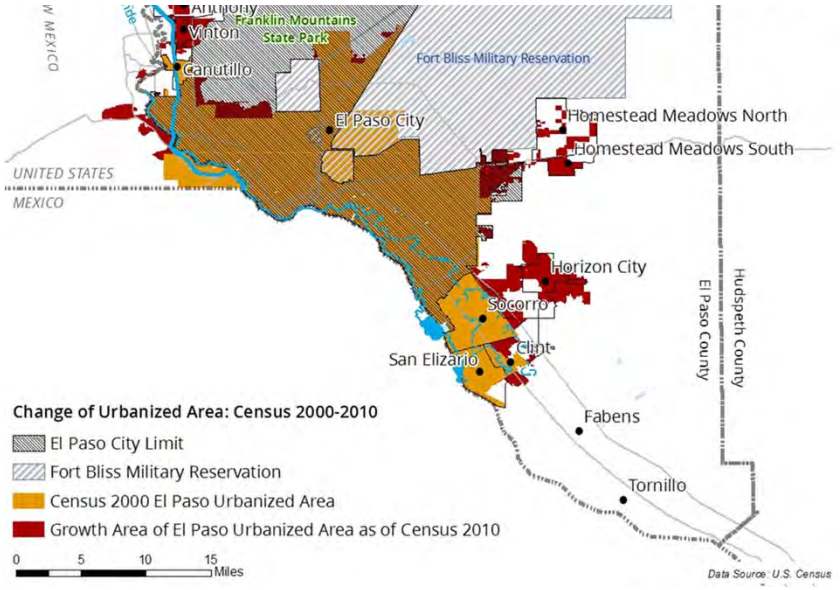


NEED FOR COUNTYWIDE TRANSIT

Population Concentration in El Paso County

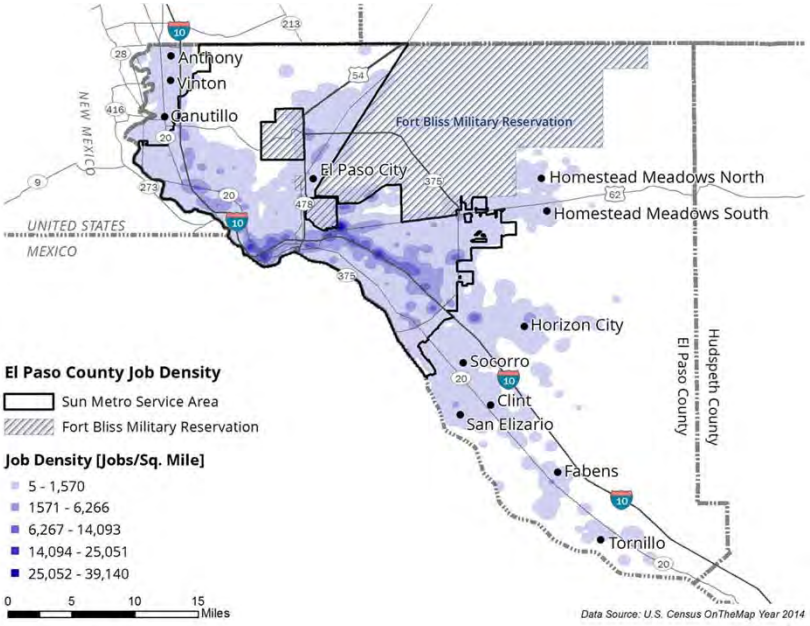


Urban Area Growth



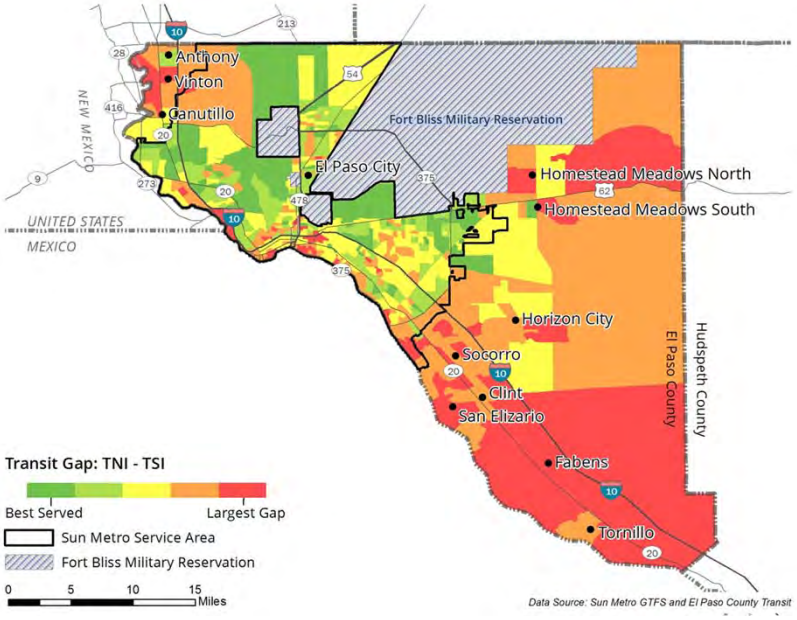
11

Job Density



12

Transit Gap: Transit Need – Transit Supply



El Paso County Transit Riders

Who are they?

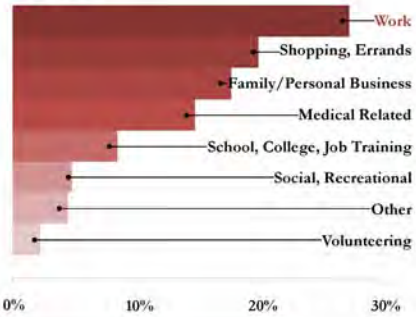
63% Without a Driver's License

48% Annual Income < $15K

29% No Access to a Vehicle

Where do they go?

Trip Purpose



75% Transfer to Sun Metro

74% Travel Long Distance

74% survey respondents travel to destinations outside their local community/area.

56% Transfer on County Routes

What is the necessity of transit?

59% Have no Independent Means of Travel

Over half of current survey respondents would have to ask a friend or family or would not travel if El Paso County Transit were not available.

83% Consider Transit Crucial to Quality-of-Life

42% consider transit "absolutely essential" and 41% consider transit of "high importance" to their quality-of-life.

SCENARIOS FOR COUNTYWIDE TRANSIT

Goals and Measures for Transit Service

Goal	Description	Measure
Rural Area Coverage	Provide transit service to all residents in the rural areas of El Paso County	Percent of rural population with transit access
Urban Area Coverage	Provide transit service to all residents in the urban areas of El Paso County	Percent of urbanized county population with transit access
Utility	Improve the utility of transit to serve many passenger trip purposes	Number of scheduled vehicle trips + demand-response revenue hours
Effectiveness	Improve the effectiveness of transit service	Passengers per revenue hour
Complement Sun Metro	Improve connections between El Paso County and Sun Metro transit service	Percent of routes serving non-downtown Sun Metro transfer centers and presence of pulsed-timed transfers

Types of Transit Services in the Scenarios

Current Service



Fixed Route Local Bus



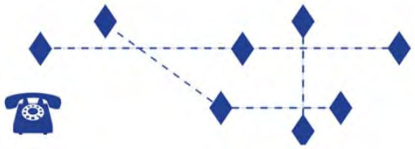
Americans with Disabilities Act (ADA) Paratransit



Flexible Route Local Bus



Dial-a-Ride (DAR)



Existing Gold Route Intercity Bus and Vamonos Vanpool do not change in the proposed scenarios.

Current Service

Description

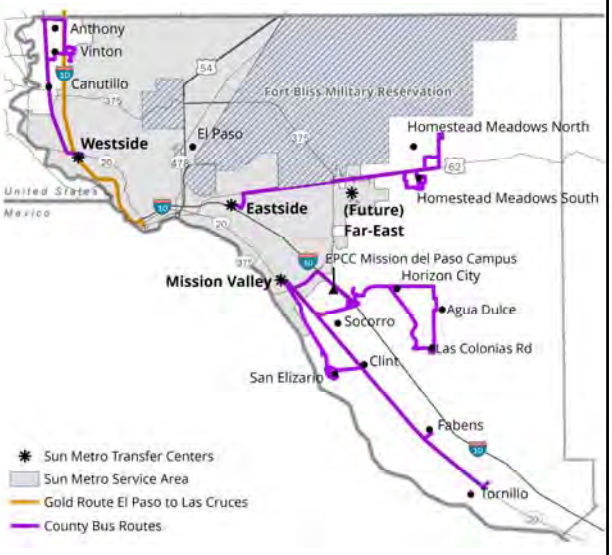
- Six county bus routes.
- Passengers get on the bus by flagging the bus driver.
- Several one-way loops.

Annual Cost

- Operating: $4.2 million
- Capital: $200,000

Performance Measures

- Annual passengers: 371,400
- Passengers per hour: 4.4
- Operating cost per passenger: $9.13
- Rural population with transit access: 53%
- Urban population with transit access: 59%



Scenario 1: Rural Dial-a-Ride

Description

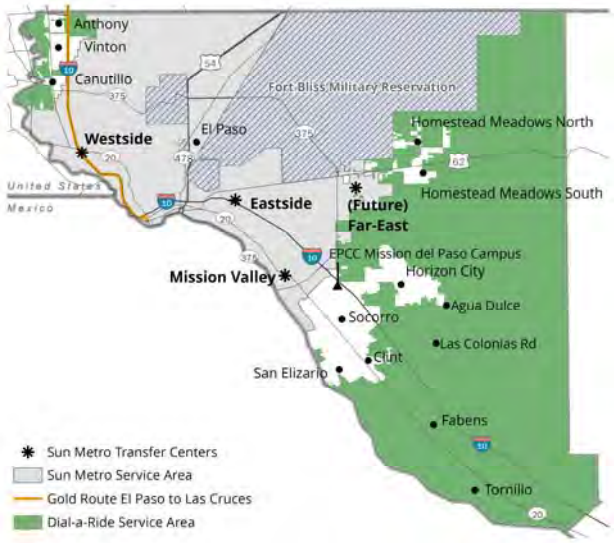
- Dial-a-Ride service throughout the rural county areas.
- Current El Paso County bus routes would be discontinued.
- Limits transit service to the rural areas and does not include urban areas.

Annual Cost

- Operating: $3.5 million
- Capital: $90,000

Performance Measures

- Annual passengers: 297,400
- Passengers per hour: 4.0
- Operating cost per passenger: $9.41
- Rural population with transit access: 100%
- Urban population with transit access: 0%



Scenario 2: Baseline Flexible-Route Local Bus

Description

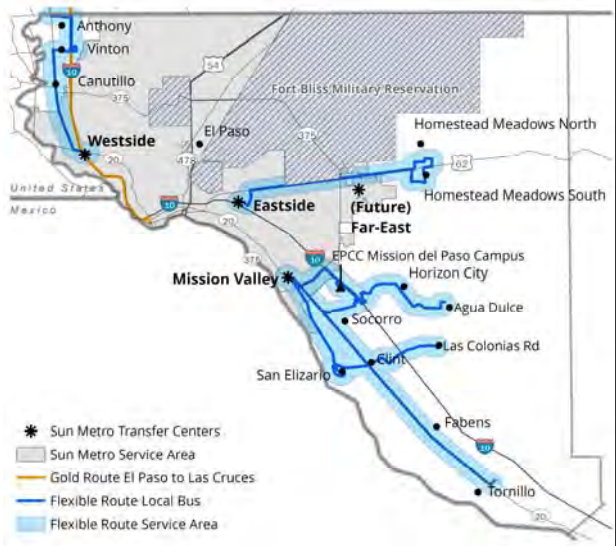
- Flexible-route local bus service to almost all currently served areas.
- Some changes in routing, frequency, or hours of service.
- Passengers can travel either direction on routes.

Annual Cost

- Operating: $4.6 million
- Capital: $480,000

Performance Measures

- Annual passengers: 442,400
- Passengers per hour: 4.9
- Operating cost per passenger: $8.18
- Rural population with transit access: 58%
- Urban population with transit access: 71%



Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride

Description

- Flexible-route bus to currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Dial-a-Ride in rural parts of the county.

Annual Cost

- Operating: $6.9 million
- Capital: $610,000

Performance Measures

- Annual passengers: 642,200
- Passengers per hour: 5.1
- Operating cost per passenger: $8.88
- Rural population with transit access: 100%
- Urban population with transit access: 71%



Scenario 4: Fixed-Route Local Bus and ADA Paratransit

Description

- Fixed-route bus service to currently served areas.
- Some changes in routing and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- ADA paratransit within ¾ mile of local fixed route

Annual Cost

- Operating: $6.4 million
- Capital: $610,000

Performance Measures

- Annual passengers: 549,500
- Passengers per hour: 4.7
- Operating cost per passenger: $9.61
- Rural population with transit access: 44%
- Urban population with transit access: 57%



Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride

Description

- Flexible-route bus service to currently served areas
- New routes, changes in routing, and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride in rural parts of county.

Annual Cost

- Operating: $7.7 million
- Capital: $880,000

Performance Measures

- Annual passengers: 794,500
- Passengers per hour: 5.8
- Operating cost per passenger: $7.89
- Rural population with transit access: 100%
- Urban population with transit access: 84%



STAKEHOLDER AND COMMUNITY DISCUSSION

Stakeholder Committee

- Area Agency on Aging
- Camino Real Regional Mobility Authority
- City of Anthony, NM
- City of El Paso Mass Transit (Sun Metro)
- City of San Elizario
- City of Socorro
- City of Sunland Park, New Mexico
- Dona Ana County, New Mexico
- El Paso County Transit
- Far West Texas/El Paso Regional Transportation Coordination Committee
- El Paso Metropolitan Planning Organization
- Project Amistad
- Rio Grande Council of Governments
- South Central Regional Transit District, NM
- Town of Anthony
- Town of Clint
- Town of Horizon City
- Texas Department of Transportation
- University of Texas – El Paso
- Village of Vinton
- Volar Center for Independent Living
- Workforce Solutions Borderplex
- Ysleta Del Sur Pueblo

Community Meetings

December 2017

- Fabens
- Montana Vista/Homestead Meadows
- Vinton/Westway
- Socorro



Pop-up Meetings

- Sun Metro Westside Transfer Center
- Sun Metro Eastside Transfer Center
- Sun Metro Mission Valley Transfer Center
- El Paso Community College, Northwest Campus
- El Paso Community College, Rio Grande Campus



Community Feedback

- Prefer Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride
- Communities in south El Paso County prefer Scenario 5: Increased Flexible-Route Local Bus and Rural Dial-a-Ride
- Concerns about gaps in service in urban areas beyond ¾-mile of the flexible routes in Scenario 3 and Scenario 5
- Expanded service hours were well received
- Service on Saturdays and Sundays is important
- Need further public involvement opportunities to discuss actual routes and bus stop locations are made

Scenario 6: Increased Flexible-Route Local Bus and Rural/Urban Dial-a-Ride

Description

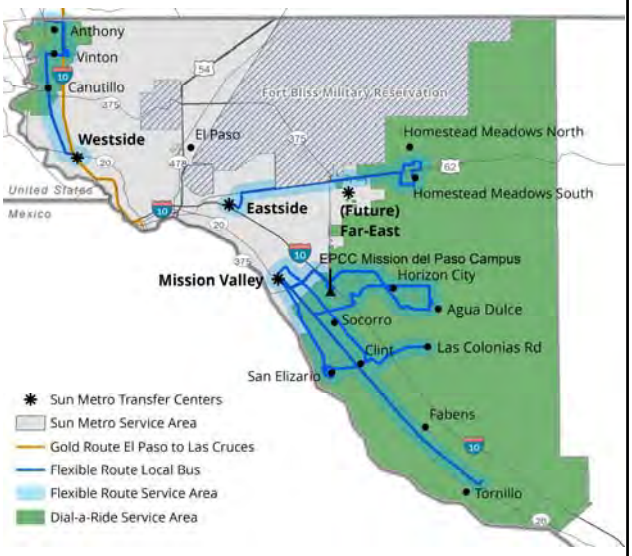
- Flexible-route bus service to currently served areas
- New routes, changes in routing, and improvements in frequency and hours of service.
- Passengers can travel either direction on routes.
- Improved transfers.
- Dial-a-Ride beyond flexible routes, rural and urban areas.

Annual Cost

- Operating: $8.0 million
- Capital: $910,000

Performance Measures

- Annual passengers: 806,700
- Passengers per hour: 5.7
- Operating cost per passenger: $8.09
- Rural population with transit access: 100%
- Urban population with transit access: 100%



Transit Service Scenarios – Performance Measures

Scenario	Rural Area Coverage	Urban Area Coverage	Utility	Effectiveness	Complement Sun Metro	Ops Cost Estimate
Current Service	○	◑	○	○	◑	$$
#1 – Rural DAR	●	○	○	○	○	$$
#2 – Baseline Flexible Route	◑	●	◑	◑	◑	$$
#3 – Flexible Route + DAR	●	●	●	◑	●	$$$
#4 – Fixed Route + ADA	○	◑	◑	◑	●	$$$
#5 – Enhanced Flexible Route + Rural DAR	●	●	●	●	●	$$$$
#6 – Enhanced Flexible Route + Urban/Rural DAR	●	●	●	●	●	$$$$

IMPACT FOR ECONOMY AND TRANSIT USERS

Approach to Economic Impact Analysis

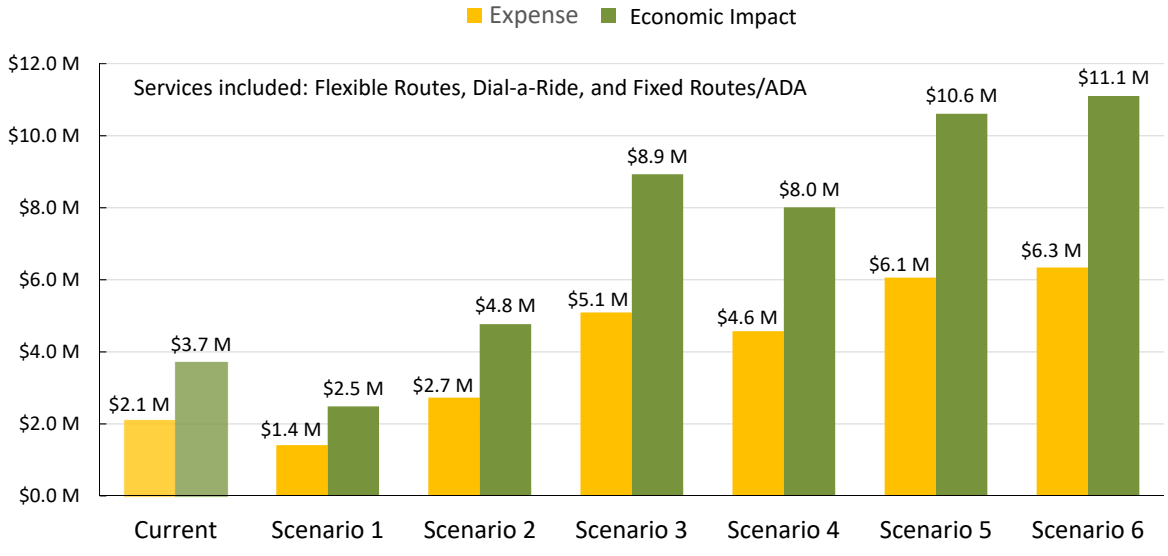
- Transit supply - Impacts of additional operating and capital expenses in terms of employment and value added to the local economy
  - Direct effects
  - Indirect effects
  - Induced effects
- Transit user benefits - Economic benefits of different types of new trips using an improved countywide transit system
  - Transportation cost savings
  - Low-cost mobility benefits

Assumptions for Transit Supply Economic Impact

- Economic impact applies to new services
  - Flexible routes
  - Dial-a-ride
  - Fixed routes/ADA paratransit

  Excludes Gold Route and Vanpool because the same in each scenario
- Transit supply is based on operating expenses and amortized annual capital, excluding transit vehicles (because vehicles are not manufactured locally)

Transit Supply Economic Impact by Scenario

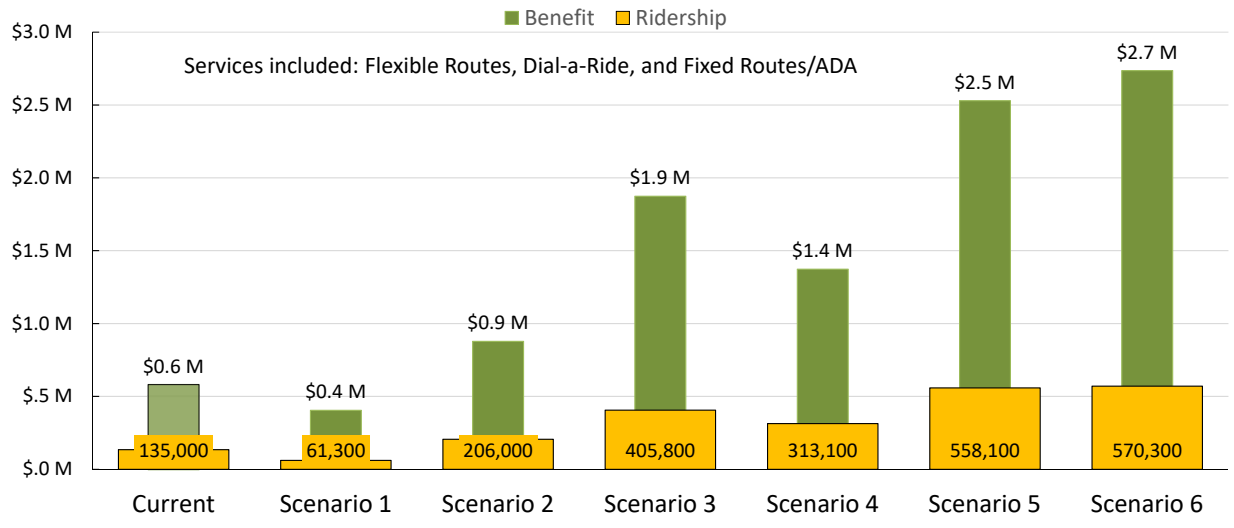


Assumptions for Transit User Benefits

- Transit user benefits applies to transit riders using these services
  - Flexible routes
  - Dial-a-ride
  - Fixed routes/ADA paratransit

  Excludes Gold Route and Vanpool because the same in each scenario
- Transit user benefits looks at the transportation cost savings and the economic benefit of the opportunities that transit provides for employment, medical, and other types of trip purposes

Transit User Benefit by Scenario



SOURCES OF REVENUE AND ORGANIZATIONAL OPTIONS

Sources of Funds for Public Transit

- Federal Transit Administration
  - Urban
  - Rural
- Federal Highway Administration
  - Congestion Mitigation and Air Quality (CMAQ)
  - Flexible Funds
- State of Texas
  - Rural Public Transportation Fund
  - Transportation Development Credits
- State of New Mexico
  - Intercity Bus (Gold Route)
- Transit Generated Funds
  - Passenger Fares
  - Advertising/Concessions
  - Revenues for Contracted Services
- Local Funds
  - Sales Tax Dedicated to Transit
  - Local Sales Tax
  - County General Revenue
  - City General Revenue
  - Non-DOT Federal Funds, for example Community Development Block Grants
  - Contributed Services

Organizational Options for Countywide Transit in El Paso County

- County Mass Transit Authority
  - Transportation Code Chapter 457
- Regional Mobility Authority (RMA)
  - Transportation Code Chapter 370
- Interlocal Agreement (ILA)
  - Government Code Chapter 791
- Local Government Corporation (LGC)
  - Transportation Code Chapter 431

Possible Alternatives for Local Funds Countywide Transit in El Paso County

- County Mass Transit Authority
  - Sales Tax Dedicated to Transit
- Regional Mobility Authority
  - Vehicle Registration Fees
  - Other Sources of Revenue within RMA Portfolio
- Interlocal Agreement
  - Local Government General Fund or Other Local Revenue
- Local Government Corporation
  - Local Government General Fund or Other Local Revenue

County Mass Transit Authority Not Feasible

Under current state statutes, an El Paso County Mass Transit Authority requires a 0.5% countywide sales tax dedicated to transit. Such a sales tax is not feasible. The combined rates of all sales and use taxes imposed by the taxing authority and all local political subdivisions cannot exceed two percent.

Jurisdiction	El Paso County (EPC)	EPC Emergency District 2	City	Transit	Total Local
City of El Paso	0.5%		1.0%	0.5%	2.0%
El Paso County	0.5%	0.5%			1.0%
Anthony	0.5%	0.5%	1.0%		**2.0%**
Borderland	0.5%	0.5%			1.0%
Canutillo	0.5%	0.5%			1.0%
Clint	0.5%	0.5%	1.0%		**2.0%**
Fabens	0.5%	0.5%			1.0%
Horizon City	0.5%		1.5%		**2.0%**
San Elizario	0.5%	0.5%	1.0%		**2.0%**
Socorro	0.5%	0.5%	1.0%		**2.0%**
Tornillo	0.5%	0.5%			1.0%
Vinton	0.5%	0.5%	1.0%		**2.0%**
Westway	0.5%	0.5%			1.0%

Regional Mobility Authority (RMA)

- Possible funding options
  - Vehicle registration fee or other sources of revenue within RMA portfolio
- Transfer of a transit system to the RMA is addressed under Transportation Code Chapter 370.361
  - City of El Paso Municipal Transit Department (Sun Metro), created under Transportation Code Chapter 453
  - El Paso County Rural Transit District under Transportation Code Chapter 458
- Example
  - No current example of RMA as the regional transit provider
  - RMAs have funded transit projects from toll revenues and served in the project management role

Interlocal Agreement(s) (ILA)

- Possible funding options
  - Local government general revenue contributions
  - Contributed services
  - Any non-U.S. Department of Transportation source of federal funds
- Benefits of ILA
  - Ease of implementation
- Example
  - Sun Metro and El Paso County Transit currently have an ILA for Route 84
  - Capital Metro (Austin) service in Georgetown and in Round Rock (cities outside the regional transit authority's service area)

Local Government Corporation (LGC)

- Similar to ILA with additional steps
  - Local government(s) adopt a resolution supporting formation of LGC
  - Secretary of State of Texas approves the LGC and issues a certificate of incorporation
  - The LGC names a board of directors and adopts bylaws to guide its operation and governance
- Benefits of creating an LGC
  - By creating a separate corporation, the LGC limits financial risk of participating local government(s)
  - Participating local governments are protected against lawsuits or claims that may be brought against the LGC
  - The LGC can focus on specific goals and objectives
- Example
  - DART created an LGC to implement service beyond the authority's service area as feeder to rail and then entered into an ILA with City of Mesquite and Star Transit (rural transit) to operate the service

IMPLEMENTATION STRATEGY

Next Steps

- Confirm interest in coordination for countywide transit with local governments
- Define the goals, objectives, and scope of countywide transit
- Evaluate organizational options, decide best approach
- Determine feasible approach to funding
- Request approval of governing bodies

Before implementing new services

- Public engagement to confirm specifics for route alignments, location of bus stops, and schedules