INTERNAL USE ONLY	
Date Approved:	11/20/2023

JH

BUDGET AND FISCAL POLICY DEPARTMENT
GRANTS ADMINISTRATION DIVISION

FY23 GRANT APPLICATION SUBMISSION APPROVAL FORM

DEPARTMENT INFORMATION	
Date:	11/ 17/ 2023
Requesting Department/ Division:	Planning & Development
Department/ Division Contact:	Reyna Mayorga, Transportation Planner, rmayorga@epcounty.com
Anticipated Commissioners Court Meeting Grant Approval Date:	**December 11, 2023**
Who from your department/ division will speak on the agenda item?	Reyna Mayorga, Transportation Planner
Please list accompanying grant documents requiring the Authorized Official's signature.	Obligation Certification via (IGX)

GRANT OPPORTUNITY INFORMATION	
Grant Opportunity Title (as provided by Grantor):	Rural Service Expansion Grant
Grantor Agency:	Texas Department of Transportation (TxDOT)
Type of Grant (State, Federal, Private, Local, Other):	State
Is this a continuation grant for an existing program?	No
CobbleStone Number for Most Recent Grant Award:	N/ A
Grant Due Date:	December 15, 2023
Grant Period:	September 1, 2024 through August 31, 2025
Grant Proposal Summary (one paragraph or less):	Through several studies conducted in partnership with the Texas A&M Transportation Institute (TTI) for the El Paso County Transit System, EPC plans to implement improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", which include current fixed-route re-alignments, increase in hours of service (earlier start times,

	later stop times), adding Sunday Service to Routes, as well as adding new routes to the existing transit system.

GRANT FINANCES	
A. Grant Funding to be Requested:	$162,098
B. Total Match Contribution (if applicable):	$108,065
I. Cash Match Amount and Description (i.e. County employee salaries, anticipated operating expenses, third-party monetary donations, etc.):	
a. Match Source Account(s) (if applicable):	Match request will be budgeted for FY25
b. What fiscal year(s) will County match funding be needed? Please indicate the fiscal years and the match needed per fiscal year.	FY25
II. In-kind Match Amount and Description (i.e. donated supplies/ equipment, volunteer hours, donated professional services, etc.):	
C. Anticipated Program Income (if applicable):	
D. Total Project Amount (A + B + C):	$270,163

FINANCIAL ASSESSMENT
1) What are the staffing requirements or needs for this grant? Please include salary and benefit amounts and anticipated salary and benefit increases for multi-year grants.
N/A
2) Has this grant has been awarded in the past? If so, please provide the financial results of the most recently completed grant award cycle to include the award amount and the balance at the closing of the grant.

No.

3) What is the sustainability plan for this grant and the services being provided if this funding is significantly reduced or is not awarded in future?

The El Paso County Planning & Development, Transportation Planning & Engineering (TP&E) Division would seek other funding opportunities.

PROGRAMMATIC ASSESSMENT

1) Is this grant and its purpose(s) aligned with the County strategic plan? How will this grant benefit your department/ division and the El Paso County community?

Yes; EPC continues to implement transit services improvements to close transit service gaps as identified in previous transit studies.

2) Please explain the capacity of your department/ division to administer this grant and complete all programmatic reporting requirements during the grant period.

Planning & Development Department – Transportation Planning & Engineering Division

3) Will this grant require the use of contractual services? *If so, please contact the Purchasing Department, upon award acceptance to ensure your department follows applicable procurement policies and procedures.*

No.

Applicant Information

Application Instructions: Application Instructions

Agency Name: *El Paso, County of*

Person to be contacted regarding **this** application

First Name * *Reyna*
Last Name * *Mayorga*
Email Address * *rmayorga@epcounty.com*
Phone Number * *(915) 273-3330*

By checking this box, you are indicating that the service profile for this organization is accurate. * *[X]*

Project Summary

1. Project Service Area, enter the percentage of each * Rural: *62* %
   Urban: *38* %
   State Planning Region * *8*
   What is the project name? * *El Paso County Transit Improvements*
2. Provide a summary of the proposed project for which the funds will be used. *

   Through several studies conducted in partnership with the Texas A&M Transportation Institute (TTI) for the El Paso County Transit System, EPC plans to implement improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", which include current fixed-route re-alignments, increase in hours of service (earlier start times, later stop times), adding Sunday Service to Routes, as well as adding newroutes to the existing transit system.
3. The Texas Transportation Commission has established the Strategic Plan. Demonstrate to what extent the project responds to one or more of the Strategic Plan goals. *

   EPC believes that implementing the proposed improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations" could cover several of the strategic goals as outlined in the Texas Transportation Commission, however, both Strategic Goal 2: Focus on the Customer and Strategic Goal 4: Optimize System Performance. Re-aligning current routes, adding more service hours (including Sundays), and adding newroutes, focuses on our customers and their needs in public transportation. As EPC continues to growand develop, it's imperative that EPCT makes the necessary changes to the transit system so that transit gaps are closed and people are able to access the services; thus we continue to strive to proved reliable and accessible mobility to rural El Paso County.
4. Identify project partners and describe what each partner will do for the project.

Partner Name	Description of Activity
N/A	*N/A*

5. Certification of Non-Profit Status
   If applying as a non-profit organization, attach documentation to certify nonprofit status.
   Accepted documentation:

   1. Proof that the Internal Revenue Service currently recognizes the applicant as an organization to which contributions are tax deductible under section 501(c)(3) of the Internal Revenue Code;
   2. A statement from a State taxing body or State Attorney General certifying that:
      a. The organization is a non-profit organization operating withing the State; and
      b. No part of its net earnings may lawfully benefit any private shareholder or individual;
   3. A certified copy of the applicant's certificate of incorporation or similar document if it clearly establishes the non-profit status of the applicant; or
   4. Any item described above if that item applies to a State or national parent organization, together with a statement by the State or parent organization that the applicant is a non-profit affiliate.

   Certification of Non-Profit Status

General Project Evaluation

Demonstrated Need and Project Description

1. Describe the specific need for the project: what service gaps, performance gaps, or unmet needs will be filled by the proposed project? For each gap or unmet need, provide convincing data to demonstrate why the project is needed. *
Through several studies conducted in partnership with the Texas A&M Transportation Institute (TTI) for the El Paso County Transit System, EPC plans to implement improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", which include current fixed-route re-alignments, increase in hours of service (earlier start times, later stop times), adding Sunday Service to Routes, as well as adding newroutes to the existing transit system. Due to the study results from TO10 indicating there are transit service gaps EPC believes there is a need to continue to strive to make improvements to the system to close these gaps, and provide more access to the developing communities in rural El Paso County.

2. Provide a detailed project description and describe how the project addresses the demonstrated need. *
EPC will followthe proposed recommendations for transit improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", which include current fixed-route re-alignments, increase in hours of service (earlier start times, later stop times), adding Sunday Service to Routes, as well as adding newroutes to the existing transit system. (It should be noted that since the publication of TO10, EPC has made some changes as outlined by the study, but has still yet to make all the proposed improvements)

3. Provide clear and concise project goals and describe the associated objectives of each goal.

Project Goals	Associated Objectives
-Followthe recommendations for transit improvements as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations"	*-Implementation of a re-alignment, newroute, and/or more service hours/days*

4. Describe specific project tasks and deliverables to achieve the objectives identified above. *

Objectives	Tasks	Deliverables
-Implement proposed transit improvements of route re-alignment, newroute(s), increased service hours and/or days	*-EPC will work with the transit provider to time changes -EPC will notify public of transit improvements -EPC will launch transit improvements*	*-Chosen transit improvements are implemented and changes have been made to the system*

5. Describe how this project meets the scope and objectives of the grant program and how it correlates to priorities outlined in this call for projects *
As EPC plans to implement the proposed changes as outlined in Task Order 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", this is directly in line with the grant program to expand service to unserved and underserved areas.

6. Identify the goals, objectives and/or priorities in the area's most recent five-year public transportation/human services transportation plan that relate to the need for the project. *

Five-year plan goal, priority, or objective	How the project relates
Goal III of the five-year public transportation/human services plan indicates "Fill gaps in service through identification and assessment of changing mobility needs, increased efficiencies, funding opportunities, and newtechnologies".	*EPC has actively been conducting studies since the first Regional Feasibility study began in 2017 to look at its system and find where service gaps exist and howto close those gaps with transit service improvements. This funding would be used to continue to aid in th e implementation of proposed transit improvements, thus closing service gaps identified.*

7. Describe how the project supports regional multi-use or multi-modal opportunities.*
Enhancing connectivity: Align bus routes and schedules to improve connectivity between different transportation modes, facilitating seamless travel for passengers.
Ensure integration with other modes such as cycling and walking, promoting a cohesive and accessible regional transportation network.
Last-Mile Connectivity: Address last-mile connectivity issues by implementing recommendations that help passengers reach their final destinations from transit hubs.
The proposed improvements can lead to the introduction of solutions like bike-sharing programs or ride-sharing partnerships to enhance last-mile connectivity and encourage multi-modal travel.
Technology Integration: Integrate technology solutions as recommended in the study to provide real-time information on transit schedules and connections. Utilize mobile apps and digital platforms to simplify trip planning, promote multi-modal options, and enhance the overall user experience.

8. Describe how the project integrates and coordinates between different public and /or private providers to expand options or maximize performance in rural areas of the state. *
The project aims to enhance rural transportation in Texas by fostering collaboration between public and private providers. Through partnerships, coordination of services, and technology integration, the project seeks to streamline transit options, allowing for seamless connectivity between different modes of transportation. Integrated ticketing, community engagement, and flexible service design are key components, ensuring that the transit network is responsive to the unique needs of rural communities. By sharing resources, leveraging public-private partnerships, and aligning with supportive policies, the project aims to maximize the efficiency and performance of the integrated transit system, offering expanded options for residents in rural areas

Project Implementation

1. Identify benchmarks or milestones that will be used to determine if the project is on track to be completed on time, within scope, and on budget. *
Since EPC has an outline/plan to followfor proposed transit improvements already in place, benchmarks/milestones will be to meet with the transit provider to prepare for the changes/improvements, public outreach and notification of the change(s), and then implementation of those changes.

2. Describe risk mitigation strategies that will be used to keep the project on schedule and within the scope and budget. *
To ensure the project stays on schedule, within scope, and within budget, robust risk mitigation strategies will be implemented. First, a thorough risk assessment will identify potential challenges, such as unexpected construction delays, funding fluctuations, or community resistance. A contingency fund will be established to address unforeseen expenses, minimizing the impact on the overall budget. Regular project monitoring and status reports will allowfor early identification of any deviations from the schedule or scope, enabling timely corrective actions. Additionally, open communication channels will be maintained with stakeholders, fostering collaboration and addressing concerns promptly to prevent scope creep. Lastly, a project management team will conduct periodic reviews to assess progress against milestones, facilitating proactive adjustments to ensure the project's successful completion within the defined parameters.

3. Describe any other fund sources that will be used to plan, initiate, implement, or sustain the project/service. *
EPC will use section 5311 funding and local contribution funds to continue to maintain any implemented service changes.

4. Describe how the project's benefit value to the community will be evaluated. *

The project's benefit value to the community will be comprehensively evaluated through a multi-faceted approach. Key performance indicators, including ridership growth, accessibility improvements, and customer satisfaction metrics, will be continuously monitored. Surveys and community feedback mechanisms will gather qualitative data to assess the perceived impact on residents' lives and transportation experiences.

5. How will this project impact your performance or the fulfillment of your services?
EPCT as a service provider, the successful implementation of this transit expansion project will significantly impact EPCTs performance and the fulfillment of services. Achievement of project objectives, such as enhanced connectivity, increased ridership, and improved service quality, will reflect positively on EPCs ability to lead and execute complex initiatives. Meeting the community's transportation needs through effective coordination with various stakeholders will showcase EPCs capacity to navigate diverse challenges. Furthermore, the project's success will strengthen EPCTs reputation for delivering impactful solutions, contributing to professional growth and fostering continued opportunities to contribute to meaningful regional development initiatives.

Roles and Responsibilities of Stakeholders

Examples of local stakeholders can include, but are not limited to, the following: *local businesses, workforce agencies, human service agencies, city officials, county officials, riders or the general public.*

1. Describe what groups/entities (stakeholders) were consulted or assisted in the development of this specific project. Describe how they participated in the project development. *
As outlined in TO 10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations", several discussions with existing and potential EPCT riders and stakeholders, including educational institutions and other community organizations, were held to identify advantages and disadvantages of proposed systemwide scenarios (from previous initial study in 2017).

2. Identify specific stakeholders who will actively participate in proposed project activities. Describe the specific activities in which they will be involved and their roles. *
EPCRT will continue working with the public involvement strategies used in previous studies and with the regional stakeholder advisory committee created in 2017 and involved in all previous EPCRT studies. The following stakeholders will have an active role during the development of the implementation plan. Their main role will be providing feedback at every stage of the project and assisting in the decision-making process.
Texas Department of Transportation (TxDOT)
El Paso County - Public Works Dept., Planning & Development Dept., and County Commissioners Court
City of El Paso/Sun Metro (Urban Transit System)
El Paso Metropolitan Planning Organization (EPMPO)
Project Amistad - Lead Agency for Transportation Coordination/ WTEP
Far West Texas/El Paso Regional Transportation Coordination Committee (WTEP)

Additionally, current authorities and representatives of the stakeholder group belowwill be engaged during the implementation plan:
City of Anthony
City of Clint
Horizon City
City of San Elizario
City of Socorro
City of Sunland Park, NM
Village of Vinton
Ysleta del Sur Pueblo

Other public and private agencies could also be involved during different stages of the implementation plan depending on the project task's goals and objectives.

3. Describe how the agency has or will coordinate with the Regionally Coordinated Transportation Planning lead agency or agencies in the project area. *
EPCRT staff will coordinate with public and private transportation planning entities as well as state, regional, and local government agencies. In summary, EPCRT will coordinate efforts with stakeholder group individuals who have a vested interest in the outcome of the study (e.g., elected officials, and individuals that advocate for users of the system, special interest groups).

Experience and Capacity

1. Describe qualifications the agency has for management and oversight for a project of this type, size, and scope. *

The El Paso County Planning & Development Department – Transportation Planning & Engineering Division is highly qualified to successfully complete the project on time and within budget. The TP&E Division has a combined 15+ years of experience in Public Works/Planning & Development and specifically, has expertise in rural infrastructure planning, development, design, permitting, NEPA review, and construction management that are often seen in its proposed transit improvement projects. Within the past five years, El Paso County has completed numerous planning studies to include "The El Paso Regional Transit Institutional Options Feasibility Study", the "Airport Business Development Plan", the "Master Thoroughfare Plan", and Task Orders (TOs) 9&10 "Developing Guidelines and Best Practices for Bus Shelter Locations Along El Paso County Rural Transit Routes" & "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations". If awarded this study will be overseen by the TP&E division of the County and technical assistance will be sought for the development, data analysis, and completion of this study.

2. Identify project staff who will contribute to the project. Describe their roles, responsibilities, and qualifications. *
Reyna Mayorga, Associate Transportation Planner will oversee the project and will be the lead Project Manager (PM) of the proposed project.
Overall, the TP&E Division will oversee the project from start to finish and all members have the qualifications and experience needed to complete the proposed project. If awarded this study will be overseen by the TP&E division of the County and technical assistance will be sought for the development, data analysis, and completion of this study.
The Grants Management Unit of the County Auditor's office will be responsible for managing project grant funds and their proper accounting, expenditure documentation, and reporting.

3. If a consultant will contribute to the project, describe the type of services they will provide. If a consultant is presently secured, describe their prior experience with similar projects. *
No consultants will be needed for the implementation of the proposed transit improvements as outlined in TO10 "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations".
Note: *When consultant services are used, TxDOT must ensure all federal and state procurement processes are/have been followed. TxDOT usually oversees each phase of the procurement process.*

Project Evaluation

1. Describe how the agency, including any partners, intends to evaluate the overall success of the project. Include information on the evaluation of this project at major milestones or stages and identify specific areas to measure. *
The agency, in collaboration with partners, will evaluate the overall success of the project through a systematic and phased approach. Major milestones and stages will be assessed at regular intervals, incorporating key performance indicators such as ridership growth, on-time performance, and customer satisfaction. The effectiveness of enhanced connectivity and seamless multi-modal options will be measured, emphasizing improvements in accessibility and reduced wait times.
Attach originally developed letters of commitment from stakeholders who will *provide resources* for this specific project.

Attach originally developed letters of support from stakeholders that are endorsing the proposed project.

Upload other attachments, as appropriate.

Task Order 10 (TO10) "Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations"	*Best Practices and Guidelines for EPC Rural Public Transportation to Identify Potential Stop Locations and Route Configurations (TO10) Final Report Updated July 2021.pdf*

Facilities Specific Evaluation

Will this project involve construction, alteration, repair, or purchase of buildings, structures, or other real property? *

Yes *[X]* No

$
$
$ $
$ $ $

Obligation Certification

As an authorized official of the *El Paso, County of*
I certify to the following:

1. The information presented in the application is true and accurate to the best of my knowledge.
2. I have not intentionally made any misstatements or misrepresented the facts.
3. The organization has the resources and technical capacity to support the project.
4. The organization has the resources and technical capacity to provide the required match.
5. The organization uses generally accepted accounting standards for its financial recordkeeping functions.
6. The organization will participate in a continuous, comprehensive dialogue throughout the life of the project. This includes but is not limited to:
    - On-Site monitoring by TxDOT personnel
    - Timely submission of required reports
    - Timely written notification of events that will affect the outcome of the project
7. The organization will comply with all applicable federal, state, and local laws and regulations. This includes but is not limited to:
    - Annual Certifications and Assurances
    - Master grant agreements
    - Project grant agreements
    - Applicable federal program circulars and similar federal and state guidance
8. Applicant Affirmation: Compensation has not been received for participation in the preparation of the specifications for this call for projects.

By checking and completing this document I certify that the above statements are true and that I have the authority to sign this document.

Name **Title** **Date**

Budget and Milestones

Agency Name *El Paso, County of*

Program Type *Service Expansion Program (State) 2024*

Does this budget include indirect costs? * Yes *[X]*No

If yes, please enter the Indirect Rate %

Attachments
You may upload additional documentation here.
(If this budget includes In-Kind funds you are required to upload supporting documentation.)

Description	Upload

When entering budget line items, fill out a row.

Description	Scope	Suffix #	TPN	Fuel Type	# of Units	Award Amount	State Match	Local Match	In-Kind Match	Total Funds	TDC Requested?	Match Ratio	TDC Amount	Estimated Contract Award	Estimated First Vehicle Delivered	Estimated Last Vehicle Delivered	Estimated RFP/IFB Issued	Estimated Contract Complete
				Operating - 30.09.01						*$162,098*	*$ $108,065*	*$ $270,163*			*9/1/2023*			*8/31/2025*
Subtotal:										*$162,098*	*$0*	*$108,065*	*$0*	*$270,163*				

Best Practices and Guidelines for El Paso County Rural Public Transportation to Identify Potential Stop Locations and Route Configurations

(Task Order #10)

Final Report

Prepared for

El Paso County Planning & Development Department

Transportation, Planning and Engineering Division

Texas A&M Transportation Institute

April 2021

(Updated July 2021)

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION & BACKGROUND

Introduction

The Texas A&M Transportation Institute (TTI) previously assisted El Paso County Transit (EPCT) staff to explore the feasibility of implementing a countywide regional transit institutional authority *(El Paso County Regional Transit Institutional Options Feasibility Study*, 2018) and identify and prioritize potential transit shelter locations based on existing passenger demand (*Developing Guidelines and Best Practices for Bus Shelter Locations along El Paso County Rural Transit Routes*, 2019). One of the recommendations of these studies was for EPCT staff to strengthen the planning process by analyzing the suitable improvement scenarios and identifying changes necessary to ensure an overall increase in transit system level of service. In preparation for the implementation of this recommendation, EPCT requested that TTI (1) research and analyze best practices in determining potential stop locations and route and service configurations and (2) develop and apply transit service planning guidelines for EPCT.

Purpose

The purpose of this report is to provide EPCT staff with (1) transit service planning guidelines based on best practices to identify and categorize potential stop locations, route configurations, and types of service and (2) recommendations to improve overall transit service and rural community mobility in El Paso County. To achieve this goal, TTI facilitated several discussions with existing and potential EPCT riders and stakeholders, including educational institutions and other community organizations, to identify advantages and disadvantages of proposed systemwide scenarios. This study is a continuation of two previous tasks that aimed to assist EPCT staff in the development of an improved transit system that provides service to several municipalities in the county.

The report is organized into the following chapters:

1. This chapter, Chapter One, describes the research objectives, provides an introduction and background, and states the overall purpose of the report.
2. Chapter Two describes the development of guidelines for locating stops and designing rural transit services. Relevant research and design guidance available from state departments of transportation (DOTs), transit agencies, and other organizations is summarized in this chapter to provide readers with information about the state-of-the-practice in locating and designing rural bus stops.
3. In Chapter Three, the research team summarizes the transit data collection process and data analysis. Data analysis was one of the most crucial parts of this study, as the data informed the transit service planning guidelines and development of potential improvement scenarios. TTI also gathered information regarding passenger counts and Origin-Destination from the 2019 *Developing Guidelines and Best Practices for Bus Shelter Locations along El Paso County Rural Transit Routes* effort.

4. Chapter Four details the application of the guidelines described in Chapter Three for locating rural bus stops and designing rural transit services. Two system-wide improvement scenarios (one being cost-neutral), with corresponding assumptions about operating costs, capital costs, funding sources, and fares, are also defined in this chapter.
5. In Chapter Five, based on the two transit service configurations introduced in Chapter Four, the research team analyzed and compared the current transit service conditions and performance against the two system-wide scenarios: Proposed Service (Cost-neutral) and Enhanced Proposed Service scenario. Chapter Five also presents the public outreach plan and process that the research team followed to introduce the two proposed configurations and corresponding stop locations to stakeholders and the public. The public outreach plan for this study consisted of stakeholder and public meetings, as well as use of online tools to reach current and potential transit passengers.
6. Chapter Six includes service redesign and bus stop implementation guidance and illustrative timelines to help EPCT staff with the future implementation of the preferred scenario.
7. The last chapter (Chapter Seven) summarizes the findings and provides the conclusions of the study.

Appendix A contains a summary of industry guidance and best practices for designing and siting rural bus stops. **Appendix B** presents rural service planning research guidance. **Appendix C** lists details of all stops proposed for the EPCT system. **Appendix D** includes stakeholder meeting materials and presentation slides. **Appendix E** (Provided under separate cover) shows the booklet that was shared with EPCT users and non-users during the public outreach process. Finally, **Appendix F** shows a set of maps with the transit service scenarios.

Conduct of the study was informed throughout by (a) industry best practices in determining potential stop locations and route and service configurations and (b) the relevant experiences of other transit systems.

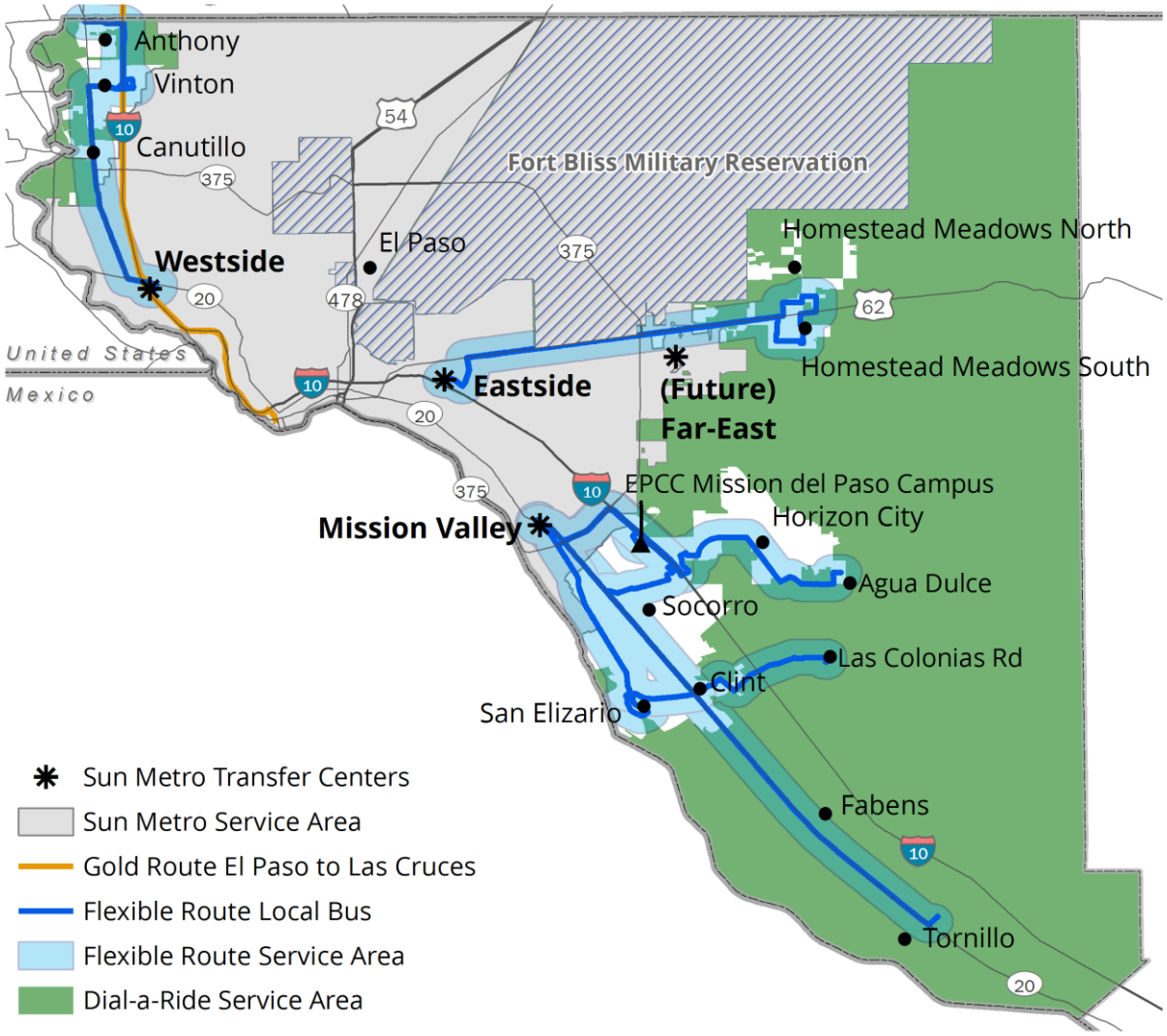
Background

The analyses and recommendations contained in this report are part of Phase 2 of the *El Paso County Regional Transit Institutional Options Feasibility Study*, the first phase of which was completed in 2018 and updated in April 2019. The purpose of the Phase 1 study was to develop and evaluate service, governance, and financial alternatives for providing countywide transit service. The Phase 1 study consisted of the following activities:

- Stakeholder and community meetings
- Documentation of existing transit service and demographics (circa 2016)
- Needs analysis, focused on circumstances where transit need exceeds transit supply
- Review of "peer" transit services for benchmarking and best practices
- Development of goals and planning guidance for countywide transit service

- Development and analysis of six service plan scenarios
- Economic impact analysis
- Multimodal level of service assessment
- Development of an implementation strategy

The Phase 2 study refines and re-analyzes the Phase 1 study's Scenarios 3 and 6, which are depicted in Figure 1 and Figure 2, respectively.



Source: *El Paso County Regional Transit Institutional Options Feasibility Study*

Figure 1. Scenario 3: Flexible-Route Local Bus and Rural Dial-a-Ride

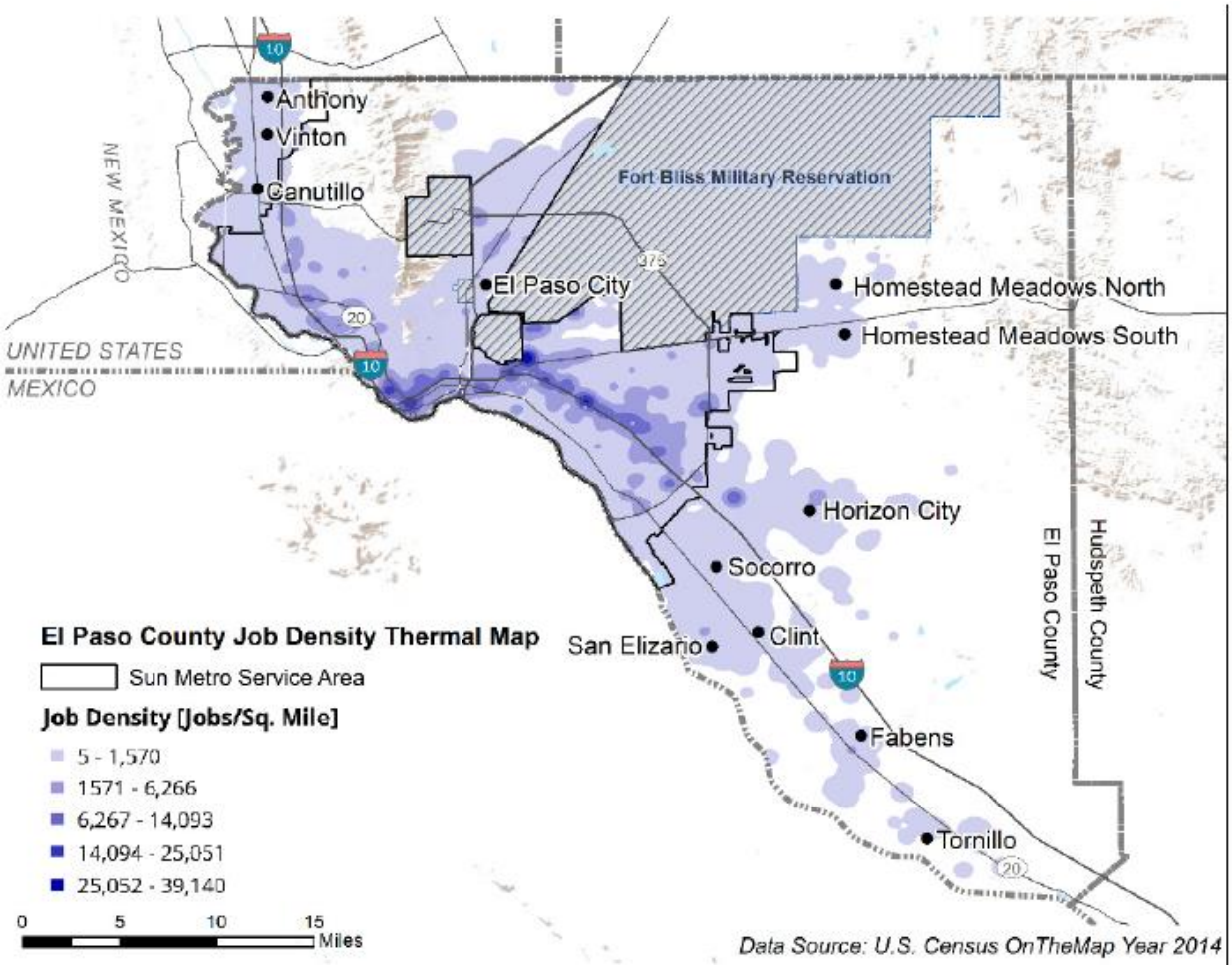
Source: *El Paso County Regional Transit Institutional Options Feasibility Study*

Figure 2. Scenario 6: Increased Flexible-Route Local Bus + Rural/Urban Dial-a-Ride

Key findings of the Phase 1 study include the following:

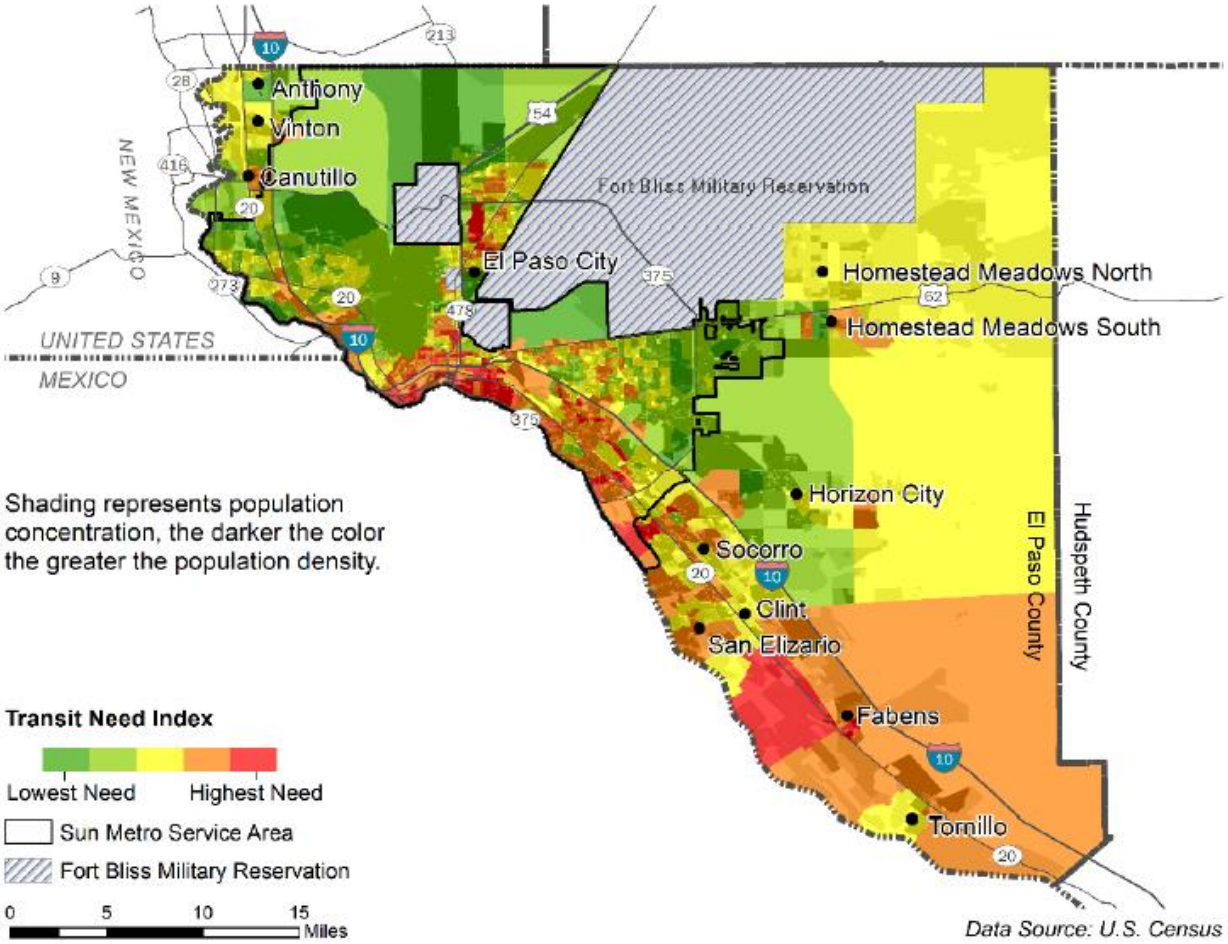
- The results of a survey conducted in 2018 indicated that 63% of current EPCT riders have no driver's license, 48% have an annual household income of less than $15,000, and 29% do not have a working vehicle in their household. EPCT riders use County bus service most often for work, shopping, errands, family or personal business, and medical treatment. Seventy-five percent of EPCT riders transfer to Sun Metro service, and 74% travel to and from destinations outside their local community.
- Most of the region's jobs are concentrated in the city of El Paso, as shown in Figure 3.
- The need for transit service in the county (as represented by the concentration of elderly populations, disabled populations, low-income households, and zero-car households) is greatest in the corridor running from downtown El Paso to Tornillo, as shown in Figure 4.

- The supply of transit service in the county (as represented by transit service coverage, service frequency, and daily hours of transit service) is highest in the City of El Paso, as shown in Figure 5.
- The largest gaps in transit service in the county (as represented by the difference between transit need and transit supply) are in the southern and eastern portions of the county, as shown in Figure 6.



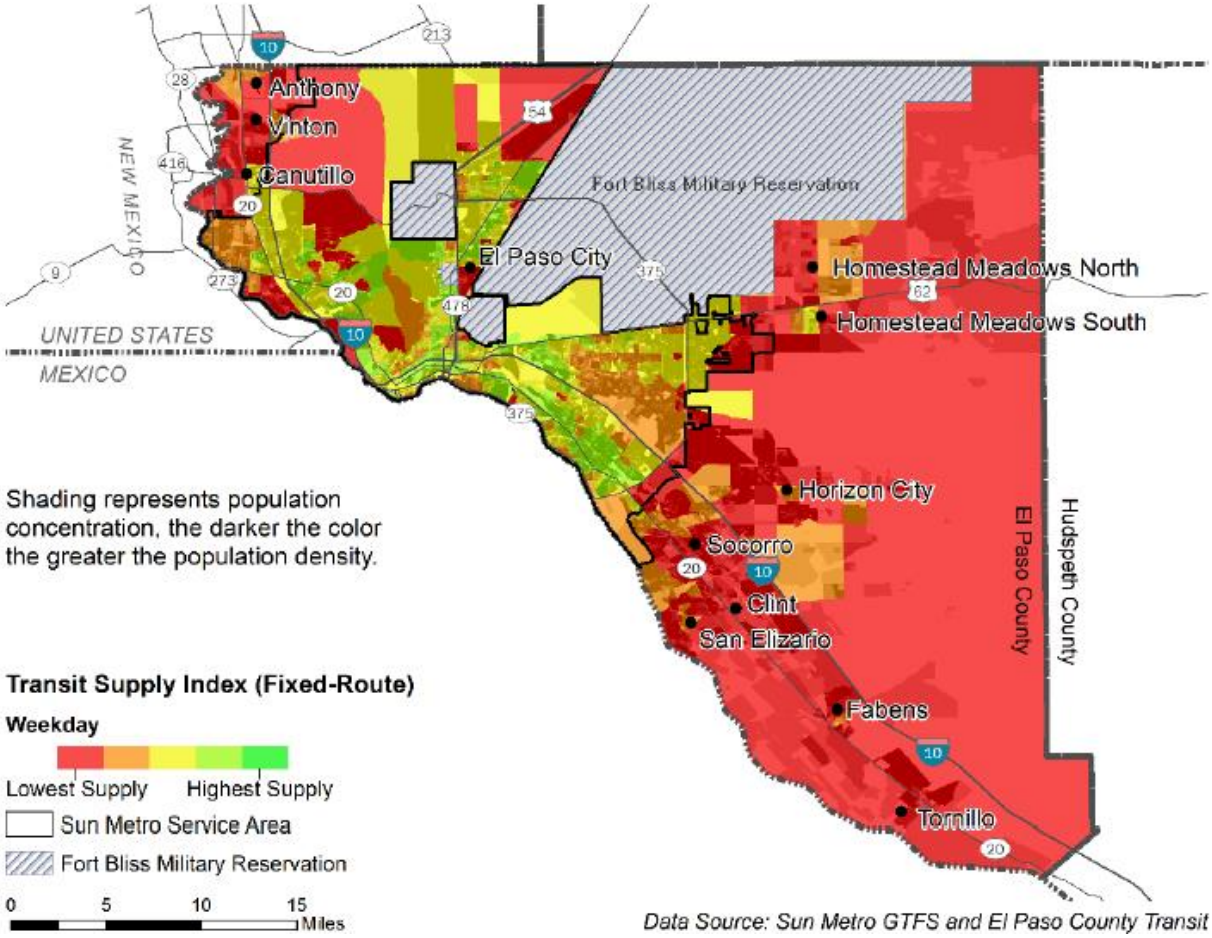
Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Figure 10

Figure 3. Job Density in El Paso County



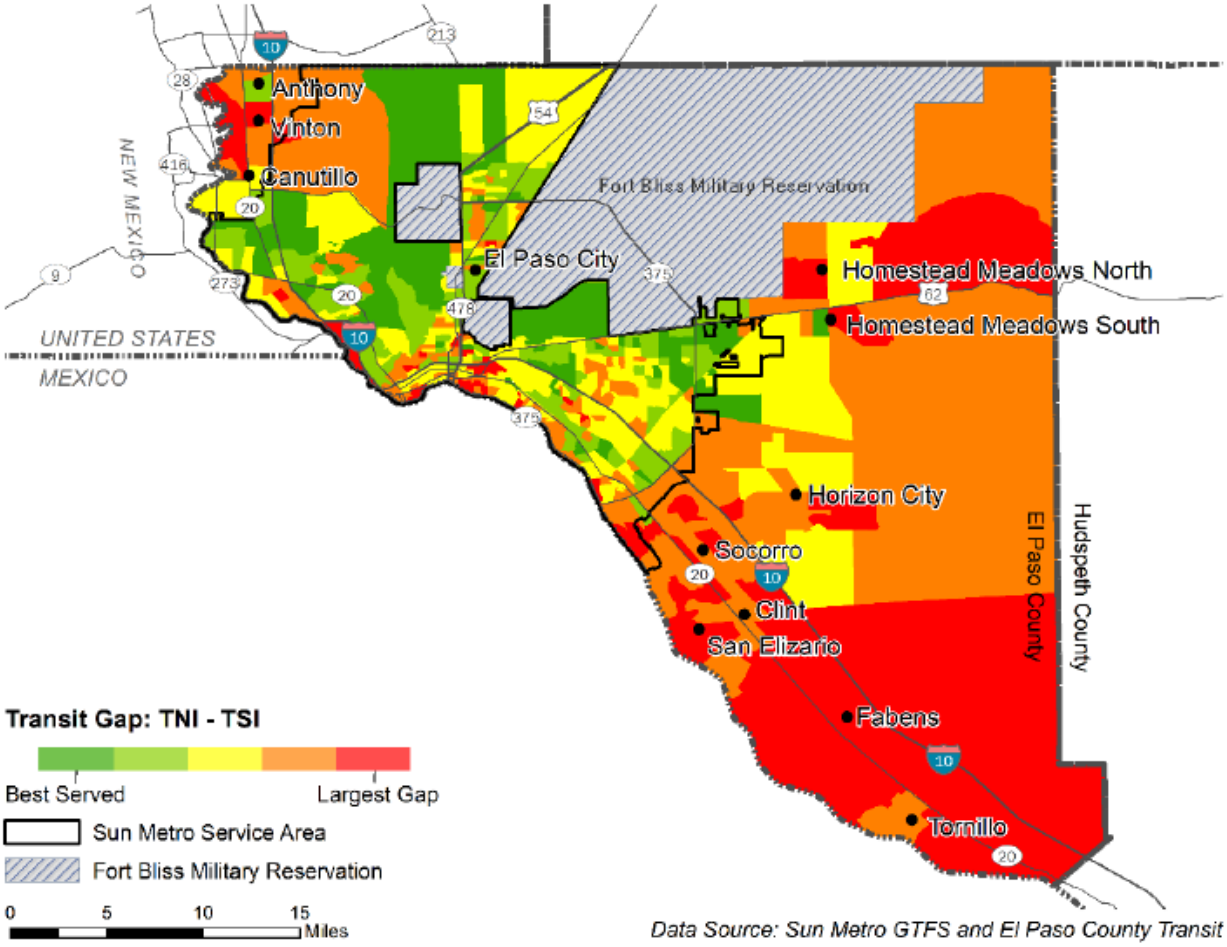
Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Figure 11

Figure 4. El Paso County Transit Need Index



Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Figure 12

Figure 5. El Paso County Transit Supply Index



Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Figure 13

Figure 6. Transit Gaps in El Paso County

2. DEVELOPMENT OF GUIDELINES FOR LOCATING RURAL BUS STOPS AND DESIGNING RURAL TRANSIT SERVICES

This chapter describes the set of guidelines developed to assist the project team and El Paso County in making decisions about the locations of County bus stops and the design of County transit services. The guidelines are intended to accomplish the following:

- Inform decision-making
    - Where should bus service be provided?
    - What type of bus service should be provided?
    - How much bus service should be provided?
    - Where should bus stops be located?
    - Which bus stops should have benches and shelters?
- Further the goals of County transit service
    - Maximizing cost-effectiveness (i.e., having a low cost per passenger)
    - Maximizing service-effectiveness (i.e., carrying a high number of passengers per hour)
    - Providing transit service to 100% of county residents
    - Maximizing passenger convenience
    - Connecting all County routes to at least one Sun Metro transfer center
- Ensure that County transit services are consistent with industry best practices for transit service planning and operations.

The guidelines were developed from industry best practices, the findings and recommendations of the Phase 1 study, and public and stakeholder input conducted for the Phase 2 study.

Development of Rural Bus Stop Location Guidelines

The study's guidelines for locating County bus stops were developed from a review of relevant research, a review of relevant transportation agencies' bus stop guidelines and standards, and the input of County stakeholders.

Best Practices

The project team reviewed relevant research as well as design guidance available from state DOTs, transit agencies, and other relevant organizations to learn about the state-of-the-practice in locating and designing rural bus stops. Synopses of reviewed documents can be found in **Appendix A**. Most guidelines and recommendations generated by research and incorporated in design documents to date are applicable to bus stops in general; the literature review includes

guidelines and recommendations that speak specifically to rural bus stop location and design where such guidelines and recommendations are available.

In general, the literature review indicated that factors that influence the location and design of bus stops in rural areas include proximity to other bus stops, accessibility needs, design needs (e.g., need for space to accommodate a shelter), location of specific trip generators, safety considerations, bus routing (e.g., bus turning movements), impacts on nearby properties, location of driveways, impacts on and from automobile movements (including parking), impacts on and from freight and delivery activity, and impacts on and from bicyclists and pedestrians.

Some of the content in **Appendix A** takes the form of detailed guidelines and requirements for bus stop design. While the Phase 2 study is not developing bus stop design standards for the County or preparing conceptual designs for bus stops, familiarity with design, engineering, and construction requirements affects what ultimately makes locating a bus stop at a given site feasible. Bus stop design standards can provide, for example, information about right-of-way requirements.

Stakeholder Input

In the Phase 1 study, most participants in stakeholder engagement activities responded positively to the potential of DAR and flex-route service to improve transit in the county. Some indicated a preference to continue the current flag-stop service, as flag-stop service allowed them to board and alight from buses closer to their origins and destinations. These members of the public were particularly concerned about bus stop locations. Participants in stakeholder engagement activities also expressed a desire to see weekend service implemented.

In October 2019, as part of the Phase 2 study, members of the public and the project's stakeholder committee were invited to participate in an exercise that explored (1) the importance of factors that influence bus stop design and siting and (2) tradeoffs in potential bus stop implementation paths. Eighteen stakeholder committee members participated in this exercise at a stakeholder committee meeting, and 70 members of the public participated at transit centers or on-board buses.

The first part of the exercise asked participants to identify the most important factors in deciding where bus stops and bus shelters should be located. Each participant could select up to three factors from a pre-prepared list or write in other factors. Table 1 and Table 2 summarize how stakeholder committee members and members of the public rated the factors. Both groups agreed that (1) proximity to key origins and destinations and (2) number of people boarding were among the most important considerations in locating bus stops and bus shelters.

Table 1. What Factors Should the County Consider in Deciding Where BUS STOPS Should Be Located?

Factor	Stakeholder Response	Public Response
Closeness to key origins and destinations	36%	22%
Number of people boarding	21%	16%
Number of people in the area who need transit (for example, people without cars)	18%	16%
Distance to travel to and from the bus stop	15%	19%
Other	6%	4%
Number of bus stops in each neighborhood	3%	10%
Closeness to other bus stops	0%	12%

Table 2. What Factors Should the County Consider in Deciding Where BUS SHELTERS Should Be Located?

Factor	Stakeholder Response	Public Response
Closeness to key origins and destinations	33%	24%
Number of people boarding	33%	22%
How long people wait at the stop	30%	23%
Other	4%	5%
Closeness to other bus stops with shelters	0%	14%
Number of bus shelters in each neighborhood	0%	12%

The second part of the exercise asked participants to allocate County resources (which could include funding, vehicles, and technology) between two different transit service options. The results of this activity provided insights into the community's transit service priorities. As shown in Figure 7, members of the stakeholder committee indicated a strong preference for having more widely spaced stops if many of those stops have seating and/or a shelter, as opposed to having more closely spaced stops without such amenities. Members of the public were nearly equally split between preferring more closely spaced stops and preferring stops with more amenities. As shown in Figure 8, members of the public and members of the stakeholder committee were nearly equally split between placing shelters where ridership is higher and placing shelters where wait times are longer.

Option A	Option B
Provide more stops (closer together), but few of them have benches and shelters	Provide fewer stops (farther apart), but many of them have benches and shelters

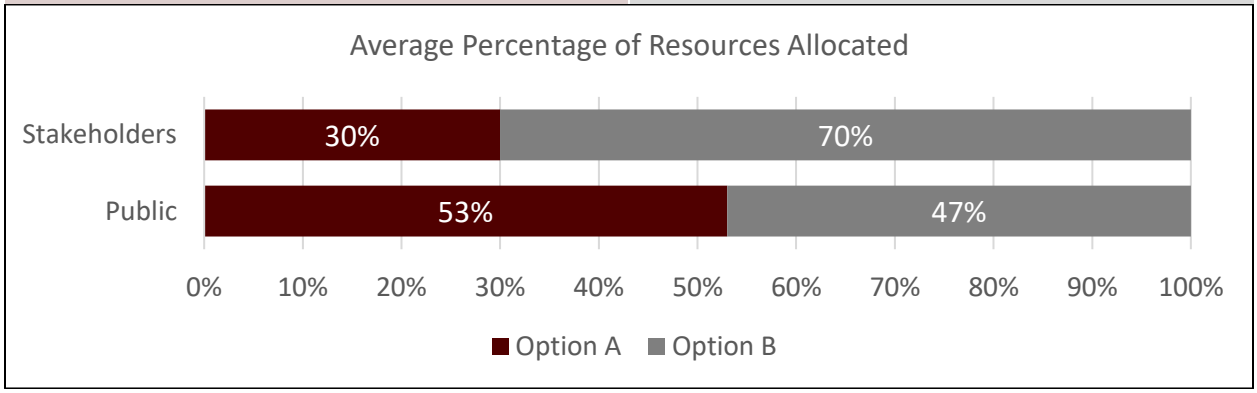


Figure 7. Trade-Offs Exercise: Bus Stop Spacing vs. Bus Stop Amenities

Option A	Option B
Provide shelters where ridership is higher	Provide shelters where wait time is longer

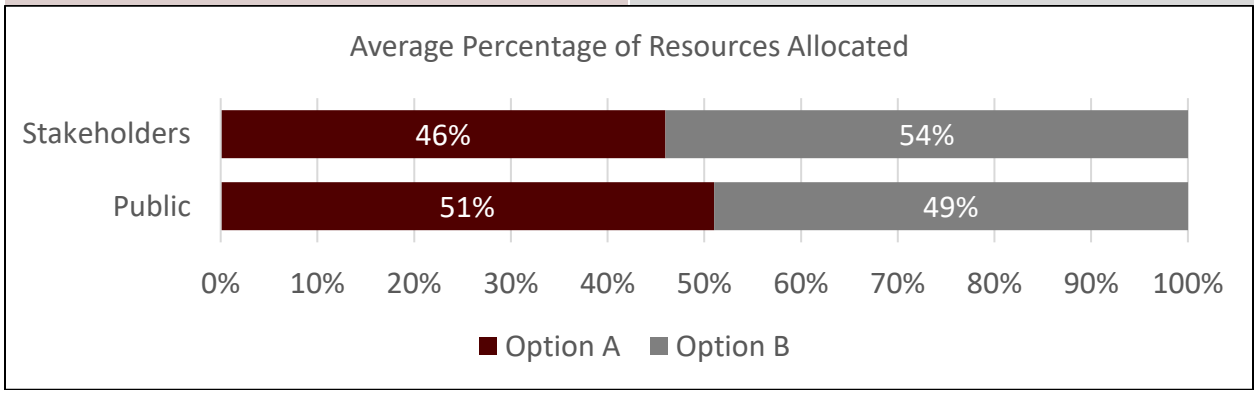


Figure 8. Trade-Offs Exercise: Bus Shelters

Recommended Guidelines for Identifying Bus Stop Locations

The research team developed the following bus stop location guidelines from the review of relevant research, review of relevant transportation agencies' bus stop guidelines and standards, and the input of the public and stakeholders:

1. County bus stops should be ½ mile apart on average. Buses can stop at other locations when requested by riders, where it is safe to stop, where it is not too close to a bus stop, and within ¾ mile of the bus route.
2. County bus stops should have a sign indicating that they are County bus stops. Some stops will also have seating or a shelter, depending on factors such as the number of people who use the stop and whether or not the stop is a transfer point (i.e., a location where passengers are likely to be waiting).
3. All bus stops should be accessible to riders in wheelchairs.
4. Bus stops should be located in areas that are highly visible, well-lit at night, near safe roadway crossings, and not prone to flooding.

The ability to implement these guidelines in full depends on costs, available resources (e.g., funding and available right-of-way), and operational needs.

Bus Stop Siting Process

This section describes a process for siting bus stops that is informed by the guidelines.

Step 1

Start with all locations where boarding and alighting are happening, even if it's just one person boarding there.

Step 2

Cluster these locations based on distance to other stops (based on max stop spacing info from comment cards and walking distance).

Step 3

Score the locations based on the Table 3 Criteria.

Table 3 Bus Stop Locations Criteria

	Weight:	*0*	*1*	*5*	*10*	*0*	*2*	*5*	*10*	*0*	*10*	*5*	*0*	*5*	*1*	*0*	*1*	*0*
Stop ID	**Location**	**Current Average Daily Boardings (from recent data collection)**				**Current Household Density (applies to Census block and only if there is currently no bus service)**			**Transfer Point (assume routing)**		**Average Wait Time (assume routing and calculate as 50% of headway)**			**Number of Nearby Major O and D (public input to help identify)**			**In Transit-Dependent Area (use Transit Need Index to identify)**	
		<5	5-10	10-20	20+	<3/ac	3-4.9/ac	≥5/ac	Yes	No	>1hr	0.5-1hr	<.5hr	<.25mi	.25-.5mi	>.5mi	Yes	No
101	Westside Transit Terminal				1			1	1				1					1
102	Doniphan Dr and Oscar Raul Dr	1				1				1			1				1	
103	Doniphan Dr and Central Ave	1				1				1			1	1			1	
104	Doniphan Dr and La Mesa Ave	1				1				1			1				1	
105	Doniphan Dr and La Tuna Ave	1				1				1			1				1	
106	Doniphan Dr and Selva Dr	1				1				1			1					1
107	Hemley Rd and Keily Rd	1				1				1			1					1
108	Keily Rd and Vinton Rd	1				1				1			1	1				1
109	Westway Blvd and Kingsway Dr	1				1				1			1				1	
110	De Alva Dr and Westway Blvd	1				1				1			1	1			1	

Factors for evaluation criteria: total boarding (favors higher ridership), household densities (favors transit trip generation potential in underserved areas), transfer points (favors transfer points), average wait time (favors longer wait times), proximity to major O and D (favors higher ridership potential and shorter walking distances), Transit Need Index (TNI - favors local transit need).

Weights of each potential location can be determined based on comment cards and best practices (literature review)[1] (See Table 4)

Use the weighted score for prioritization.

Table 4. Bus Stop Prioritization Criteria

Category Level	Category Description	Score[1]	
Category 1	bus stop with sign, seating, and a shelter	15	>
Category 2	bus stop with a sign and seating	10	14
Category 3	bus stop with a sign only	5	9

Step 4

Assign a bus stop category to each location based on the scores, using Table 5. If the score is not high enough to fall within the Category 3 score range, no bus stop is warranted.

[1] This score was determined specifically for El Paso County rural area and it was based on the best practices of rural transit planning reviewed, public feedback and stakeholder meetings.

Table 5. Bus Stop Categories

Bus Stop Category	Amenities	Score Range	
		Low	High
1	sign, seating, shelter	15	26
2	sign, seating	10	14
3	shelter	5	9
None	N/A	0	4

The more stops that are identified, the less likely deviations will occur.

Step 5

Adjust the set of bus stops based on equity, spacing, or site-specific factors not represented by the factors identified in Step 3.

The set of bus stops can be used to inform routing. (See the next section of this chapter.) Locations with bus stop type "None" need not be factored into routing but might end up served by flex-route service.

Step 6

Apply bus stop guidelines to refine the identification of more-specific bus stop locations, The key factors for Step 6 are:

Sight distance (vertical and horizontal roadway curvature)

Proximity to specific destinations

Accessibility

Utility conflicts

Available right-of-way (amount needed depends on number of buses using the stop, amenities, need for bus pullouts, etc.)

Presence of safe pedestrian crossing nearby

Flood-prone areas

Lighting

Etc.

Other relevant factors to consider before determining the exact location of a bus stop:

- Location of driveways

- Distance from the proposed stop to the nearest intersection
- Most efficient location of the stop (Midblock, before crossing the intersection, or after crossing the intersection). This will depend on the intersection type, intersection design and pedestrian crossings)
- Compatibility of surrounded land use
- Topography of stop placement (specially for shelter placement)
- Sidewalk presence, condition, and accessibility
- Existing utilities nearby
- Shoulder and curb existence and overall conditions
- Road posted speed
- Local policies (EPC and City of El Paso) for far-side/near-side, driveway blockage, parking, etc.

Finding a specific site and addressing deficiencies is a job for design, but we can flag potential issues. Example: "Potential utility conflicts in Alameda Avenue corridor." We could use a simple checklist to keep it high-level. Chapter 3 (Data Collection and Analysis) describes more details about the bus stop field review checklist that TTI surveyors used to take the factors above into consideration for the stop design process.

Step 7

Discuss prioritization.

Development of 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. Several transit service planning terms are defined first.

Transit Service Planning Terms

There are several different types of transit service. Figure 9 displays and defines the service types that were included in the Phase 1 and Phase 2 studies.

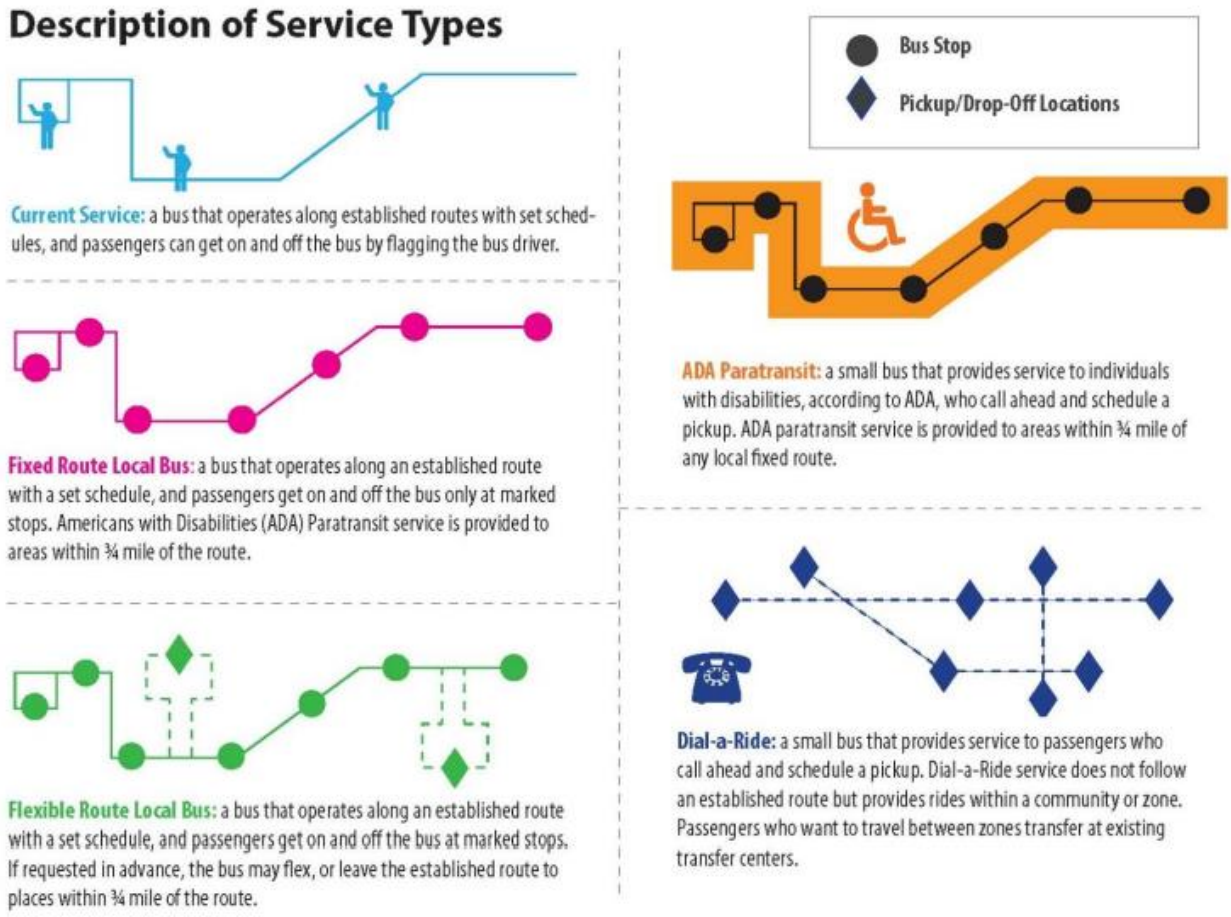


Figure 9. Description of Transit Service Types

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.

Phase 1 Study: Transit Service Planning Goals

The Phase 1 study team established five service scenario goals both to help guide service planning and to evaluate service scenarios. Table 6 presents each goal by title, a description, some examples of planning strategies by which to achieve the goal, and a quantitative performance measure.

Table 6. 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
Effective-ness	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
Comple-ment 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

Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Table 9

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 urbanized area (UZA) and the City of El Paso that has access to at least one of the proposed EPCT transit services in the service scenario. (Note: Having access means living within the dial-a-ride (DAR) 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.)
- 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 DAR 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. DAR revenue hours refers to the total annual estimated revenue hours for DAR service. The estimate was based on the DAR span of service multiplied by the number of DAR 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% of proposed EPCT 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 EPCT bus routes and to and from Sun Metro bus routes. The study team scored DAR 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, which results in convenient passenger transfers.

Phase 1 Study: Transit Service Standards

Service standards establish the baseline characteristics of transit services. The Phase 1 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, as summarized in Table 7.

Table 7. Standards for Headways and Span of Service

Service Characteristic	Day of Week	Type of Service		
		DAR	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 a.m. and 3-6 p.m.	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.

Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Table 10

Phase 1 Study: 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 Phase 1 study team established and applied the route planning guidelines contained in Table 11 during the creation of the proposed transit service scenarios.

Table 8. 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 on-board 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)

Source: *El Paso County Regional Transit Institutional Options Feasibility Study*, Table 11

Best Practices

The project team reviewed relevant research as well as planning guidance available from state DOTs, transit agencies, and other organizations to learn about the state-of-the-practice in designing rural transit networks. Synopses of reviewed documents are available in **Appendix B**.

Survey Input

Figure 10 through Figure 15 summarize relevant outcomes of the Phase 2 October 2019 public outreach and stakeholder committee events. Reflected in the figures are the perspectives of the 18 stakeholder committee participants and 70 public participants who were asked to allocated transit resources (e.g., funding, staff, and vehicles) between hypothetical transit improvement scenarios. The figures show that stakeholder committee members and members of the public tended to agree on the direction in which transit resources should be prioritized. The specific allocation of resources between the options tended to vary, however, with the stakeholder committee often indicating a more uneven split between the options.

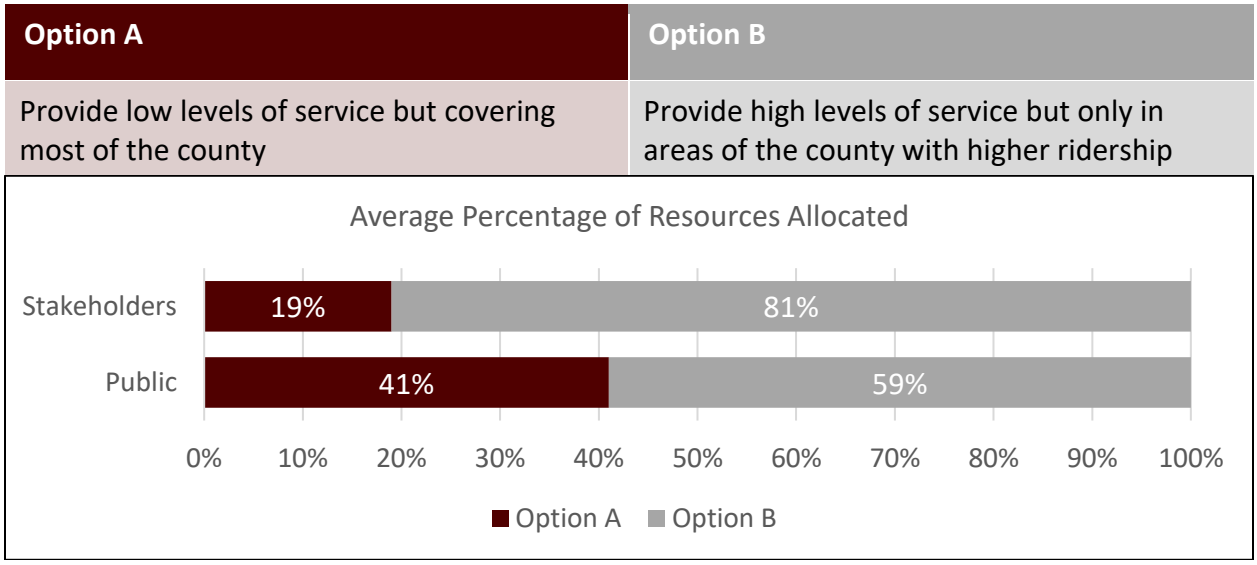


Figure 10. Trade-Offs Exercise: Service Coverage vs. Service Frequency

Option A	Option B
Provide connections to Sun Metro	Provide service within local communities

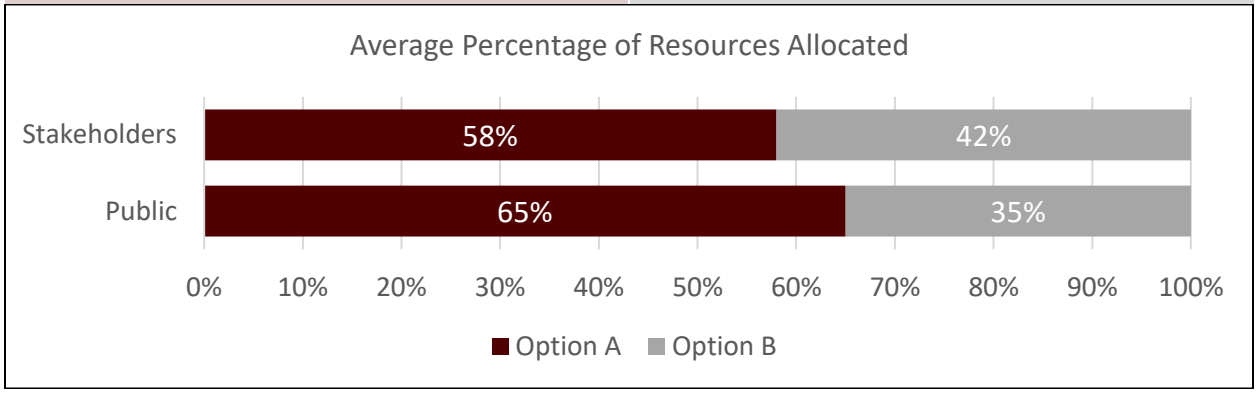


Figure 11. Trade-Offs Exercise: Regional Connectivity vs. Local Circulation

Option A	Option B
Send buses into neighborhoods (slowing down the route)	Keep buses only on main roads (speeding up the route)

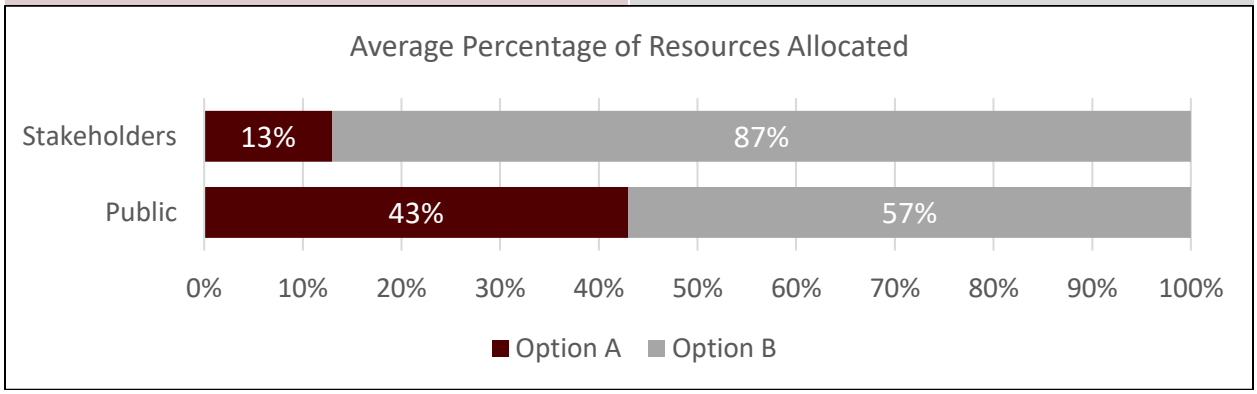


Figure 12. Trade-Offs Exercise: Access vs. Speed

Option A	Option B
Require less advance notice to schedule a pickup (travel is more spontaneous but trips might be longer)	Require more advance notice to schedule a pickup (have to plan farther ahead but trips might be shorter)

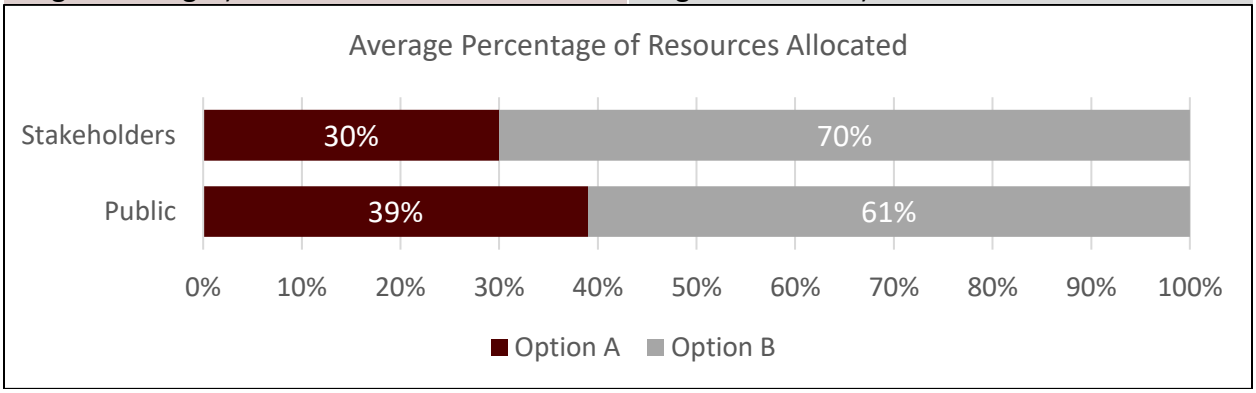


Figure 13. Trade-Offs Exercise: DAR Advance Scheduling vs. Trip Length

Option A	Option B
Provide more service during rush hours or peak travel times (resulting in less service at other times)	Provide a consistent level of service throughout the day

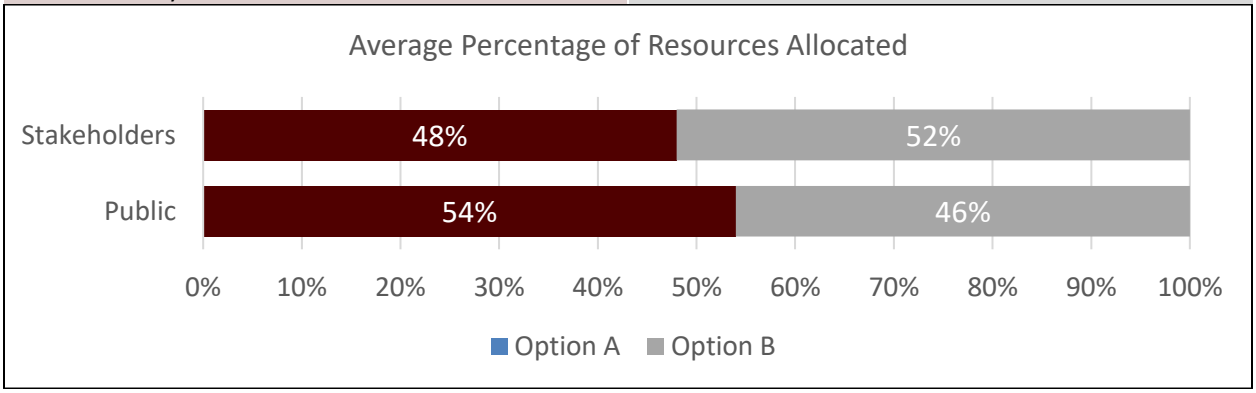


Figure 14. Trade-Offs Exercise: Peak Service vs. Off-Peak Service

Option A	Option B
Provide more service on weekdays (with little or no weekend service)	Provide a consistent level of service 7 days a week

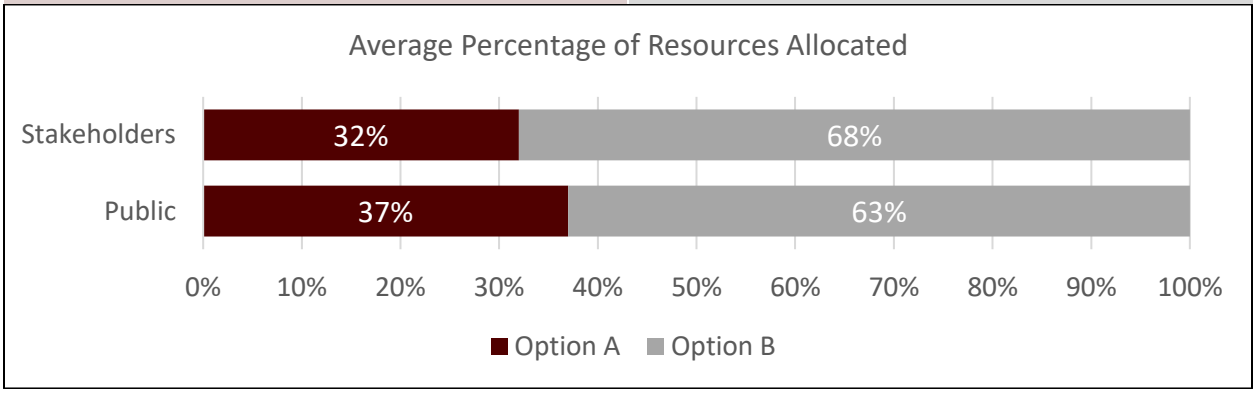


Figure 15. Trade-Offs Exercise: Weekday Service vs. Weekend Service

Peer Agency Service Levels and Performance

The research team reviewed the levels of service and selected performance statistics for peer transit agencies. Peer transit agencies are transit agencies that operate fixed-route bus service in a context comparable to that of the current County transit system (e.g., in similar environments and/or with similar resources). Peer agency data can inform the development of transit service standards in the county.

Peer agencies were initially identified using the Rural NTD peer selection tool developed in TCRP Project G-11 and published in TCRP Report 141, *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*. The team went through the tool-generated list of peers and removed those agencies that (1) do not provide fixed-route service under a model similar to what the County currently provides and (2) do not provide DAR service under a model similar to what the County would likely provide in the future. The team then adjusted the tool-generated list of peers to make sure the tool's % Fixed Route Service screening criterion properly accounted for the high levels of vanpool usage in El Paso County. The resulting set of peer agencies is listed and described in Table 9 and Table 10; the data in the tables are 2017 data from the Rural NTD. Figure 16 through Figure 24 compare the peer agencies graphically. *Chapter 4 includes additional peer data.*

Table 9. Peer Agencies: Fixed-Route Service Statistics

Peer Agency	Annual Revenue Miles	Annual Revenue Hours	Annual Trips	Annual Operating Expense
CARTS Rural (Central TX)	807,765	34,428	146,734	$3,350,515
Heart of Iowa Regional Transit Agency (Des Moines, IA)	*	*	*	*
Fresno County Rural Transit Agency (Fresno, CA)	440,062	20,101	93,575	$1,374,244
Kern Regional Transit (Bakersfield, CA)	1,885,709	61,729	334,144	$9,171,058
McLennan County (Waco, TX)	82,022	3,863	22,516	$522,869
Panhandle Community Services (Amarillo, TX)	*	*	*	*
Tulare County Area Transit (Visalia, CA)	947,447	33,068	293,989	$2,997,125
Webb County Community Action Agency (Laredo, TX)	190,898	11,757	68,566	$778,217
Peer Maximum	**1,885,709**	**61,729**	**334,144**	**$9,171,058**
Peer Minimum	**33,335**	**2,470**	**5,779**	**$138,270**
Peer Average	**621,986**	**23,564**	**137,075**	**$2,599,147**
El Paso County Transit (El Paso County, TX)	910,274	38,357	186,627	$3,225,148

*Operates only DR
Source: Rural NTD

Table 10. Peer Agencies: Fixed-Route Performance Metrics

Peer Agency	Trips/ Revenue Mile	Trips/ Revenue Hour	Operating Expense/ Revenue Mile	Operating Expense/ Revenue Hour	Operating Expense/ Trip
CARTS Rural (Central TX)	0.18	4.26	$4.15	$97.32	$22.83
Heart of Iowa Regional Transit Agency (Des Moines, IA)	*	*	*	*	*
Fresno County Rural Transit Agency (Fresno, CA)	0.21	4.65	$3.12	$68.36	$14.68
Kern Regional Transit (Bakersfield, CA)	0.17	5.41	$4.86	$148.56	$27.44
McLennan County (Waco, TX)	0.27	5.82	$6.37	$135.35	$23.22
Panhandle Community Services (Amarillo, TX)	*	*	*	*	*

Peer Agency	Trips/ Revenue Mile	Trips/ Revenue Hour	Operating Expense/ Revenue Mile	Operating Expense/ Revenue Hour	Operating Expense/ Trip
Tulare County Area Transit (Visalia, CA)	0.31	8.89	$3.16	$90.63	$10.19
Webb County Community Action Agency (Laredo, TX)	0.35	5.83	$4.07	$66.19	$11.34
Peer Maximum	**0.35**	**8.89**	**$6.37**	**$148.56**	**$27.44**
Peer Minimum	**0.17**	**2.33**	**$3.12**	**$66.19**	**$10.19**
Peer Average	**0.24**	**5.33**	**$4.29**	**$101.07**	**$18.28**
El Paso County Transit (El Paso County, TX)	0.21	4.86	$3.54	$84.08	$17.28

*Operates only DR
Source: Rural NTD

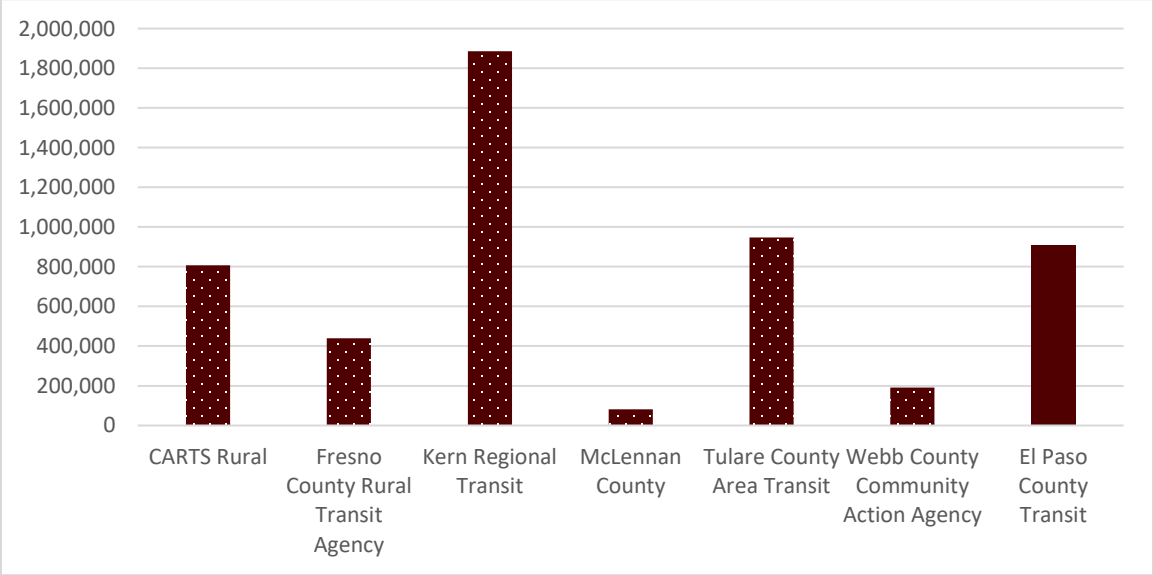


Figure 16. Peer Agencies: Fixed-Route Annual Revenue Miles

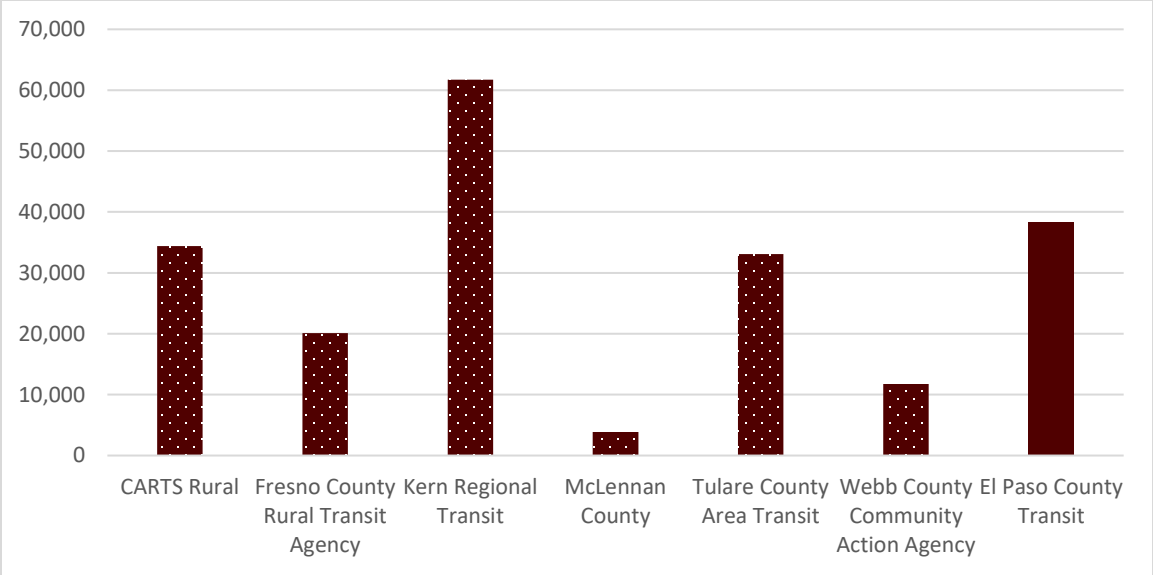


Figure 17. Peer Agencies: Fixed-Route Annual Revenue Hours

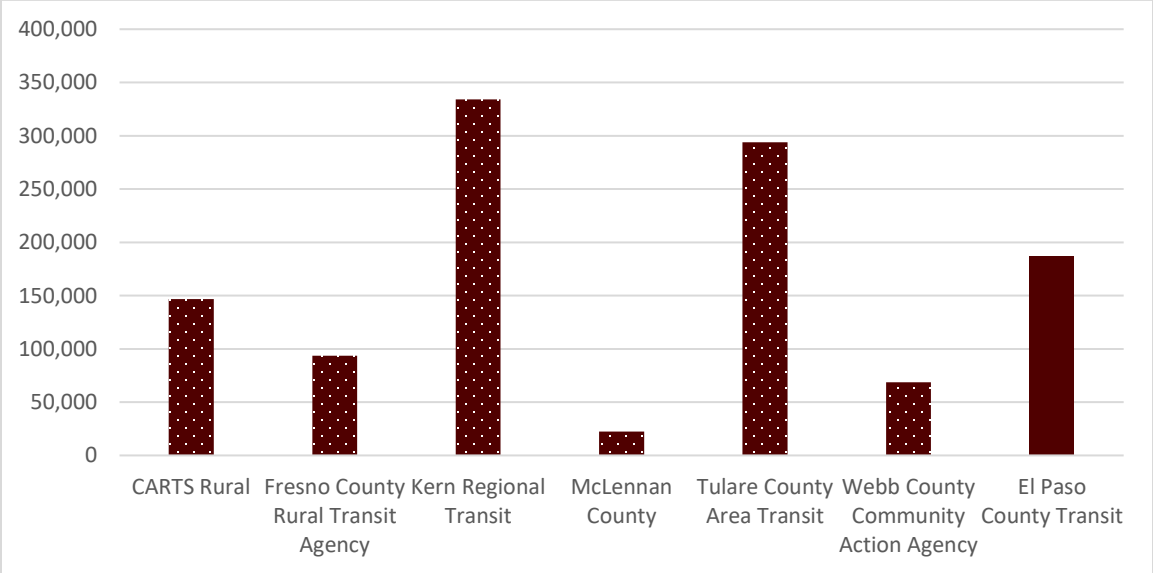


Figure 18. Peer Agencies: Fixed-Route Annual Trips

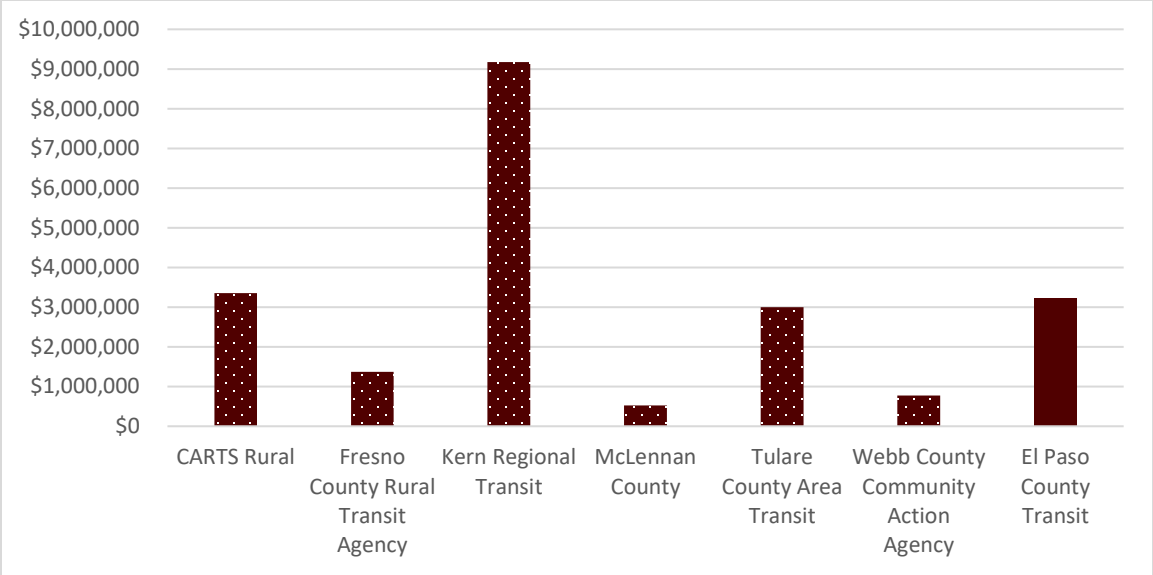


Figure 19. Peer Agencies: Fixed-Route Annual Operating Expense

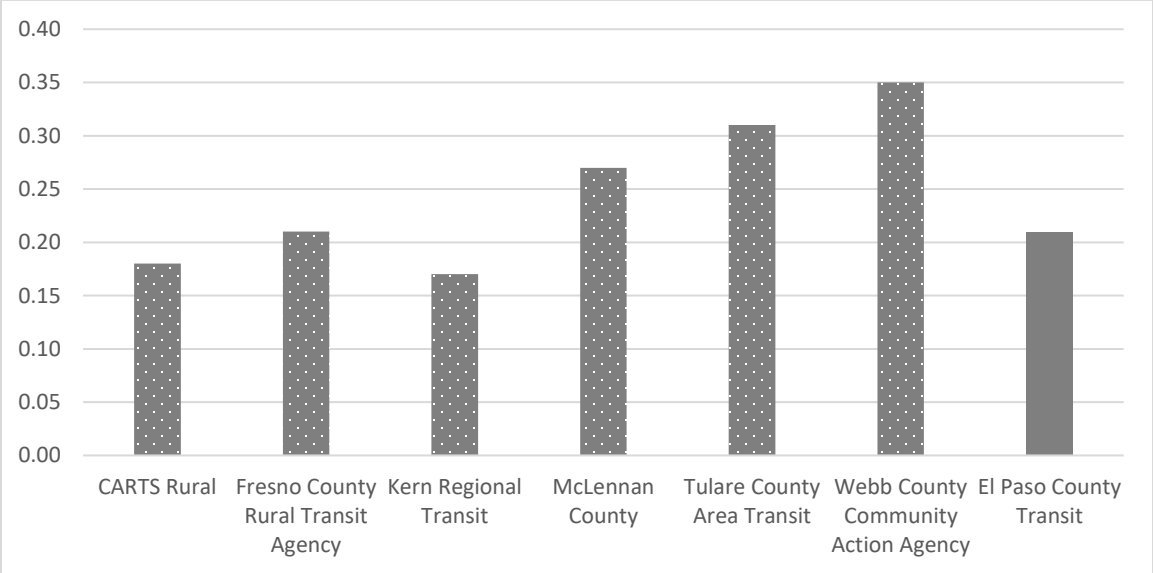


Figure 20. Peer Agencies: Fixed-Route Trips/Revenue Mile

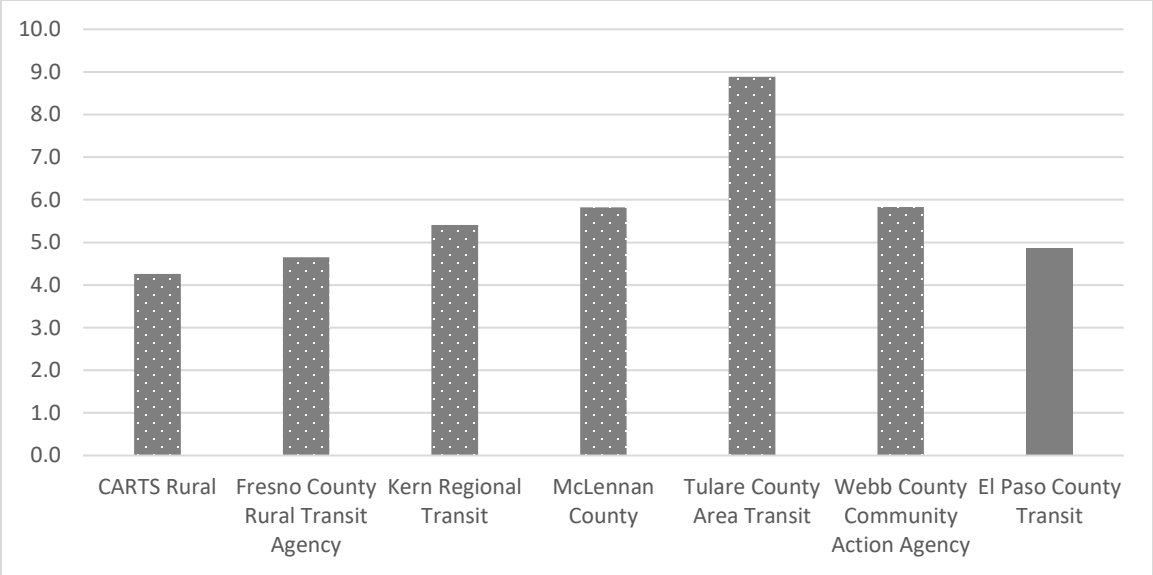


Figure 21. Peer Agencies: Fixed-Route Trips/Revenue Hour

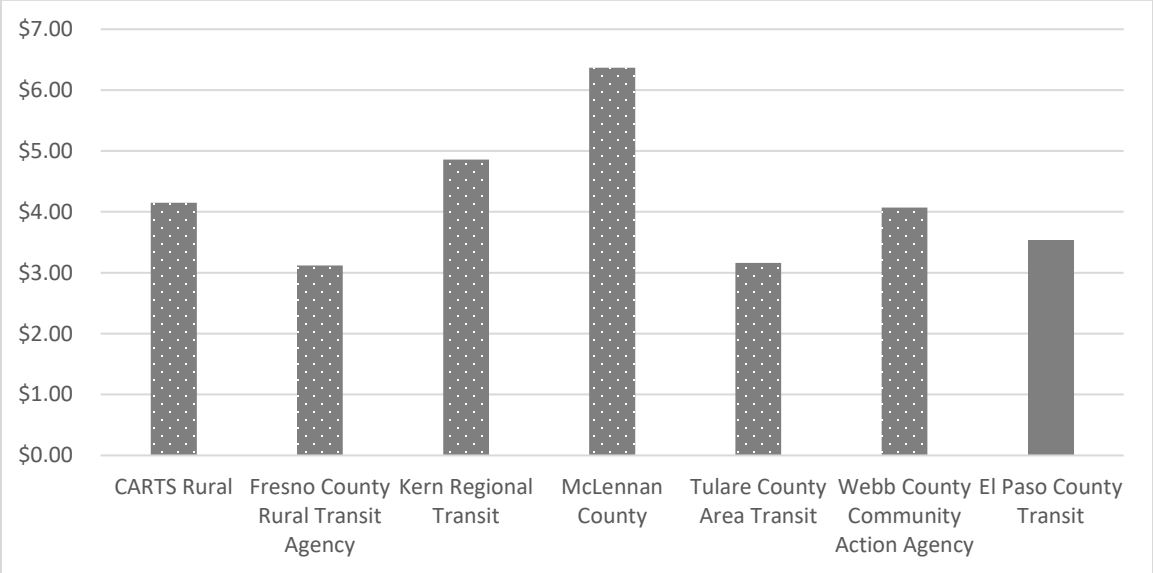


Figure 22. Peer Agencies: Fixed-Route Operating Expense/Revenue Mile

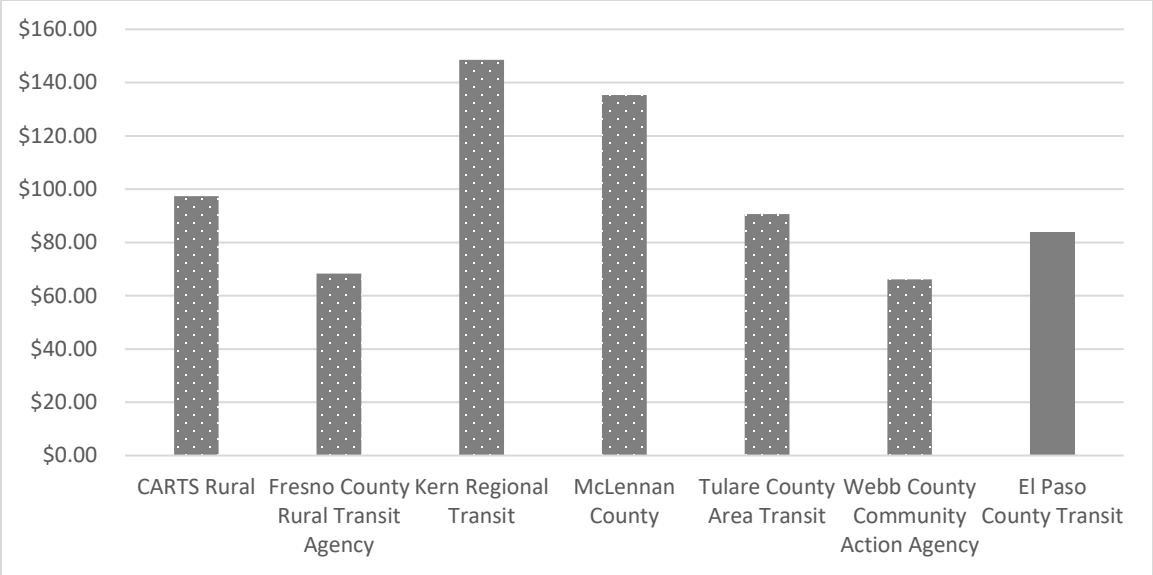


Figure 23. Peer Agencies: Fixed-Route Operating Expense/Revenue Hour

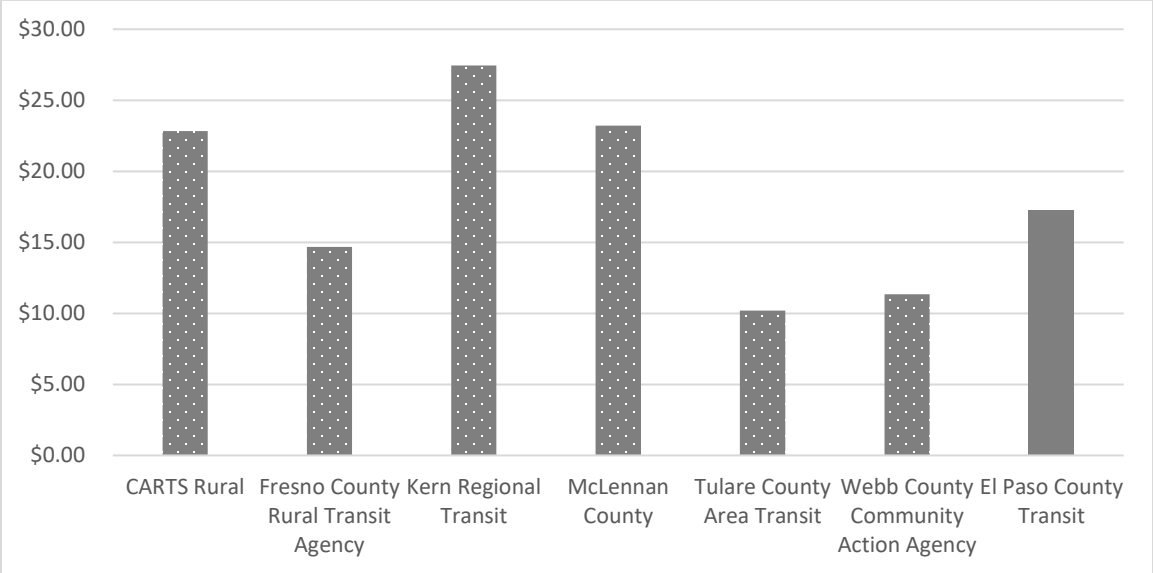


Figure 24. Peer Agencies: Fixed-Route Operating Expense/Trip

A significant observation from the above graphs is that Tulare County Area Transit and Webb County Community Action Agency are achieving higher productivity (expressed as trips per revenue mile and trips per revenue hour) than EPC at a similar or lower unit cost.

Recommended Transit Service Planning Guidelines

The research team developed the following transit service planning guidelines from the Phase 1 study findings and recommendations, the review of best practices, input from the public and stakeholders, and peer agency comparison:

1. County transit service should be available to all residents of rural El Paso County. County transit service can take the form of flexible bus routes or DAR service.
2. New or modified County transit services should serve existing riders to the extent possible.
3. County transit service should run at least 14 hours per day on weekdays and at least 12 hours per day on weekends.
4. County transit service should not compete for riders with Sun Metro bus service.
5. Bus routes should (a) connect residents of rural El Paso County to Sun Metro bus service and (b) serve key destinations in the county, such as medical centers and shopping centers.
6. Buses should run no more than 60 minutes apart during peak times and no more than 120 minutes apart at other times.
7. Bus routes should run in areas with higher population density and/or higher job density.
8. Bus routes should keep to main roads as much as possible, but buses can go up to ¾ mile into neighborhoods when requested by riders.
9. Bus routes should be as simple as possible. They should be direct and follow the same roads in both directions. Bus schedules should be easy to remember.
10. Where possible, bus routes that intersect each other or meet Sun Metro routes should be timed so that transfers are convenient.
11. DAR service should connect residents of rural El Paso County to (a) key destinations in the county and (b) Sun Metro transfer centers.

The ability to implement these guidelines in full depends on costs, available resources (e.g., funding, staffing, and technology), and operational needs. *Planning guidelines for bus stop locations were provided earlier in this report.*

It should be noted that service span of 12-14 hours is adequate "to serve work trips based around traditional office hours, with some arrival and departure time flexibility" per the 3rd Edition of the *Transit Capacity & Quality of Service Manual* (TCRP Report 165). Flex-route bus and DAR might complement each other with respect to service span, as opposed to operating concurrently.

3. DATA COLLECTION AND ANALYSIS

Existing Conditions and Previous Data Collection Efforts

Information and data collection about existing EPCT system conditions was needed for planning potential service improvement scenarios. Data collection for this study was a crucial and challenging task. It required the entire research team as well as coordination with EPCT staff, Sun Metro, and First Transit.

To supplement data collected for the 2019 study, the research team collected ridership travel behavior and bus passenger origin-destination (O-D) data to identify the points and segments along the transit system routes with the highest existing ridership activity. The collection methods included on-board data collection during peak and off-peak hours on weekdays to obtain passenger counts and travel patterns. Additionally, total monthly passenger counts were obtained from the EPCT operators (i.e., Sun Metro and First Transit) as complementary information and for weekend passenger flow analysis.

From September 16-27, 2019, TTI surveyors performed O-D data collection. This process relied on the ArcGIS Collector App. This app allowed the researchers to access route information on their mobile devices. Due to poor mobile connectivity experienced in the rural areas of the county, TTI surveyors preemptively downloaded the route maps into their mobile devices (i.e., the off-line maps option). In most cases, TTI surveyors boarded the bus and stayed on for two or three round trips of each bus route. On average, each surveyor went on three round trips per day. Routes were assigned daily depending on bus schedules and the surveyors' working hours. The data collection process was performed during weekdays for both peak and off-peak service hours. The research team defined the peak hours as the highest passenger demand period of the day. Thus, the morning peak hours ran from 5:00 a.m. through 9:00 a.m. and the afternoon peak hours ran from 4:00 p.m. until the last available trip. Off-peak hours were every hour in between. (Please refer to Chapter 3 of the August 2020 report *Developing Guidelines and Best Practices for Bus Shelter Locations Along El Paso County Rural Transit Routes* for more details.)

Summary of Collected Data for Transit Service Design

The information and data collected for designing EPCT service improvement scenarios included several categories, each one containing several items:

- El Paso County population, economic and social data
  - Population breakdown
  - Household size
  - Employment information
  - Household income
  - Induced demand from Ciudad Juarez

- Transportation system infrastructure

    - Existing regional transit network (El Paso County's and the City of El Paso's urban and rural areas)
    - Stations/terminals and transfer centers (including planned transfer centers such as the Far East and Far West transfer centers)
    - Parking facilities available
    - El Paso's street/highway and railroad system (including right-of-way information)
    - Pedestrian infrastructure (relevant information for access to stops)
    - Traffic engineering data (street crossings, school zones, existing work zones, etc.)

- Land use data

    - Existing potential demand generators in the region of study
    - Future (long-term) residential developments

- Transit system usage data about the current ridership behavior (several items of which were collected as part of previous transit studies)

    - Boarding and alighting counts by day of the week
    - Peak and off-peak O-D pairs
    - Directional volumes along each line
    - Clustering demand by Location
    - Total miles per passenger per trip
    - Current travel time and number of individual trips
    - Current transit service hours (for level of service purposes)
    - Key origin and destination locations per line
    - Estimation of interagency (Sun Metro-EPCT) transfers

- Other information directly relevant to regional transit in the county, such as:

    - Accessibility to current and proposed stops
    - Walking distance from/to current stops (average passenger's walking distance by route)
    - Existing utilities near current and proposed stops (applicable to identifying potential utility impacts on accessing stops and shelters)
    - Current and future bus fleet availability (Capacity)
    - Future Transportation Network in the County (from the Regional Transportation Plan)
    - EPCT financial and service information (annual operating and capital costs, other costs, fare revenue, marketing, etc.)

The data collection effort was one of the most important and time-intensive activities in the study. The research team assessed all the information listed above and updated other import factors influencing passenger demand, such as the TNI in the EPCT service area. The TNI is

based on demographic statistics at the Census block group level to identify concentrations of transit-dependent residents. TNI comprises four measures to identify transportation-disadvantaged populations or populations more likely to benefit from and use transit. The four variables/measures are:

1. Elderly population (65+),
2. Households with an individual with a disability,
3. People living below the poverty level, and
4. Transit hours of service.

The El Paso County regional TNI was first calculated during an EPCT feasibility study conducted in 2018, using demographic data from 2015-2016. For the Phase 2 study, the research team updated the TNI for the base year 2019 (Figure 25) and the forecasted year 2024 (Figure 26).

The extensive analysis of data included Geographic Information Systems (GIS) tools. The team processed, assessed, and calculated transit planning parameters using tools included in ArcGIS desktop (Online and Pro versions) as well as spreadsheets and reviewed literature. Figure 27, Figure 28, and Figure 29 are examples of the planning parameters analyzed by the research team to determine the optimal route configurations and stops locations for each of the proposed scenarios described in Chapter 5 of this report.

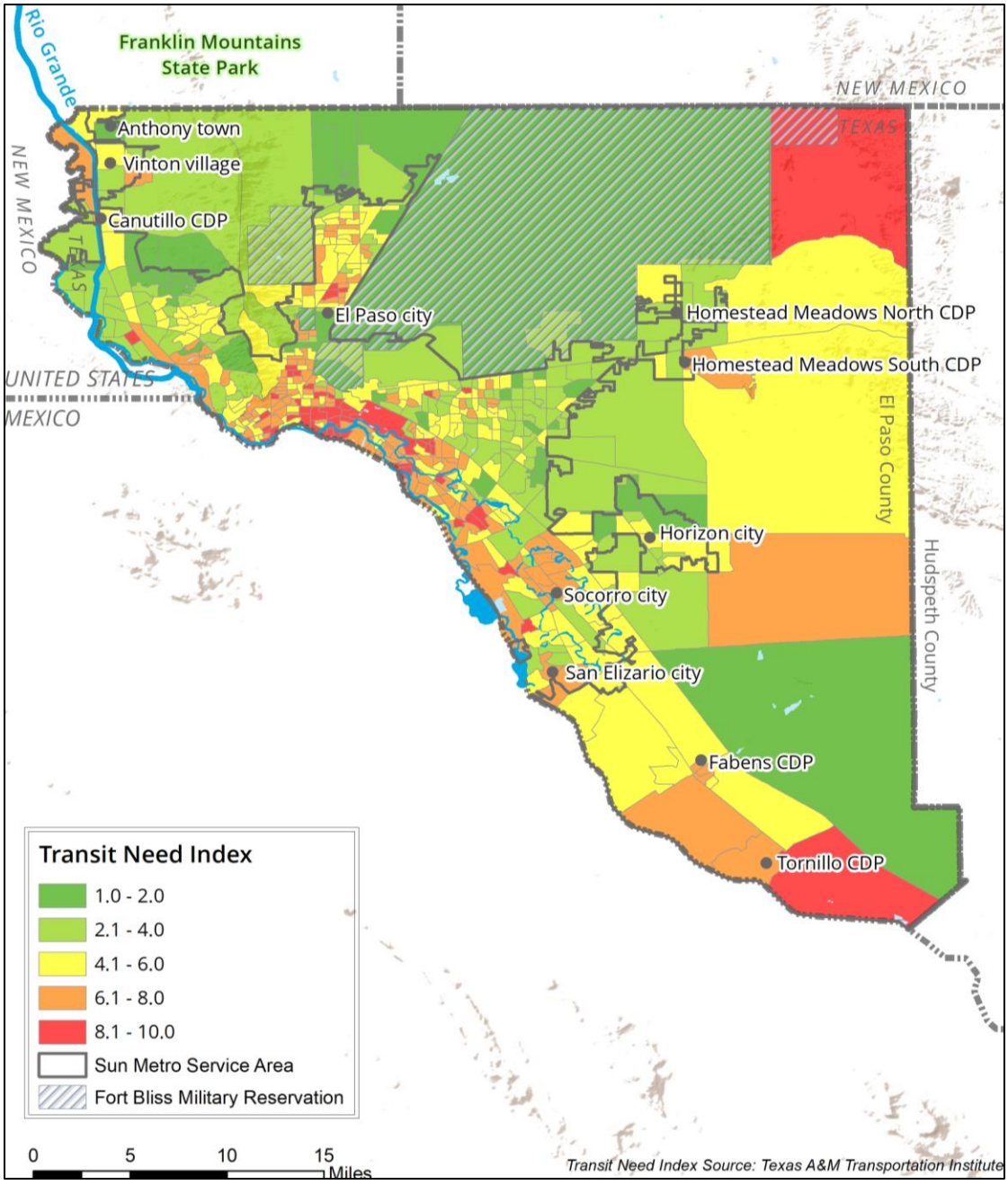


Figure 25. El Paso County Transit Need Index Map for 2019

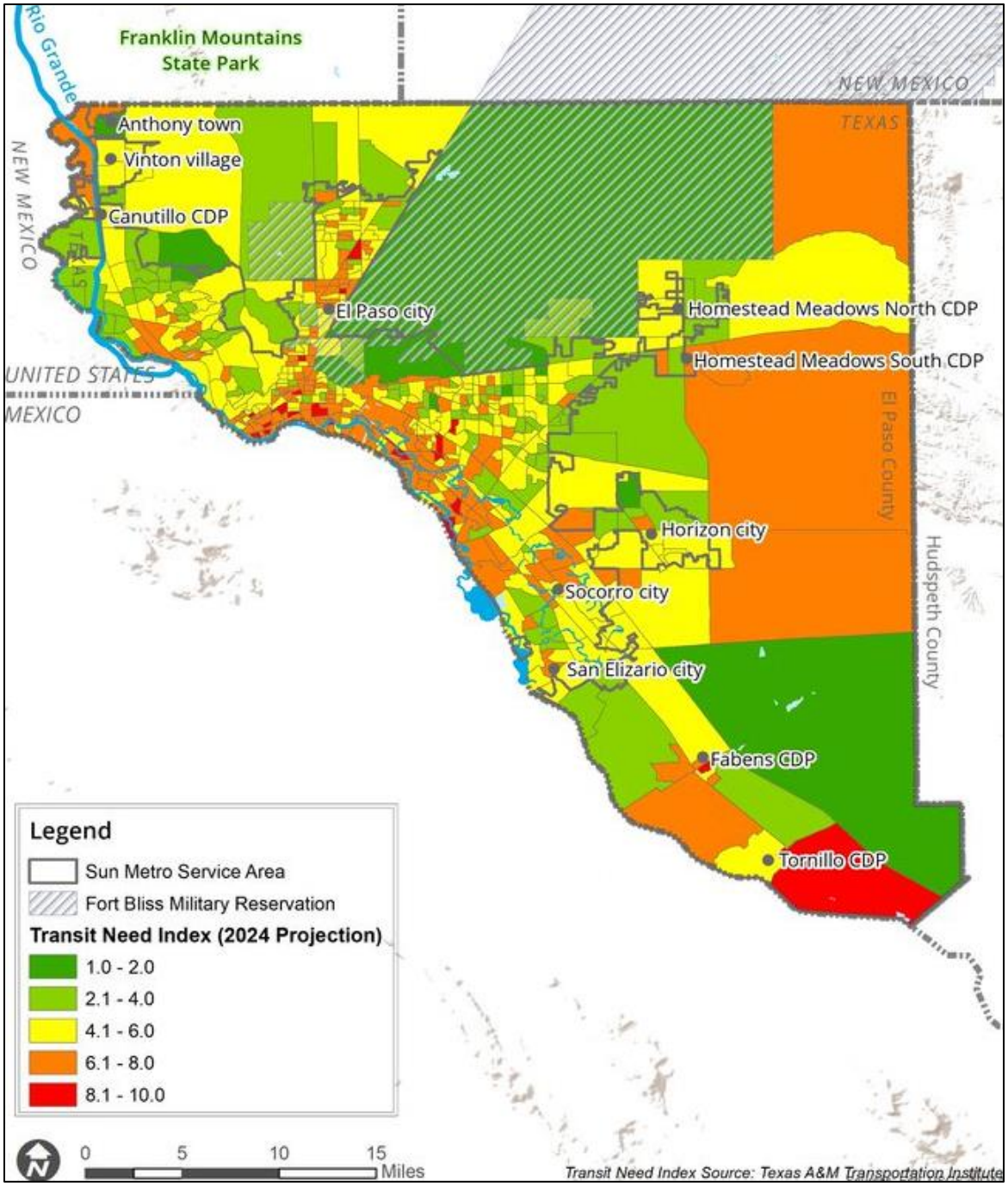


Figure 26. El Paso County Transit Need Index Map for 2024

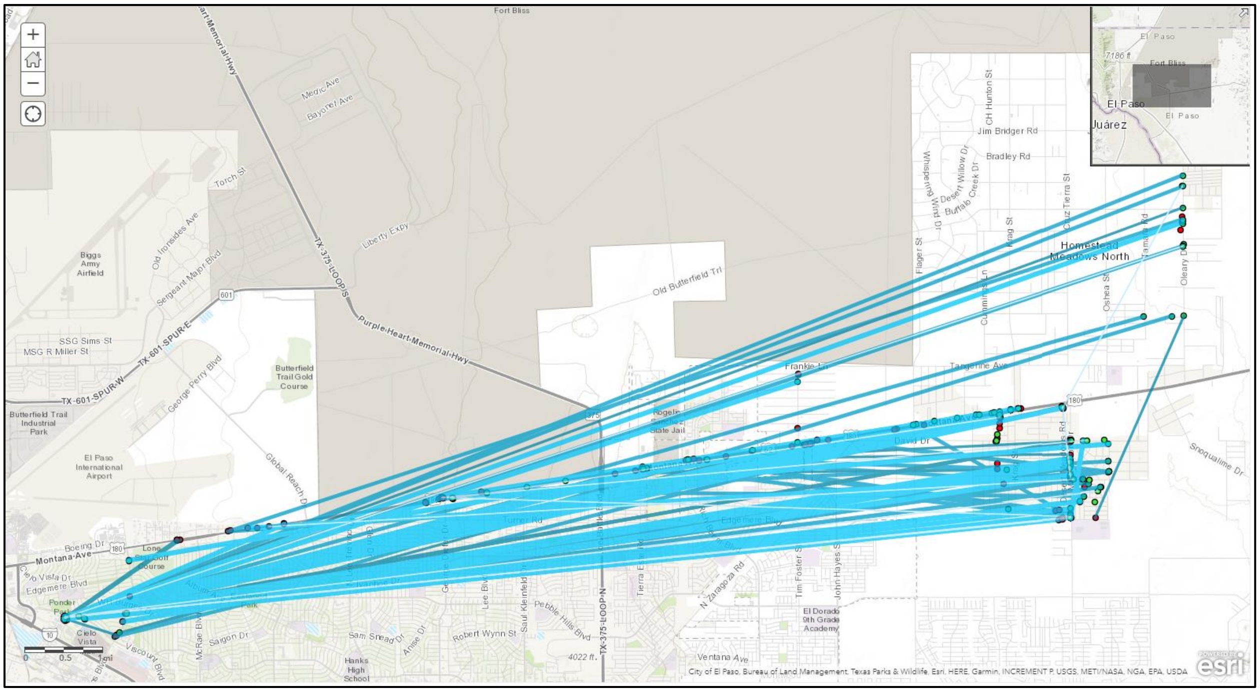


Figure 27. Example of Origin-Destination Pairs Analysis for Route 20 during Peak and Off-Peak Hours

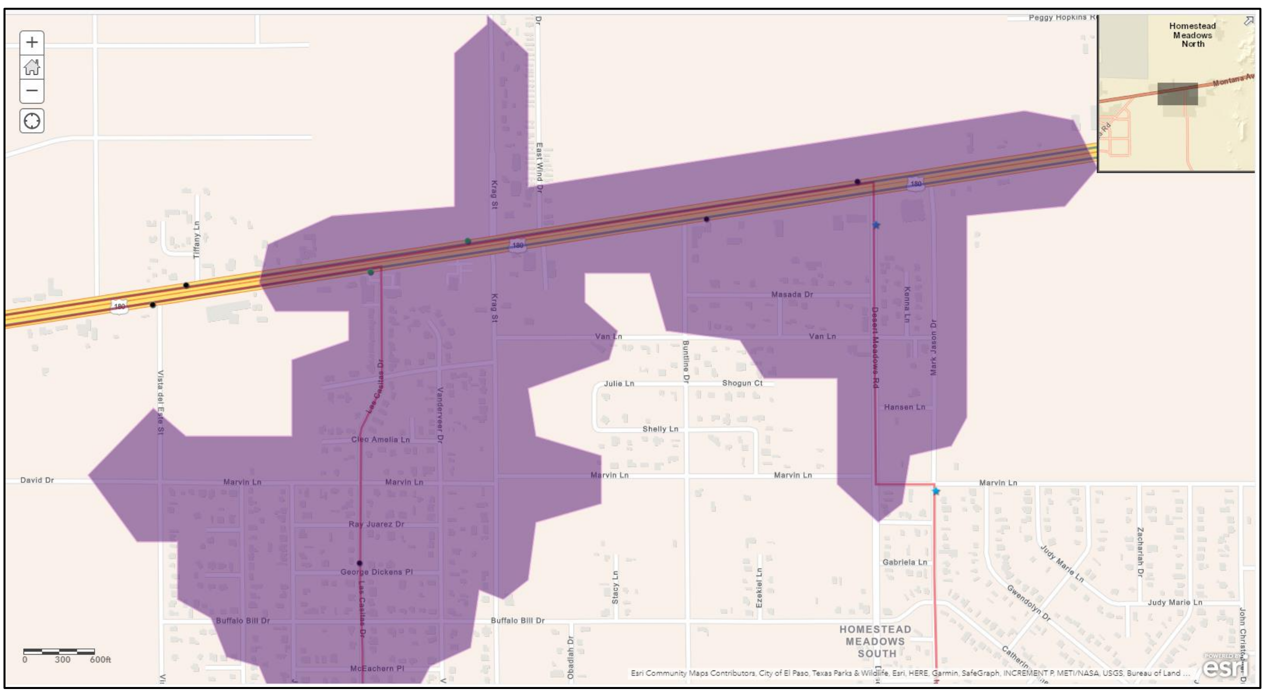


Figure 28. Example of Walking Distance from Proposed Stops Analysis

Figure 29. Example of Individual Travel Time and Distance Classification (Short, Medium, Long Trips)

Finally, the TTI surveyors collected data in the field regarding existing conditions around current and proposed bus stops. The database generated by TTI surveyors was built utilizing a bus stop field review checklist with information about the status of the potential stop location. The database included:

- Description of location (intersection landmarks, directionality, and adjacent land use)
- Roadway cross section elements (existing curbs, pavement conditions, shoulder existence and condition, side parking, etc.)
- Pedestrian accessibility (sidewalks to/from adjacent land uses, traffic signals, pedestrian signals, marked crosswalks, etc.)
- Utility conflicts (existence of storm water inlets, ditches or swales, utility poles, overhead power lines, indications of underground utility lines, etc.)
- Topography and visibility (existence of steep slopes, flood-prone location, roadway lighting, visibility of waiting passengers, etc.)
- Right-of-way (potentially adequate public right-of-way for bus shelter/bench and landing pads) and potential to coordinate with private property owners for on-site bus stops
- Other factors (potential driveway conflicts, passenger vehicle parking issues, posted speed, etc.)

The research team provided EPCT staff with a template bus stop field review checklist for future bus stop planning and implementation.

4. APPLICATION OF GUIDELINES FOR LOCATING RURAL BUS STOPS AND DESIGNING RURAL TRANSIT SERVICES

Assumptions for Service Scenarios

Service scenarios were developed using the methodologies described in Appendix 6-B (Service Scenario Costs, Ridership, and Revenues Methodology) of the 2018/2019 *El Paso County Regional Transit Institutional Options Feasibility Study* to the extent possible. There are two scenarios: a cost-neutral scenario and an expanded funding (enhanced service) scenario.

Service Types

Both scenarios include some degree of flex-route transit service and DAR service. Vámonos Vanpool service and Gold Route service were assumed to continue at currently planned levels under both scenarios.

Funding Levels

The cost-neutral scenario reflects currently programmed funding levels. The expanded funding scenario assumes that funding levels will increase by 25%. The source of the additional funding is yet to be determined, but possible sources include fare increases, new grants, increased local funding contributions, and technological investments to increase service efficiency.

Table 11 summarizes EPCT's annual operating budget for the three fiscal years preceding the start of the COVID-19 pandemic. Table 12 and Table 13 summarize EPCT revenues as reported to TxDOT for the same fiscal years. The latter tables account for funds not accounted for in the former table, such as fare revenues and administrative expenses.

Table 11. El Paso County Transit Annual Operating Budget, FY2017 through FY2019

Service	FY2017	FY2018	FY2019
Section 5311 (all County routes but Route 50)	$1,077,205	$1,156,762	$1,583,895
Gold Route	$420,180	$420,180	$496,788
Vanpool	$569,818	$882,754	$882,754
Route 50	$335,261	$566,093	$566,093
Total	**$2,402,464**	**$3,025,789**	**$3,529,530**

Source: El Paso County staff
Note: FY2020 not included due to the COVIC-19 pandemic

Table 12. El Paso County Transit Annual Revenues – Commuter Bus

Revenue Source	FY2017	FY2018	FY2019
Section 5311	$866,959	$1,243,630	$1,232,010
Section 5309 & 5339 Capital Revenues	$0	$0	$858,172
Rural State	$407,287	$442,264	$282,880
Passenger Fares	$341,717	$319,849	$319,601
Local Contributions	$830,675	$868,000	$1,000,025
Local Contributions - In Kind	$10,056	$10,056	$12,916
Local Contracts - NMDOT – Intercity Bus	$420,180	$420,180	$496,788
Local Contracts - Route 84 - CMAQ	$211,495	$117,847	$0
Local Contracts - Route 50 - CMAQ	$295,077	$309,036	$320,045
Total	**$3,383,446**	**$3,730,862**	**$4,522,437**

Source: TxDOT PTN-128
Note: FY2020 not included due to the COVIC-19 pandemic

Table 13. El Paso County Transit Annual Revenues – Vanpool

Revenue Source	FY2017	FY2018	FY2019
Passenger Fares	$491,580	$537,455	$741,012
Local Contracts - Enterprise Vanpool - CMAQ	$352,511	$364,629	$455,885
Total	**$844,091**	**$902,084**	**$1,196,897**

Source: TxDOT PTN-128
Note: FY2020 not included due to the COVIC-19 pandemic

Based on Table 12 and Table 13 above, a 25% increase in revenues translates to the annual revenues summarized in Table 14.

Table 14. El Paso County Transit Annual Revenues – Expanded Funding Scenario

Service	Estimated Annual Revenues
Commuter Bus	$5,653,046.25
Vanpool	$1,496,121.25
Total	**$7,149,167.50**

Basis of Operating Costs

Operating costs for both scenarios were estimated based on revenue hours of transit service. As such, operating cost estimates are sensitive to service days, service span, and the number of transit vehicles in operation (a function of routing and frequency). Annual operating costs were estimated for a 10-year period and reflect inflation.

For the Phase 2 study, the research team assumed an operating cost of $65 per revenue hour based on the Phase 1 study. This unit cost falls within the range of peer system operating costs per revenue hour summarized in Table 15. Because future EPCT services are anticipated to

continue to use the same type of vehicles as the current service, the $65 per revenue hour unit cost is assumed to apply to fixed-route, flex-route, and DAR services.

Table 15. Peer Agency Fixed-Route/DAR Operating Cost Comparison

Peer Agency	Operating Expense per Vehicle Revenue Hour		
	Fixed-Route	DAR	Fixed-Route/ DAR
CARTS Rural – Commuter Bus (Austin, TX)	$100.51	$87.69	115%
CARTS Rural – Motor Bus (Austin, TX)	$55.97	$87.69	64%
Heart of Iowa Regional Transit Agency (Des Moines, IA)	*	$48.37	*
Fresno County Rural Transit Agency (Fresno, CA)	$68.36	$68.35	100%
Kern Regional Transit (Bakersfield, CA)	$148.56	$36.83	403%
McLennan County (Waco, TX)	$135.35	$37.46	361%
Panhandle Community Services (Amarillo, TX)	*	$42.38	*
Tulare County Area Transit (Visalia, CA)	$90.63	$74.64	121%
Webb County Community Action Agency (Laredo, TX)	$66.19	$32.69	202%
Maximum	**$148.56**	**$87.69**	**403%**
Minimum	**$55.97**	**$32.69**	**64%**
Average	**$95.08**	**$57.34**	**195%**

*Operates only DAR
Source: Rural NTD

Basis of Capital Costs

Illustrative unit costs for transit system capital elements are provided in Table 16. Capital costs for new vehicles as well as costs of acquiring scheduling software and in-vehicle technology might not be costs directly borne by EPC in their entirety, if service operations continue to be contracted out. At the end of FY2020, based on data reported to the TxDOT PTN-128 system, EPC owned 22 fixed-route revenue vehicles and contracted seven fixed-route revenue vehicles.

Table 16. Illustrative Unit Costs for Transit Capital Elements

Element	Unit Cost
5-foot by 8-foot concrete landing pad for wheelchair ramp	$250 each
6-foot sidewalk	$35 per linear foot
Bus stop sign	$100 each
Bench	up to $1,400 each
Basic bus shelter with seating	$5,000 to $6,000
"Full-featured" bus stop with shelter, seating, trash can, larger concrete pad, solar lighting, design, engineering, construction/installation, and permitting	$15,000 to $35,000
Addressing more-complicated design needs (drainage, utilities, topography, etc.) and adjacent pedestrian crossing needs	case-specific
Bus (cutaway, CNG)	$125,000

Sources: TxDOT average low bid report, statewide 12-month average, November 2020; TxDOT PTN-128; and Streetsblog, "Why We Need a Bus Shelter at Every Stop," October 1, 2018

Basis of Other Costs

Other costs include training costs for El Paso County staff (including bus drivers).

Ridership and Fare Revenues

The fare structures for fixed-route, flex-route, and DAR are assumed to be equivalent.

Transfers are assumed to be free between County buses but not between County buses and Sun Metro buses.

Development of Service Scenarios

In the Phase 1 study, the research team developed a series of transit service scenarios. Every scenario included a ridership, revenue, and expenses forecast, and each scenario was evaluated on how well it performed with respect to the five service planning goals listed below:

1. Provide transit service to all residents in the rural areas of El Paso County
2. Provide transit service to all residents in the urban areas of El Paso County
3. Improve the utility of transit to serve many passenger trip purposes
4. Improve the effectiveness of transit service
5. Complement Sun Metro

Out of the six scenarios developed under the above planning goals, the preferred scenario was Scenario 6: Increased Flexible-Route Local Bus and Full County DAR. Scenario 6 was used as a base for developing and analyzing transit service improvement options in the Phase 2 study (including route configuration and potential stop locations). Using the transit service planning

guidelines described previously in this report and the data collected for the Phase 2 effort, the research team assessed current and future (short-term) transit patterns and potential bus stop locations. TTI researchers compared the results of the demand assessment to the current transit supply available in the county to identify service gaps and recommend operational improvements with special emphasis on travel time savings.

Consequently, two new service scenarios were proposed: a cost-neutral scenario and an enhanced scenario. Some of the factors considered for the development of the two scenarios included catchment areas in the region (land uses), distance between stops, topography, demand patterns (including special demand generators), safety and security, possible intersection conflicts, roadside infrastructure, and other infrastructure considerations. DAR and flex-route bus service (the latter of which allows for deviations from the established route to places within ¾ mile of the route) were also considered as part of the service scenarios. The details about the two new service scenarios are provided in Chapter 5.

5. PROPOSED SERVICE SCENARIOS

The research team proposed two different transit service configurations for the EPCT system, which were named as follows:

1. Proposed Service scenario (cost-neutral)
2. Enhanced Service scenario (service in full compliance with service planning guidelines and public feedback priorities)

This chapter describes transit system changes, costs, and benefits for both scenarios.

Proposed and Enhanced Service Scenarios

Both scenarios include these main features:

- Flex-route local bus service operates in 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.
- The DAR service operates in all areas of the county outside the flex-route service area.
- The Gold Route and Vámonos Vanpool program continue unchanged.
- The proposed service can be enhanced with greater frequency or additional operating hours/days, subject to funding availability.

The main differences between the Proposed Service scenario and current service are as follows:

- **DAR** would serve rural areas outside the flexible-route area all day.
- **Route 10** would be split into Route 10 serving Anthony and Route 11 serving Westway. Both routes would run on Doniphan Drive between Westside Transfer Center and Canutillo. Route 10 would continue to Anthony on Doniphan Drive, while Route 11 would continue to Westway on Talbot Drive and Interstate 10. Route 10 and Route 11 buses would run every 60-75 minutes. Route 11 would also connect the Westside Transfer Center with the El Paso Shoppes (outlet mall). Off-peak service would cover a flexible area of ¾ of a mile.
- **Route 20** would be split into Route 20 serving Homestead Meadows South and Route 21 serving Homestead Meadows North. Both routes would operate every 60-75 minutes and only during peak periods. DAR service would be available on demand during off-peak periods.
- **Route 30** would have several changes along most of the route. Frequency would increase to one bus per hour. Route 31 would be a new route that provides service on Eastlake Boulevard. It would connect Agua Dulce and Horizon City to Mission Valley Transfer Center. Buses would run every 60 minutes during peak periods and every 90 minutes during off-peak periods. During off-peak periods, DAR service would be

available on demand. Route 30 and Route 31 would share stops at Darrington Road and Horizon 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 increase from one bus every 1 hour and 40 minutes to one bus every 1 hour and 30 minutes. Route 40 would be supplemented by Route 40X, which would be a new express route that operates on Interstate 10 during peak periods only. It would connect Mission Valley Transfer Center to Tornillo, and buses would run every 75 minutes.
- **Route 50** would not enter the Socorro Entertainment Center or Licon Dairy; however, these locations would be served with flexible-route service. Route 50 would run hourly all day. All existing stops would be served either by direct service or DAR service.
- **Route 84** would be moved to North Loop Road and run hourly all day. Route 50 and Route 84 currently run primarily on the same roads and moving Route 84 would increase transit access to more county residents.

Maps of the Proposed Service scenario can be found in Figure 30 through Figure 47.

The main difference between Proposed Service scenario and the Enhanced Service scenario is that Enhanced Service scenario would include greater bus frequencies. Buses would run no more than 60 minutes apart on all routes. As a result of the greater bus frequencies, passengers on affected routes would significantly reduce their waiting time and overall travel time, not only during peak hours but also during off-peak hours. The Enhanced option would also provide Sunday service to all routes during peak and off-peak hours and would provide flex-route service during off-peak periods for Routes 20 and 21.

The differences between the proposed and enhanced services are operational and mainly affect the level of service provided. That is, the route configuration and stop distribution/locations would remain essentially the same under both scenarios. Some routes under off-peak periods would experience configurations and service levels, such as Routes 30 and 31 (which would reduce their total trip length) and Routes 20 and 21 (which would not be available to the same extent during off-peak periods).

Figure 30. EPC Transit Proposed Route Configuration (Peak hours service)

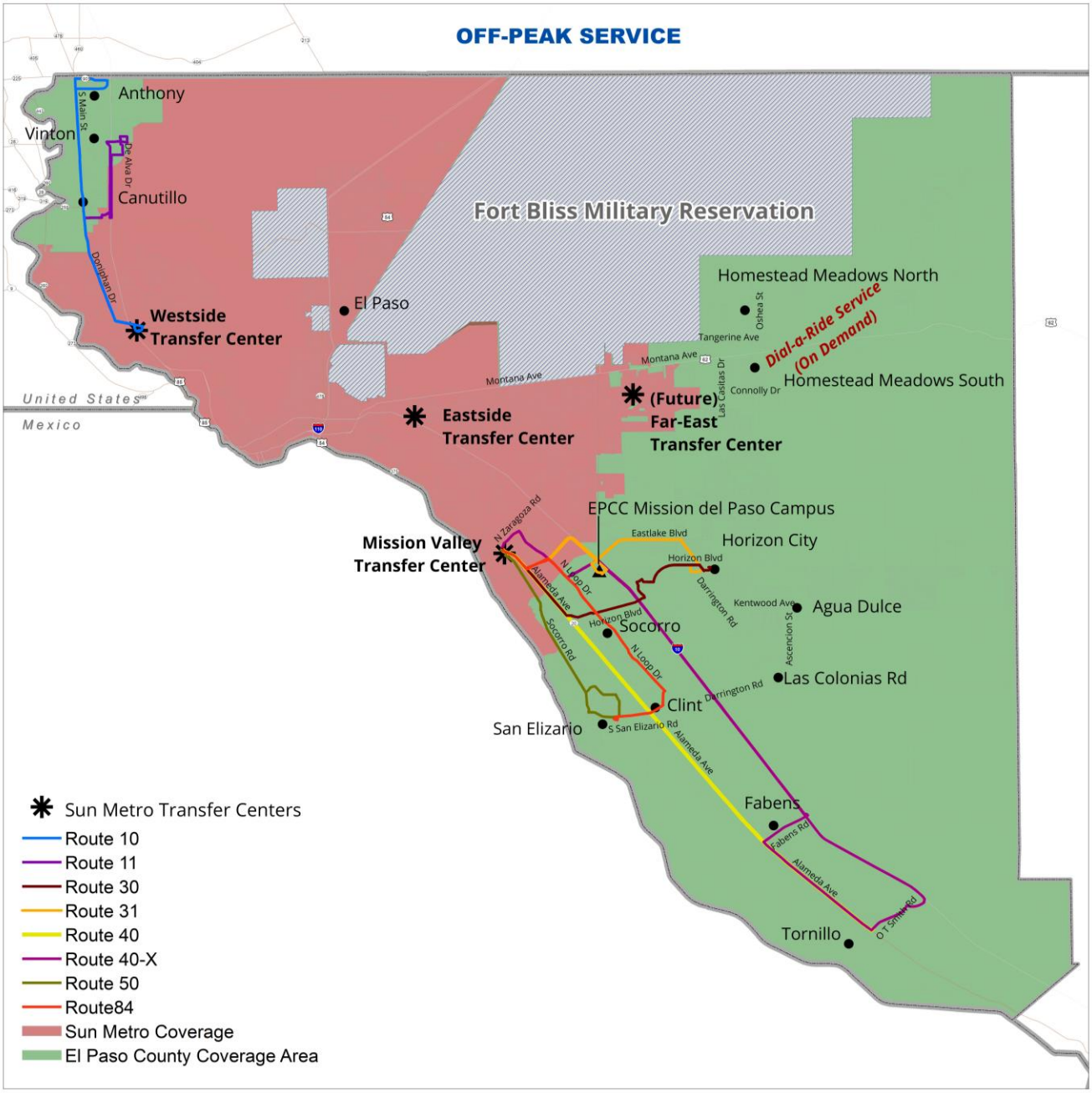


Figure 31. EPC Transit Proposed Route Configuration (Off-Peak Service)

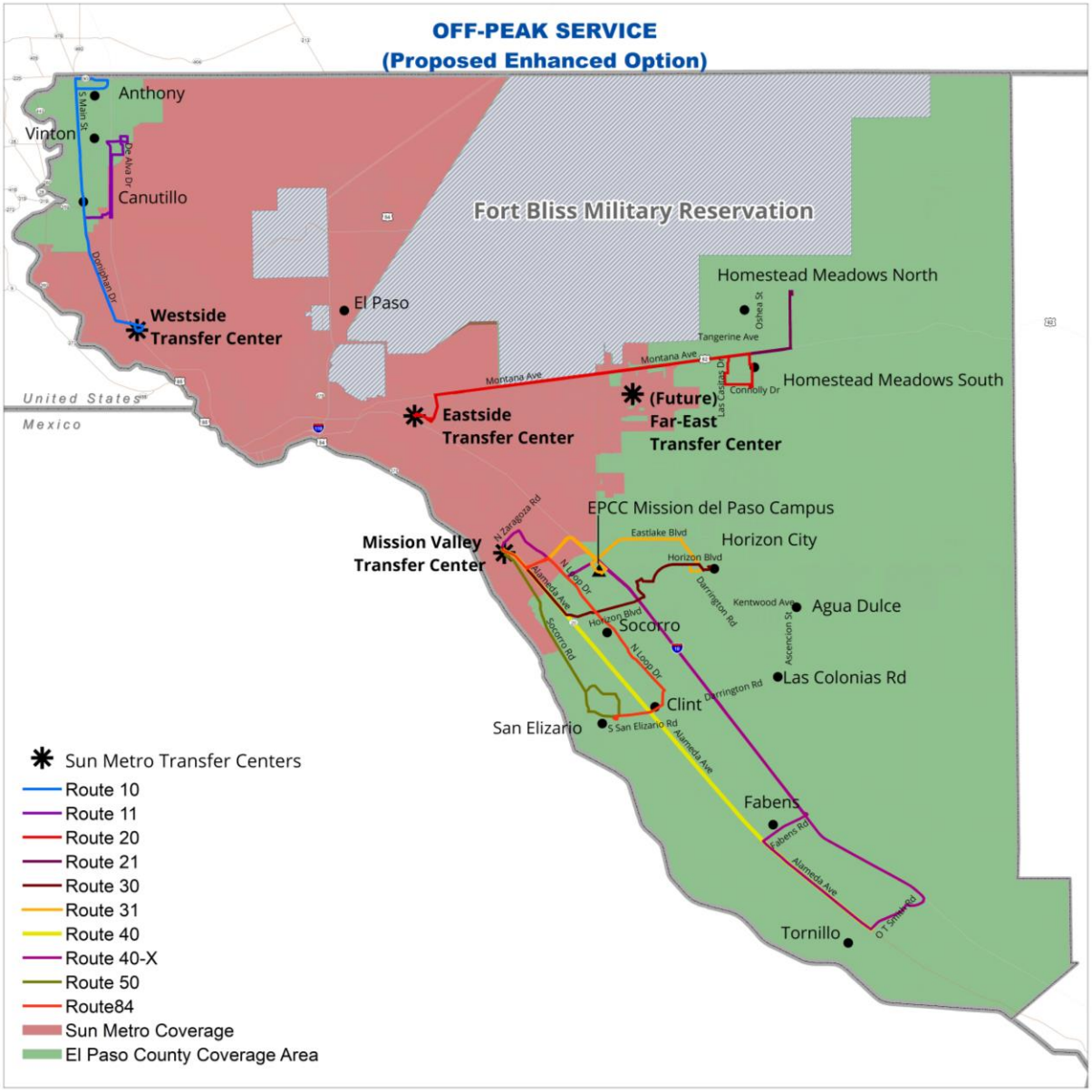


Figure 32. EPC Proposed-Enhanced Transit Route Configuration (Off-Peak Service)

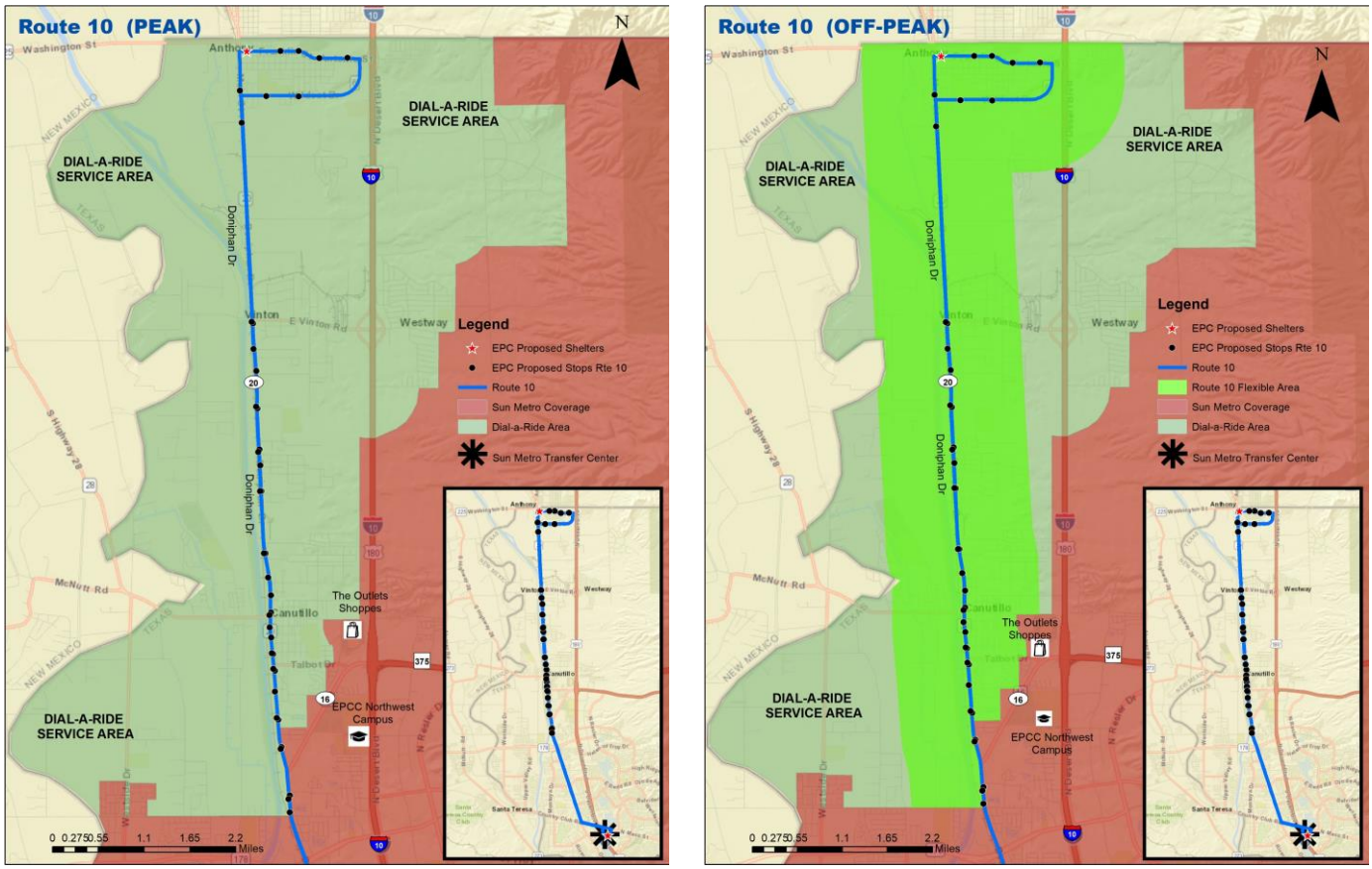


Figure 33. Proposed Service for Route 10: Peak (left) and Off-Peak (right)

Current Route 10 is proposed to be split into two new different routes: Route 10 and Route 11. Based on the O-D data collected by the research team, the optimal configuration for this route is departing from the Westside Transfer Center and utilizing two main El Paso arterials (Mesa Street and Doniphan Drive) to serve the Canutillo, Vinton and Anthony rural communities avoiding deviations into other areas of EPC. During the peak period, Route 10 would not allow flexible service (Figure 33), covering Anthony by using Franklin Street and Wildcat Drive. An extension of the current service hours is proposed, from 5:30 a.m. to 7:30 p.m. Monday through Friday. The off-peak hours service would allow deviations (flexible service areas) up to ¾ of a mile as long as they are along paved roads. The Enhanced Service scenario would also offer service on Sundays from 7:30 a.m. to 4:15 p.m.

Table 17. Route 10 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Westside Transfer Center	10	Outbound	Shelter
1	Doniphan Dr and Easy Way OB	10	Outbound	Bus Sign
2	Doniphan Dr and Oscar Raul Dr (6601 Doniphan Dr) OB	10	Outbound	Bus Sign
3	Doniphan Dr and Crystal Marie Rd OB	10	Outbound	Bus Sign
4	Doniphan Dr and Talbot Ave OB	10	Outbound	Bus Sign+Bench
5	Doniphan Dr and Park Ave OB	10	Outbound	Bus Sign+Bench
6	Doniphan Dr and Central Ave OB	10	Outbound	Bus Sign+Bench
7	Doniphan Dr and La Mesa Ave OB	10	Outbound	Bus Sign
8	Doniphan Dr and La Tuna Ave OB	10	Outbound	Bus Sign
9	Doniphan & El Chanate OB	10	Outbound	Bus Sign
10	Doniphan Dr And McArthur St OB	10	Outbound	Bus Sign+Bench
11	Doniphan Drand McKnight St OB	10	Outbound	Bus Sign
12	Doniphan Dr and Selva Dr OB	10	Outbound	Bus Sign
13	Doniphan Dr and Cap Carter Rd OB	10	Outbound	Bus Sign
14	Doniphan Dr and Hemley Rd OB	10	Outbound	Bus Sign+Bench
15	Doniphan Dr and Vinton Rd OB	10	Outbound	Bus Sign+Bench
16	Wildcat Dr and S 4th St OB	10	Outbound	Bus Sign+Bench
17	Wildcat Dr and Jaime St OB	10	Outbound	Bus Sign+Bench
18	Antonio St and Wildcat Dr OB	10	Outbound	Bus Sign+Bench
19	Antonio St and Luisa St OB	10	Outbound	Bus Sign
20	Franklin St and S 10th St OB	10	Outbound	Bus Sign
21	Franklin St and 8th St OB	10	Outbound	Bus Sign+Bench
22	Franklin St and S 2nd St OB	10	Outbound	Shelter
23	Main St and Wildcat Dr IB	10	Inbound	Bus Sign
24	Doniphan and Rainbow Lake IB	10	Inbound	Bus Sign
25	Doniphan Dr and Vinton Rd IB	10	Inbound	Bus Sign+Bench
26	Doniphan Dr and Holguin Ave IB	10	Inbound	Bus Sign
27	Doniphan Dr and Cap Carter Rd IB	10	Inbound	Bus Sign
28	Doniphan Dr and Selva Dr IB	10	Inbound	Bus Sign
29	Doniphan Dr And McArthur St IB	10	Inbound	Bus Sign+Bench
30	Doniphan & El Chanate IB	10	Inbound	Bus Sign
31	Doniphan Dr and Anthony Ave IB	10	Inbound	Bus Sign
32	Doniphan Dr and La Mesa Ave IB	10	Inbound	Bus Sign+Bench
33	Doniphan Dr and Central Ave IB	10	Inbound	Bus Sign
34	Doniphan Dr and Park Ave IB	10	Inbound	Bus Sign+Bench
35	Doniphan Dr and Talbot Ave IB	10	Inbound	Bus Sign+Bench
36	Doniphan Dr and H D Rd IB	10	Inbound	Bus Sign
37	Doniphan Dr and Crystal Marie Rd IB	10	Inbound	Bus Sign
38	Doniphan Dr and Oscar Raul Dr (6601 Doniphan Dr) IB	10	Inbound	Bus Sign
39	Doniphan Dr and Easy Way IB	10	Inbound	Bus Sign
40	Doniphan Dr and Borderland Rd IB	10	Inbound	Bus Sign

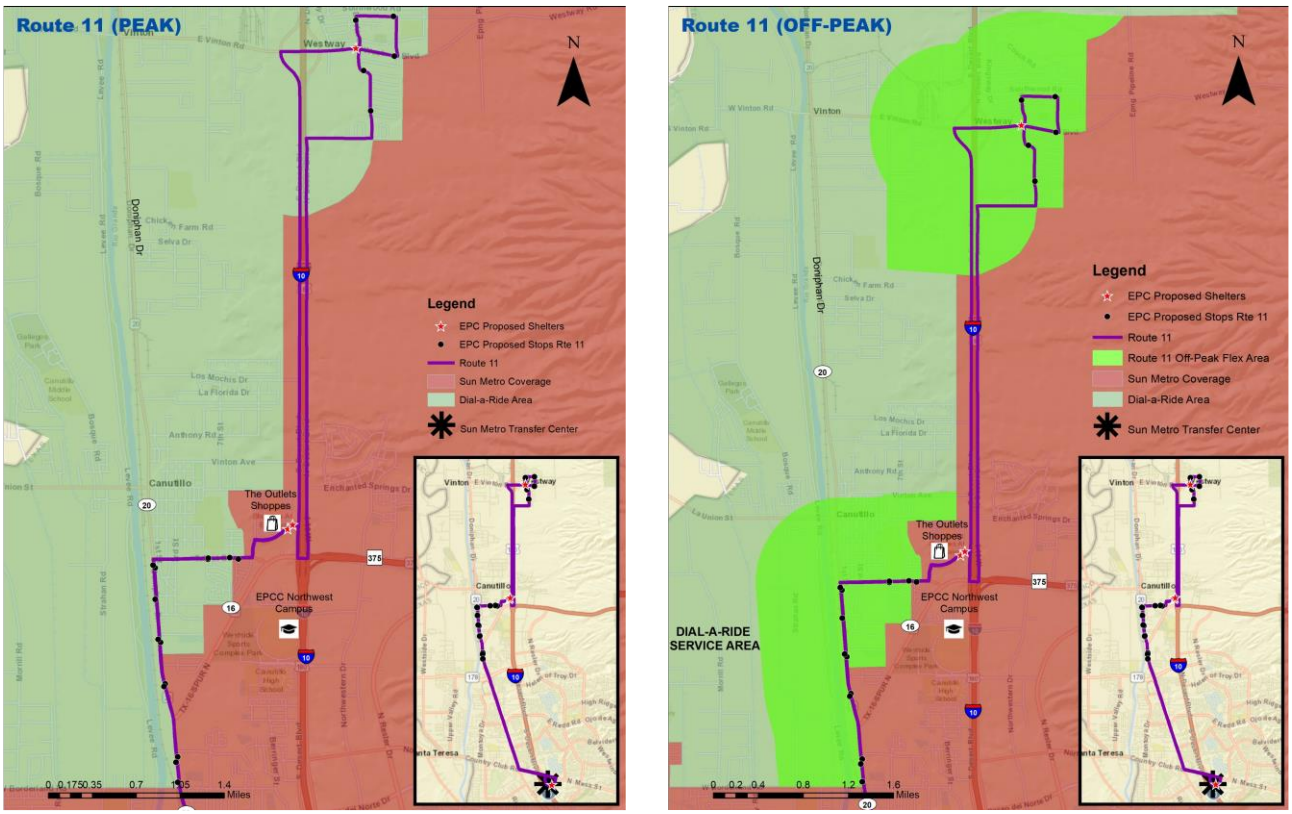


Figure 34. Proposed Service for Route 11: Peak (left) and Off-Peak (right)

Route 11 would share a segment of Doniphan Drive with Route 10. However, Route 11 would cover the Westway community and South Canutillo. Route 11 is projected to have inbound and outbound stops at the Outlets Shoppes of El Paso. (See Figure 35.) Similarly to Route 10, Route 11 would run along the proposed configuration during the peak period, allowing no deviations. The off-peak period would see flexible service along the route except along the segments of I-10 that are part of the Sun Metro service area. (See Figure 34, right.) Route 11 proposed service hours would be from 5:45 a.m. to 7:45 p.m. Monday through Friday and 7:45 a.m. to 4:30 p.m. on Saturday. The Enhanced Service scenario would also include Sunday service from 7:45 a.m. to 4:30.

Figure 35. Route 11 Stop at the Intersection of Transmountain Road and I-10

Table 18. Route 11 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Westside Transfer Center	11		Shelter
1	Doniphan Dr and Easy Way OB	11	Outbound	Bus Sign
2	Doniphan Dr and Oscar Raul Dr (6601 Doniphan Dr) OB	11	Outbound	Bus Sign
3	Doniphan Dr and Crystal Marie Rd OB	11	Outbound	Bus Sign
4	Doniphan Dr and Talbot Ave OB	11	Outbound	Bus Sign+Bench
5	Talbot and Burns St OB	11	Outbound	Bus Sign+Bench
6	Talbot and Road A OB	11	Outbound	Bus Sign
7	The Outlet Shoppes at El Paso OB	11	Outbound	Shelter
8	De Alva Dr and Gallardo Road OB	11	Outbound	Bus Sign
9	De Alva Dr and Bayshore Rd OB	11	Outbound	Bus Sign
10	Westway Blvd and Tom Mays Rd OB	11	Outbound	Bus Sign
11	Banker Rd and Tom Mays Rd IB	11	Inbound	Bus Sign
12	De Alva Dr and Meadow Rd IB	11	Inbound	Bus Sign
13	Westway Blvd and De Alva Dr IB	11	Inbound	Shelter
14	The Outlet Shoppes at El Paso IB	11	Inbound	Shelter
15	Talbot and Rey Pl IB	11	Inbound	Bus Sign
16	Talbot and Burns St IB	11	Inbound	Bus Sign+Bench
17	Doniphan Dr and Talbot Ave IB	11	Inbound	Bus Sign+Bench
18	Doniphan Dr and H D Rd IB	11	Inbound	Bus Sign
19	Doniphan Dr and Crystal Marie Rd IB	11	Inbound	Bus Sign
20	Doniphan Dr and Oscar Raul Dr (6601 Doniphan Dr) IB	11	Inbound	Bus Sign
21	Doniphan Dr and Easy Way IB	11	Inbound	Bus Sign
22	Doniphan Dr and Borderland Rd IB	11	Inbound	Bus Sign

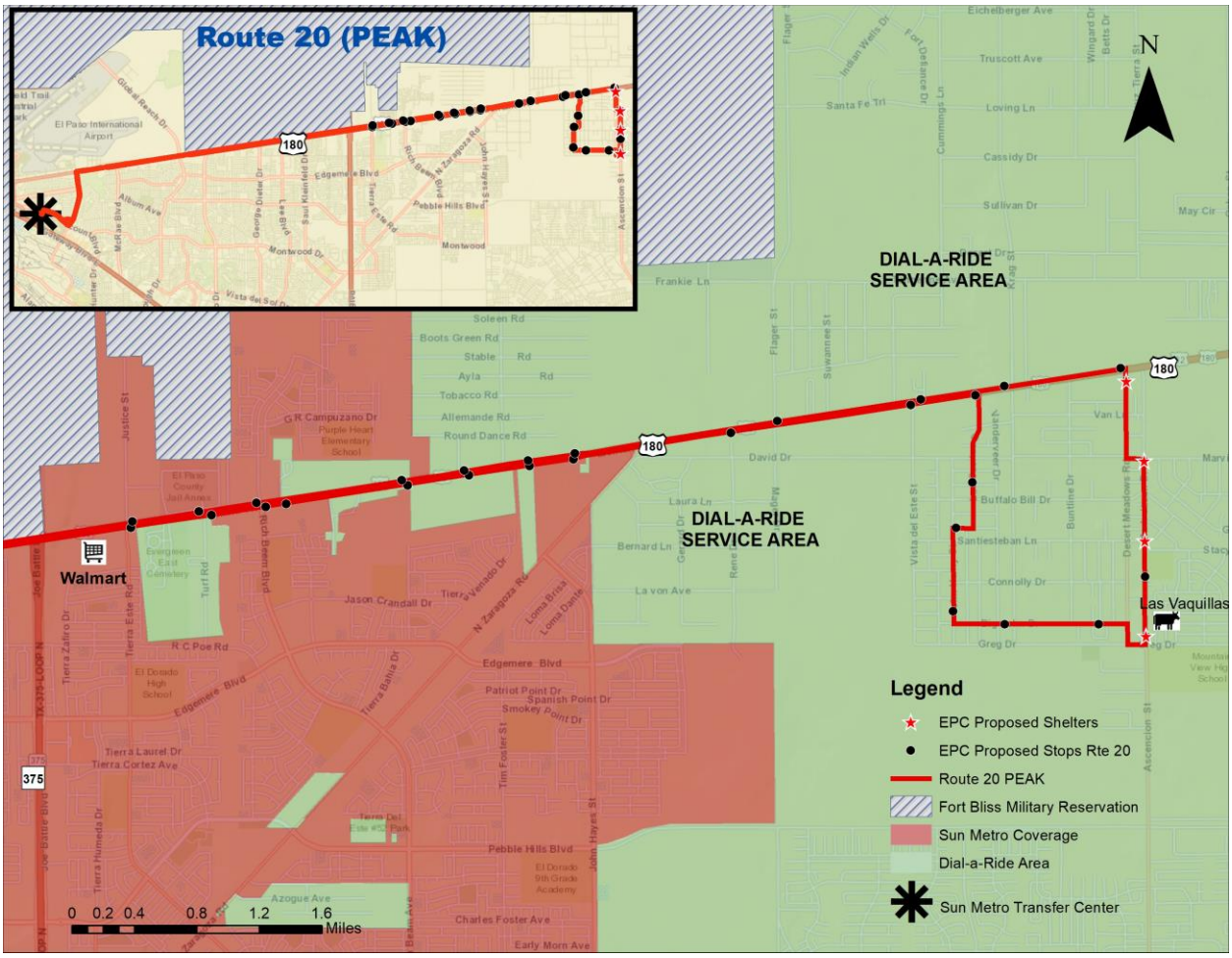


Figure 36. Proposed Service for Route 20 Peak

Montana Avenue would continue to be the main corridor for Route 20. However, to improve the service efficiency in the Montana Vista region, Route 20 would run along Montana Avenue, covering only the Homestead Meadows South community. (See Figure 36.) An additional route, Route 21, is proposed to cover the Homestead Meadows North rural community, sharing the Montana Avenue segment with Route 20. (See Figure 37.) On weekdays, Route 20 is proposed to run from 5:15 a.m. to 7:45 a.m. and would have a break during off-peak hours. The route would continue serving Homestead Meadows South with DAR (on-demand service) from 7:45 a.m. to 3:15 p.m. to optimize the route's runs and cover existing demand. On weekends, Route 20 would operate from 7:45 a.m. to 3:15 p.m. Both routes are proposed to operate every 60-75 minutes and only during peak periods. The Enhanced Service scenario would operate both routes a 60-minute round trips on weekdays and weekends and to operate as flex-routes during off-peak periods (instead of DAR only).

Table 19. Route 20 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Eastside Transfer Center	20		Shelter
1	Montana Ave and Tierra Este Rd OB	20	Outbound	Bus Sign
2	Montana Ave and Turf Rd OB	20	Outbound	Bus Sign
3	Montana Ave and Rich Beem Blvd OB	20	Outbound	Bus Sign
4	Montana Ave and Hueco Club Rd OB	20	Outbound	Bus Sign
5	Montana Ave and Mark Avizo OB	20	Outbound	Bus Sign
6	Montana Ave and Camino Azteca St OB	20	Outbound	Bus Sign
7	Montana Ave and Square Dance Rd OB	20	Outbound	Bus Sign+Bench
8	Montana Ave and N Zaragoza Rd OB	20	Outbound	Bus Sign
9	Montana Ave and Rene Dr OB	20	Outbound	Bus Sign
10	Montana Ave and Vista Del Este St OB	20	Outbound	Bus Sign
11	Montana and Las Casitas Dr OB	20	Outbound	Bus Sign+Bench+
12	Las Casitas Dr and George Dickens Pl OB	20	Outbound	Bus Sign
13	Roger Torres Pl and Jonh Henry Dr OB	20	Outbound	Bus Sign
14	John Henry St and Sea Biscuit Dr OB	20	Outbound	Bus Sign
15	Big John Dr and Vander Veer Dr OB	20	Outbound	Bus Sign
16	Big John Dr and Yanagisako Ave OB	20	Outbound	Bus Sign
17	Mark Jason Dr and Greg Dr IB	20	Inbound	Shelter
18	Mark Jason Dr and Karl Ct IB	20	Inbound	Bus Sign+Bench
19	Mark Jason Dr and Santiesteban Ln IB	20	Inbound	Shelter
20	Mark Jason Dr and Marvin Ln IB	20	Inbound	Shelter
21	Desert Meadows Rd. and Montana Ave IB	20	Inbound	Shelter
22	Montana and Desert Meadows IB	20	Inbound	Bus Sign
23	Montana Ave and Krag St IB	20	Inbound	Bus Sign+Bench
24	Montana Ave and Vista Del Este St IB	20	Inbound	Bus Sign
25	Montana Ave and Flager Dr IB	20	Inbound	Bus Sign
26	Montana Ave and N Zaragoza Rd IB	20	Inbound	Bus Sign
27	Montana Ave and Square Dance Rd IB	20	Inbound	Bus Sign+Bench
28	Montana Ave and Camino Azteca St IB	20	Inbound	Bus Sign+Bench
29	Montana Ave and Mark Avizo IB	20	Inbound	Bus Sign+Bench
30	Montana Ave and Rich Beem Blvd IB	20	Inbound	Bus Sign
31	Montana Ave and Turf Rd IB	20	Inbound	Bus Sign+Bench
32	Montana Ave and Tierra Este Rd (Justice St) IB	20	Inbound	Bus Sign

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

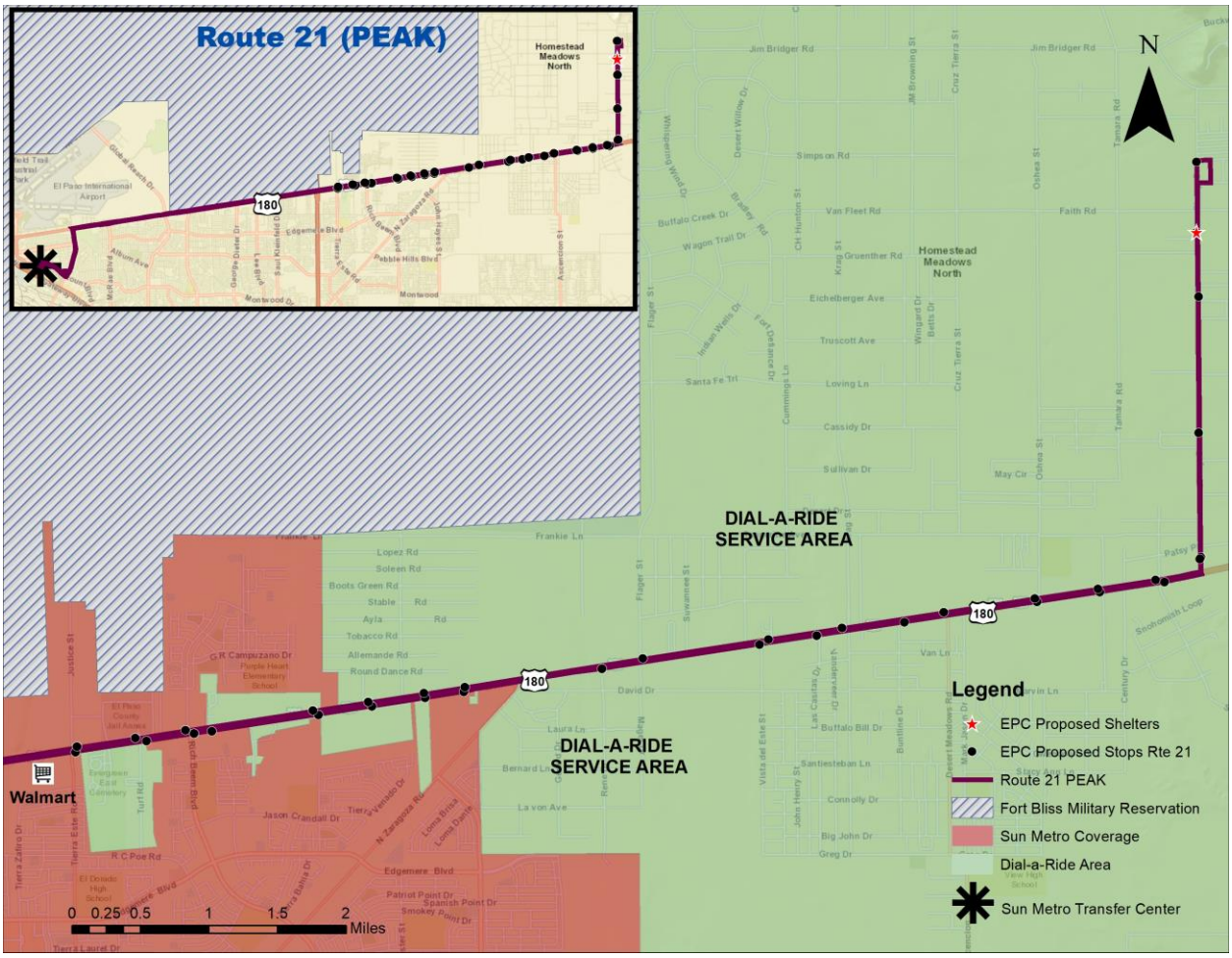


Figure 37. Proposed Service for Route 21 Peak

Route 21 would cover Homestead Meadows North with regular scheduled service during weekdays from 5:30 a.m. to 7:30 a.m. and from 3:00 p.m. to 7:00 p.m. The route would allow no deviations during the peak hours. However, DAR (on-demand service) would operate from 7:45 a.m. to 3:15 p.m. with an optimized route that will depend on daily off-peak passenger demand (user calls). On weekends, Route 21 would also serve riders from 7:45 a.m. to 3:15 p.m. every hour during peak periods and every 150 minutes during off-peak periods. The Enhanced Service scenario for Route 21 would provide service from Monday through Sunday with an estimated frequency of less than an hour during peak periods.

TxDOT El Paso District is planning on adding capacity to some segments of Montana Avenue. These plans may cause changes in some of the proposed stop locations along Montana Avenue between the Loop 375 intersection and Zaragoza Road. The possible stop changes are not likely to interfere with the Routes 20 and 21 expected travel times. However, the changes may cause some delays at the time of implementation due to the work zone areas created as part of the construction project. (See Figure 38.)

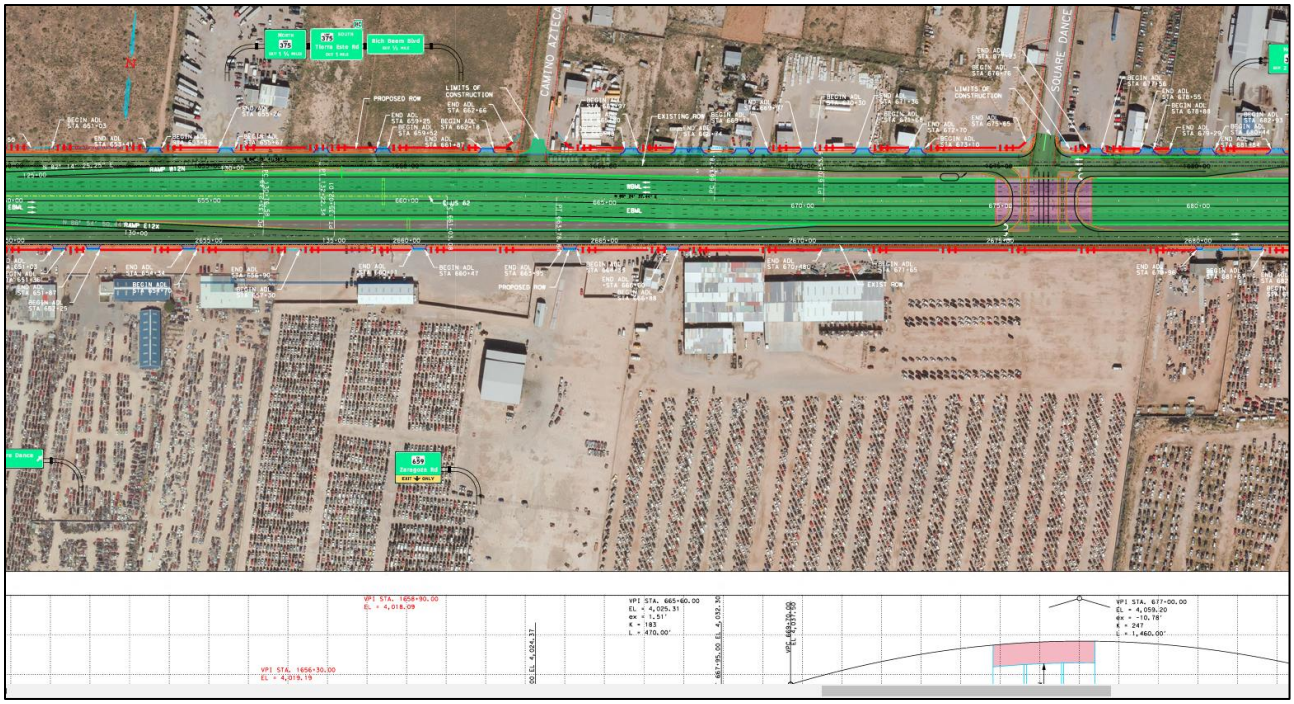


Figure 38. Example of Future TxDOT Plans for Montana Avenue (Square Dance Rd and Camino Azteca St)

Table 20. Route 21 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Eastside Transfer Center	21		Shelter
1	Montana Ave and Tierra Este Rd OB	21	Outbound	Bus Sign
2	Montana Ave and Turf Rd OB	21	Outbound	Bus Sign+Bench
3	Montana Ave and Rich Beem Blvd OB	21	Outbound	Bus Sign
4	Montana Ave and Hueco Club Rd OB	21	Outbound	Bus Sign
5	Montana Ave and Mark Avizo OB	21	Outbound	Bus Sign
6	Montana Ave and Camino Azteca St OB	21	Outbound	Bus Sign
7	Montana Ave and Square Dance Rd OB	21	Outbound	Bus Sign+Bench
8	Montana Ave and N Zaragoza Rd OB	21	Outbound	Bus Sign
9	Montana Ave and Rene Dr OB	21	Outbound	Bus Sign
10	Montana Ave and Vista Del Este St OB	21	Outbound	Bus Sign
11	Montana and Las Casitas Dr OB	21	Outbound	Bus Sign+Bench+
12	Montana and Buntline OB	21	Outbound	Bus Sign
13	Montana Ave and O'shea St OB	21	Outbound	Bus Sign
14	Montana Ave and Acacia Dr OB	21	Outbound	Bus Sign
15	Montana Ave and Snoqualmie Dr OB	21	Outbound	Bus Sign
16	Oleary Dr and Patsy Pl OB	21	Outbound	Bus Sign
17	Oleary Dr and Gus Hickerson St OB	21	Outbound	Bus Sign+Bench+
18	Oleary Dr and Marsha Rd IB	21	Inbound	Bus Sign+Bench
19	Oleary Dr and Newell Heights Ln IB	21	Inbound	Shelter
20	Oleary Dr and Cactus Blossom IB	21	Inbound	Bus Sign
21	Oleary Dr and Patsy Pl IB	21	Inbound	Bus Sign
22	Montana Ave and Edgar Williams Dr IB	21	Inbound	Bus Sign
23	Montana Ave and Acacia Dr IB	21	Inbound	Bus Sign
24	Montana Ave and O'shea St IB	21	Inbound	Bus Sign
25	Montana and Desert Meadows IB	21	Inbound	Bus Sign
26	Montana Ave and Krag St IB	21	Inbound	Bus Sign+Bench
27	Montana Ave and Vista Del Este St IB	21	Inbound	Bus Sign
28	Montana Ave and Flager Dr IB	21	Inbound	Bus Sign+Bench
29	Montana Ave and N Zaragoza Rd IB	21	Inbound	Bus Sign
30	Montana Ave and Square Dance Rd IB	21	Inbound	Bus Sign+Bench
31	Montana Ave and Camino Azteca St IB	21	Inbound	Bus Sign+Bench
32	Montana Ave and Mark Avizo IB	21	Inbound	Bus Sign+Bench
33	Montana Ave and Rich Beem Blvd IB	21	Inbound	Bus Sign
34	Montana Ave and Turf Rd IB	21	Inbound	Bus Sign
35	Montana Ave and Justice St IB	21	Inbound	Bus Sign

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

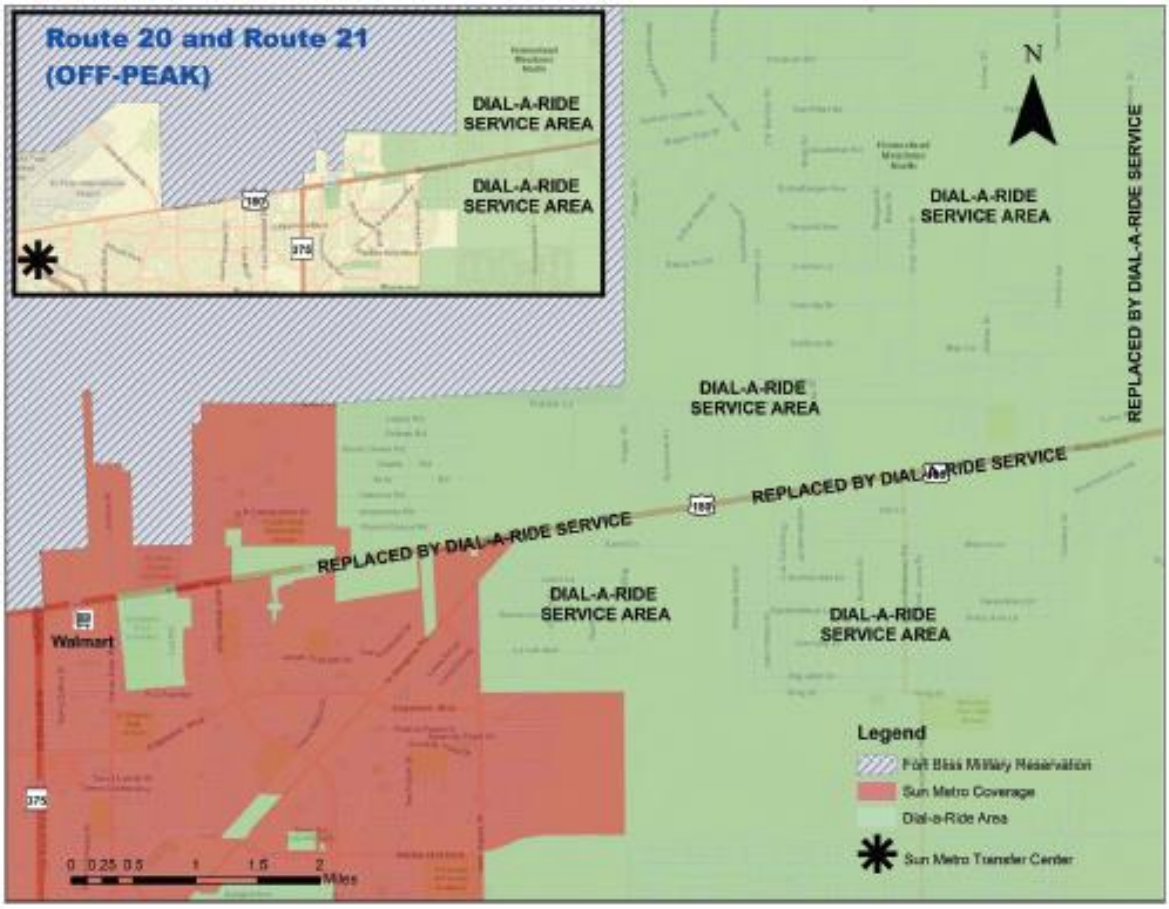


Figure 39. Proposed Service for Route 20 Off-Peak and Route 21 Off-Peak

Running times during off-peak periods for Routes 20 and 21 will be optimized according to the number of riders requesting DAR service. The routes will cover the rural communities of Homestead Meadows South, Homestead Meadows North, and all other rural communities along Montana Avenue that are inside the EPCT service area. The stops proposed for Routes 20 and 21 would be utilized to board and alight DAR passengers to the extent possible.

It is important to note that, as part of Sun Metro's capital improvement program, the agency is planning the construction of the Far East Transit Center at the intersection of Edgemere Boulevard and RC Poe Road.[2] In addition, Sun Metro plans to complete the 19-mile Montana Brio (bus rapid transit line) by the summer of 2022, which would run along Montana Avenue from Downtown Transit Center to the Far East Transit Center. This would shorten the existing and proposed travel times for Routes 20 and 21, allowing for nodal transit system configuration in the Montana Vista Region.

[2] https://www.youtube.com/watch?v=mR47rO_YOqQ

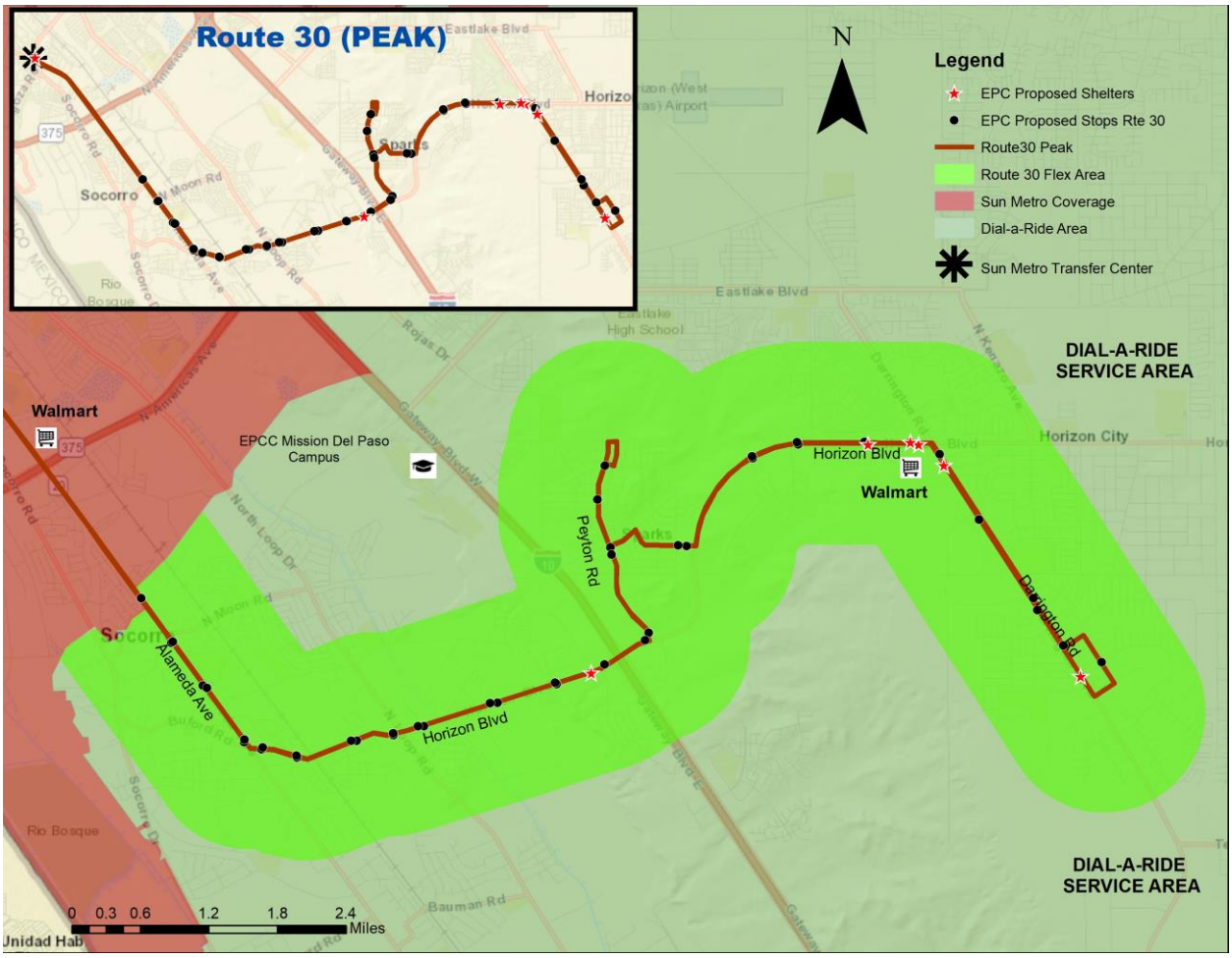


Figure 40. Proposed Service for Route 30 Peak

Currently, Route 30 covers a large area that includes the rural communities of Sparks, Horizon City, Las Colonias, and Agua Dulce. The current frequency is 132 minutes, which makes the route inefficient, especially during off-peak hours. (The research team identified some trips without passengers boarding or alighting during off-peak periods on weekdays.) Therefore, the research team proposes splitting the route in two separate routes: Routes 30 and 31. During peak periods, Route 30 would have shorter inbound and outbound trips compared to the existing configuration. It would connect south Horizon City to Mission Valley Transfer Center. Route 30 would allow deviations. (See Figure 40.) This route would run from 5:00 a.m. to 7:00 p.m. on weekdays and from 8:00 a.m. to 4:00 p.m. on Saturdays. The Enhanced Service option would operate on Sundays from 8:00 a.m. to 4:00 p.m. at an increased frequency of 60 minutes during peak periods. El Paso Community College would be covered by DAR service.

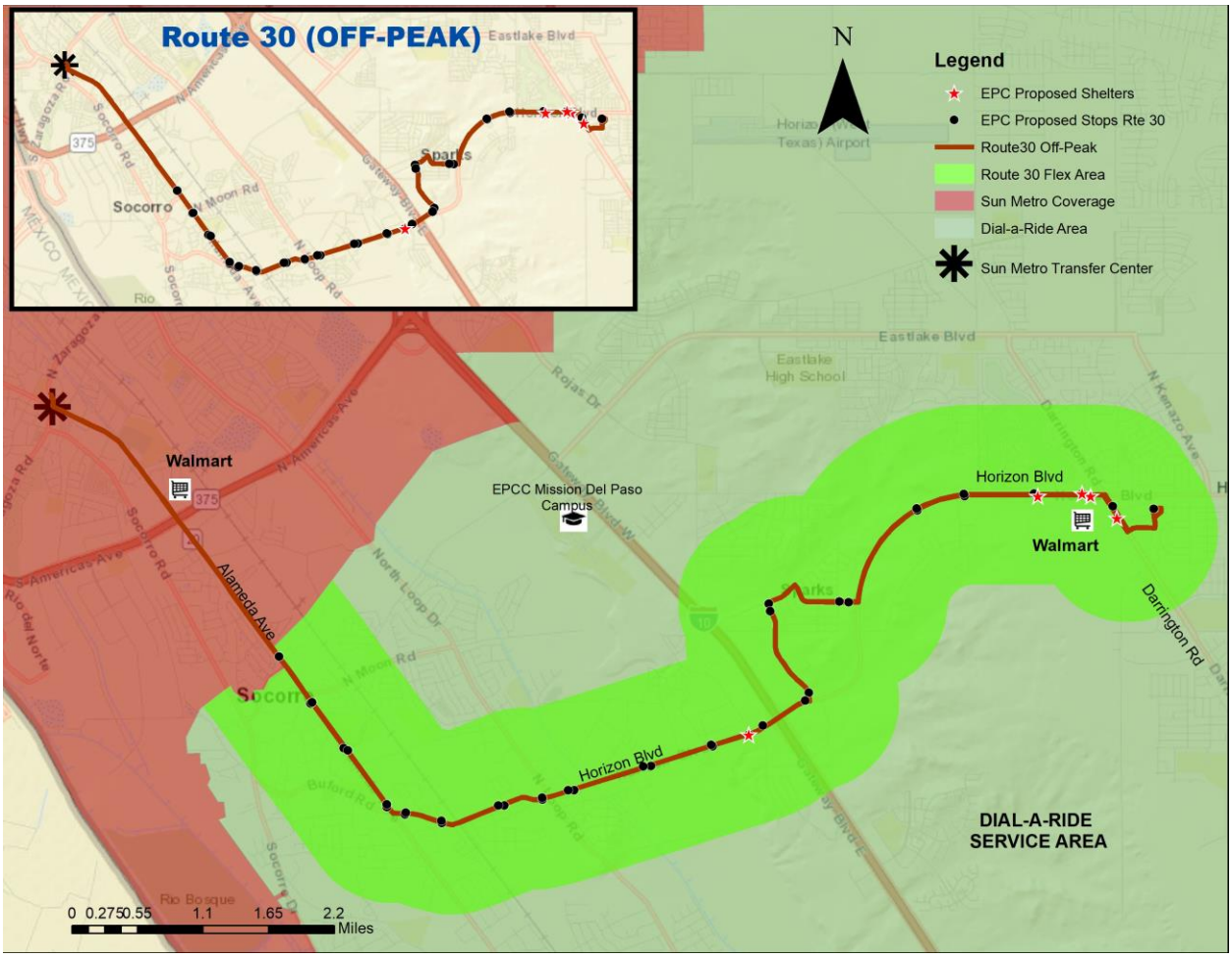


Figure 41. Proposed Service for Route 30 Off-Peak

During off-peak periods, the configuration of Route 30 would be shorter than during peak periods. The length reduction would allow for more efficient coverage based on observed O-D patterns and the recommended headways of 60 minutes based on the service planning guidelines and public feedback. Moreover, during off-peak periods, DAR service would be available on-demand in designated areas. (See Figure 41.) Route 30 would still serve the Sparks community in off-peak hours with limited stops but flexible service areas. El Paso Community College would be covered by DAR service. For the Proposed Service scenario, Route 30 off-peak would offer service on Saturdays from 8:00 a.m. to 4:00 p.m. while, under the Enhanced Service scenario, the route would operate on Saturdays and Sundays from 8:00 a.m. to 4:00 p.m. with 60-minute headways during peak hours and a 75-minute headways during off-peak hours.

Table 21. Route 30 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	30		Shelter
1	Alameda Ave and N Moon Rd OB	30	Outbound	Bus Sign
2	Alameda Ave and N Rio Vista Rd (Socorro HS) OB	30	Outbound	Bus Sign
3	Alameda Ave and Buford Rd OB	30	Outbound	Bus Sign+Bench
4	Horizon Blvd and Montevideo St OB	30	Outbound	Bus Sign+Bench
5	Horizon Blvd and Monte Alto Way OB	30	Outbound	Bus Sign
6	Horizon Blvd and Homan Dr OB	30	Outbound	Bus Sign+Bench
7	Horizon Blvd and North Loop Dr OB	30	Outbound	Bus Sign+Bench
8	Horizon Blvd and Maxine Dr OB	30	Outbound	Bus Sign+Bench
9	Horizon Blvd and Patti Jo Dr OB	30	Outbound	Bus Sign+Bench
10	Horizon Blvd and Robin Rd OB	30	Outbound	Bus Sign+Bench
11	Horizon Blvd and Nancy Dr OB	30	Outbound	Shelter
12	Peyton Rd and Horizon Blvd OB	30	Outbound	Bus Sign
13	Peyton Rd and Grand River Dr OB	30	Outbound	Bus Sign
14	Peyton Rd and Bret Harte Dr OB	30	Both	Bus Sign+Bench
15	Peyton Rd and Trollope Dr OB/IB	30	Both	Bus Sign+Bench
16	Bowdoin Dr and Horizon Blvd OB	30	Outbound	Bus Sign+Bench
17	Horizon Blvd and Green Desert Cir OB	30	Outbound	Bus Sign
18	Horizon Blvd and Elsworth Dr OB	30	Outbound	Bus Sign+Bench
19	Horizon Blvd and Thea Smith Dr OB	30	Outbound	Shelter
20	Horizon Blvd (Walmart entrance) OB	30	Outbound	Shelter
21	Darrington Rd and Pawling Dr OB	30	Outbound	Shelter
22	Breaux St and McMahon Ave IB	30	Inbound	Bus Sign
23	Darrington Dr and Pawling Dr IB	30	Inbound	Bus Sign
24	Darrington Rd and S Kenanzo Ave OB	30	Outbound	Bus Sign
25	Darrington Rd and Valentin Dr OB	30	Outbound	Bus Sign+Bench
26	Darrington Rd and Desierto Lindo Ave OB	30	Outbound	Shelter
27	Linwood Dr and Kaye Dr IB	30	Inbound	Bus Sign
28	Darrington Rd and Corby Dr IB	30	Inbound	Bus Sign
29	Darrington Rd and Rudi Kuefner Dr IB	30	Inbound	Bus Sign+Bench
30	Darrington Dr and Pawling Dr IB	30	Inbound	Bus Sign
31	Horizon Blvd and Darrington Rd IB	30	Inbound	Shelter
32	Horizon Blvd and Rick Smith St IB	30	Inbound	Bus Sign+Bench
33	Horizon Blvd and Elsworth Dr IB	30	Inbound	Bus Sign+Bench
34	Horizon Blvd and Green Desert Cir IB	30	Inbound	Bus Sign
35	Bowdoin Dr and Horizon Blvd IB	30	Inbound	Bus Sign+Bench
36	Peyton and Bales Dr IB	30	Inbound	Bus Sign+Bench
37	Horizon Blvd and Peyton Rd IB	30	Inbound	Bus Sign
38	Horizon Blvd and Stockyard Rdr IB	30	Inbound	Bus Sign+Bench+
39	Horizon Blvd and Robin Rd IB	30	Inbound	Bus Sign
40	Horizon Blvd and Patti Jo Dr IB	30	Inbound	Bus Sign+Bench

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

Table 21. Route 30 Proposed Stops Cont'd

Num -ber	Name	Route	Direction	Category
41	Horizon Blvd and Horn Cir IB	30	Inbound	Bus Sign+Bench
42	Horizon Blvd and North Loop Dr IB	30	Inbound	Bus Sign+Bench
43	Horizon Blvd and Homan Dr IB	30	Inbound	Bus Sign+Bench
44	Horizon Blvd and Monte Alto Way IB	30	Inbound	Bus Sign+Bench
45	Horizon Blvd and Montevideo St IB	30	Inbound	Bus Sign+Bench
46	Alameda Ave and Buford Rd IB	30	Inbound	Bus Sign
47	Alameda Ave and N Rio Vista Rd IB	30	Inbound	Bus Sign
48	Alameda Ave and N Moon Rd IB	30	Inbound	Bus Sign
49	Alameda Ave and Nevarez Rd IB	30	Inbound	Bus Sign

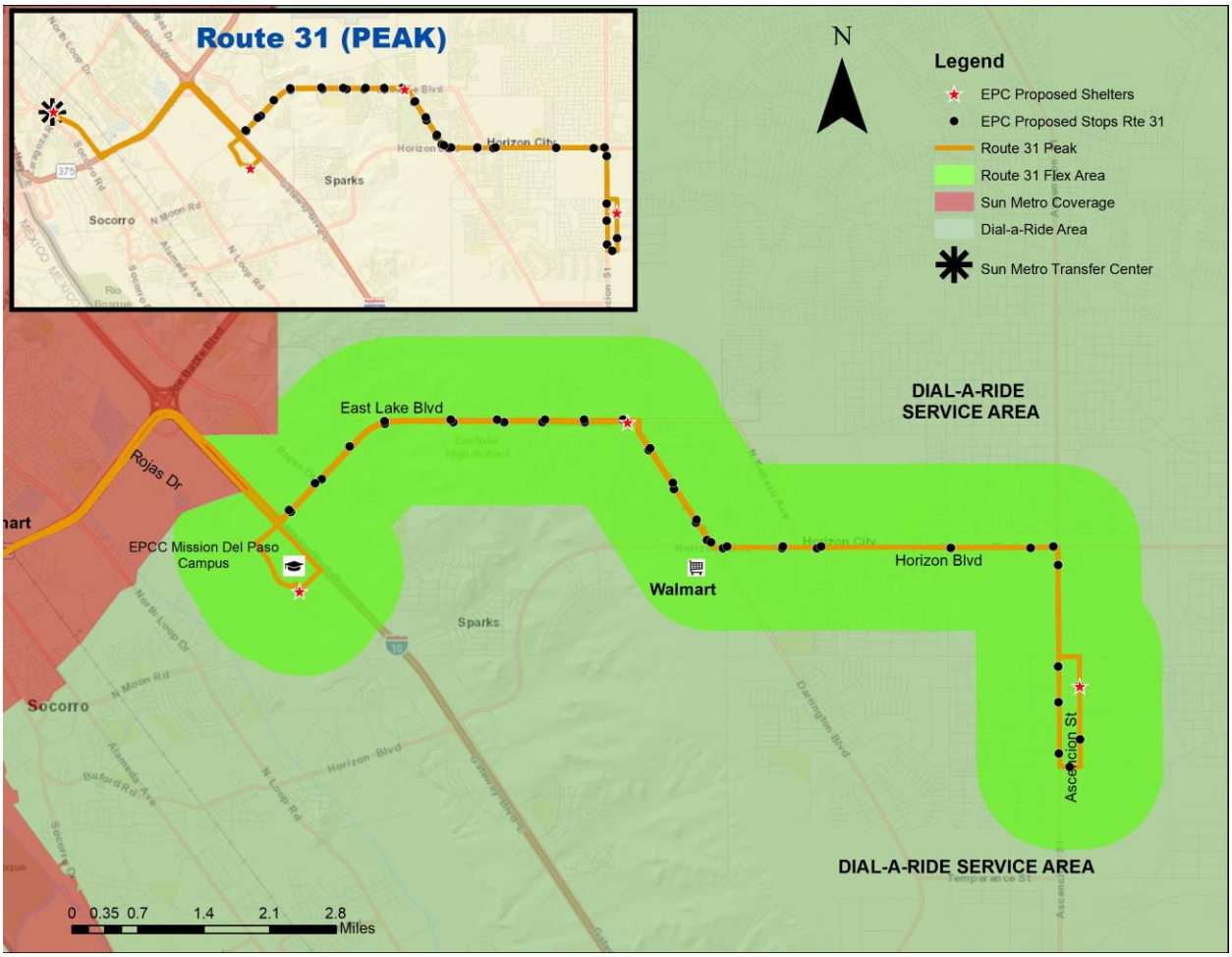


Figure 42. Proposed Service for Route 31 Peak

A new proposed Route 31 would connect Mission Valley Transfer Center with the rural communities of Agua Dulce and Horizon City via Eastlake Boulevard, Horizon Boulevard, and the north part of Ascension Street. The route would run from 5:30 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 4:00 p.m. on Saturdays and Sundays. This route would operate under the flexible area service scheme, allowing limited deviations up to ¾ of a mile from the main configuration in both directions. El Paso Community College would be covered by Route 31 instead of the current version of Route 84. Route 31 would also cover new potential riders from the new residential developments along Eastlake Boulevard. DAR service would be available in other small communities in the area, as shown in Figure 42. The Proposed Service scenario includes headways of 90 and 60 minutes during peak and off-peak periods, respectively, while the Enhanced Service scenario includes headways of 60 and 75 minute during peak and off-peak periods, respectively.

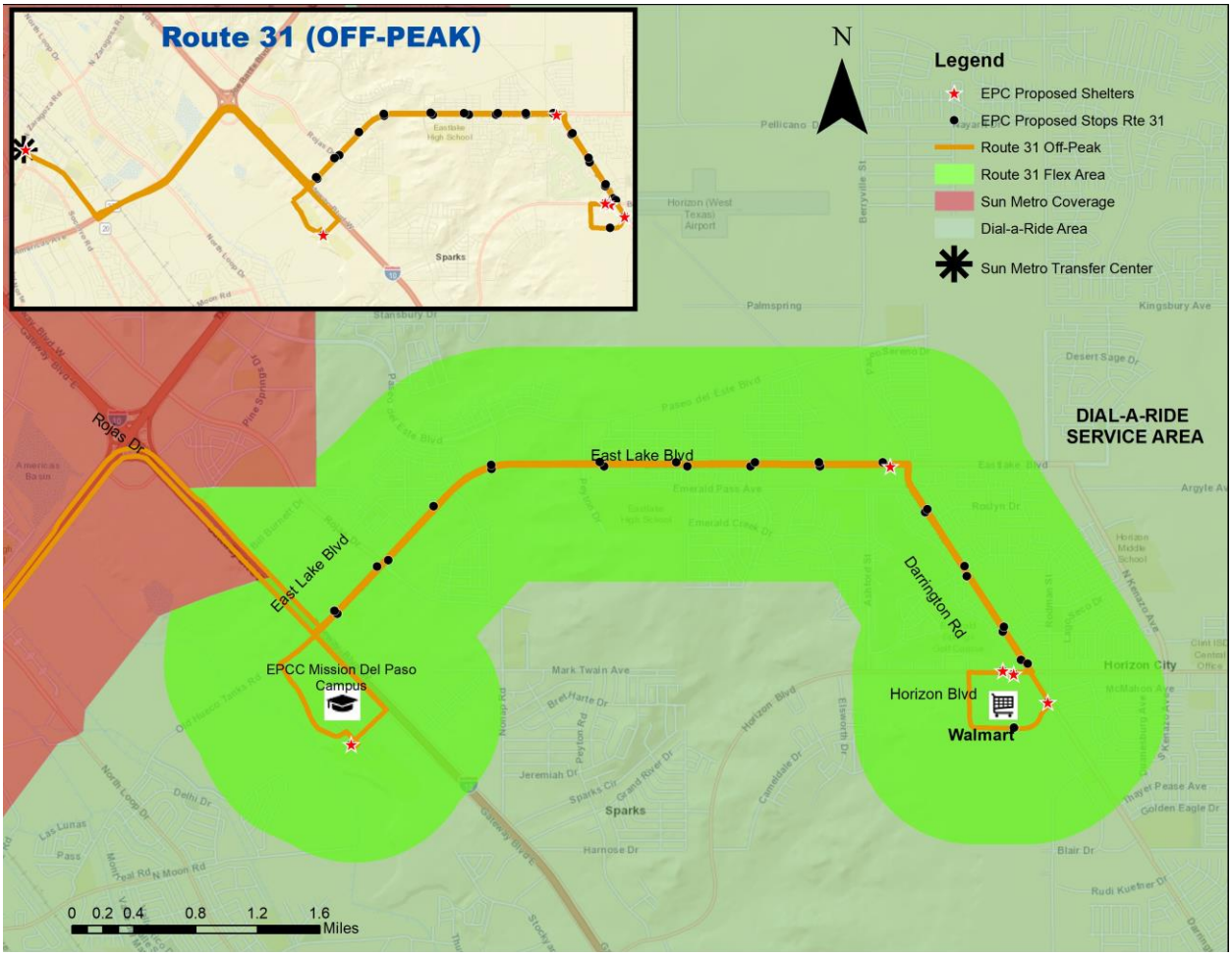


Figure 43. Proposed Service for Route 31 Off-Peak

After the O-D analysis along current Route 30, the research team proposed that the new Route 31 configuration should be relatively shorter during off-peak periods. This length reduction would allow for more efficient coverage based on the main weekday O-D pairs, and it would also help achieve 60-minute headways during peak periods. During off-peak periods, DAR

service would be available on-demand in designated areas. (See Figure 43.) For the Proposed Service scenario, the Route 31 off-peak alignment would run on Saturdays from 8:00 a.m. to 4:00 p.m., while the Enhanced Service scenario would offer Saturday and Sunday service from 8:00 a.m. to 4:00 p.m. with a 75-minutes headway during off-peak periods.

Table 22. Route 31 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	31		Shelter
1	EPCC Mission Del Paso	31	Both	Shelter
2	Eastlake Blvd and Gateway Blvd W (SISD) OB	31	Outbound	Bus Sign
3	Eastlake Blvd and Rojas Dr OB	31	Outbound	Bus Sign
4	Eastlake Blvd and Mission Ridge Blvd OB	31	Outbound	Bus Sign
5	Eastlake Blvd and Peyton Dr OB	31	Outbound	Bus Sign
6	Eastlake Blvd and Emerald Sands Ave OB	31	Outbound	Bus Sign
7	Eastlake Blvd and Emerald Park Dr OB	31	Outbound	Bus Sign
8	Eastlake Blvd and Aiskew St OB	31	Outbound	Bus Sign
9	Eastlake Blvd and Darrington Rd OB	31	Outbound	Shelter
10	Darrington Rd and Scobey Dr OB	31	Outbound	Bus Sign+Bench
11	Darrington Rd and Alderwood Manor Dr OB	31	Outbound	Bus Sign+Bench
12	Darrington Rd and Homestead Dr OB	31	Outbound	Bus Sign
13	Darrington Dr and Horizon Blvd (Court) OB	31	Outbound	Bus Sign+Bench
14	Darrington Rd and Pawling Dr OB	31	Outbound	Shelter
15	Town Center and Sky Vista Pl IB	31	Inbound	Bus Sign
16	Horizon Blvd and Howard Lowe St OB	31	Outbound	Bus Sign+Bench
17	Horizon Blvd and Duanesburg Ave OB	31	Outbound	Bus Sign
18	Horizon Blvd and Biglon St OB	31	Outbound	Bus Sign
19	Horizon Blvd and Anderpont OB	31	Outbound	Bus Sign
20	Horizon Blvd and Ascencion Dr OB	31	Outbound	Bus Sign+Bench
21	Ascencion St and Alberton Ave OB	31	Outbound	Bus Sign
22	Ascencion St and Fishkill Dr OB	31	Outbound	Bus Sign
23	Ascencion St and Ballston Ave OB	31	Outbound	Bus Sign
24	Kentwood Ave and Cascada St OB	31	Outbound	Bus Sign
25	Agua Clara St and Laguna Azul Ave IB	31	Inbound	Bus Sign
26	Agua Clara St and El Rosio Ave IB	31	Inbound	Shelter
27	Ascencion St and Jack Rabbit Rd IB	31	Inbound	Bus Sign
28	Horizon Blvd and Ascencion St IB	31	Inbound	Bus Sign+Bench
29	Horizon Blvd and Anderpont IB	31	Inbound	Bus Sign
30	Horizon Blvd and Biglon St IB	31	Inbound	Bus Sign
31	Horizon Blvd and Desert Mesa St IB	31	Inbound	Bus Sign+Bench
32	Horizon Blvd and Rodman St IB	31	Inbound	Bus Sign+Bench
33	Darrington Dr and Horizon Blvd IB	31	Inbound	Bus Sign+Bench
34	Darrington Rd and Benton Dr IB	31	Inbound	Bus Sign
35	Darrington Rd and S Roslyn Dr IB	31	Inbound	Bus Sign+Bench
36	Darrington Rd and N Roslyn Dr IB	31	Inbound	Bus Sign+Bench

Table 22. Route 31 Proposed Stops Cont'd

Num -ber	Name	Route	Direction	Category
37	Eastlake Blvd and Darrington Rd IB	31	Inbound	Bus Sign+Bench
38	Eastlake Blvd and Aiskew St IB	31	Inbound	Bus Sign
39	Eastlake Blvd and Emerald Park Dr IB	31	Inbound	Bus Sign
40	Eastlake Blvd and Emerald Sands Ave IB	31	Inbound	Bus Sign
41	Eastlake Blvd and Peyton Dr IB	31	Inbound	Bus Sign
42	Eastlake Blvd and Mission Ridge Blvd IB	31	Inbound	Bus Sign
43	Eastlake Blvd and Chapel Hill Rd IB	31	Inbound	Bus Sign
44	Eastlake Blvd and Rojas Dr IB	31	Inbound	Bus Sign
45	Eastlake Blvd and Gateway Blvd W IB	31	Inbound	Bus Sign
46	EPCC Mission Del Paso	31	Both	Shelter

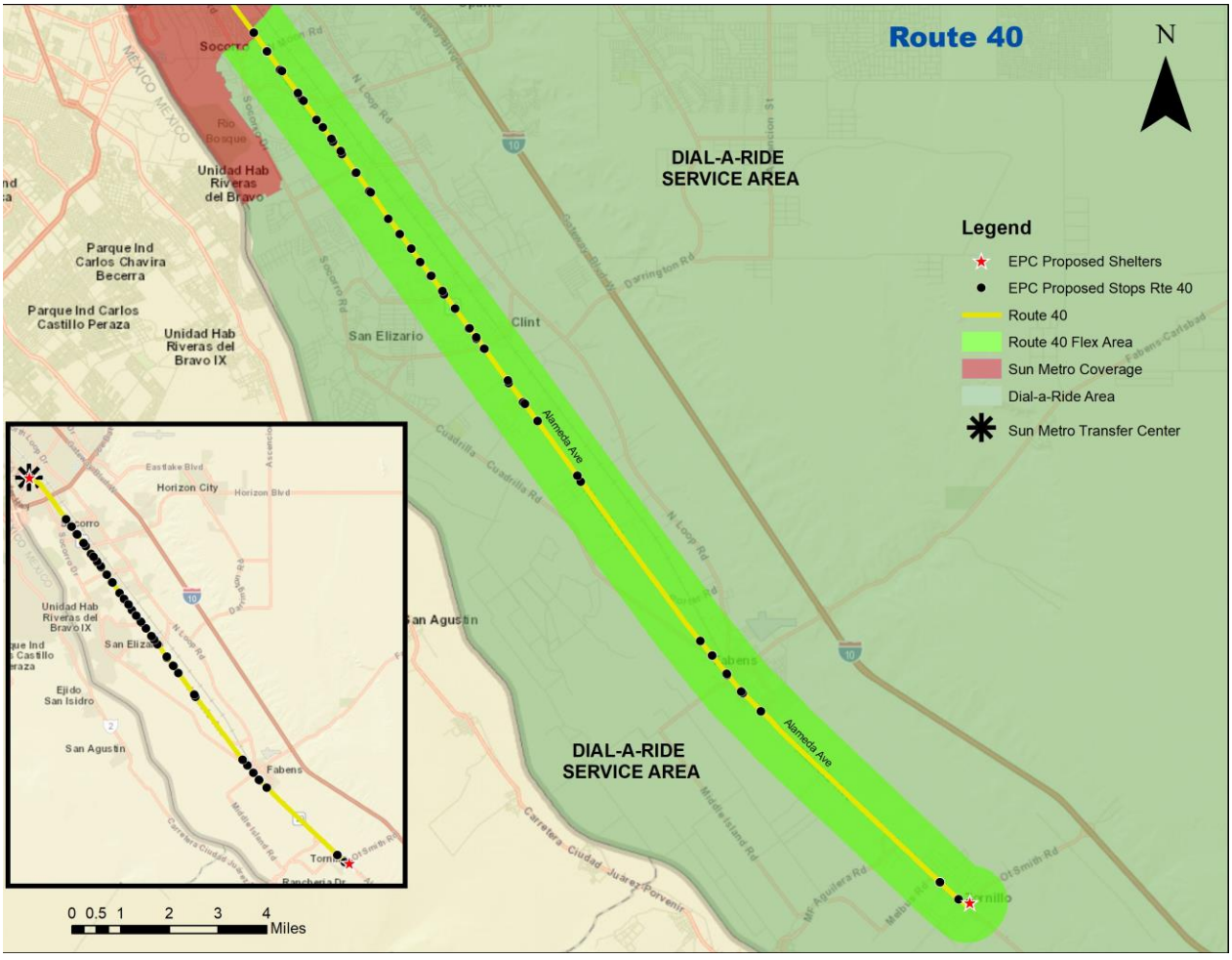


Figure 44. Proposed Service for Route 40

Route 40 would be split into Routes 40 and 40X. Route 40 would offer service from 5:30 a.m. to 7:00 p.m. during peak and off-peak hours. Under the Proposed Service scenario, Route 40 would operate Monday through Saturday with a headway of 90 minutes while, under the

Enhanced Service scenario, it would operate with a 60-minute headway. Route 40 would offer riders flex-service. (See Figure 44.)

Table 23. Route 40 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	40		Shelter
1	Alameda Ave and N Moon Rd OB	40	Outbound	Bus Sign
2	Alameda Ave and N Rio Vista Rd (Socorro HS) OB	40	Outbound	Bus Sign
3	Alameda Ave and Buford Rd OB	40	Outbound	Bus Sign+Bench+
4	Alameda Ave and Place Rd OB	40	Outbound	Bus Sign
5	Alamenda Ave and Carrillo Ln OB	40	Outbound	Bus Sign
6	Alameda Ave and Sun Park Rd OB	40	Outbound	Bus Sign+Bench
7	Alameda Ave and Vineyard Rd OB	40	Outbound	Bus Sign
8	Alameda Ave and Passmore Rd OB	40	Outbound	Bus Sign+Bench
9	Alameda Ave and Jesus Barrera Ave OB	40	Outbound	Bus Sign+Bench
10	Alameda Ave and Melton Rd OB	40	Outbound	Bus Sign
11	Alameda Ave and Vianey Rd OB	40	Outbound	Bus Sign+Bench
12	Alameda Ave and Fortaleza Rd OB	40	Outbound	Bus Sign+Bench
13	Alameda Ave and De La Rosa Ave OB	40	Outbound	Bus Sign+Bench
14	Alameda Ave and Clint Junior High School OB	40	Outbound	Bus Sign+Bench
15	Alameda Ave and Velasco Way OB	40	Outbound	Bus Sign+Bench
16	Alameda Ave and San Elizario Rd OB	40	Outbound	Bus Sign+Bench
17	Alameda Ave and River Hondo OB	40	Outbound	Bus Sign
18	Alameda Ave and Denton Rd (Clint HS) OB	40	Outbound	Bus Sign+Bench+
19	Alameda Ave and Zepplin Dr OB	40	Outbound	Bus Sign
20	Alameda Ave and W 6th St OB	40	Outbound	Bus Sign
21	Alameda Ave and 1st St SW OB	40	Outbound	Bus Sign
22	Alameda Ave and 4th St OB	40	Outbound	Bus Sign+Bench
23	Alameda Ave and Grace St OB	40	Outbound	Bus Sign
24	Alameda Ave and Oil Mill Rd OB	40	Outbound	Bus Sign
25	Alameda Ave and Henderson St OB	40	Outbound	Bus Sign
26	OT Smith Rd and Tornillo Ave OB	40	Outbound	Shelter
27	Alameda Ave and Oil Mill Rd IB	40	Inbound	Bus Sign
28	Alameda Ave and 4th St IB	40	Inbound	Bus Sign+Bench
29	Alameda Ave and 1st St SW IB	40	Inbound	Bus Sign
30	Alameda Ave and W 6th St IB	40	Inbound	Bus Sign
31	Alameda Ave and Potasio St IB	40	Inbound	Bus Sign
32	Alameda Ave and Leisure Ln IB	40	Inbound	Bus Sign+Bench
33	Alameda Ave and Morning Glory Dr IB	40	Inbound	Bus Sign
34	Alameda Ave and Denton Rd IB	40	Inbound	Bus Sign+Bench
35	Alameda Ave and River Hondo IB	40	Inbound	Bus Sign
36	Alameda Ave and San Elizario Rd IB	40	Inbound	Bus Sign

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

Table 23. Route 40 Proposed Stops Cont'd

Num-ber	Name	Route	Direction	Category
37	Alameda Ave and Velasco Way IB	40	Inbound	Bus Sign+Bench
38	Alameda Ave and Clint Junior High School IB	40	Inbound	Bus Sign+Bench
39	Alameda Ave and Robert Varela IB	40	Inbound	Bus Sign
40	Alameda Ave and Burbridge IB	40	Inbound	Bus Sign+Bench
41	Alameda Ave and Fortaleza Rd IB	40	Inbound	Bus Sign+Bench
42	Alameda Ave and Skov Rd IB	40	Inbound	Bus Sign
43	Alameda Ave and Passmore Rd IB	40	Inbound	Bus Sign+Bench
44	Alameda Ave and Roden Way (Vineyard Rd) IB	40	Inbound	Bus Sign
45	Alameda Ave and Sun Park Rd IB	40	Inbound	Bus Sign+Bench
46	Alamenda Ave and Shanda Cir IB	40	Inbound	Bus Sign
47	Alameda Ave and Oden Dr IB	40	Inbound	Bus Sign
48	Alameda Ave and Horizon Blvd (passing Wiseman Cir) IB	40	Inbound	Bus Sign+Bench
49	Alameda Ave and Horizon Blvd IB	40	Inbound	Bus Sign+Bench+
50	Alameda Ave and N Rio Vista Rd (Socorro HS) IB	40	Inbound	Bus Sign
51	Alameda Ave and N Moon Rd IB	40	Inbound	Bus Sign
52	Alameda Ave and Nevarez Rd IB	40	Inbound	Bus Sign

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

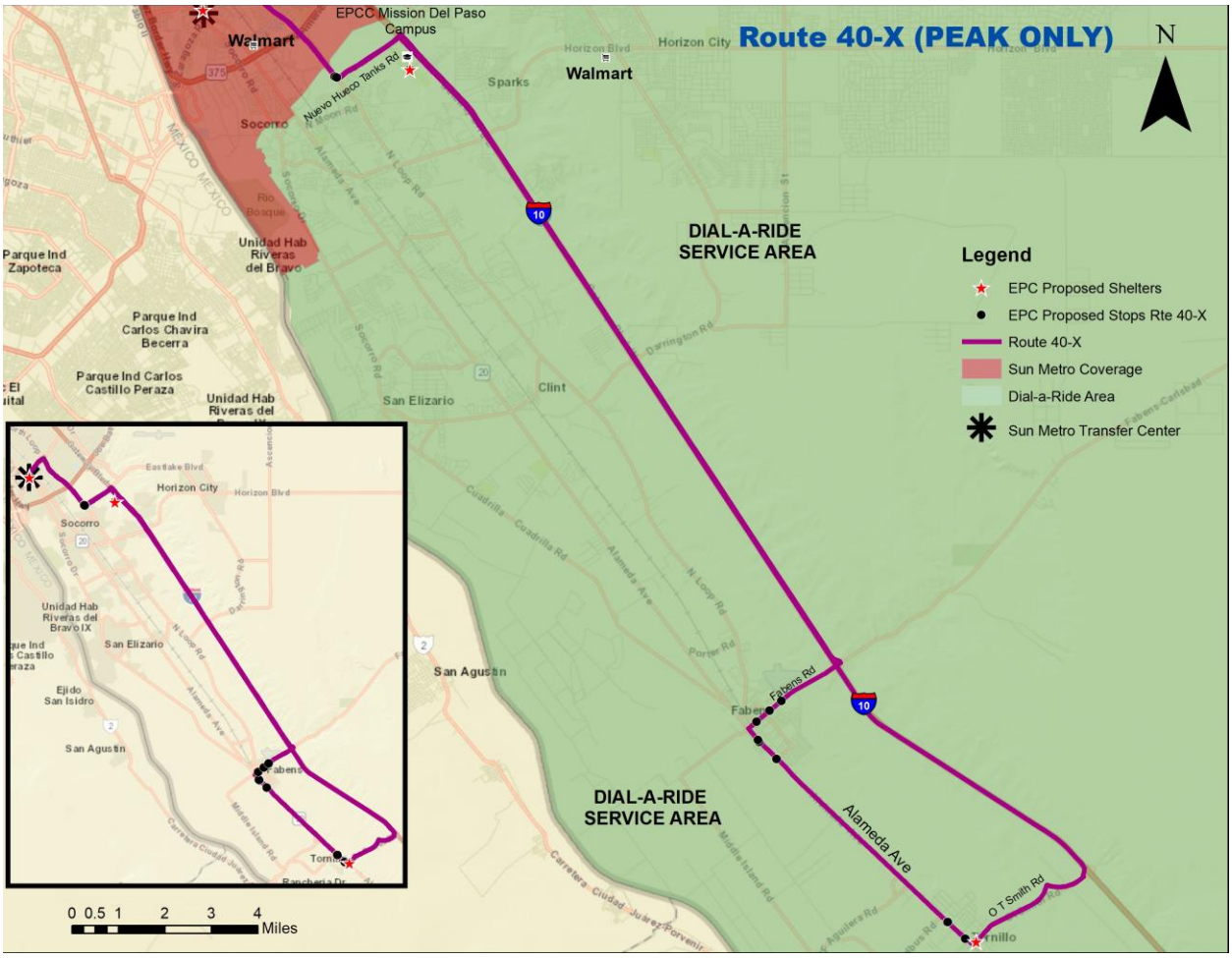


Figure 45. Proposed Service for Route 40X

After the ridership assessment and the identification of key origin and destinations, the research team concluded that the Tornillo and Fabens communities have a large group of daily commuting riders. Consequently, a proposed new Route 40X (or 40 Express) would only run during peak hours, connecting the communities of Tornillo and Fabens with Mission Valley Transfer Center via I-10. The route would run from 5:30 a.m. to 8:00 a.m. and from 3:30 p.m. to 7:15 p.m on weekdays only, with a headway of 75 minutes for the Proposed Service scenario and a headway of 45 minutes for the Enhanced Service scenario. Key origins and destinations along Alameda Avenue from Fabens to Nuevo Hueco Tanks Road would be covered by Route 40. (See Figure 44.) Riders in other small rural communities in the south part of the county would be served by DAR. (See Figure 45.) Users of Route 40X would have the opportunity to request a stop at El Paso Community College upon request.

Table 24. Route 40X Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	40X		Shelter
1	North Loop Dr and Old Hueco Tanks Rd OB	40X	Outbound	Bus Sign+Bench+
2	EPCC Mission Del Paso [upon request]	40X	Both	Bus Sign+Bench
3	OT Smith Rd and Tornillo Ave OB	40X	Inbound	Shelter
4	Alameda Ave and Oil Mill Rd IB	40X	Inbound	Bus Sign
5	Alameda Ave and 4th St IB	40X	Inbound	Bus Sign
6	Fabens St and Camp St IB	40X	Inbound	Bus Sign
7	Fabens St and NE I Ave IB	40X	Inbound	Bus Sign
8	Fabens St at Supermarket IB	40X	Inbound	Bus Sign+Bench+
9	North Loop Dr and Old Hueco Tanks Rd IB	40X	Inbound	Bus Sign+Bench+

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

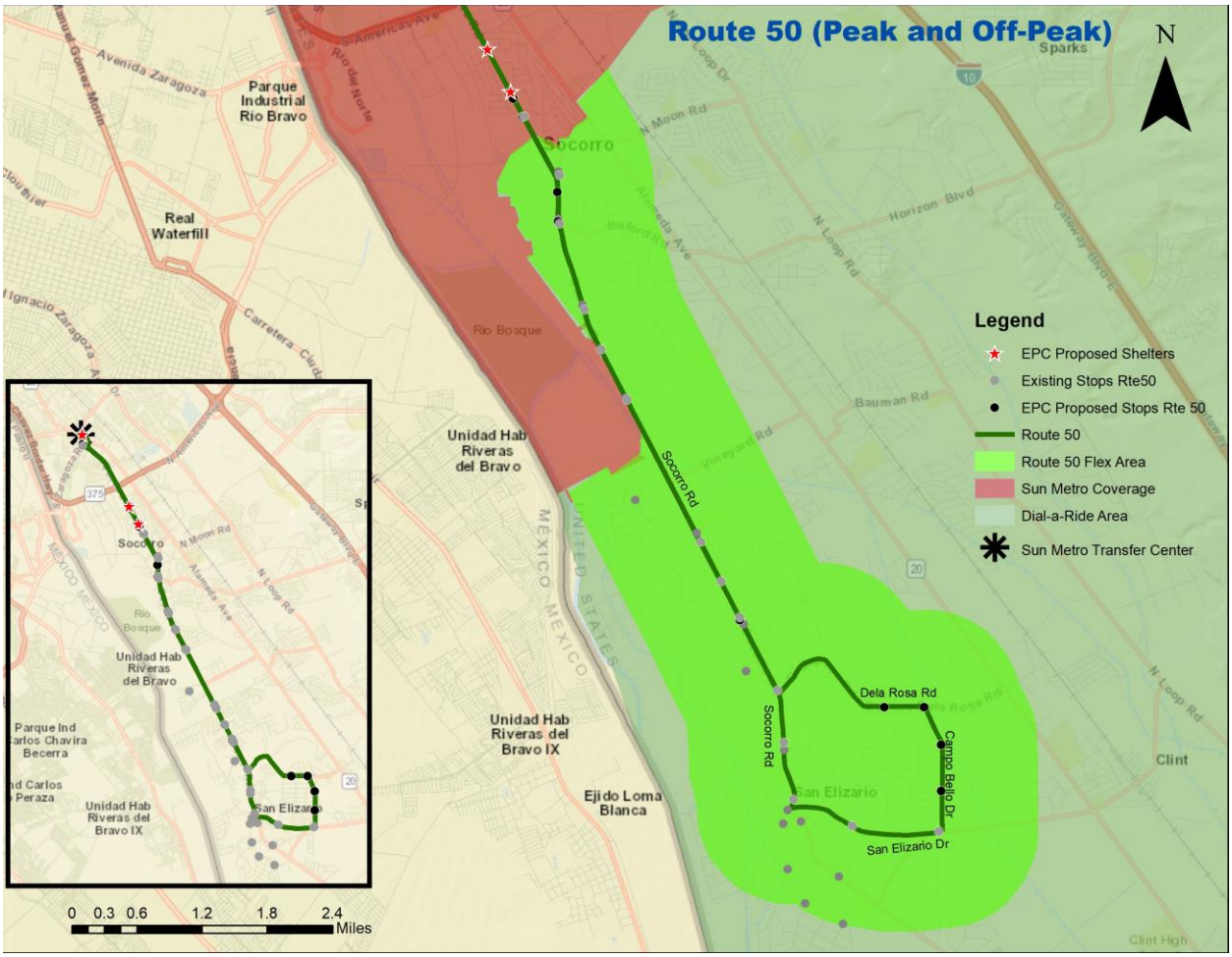


Figure 46. Proposed Service for Route 50

Route 50 is currently competing for ridership with Route 84. Several segments are shared by both routes, making Route 50 inefficient and resulting in a significant drop of ridership in recent years. The research team proposes several changes to Route 50 and Route 84. Both routes would operate Monday through Sunday from 5:30 a.m. to 7:30 p.m. with a 60-minute headway. Route 50 would cover the city of San Elizario using Socorro Road as the main access road. Route 84 would utilize North Loop Rd to connect Mission Valley Transfer Center and the city of Clint. With the proposed changes, Route 84 is expected to cover future development along North Loop Road (where stops could be introduced gradually) and significantly shorten trip lengths and travel times. Route 50 would also increase its frequency and would cover existing ridership along Socorro Road. (See Figure 46 and Figure 47.)

Table 25. Route 50 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	50		Shelter
1	Socorro Rd and Caribe Cir OB	50	Outbound	Bus Sign
2	Socorro Rd and Jericho OB	50	Outbound	Bus Sign
3	Socorro Rd and Isaiha Dr IB	50	Inbound	Bus Sign+Bench
4	Socorro Rd and Isaiha Dr OB	50	Outbound	Bus Sign
5	Socorro Mission	50	Both	Bus Sign
6	Socorro Rd and S Moon Rd OB	50	Outbound	Bus Sign
7	Socorro Rd and Buford Rd OB	50	Outbound	Bus Sign
8	Socorro Entertainment Center	50	Both	Bus Sign+Bench
9	Socorro Rd Fray Vargas Rd OB	50	Outbound	Bus Sign
10	Camino de la Rosa Rd and Las Tunas Dr OB	50	Outbound	Bus Sign
11	Camino Dela Rosa Rd and Campo Bello Dr OB	50	Outbound	Bus Sign
12	Campo Bello Dr and Borrego OB	50	Outbound	Bus Sign
13	Campo Bello Dr and Marisela OB	50	Outbound	Bus Sign
14	San Elizario Rd and Campo Bello Dr IB	50	Inbound	Bus Sign
15	FM 1110 and Vigil Rd IB	50	Inbound	Bus Sign
16	Socorro Rd and San Antonio St IB	50	Inbound	Bus Sign+Bench
17	Socorro Rd and Herradura Ave IB	50	Inbound	Bus Sign
18	Socorro Rd and Thompson Rd IB	50	Inbound	Bus Sign+Bench
19	Socorro Rd Fray Vargas Rd IB	50	Inbound	Bus Sign+Bench
20	Socorro Rd and Lisa Diane Rd IB	50	Inbound	Bus Sign+Bench
21	Socorro Rd and Passmore Rd IB	50	Inbound	Bus Sign+Bench
22	Socorro Rd and Zebu Rd IB	50	Inbound	Bus Sign+Bench
23	Socorro Rd and Anahi Cir IB	50	Inbound	Bus Sign+Bench
24	Socorro Rd Bovee Rd IB	50	Inbound	Bus Sign
25	Socorro Rd and Buford Rd IB	50	Inbound	Bus Sign
26	Socorro Rd and Isaiah Dr IB	50	Inbound	Bus Sign+Bench
27	Socorro Rd and Jericho IB	50	Inbound	Shelter
28	Socorro Rd and Caribe Cir IB	50	Inbound	Shelter

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

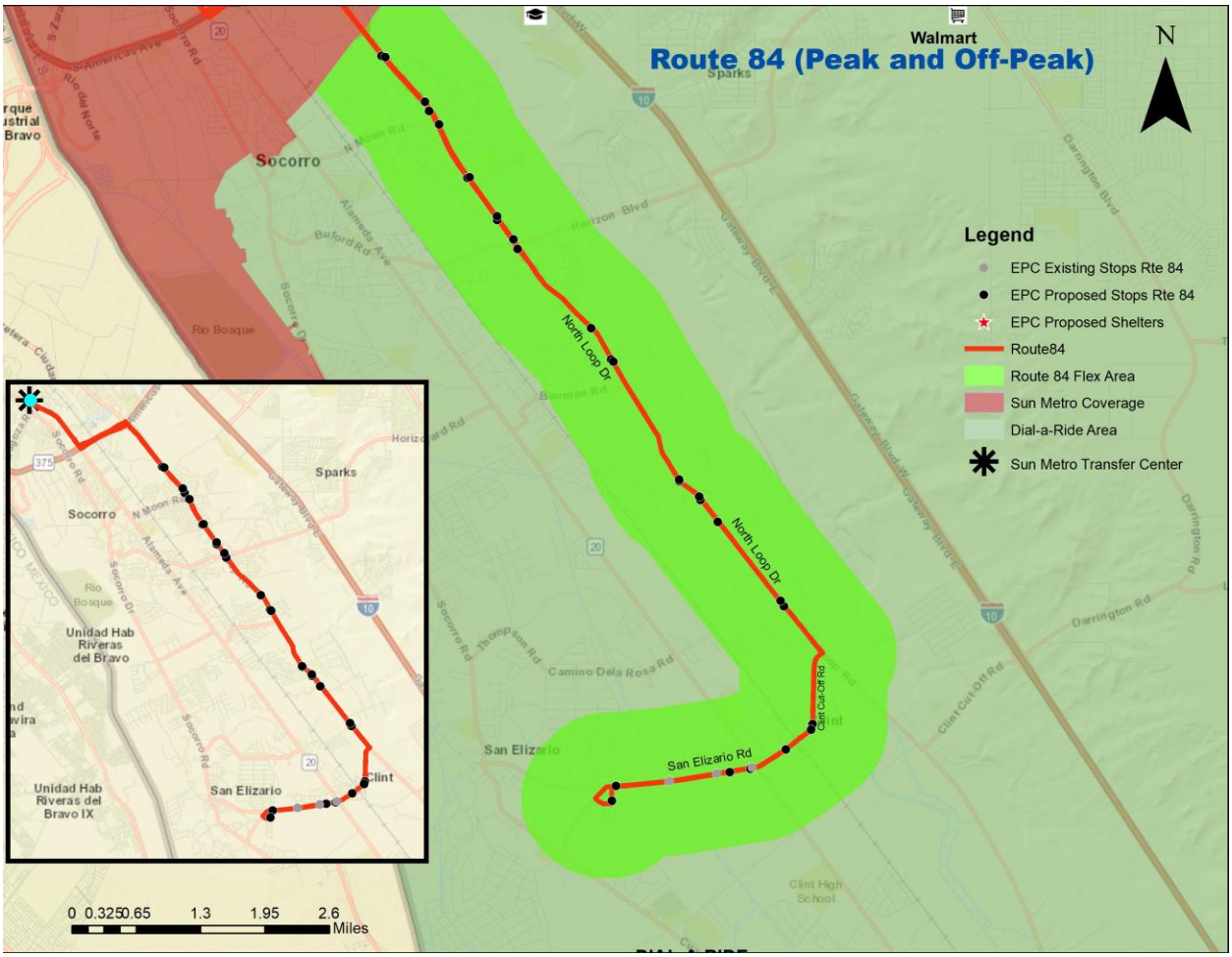


Figure 47. Proposed Service for Route 84

Route 84 would offer passengers the opportunity to transfer at San Elizario Road and Rio Negro Street where, depending on future passenger demand, the stop could be an important transfer point and could be upgraded with a shelter.

All maps shown in this chapter can be seen in detail online at https://arcg.is/1m8r5f0 or in **Appendix F**.

Table 26. Route 84 Proposed Stops

Num-ber	Name	Route	Direction	Category
	Mission Valley Transfer Center	84		Shelter
1	North Loop Dr and Old Hueco Tanks Rd OB	84	Outbound	Bus Sign+Bench+
2	North Loop Dr and Hesse Dr OB	84	Outbound	Bus Sign
3	North Loop Dr and Los Robles Ave OB	84	Outbound	Bus Sign+Bench
4	North Loop Dr and Horn Cir OB	84	Outbound	Bus Sign
5	North Loop Dr and Horizon Blvd OB	84	Outbound	Bus Sign+Bench
6	North Loop Dr and Liahona Dr OB	84	Outbound	Bus Sign
7	North Loop Dr and Barnhart Dr OB	84	Outbound	Bus Sign
8	North Loop Dr and Welletka Dr OB	84	Outbound	Bus Sign
9	North Loop Dr and Richardson Rd OB	84	Outbound	Bus Sign
10	North Loop Dr and Rancho Viejo Dr OB	84	Outbound	Bus Sign
11	North Loop Dr and Estate OB	84	Outbound	Bus Sign
12	FM 1110 Rd and Fenter OB	84	Outbound	Bus Sign
13	San Elizario Rd and Alameda Ave (Clint MS) OB	84	Outbound	Bus Sign+Bench+
14	San Elizario Rd and Hansard Dr OB	84	Outbound	Bus Sign
15	San Elizario Rd and Rio Negro St OB	84	Outbound	Bus Sign+Bench
16	Estancias de Missiones Rd and Estancias Del Sur IB	84	Inbound	Bus Sign
17	San Elizario Rd and San Elizario IB	84	Inbound	Bus Sign
18	San Elizario Rd and Alameda Ave (Clint MS) IB	84	Inbound	Bus Sign+Bench+
19	FM 1110 Rd and Laysol Ave IB	84	Inbound	Bus Sign
20	FM 1110 Rd and Fenter IB	84	Inbound	Bus Sign
21	North Loop Dr and Estate IB	84	Inbound	Bus Sign
22	North Loop Dr and Richardson Rd IB	84	Inbound	Bus Sign
23	North Loop Dr and Welletka Dr IB	84	Inbound	Bus Sign
24	North Loop Dr and Barnhart Dr IB	84	Inbound	Bus Sign
25	North Loop Dr and Horizon Blvd IB	84	Inbound	Bus Sign+Bench
26	North Loop Dr and Horn Cir IB	84	Inbound	Bus Sign
27	North Loop Dr and Los Robles Ave IB	84	Inbound	Bus Sign
28	North Loop Dr and Valle Negro Dr IB	84	Inbound	Bus Sign
29	North Loop Dr and Hesse Dr IB	84	Inbound	Bus Sign
30	North Loop Dr and Old Hueco Tanks Rd IB	84	Inbound	Bus Sign+Bench+

Bus Sign+Bench+: *Stop can be potentially upgraded to a Shelter.*

Ridership Forecasts and Cost Estimates

Table 27 through Table 32 summarize forecasted ridership and forecasted operating costs for the proposed and enhanced scenarios.

The ridership forecasts are "sketch-level" forecasts, or planning-level forecasts. The fixed- and flex-route forecasts are based in part on application of elasticity factors from research such as that summarized in the 3rd edition of the *Transit Capacity & Quality of Service Manual* (TCRP Report 165). Elasticity factors relate a 1% change in service parameters (in this case, service frequency, round trip travel time, and service hours) to an expected corresponding change in ridership. Elasticity factors are appropriate for corridors where transit routes are already established. In the corridors where transit routes do not currently run (e.g., Eastlake Boulevard), the research team modeled ridership of proposed transit services after the ridership of similar transit services in similar corridors. For DAR, the research team used the forecast methodology developed in TCRP Project B-36 and described in TCRP Report 161 (*Methods for Forecasting Demand and Quantifying Need for Rural Passenger Transportation*). The B-36 methodology relies on Census data.

Table 27. Proposed Scenario: Ridership

Route	Time Period	Daily Passengers	Annual Passengers
10 Anthony	Peak	35	9,210
	Off-Peak	20	5,580
11 Westway	Peak	35	9,210
	Off-Peak	20	5,580
20 Homestead Meadows South	Peak	40	10,260
21 Homestead Meadows North	Peak	15	4,360
30 Horizon City	Peak	90	22,810
	Off-Peak	30	9,180
31 East Lake	Peak	130	33,400
	Off-Peak	25	8,070
40 Tornillo	All Day	50	15,030
40X Tornillo Express	Peak	65	17,290
50 San Elizario	All Day	145	52,340
84 North Loop	All Day	40	11,900
DAR	6 Days/Week	250	77,640
Vanpool	5 Days/Week	710	185,000
Total		**1,700**	**476,860**

Table 28. Proposed Scenario: Revenue Hours

Route	Time Period	Annual Revenue Hours	Passengers/ Revenue Hour
10 Anthony	Peak	1,300	7.1
	Off-Peak	2,730	2.0
11 Westway	Peak	1,300	7.1
	Off-Peak	2,730	2.0
20 Homestead Meadows South	Peak	1,950	5.3
21 Homestead Meadows North	Peak	1,560	2.8
30 Horizon City	Peak	1,560	14.6
	Off-Peak	2,496	3.7
31 East Lake	Peak	1,950	17.1
	Off-Peak	2,496	3.2
40 Tornillo	All Day	4,212	3.6
40X Tornillo Express	Peak	1,625	10.6
50 San Elizario	All Day	5,096	10.3
84 North Loop	All Day	4,368	2.7
DAR	6 Days/Week	21,840	3.6
Vanpool	5 Days/Week	45,534	4.1
Total		**102,747**	**4.7**

Table 29. Proposed Scenario: Operating Costs

Route	Time Period	Annual Operating Cost	Operating Cost/Passenger
10 Anthony	Peak	$84,500	$9.00
	Off-Peak	$177,450	$32.00
11 Westway	Peak	$84,500	$9.00
	Off-Peak	$177,450	$32.00
20 Homestead Meadows South	Peak	$101,400	$10.00
21 Homestead Meadows North	Peak	$126,750	$29.00
30 Horizon City	Peak	$101,400	$4.50
	Off-Peak	$162,240	$17.50
31 East Lake	Peak	$126,750	$4.00
	Off-Peak	$162,240	$20.00
40 Tornillo	All Day	$273,780	$18.00
40X Tornillo Express	Peak	$105,625	$6.00
50 San Elizario	All Day	$331,240	$6.50
84 North Loop	All Day	$283,920	$24.00
DAR	6 Days/Week	$1,419,600	$18.50
Vanpool	5 Days/Week	$333,000	$2.00
Total		**$4,051,845**	**$8.50**

Table 30. Enhanced Scenario: Ridership

Route	Time Period	Daily Passengers	Annual Passengers
10 Anthony	Peak	35	9,210
	Off-Peak	25	9,030
11 Westway	Peak	35	9,210
	Off-Peak	25	9,030
20 Homestead Meadows South	Peak	40	10,260
	Off-Peak	5	2,030
21 Homestead Meadows North	Peak	30	7,180
	Off-Peak	<5	870
30 Horizon City	Peak	140	36,870
	Off-Peak	30	10,710
31 East Lake	Peak	210	53,980
	Off-Peak	30	11,760
40 Tornillo	All Day	65	24,370
40X Tornillo Express	Peak	90	23,260
50 San Elizario	All Day	145	52,340
84 North Loop	All Day	35	12,860
DAR	7 Days/Week	250	90,580
Vanpool	5 Days/Week	710	185,000
Total		**1,905**	**558,540**

Table 31. Enhanced Scenario: Revenue Hours

Route	Time Period	Annual Revenue Hours	Passengers/ Revenue Hour
10 Anthony	Peak	1,300	7.1
	Off-Peak	6,370	1.4
11 Westway	Peak	1,300	7.1
	Off-Peak	6,370	1.4
20 Homestead Meadows South	Peak	3,900	2.6
	Off-Peak	2,730	0.7
21 Homestead Meadows North	Peak	1,560	4.6
	Off-Peak	2,730	0.3
30 Horizon City	Peak	3,120	11.8
	Off-Peak	2,912	3.7
31 East Lake	Peak	3,900	13.8
	Off-Peak	2,912	4.0
40 Tornillo	All Day	9,828	2.5
40X Tornillo Express	Peak	3,250	7.2
50 San Elizario	All Day	5,096	10.3
84 North Loop	All Day	5,096	2.5
DAR	7 Days/Week	25,480	3.6
Vanpool	5 Days/Week	45,534	4.1
Total		**133,388**	**4.2**

Table 32. Enhanced Scenario: Operating Costs

Route	Time Period	Annual Operating Cost	Operating Cost/Passenger
10 Anthony	Peak	$84,500	$9.00
	Off-Peak	$414,050	$46.00
11 Westway	Peak	$84,500	$9.00
	Off-Peak	$414,050	$46.00
20 Homestead Meadows South	Peak	$101,400	$10.00
	Off-Peak	$177,450	$87.50
21 Homestead Meadows North	Peak	$253,500	$35.50
	Off-Peak	$177,450	$204.00
30 Horizon City	Peak	$202,800	$5.50
	Off-Peak	$189,280	$17.50
31 East Lake	Peak	$253,500	$4.50
	Off-Peak	$189,280	$16.00
40 Tornillo	All Day	$638,820	$26.00
40X Tornillo Express	Peak	$211,250	$9.00
50 San Elizario	All Day	$331,240	$6.50
84 North Loop	All Day	$331,240	$26.00
DAR	7 Days/Week	$1,656,200	$18.50
Vanpool	5 Days/Week	$333,000	$2.00
Total		**$6,043,510**	**$11.00**

Table 12 and Table 13 previously indicated that approximately $5.7 million in annual revenue is currently available to support EPCT (including operations and administration). Table 29 indicates that approximately $4.1 million is needed to fund operations of the proposed scenario, leaving approximately $1.6 million for administration and other costs.

Table 14 previously indicated that approximately $7.1 million represents a 25% increase in current revenue sources that might reasonably be available to support expanded EPCT service in the future (including operations and administration). Table 32 indicates that approximately $6.1 million is needed to fund operations of the enhanced scenario, leaving approximately $1.0 million for administration and other costs.

Public Outreach

The research team conducted additional public outreach for the Proposed Service and Enhanced Service scenarios. This public outreach effort consisted of stakeholder meetings and public meetings. Due to the COVID-19 shelter-at-home orders imposed by El Paso County and the City of El Paso, the research team's plan for public outreach relied on online tools.

Stakeholder Meeting

On May 14, 2020, the research team presented a summary of project progress via an online meeting with project stakeholders. The list of stakeholders was updated and included all previous stakeholder meeting participants. The online meeting was held from 10:00 a.m. to 12:00 p.m. EPC officials such as the County Judge and commissioners were present during this meeting, along with County technical staff. The research team discussed in detail the development and assessment of potential service models for consideration. The meeting also included discussion of the service model feasibility for each EPCT corridor. The meeting was recorded with the authorization of all participants, and the recording is available upon request.[3] The entire presentation is also available in **Appendix D**.

Online Public Meeting

Due to the shelter-at-home orders, the research team revised the originally envisioned public outreach plan. All in-person public meetings were changed to online public information sites. The team created a web site (see Figure 48) containing all the information about the potential changes for each EPCT route. The web site offered details about the previous EPCT studies, the entire transit plan, and interactive story maps (as in Figure 49 and Figure 50) and encouraged the public to leave feedback regarding all routes or specific routes. The web site was available in English and Spanish.[4]

[3] Please contact Tina Geiselbrecht T-Geiselbrecht@tti.tamu.edu for more information.
[4] www.EPCountytransitplan.org

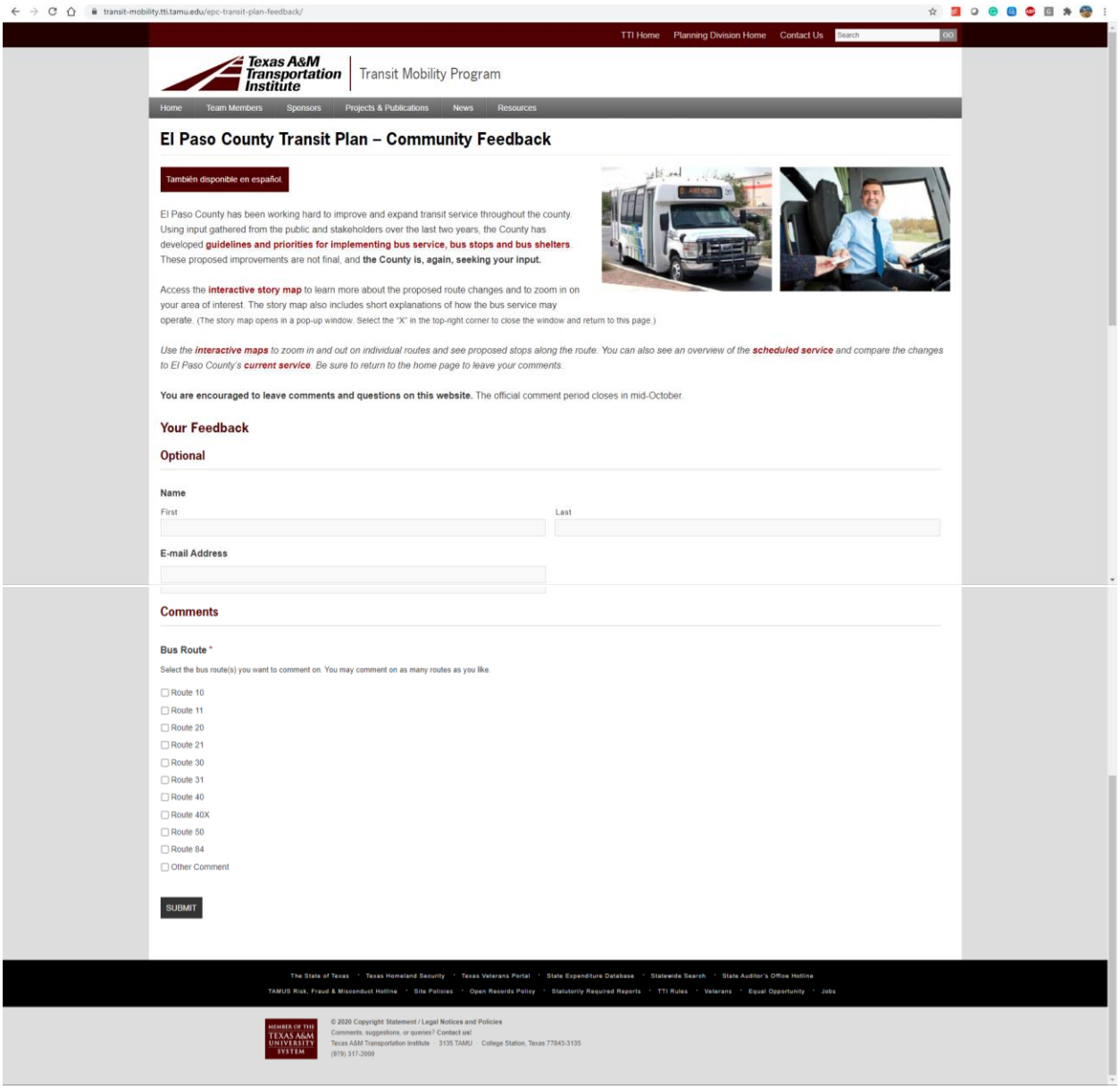


Figure 48. El Paso County Transit Plan Website (Community Feedback Input)

The EPC Transit Plan website also included illustrative schedules for the Proposed and Enhanced Service scenarios and their corresponding service hours for weekdays and weekends. A comparative chart was also available on the web site to allow readers to easily distinguish the differences among the current, Proposed, and Enhanced Service schedules and provide comments and feedback to improve the scenarios.

Figure 49. Interactive Story Maps (English)

The interactive maps (i.e., story maps) are a strategy that uses a graphic organizer to help web site visitors to learn, visualize, and interact with the proposed route configurations, bus stops, and other map elements. The interactive maps were shared with the planning departments of local agencies such as the El Paso Metropolitan Planning Organization, Sun Metro, and the City of El Paso, among others.

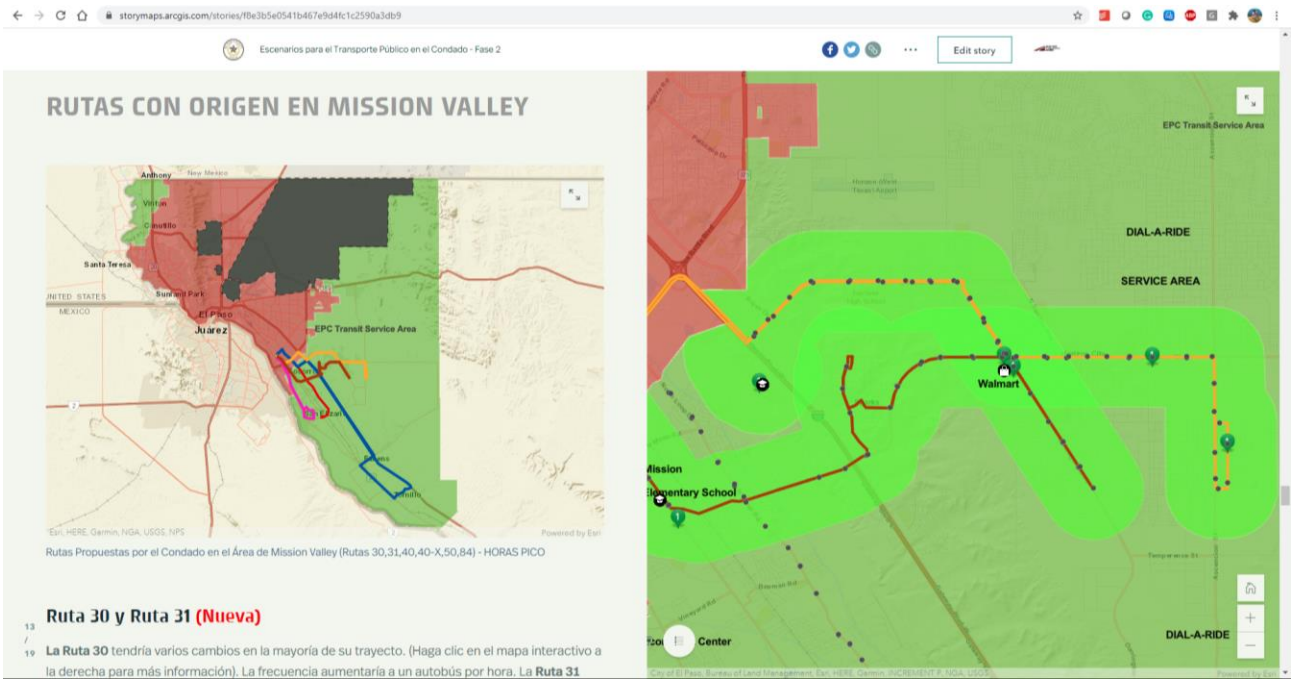


Figure 50. Interactive Story Maps (Spanish)

Social Media

The shelter-at-home restrictions on travel and gathering made the outreach for the project even more reliant on digital methods to reach the residents of El Paso County. A social media strategy was used to leverage social media channels of TTI, El Paso County, and area cities and agencies that have an interest in the study. The goal of the social media plan was to facilitate public outreach and engagement by encouraging audiences to visit the web site for this effort (described previously), calling project team members at the phone number provided for feedback, or sending an email to epcountytransitplan@tti.tamu.edu.

To encourage wide distribution, EPCT staff tagged several agencies and cities. Various hashtags were also used to spread/post the EPC transit information, including the interactive maps. Listed below are the agencies/entities that the research team recommended EPC staff tag:

- El Paso County
- El Paso County Transportation
- El Paso County Veterans Assistance
- El Paso County Community Services
- El Paso County Public Works
- NMDOT Park and Ride
- Vamonos Vanpool
- Enterprise Rideshare
- City of El Paso
- Sun Metro
- El Paso MPO
- Town of Anthony – mailing list
- Village of Vinton – mailing list
- City of Socorro
- City of San Elizario
- Town of Clint
- Town of Horizon City
- Sunland Park, MN
- Fort Bliss
- El Paso Community College

In addition, the following communication channels were also suggested:

- Use EPC region social media accounts (Facebook, Instagram, Twitter, Nextdoor, etc.).
- Share tags, maps, and the web site address through stakeholders' social media accounts in their communities.
- Use Mentimeter.
- Use Local TV stations.
- Use EPCC's web pages, especially the Northwest and Mission Del Paso campuses.
- Use Sun Metro's main web page, if protocols and inter-agency agreements allow.

Booklets

In addition to information on the website, story maps, and social media sharing, a printed booklet with detailed information about the proposed scenarios was available for distribution on buses, at transit transfer centers, and in County facilities. Around 8,000 booklets were printed in English and Spanish and shared with EPCT's current riders and potential riders from September 28 to October 9, 2020. The printed booklets were also available at Sun Metro's main transfer centers. This written material also sought public feedback on proposed route configurations, service, and schedules. It included more comprehensive information about how, when, and where buses might operate as well as potential bus stop and shelter locations. **Appendix E** contains the booklet information in English and Spanish.

6. IMPLEMENTATION GUIDANCE

The recommendations contained in this report effectively result in a redesign of EPCT services. Based on best practices[5,6,7] in the industry, service redesign efforts can be divided into five phases:

1. Laying the groundwork (establishing why service redesign may be needed)
2. Developing a plan
3. Counting down to "GoLive" (preparing to implement the redesign)
4. GoLive, or the launch day for the redesigned service
5. The first 90 days after launch

Stages 3, 4, and 5 include the activities described in the following sections, which provide implementation guidance for EPCT consideration. *TTI strongly recommends development of a detailed implementation plan that incorporates these activities and provides more-detailed direction regarding phasing and possible technology investments.*

Service Redesign Implementation Guidance

Engagement

Publicize the upcoming redesign. This can occur via EPC and community web sites, TV and radio ads, press releases, social media, and distribution of brochures or flyers (on board buses, via mailouts, and via conversations with partners). Make sure that engagement with seniors and persons with disabilities occurs early and frequently. Identify community events throughout the implementation period at which EPC staff or community representatives (who might be volunteers) could staff a table for the purposes of providing information and answering questions.

Be prepared to explain the systemwide benefits of the redesign. Some agencies that have implemented service redesigns were able to address individual concerns about changes by focusing on systemwide benefits. Publicize DAR service to further address individual concerns.

Obtaining bus drivers' support for the changes is important. Engage bus drivers early so that they are able to provide advance information about redesigned services to current riders (thus supporting EPC staff's engagement efforts). Consider forming a bus driver committee to (a) provide input on new routes, schedules, and stops as they are being developed, (b) coordinate

[5] TransitCenter. *Untangling Transit: Bus Network Redesign Workshop Proceedings.* New York City, NY, January 2018.
[6] Byala, Lora B., et al. *Comprehensive Bus Network Redesigns.* TCRP Synthesis 140. Transportation Research Board, Washington, DC, 2019.
[7] TCRP Synthesis SH-20 research (report to be published in 2021).

testing of new routes, and (c) coordinate provision of information to and review of input from riders during and after implementation of the service redesign.

Engage with community partners continuously during the implementation process. Update them at key stages in the implementation process. Consider taking community leaders on a tour of the existing bus service to illustrate where improvements are needed.

On the GoLive date and for a week afterwards, stage EPC staff or community representatives (who might be volunteers) at the transfer center and other key locations as part of an "on-site team" to assist riders with timing, connections, and service concerns. TransitCenter reports that one transit agency's on-site team included members of the local Boy Scouts and Girl Scouts troops.[8]

Have a backup vehicle and driver available on the GoLive date, and monitor service via dispatchers and live data sources.

For at least the first 90 days after GoLive, continue public and stakeholder engagement activities. Get feedback on the service changes, acknowledge the feedback, and address the concerns with either service modifications or clear explanations.

Marketing

Identify a GoLive date and use it in advance marketing. This can create a sense of urgency to increase community engagement.

Service redesign will require updated maps and schedules. This creates an opportunity to update the maps and schedules to ensure that they are easy-to-read. It may be useful to establish a rider focus group to receive relevant input from them. Promote transit apps on the updated maps and schedules.

Determine if the redesigned service will be fare-free on the GoLive date or during the GoLive week. If so, hand out free ride tickets in advance (as part of marketing and outreach) and/or after GoLive (via drivers or the on-site team).

Route-Building and Technology

Review the contract with First Transit with respect to the capabilities of First Transit to schedule, manage, and deliver demand-responsive service and flex-route deviations. If not, deployment of the recommended service may have to be staged, and it may be necessary to issue a revised RFP

[8] TransitCenter. *Untangling Transit: Bus Network Redesign Workshop Proceedings.* New York City, NY, January 2018.

in the future to ensure that the contracted operator has the capabilities to schedule, manage, and deliver the recommended service.

Work with the contractor to build new routes with stops in scheduling software.

Verify that on-board technology can capture training run data and record driver observations.

Testing and Training

Bus drivers should start testing and training runs at least six weeks before the GoLive date—preferably earlier. Include a scheduler or dispatcher on board during testing and training runs, if possible. Be sure to perform testing and training runs on the days and time periods when the redesigned service will operate (e.g., on weekdays and on weekends during both the a.m. and p.m. peak periods and during off-peak periods). Use spare buses for testing and training runs to increase the accuracy of pull-in and pull-out times at bus stops. Mark future bus stop locations in the field prior to testing, if bus stop signs are not already in place.

Solicit driver feedback and input throughout testing and training. Use this input as well as data from on-board technology to evaluate the routes and adjust them. Include adjustments needed to coordinate routes at the transfer centers. Re-test and re-evaluate the routes. Do not underestimate the need for testing and training prior to GoLive.

Bus Stop Implementation Guidance

Bus stop implementation activities overlap with service redesign activities and should be coordinated. Bus stop locations should be finalized far enough in advance of the service redesign GoLive date that, at minimum, bus stop signs can be installed before the service redesign GoLive date.

The information in the following sections is based on best practices[9,10] in the industry and TTI researchers' experience.

Potential funding sources for bus stop infrastructure include the following:

- Capital, accessibility, safety, and public art grants
- Local municipalities (multiple mechanisms)
- Coordination with developers and/or community organizations
- Coordination with future roadway projects

[9] TCRP Synthesis SH-20 research (report to be published in 2021).
[10] TCRP Synthesis SD-06 research (report to be published in 2021).

- Local initiatives
- Sponsored stops
- Shelter and bench ad vendors

Look for opportunities to share costs. Make sure community partners and property owners understand the value of having a bus stop with seating and a shelter. Explain how the bus stop benefits their employees, clients, constituents, and/or customers. Express the value of the bus stop in terms that resonate (e.g., improved bus service will help employees get to work more reliably).

The hierarchy of desired bus stop locations is as follows:

- Preferred: on-street location in public right-of-way (ROW)
- Side street location in public ROW
- Location in private ROW or off-street location

Each site has unique constraints and opportunities and must be evaluated on an individual basis.

Develop agreements with partners as needed to establish who is responsible for bus stop construction, maintenance, repairs, etc.

Make sure the cities and TxDOT are aware of the proposed bus stop locations so that stop improvements (e.g., sidewalk connections and installation of stop amenities) can be coordinated with future corridor projects.

Start with implementation of bus stop signs and implement seating and shelters as opportunities become available (e.g., as part of new development projects and new roadway projects) and after coordination with community partners and property owners.

Illustrative Timelines

The illustrative schedule for service design activities shown in Figure 51 is variable. These activities overlap with bus stop implementation activities.

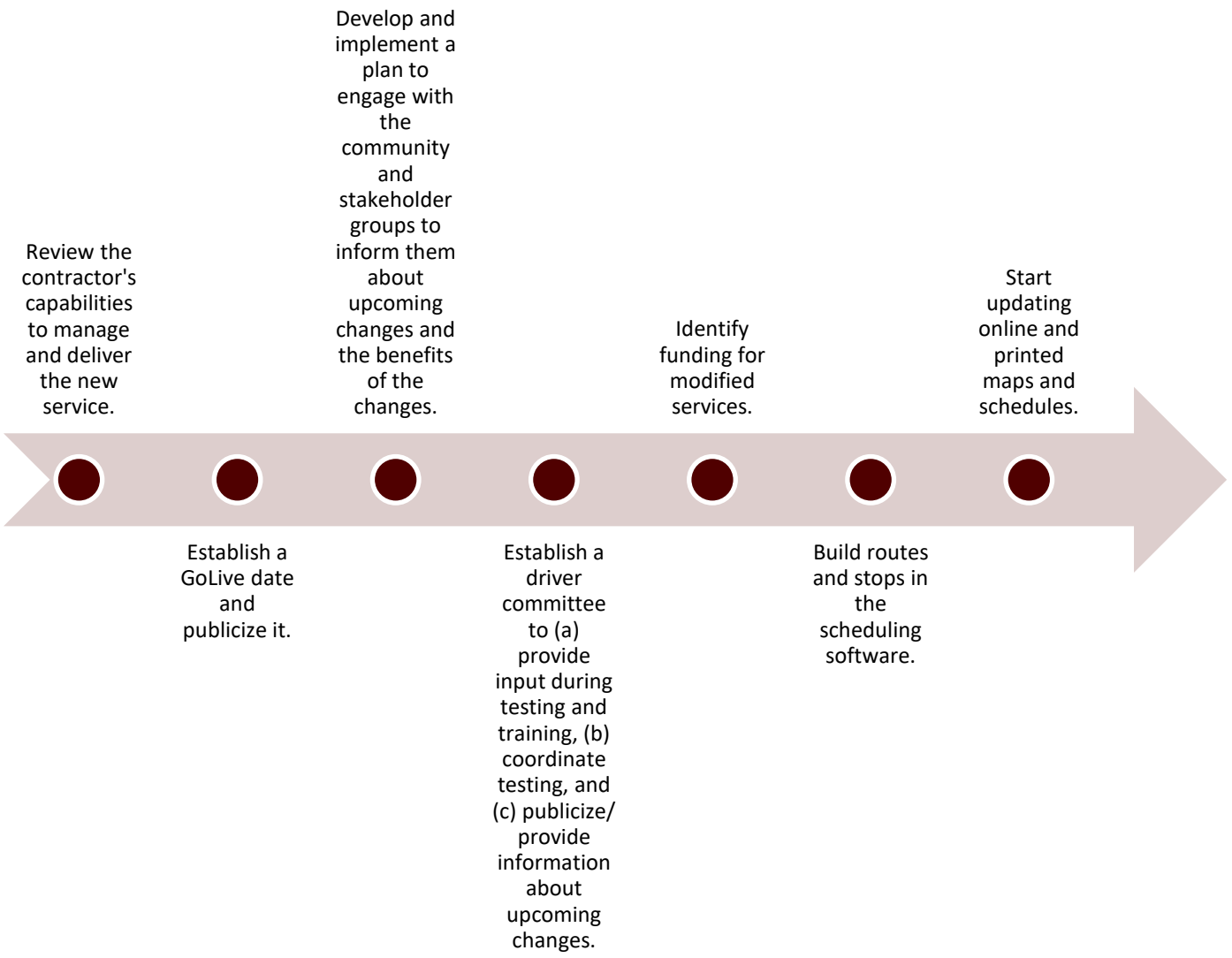


Figure 51. Illustrative Service Design Timeline

The illustrative schedule for bus stop implementation activities shown in Figure 52 is variable. These activities overlap with service design activities.

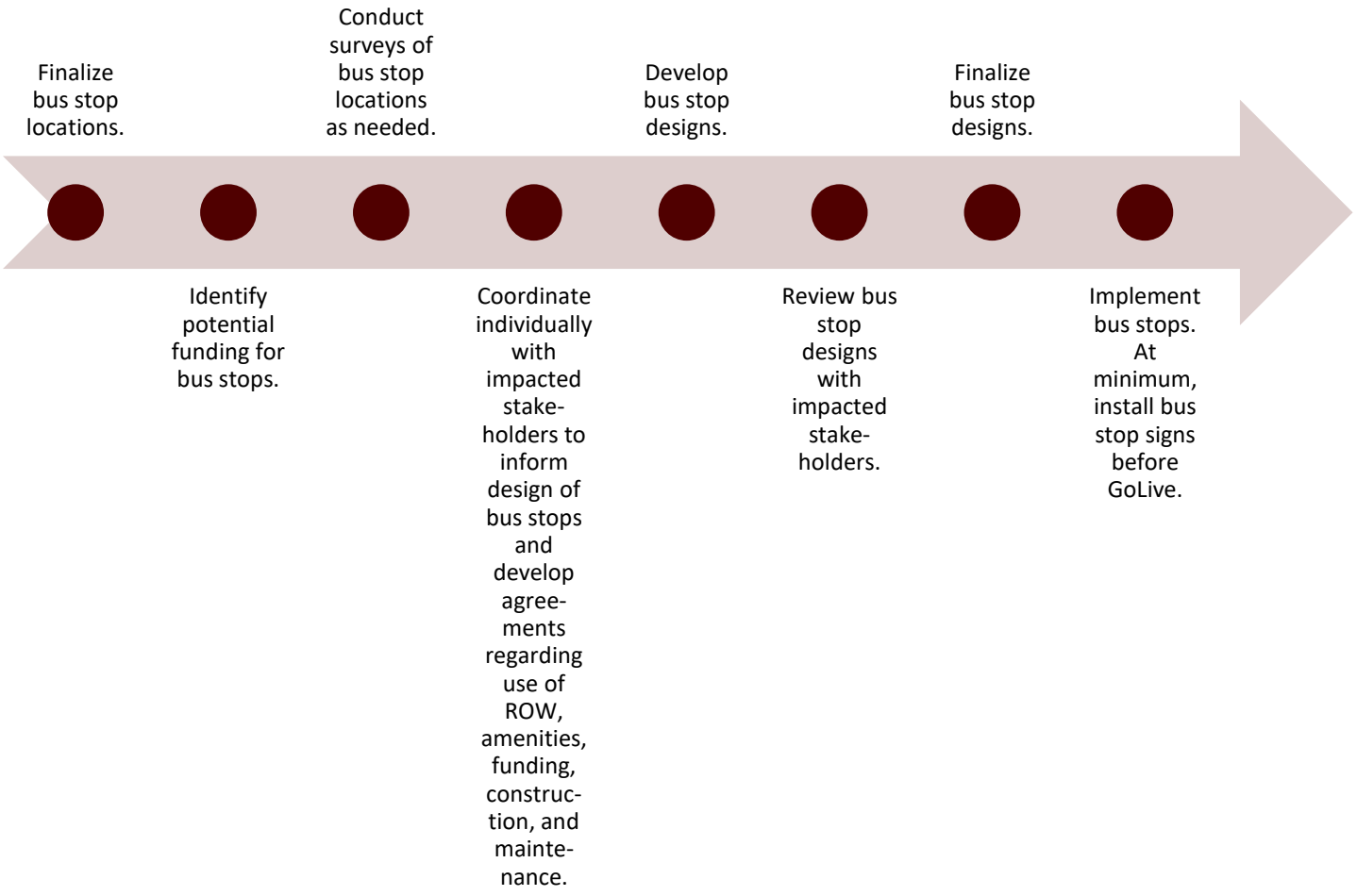


Figure 52. Illustrative Bus Stop Implementation Timeline

The activities shown in Figure 53 occur after service design activities and bus stop implementation activities. The timeline for the activities in the graphic below is illustrative.

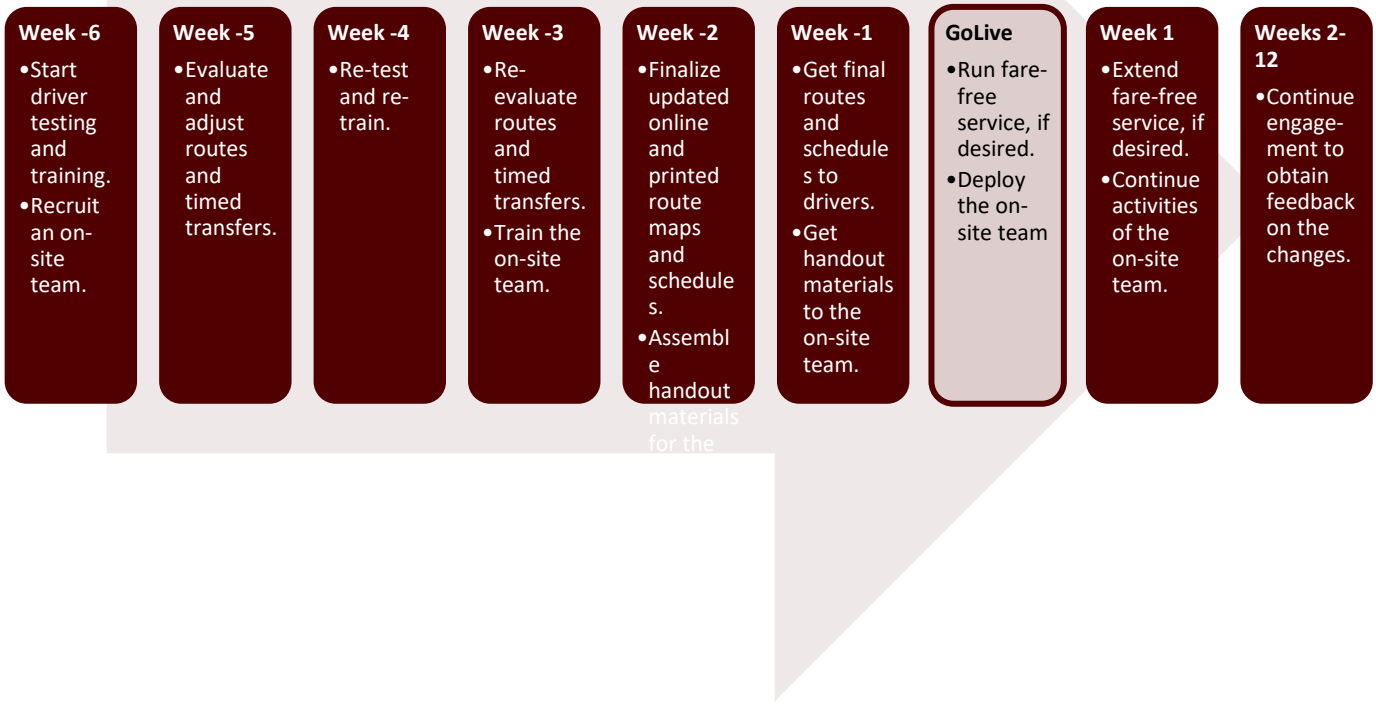


Figure 53. Illustrative Bus Stop Implementation Timeline

7. CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the final remarks and recommended actions after the analysis of the best practices and guidelines for El Paso County rural public transportation system to identify potential stop locations and route configurations. This research project represents the third effort to assist the EPCT staff with technical guidance to achieve rural public transportation improvements. In the first study, El Paso County Regional Transit Institutional Options Feasibility Study, the TTI team suggested six different transit service scenarios and their estimated total annual cost, passenger boardings, and economic benefits. The second study provided the EPCT staff with a closer look of the potential route configuration, associated stop locations, prioritization and categorization, and finalized with a potential list of system-wide shelter locations that helped EPCT to allocate resources to bus shelters implementation.

The present study aimed to contribute with the state-of-the-practice and implementation guidelines for El Paso County rural transit to identify service scenarios, stop locations and route configurations for a cost-neutral and an enhanced service scenario. The study also includes a comparison of the proposed scenarios with the current transit service conditions, estimated annual ridership, estimated total annual cost, potential passenger revenue hours, guidelines for future expansion/design and guidelines for implementation.

The current service type and configuration was optimized with travel time savings in mind based on the number one priority from the public outreach process. The proposed scenarios also aimed to ensure air quality benefits (emission reduction because of route and service optimization) that could be potentially turn into the Congestion Mitigation Air Quality program support.

The research team recommends that ECPT staff consult the service planning guidelines contained in this report whenever needed to inform future decision-making about future service improvements. The guidelines represent industry best practices and input from local stakeholders and the public.

The Proposed Service scenario and Enhanced Service scenarios presented in this report are anticipated to have operating costs that fall within the funding range established for them. Namely:

- Approximately $5.7 million in annual revenue is anticipated to be available to fund current EPCT services, including operations and administration.
- Approximately $4.1 million is needed to fund operations of the Proposed Service scenario, leaving approximately $1.6 million for administration and other costs.
- A 25% increase in current revenue sources is anticipated to result in adequate funding for the Enhanced Service scenario. Approximately $6.1 million is needed to fund operations of

the Enhanced Service scenario, leaving approximately $1.0 million for administration and other costs.

The route configurations presented in this report should be considered planning-level recommendations. As Chapter 6 suggests, testing the routes in the field during a range of operating conditions and during peak and off-peak periods may result in a need to adjust routing or schedules to address operational or scheduling needs.

The bus stop locations presented in this report should be considered planning-level recommendations. As surveys of recommended sites are conducted, and as opportunities to partner with other entities to implement bus stops emerge, bus stop locations may need to be adjusted. Chapter 2 and Chapter 6 in this report contain relevant guidance for refining bus stop locations and making use of bus stop implementation partnerships. **Appendix A** also contains information to support bus stop implementation.

The study team recommends that, once the Montana Brio bus rapid transit service is operating, Routes 20 and 21 be reduced in length so that these routes operate between the new Far East Transfer Center and Homestead Meadows North and South (instead of terminating at the Eastside Transfer Center).

The research team suggested that the EPC staff confers with the agency responsible for the roadway to obtain detailed right-of-way and utility information to avoid possible conflicts at the potential locations.

EPCT should coordinate efforts with Sun Metro planning staff about Route 59 scheduling. Route 59 is a connector offering rapid daily service from the Downtown Transit Center to the Eastside Transit Center. Proposed Routes 20 and 21 need to be synchronized to optimize their arrival at the transit center, especially during peak hours. According to current riders' feedback, the ideal peak-hour first arrival of current Route 20 on a typical weekday is 5-10 minutes before Route 59's morning departure of 7:02 a.m. Currently, the first arrival of Route 20 to Eastside Transit Center is at 7:00 a.m.

EPCT should coordinate with Sun Metro to formally agree on the use of Sun Metro's facilities and roadside infrastructure (e.g., bus stops) to support EPCT service. Dedicated space or shelters for EPCT at transfer locations are extremely important for riders. Moreover, bus scheduling must be discussed with Sun Metro's planning staff to ensure optimal transfers not only to Sun Metro's regular bus routes but also to other modes operated by the agency (such as the Brio system and, indirectly, the El Paso Streetcar. First Transit and the South Central Regional Transit (operating from Las Cruces, NM) are agencies that should also be involved in the scheduling process.

The support of Sun Metro and First Transit operating staff and drivers will be key to confirm that the modeled schedule design for the proposed fixed transit routes (inbound and outbound bus travel time) is realistic. EPCT planning staff must ensure that the travel times proposed by the TTI team complies with the real traffic conditions and potential delays typically found in El Paso transportation network before implementing any changes (i.e., bus travel time testing).

New bus stops for proposed Route 84 along North Loop Road could be gradually implemented over time, as the area develops and ridership is established. This recommendation applies particularly to the inbound and outbound stops between Clems Road and Clint Cut-Off Road, where there are low-density residential areas.

A bus stop maintenance program should be coordinated with Sun Metro, TxDOT, and local jurisdictions. During the field visits, TTI surveyors detected several stops in need of maintenance. Lack of maintenance may discourage potential passengers to use rural transit service.

Before EPCT staff starts implementing the preferred scenario, development of a detailed implementation plan is highly recommended. The implementation plan will guide EPCT planning staff in implementing the preferred alternative and facilitate the decision-making process. Furthermore, the implementation plan could also provide a detailed service plan, a recommended structure for governance and financing, system management and operating guidance, a marketing plan, guidance for procurement of capital equipment and service contracts, a detailed financial plan, and other implementation support.

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