



LONG-RANGE **TRANSIT PLAN**

TAPS PUBLIC TRANSIT
DECEMBER 2021

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INTRODUCTION

Project Purpose

The Texoma Area Paratransit System (TAPS) Long-Range Transit Plan (LRTP), initiated in 2020 through a partnership between TAPS and the Grayson County Metropolitan Planning Organization (GCMPO), followed through on the recommendations of the transit market study completed in 2019.¹

Prior to this project, the Texoma Council of Governments (TCOG) conducted the 2019 Transit Market Study, which focused on identifying the degree of transit need and potential in the Texoma region (Grayson, Cooke, and Fannin counties). The conclusions reached in the 2019 Transit Market Study set the stage for the LRTP by determining that there was sufficient evidence of transit need and potential in the region which warranted further study to determine initial recommendations for a TAPS-run fixed-route bus system.² This LRTP effort conducted a detailed study to establish the feasibility of creating a fixed-route bus transit system in the Grayson County area and identified a potential service configuration for this type of transit system.

Project Setting

The study area for this project consists of the urbanized area of Sherman and Denison, Texas (**Figure 1**). According to the initial release of the 2020 Decennial Census, the Grayson County Metropolitan Statistical Area (MSA) has a population of 135,543 persons.³ Based on a comparison of the American Community Survey (ACS) data to the 2010 decennial Census, the population of the MSA has grown approximately 12.1% in the intercensal period. The two cities continue to grow in importance in North Texas because of the development of the regional medical center, industrial development clusters around Sherman and Denison, retail centers along US 75 and US 82, and growth in the enrollment at the local colleges. Additionally, Grayson County, adjacent to the Dallas-Fort Worth MSA, continues to experience an influx of residential population on its southern edges because of the continued growth in the Dallas region.

Meetings with the project stakeholders and other community leaders revealed that the area's location between Dallas-Fort Worth and Oklahoma City positions it well to support the overall economic growth and development of the region. The study supports the general efforts of the region to provide services which support mobility, job growth and opportunity, and connectivity to the general population.

Current Transit Services

TAPS currently provides the only publicly available transit service in the Grayson County area. This service operates using a demand response, curb-to-curb format with 36 buses and vans serving Clay, Cooke, Fannin, Grayson, Montague, and Wise counties. As of 2020, TAPS has provided 40,300 annual trips to riders in the region.⁴ Because of its demand response, curb-to-curb format, TAPS users must schedule their rides in advance. As the region continues to grow and demand for services by the regional population continues to increase, TAPS may not be

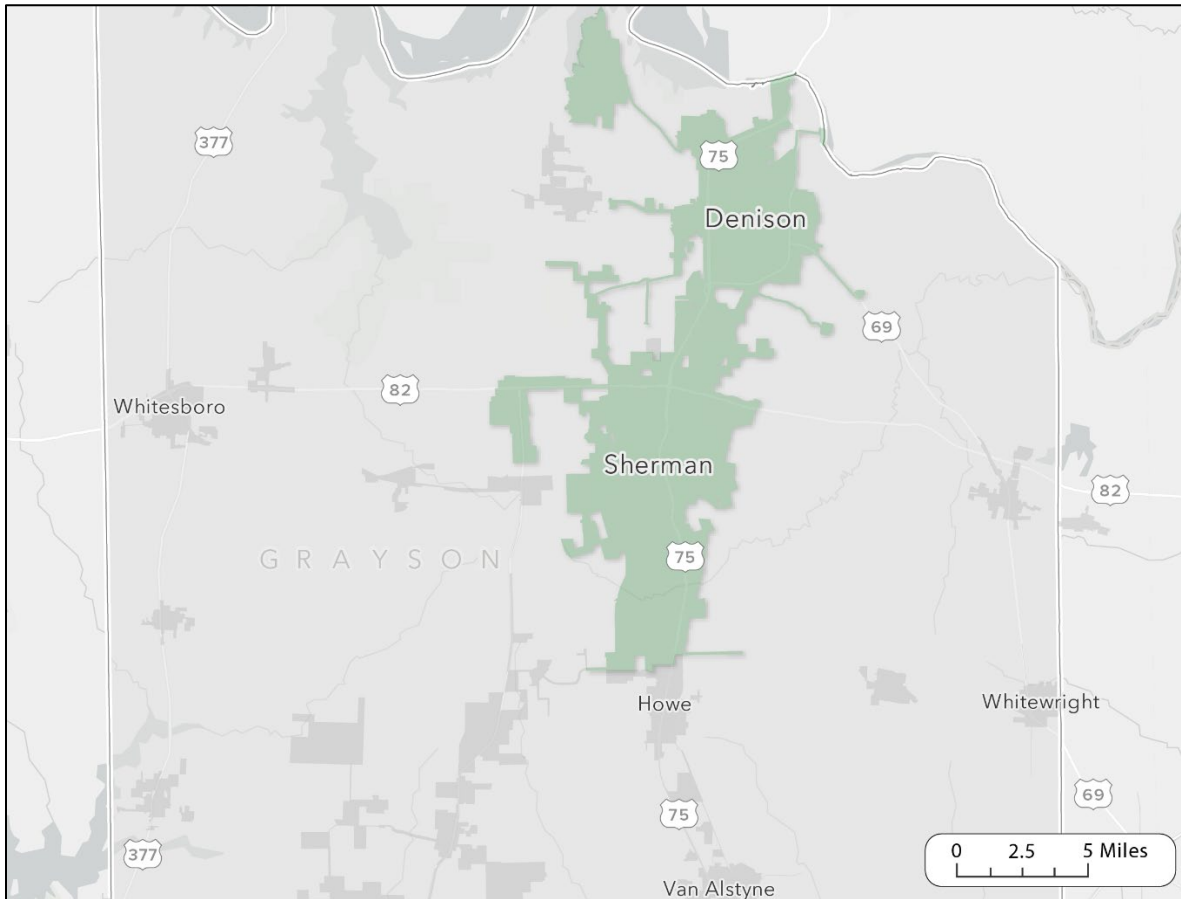
¹ 2019 Transit Market Study, Completed on behalf of the Texoma Council of Governments, August 30, 2019.

² A peer review of the market study completed by Half & Associates appears in Appendix C.

³ Table P1: Race, Decennial Census 2010 and 2020, <https://data.census.gov/cedsci/table?q=MSA%20data&t=Population%20Total&g=310XX00US43300&y=2020&tid=DECENNIALPL2020.P1>.

⁴ National Transit Database (NTD) report for Texoma Area Paratransit Service for FY 2020, <https://www.transit.dot.gov/ntd>

Figure 1: Grayson County Urbanized Area (UZA), Grayson County



Role of the Project Steering Committee

The project Steering Committee (committee) guided the plan's development. They met regularly to review the outcomes of analyses and provided a link to the community by setting expectations for the outcomes of the fixed-route recommendations. They maintained connections to GCMPO to monitor plan development and offered their knowledge of development activities (residential, commercial, industrial) occurring or proposed in the study area which could affect demand for a new fixed-route transit service. Chapters 2, 3, and 4 provide further information about the committee, its activities, and input/feedback it provided during the study process.

The committee's primary functions included:

- Defining success for the project by establishing high-level goals for the performance and operation of the new fixed-route system,
- Providing the project team with local information and data files relevant to the development of system recommendations,
- Reviewing project milestones and deliverables to provide feedback and help keep the plan development process on track, and
- Using the outcomes of the public input process to supplement decision-making and guide development of plan recommendations to achieve the needs of the community.

Public Outreach

A regional transit survey collected feedback from stakeholders and members of the community on their existing transportation habits, perspective on need for transit, and use of the available transit service. The survey effort also informed the development of the regional Coordinated Human Services Transportation Plan developed with TCOG in parallel to this feasibility study.

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ROUTE DEVELOPMENT

Route Development Methodology

A primary aim of the LRTP is to create fixed-route concepts that would serve the Grayson County community. These routes would differ from existing service provided by TAPS, running on a predetermined alignment and with scheduled stops. A combination of data analysis, stakeholder feedback, and community input informed the initial route concepts. Through discussion with the committee and community leaders, refinement and consolidation of the route concepts took place to create a conceptual network of cohesive routes connecting community nodes and potential rider groups.

Transit Need Index

For fixed-route service to best serve the community, it is necessary to understand where the need for transit is likely to be strongest. Measuring transit demand geographically involves looking at several demographic indicators that demonstrate where transit service will be most needed and utilized. Identifying high areas of transit need helps design a system that increases mobility access to those who need it.

Two demographic scores were calculated to generate a geographic understanding of the transit needs of the Grayson County urbanized area: Transit Dependent Population (TDP) and Target Transit Riders (TTR). These measurements show where in the community those who are more likely to utilize transit service are concentrated. Understanding the geography of transit need in the community is an important part of designing equitable and cost-effective fixed-route service, ensuring that those with the greatest need for services have access to reliable transit. The transit need analysis conducted at the block group level used 2017 ACS data, which provides detailed demographic information applicable to TDP calculations not available from the decennial Census.

Transit Dependent Population

TDP quantifies the amount of people in a community most likely to depend on transit as their primary mode of transportation. TDP measures those whose mobility is most likely dependent on public transportation, including those younger than 16 and those who do not own a car. This analysis used a formula derived from the US Department of Transportation (USDOT) to identify the number of driving-age citizens with limited-to-no access to personal automobiles.

- **Household Drivers** = *(Population 18+) - (Persons living in group quarters)*
- **Transit-Dependent Household Population** = *(Household Drivers) - (Vehicles available)*
- **Transit Dependent Population** = *(Transit-Dependent Household Population) + (Population 17 or under) + (Non-institutionalized* population living in group quarters)*

**The 2017 ACS data on group quarters does not distinguish between institutionalized and noninstitutionalized. These figures were estimated using the group quarters data from the 2010 Census based on proportions per block group.*

Block groups in Denison and central Sherman showed the highest transit dependency given this evaluation methodology, with the greatest concentrations found near Austin College and surrounding neighborhoods.

Target Transit Riders

TTR highlights additional transit demand not accounted for in the TDP index by incorporating other demographic groups that have a higher propensity to use transit. These groups include:

- People aged 65 and older
- People aged 17 and younger
- People with disabilities
- People living in poverty
- Racial and ethnic minorities
- People with limited English proficiency (LEP)

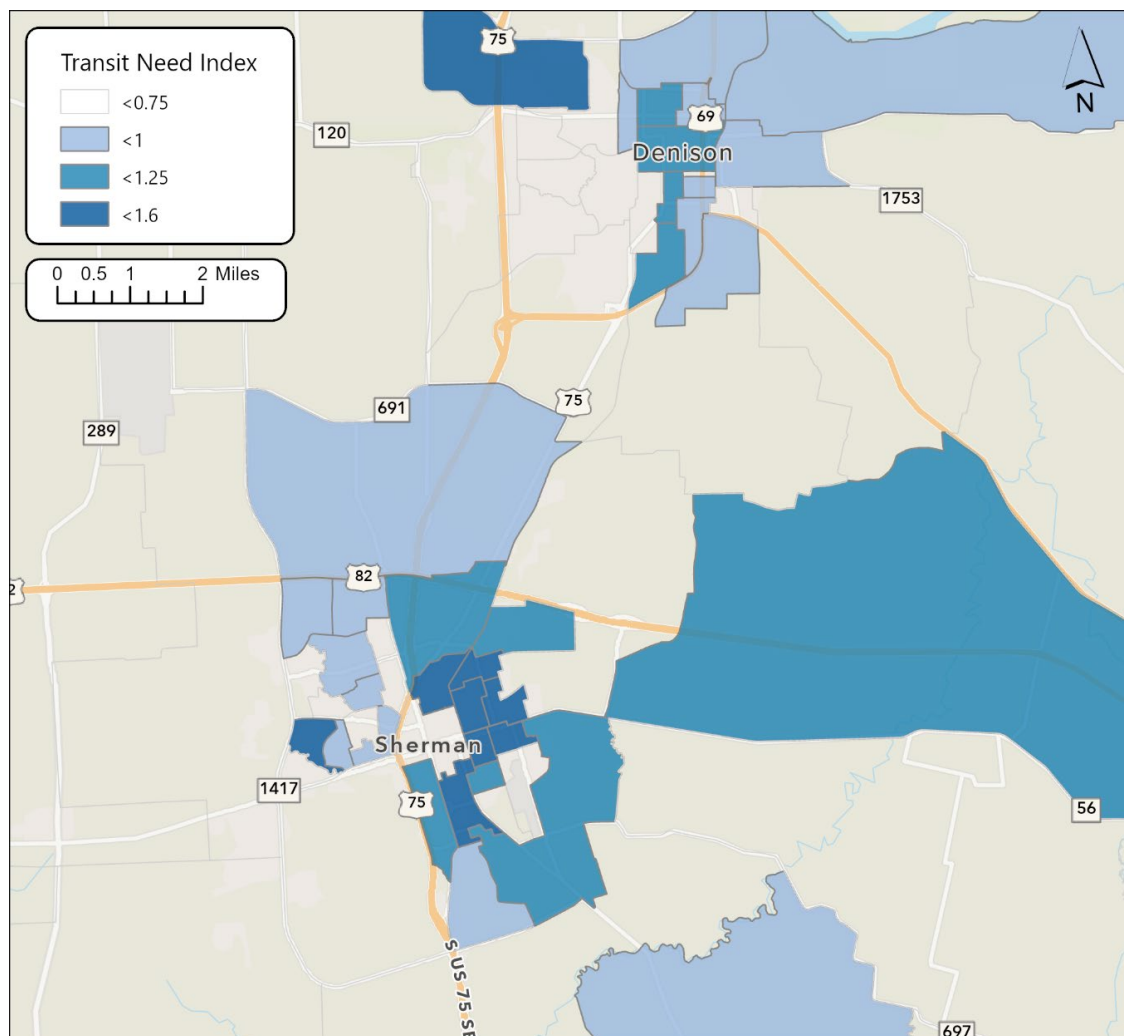
Calculating TTR requires incorporating data about these groups at the block group level. Results represent the total number of target riders. Due to the nature of these characteristics, it is possible that some people belong to more than one category (e.g., someone older than 65 years of age may also have a disability). This means that some may have been counted more than once in the TTR score, which provides consideration for those facing multiple mobility barriers.

TTRs appear to be most concentrated in block groups in central Sherman along the east side of US 75 and near Austin College, and to the south and northwest of Denison.

Transit Need Index

The TNI represents the combination of TDP and TTR as a percentage of the total population to identify areas of highest need relative to block group size, as shown in **Figure 2**.

Figure 2: Sherman Denison UZA TNI Score

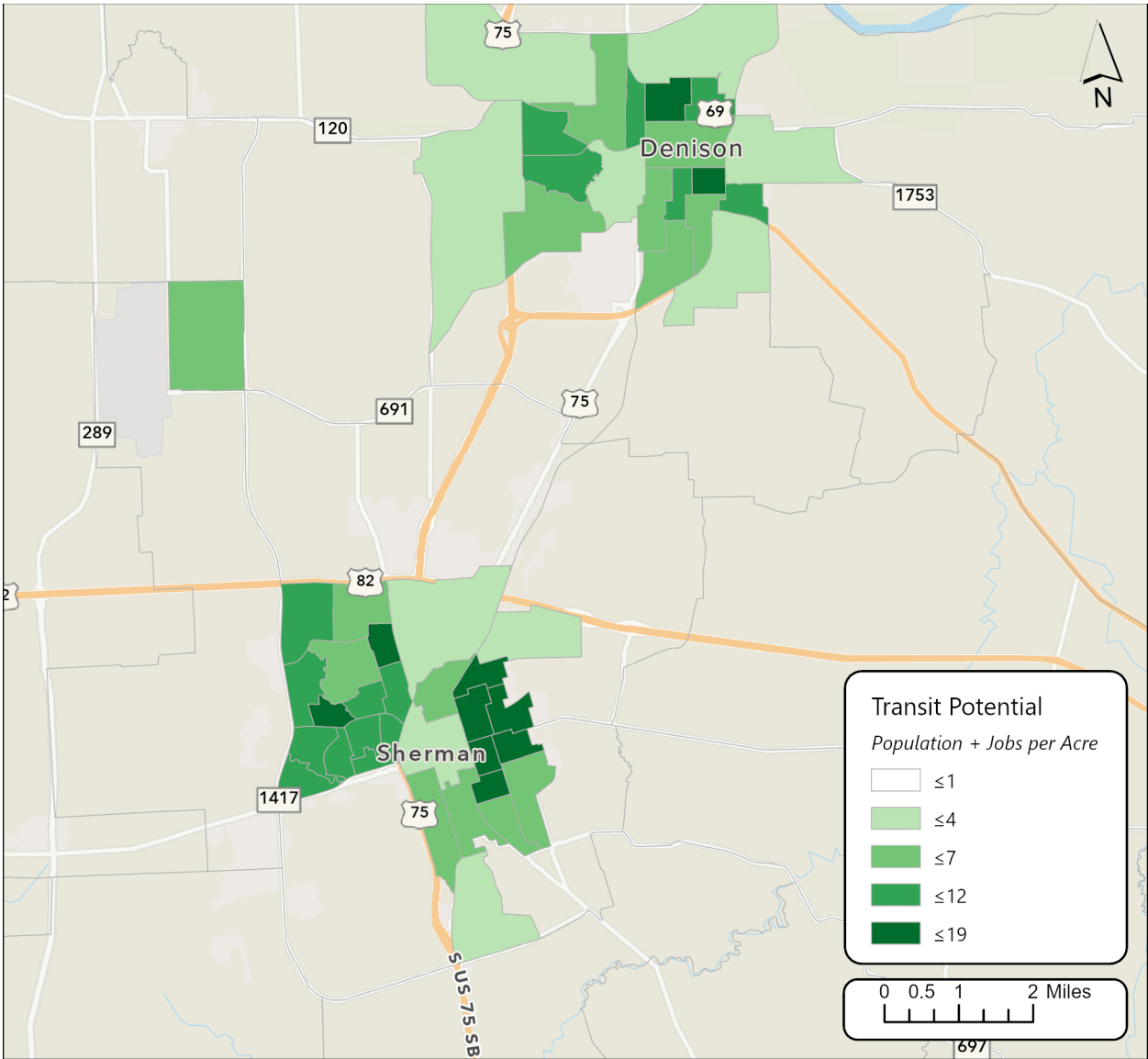


Transit Potential

Route development also took into consideration where activity is concentrated within the growing Grayson County community. High population and job densities highlight areas that are likely to generate transit ridership due to concentrations of people and destinations they need or want to get to. These areas can also represent development and land use patterns that support fixed-route transit service.

Figure 3 shows that the highest concentrations of population and employment occur in east Sherman, along with some block groups in central Denison. Except for the block group east of the North Texas Regional Airport, density decreases in block groups farther out from the cities. Lower-density areas such as these are often better served by more flexible service models such as the current demand response system, employer vanpools, or focused microtransit applications.

Figure 3: Population and Employment Density



Route Concepts

Draft route concepts were created utilizing the following data and information resources:

- Existing transit service area
- Key destinations and adjacent land uses (including grocery stores, municipal buildings, schools, shopping centers, places of worship, and hospitals)
- Employment generators
- Transit Need Index scores
- Population and job density

The project team mapped these datasets across the study area, resulting in the identification of over 20 initial route concepts with the aim of serving a combination of destinations, high density neighborhoods and apartment buildings, and block groups that had high TNI scores. Not all of these initial concepts were intended to be implemented; rather, this provided a range of potential opportunities for service from which a refined set of recommended routes would be identified. The initial route concepts were screened further to identify the combination of routes that would most directly address needs as determined by the TNI analysis.

In the process of evaluation, the team looked at transportation system characteristics to make sure the network provided capacity to support transit implementation. The team focused their attention specifically on roadway width and geometry, corridor speed, sidewalk connectivity, access to crosswalks, and connectivity to other transportation facilities (bicycle paths, recreational paths, etc.). The concepts considered a range of potential transfer center locations around a central focal point in northeast Sherman, as well as the location of TAPS maintenance facilities, to ensure proposed routes would be connected to the infrastructure necessary to support future passenger transfers and vehicle storage and maintenance operations.

Concept Review Process

Grayson County MPO Review

Upon the completion of the initial route concepts, the project team provided the concepts to GCMPO for review in the form of route profiles. These profiles contained information about each draft route, including its name, potential alignment, and general location, start and end points, route type, length in miles, estimated number of stops and stop spacing, estimated travel time, whether there were potential transfer opportunities, the transit potential of the area served, the TNI of the area served, and key destinations served. In addition, the project team provided GCMPO with an interactive online story map that contained the system of draft routes and points of interest, which allowed further review of the concepts.

With these tools, GCMPO and the project team collaborated in an iterative draft route refinement process that entailed multiple rounds of review and modification until an ideal draft fixed-route system was reached.

Steering Committee Review

The project team first presented the draft route concepts to the Steering Committee at its third meeting on August 18, 2021. The team presented the committee with a map of the full draft system along with an individual map zoomed into each draft route that allowed for a comprehensive review of the alignments. The committee discussed each route individually and provided suggestions for updating, adding, or removing routes.

After the third committee meeting, the project team implemented updates to the route alignments based on the committee's feedback. Additionally, prior to the fourth committee meeting, the project team drafted and presented a sixth fixed-route alignment to the committee members for feedback and adjustment. The project team presented the updated routes to the committee at its fourth meeting on December 1, 2021, where the committee confirmed all six of the route alignments as the final route recommendations for this phase of the fixed-route development effort.

Transit Center Concept

In addition to the potential route alignments, the project team assessed a transit center concept that would create a hub location for routes to interact, thereby facilitating passenger transfers between routes serving Sherman and Denison. In theory, this facility could be multi-purpose, providing areas for passengers, transit system employees, and potential spaces for complementary development.

Because this phase of the fixed-route study did not fully define the final concept for the facility, its need would be determined during the final system design. Facility implementation could be part of a phased approach where initial build may consist only of those elements required to launch operations. However, in discussions with the committee and the GCMPO, their consensus is that as part of future facility development phases, the following elements should be considered:

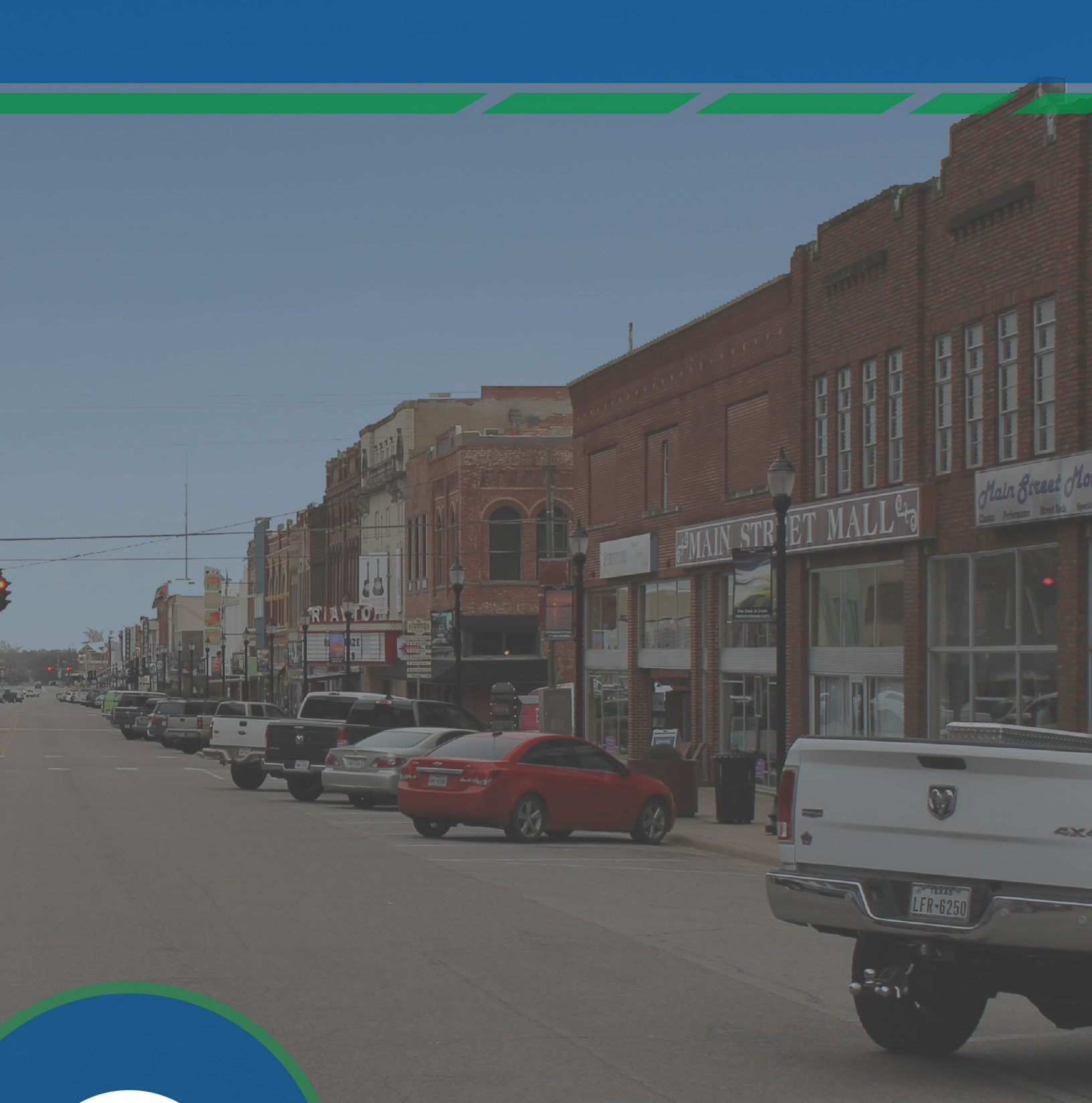
- **Passenger information and comfort** – the facility should provide passengers with systemwide service information. The facility's covered area should be sufficiently sized to protect passengers from the elements as they wait for buses.
- **Multimodal connectivity** – the facility should provide opportunity to connect to the regional bicycle and pedestrian networks and support bike-to-bus services.
- **Community development** – the facility should be sufficiently sized to facilitate development (long-term) of complementary activities, including commercial retail, community services, etc. Models for such facilities exist in other transit systems, and the committee identified several across Texas as potential models for this system's facility.
- **Potential for expansion** – the facility should be sufficiently sited and sized to allow for its eventual expansion to support system development needs, as well as to achieve the other objectives identified above. Again, the committee identified several facilities in similarly sized communities in Texas which provide a potential model for phased development.

Site Identification

The initial objective for site identification was to place the hub in a central location between the two cities, near the intersection of US 82 and US 75. Input from the Steering Committee changed the focus of this location to seven potential sites located within $\frac{3}{4}$ of a mile of the intersection at North Loy Lake Road and East Taylor Street. Options for the potential transit center are discussed further in Chapter 4. The sites vary in size and location and each presents opportunities to support the committee's identified objectives. The committee offered no expression of preferences for any of these sites, allowing for further refinement of the specific location and concept to occur during the next phase of system development.

Next Steps

Identification of the final site and evaluation of its effects on service and the community would be the subject of a next-phase environmental evaluation completed in accordance with Federal Transit Administration (FTA) standards.



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PUBLIC ENGAGEMENT

Methodology

The public engagement effort for the TAPS LRTP gathered input from members of the community that would inform recommendations for overall service improvements and future phases of implementation. Stakeholders and residents of Sherman, Denison, and surrounding areas participated in the engagement process, and their input supplemented the data-driven transit market analysis to create the recommendations included in the final plan.

The GCMPO Public Participation Plan (PPP) guided the public engagement process. The PPP calls for early and continuous communication with the public in accordance with Federal Highway Administration (FHWA) and FTA standards. Outreach efforts coordinated between GCMPO, TAPS, and TCOG included distribution of the survey as well as distribution of information on survey availability to existing transit riders and agencies representing population groups identified in the TNI as at-need for service. Due to the COVID-19 pandemic, the survey and GCMPO's communications with individual agencies comprised much of the public engagement process. Any meetings or outreach conducted took place in a virtual or hybrid setting utilizing Microsoft Teams and Zoom. The project team used social media and the local print and television media as a key conduit for spreading awareness of the involvement opportunity presented by the survey.

Due to the inability to directly meet with the public, the LRTP's recommended route concepts lay the foundation for additional analysis and community input, including meetings and community review sessions. Such activities benefit the development process by confirming survey results, as well as providing recurring feedback opportunities necessary to guide development of the implementation plan. Subsequent phases of refinement to the LRTP's recommendations should continue to engage and inform the community through public meetings and additional stakeholder outreach.

Steering Committee

GCMPO and the project team collaborated to assemble the committee from a group of local professionals that represent both the Sherman and Denison urban areas. The committee members, the entities they represent, and their roles at those entities are listed in **Table 1** below.

Table 1: Steering Committee Members

Committee Member	Entity Represented	Role
Clay Barnett, PE	GCMPO	Director
Jud Rex, AICP	City of Denison	City Manager (former)
Tony Kaai, CEcD	Denison Development Alliance	President
Terrence Steele	City of Sherman	Assistant City Manager
Rob Rae, AICP	City of Sherman	Director of Development Services
Josh Walker	TAPS	General Manager (former)
Shellie White	TAPS	General Manager
John Webb, AICP	City of Denison	Executive Director of Planning & Community Development (former)

The members of the committee met a total of four times throughout the duration of the plan development process, including shortly after project kickoff, at major project milestones, and near the end of the plan development process. **Table 2** below provides a schedule of the four committee meetings as well as the topics discussed at each.

Table 2: Steering Committee Meetings

Meeting #	Meeting Date	Topics Discussed
Meeting 1	October 29, 2020	<ul style="list-style-type: none"> • Purpose of the Steering Committee • Project overview • Review of the 2019 market study • Project study area • Project visioning • Potential stakeholders • Areas of potential demand for consideration • Pending developments within the study area • Anticipated Steering Committee meeting schedule
Meeting 2	April 8, 2021	<ul style="list-style-type: none"> • Project status update • Points of interest review and feedback • Public survey review and feedback • Human Services Coordinated Transportation Plan (HSTP)
Meeting 3	August 18, 2021	<ul style="list-style-type: none"> • Project status update • Route analysis and concept development • Review of initial draft routes • Review of initial transfer center location • Community survey update • Coordination with the HSTP
Meeting 4	December 1, 2021	<ul style="list-style-type: none"> • Project status update • Approval of final route recommendations • Community survey results

Results of Steering Committee Visioning

In the first committee meeting, the project team asked committee members to participate in a visioning exercise with the following framing questions:

- What does success look like for this project specifically?
- When envisioning the future of the Texoma region, what does a successful fixed-route system look like and why is it effective?

Through group discussion, the committee determined that a successful fixed-route system should have the following characteristics:

- On-time service
- Financially stable and sustainable
- Actively attracts passengers
- Integrates technology to enhance reliability and efficiency

Local Information & Data Provided by the Steering Committee

Throughout the plan development process, the members of the committee provided the project team with various sources of local information and data to facilitate the fixed-route analysis and public engagement process. The committee provided information about major employers in the area, points of interest and important destinations, areas that generate demand for transit, some data on previous fixed-route service, pending developments in the study area that may impact service and route planning.

Public Survey

To understand more about transit use in the Texoma region, TAPS and TCOG, in partnership with GCMPO, administered a community survey. The purpose of this survey was to gather feedback from both current transit users and non-transit users, asking about their travel habits and what they would look for in transit. This feedback will help TAPS better understand how a fixed-route system may serve the region and what service changes may attract new ridership. To maximize engagement and coordinate planning processes, the survey effort for the TAPS LRTP was combined with that of the TCOG Human Services Coordinated Transportation Plan update. Survey findings helped evaluate TAPS' service and inform initial route and service recommendations made in the plan.

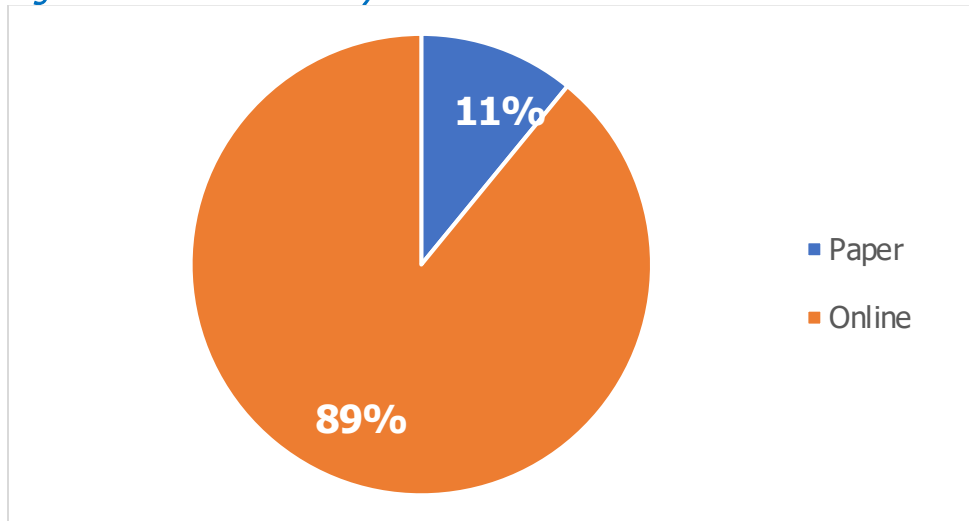
The public had access to the survey between August and October of 2021. Participants could respond using an online platform or on an abridged paper copy made available on TAPS vehicles and distributed by various entities in the region. To inform this plan and the fixed-route recommendations, responses were narrowed down to isolate those who reported living in the Grayson County UZA, which includes ZIP codes 75020, 75021, 75090, and 75092 (**Table 3**).

Table 3: Number of Survey Participants by ZIP Code

ZIP Code of Residence	Number of Respondents
75020	34
75021	6
75090	28
75092	51
Total	119

From residents of the Grayson County urbanized area, a total of 119 complete responses were received. As shown in **Figure 4**, approximately 89% of these responses were received electronically and 11% on paper, although for the purposes of this analysis, the results were examined together.

Figure 4: Method of Survey Collection



Survey Promotion

Promotional materials created for the survey consisted of graphics for use on agency websites and social media, as well as a printed flyer to post on TAPS vehicles. Facebook notices about survey availability appeared on the pages of TAPS, GCMPO, and TCOG. The flyer displayed a QR code and web link that riders could use to access the electronic survey. Examples of survey promotion are shown in **Figure 5** and **Figure 6**.

Figure 5: TAPS Facebook Post

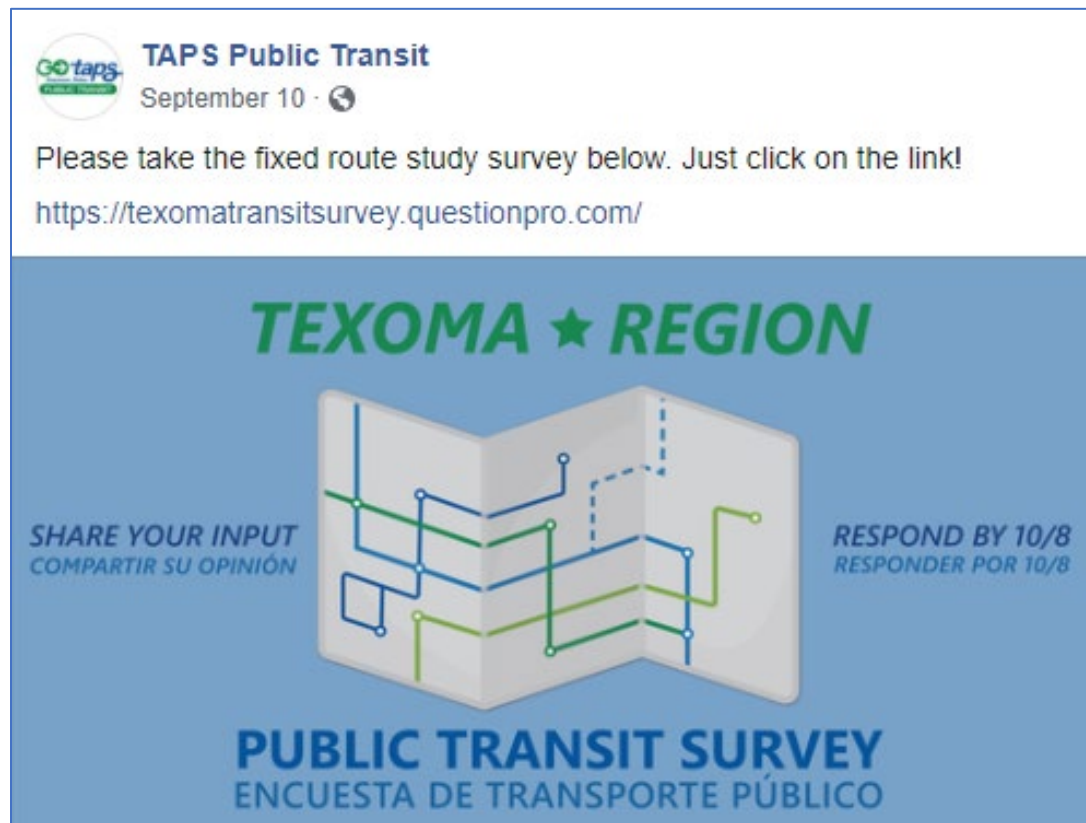


Figure 6: Survey Promotional Graphic



Survey Results

Demographics

The survey included optional demographic questions to provide insight into the population represented in the responses. Most participants who answered these questions were white, with over 73% of people identifying as such. Most were between the ages of 26 and 45, with 44% falling within this range. 40% were between 46 and 65, and 11% were over the age of 66, while just 4% were 25 or younger. Respondents represented a range of income brackets, with about 16% making less than \$25,000 per year, 20% making between \$25,000 and \$50,000, 38% making between \$50,000 and \$100,000, and 25% making more than \$100,000 per year.

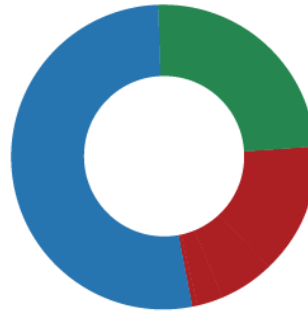
Over 74% of participants reported being employed full or part time. 3% identified as students at either the K-12 or university level, 14% were retired, and 6% were unemployed. Self-identified veterans comprised 5% of survey respondents, and about 13% of all participants reported having a disability.

Only about 10% of the respondents living in the Grayson County area reported that they use transit service more than a few times per year. These participants said that they utilize TAPS demand response service and DART, as well as local transportation services for veterans and the elderly. One third of these respondents do not have regular access to a car, and another 50% must share a car with others in their household. About 50% of these transit users reported having a disability, while only 15% identified as veterans. Over 90% of these respondents earn less than \$50,000 per year. 50% are between 26-45 years old, and another 33% are between 46-65 years old.

Transportation Habits

Survey participants were asked a series of questions that aimed to understand their transportation choices. Nearly 75% of respondents have their own car or share one or more cars within their household. When asked about how they usually get around, over 70% of respondents said that they drive alone. Other commonly reported modes included carpooling with family and walking, with fewer participants saying that they use public transit, bike, or ridesharing.

ARE YOU EVER UNABLE TO GET WHERE YOU NEED TO GO BECAUSE YOU LACK TRANSPORTATION?



53% responded “Never”
24% responded “Rarely”
23% responded “Sometimes, Often, or Almost Always”

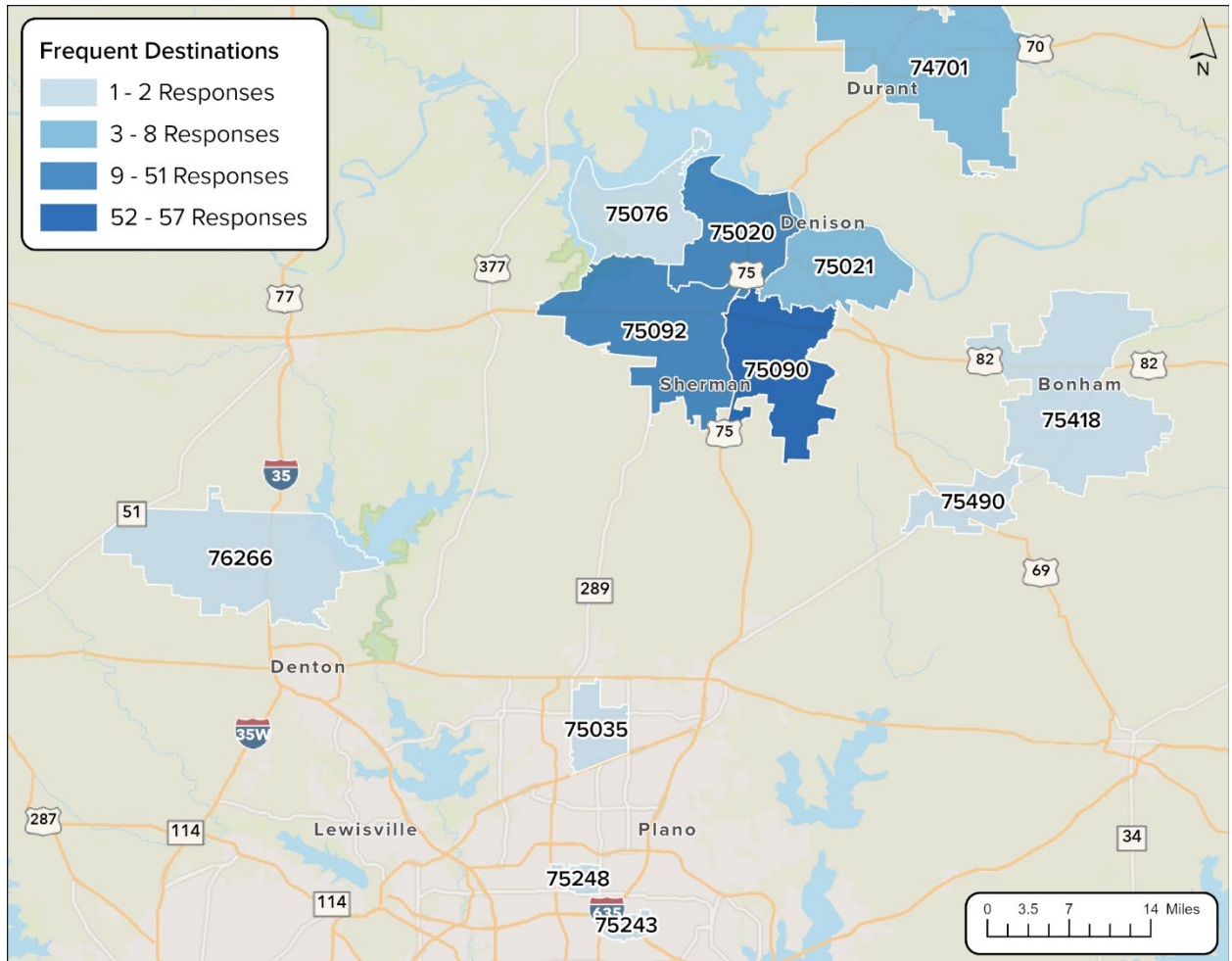
Participants were asked where and when they most often need to travel. Trip purposes such as work, shopping destinations, medical appointments, and personal errands were the most common choices selected. Other types of trips such as those to visit family, friends, or places of worship were less common, but still represented in responses. Most participants said that on a typical day, they leave home between 6:00 and 9:00 AM and return home between 4:00 and 7:00 PM. Some subsets of survey respondents indicated that they need to leave home as early as 2:00 AM or later in the afternoons and return home in the early hours of the morning.

Where do you most often need to travel? *Participants were able to select multiple options



The survey asked participants what ZIP codes they live in and travel to frequently. This question was used to identify common trip destinations that future transit service may target to attract more ridership. The ZIP codes most-visited by those living in Grayson County are shown in **Figure 7** below.

Figure 7: Frequent Destinations Reported by Grayson County UZA Residents



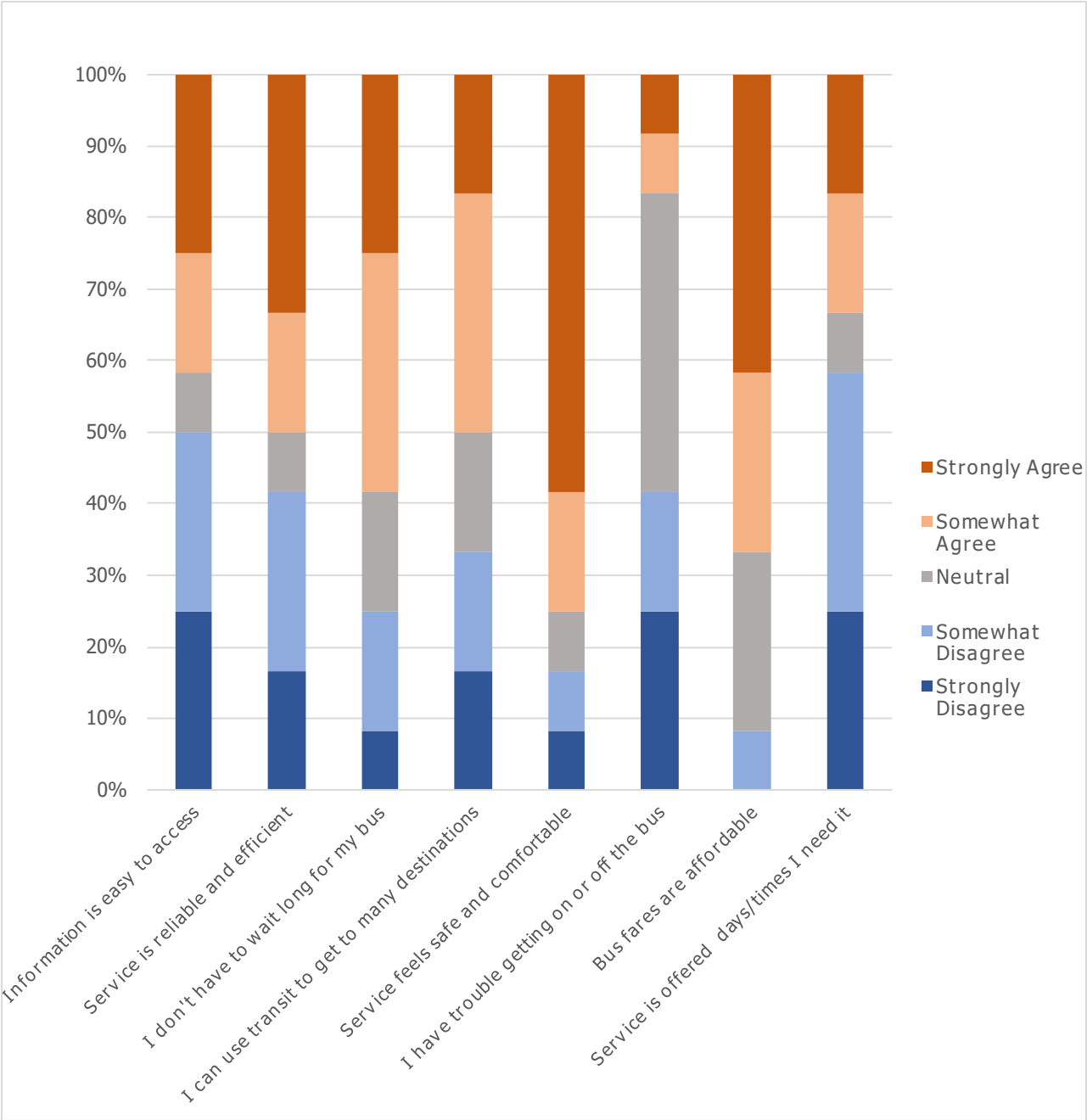
A need for transit trips outside of the immediate Grayson County area was also apparent in the survey participants' responses. Many indicated a need to travel to the Dallas area with many participants' written comments indicating a desire for transit connections between Grayson County and DART service. The high concentration of trips within and between Sherman and Denison ZIP codes shows the importance of convenient travel options to destinations within the Texoma community as well.

Transit Perspectives

The survey asked respondents to share their perspective on several aspects of transit in the Texoma community, regardless of whether they currently use or need the service. Feedback shows that participants find transit in their community to be affordable and generally safe. However, many expressed the desire for expanded operating hours, shorter wait times, and reliability. Respondents also want it to be easier to access information about the transit options available to them. This points to an opportunity for TAPS to invest in community outreach and education initiatives in addition to planned service enhancements and coordination efforts with other transportation service providers and health/human services entities in the region.

Figure 8 below shows Grayson County area transit riders’ responses to a series of statements evaluating various aspects of existing transit service.

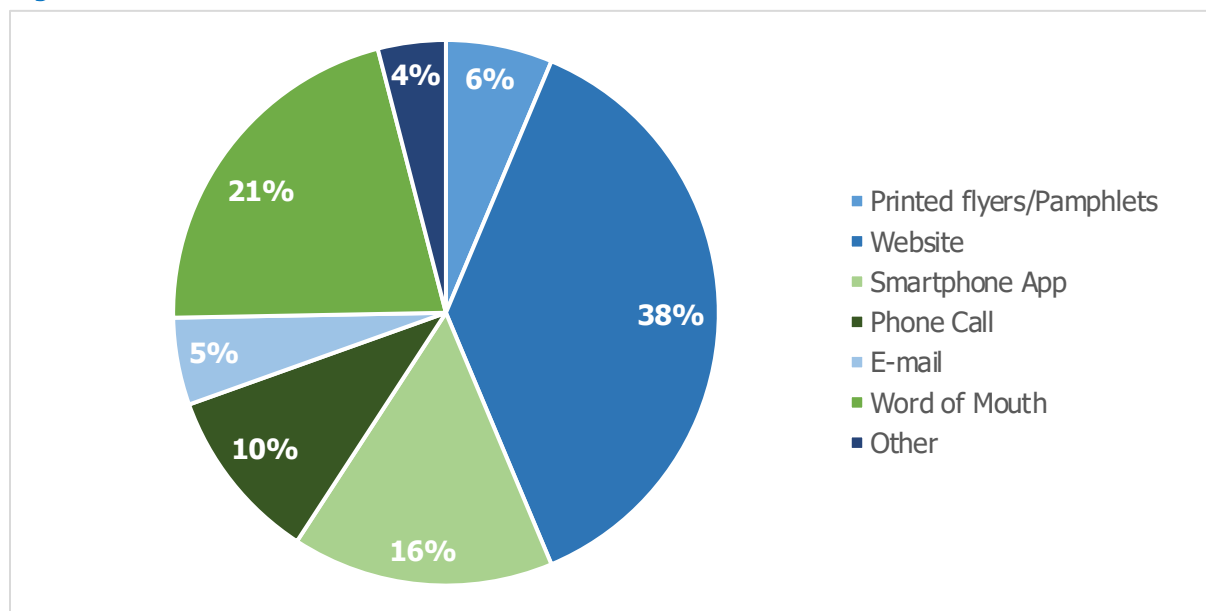
Figure 8: Transit Evaluation Responses from Riders Living in the UZA



Many transit users tend to feel safe using transit in their community and find the existing service affordable. However, riders expressed that their transit options' current span of service is not serving their needs, and nearly half feel that information about service is difficult to find. When asked what would cause them to use transit service more frequently, respondents ranked qualities like reliability, safety, and convenience the highest. Respondents also said they would like to be able to schedule their rides with less or no advance notice, indicating a preference for more spontaneous transit trips.

When participants were asked how they access information about transit in their community, 37% reported that they most often rely on agencies' websites. 21% frequently rely on word of mouth, 15% rely on smartphone apps, and 10% rely on phone calls. Only 6% use paper materials such as pamphlets and brochures and no respondents answered that they use newspaper ads to learn about transit service. The remaining 6% gave other responses, most of which were that they don't currently use local transit services. The breakdown of these responses is shown in **Figure 9**.

Figure 9: Most Common Transit Information Sources



Moving Forward

Input from those who live and work in the Texoma region is essential to ensuring that future expansion of TAPS service fit the interests and goals of the community. This survey comprised a significant part of the public involvement process for the TAPS LRTP, although representatives of the community also had the opportunity to provide input on proposed fixed-route service as part of the Steering Committee.

The findings discussed above will be used alongside the input of the Steering Committee and the technical analysis conducted by the project team as the recommended service enhancements included in this plan are further refined. As proposed fixed-route service moves toward implementation, a further in-depth public involvement process and equity analysis will be carried out in compliance with FTA Title VI requirements.

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5

IMPLEMENTATION

Initial Recommendations

The initial set of recommendations presented to the committee included five circulator route concepts covering Sherman and Denison and a central transit center location somewhere in Sherman. The five route concepts included:

- Yellowjacket route in Denison
- Texoma route connecting Sherman and Denison
- Heritage route in Sherman
- Bearcat route in Sherman
- Roo route in Sherman

GCMPO and the project team developed these route concepts through an iterative process, starting with a sample of potential routes identified by the project team (as discussed in Chapter 2). This sample was then reduced to the route concepts identified above after passing through several additional refinements prior to presentation to the committee.

In addition to the route concepts, the project team and GCMPO presented a potential location for the central transit center for the region on the southeast corner of the intersection of US 75 and US 82. The committee provided feedback on this location, noting that it would not be a feasible property for the transit center. Following the committee's third meeting, the list of suggested alternate sites for the transit center (as discussed in Chapter 2) will be assessed in more detail in future phases of this fixed-route system development effort.

Final Recommendations

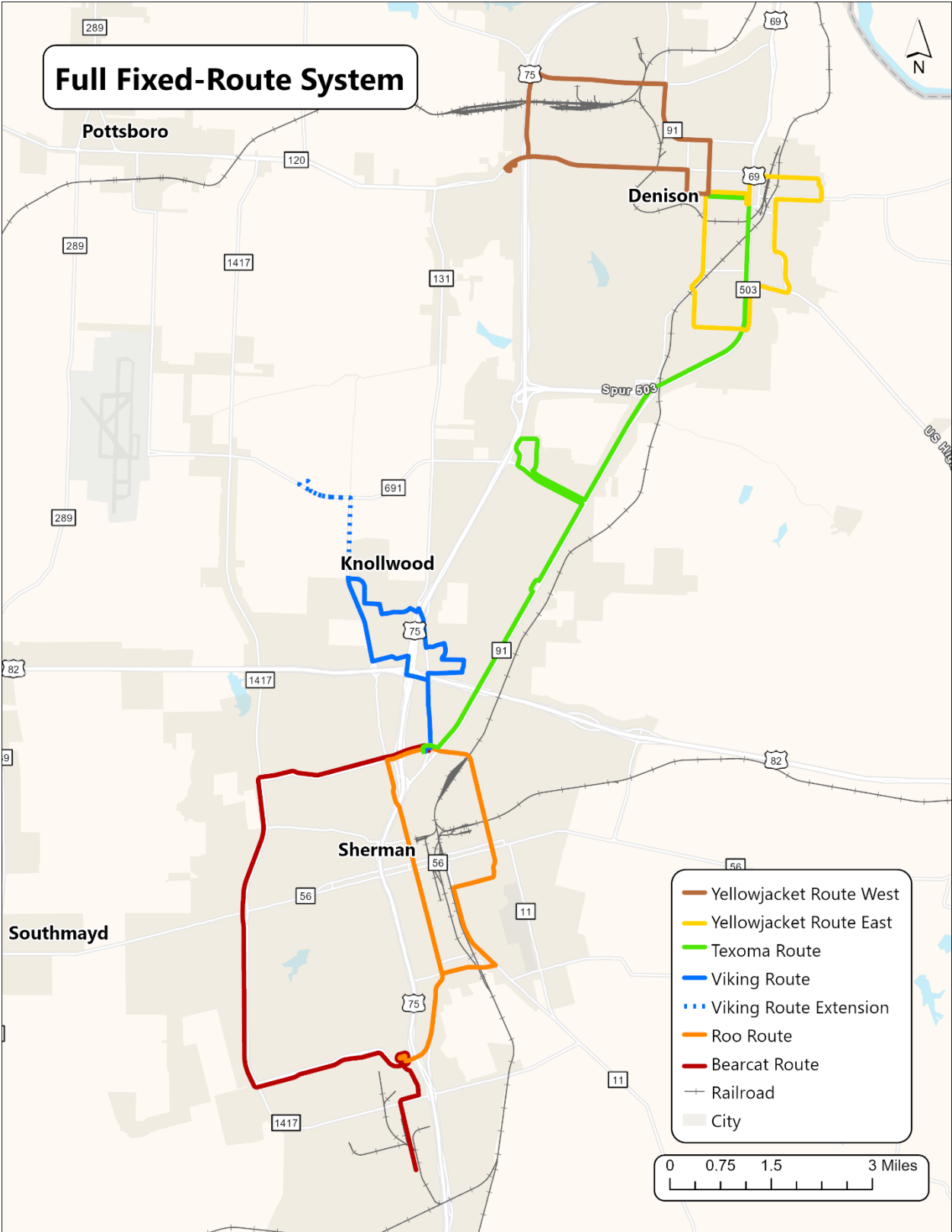
As discussed in Chapter 2, the committee conducted a review of the initial route recommendations in its third meeting. By incorporating the committee's feedback on the initial recommendations and adding a sixth route alignment to the mix to provide service opportunities in the Sherman Town Center and to Grayson College, the project team created the final route concept recommendations, which include the following:

- Yellowjacket route West in Denison
- Yellowjacket route East in Denison
- Texoma route connecting Sherman and Denison
- Viking route (with potential extension to Grayson College) in Sherman
- Roo route in Sherman
- Bearcat route in Sherman

Figure 10 shows the conceptual alignment for all six routes, with details for each appearing in the appendix. Priorities for implementation expressed by the committee included a phased roll-out of this system, with the map shown in Figure 7 representing a future system at full implementation.

Future development and refinement of the recommended route concept would define the final alignment, future bus stops, and timepoints for schedule planning. Schedule concepts would include a calculation of travel times based on speed and layover time necessary to support route-to-route transfers at the transit center and key interline stops provided in the network. Initial targets for route development included a round-trip distance of 10 miles or less within the individual cities, with inline transfer at several locations in each community. This reduces waiting time between buses and could offer more trips per hour to the community.

Figure 10: Conceptual Fixed-Route System



Additional community input would refine these assumptions and create a final route map and system layout. At the present, interline connections appear in Denison, near Sherman Town Center, on W. Travis Street, and at the future transit center. Route refinement would also define whether service would run on a fixed daily schedule, peak periods only with off-peak demand-based service, a combination of the two, or another community-identified option.

Preliminary Service Standards

Service standards provide guidance to transit providers by establishing policies, procedures, criteria, targets, and recommendations for how to measure and implement various aspects of service. The following broad standards provide insight into the service topics reviewed with the committee. These will be fleshed out fully with TAPS and community stakeholders in the future implementation plan. Details added during final route design/designation in future phases will also need to be adopted by the operating entity as part of their future Title VI evaluation. For all service standards, TAPS will need to further define the key performance indicators (KPIs) and targets/recommendations that will be used to measure the success of fixed-route bus services.



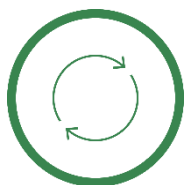
Bus Stops

The characteristics of bus stop service standards include stop spacing, the levels of amenities provided, connections to other routes and other transportation networks, and stop placement within the context of the streetscape.



Span

Span refers to the day-to-day scheduling of transit service. The span of transit service usually starts sometime in the morning and ends sometime in the evening. There are varying degrees of service span that can be implemented based on the demand for transit at various times of the day on various days of the week.



Frequency

Frequency refers to how often a given stop along a route is served by a bus travelling that route. Like span, the appropriate frequency for a route can be determined based on the level of demand for service. Higher frequencies (lower number of minutes between each time a bus visits a stop) improve the convenience of transit service for riders but may be less feasible to provide depending on the resources a transit agency has to meet this level of service.



Days of Service

A transit agency can determine on which days it provides services. Many agencies provide services only on weekdays. Providing services on weekends (Saturdays, Sundays, or both) gives riders additional opportunities to utilize transit for more of their travel needs.



Additional Service Standards

As TAPS reaches the process of finalizing route designs and operational specifications, all service standards should be fully developed, including the following additional service standard categories:

- Route design (route deviation, directness, spacing, etc.)
- Productivity and performance
- Communications
- Technology (operational software, mobile app, data tracking, etc.)

Potential Transit Center Location(s)

As noted in Chapter 2, input from the committee changed the focus of facility location identification to seven potential sites situated within $\frac{3}{4}$ of a mile of the intersection at North Loy Lake Road and East Taylor Street (as shown in **Table 4** below). Additionally, the inclusion of a location in the table does not guarantee its final selection as the location used, given the refinement steps which need to take place.

The next steps to developing this transit center concept include identifying the final facility design. Some indication of the elements needed, based on the input of the committee, TAPS, and GCMPO appears in Chapter 2. However, this list only provides initial guidance. Final facility development requires input and evaluation including community review and discussion. The sites shown in Table 3 also require further review to document their actual boundaries, size, and characteristics. Introduction of the transit facility offers the opportunity to connect residents and adjacent businesses to transit service, but also introduces a facility whose operational characteristics need to be evaluated for their potential effect on the community. Likewise, the location affects service and the ability to support transfers and system recovery time performance indicators adopted as part of the system service standards.

Identification of the final site and evaluation of its effects on service and the community would be the subject of a next-phase environmental evaluation completed in accordance with FTA standards.

Table 4: Initial Transit Center Site Concepts

Site	Location (General)	Current Land Use
1	N. Loy Lake Road (northwest of Planet Fitness)	Vacant/Abandoned Rail Corridor
2	E. Taylor Street (west of Sherwin-Williams)	Vacant/Abandoned Rail Corridor/Building
3	Texoma Parkway (at Green Market)	Parking Lot
4	E. Francis Street (at Sherman Pharmacy)	Parking Lot
5	E. Francis Street at N. Loy Lake Road (southeast of Kroger)	Vacant/Parking Lot
6	N. Grand Avenue (east of Texoma Parkway, behind Sweetberries Cafe)	Parking Lot
7	N Grand Avenue (at Teague Drive)	Vacant

Project Implementation and Funding

Recommendations identified in this LRTP identify a potential future network of transit service across Sherman and Denison. Needs identified by the community and the committee have guided the overall development of this concept, with the acknowledgement that future refinement steps will advance the items shown within this plan toward functional projects.

Overall, the implementation of the concepts in this study offers the metropolitan area and region a fresh start with fixed-route transit. Previous efforts did not enjoy broad-based support in part due to the challenges of sustaining funding, momentum, and community support in the face of changing consumer needs and demands. However, this type of system, if implemented correctly, offers the opportunity to demonstrate success in several areas.

Transit offers opportunity and mobility to those currently without such alternatives in the community. The data provides an indication of where these groups can be found, but the future refinement activities will help to confirm the data with on-the-ground assessment and input.

Not only does transit offer improved mobility to those without reliable transportation, but it can also provide the means to connect residents to educational and economic opportunities. The Grayson County area continues to grow its industrial and manufacturing base, which needs workers and work access to remain competitive and successful.

As part of the refinement process, identification of anticipated costs of operation, for capital facilities and vehicles, as well as required local match amounts would be identified. Waiting until a future phase allows these costs to be based upon a refined set of recommendations which have support from the project steering committee, as well as the local community and key regional decision-makers. In addition, refinements would be informed by any updates in federal transit funding dollars and federal transit development policy coming from the recently passed Infrastructure Investment and Jobs Act (Pub.L.117-58).

Recommendations for overall implementation assume a phased approach to beginning revenue service, to include evaluation of outcomes and service use. The steps below could occur in sequence or concurrently based on mutual agreement. The overall timeline uses future refinement to initiate service and establish relationships required to support system funding, implementation, and evaluation:

- **Route Refinement** would include community engagement to identify potential refinement to the route concepts, schedules, transit facility concept definition and locations, standards of service, equity review, vehicle needs, and sequence of service roll-out. Final route concepts and facility analyses would be coordinated with the regional bicycle and pedestrian plan, as well as the adopted Transportation Improvement Plan projects for the region. This step represents the critical decision point for the start of revenue service. With a decision made to commence service, the data developed, and refinements made would inform local decision-makers and establish the basis for defining local funding commitments to support service roll-out in the community.
- **TxDOT/FTA Coordination** would include steps required to initiate the system, including designation of agencies for direct receipt of future FTA Section 5307 funding, development of the full funding grant agreement, and an overall program of projects. Coordination with TxDOT Public Transit would also occur to maintain consistency with any state-based program requirements.

- **Grants Development** would include steps required to apply for and receive funding from the FTA Section 5307 program. This step would also formalize local sponsors and funding participants for the service through a memorandum of understanding or appropriate action of the local municipal or county approval by resolution and funding commitment.
- **A System Organizational Framework** would be developed to include completion of oversight policy documents required to address FTA requirements such as a transit development plan, agency safety plan, ADA complementary service evaluation, public participation statement and plan, Title VI evaluation, service standard development, etc.
- **System Implementation and Evaluation** includes the start of revenue service for fixed-route operations. This process, guided by the implementation plan, would include an evaluation of community acceptance and use of the available service. Marketing of available services and a full community-based marketing campaign to promote service availability would take place.

Outcomes could also include adjustments in the timeline for system development and expansion. Ongoing service evaluation combined with community and customer engagement offers the opportunity for continued refinement of system services. Pending the outcomes, decisions on the establishment of the transit center location and capital facility concept could be made and programmed through the process of FTA environmental review/approval at Region VI and programmed for funding through the FTA Section 5307 program.



Appendix A

Texoma Region Public Transit Survey (Online Form, English/Spanish)

Texoma Region Public Transit Survey

texomatransitsurvey.questionpro.com

Your feedback will be used to evaluate existing public transit service in the Texoma region and to develop potential service improvements in the future. All information provided will be kept anonymous. Thank you for participating!

Sus comentarios se utilizarán para evaluar el servicio existente del transporte público en la región de Texoma y para desarrollar posibilidades mejoras de servicio en el futuro. Toda la información proporcionada se mantendrá anónima. ¡Gracias por participar!

- **How do you normally get around? Please select all that apply:**

¿Cómo se transporta normalmente? Seleccione todas las opciones que aplican:

- Drive alone / Conducir solo
- Carpool or vanpool / Coche compartido
- Rideshare (Uber, Lyft, etc.) / Transporte compartido
- Public transit/Bus / Transporte público
- Walk / Caminar
- Bike / Biciclar
- Taxi / Taxi
- Other / Otro _____

- **Do you or another driver in your household own or have regular access to a car? Please select one answer:**

¿Tiene usted u otro conductor en su propia casa acceso regular a un coche? Por favor, seleccione una respuesta:

- Yes, all drivers in my household have a car / Sí, todos los conductores en mi casa tienen un coche
- Yes, the drivers in my household share one or more cars / Sí, los conductores en mi casa comparten uno o más coches
- No, my household does not own or have regular access to a car / No, mi hogar no posee ni tiene acceso regular a un automóvil

- **What ZIP code do you live in? / ¿En qué código postal vive? _____**

- **What ZIP code do you travel to the most? / ¿A qué código postal viaja más? _____**

- **On a typical day, what time do you normally leave your home? / En un día típico, ¿a qué hora sale normalmente de su casa? _____**

- **On a typical day, what time do you normally need to get back home? / En un día típico, ¿a qué hora suele volver a casa? _____**

- **Are you ever unable to get where you want to go because you cannot find a means of transportation?**

¿Alguna vez fue incapaz de llegar a donde quería ir porque no encontró un medio de transporte?

- Almost Always / Casi siempre
- Often / A menudo
- Sometimes / A veces

- Rarely / Rara vez
- Never / Nunca
- **Where do you most often need to travel? Please select *up to three* of the options below:**
 ¿A Dónde necesita viajar más a menudo? Seleccione *hasta tres* de las siguientes opciones:
 - Work / Trabajo
 - School / Escuela
 - Medical appointments / Citas médicas
 - Shopping / Compras
 - Personal errands / Diligencias personales
 - Visit friends and family / Visitar a amigos y familiares
 - Places of worship / Iglesia/Lugares de culto
 - To access entertainment/recreational activities / Acceso a actividades de entretenimiento/recreación
 - Other / Otro _____
- **How often do you use public transit?**
 ¿Con qué frecuencia utiliza el transporte público?
 - 5 or more days per week / 5 o más días por semana
 - 2-4 days per week / 2 a 4 días por semana
 - 2-4 times per month / 2 a 4 veces al mes
 - Once per month / Una vez al mes
 - A few times per year / Algunas veces al año
 - Never / Nunca
- **What do you need from public transit? Please rank the following choices from 1-6, with 1 being the most important and 6 being the least important:**
 ¿Qué necesita del transporte público? Por favor clasifique las siguientes opciones de 1 a 6, siendo 1 el más importante y 6 el menos importante:
 - I need it to save me time / Necesito que me ahorre tiempo
 - I need it to be reliable / Necesito que sea confiable
 - I need it to be frequent / Necesito que sea frecuente
 - I need it to be safe and friendly / Necesito que sea seguro y amigable
 - I need it to be easy to use / Necesito que sea fácil de usar
 - I need it to save me money / Necesito que me ahorre dinero
- **Which of the following increases in transit service would you need in order to use public transit more often? Please rank the following choices from 1-4, with 1 being the most important and 4 being the least important.**
 ¿Cuál de los siguientes aumentos podría causar que usted utilice el transporte público con más frecuencia? Clasifique las siguientes opciones de 1 a 4, siendo 1 el más influyente y 4 el menos influyente en la frecuencia con la que utiliza el tránsito.
 - I would need it to run later at night / Necesitaría el autobús operar más tarde en la noche
 - I would need it to run earlier in the morning / Necesitaría el autobús operar más temprano en la mañana

- I would need it to run on weekends / Necesitaría el autobús operar en los fines de semana
- I would like to be able to schedule my ride with less notice / Me gustaría poder programar mi viaje con menos antelación
- **Do you need any of the following types of assistance when you travel locally? Select all that apply:**
 ¿Necesita alguno de los siguientes tipos de asistencia cuando viaja localmente? Seleccione todas las opciones que aplican:
 - Getting in and out of vehicle / Entrar y salir del vehículo
 - Loading/unloading items / Carga/descarga de artículos
 - Space for fold-up wheelchair / Espacio para silla de ruedas plegable
 - Door-to-door escort / Escolta de puerta a puerta
 - Wheelchair ramp or lift / Rampa o elevador para sillas de ruedas
 - None of the above / Ninguno de estos
 - Other _____ / Otro _____
- **What transportation service provider(s) or service(s) do you use? Please select all that apply:**
 ¿Qué proveedor(es) de servicios de tránsito utiliza? Por favor, seleccione todos los que se aplican:
 - TAPS Public Transit
 - DART
 - DCTA
 - Greyhound
 - Transportation service for veterans / Servicios para veteranos
 - Transportation service for the elderly / Servicios para los mayores
 - Transportation service for Medicaid recipients / Servicios para los receptores de Medicaid
 - Transportation service through a church or other place of worship / Servicios proporcionados por una iglesia o otro lugar de culto
 - I do not use these or similar services. / No utilizo estos servicios ni servicios similares
 - Other / Otro _____
- **Please evaluate the following statements regarding your overall experience using public transit in your community:**
 Por favor, evalúe las siguientes declaraciones con respecto a su experiencia general en el uso del tránsito público en su comunidad:
 - **Information about available transit service is clear and easy to find.**
 La información sobre el servicio de tránsito disponible es clara y fácil de encontrar.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
 - **Public transit in my community is reliable and efficient.**
 El transporte público en mi comunidad es confiable y eficiente

- Strongly Agree / Totalmente de acuerdo
- Somewhat Agree / Un poco de acuerdo
- Neutral / Neutral
- Somewhat Disagree / Un poco en desacuerdo
- Strongly Disagree / Totalmente en desacuerdo
- **I do not usually have to wait long for my bus.**
Por lo general no tengo que esperar mucho tiempo para mi autobús.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **I can get to many of the places I want to go using public transit.**
Puedo llegar a muchos de los lugares a los que quiero ir usando el transporte público.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **I feel safe and comfortable using transit in my community.**
Me siento seguro(a) y cómodo(a) usando el tránsito en mi comunidad.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **I have trouble getting on or off the bus.**
Tengo problemas para subir o bajar del autobús.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **Bus fares in my community are affordable.**
Las tarifas de autobús en mi comunidad son económicas.
 - Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **Transit service in my community is offered at the times of day when I need it.**
El servicio de tránsito en mi comunidad se ofrece a las horas del día cuando lo necesito.

- Strongly Agree / Totalmente de acuerdo
 - Somewhat Agree / Un poco de acuerdo
 - Neutral / Neutral
 - Somewhat Disagree / Un poco en desacuerdo
 - Strongly Disagree / Totalmente en desacuerdo
- **What sources do you use to access information about public transit in your community?**
Please select all that apply:
 ¿Qué fuentes utiliza para acceder a la información sobre el transporte público en su comunidad?
 Seleccione todas las que correspondan:
 - Printed flyers or pamphlets / Volantes o folletos impresos
 - Website / Sitio web
 - Smartphone app / Aplicación para teléfonos inteligentes
 - Phone call / Llamada telefónica
 - E-mail / Correo electrónico
 - Word of mouth / A través del discurso
 - Other _____ / Otro _____
- **Overall, how satisfied are you with the availability and quality of public transportation in your community?**
 En general, ¿cuán satisfecho está con la disponibilidad y calidad del transporte público en su comunidad?
 - Very satisfied / Muy satisfecho
 - Somewhat satisfied / Algo satisfecho
 - Neutral / Neutral
 - Somewhat dissatisfied / Algo insatisfecho
 - Very dissatisfied / Muy insatisfecho
- **Do you have any other comments on public transit in your community?** / ¿Tiene algún otro comentario sobre el transporte público en su comunidad?

The following demographic questions are optional.

Las siguientes preguntas demográficas son opcionales.

- **What is your age?**
¿Cuál es su edad?
 - 17 or younger / 17 años o menos
 - 18-25 / 18-25
 - 26-45 / 26-45
 - 46-65 / 46-65
 - 66 or older / 66 años o más
- **What is your annual household income?**
¿Cuál es el ingreso anual de su familia?
 - Less than \$25,000 / Menos de 25,000 dólares
 - \$25,000-\$49,999 / 25,000-49,999 dólares
 - \$50,000-\$100,000 / 50,000-100,000 dólares
 - More than \$100,000 / Más de 100,000 dólares
- **Which of the following describes you? If applicable, you may select more than one answer:**
¿Cuál de los siguientes le describe? Si es aplicable, puede seleccionar más de una respuesta:
 - K-12 student / Estudiante Pre-escolar - Bachillerato
 - College Student (Full Time) / Estudiante universitario (a tiempo completo)
 - College Student (Part Time) / Estudiante universitario (a tiempo parcial)
 - Employed (Full Time) / Empleado (a tiempo completo)
 - Employed (Part Time) / Empleado (a tiempo parcial)
 - Unemployed / Desempleado
 - Retired / Jubilado
- **Do you have a disability?**
¿Tiene alguna discapacidad?
 - Yes / Sí
 - No / No
 - Prefer not to answer / Prefiero no responder
- **Are you a veteran?**
¿Eres un veteran?
 - Yes / Sí
 - No / No
 - Prefer not to answer / Prefiero no responder
- **What is your ethnicity? Please select all that apply:**
¿Cuál es su etnia? Por favor, seleccione todo lo que aplica:
 - African American or Black / Afroamericano o Negro
 - American Indian or Alaska Native / Indígena Americano o Nativo de Alaska
 - Asian / Asiático
 - Hispanic or Latino / Hispano o Latino
 - Native Hawaiian or Other Pacific Islander / Hawaiano Nativo u Isleño del Pacífico

- White / Blanco
 - Prefer not to answer / Prefiero no responder
- **What is your gender?**
¿Cuál es su género?
 - Male / Masculino
 - Female / Femenino
 - Prefer not to answer / Prefiero no responder
- **Please provide your name and email address.** / Por favor proporcione su nombre y dirección de correo electrónico.

Texoma Region Public Transit Survey (Paper Form, English)

TEXOMA ★ REGION

PUBLIC TRANSIT SURVEY

Your feedback will be used to evaluate existing public transit service in the Texoma region and to develop potential service improvements in the future. All information provided will be kept anonymous. Thank you for participating!

If you would prefer to take this survey online, please go to texomatransitsurvey.questionpro.com or scan the QR code at the bottom of the page with your phone's camera.

1. How do you normally get around? Please select all that apply:

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Drive Alone | <input type="checkbox"/> Public Transit/Bus |
| <input type="checkbox"/> Walk | <input type="checkbox"/> Carpool or Vanpool |
| <input type="checkbox"/> Bicycle | <input type="checkbox"/> Rideshare (<i>Uber, Lyft, etc.</i>) |
| <input type="checkbox"/> Taxi | <input type="checkbox"/> Other _____ |

2. Do you or another driver in your household own or have regular access to a car? Please select one answer:

- Yes, all drivers in my household have a car
- Yes, the drivers in my household share one or more cars
- No, my household does not own or have regular access to a car

3. What ZIP code do you live in? _____

4. What ZIP code do you travel to most? _____

5. On a typical day, what time do you normally need to leave your home? _____

6. On a typical day, what time do you normally need to return home? _____

7. Are you ever unable to get where you want to go because you cannot find a means of transportation?

- Almost always Often Sometimes Rarely Never

8. Where do you most often need to travel? Please select up to three of the options below:

- | | |
|---|--|
| <input type="checkbox"/> Work | <input type="checkbox"/> Personal errands |
| <input type="checkbox"/> School | <input type="checkbox"/> Visit friends and family |
| <input type="checkbox"/> Medical appointments | <input type="checkbox"/> Places of worship |
| <input type="checkbox"/> Shopping | <input type="checkbox"/> To access recreational activities |

9. How often do you use public transit?

- | | |
|---|--|
| <input type="radio"/> 5 or more days per week | <input type="radio"/> Once per month |
| <input type="radio"/> 2-4 days per week | <input type="radio"/> A few times a year |
| <input type="radio"/> 2-4 times per month | <input type="radio"/> Never |



Survey continued on the next page

TEXOMA ★ REGION
PUBLIC TRANSIT SURVEY

10. What do you need from public transit? Please rank the following choices from 1-6, with 1 being the most important and 6 being the least important:

- I need it to save me time
- I need it to be reliable
- I need it to be frequent
- I need it to be safe and friendly
- I need it to be easy to use
- I need it to save me money

11. Do you have any other comments on public transit service in your community?

12. What is your age? *(optional)*

- 17 years or younger
- 18-25 years
- 26-45 years
- 46-65 years
- 66 years or older

13. What is your annual household income? *(optional)*

- Less than \$25,000
- \$25,000-\$49,999
- \$50,000-\$100,000
- More than \$100,000

14. Which of the following describes you? Please select all that apply: *(optional)*

- | | |
|---|--|
| <input type="checkbox"/> Employed (Full Time) | <input type="checkbox"/> K-12 student |
| <input type="checkbox"/> Employed (Part Time) | <input type="checkbox"/> College Student (Full Time) |
| <input type="checkbox"/> Unemployed | <input type="checkbox"/> College Student (Part Time) |
| <input type="checkbox"/> Retired | |

15. Do you have a disability? *(optional)*

- Yes, I have a disability
- No, I do not have a disability
- Prefer not to say

16. Are you a veteran? *(optional)*

- Yes, I am a veteran
- No, I am not a veteran
- Prefer not to say

Please provide your name and email address: *(optional)*

Texoma Region Public Transit Survey (Paper Form, Spanish)

TEXOMA ★ REGION

PUBLIC TRANSIT SURVEY

Sus comentarios se utilizarán para evaluar el servicio existente del transporte público en la región de Texoma y para desarrollar posibilidades mejoras de servicio en el futuro. Toda la información proporcionada se mantendrá anónima. ¡Gracias por participar!

Si prefiere responder en línea, vaya a texomatransitsurvey.questionpro.com o escanea el código a pie de página con la cámara de su teléfono.

1. ¿Cómo se transporta normalmente? Seleccione todas las opciones que aplican:

- | | |
|--|---|
| <input type="checkbox"/> Conducir solo | <input type="checkbox"/> Transporte público |
| <input type="checkbox"/> Caminar | <input type="checkbox"/> Coche compartido |
| <input type="checkbox"/> Biciclar | <input type="checkbox"/> Transporte compartido (<i>Uber, Lyft, otros</i>) |
| <input type="checkbox"/> Taxi | <input type="checkbox"/> Otro _____ |

2. ¿Tiene usted u otro conductor en su propia casa acceso regular a un coche? Por favor, seleccione una respuesta:

- Sí, todos los conductores en mi casa tienen un coche
- Sí, los conductores en mi casa comparten uno o más coches
- No, mi hogar no posee ni tiene acceso regular a un automóvil

3. ¿En qué código postal vive? _____

4. ¿A qué código postal viaja más? _____

5. En un día típico, ¿a qué hora sale normalmente de su casa? _____

6. En un día típico, ¿a qué hora suele volver a casa? _____

7. ¿Alguna vez fue incapaz de llegar a donde quería ir porque no encontró un medio de transporte?

- Casi siempre A menudo A veces Rara vez Nunca

8. ¿A Dónde necesita viajar más a menudo? Seleccione hasta tres de las siguientes opciones:

- | | |
|--|---|
| <input type="checkbox"/> Trabajo | <input type="checkbox"/> Diligencias personales |
| <input type="checkbox"/> Escuela | <input type="checkbox"/> Visitar a amigos y familiares |
| <input type="checkbox"/> Citas médicas | <input type="checkbox"/> Iglesia/Lugares de culto |
| <input type="checkbox"/> Compras | <input type="checkbox"/> Acceso a actividades de entretenimiento/recreación |

9. ¿Con qué frecuencia utiliza el transporte público?

- | | |
|---|--|
| <input type="radio"/> 5 o más días por semana | <input type="radio"/> Una vez al mes |
| <input type="radio"/> 2-4 días por semana | <input type="radio"/> Algunas veces al año |
| <input type="radio"/> 2-4 veces al mes | <input type="radio"/> Nunca |



La encuesta continúa en la página siguiente

TEXOMA ★ REGION
PUBLIC TRANSIT SURVEY

10. ¿Qué necesita del transporte público? Por favor clasifique las siguientes opciones de 1 a 6, siendo 1 el más importante y 6 el menos importante:

- Necesito que me ahorre tiempo
- Necesito que sea confiable
- Necesito que sea frecuente
- Necesito que sea seguro y amigable
- Necesito que sea fácil de usar
- Necesito que me ahorre dinero

11. ¿Tiene algún otro comentario sobre el transporte público en su comunidad?

12. ¿Cuál es su edad? *(opcional)*

- 17 años o menos
- 18-25 años
- 26-45 años
- 46-65 años
- 66 años o más

13. ¿Cuál es el ingreso anual de su familia? *(opcional)*

- Menos de \$25,000
- \$25,000-\$49,999
- \$50,000-\$100,000
- Más de \$100,000

14. ¿Cuál de los siguientes le describe? Puede seleccionar más de una respuesta: *(opcional)*

- | | |
|---|---|
| <input type="checkbox"/> Empleado (a tiempo completo) | <input type="checkbox"/> Estudiante Pre-escolar - Bachillerato |
| <input type="checkbox"/> Empleado (a tiempo parcial) | <input type="checkbox"/> Estudiante universitario (a tiempo completo) |
| <input type="checkbox"/> Desempleado | <input type="checkbox"/> Estudiante universitario (a tiempo parcial) |
| <input type="checkbox"/> Jubilado | |

15. ¿Tiene alguna discapacidad? *(opcional)*

- Sí
- No
- Prefiero no responder

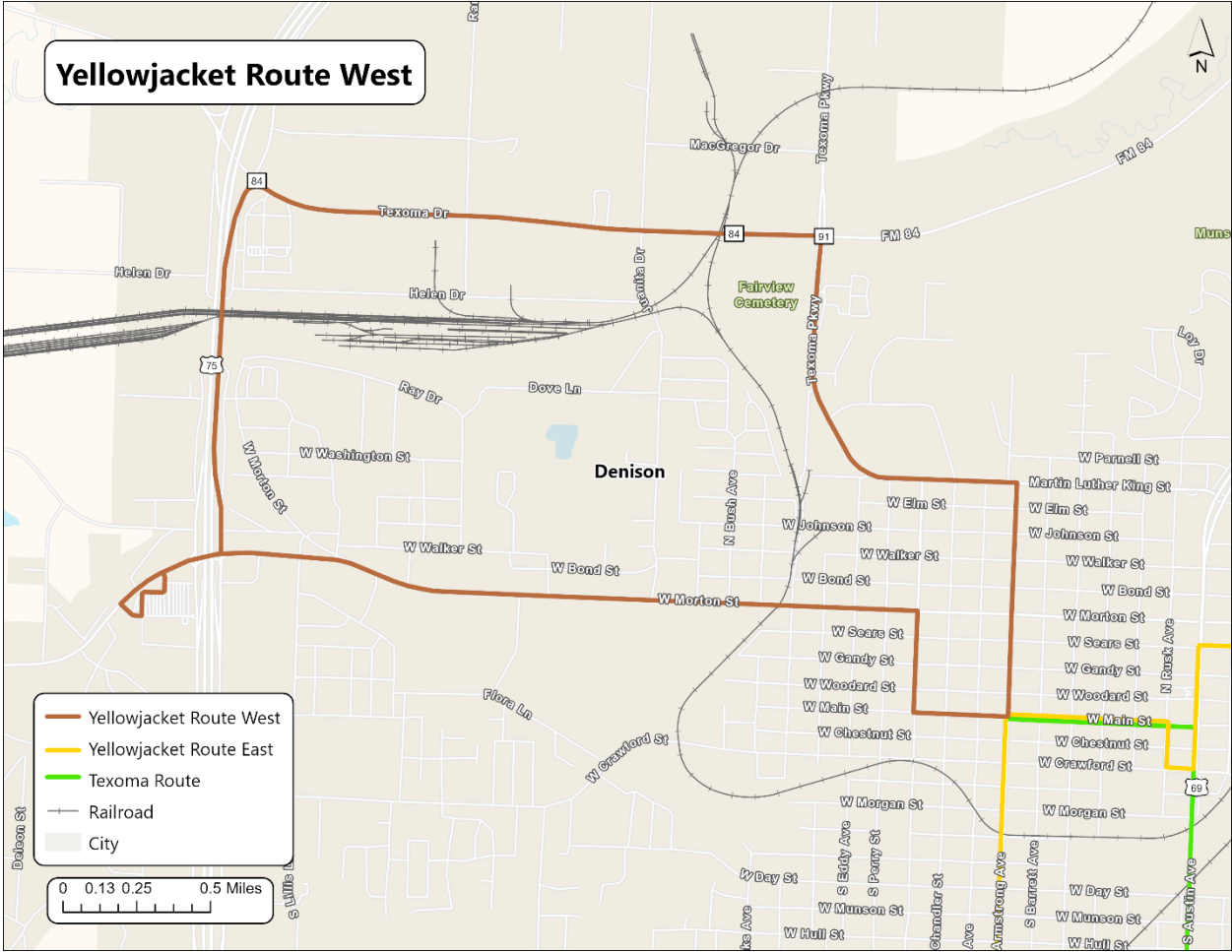
16. ¿Eres un veteran? *(opcional)*

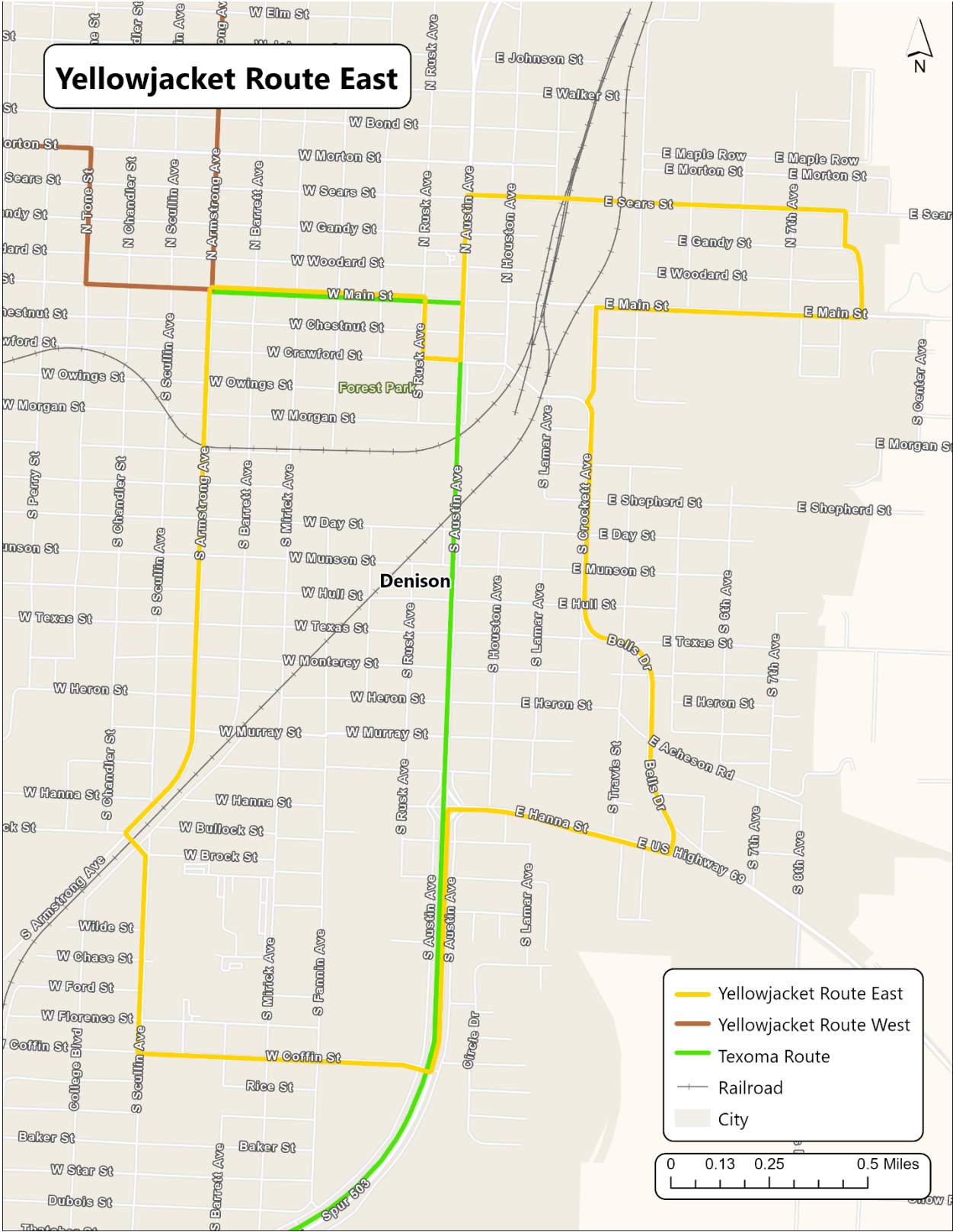
- Sí
- No
- Prefiero no responder

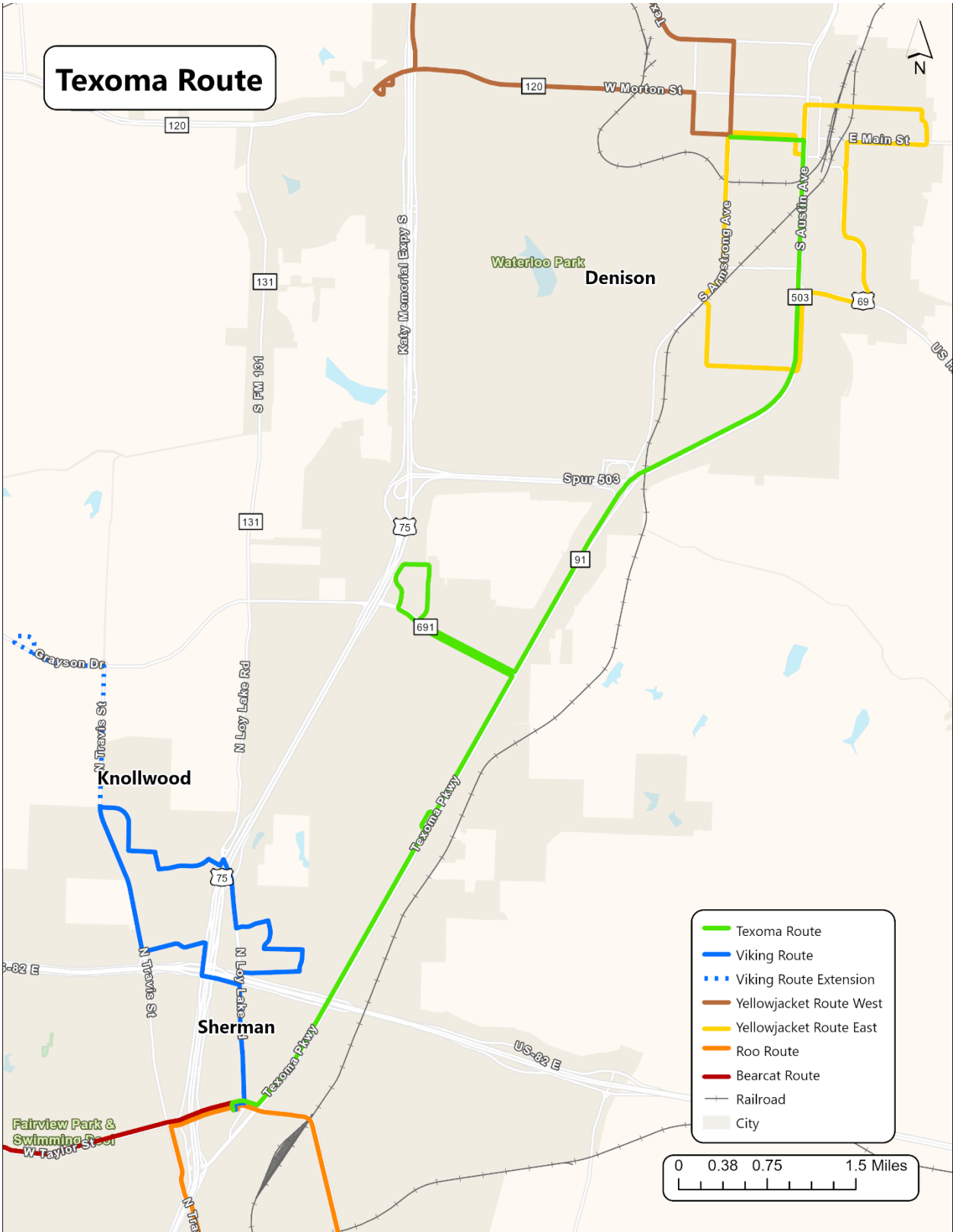
Por favor escribe su nombre y correo electrónico: *(opcional)*

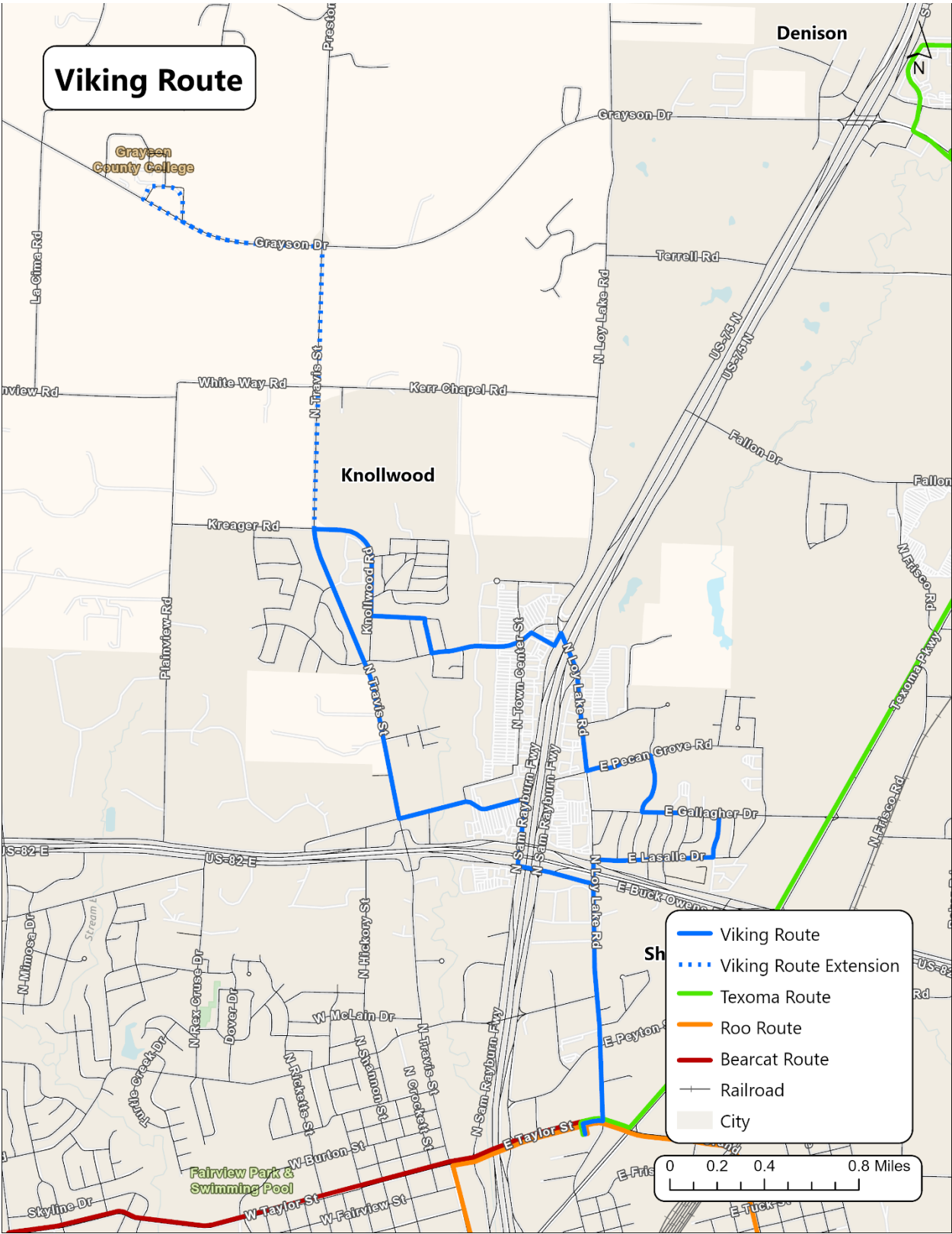
Appendix B

Individual Route Concept Maps









Bearcat Route





Appendix C

2019 Transit Market Study Review

Sherman-Denison TAPS LRTP

MEMORANDUM

DATE: November 13, 2020
TO: Josh Walker, Clay Barnett
CC: Shellie White
FROM: ATG/Halff & Associates
RE: Review of 2019 Transit Market Study

The following memorandum provides an evaluation of the 2019 Transit Market Study that identified trends and potential needs for the Sherman-Denison Urbanized Area. Section 1.0 of the memorandum is a review of the 2019 Transit Market Study and Section 2.0 identifies updates to the analysis conducted in the Transit Market Study and additional information to be analyzed for the development of the TAPS Long Range Transit Plan.

1.0 2019 Transit Market Study Review

The Texoma region is in northeast Texas and is made up of 2,698 square miles of land with an estimated 2017 population of 198,997, according to the U.S. Census Bureau. One of the planning bodies in the region is the Texoma Council of Governments (TCOG) which is a voluntary association of the local governments in Cooke, Fannin, and Grayson counties that works directly with citizens and local jurisdictions to improve and advance economic vitality and quality of life in Texoma.

1.1 Existing Service

Texoma Area Paratransit System (TAPS) is the only public transportation provider in the Texoma region operating demand response transportation in partnership with Transdev, a French-based international private public transportation provider. TAPS operates in the three-county Texoma planning region, as well as in Clay, Montague, and Wise counties. Service is offered Monday through Friday from 6:00 AM until 5:30 PM. Passengers must schedule their ride 48 hours in advance. In 2017, TAPS reported the following service statistics to the Federal Transit Administration (FTA) National Transit Database (NTD):

- 22 demand response vehicles; 16 operated at maximum service
- FTA 5307, 5309, 5310 and 5311 funding sources in addition to local funds
- Service population: 285,394
- Service area: 5,754 square miles
- Average fleet age: 3.8 years

Review of 2019 Transit Market Study

1

Sherman-Denison TAPS LRTP

In 2018, TAPS provided 31,244 trips to the region, transporting 34,215 passengers for a total of 376,136 miles traveled. **Table 1** highlights the most common trip purpose for each county.

Table 1: Most Common Trip Purpose

County	Trip Purpose	Percentage
Grayson County Urban	Employment	46%
Grayson County Rural	Dialysis	26%
Fannin County	Employment	39%
Cooke County	Medical	29%

Source: 2019 TCOG Transit Market Study

TAPS is the sole provider of public transportation for the Texoma region, but there are over 90 private agencies that provide some form of transportation as well. These agencies include school districts, community-based organizations, senior living facilities, and churches. These providers only serve their own clients, which makes coordination and regional transportation difficult.

1.2 Transit Need

The transit need analysis geographically assesses Texoma's demographic characteristics to understand where groupings of people more likely to be dependent on transit as a critical service are located within the region.

Two subsets of the population were calculated to generate an understanding of the transit needs of the Texoma study area:

- Transit-Dependent Population (TDP)
- Target Transit Ridership (TTR)

These population subsets create a measure of the regional population who are more likely to rely on transit in comparison to the rest of the community. TDP and TTR measures are crucial as they identify those more likely to be dependent on transit.

1.2.1 Transit-Dependent Population

Transit-Dependent Population (TDP) is the product of a formula which quantifies the number of people in a community who are most likely to depend heavily on transit as their primary mode of transportation. TDP measures captive riders (i.e. those whose mobility is almost entirely dependent on public transportation), which is one measure to quantify regional transit demand. To determine TDP, the study used a three-part formula derived from the U.S. Department of Transportation (USDOT) to locate larger concentrations of driving age citizens with limited-to-no access to personal automobiles. The analysis was measured at the Census block group level and used data from the 2017 American Community Survey (ACS), which provides detailed

Sherman-Denison TAPS LRTP

demographic information applicable to TDP calculations. The following displays the USDOT formula:

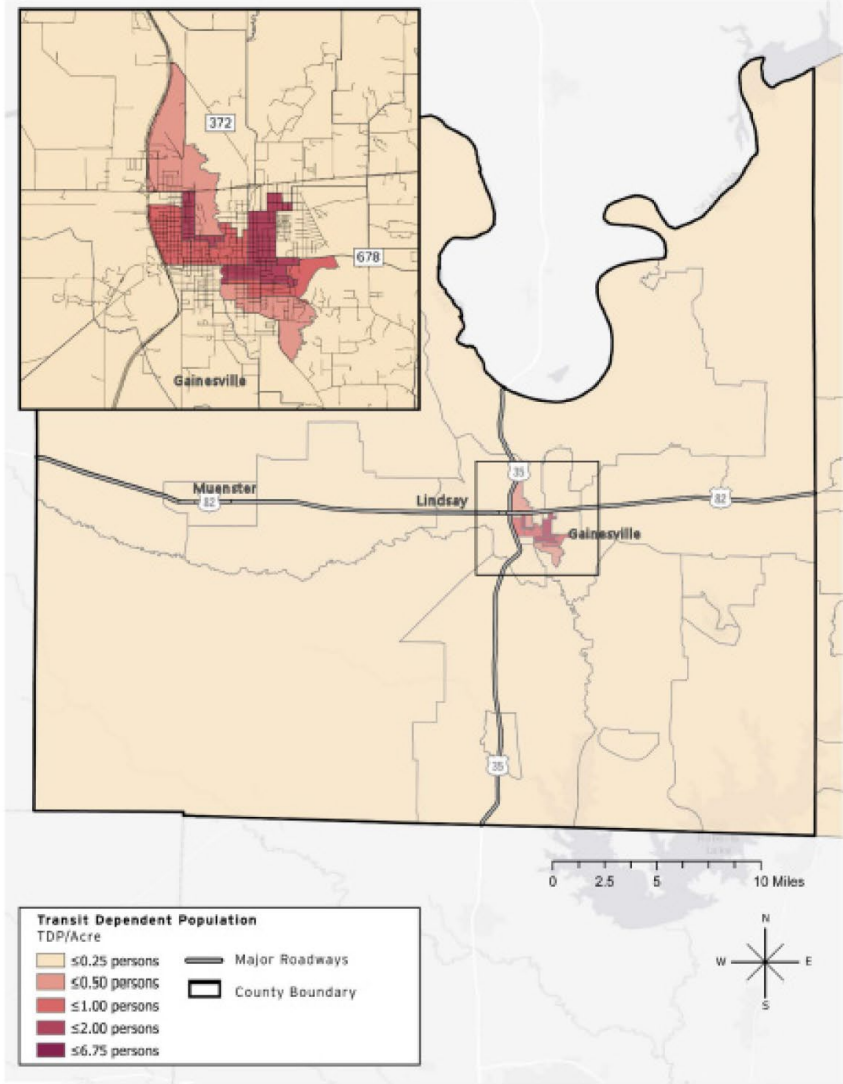
- Step 1: Household Drivers = (Population Aged 18 and Over) – (Persons Living in Group Quarters)
- Step 2: Transit-Dependent Household Population = Household Drivers – Vehicles Available
- Step 3: Transit-Dependent Population = Transit-Dependent Household Population + Population Aged 17 or Under + Non-Institutionalized Population Living in Group Quarters

The combination of the three demographic groups that make up Step 3 of the formula identifies the total amount of the population who is either unable to drive or highly unlikely to drive, making them more dependent on transit. **Figures 1 – 4** define the density of TDP per acre for Cooke County, Grayson County, the Sherman-Denison area, and Fannin County, respectively. Moderate-to-high TDP can be seen in the following areas:

- Surrounding Gainesville along US 82 and IH 35 (Cooke County)
- Sherman and Denison major urban areas (Grayson County)
- South of Pottsboro east of Hwy 289 (Grayson County)
- Bonham and Leonard urban areas (Fannin County)

Sherman-Denison TAPS LRTP

Figure 1: Cooke County Transit-Dependent Population

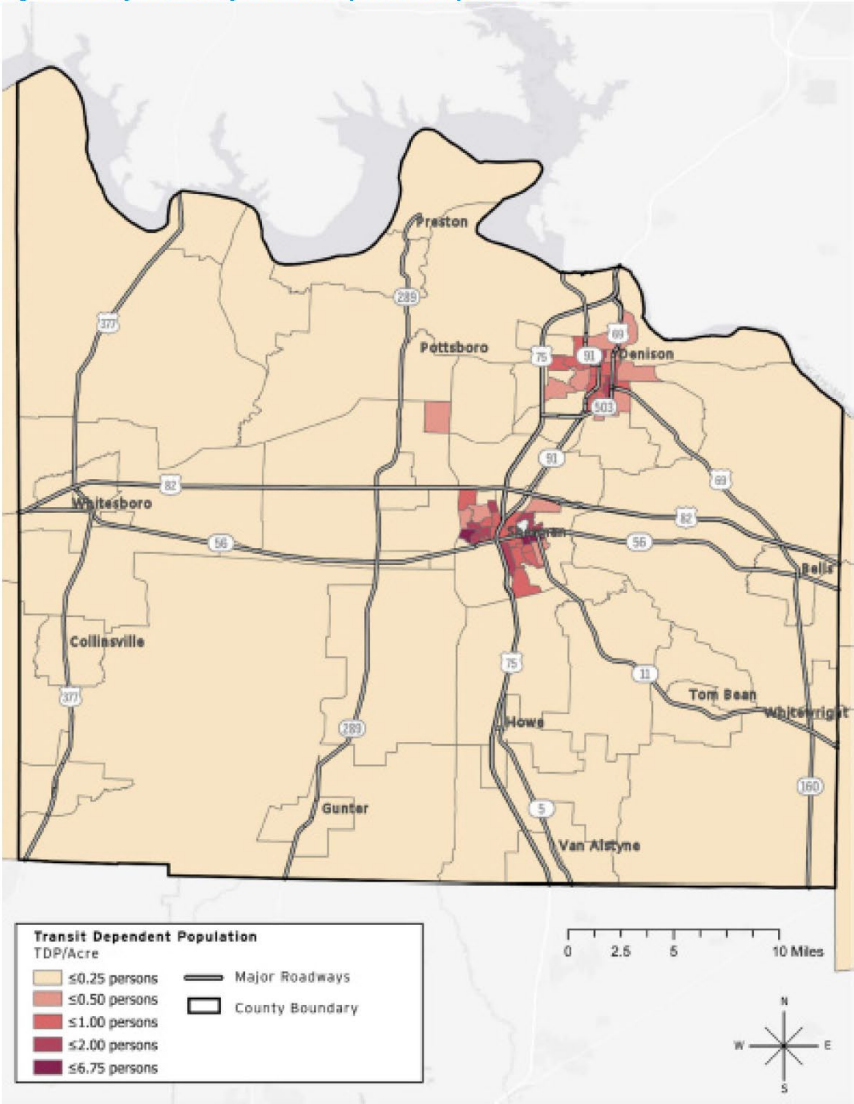


Source: 2019 TCOG Transit Market Study

Review of 2019 Transit Market Study 4

Sherman-Denison TAPS LRTP

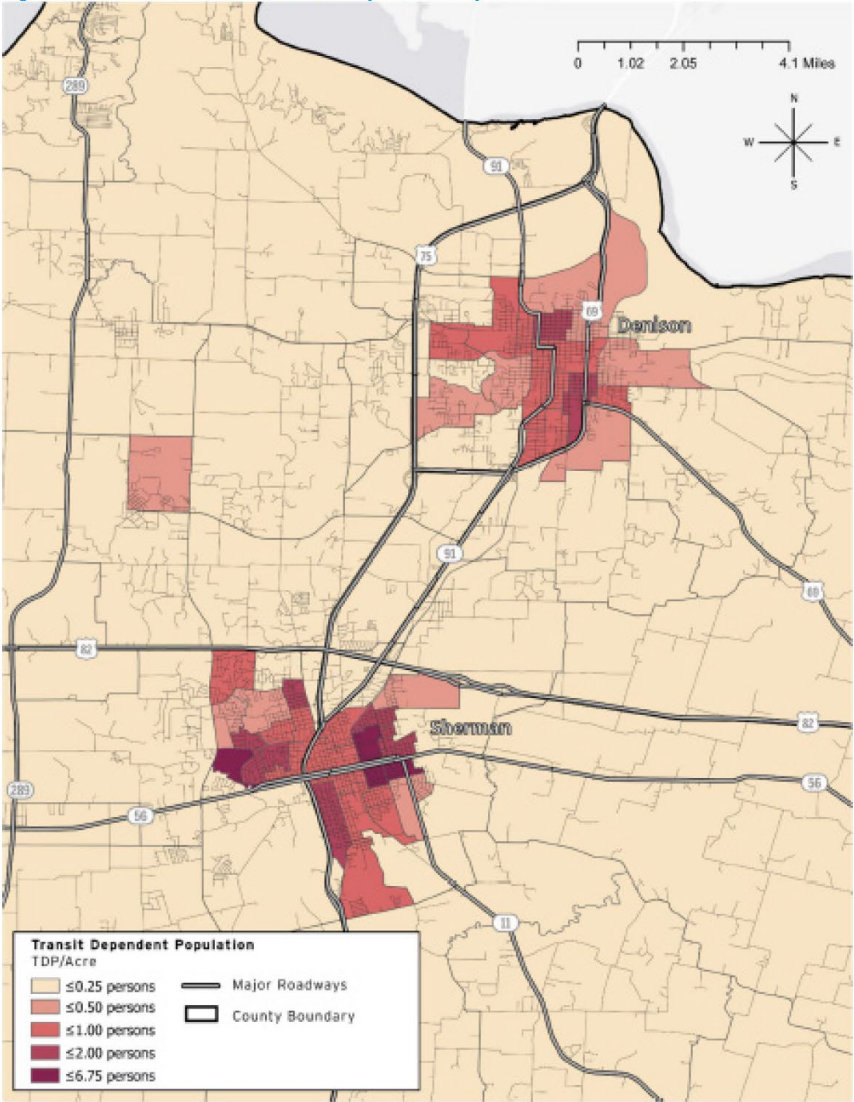
Figure 2: Grayson County Transit-Dependent Population



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

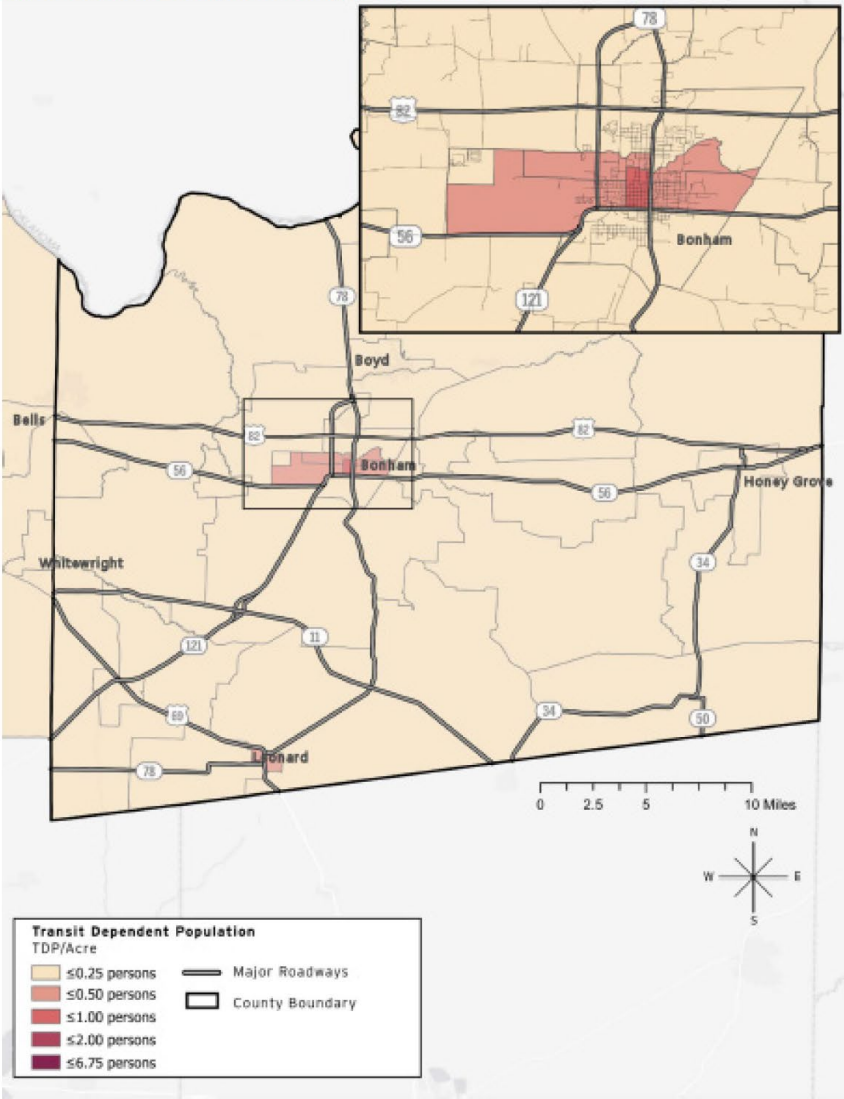
Figure 3: Sherman-Denison Transit-Dependent Population



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

Figure 4: Fannin County Transit-Dependent Population



Source: 2019 TCOG Transit Market Study

Review of 2019 Transit Market Study 7

Sherman-Denison TAPS LRTP

1.2.2 Target Transit Ridership

Target Transit Ridership (TTR) is used to represent additional regional transit demand not accounted for in the TDP calculation. This population differs from TDP in that it represents those who are more likely to need transportation services in comparison to the general public, representing some of the largest barriers to personal mobility. TTR represents the following characteristics:

- People aged 65 years or older
- People aged 17 years or younger
- People with disabilities
- People in poverty
- People identifying as a minority population
- People with Limited English Proficiency (LEP)

To calculate TTR, the six groups discussed above were summed at the Census block group level, then divided by the total population, representing the total number of TTR in each block group.

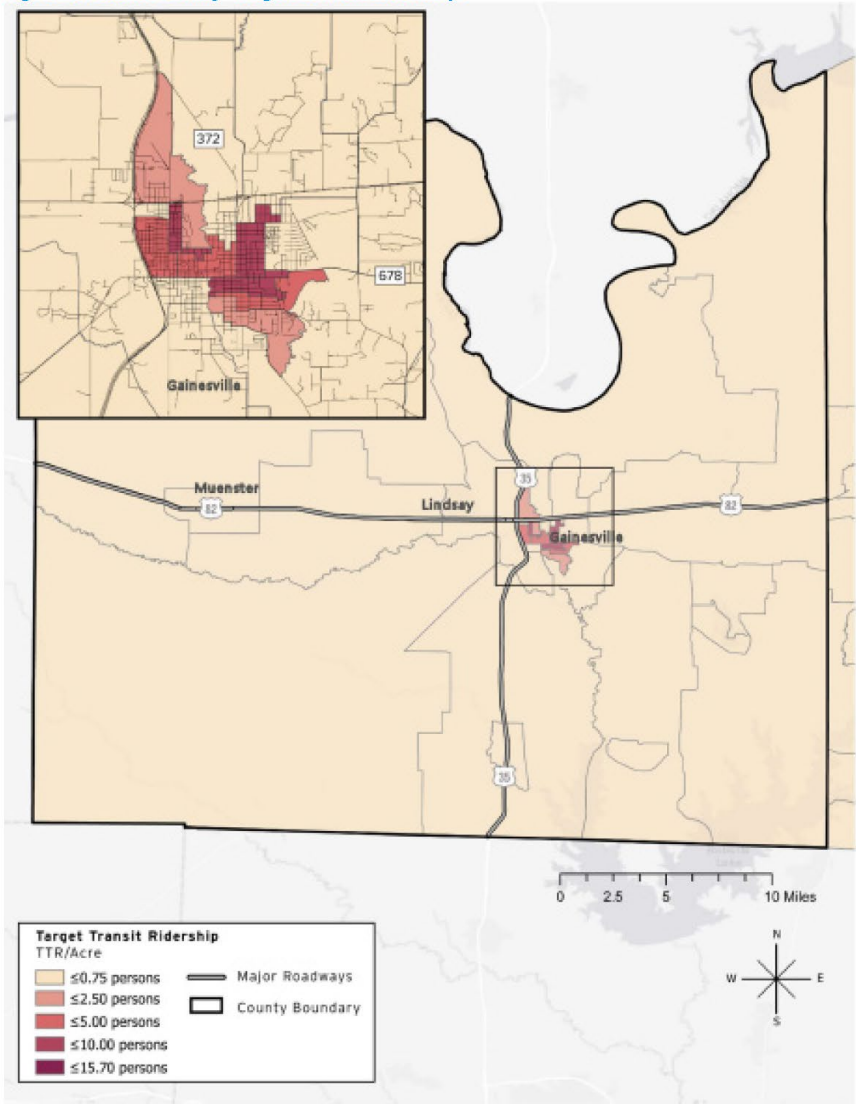
Figures 5 – 8 show the TTR density of Cooke County, Grayson County, the Sherman-Denison area, and Fannin County, respectively. Concentrations of TTR can be seen in similar areas as the TDP, listed below:

- Surrounding Gainesville along US 82 and IH 35 (Cooke County)
- Sherman and Denison major urban areas (Grayson County)
- Bonham and Leonard urban areas (Fannin County)

Review of 2019 Transit Market Study	8
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Sherman-Denison TAPS LRTP

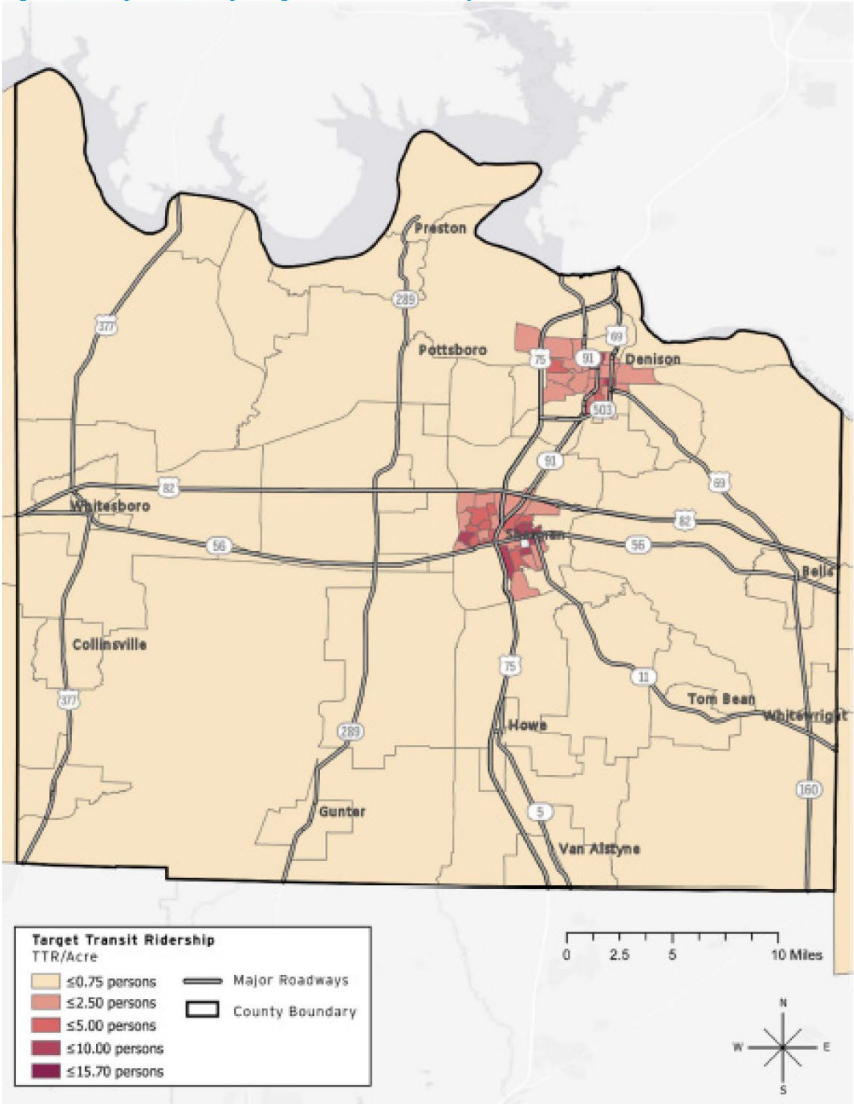
Figure 5: Cooke County Target Transit Ridership



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

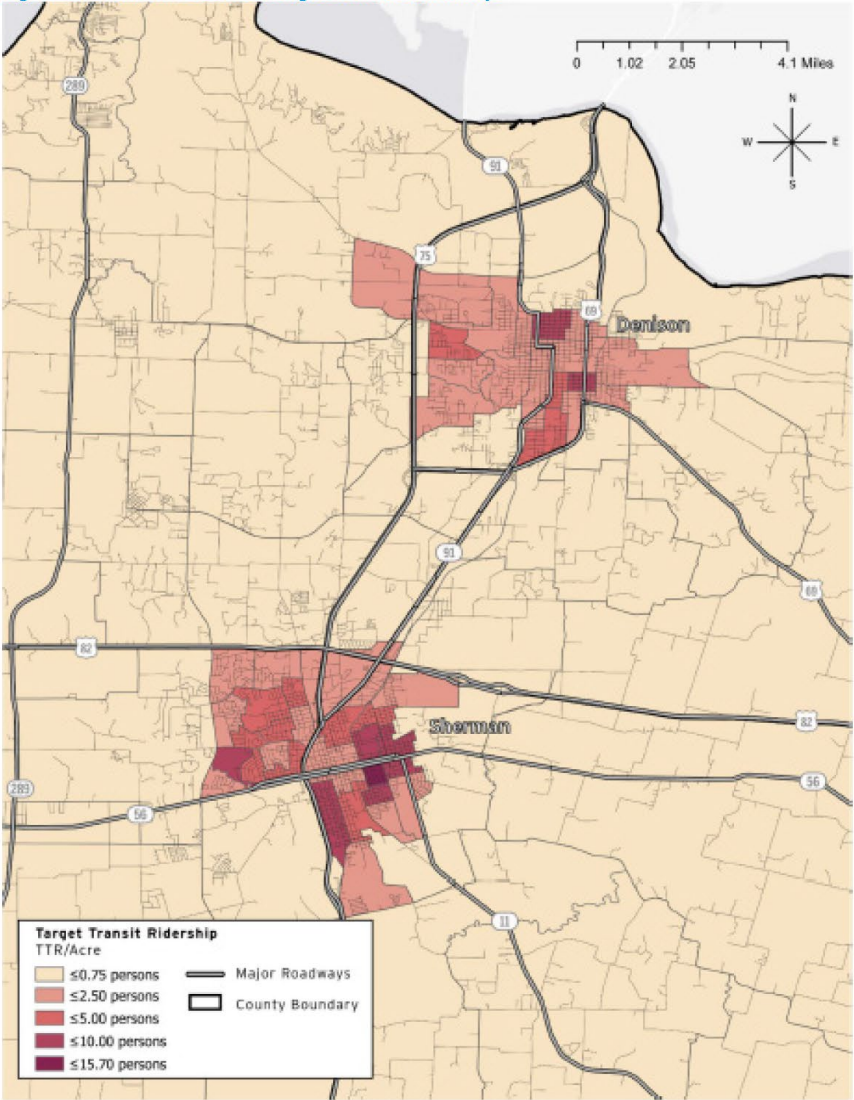
Figure 6: Grayson County Target Transit Ridership



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

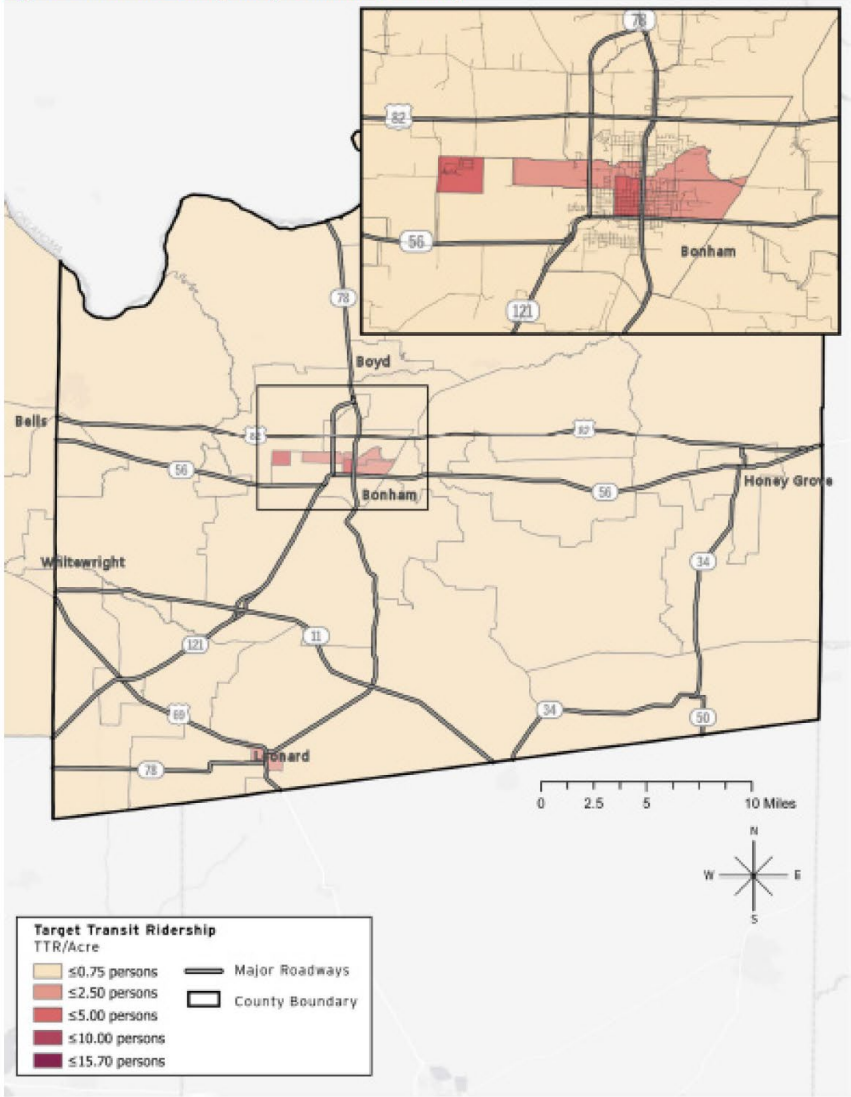
Figure 7: Sherman-Denison Target Transit Ridership



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

Figure 8: Fannin County Target Transit Ridership



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP

1.2.3 Transit Need Index

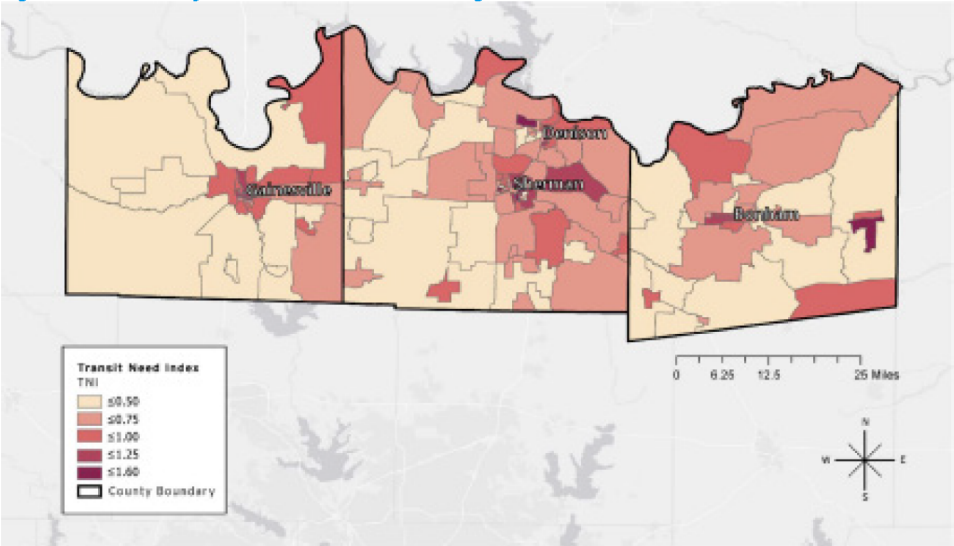
The Transit Need Index (TNI) is a combination of the TDP and TTR as a percentage of the overall population, i.e. transit need is high for the entire area when TNI is greater than or equal to one. This is used as a methodical tool for identifying areas of highest concern and highest potential for coordination with demand response transit services. **Table 2** shows the percentage of the total population in each county and in the entire region that will fall within the TDP or TTR category and **Figure 9** shows the TNI for Cooke, Grayson, and Fannin counties.

Table 2: TDP, TTR, and Percent of Total Population

Area	TDP	Percent of Total Population	TTR	Percent of Total Population
Cooke County	5,851	15%	22,334	57%
Fannin County	5,027	15%	17,750	53%
Grayson County	21,491	17%	71,661	57%
Texoma Region	32,389	16%	111,745	56%

Source: 2019 TCOG Transit Market Study

Figure 9: Cooke, Grayson, and Fannin Counties Region Transit Need Index



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP



1.2.3 Transit Need Analysis Conclusion

A large portion of Texoma falls above a Transit Need Index (TNI) of one, indicating an expressed need for transit regionally. The key areas with high TNI include multiple areas, such as:

- Gainesville urban area (Cooke County)
- Sherman-Denison urban areas (Grayson County)
- East of Sherman along US 82 towards Bells (Grayson County)
- Bonham and Honey Grove urban areas (Fannin County)

A fixed route transit system could create a more regular, scheduled-based system that would serve the needs of more communities throughout the region. It is beneficial to the region to introduce a fixed route transit system that complements the current demand response transit service, which could link these areas of high transit need, increasing the overall connectivity of the region.

1.3 Transit Potential

Transit service efficiency is tied to land use, and areas with high concentrations of residents and/or businesses best support transit service. Combining both residential and employment densities yields a Transit Potential Index. This index illustrates the locations likely to be the most suitable for transit service based on the number of jobs and people per acre.

1.3.1 Population Density

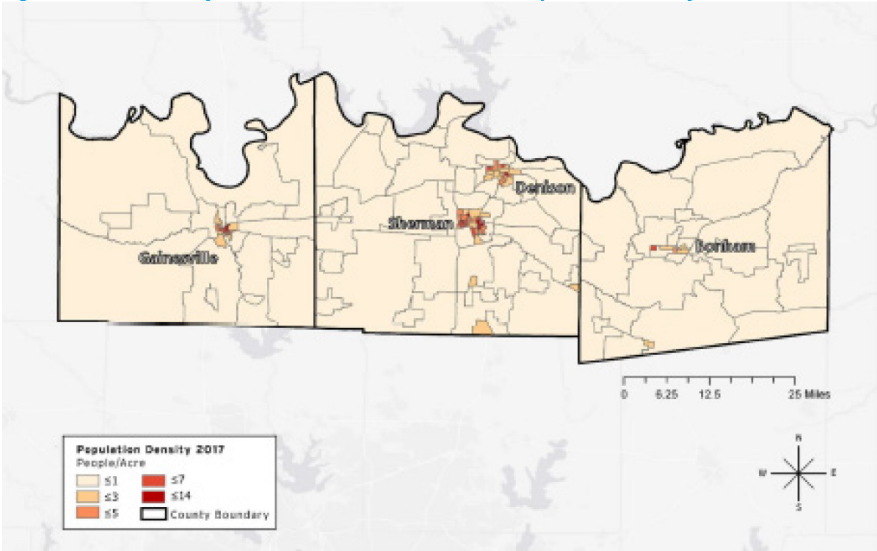
Public transportation is most efficient when it connects population and employment centers where people can easily access bus stops. As a general rule, a density of 3-5 households, or 6-15 people per acre is needed to support base-level fixed route transit service (service every 60 minutes). **Figure 10** shows the 2017 population densities for Cooke, Grayson, and Fannin counties. The dark orange densities can support at least hourly service; areas with dark red color are more likely to be able to support more frequent services. High population densities can be found in the following areas:

- Gainesville urban area (Cooke County)
- Urban areas of Sherman, Denison, Howe, and Van Alstyne (Grayson County)
- Bonham and Leonard (Fannin County)



Sherman-Denison TAPS LRTP

Figure 10: Cooke, Grayson, and Fannin Counties 2017 Population Density



Source: 2019 TCOG Transit Market Study

1.3.2 Employment Density

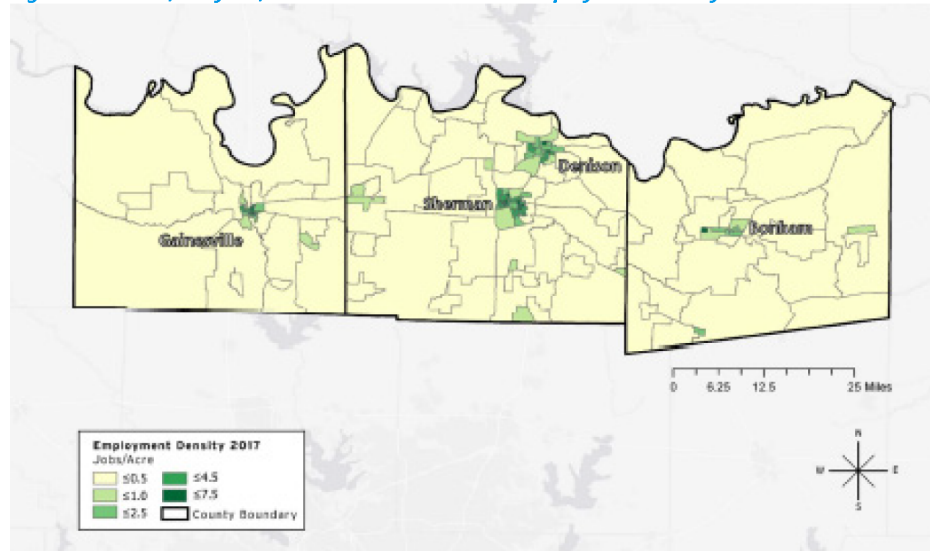
The location and number of jobs is a second strong indicator of transit demand, as traveling to and from work accounts for the largest single segment of transit trips in most markets. The minimum level of employment density that is typically needed to support hourly transit service is five jobs per acre. **Figure 11** shows the employment densities for Cooke, Grayson, and Fannin counties with the darker green representing the higher employment density.

High employment densities are concentrated in the same areas that high population densities are with additional pockets in:

- Burns (Cooke County)
- Honey Grove (Fannin County)

Sherman-Denison TAPS LRTP

Figure 11: Cooke, Grayson, and Fannin Counties 2017 Employment Density



Source: 2019 TCOG Transit Market Study

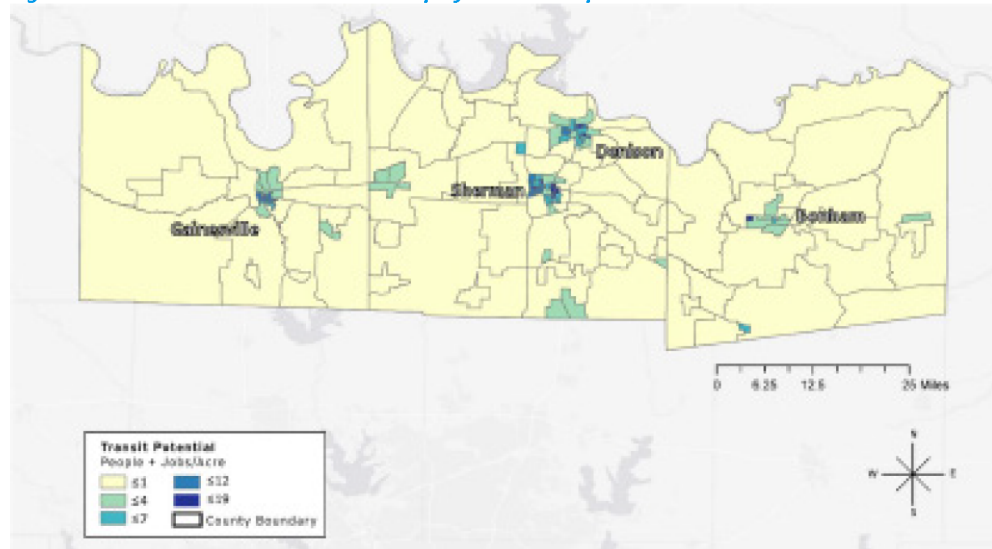
1.3.3 Transit Potential

The Transit Potential Index, **Figure 12**, is a composite of the population and employment densities and is an indicator of the viability of fixed route service in a particular area. A higher Transit Potential Index score for a Census block points to a higher likelihood of generating substantial transit ridership. A review of the Transit Potential Index for the study area suggests:

- High transit potential for urban areas of Gainesville, Sherman, and Denison
- Highest within the Sherman-Denison area, which could benefit from fixed route service
- Bonham and Whitesboro have high transit potential; would benefit from having transit service connect to the Sherman-Denison area

Sherman-Denison TAPS LRTP

Figure 12: Transit Potential – Combined Employment and Population Densities



Source: 2019 TCOG Transit Market Study

1.3.4 Transit Potential Analysis Conclusion

The analysis of the transit need in the Texoma region demonstrates a high need for transit in the urban and most densely populated areas. The analysis conducted supports the feasibility of establishing fixed routes to serve the urban areas of the Texoma region.

As stated in Section 1.3.3, the areas with the highest transit potential are the urban areas of Gainesville, Sherman, and Denison. However, the next study should initially focus on the urban centers of Sherman and Denison. These two areas have the highest potential to support the successful development of fixed route transit in the region.

1.4 Fixed Route Transit Concept

The study identified potential transit routes that could support fixed route transit. These corridors are positioned along adjacent land uses with high thresholds of transit-supportive measures such as Transit-Dependent and Target Transit Ridership populations as well as areas with high transit need and potential. **Figure 13** depicts the Sherman-Denison Transit Need Index overlaid with the proposed fixed routes and existing TAPS stops.

Sherman-Denison TAPS LRTP

The Sherman-Denison area has been targeted for fixed route service. Targeting the areas with the largest population and most transit supportive indicators will ensure a successful and sustainable implementation of fixed route service.

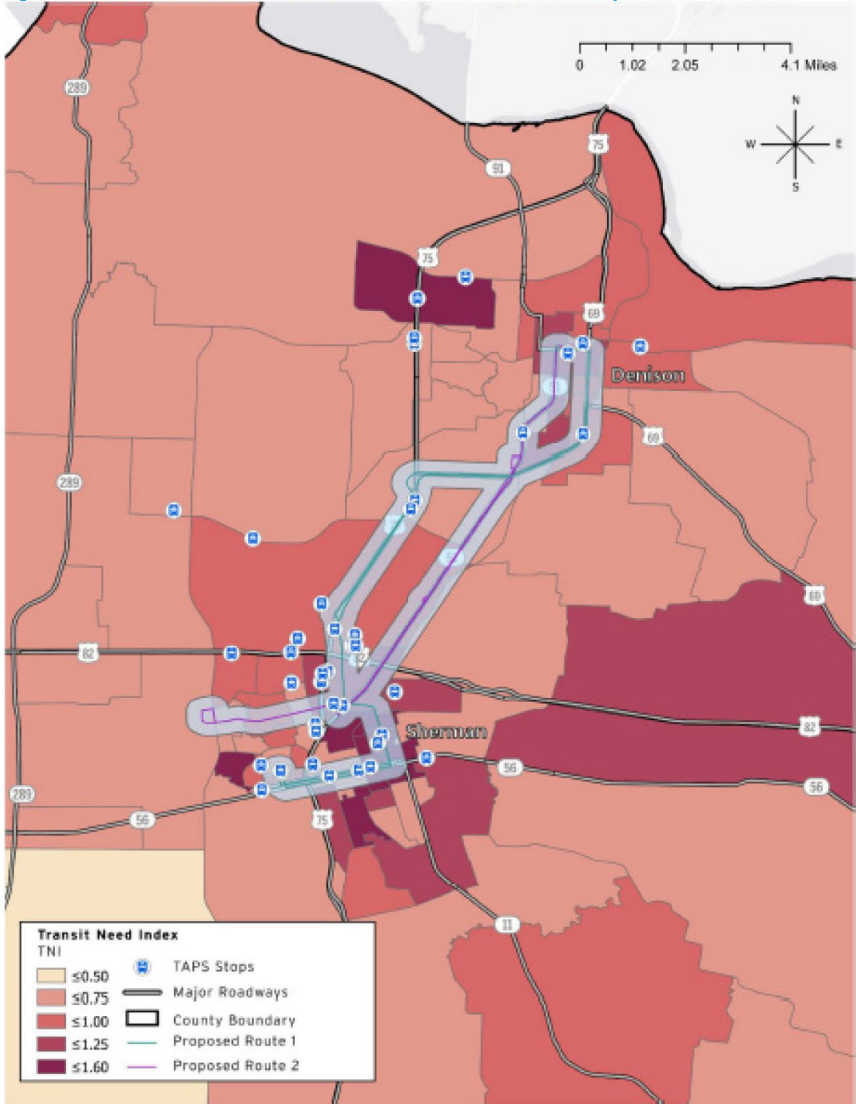
The fixed route service concept for the Sherman-Denison area consists of two bidirectional routes connecting the two cities and serving various functions that complement each other and enhance connectivity. The two routes would intersect at various points in both cities providing passengers multiple transfer opportunities. The following is a description of each route:

- **Route 1** – two vehicles operating on 60-minute headways all day long. The route would travel in express mode between the two communities running on US 75. It would provide connections to the Wilson N. Jones Regional Medical Center, Downtown Sherman, Austin College, and Downtown Denison.
- **Route 2** – two vehicles operating on 60-minute headway during the AM and PM peak, with midday service to local portions of each community (one bus in Sherman and the second in Denison in the midday). The route would travel along Texoma Parkway between Sherman and Denison providing essential connections between residents of West Sherman, retail along Texoma Parkway, and residents and retail in southern Denison and Downtown Denison.

As a general rule, a density of three to six household, or six to fifteen people per acre is needed to support fixed route transit service every 60 minutes (60-minute headway). Transit service on a 60-minute headway, means a bus will arrive at a bus stop every 60 minutes, or once an hour. If transit service is increased to a 30-minute headway, this will result in a bus arriving twice an hour (every 30 minutes) at a bus stop.

Sherman-Denison TAPS LRTP

Figure 13: Sherman-Denison Transit Need Index Paired with Proposed Fixed Routes



Source: 2019 TCOG Transit Market Study

Sherman-Denison TAPS LRTP



2.0 Considerations for the TAPS Long Range Transit Plan

After a thorough review of the 2019 Transit Market Study, this section identifies items to be taken into consideration in the development of the TAPS Long Range Transit Plan. For items relating to capital and operating budget and existing ridership, it is understood that 2019 will be used as the benchmark.

2.1 Data

The analysis conducted throughout the 2019 Transit Market Study used 2017 American Community Survey (ACS) data to calculate the Transit Dependent Population (TDP), Transit Target Ridership (TTR), and Transit Need Index (TNI). It is recommended to use the most recent ACS data available (2019 if possible) and rerun the calculations for TDP, TRR, and TNI to determine if any additional areas have a need for transit.

For the calculation of Transit Potential, 2017 population and employment densities were used. It is recommended that this calculation be updated with 2019 data to identify any additional areas that may be suitable for transit service.

2.2 Capital and Operating Budget

One of the items that was not included in the 2019 Transit Market Study was a detailed look at the TAPS capital and operating budget. An analysis of both capital and operating costs (existing and future) should take place to identify any potential barriers for the implementation of fixed route transit service and any opportunities for cost efficiencies. Discussion should take place between TAPS and TCOG staff to determine if a constrained and unconstrained financial plan should be prepared.

2.2.1 Capital Budget

An analysis should be conducted to describe the status of TAPS capital inventory including fleet, facilities, and technologies. Updates, upgrades, and changes in capital investments made in recent years should be included as well as any future challenges or areas of change identified.

For the implementation of fixed route service, a detailed cost analysis should take place to identify any additional rolling stock, storage and maintenance needs, staffing, bus stops, scheduling/dispatch, etc. A clear picture of the current complete capital items should be presented to TAPS and TCOG staff.

2.2.2 Operating Budget

A detailed analysis of TAPS' existing operations budget should be conducted to identify where the agency stands financially with their existing service. In addition, a detailed operating budget should be prepared for the proposed fixed route service. At a minimum, this should include

Review of 2019 Transit Market Study

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Sherman-Denison TAPS LRTP

staffing (drivers, administration, dispatch, etc.), estimated hourly cost for the fixed route service, and other items as identified by TAPS, TCOG, and the consultant.

2.3 COVID-19 Impacts

Like all transit agencies across the nation, TAPS has had significant impacts to capital and operating budgets, ridership, and fare revenues due to COVID-19. It is understood that 2019 will be used as the benchmark for data, but the 2020 COVID impacts should not be overlooked. Items that should be considered in the development of the TAPS Long Range Transit Plan in relation to COVID should include, but not be limited to:

- Employment – unemployment in the area, impacts to essential workers, the trend of more people working from home
- Sales tax revenues
- Long-term impacts to ridership
- Public perception of transit (safety, cleanliness, etc.)
- Travel patterns
- Austin College and Grayson College – impacts to in-person enrollment and living on campus, more virtual classes, etc.

To document the above-mentioned items, the project team can address this during stakeholder meetings, client meetings, and public engagement.

- **Stakeholder Meetings** – during stakeholder meetings, ask how they have been affected by COVID. How has their business been impacted due to COVID? Have they seen an increased or decreased need for transit? How do their employees/clientele view transit? If a public agency, how has their budget been impacted by a decline in sales tax revenue? Have they had to lay off or furlough employees?
- **Client Meetings** – when meeting with TAPS have a discussion on how their operations and ridership have been affected by COVID. Has there been a recovery in ridership? What have been the impacts on fare box revenue? What is the status of current and future funding scenarios? Have they noticed a difference in where the demand response customers are wanting to go, i.e. increase in medical trips or an increase in shopping trips? What are their riders' current perception of transit?
- **Public Engagement** – during the public engagement process a survey should be prepared for riders and non-riders that asks specific questions regarding their perception of transit during COVID and how COVID has changed their daily routine. Are they working from home more? Are they more selective on when they schedule a trip to the store or doctor? Do they view transit as safe during the pandemic?

Sherman-Denison TAPS LRTP

This three-pronged approach to identifying the impacts of COVID on transit operations for the TCOG region should provide the project team an understanding of the public's perception and how to plan future transit service accordingly.

2.4 Fixed Route Structure

The 2019 Transit Market Study identified two starter fixed routes that would serve Sherman and Denison, the two most populous cities in the region. These routes would provide all day service between and within the two cities and connect residents to employment, retail, housing, and medical facilities. These routes were developed as a result of the Transit Market Study which was focused on evaluating the potential for fixed route service rather than making final recommendations for where the fixed routes would run.

The LRTP will conduct the detailed analysis to determine where the fixed routes will run, span of service, headways, and stop locations. Items to consider in the development of the fixed routes are:

- Re-examine the need for fixed route transit service in downtown Sherman. Members of the Steering Committee questioned whether the residents would be likely to use transit
- Examine the transit need for the developments occurring south of State Highway (SH) 56
- Existing and new developments around Farm-to-Market (FM) 1417 that could affect transit routing, such as:
 - New high school
 - 600-unit mobile home park
 - Apartment complexes
 - Industrial park

One strategy to consider is to make the two proposed routes deviated fixed routes. A deviated fixed route is a hybrid of a fixed route and demand response services. With this type of service, the bus or van stops at fixed points and keeps to a timetable but can deviate from its course between two stops to go to a specific location for a pre-scheduled request (usually no more than $\frac{3}{4}$ of a mile off the route). Benefits could include:

- Cost savings in small urban areas when serving persons with disabilities rather than a strictly demand-response service.
- First-time public transit users may be encouraged to use a flexible service.
- Deviated fixed routes can improve reliability for customers who would otherwise be dependent on an exclusively demand response system.
- More effective use of resources compared to the existing demand response service.

Sherman-Denison TAPS LRTP

TAPS currently requires their customers to call 48 hours in advance to schedule a ride. It is recommended that the agency explore ways to reduce the recommended call-ahead time to at least 24 hours in advance. This could potentially increase ridership and decrease trip cancelations.

3.0 Conclusion

The 2019 Transit Market Study provides a solid base for the development of a fixed route bus service for TAPS. The study identified the transit need for the region and proposed a starter system that would connect residents to employment centers, healthcare, retail centers, and housing.

The TAPS Long Range Transit Plan will be able to build upon the 2019 study to develop a fixed route transit system for the TAPS service area.

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Fixed-Route Final Concept Review

Sherman-Denison TAPS LRTP



MEMORANDUM

DATE: November 22, 2021
FROM: Halff Associates Inc.
RE: Fixed-Route Service Peer Review

As a result of the findings of the Texoma Council of Governments (TCOG) Transit Market Study, the need for fixed-route transit service in the communities of Sherman and Denison, Texas was identified. The potential for transit is high in these areas due to high employment densities and the need to move employees from one community to the other. The Sherman-Denison TAPS LRTP has outlined five fixed routes that work to fulfill the transit needs in the region. The purpose of this memorandum is to provide a peer review of the identified routes and findings, as well as provide recommendations on potential next steps.

Fixed-Routes Overview and Recommendations

The final route concepts were determined based on feedback from the project steering committee and other stakeholders. Throughout the development process of these routes, collaboration with community leaders informed routes that would best serve employees, employers, and others who have travel need within or between Sherman and Denison. Brief descriptions of the final route concepts are outlined in *Table 1*.

Table 1: Table Title

	Description	Length (Miles)
Yellowjacket West	Circulator route serving west-central Denison.	7.75
Yellowjacket East	Circulator route serving south-east Denison.	7.17
Texoma	Linear route providing a connection between Denison and Sherman.	11.63
Roo	Circulator route serving east-central Sherman.	10.49
Bearcat	Linear route providing a connection between north and south Sherman.	9.78

Approximately 46.82-miles of fixed-route service is proposed for the Sherman-Denison TAPS LRTP. The final proposed routes are those selected from a larger group of routes developed as a part of the Plan. The five routes outlined above are those that serve the greatest need, while providing connections to several points of interest within the Sherman-Denison region. The following sections will provide greater detail on each proposed route, the populations they serve, and the connections that are made.



Sherman-Denison TAPS LRTP



Yellowjacket West

Through the west central area in Denison the Yellowjacket West route generally travels clockwise for 7.75-miles beginning and ending at the intersection of Main Street and Armstrong Avenue. Based on 4-minute miles, the estimated travel time of the route is approximately 31 minutes. The Yellowjacket West route also provides in-line transfer options to the Texoma and Yellowjacket East routes, as well as a transfer location at the Main Street and Armstrong Avenue intersection. The route serves five high propensity areas and three TNI areas. The Yellowjacket West route makes connections to several major destinations in the area, such as Downtown Denison's Farmer's Market, Greater Texoma Health Clinic, Walmart, and TexomaCare Urgent Care.

The proposed Yellowjacket West route ensures transit service to a dense residential population area by bringing transit users into the downtown area of Denison. The route is fixed within several different land uses, such as commercial along Morton Street and an industrial employment area near FM-84. An active Union Pacific (UP) rail line intersects the Yellowjacket route at three different locations. It is important to note that additional timing and safety measures ought to be considered at these locations to ensure the safety of users, as well as the efficiency of the route.

Yellowjacket East

Yellowjacket East functions generally within the Downtown Denison area into southeast Denison. The 7.17-mile route has an estimated travel time of 28.68 minutes. The Yellowjacket East route serves seven high propensity areas and four TNI areas. Major destinations that can be accessed through this route include the Downtown Farmer's Market, Senior Citizen Center, Albertson's, and Workforce Texoma. In-line transfer options to the Texoma and Yellowjacket West routes are also achievable through this route.

A potential improvement to the Yellowjacket East route is to extend service to the south to capture a commercial and industrial area running along Woodlawn Boulevard to SPUR-503 (Eisenhower Parkway). Additionally, service in this area could extend south to a dense residential population in the Mills community. Similarly, the Yellowjacket East route is situated in an area with several active UP rail lines, intersecting four times. Safety and timing efficiency measures ought to be considered for the Yellowjacket East route as well.

Texoma

Serving as the linear connector between Denison and Sherman, the Texoma route is approximately 11.63 miles long and would operate within a travel time of 46.52 minutes. A benefit of this proposed route is the utilization of an existing TAPS facility on Texoma Parkway. It generally appears that the Texoma route would operate with limited stops and primarily serve as a commuter route for those traveling between Denison and Sherman. As proposed, the Texoma route would provide connections to several commercial centers, as well as the Texoma Heart Group, Workforce Texoma, Celebration Senior Living, TAPS Public Transit, and Texoma

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Regional Blood Center. The Texoma route serves seven areas of high propensity and five TNI areas. Additionally, the route has in-line transfer potential to all other proposed routes.

At the northwest corner of Texoma Parkway and US-82 (Buck Owens Freeway) is Dillingham Intermediate School, Neblett Elementary School, Texoma Council of Governments, Life Center Specialty Hospital, North Texas Cardiology, and Heritage Park Surgery Center. This area also includes dense commercial retail along the east side of US-75. Just southwest of the intersection is the Texoma Health Center and Sherman Independent School District (SISD) Administration Center. The current configuration of the Texoma route does not provide connections to these major destinations. A potential improvement is to extend the route along US-82 to accommodate travel to this dense, unreached area. In addition, an enhanced configuration of this route could provide connection to the west to Grayson College or the North Texas Regional Airport.

Roo Route

The Roo route circulates in central Sherman for 10.49 miles. Based on an estimated four-minute mile, the route travel time is approximately 42 minutes. The route has in-line transfer options to the Texoma and Bearcat routes. This route serves fourteen high propensity areas and twelve TNI areas. Based on the transit potential and transit need metrics, this route fulfilled the greatest transit need and potential. The Roo route makes connections to several destinations, particularly City of Sherman government facilities and Grayson County government facilities. In addition, the Roo route connects to industrial areas and commercial centers, as well as Austin College.

The Roo route serves an area with the highest population density in Sherman, which translates to the area with the highest number of transit dependent users. Safety and efficiency measures ought to be considered for the Roo route as there are three points of intersection with active UP rail lines. Lastly, a possible consideration for the Roo route would include the addition of service down Lamar Street to better serve the residential area around Sherman High School.

Bearcat Route

A linear route operating on the west side of Sherman, the Bearcat route has an estimated travel time of 39.12 minutes for 9.78 miles. The Bearcat route has in-line transfer options to the Roo and Texoma routes. Nine high propensity areas are served and three TNI areas are potentially served with the proposed configuration of the Bearcat route. The Bearcat route connects to a diverse set of destinations such as Fairview Park, Parkside Apartments, Kaiser Aluminum, Progressive Industrial Park, DaVita Dialysis, and Tyson Foods.

The Bearcat route has the potential to serve a high population and employment density through extended service near the southwest corner of the US-82/US-75 intersection. This would also provide a connection to Pecan Grove Park West. In addition, between the Roo and Bearcat routes, the expansion of service along W Houston Street/Lamar Street may be warranted to provide access to Sory Elementary School, Binkley Park, and Center Street Park.

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Additional Recommendations

The proposed routes succeed at serving areas with the highest population density and employment density. In general, the routes also provide transit service for areas with the highest density of target transit riders and transit dependent populations. Future opportunities exist to provide service to an area east of Sherman where transit need is substantial. Prior to the implementation phase of the proposed routes, public involvement activities ought to be conducted to gather public feedback and approval. Lastly, the development and growth of areas around proposed routes should be coordinated with community leaders and developers.

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Note, completion of the peer review occurred prior to the development of the steering committee derived alternative for the Viking Route shown in Appendix B on page 49. The proposed concept for the Viking Route adds service to Grayson College, as well as the Sherman Town Center and neighborhoods in northwest Sherman. This concept addresses several of the comments and suggestions made in this peer review for both the Texoma and Roo routes.

