

McLENNAN COUNTY TRANSIT NEED STUDY

2018



PLAN CREATED FOR:



Waco Metropolitan Planning Organization

PLAN CREATED BY:



IN COLLABORATION WITH:



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Chapter 1: Introduction & Project Overview

INTRODUCTION

Background & Purpose

As the urban and rural areas of McLennan County continue to change, so do the transportation needs of its residents. To evaluate the needs of McLennan County residents and those who travel through the County, the Waco Metropolitan Planning Organization (MPO), in partnership with Waco Transit, conducted this Transit Need Study. This Study will ensure that the provision of public transportation services meets the needs of the County to the fullest extent possible, especially for individuals with limited transportation options. This Study will also help the Waco MPO and Waco Transit take the necessary steps to plan for the future public transportation needs of the County and the region.

The overall goal of the McLennan County Transit Need Study, herein after referred to as the Study, is to improve the availability, quality, and efficiency of transportation services for seniors, individuals with disabilities, those with low income, and other population groups with limited transportation options. This Study is likewise developed to create a plan for McLennan County that will fit seamlessly into the Heart of Texas Regionally Coordinated Transportation Plan. This goal can be attained through identifying coordination opportunities among transportation service providers and human service agencies, as well as identifying projects to better allocate/manage existing transportation resources. The Study is intended to offer direction for transportation service coordination and explore alternatives supporting more effective pairing of available transportation resources to community needs. The Study is meant to satisfy federal law under the Fixing America's Surface Transportation (FAST)

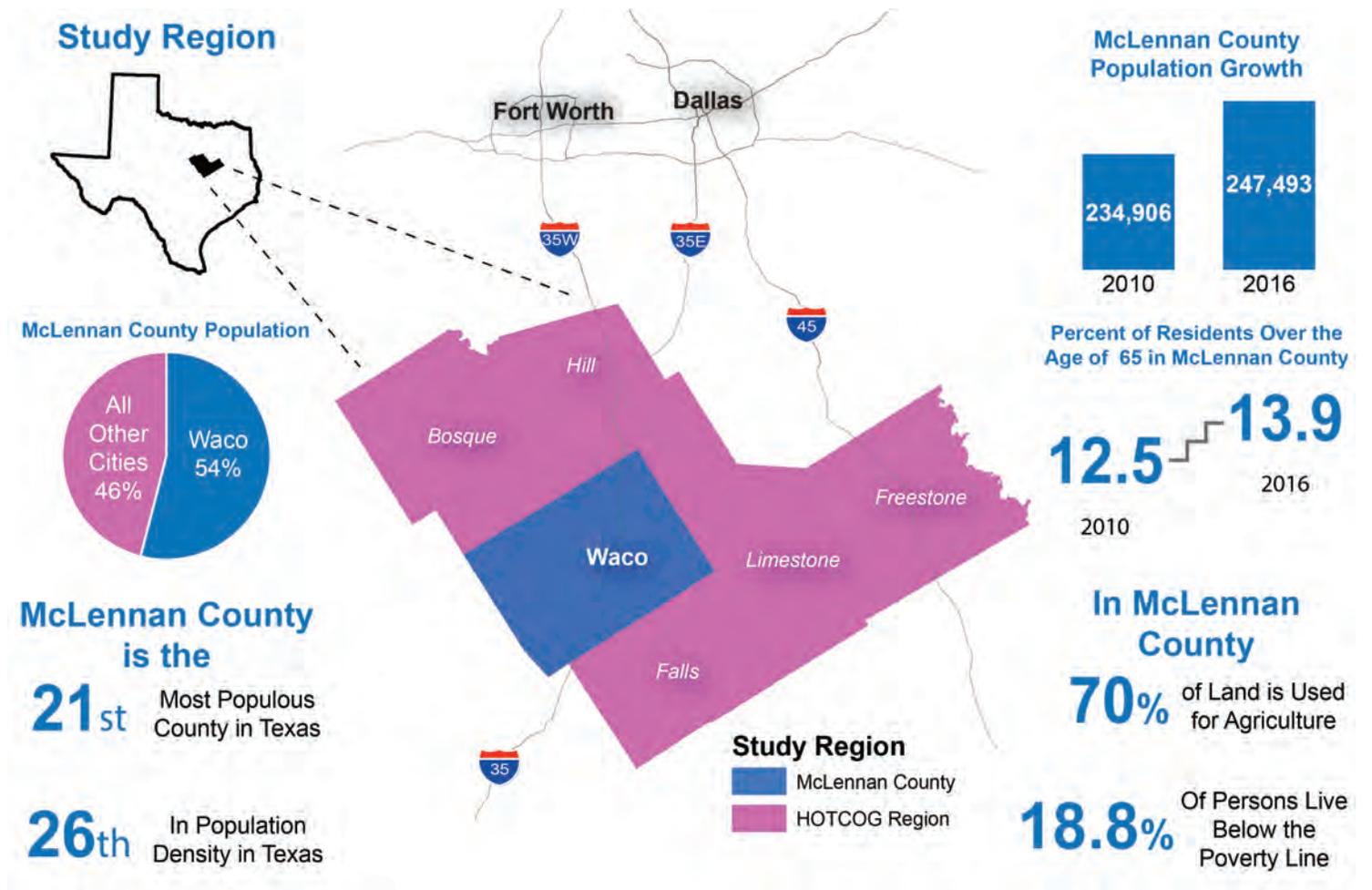
Act that requires the development of a coordinated public transit-human services transportation plan to receive funding under the Enhanced Mobility of Seniors and Individuals with Disabilities - Section 5310 program.

As of the 2016 U.S. Census Bureau American Community Survey (ACS) estimates, McLennan County has a population of 247,943, of which approximately 54 percent live in Waco, TX. McLennan County is the 21st most populous county in Texas and ranks 26th in terms of population density (persons per square mile). McLennan County is situated along the Brazos River, halfway between Austin and Dallas, and is one of six counties that make up the Heart of Texas Council of Governments. The Waco Urbanized Area acts as the hub for much of the economic activity within the Heart of Texas region, with McLennan County representing approximately 69 percent of the Heart of Texas region's population. According to US Census estimates, McLennan County experienced a 5.5 percent increase in population between 2010 and 2016, which accounted for over 90% of the Heart of Texas' regional growth over that time. As part of this growth, McLennan County experienced an increase from 12.5 to 13.9 percent of residents over the age of 65 between 2010 and 2016. Much of the growth experienced within McLennan County is occurring in the suburban and exurban areas surrounding the City of Waco. Despite this growth, 70 percent of the land in McLennan County is used for agricultural purposes, and as of the 2016 Census estimates, 18.8 percent, or 46,681 persons in McLennan County live below the federal poverty line. Of these 46,681 persons living below the federal poverty line, 72 percent, or 33,708 of them live in Waco.

McLennan County is expected to continue its growth trend. Environmental Systems Research Institute, Inc. (ESRI), an international geographic information system (GIS) software and geodatabase provider, estimates that the population will reach 262,169 by 2022. The Texas Demographic Center at the University of Texas at San Antonio estimates that

the population will reach 260,401 by 2022 (assuming the same levels of immigration as recent periods). The Texas Demographic Center further estimates a population of 275,987 by 2028. Figure 1 shows a map of McLennan County and the HOTCOG Region as well as a regional profile with demographic information.

Figure 1: McLennan County and HOTCOG Study Region



PROJECT OVERVIEW

This Study is more than just a planning document; it is a process through which McLennan County, local transit providers, the public, and other stakeholders collectively identify public transit resources and transportation needs and develop strategies and projects to address those needs and reduce barriers to coordination. Transportation service coordination is the ongoing process of transportation providers and human services agencies communicating and working together to more efficiently manage limited transportation resources.

Coordination is about building trust relationships among organizations and fostering a willingness to share power, responsibility, funding, and benefits to eliminate service duplication, deliver more cost-effective service, address service gaps, and improve information communication.

Coordination happens at federal, state, regional, and local levels, though it is most visible at the local level and can include activities such as:

- Cross training of staff;
- Workforce and equipment sharing;
- Centralized maintenance;
- Standard data collection and reporting;
- Reimagining fixed-route services;
- One-call/one-click transportation service centers;
- Coordination of alternative fuel fleet transitioning; and
- Group transit asset management plan development.

The methodology used in this Study is intended to identify opportunities for improving transit services and coordination specific to McLennan County, as well as to provide a robust framework for prioritization of projects and measuring their

performance. This process is accomplished through a series of critical steps that provide perspective and insight for the decision-making process.

Process

Gap Analysis

To set appropriate goals and develop effective strategies for the coordination of public transit services, it is imperative to first understand the transportation needs of McLennan County's residents, as well as the resources available to serve those needs. This understanding was accomplished through demographic, transit vehicle inventory, destination, and transit service analysis. The resources and needs data are aggregated and mapped using GIS tools for comparison. By observing and analyzing the resources and needs data together, the Study identifies where there are gaps in public transit services or mismatches between transportation resources and needs.

The analysis of demographics and the juxtaposition to the inventory of services helps provide the data necessary to perform a gap analysis, meaning this process reveals where services might be lacking, overlapping, or have opportunities for coordination between agencies/services.

Public Engagement

The next step in the needs assessment was stakeholder engagement and public involvement. The project team executed a public kickoff event, a public workshop, as well as a public survey and a transit provider survey, which were posted on the Waco Transit website. The project team also sent out focused emails and followed up via phone calls and in-person interviews to a stakeholder list developed in coordination with the Waco MPO. A total of 28 entities were notified of the effort and invited to participate.

Through this process, feedback was obtained from both riders and providers of transit services. This feedback helped provide not only recommendations, but also provided insight into transit users' experiences, as well as more qualitative data that is not attainable through Census or other data methods. Public engagement also provides a platform for dialogue and buy-in from both riders and providers to be more engaged in the development and provision of services. A detailed description of the public participation process used in the adoption of this study may be found in Chapter 4: Public Engagement.

Coordination Opportunities

The feedback from the engagement process was then incorporated with the preliminary findings from the data-based analyses (demographic analysis, inventory analysis, destination analysis, service analysis, etc.) and used to develop a list of coordination opportunities that are both data-driven and address the unique transit needs of the community. Combining the gap analysis findings and public feedback also helped provide sound methodology for developing prioritization of opportunities.

Prioritization & Performance Measures

The final step in developing a study that meets the short-term and long-term goals of improving the availability, quality, and efficiency of transportation services for populations with limited transportation options is to define appropriate performance measures. This is done so that the efficacy of projects and coordination efforts can be gauged and adjusted as needed over time.

The performance measures describe what the study is measuring and how. In this way changes from the baseline data can be measured and evaluated. This approach provides a method for

comparing the quality and availability of public transit services throughout McLennan County over time. The measures also help to identify where there are gaps in transit services. By monitoring performance over time, McLennan County can identify what coordination strategies and transit-improvement projects are most impactful and can adjust its priorities and strategies to establish a more coordinated and efficient public transit system, as well as use this plan to address how County level efforts tie into the HOTCOG Regionally Coordinated Transportation Plan performance measures and efforts.

Benefits/Barriers to Coordination

In addition to being required by federal and state laws, transit coordination holds many benefits, both for providers and users of transit services. For providers, benefits can include access to a wider range of funding which can help hire staff, and procure resources; increased productivity; reduced operating costs; and more efficient processes for reporting, funding applications, and data collection. For users of transit, benefits may include expanded service areas and hours of operation; a wider array of transit options; simpler connections; information that is less difficult to understand; and more affordable service. Most importantly, though, coordination improves access to goods, services, and job sites for the target populations that rely on these services.

Coordination often requires commitment and compromise from a variety of people and organizations, each with their own needs, constraints, and responsibilities. This dynamic can sometimes make it difficult for participants in the coordination-planning process to realize the benefits of coordination. This is especially true considering coordination benefits are not always enjoyed by those who sacrifice the most time and resources. For these reasons, it is crucial that the coordination-

Chapter 1: Introduction & Project Overview

planning process identifies win/win strategies and fosters a sense of comradery and teamwork among involved individuals and their agencies.

While there are many barriers to coordination, this Study aims to address unique barriers specific to public and human services providers in McLennan County. During the public and stakeholder engagement process, the public and human services providers discussed their coordination efforts and what barriers they faced when coordinating. Some of the barriers mentioned most frequently throughout the engagement process included:

- Regulatory and funding restrictions;
- Lack of drivers;
- Road conditions;
- Lack of vehicles;
- The rural environment;
- Funding for maintenance;
- Dispatching;
- Political barriers; and
- State of good repair.

Federal & State Requirements

In 2004, President Bush signed Executive Order 13330, establishing the Coordinating Council on Access and Mobility (CCAM) to “promote interagency cooperation and the establishment of appropriate mechanisms to minimize duplication and overlap of federal programs and services so that transportation-disadvantaged persons have access to more transportation services.”

In August 2005, Congress passed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which included a requirement that projects selected for funding under the New Freedom (Section 5317), Elderly Individuals and Individuals with Disabilities (Section 5310), and Job Access and Reverse Commute (JARC

– Section 5316) programs “must be derived from a locally developed, coordinated public transit-human services transportation plan” beginning in 2007.

The FTA also requires all coordinated transportation plans to include the following elements:

- An assessment of available services that identifies current transportation providers (public, private, and nonprofit);
- An assessment of transportation needs for individuals with disabilities and seniors. This assessment can be based on the experiences and perceptions of the planning partners or on more sophisticated data collection efforts, and gaps in service;
- Strategies, activities, and/or projects to address the identified gaps between current services and needs, as well as opportunities to achieve efficiencies in service delivery;
- Priorities for implementation based on resources (from multiple program sources), time, and feasibility for implementing specific strategies and/or activities identified.

Texas State policymakers passed House Bill 3588 in 2005 which requires each region in Texas to adopt a regionally coordinated transportation plan. These plans are required to identify projects that the region plans to implement in order to eliminate overlaps in service and fill existing and anticipated service gaps.

Though the coordinated transportation plan requirement only applies to communities and organizations applying for Section 5310 funding, FTA expects that other federally-funded transit programs, the Urban Transit (Section 5307) and Rural Transit (Section 5311) programs, be included in the coordination planning process and coordination activities. In addition, FTA requires that any project identified for funding in a coordinated transportation

plan, such as the HOTCOG Regionally Coordinated Transportation Plan, be included in the Statewide Transportation Improvement Program (STIP) and, for urbanized areas with populations over 50,000, in the local Transportation Improvement Program (TIP). This Study, along with the coordination activities performed during the coordination planning process, is meant to satisfy federal law under the Fixing America's Surface Transportation (FAST) Act that requires the development of a coordinated public transit-human services transportation plan to receive funding under the Enhanced Mobility of Seniors and Individuals with Disabilities - Section 5310 program, as well as the requirements set forward in Texas Sate H.B. 3588.

The following is a excerpt from the FTA Sections 5310 & 5311 Services (Elderly & Disabled):

"Funding under the Federal Transit Administration (FTA) section 5310 and 5311 provides capital grants to the state of Texas to help make available mass transportation service to meet the special needs of elderly individuals and individuals with disabilities; and to provide general public transportation to the rural areas of the region. Funds are available to private non-profit organizations and other public for-profit entities that certify to the governor that there are no existing non-profit corporations or associations in their area that already provide transportation service. Local stakeholder forums or committees plan and design the service for their local community and existing rural and/or urban transit service providers operate the service as designed by the committees. These funds are awarded directly to the transit operator who may use the funds for eligible capital expenses. They may also use the funds to contract with other transportation providers in the local area. Eligible capital expenses include but are not limited to buses, vans, or other paratransit vehicles, radios and communication equipment, vehicle shelters, and

wheelchair lifts and restraints. Other options, with the approval of TxDOT-PTN, are lease of equipment, the acquisition of transportation services under a contract lease, and preventive maintenance service or parts associated with preventive maintenance service."

Chapter 2: Inventory of Services

INTRODUCTION

The following section inventories and evaluates the existing conditions of transit services within McLennan County, which include Waco Transit System (WTS) and McLennan County Rural Transit District (MCRTD). Developing an inventory and understanding of available services is valuable outside of analyzing service performance, as it provides a vantage point to gauge participation and level of coordination. This coordination can go beyond the transit agencies and include private and non-profit transportation providers and human services agencies.

WTS operates Waco's fixed-route system using a hub-and-spoke distribution network. The system includes the following services.

- Nine urban fixed-routes;
- One rural fixed-route;
- Six Baylor University Shuttles (BUS);
- The Downtown Connect Shuttle;
- The Silo Trolley, the Airport Shuttle;
- The Evening LINK; and
- Demand Response Services.

Through an interlocal agreement, WTS and MCRTD concurrently provide rural commuter demand response services anywhere within McLennan County. WTS also provides specialized transportation services to seniors and those with disabilities within McLennan County.

FIXED-ROUTE OPERATIONS

Waco Transit

Eight of the WTS fixed-routes and the one rural commuter route are based out of and provide service through the Downtown Transit Terminal located at 319 S. 8th Street. The remaining fixed-route operates as a circulator for West Waco, the City of Hewitt, and portions of the City of Woodway and does not extend to the Downtown Transit Terminal. All WTS fixed-routes are flag-stop routes, meaning passengers may board the bus at any safe and preferable location along the route by making eye contact and flagging down the transit operator. Several routes run in conjunction with one another and serve as one bidirectional loop route. Because of the network's hub-and-spoke system, typical route frequency measures 60 minutes. The network provides accessibility to downtown and surrounding residential and commercial destinations in Waco. The rural route, with major destinations of Riesel, Marlin, Chilton, Golinda, Robinson, and Sanderson Farms, provides less frequent service on fewer days than the other fixed-routes.

Operational Characteristics

WTS urban routes generally have the same operational characteristics with some differences between routes. Table 1 provides the operational hours by route and day of service. There is no service provided on Sundays.

Table 2 provides ridership statistics by route through various lenses. The first three columns display daily (average), monthly (average), and annual (total) boardings by route. The last column provides the productivity for each route. Productivity is calculated by counting the number of passenger who board a bus every hour that the bus is in operation and

dividing by the total number of hours the bus is in service (passengers divided by number of operational hours). The boarding information was taken from the most recent data utilized in the Waco Rapid Transit Corridor Feasibility Study.

Table 2 provides valuable data at the route level, but it is important to think about the relationships between the routes and how the sum of their parts work together as a cohesive network. Several of the routes share large portions of their alignments in

Table 1: Operational Hours by Route & Day of Service

Route	Weekday	Saturday
1 - MCC/Valley Mills Drive	5:15 a.m. – 7:15 p.m.	6:15 a.m. – 8:15 p.m.
2 - Valley Mills Drive/MCC	6:15 a.m. – 7:15 p.m.	7:15 a.m. – 8:15 p.m.
3 - VA/Colcord	6:15 a.m. – 7:15 p.m.	7:15 a.m. – 8:15 p.m.
4 - Colcord/VA	6:15 a.m. – 7:15 p.m.	7:15 a.m. – 8:15 p.m.
5 - TSTC/Bellmead	6:15 a.m. – 7:15 p.m.	7:15 a.m. – 8:15 p.m.
6 - Highway 6 Loop	6:45 a.m. – 7:15 p.m.	7:45 a.m. – 8:15 p.m.
7 - East Waco (Odd and Even Hours)	5:15 a.m. – 7:15 p.m.	6:15 a.m. – 8:15 p.m.
8 - Bosque & Sanger	6:15 a.m. – 7:15 p.m.	7:15 a.m. – 8:15 p.m.
9 - South Terrace	5:15 a.m. – 7:15 p.m.	6:15 a.m. – 8:15 p.m.
10 - Waco, Marlin, & Robinson	5:50 a.m. – 6:30 p.m.	No Service

Table 2: Ridership by Route

Route	Avg. Daily Boardings	Avg. Monthly Boardings	Total Annual Boardings	Productivity (Boardings/Revenue Hr.)
1 - MCC/Valley Mills Drive	228	5,886	70,627	16.60
2 - Valley Mills Drive/MCC	233	6,012	72,148	18.16
3 - VA/Colcord	264	6,804	81,646	20.54
4 - Colcord/VA	177	4,567	54,803	13.79
5 - TSTC/Bellmead	225	5,806	69,670	17.54
6 - Highway 6 Loop	72	1,853	22,241	6.02
7 - East Waco	200	5,153	61,833	14.52
8 - Bosque & Sanger	217	5,605	67,255	16.93
9 - South Terrace	257	6,634	79,610	18.69
10 - Waco, Marlin, & Robinson	65	1,676	20,107	7.96
Total	1,937	49,995	599,940	15.08

Chapter 2: Inventory of Services

reverse direction and function as one bidirectional route. These routes should be evaluated in the same manner they function for passengers. Table 3 is an optimized version of Table 2 that combines routes that work together.

Evaluating the routes in this manner generates different results. Route 3 in conjunction with Route 4 is still one of the most productive routes, but the difference is minor among the top performing routes. Route 9 is the most productive route.

Ridership Analysis

To develop an understanding of existing travel patterns and potential opportunities to improve connectivity for the Waco Transit fixed-route bus network, boarding and alighting data was analyzed at the stop, segment, and network level. The purpose of this analysis was to evaluate ridership trends and make observations about route performance and what these trends mean at the route and network level. Boarding and alighting data collection efforts were executed in 2016 and 2017 by WTS. The most recent 2017 boarding and alighting survey recorded

counts of typical weekday transit riders on the fixed-route system which captured a representative sample of boarding and alighting counts for each route. This survey was conducted from October 2-4, 2017 which was a non-holiday, typical weekday (Monday, Tuesday, and Wednesday) during the school year. This data, along with data from the more robust 2016 survey conducted by WTS, was expanded to a universe of total estimated boarding and alighting movements using the monthly ridership by route derived from fare box data provided by WTS.

Methodology

For this analysis, boarding and alighting data was combined to represent 'boarding activity.' As mentioned previously, WTS operates a flag-stop system which means that passengers can board and alight anywhere along the route where it is deemed safe to do so. This has some unintended impacts that were considered when developing this methodology. To not mislabel a productive segment or location as unproductive because passengers are accessing it at different points, boarding activity was aggregated at quarter-mile segments for the whole system. Doing

Table 3: Revision of Ridership by Route

Route	Avg. Daily Boardings	Avg. Monthly Boardings	Total Annual Boardings	Productivity (Boardings/Revenue Hr.)
1/2 - MCC/Valley Mills Drive	461	11,898	142,775	17.35
3/4 - VA/Colcord	441	11,371	136,449	17.17
5 - TSTC/Bellmead	225	5,806	69,670	17.54
6 - Highway 6 Loop	72	1,853	22,241	6.02
7 - East Waco	200	5,153	61,833	14.52
8 - Bosque & Sanger	217	5,605	67,255	16.93
9 - South Terrace	257	6,634	79,610	18.69
10 - Waco, Marlin, & Robinson	65	1,676	20,107	7.96
Total	1,937	49,995	599,940	15.08

this resulted in a more cohesive visualization of the ridership and enabled analysis to occur at the segment level instead of at the ‘checkered’ stop level. Analysis at the segment level provides more real-world opportunities to reimagine service in a way that improves connectivity and system efficiency. Note that with this method there still may be small segments that display low boarding activity that the analysis does not specifically address as the segment may serve as a connection between two productive segments.

When combining the boarding and alighting data sets, a weight was applied to the 2016 data as it represented a much larger sample size than the 2017 data. A daily ridership score using the index classifications in Table 4 was applied at the segment level to identify the level of productivity associated with each route segment.

Using this index score three classifications were developed to enable the analysis to ‘smooth’ scores

Table 4: Daily Ridership Score, Index Classification

Index	Ridership	Score
0 =	0 boarding activities	very low
1 =	5-10 boarding activities	low
2 =	10-20 boarding activities	moderate
3 =	20-25 boarding activities	high
4 =	More than 25 boarding activities	very high

Table 5: Productivity Classification

Classification	Index	Ridership	Score
Unproductive	0 - 1	0-10 boarding activities	Very low - low
Moderate	2	10-20 boarding activities	Moderate
Productive	3 - 4	20-25 or more boarding activities	High – very high

along segments with varying scores and provide the Study with continuous segments that represent real-world conditions. Table 5 provides the general guidelines used as classifications during the smoothing process.

Due to the nature of the hub-and-spoke system, the Downtown Transfer Center represents the largest volume of boarding activity since this is where most of the transfer activity occurs. Segments and stops surrounding the transfer center were not included in the analysis because its importance is known, and it could negatively impact the distribution of the index classifications for the ridership score. Note that several routes work in tandem with one another forming bidirectional loops to avoid forcing passengers to ride around the entire loop to arrive at their desired destination. Ridership and performance for these routes are evaluated together as one.

Network

The WTS fixed-route system design works to provide the maximum amount of coverage for the service area to connect passengers to Downtown Waco. To travel to destinations throughout the service area, passengers must rely on transfers between the routes that primarily occur at the Downtown Transit Terminal. There are other locations throughout the system besides the Waco Transit Terminal where transfers occur such as the Richland Mall, but the schedules are not built around these points. This type of system can often lead to extremely long travel times and unnecessary out-of-direction travel.

Chapter 2: Inventory of Services

Figure 2: WTS Network Route Performance

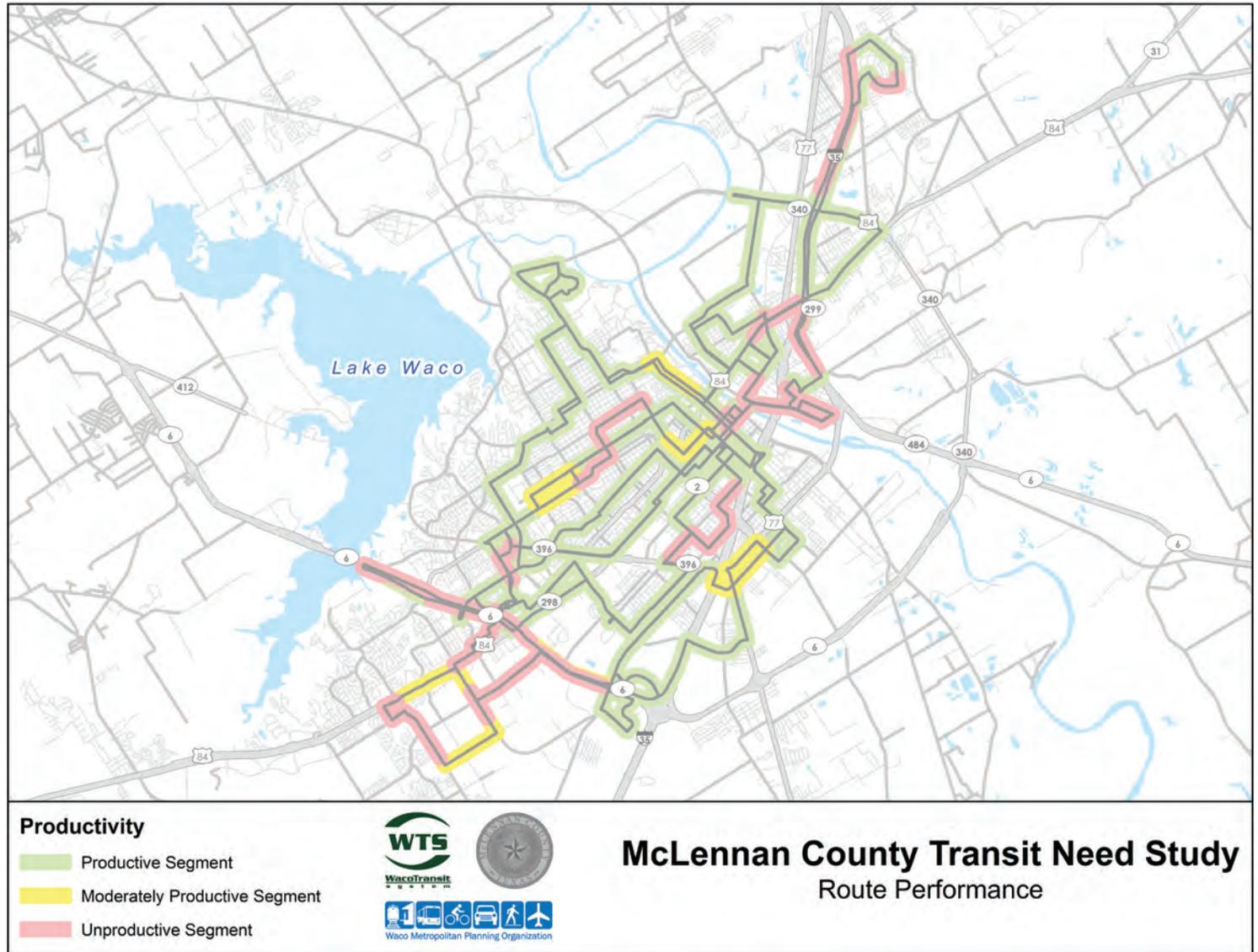


Figure 2 reveals the segment productivity classifications throughout the network as a result of the analysis. As explained in the ridership analysis methodology, it is important not to focus on any one segment that may be under performing but rather look at the continuity of the segments and how they perform at the system level.

The unproductive segments displayed in the map at the network level will be analyzed in more depth at the route level in following sections. At this level it is important to focus on the larger areas of low boarding activity that can be found at various locations. The first location of interest is in southwest Waco where there is low residential density and many industrial developments. Most of the unproductive segments can be found along highway corridors.

The next area with unproductive segments can be found in central Waco where segments range from moderate to unproductive. These segments provide connections to productive segments further out in the system from the productive downtown service area. It is important to determine if there are opportunities to efficiently connect these productive areas in ways that can increase connectivity, reduce travel times, and improve service efficiency.

The final area to note at the network level is the area north of the Brazos River. This area has many unproductive segments that would benefit from a realignment of all service routes in the area to ensure all productive segments maintain service and that routes north of the river complement one another.

Routes 1 & 2

Routes 1 and 2 operate together as a bidirectional loop and are two of the better performing routes in the Waco Transit System. Route 1 operates in a loop pattern in the counter-clockwise direction and Route 2 operates in a loop pattern in the clockwise direction. The routes serve McLennan Community College, Cameron Park Zoo, and the retail center at Bosque Boulevard and Valley Mills Drive. Table 6 shows the destinations along these two routes where most daily boarding activity occurs, excluding the area surrounding the WTC.

Again, these routes experience relatively high amounts of boarding activity compared to other

routes in the system. There are few unproductive segments along these routes, indicating that it succeeds in providing an attractive service to key destinations. Considering the two routes work in conjunction with one another as a bi-directional loop, the route avoids some of the issues related to typical single direction loop routes (e.g. long wait and travel times, particularly when traveling to destinations in the reverse direction of the loop). The only segments along the routes that may be considered unproductive are Route 1 segments providing access to the Cameron Park Zoo. Figure 3 shows the segment productivity along the two routes.

Routes 3 & 4

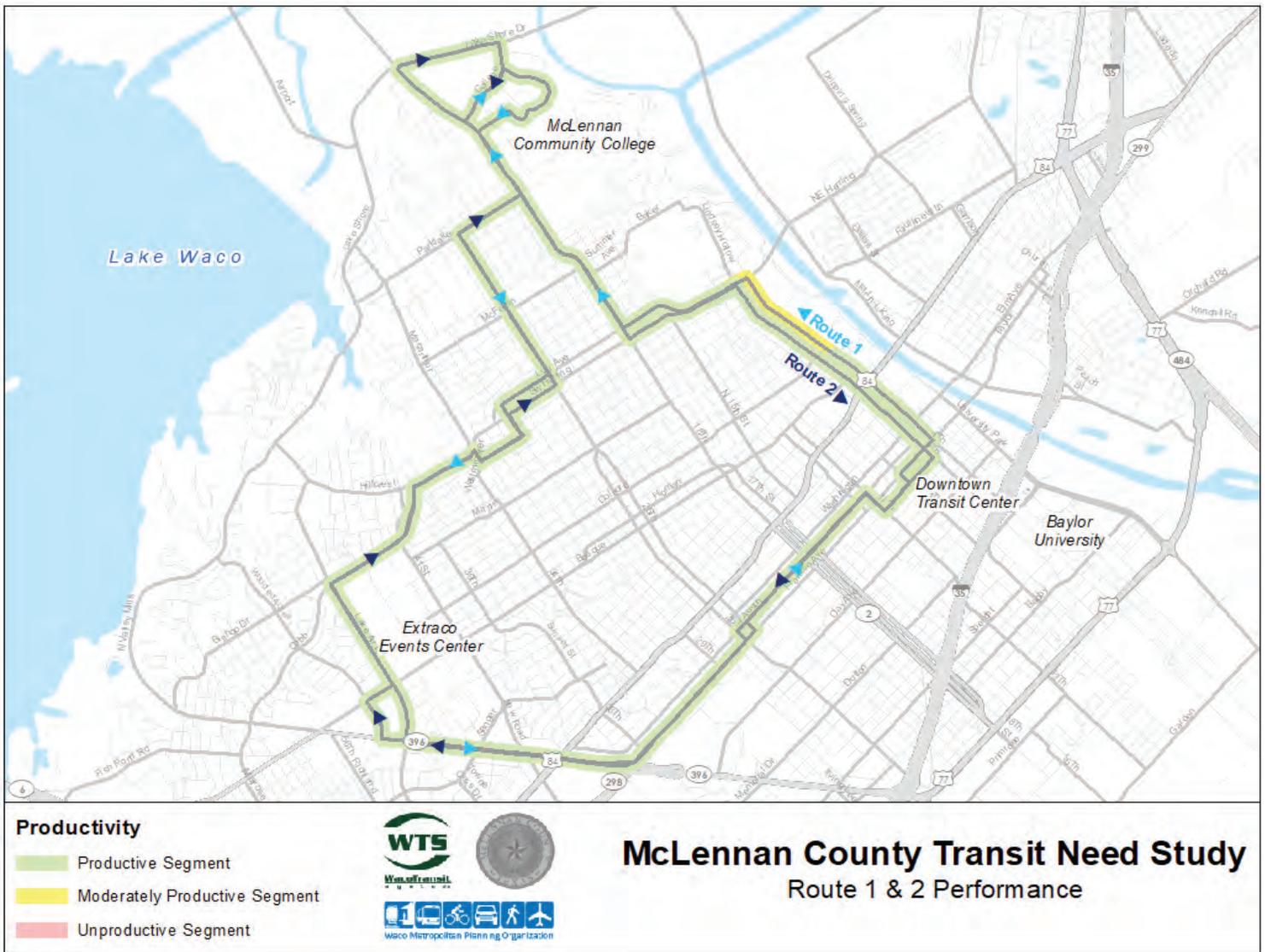
Routes 3 and 4 work together to form a bidirectional loop route that operates throughout central Waco. Route 3 operates in a loop pattern in the clockwise direction and is the most productive route of the system. Route 4 operates in a loop pattern in the counter-clockwise direction. The highest performing segments along these routes are associated with major retail locations such as Richland Mall, the HEB store located at Wooded Acres Drive and Bosque Boulevard and various other businesses along New Road and South Valley Mills Drive. High ridership can also be found along segments that operate on long continuous segments where service is provided in both directions and is easy to understand. Table 7 shows the destinations along Routes 3 and 4 experiencing the most daily boarding activity.

Table 6: Routes 1 & 2

Location	Ridership	Boardings	Alightings
McLennan Community College	50.4	37.8	12.6
Bosque Blvd. & Wooded Acres Drive (retail center)	42.95	23.30	19.64
Franklin Ave. & 35th Street	29.75	15.75	14.0

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Figure 3: Routes 1 & 2 Performance



The segments with moderate boarding activity that currently provides service between 42nd Street and 34th Street using the La Colcord Avenue and Bosque Boulevard couplet may provide an opportunity to consider consolidation of the route. In the current configuration, passengers may have a short walk to the bus route in one direction and a longer approach in the other direction. More in-depth surveying of the passengers and interviews from the operators

may reveal that most of the boarding activity that occurs along this segment may be better served by only operating on one of the corridors as opposed to the couplet.

There are two areas with severe to low boarding activity. The first area is the segment where Route 3 operates along Wooded Acres and Richland Drive between North Valley Mills Drive and Sanger Avenue.

Route 4 operates along Lake Air Drive through this segment and experiences more boarding activity. This presents another opportunity to consolidate service and provide bidirectional service along one segment as opposed to operating along a couplet. The second area where there is low boarding activity is where the two routes operate along Dutton Avenue and then Route 3 splits from Route 4 and provides service along South 26th Street, Speight Avenue, South 18th Street and back to Dutton Avenue. There is one productive segment in this area along Circle Rd. but no other areas that experience robust boarding activity. These findings indicate that opportunities may exist to improve services through this area.

These two routes are some of the more productive and effective routes in the system providing good coverage and a good distribution of boarding activity along their alignments. Figure 4 shows segment productivity for Routes 3 & 4. As is mentioned in the methodology explanation, many of the moderate to low boarding activity segments associated with this route may be a product of connecting productive segments together, and there may be

few opportunities for a reconfiguration of service. Any proposals to reconfigure these routes should be done with care to ensure that all portions of this route remain covered by bus service so as not to lose existing passengers.

Route 5

Route 5 serves two key functions in East Waco. The first is to provide connectivity from the Texas State Technical College (TSTC) to the rest of the system and Downtown Waco. The second is to compliment Route 7 and increase coverage throughout East Waco. The highest boarding activity segments along this route are shown in Table 8.

Most of the route has moderate boarding activity, but there is one segment along the west side of I-35 that has low to very low boarding activity, highlighted in red in Figure 5. East Waco is a geographically challenging area to serve due to the many highways that bisect the area. There are cases where the route needs to travel along the highway frontage roads to provide connectivity for the service area. Removing service from these highway segments should be considered as they are not pedestrian-friendly and provide little access.

Table 7: Routes 3 & 4

Location	Ridership	Boardings	Alightings
Walmart at New Road and Franklin Avenue	66.93	36.37	30.55
Retail center at New Road and Franklin Avenue	54.9	26.1	28.8
Richland Mall	41.03	16.25	24.78

Table 8: Route 5

Location	Ridership	Boardings	Alightings
Landing and Brazos Village Apartment Complexes	31.11	11.8	19.31
Industrial Boulevard and I-35	29.14	15.29	13.85
Texas State Technical College	28.55	12.35	16.2

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Figure 4: Routes 3 & 4 Performance

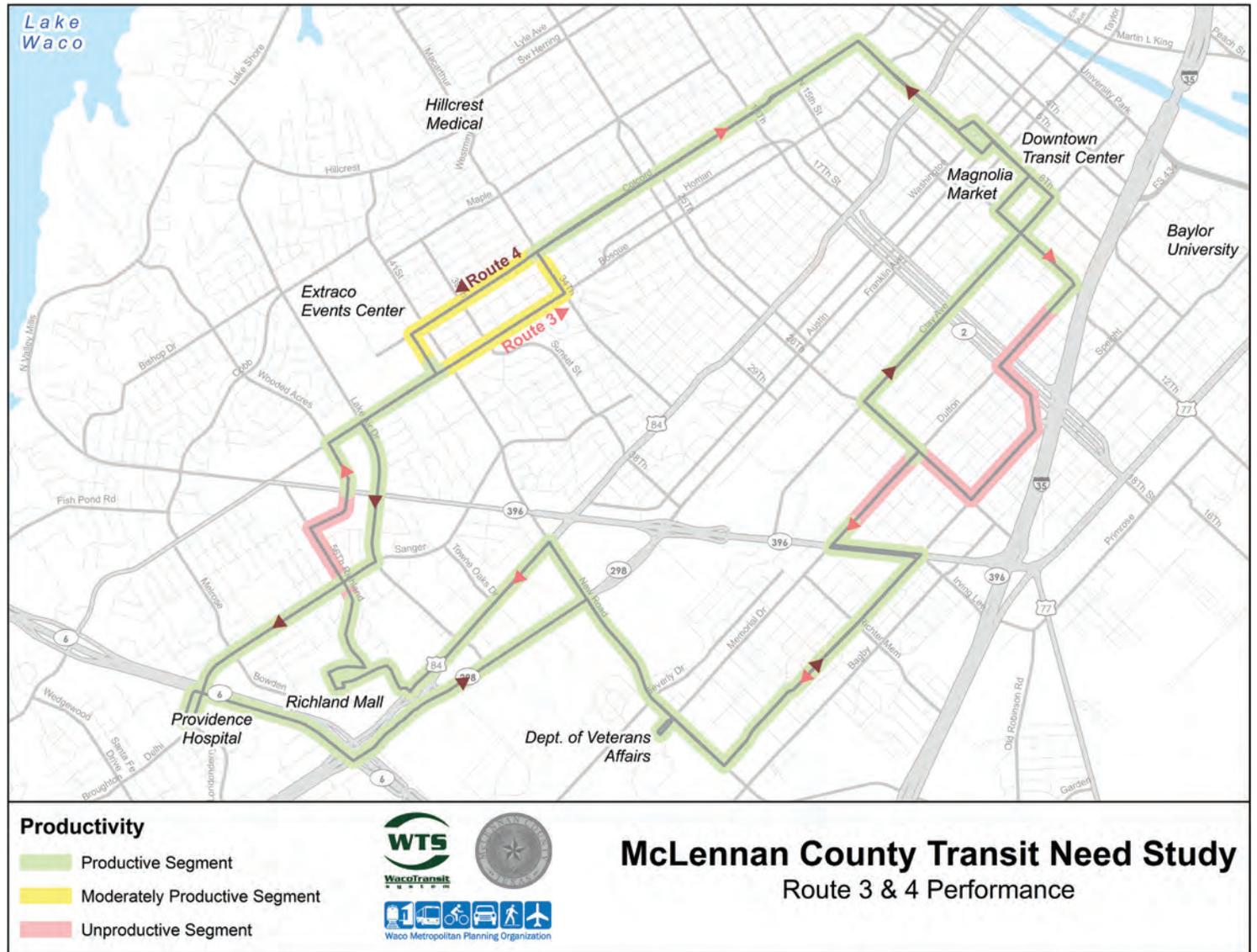
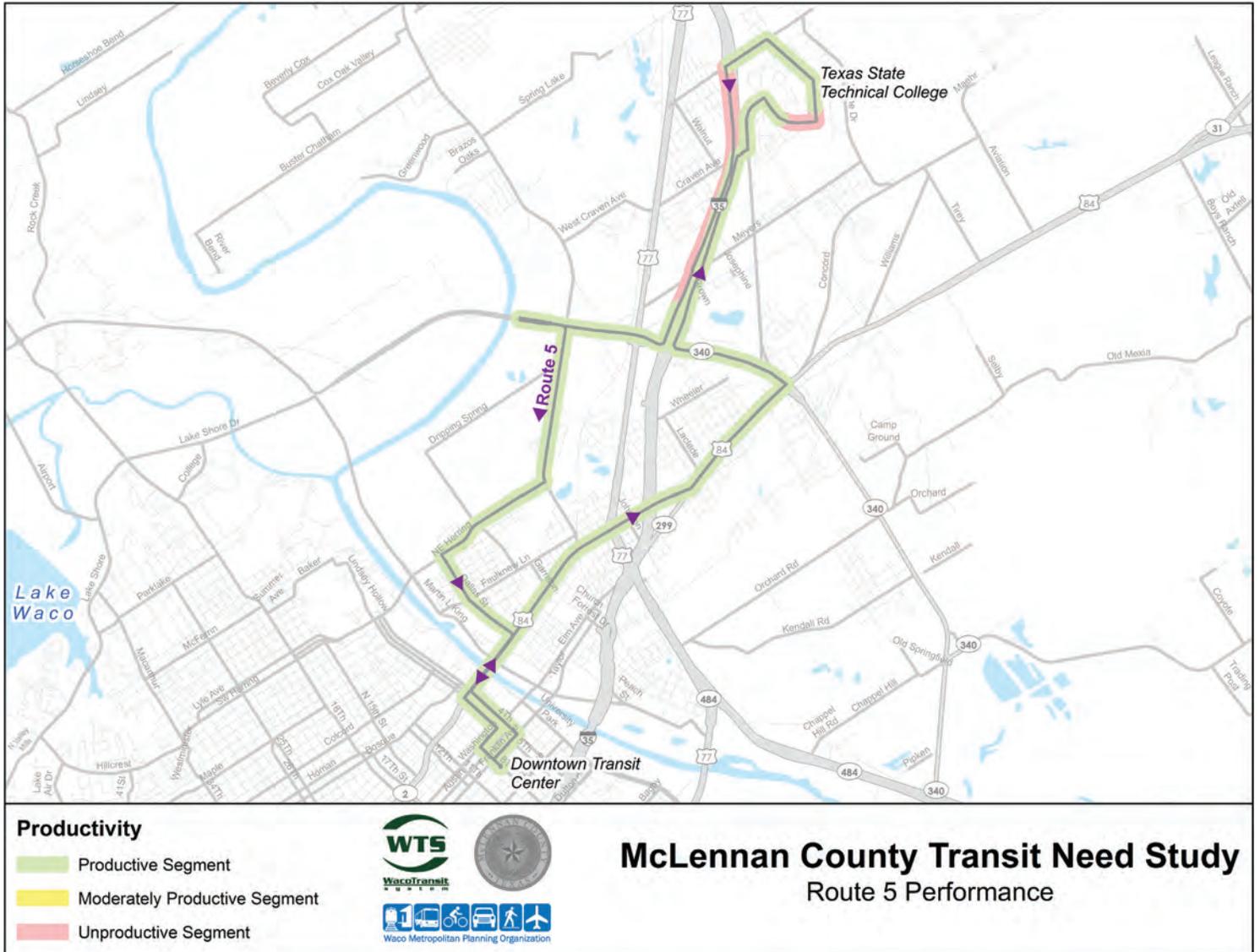


Figure 5: Route 5 Performance



Route 5 has good ridership and potential for improvement if service is evaluated in conjunction with Route 7. Evaluating the routes together to determine how to realign service in a way that each route continues to provide coverage for the existing productive segments and simplifies service so that the two routes complement each other making service easier to use for existing and future passengers. Figure 5 shows segment productivity for Route 5.

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Route 6

Route 6 is the lowest performing urban fixed-route (in terms of boarding activity) and operates as a single-direction loop circulator. Major destinations served by the route include the Central Texas Marketplace, Baylor Scott and White Medical Center, Richland Mall, Midway High School, and the businesses/employment center located in West Waco—particularly along Texas Central Parkway. Route 6 is the only route that does not come to the intermodal transit center downtown so users must make a transfer to access other parts of the city. Table 9 shows the locations along the route where there is the most daily boarding activity.

The Central Texas Marketplace location includes several segments along Marketplace Drive north of the retail center, all of which experience relatively high ridership. The Retreat at Central Texas Marketplace, which is a large apartment complex, and a hotel are also served here. This area and the Baylor Scott and White Medical Center are major activity areas for this route. Any reconfigurations to the service should consider these as key destinations and should optimize the stop locations and routing through these facilities.

Outside of the area near Central Texas Marketplace, many concurring segments along this route experience moderate-to-no boarding activity. Segments of unproductiveness include the routing along SH 6 heading northwest from US 84 and the two approaches (along US 84 and Imperial Drive) to the loop in West Waco from SH 6. While there

are some productive segments along this route, the approaches to these locations are often long and experience little other boarding activity. The single-direction loop configuration of this route can also lead to long travel and wait times as buses must circulate the entire route, which takes 50 minutes to run, before returning to a location. Figure 6 shows segment productivity for Route 6.

Reconfiguration of this route could include more direct services to the few priority destinations along the route and removing portions of the route that run along SH 6. Highways do not provide safe conditions for boarding activity and reduce opportunities for activity if the bus is on that roadway. Currently, SH6 between US 84 and IH-35 has been identified for a redesign, which may present an opportunity to better accommodate transit and pedestrian modes. Another approach to improving service in the area may be to coordinate with any major employee centers in west Waco, the Retirement and Health Care Center along SH 6, and/or other facilities whose employees/customers utilize transit frequently to provide limited or demand response services only at specific times based around their schedules.

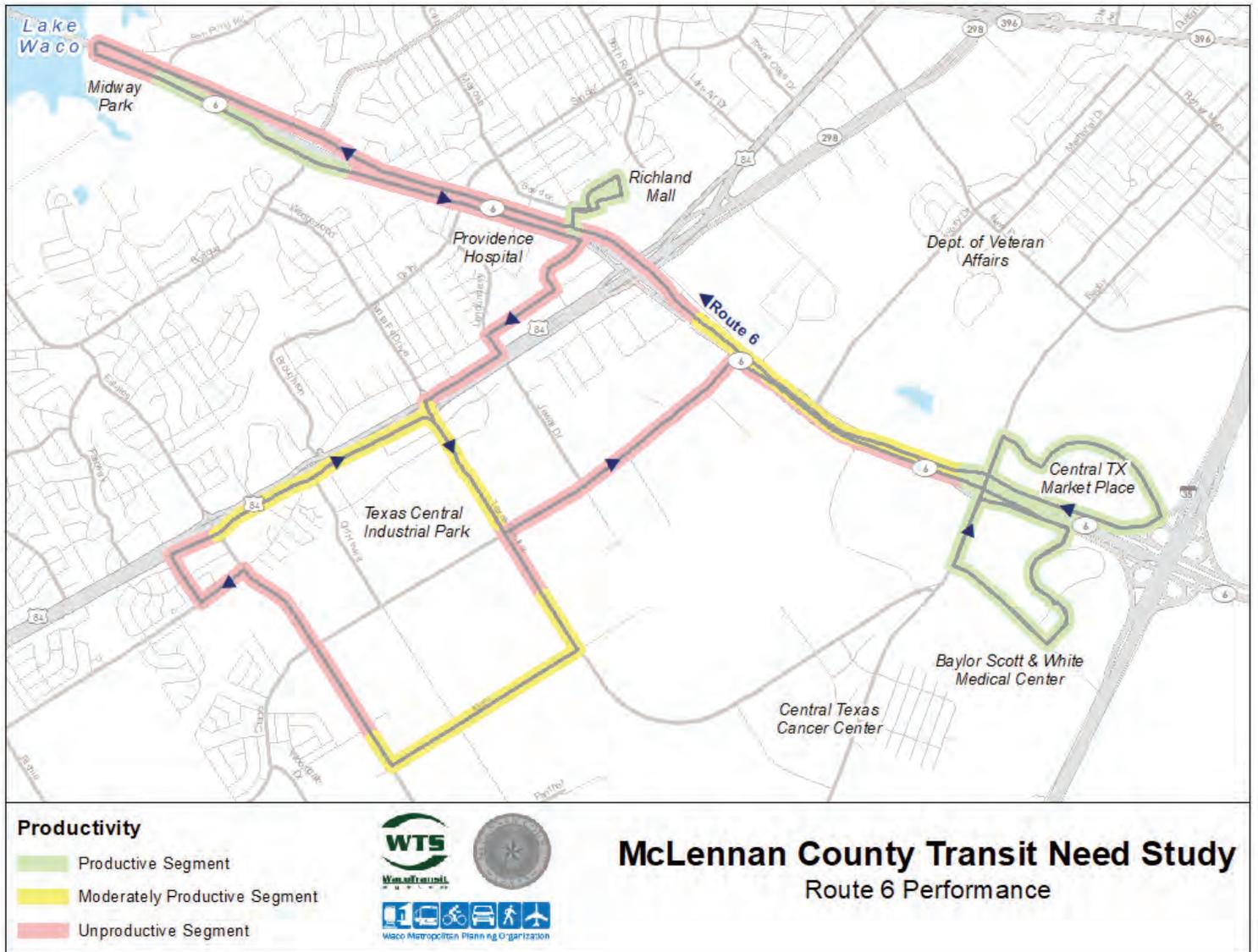
Route 7

Route 7 acts as two circulator routes that operate in opposite directions on odd and even hours and provide coverage throughout East Waco. This route provides direct access to essential grocery and retail shopping for neighborhoods throughout East Waco. The highest ridership is associated with the residential areas and the big box retail destinations

Table 9: Route 6

Location	Ridership	Boardings	Alightings
Central TX Marketplace	34.31	14.06	20.25
US 84 - .25 miles west of TX Central Parkway	33.75	-	33.75
Ridgecrest Retirement and Health Care	22.5	22.5	-

Figure 6: Route 6 Performance



McLennan County Transit Need Study
Route 6 Performance

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Table 10: Route 7

Location	Ridership	Boardings	Alightings
Wheeler Street and I-35	88.2	50.4	37.8
McLennan County Courthouse	79.04	-	79.04
East Waco Junior High School	60.9	4.2	56.7

Table 11: Route 8

Location	Ridership	Boardings	Alightings
Richland Mall	39.26	18.2	21.06
Bosque Boulevard at Lake Air Drive (near HEB)	32.31	15.21	17.1
Bosque Boulevard & North 34th Street	29.25	5.85	23.4

that the route provides connectivity to. Specific locations with the highest boarding activity are shown in Table 10.

Several low boarding activity segments are located along major highways that bisect the Route 7 service area. Similar to Route 5, there are cases where the route needs to travel along highway frontage roads to provide connectivity for the service area. Again, the segments running along the highways should be considered for removal, as they are not pedestrian-friendly and provide little access. The other main area of concern for this route is the loop that operates along MLK Jr. Boulevard, Spring Street, East 11th Street, and East 4th Streets. This is an area made up of segments with little-to-no boarding activity serving a sparsely populated area. There are some pockets of student housing in this area, but the ridership data would indicate that they are not utilizing Route 7 due to the infrequent service or that the enhanced pedestrian facilities provide a more direct and timely solution traveling to campus.

This route could benefit from a reimagined concept that explored how to provide service to the area

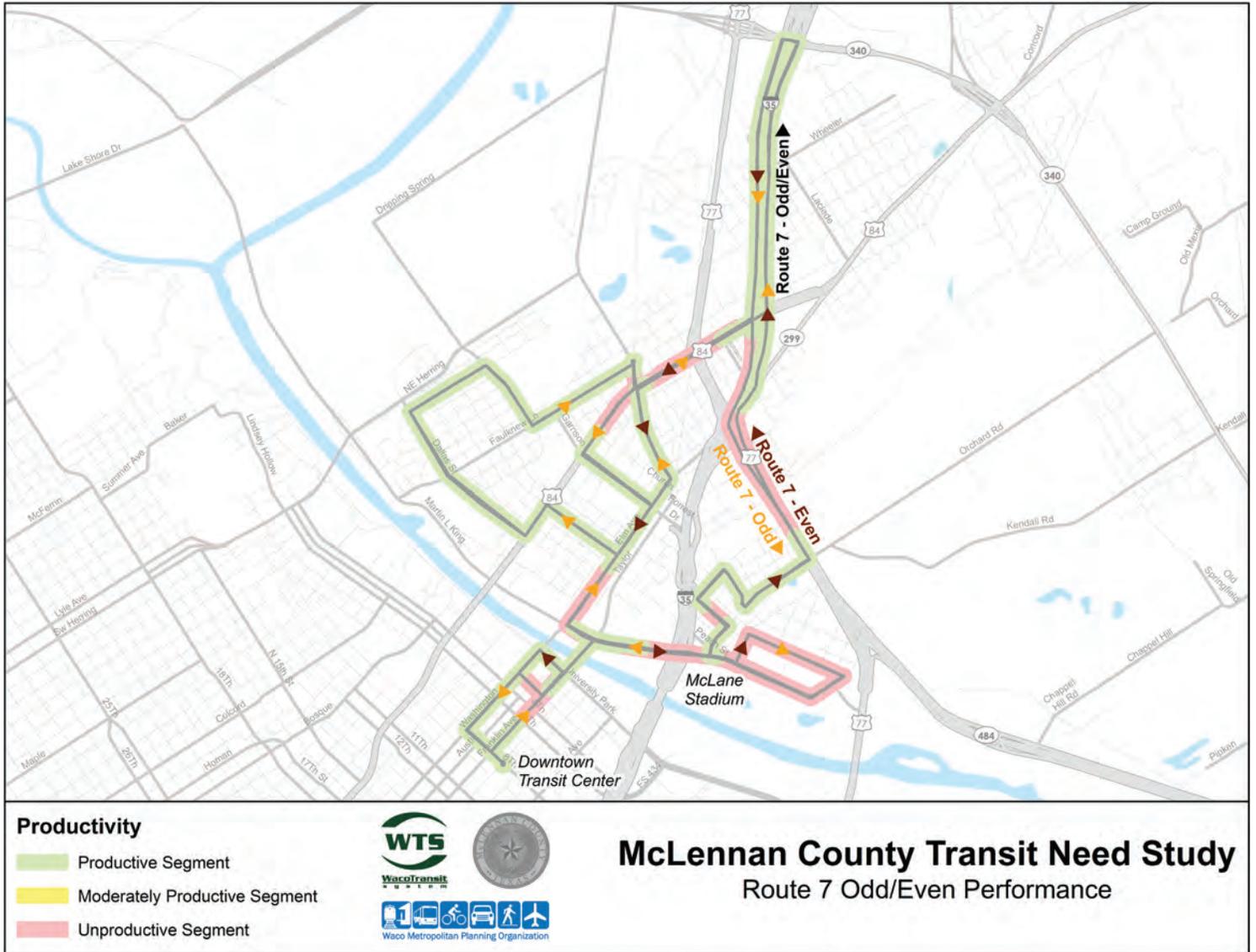
north of the river that simultaneously includes Route 5. Eliminating the odd and even hour service and implementing a more straightforward and simple route alignment could make the service more attractive to nearby residents. Figure 7 shows the segment productivity for Route 7.

Route 8

Route 8 is a loop route providing service from the Waco Transit Center to Richland Mall and experiences the sixth most daily boarding activity compared to other routes. Outside of the Richland Mall, the route provides service to the Extraco Coliseum, Waco High School, Crestview Park and Elementary School, and the large retail center at the intersection of Bosque Boulevard and North Valley Mills Drive. Table 11 shows the destinations along the route where most daily boarding/alighting activity occurs.

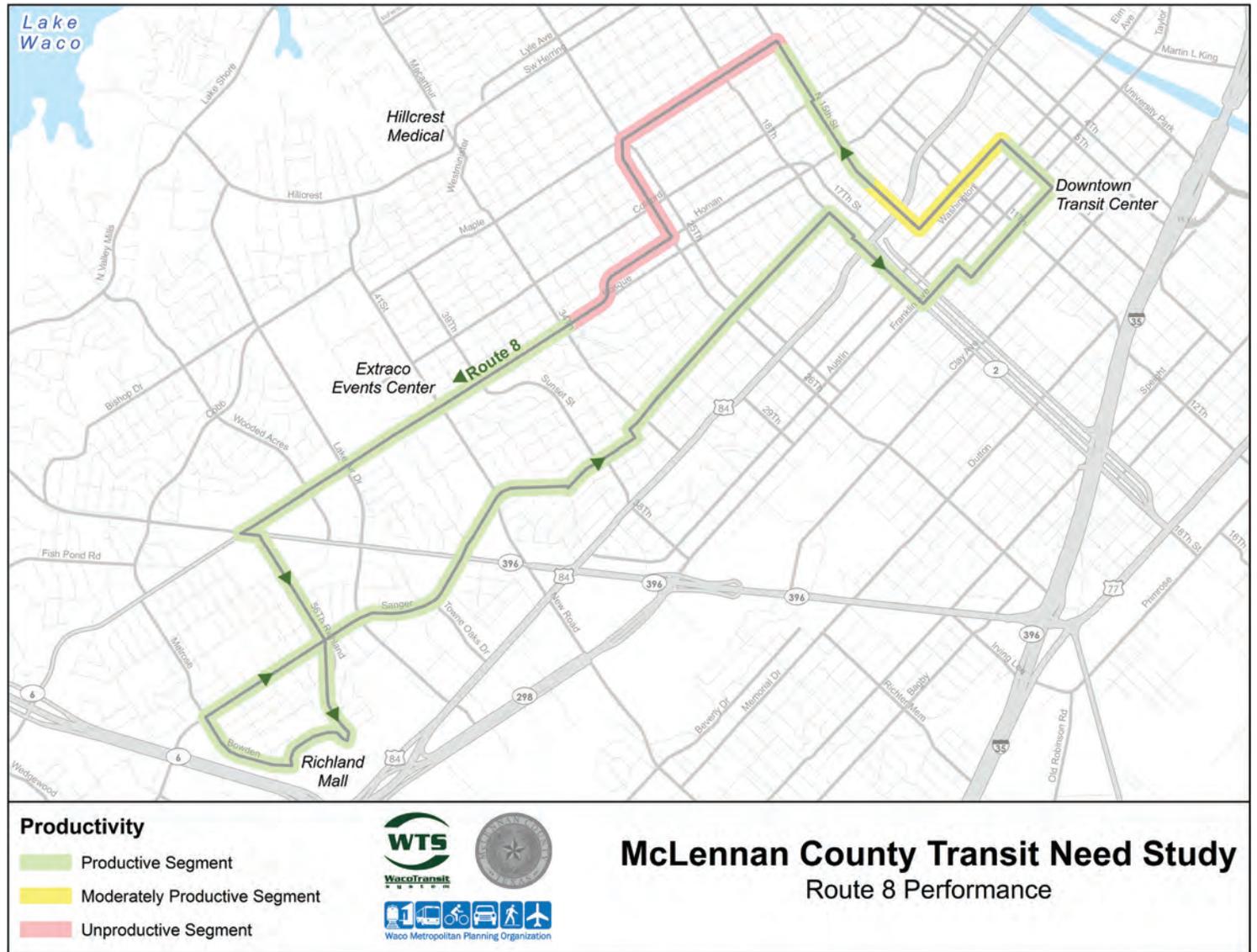
Note that the areas surrounding Richland Mall and the Bosque Boulevard/Lake Air Drive intersection also experience similar high levels of activity, specifically the area between Richland Mall and the Six West Medical Center and the retail center at Bosque Boulevard and North Valley Mills Drive.

Figure 7: Route 7 Performance



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Figure 8: Route 8 Performance



In general, there is relatively high boarding activity along most of the route. Only the portion of the route along Maple Avenue and North 26th Street connecting to Bosque Boulevard appears to be unproductive compared to other route segments. There are few major trip generators along this portion of the route outside of a Waco High School and Elementary School. The portion of the route connecting the WTC to North 15th Street on the

north side of US 84 could be considered moderately unproductive; however, since the route starts at the Downtown Transit Terminal, there may be few other routing alternatives to consider for the route to connect to its major destinations. Figure 8 shows the segment productivity for Route 8.

The configuration of the route as a single direction loop can make it difficult for transit riders attempting

to travel in the opposite direction of the loop, as they would have to ride around the loop to get to their destination. For example, if somebody boards near Bosque Boulevard and North 34th Street and is dropped off at Richland Mall (about a 3-mile trip), that individual would have to travel all the way back to the WTC and around the loop to get back to where they were picked up (over a 9-mile trip). The different sides of the loop do not run close enough to one another to make it an easy walk from one side of the loop to the other. Using the previous example, a person trying to get back to Bosque Boulevard and North 34th Street from Richland Mall may consider getting off at the Morrow Avenue and North 36th Street, but it is a 0.5-mile walk between stops and does not consider the additional walk to their destination.

Route 9

Route 9 is one of Waco Transit’s highest performing routes (see Figure 9) and operates as both a bidirectional and loop route at different segments along its alignment. The highest ridership along the route is associated with the many retail destinations it serves such as the HEB and surrounding retail located at Bagby Avenue and South Valley Mills Drive. Other high boarding activity occurs throughout Downtown Waco, at 12th Street and Gurley Lane where there is a significant amount of affordable housing at the South Terrace Homes complex and at Central Texas Marketplace where there are many retail destinations and connections are made with Route 9 (Table 12).

Table 12: Route 9

Location	Ridership	Boardings	Alightings
Central Texas Marketplace	79.15	34.17	44.98
Bagby Avenue and Nelva Street	44.1	25.2	18.9
The Residence at Central Texas Marketplace	37.8	18.9	18.9

There is one area that has three segments with moderate boarding activity that may provide an opportunity to consider consolidation of the route that currently travels through the area using the La Salle Avenue and Primrose Drive couplet. In the current configuration, passengers may have a short walk to the bus route in one direction and a longer approach in the other direction. More in-depth surveying of the passengers and interviews from the operators may reveal that most of the boarding activity that occurs along this segment may be served more efficiently only operating on one of the corridors as opposed to the couplet.

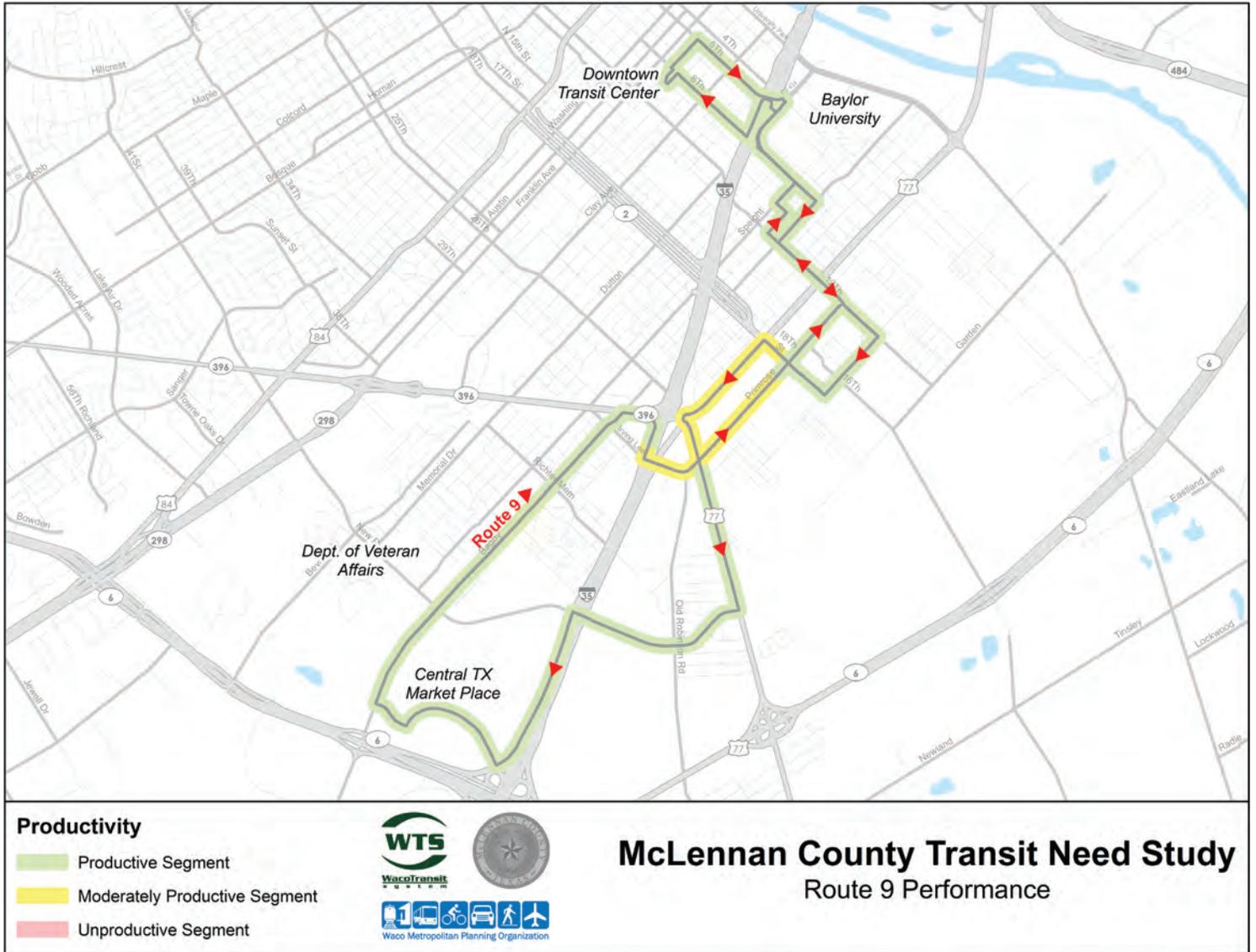
While this route has many couplets and operates in a loop for a large portion of the route, which can make service confusing or inconvenient, it does provide good coverage and has a good distribution of boarding activity along its alignment. Any reconfiguration of service should be done with care to ensure that all portions of this route remain covered by bus service to not lose existing passengers.

Ridership Analysis Conclusion

The ridership segment analysis revealed many valuable findings at the route and system level. These findings informed the next steps in the Study and provided support for some of the coordination opportunities that will directly improve transit services for the fixed-route urban system and indirectly benefit transportation services for the entire service area.

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Figure 9: Route 9 Performance



Baylor Shuttles

The Baylor University Shuttle (BUS) is a fixed-route transportation system operated by WTS in conjunction with the Baylor University Division of Operations and Facilities. BUS currently provides six shuttles (Green, Blue, Red, Silver, Gold, Gameday) which serve and connect the main campus with surrounding residential and commercial activity centers. Students, guests, and faculty are provided service at no cost and encouraged to ride BUS as it reduces vehicular congestion and parking circulation, as well as increases access to campus events. The gameday shuttle offers services for basketball and football games. Shuttles for football games begin three hours prior to kick-off and end service an hour after the game. Basketball shuttles begin one hour prior to tip-off and continue until one hour after the game. Table 13 shows BUS operating characteristics. BUS also provides an “After Hours Route” which runs Monday-Thursday from 6:30 pm to 1:30 am. The service is split into two separate routes; one covering the main campus and one that connects to adjacent university buildings and student residences.

Key destinations for this service include:

- Truett Seminary
- Moody Library
- East Village Parking Garage
- University Parks Apartments
- Oso Verde & Domain Apartments
- Ferrell Center

Table 13: Baylor Shuttle Characteristics

Service Characteristics	
Frequency	10 - 15 minutes
Weekday Span	7:25 am - 5:25 pm
Saturday Span	No Service
Days of Week	Monday - Friday
Cost	Free Service

Downtown Connect

The recently rebranded Downtown Connect (previously the Downtown Area Shuttle – DASH) is a quasi-public service that provides a different type of service from the traditional fixed-route bus service. It serves as a one-way loop operating on weekdays throughout the Baylor academic year. The shuttle’s primary purpose is to increase connectivity between the Baylor campus and Downtown Waco and provides 15-minute express frequencies. Like the main fixed-route system, the Downtown Connect is a flag-stop service mixed with fixed stop locations. Table 14 shows Downtown Connect operating characteristics.

Key Destinations for this service include:

- Baylor University
- Magnolia Market
- Heritage Quarter Apartments
- McLennan County Courthouse
- Downtown Convention Center

Table 14: Downtown Connect Characteristics

Service Characteristics	
Frequency	15 minutes
Weekday Span	7:25 am - 10:25 am & 1:25 pm - 4:25 pm
Saturday Span	No Service
Days of Week	Monday - Friday
Cost	Free Service

Silo Trolley

The Silo Trolley is a privately funded service that provides similar service around Downtown Waco as the Downtown Connect does. Providing patrons accessibility to various destinations such as shopping, dining, art venues, and park-and-rides in

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the downtown area, the Silo Trolley operates as a circulator route in a clockwise direction. The trolley is a flag-stop route. Parking to access the trolley is free and located near the Downtown Transit Terminal. Table 15 shows Silo Trolley operating characteristics.

Key Destinations for this service include:

- Balcones Distilling
- Veteran’s Affairs Office
- Austin Avenue Boutiques and Shops
- Magnolia Market
- 4th Street Shops and Bars
- 6th Street Dining, Shops, and Bars
- Downtown Convention Center

Table 15: Silo Trolley Characteristics

Service Characteristics	
Frequency	15 - 20 minutes
Weekday Span	9:00 am - 6:30 pm
Saturday Span	9:00 am - 6:30 pm
Days of Week	Monday - Saturday
Cost	Free Service

Table 16: Minimal Assistance Delineation

Minimal Assistance Includes:	Minimal Assistance Does Not Include:
Curbside pick-up/drop-off	Assistance in or out of wheelchair
Arrival notification by horn or doorbell	Assistance in getting ready for a trip
Boarding/exit assistance	Administering medication/oxygen
Passenger delivered origin to destination	Assisting passengers in wheelchairs up/down stairs
	Assisting passengers with ramps at origin/destination
	Assistance with personal belongings/purchases

DEMAND RESPONSE

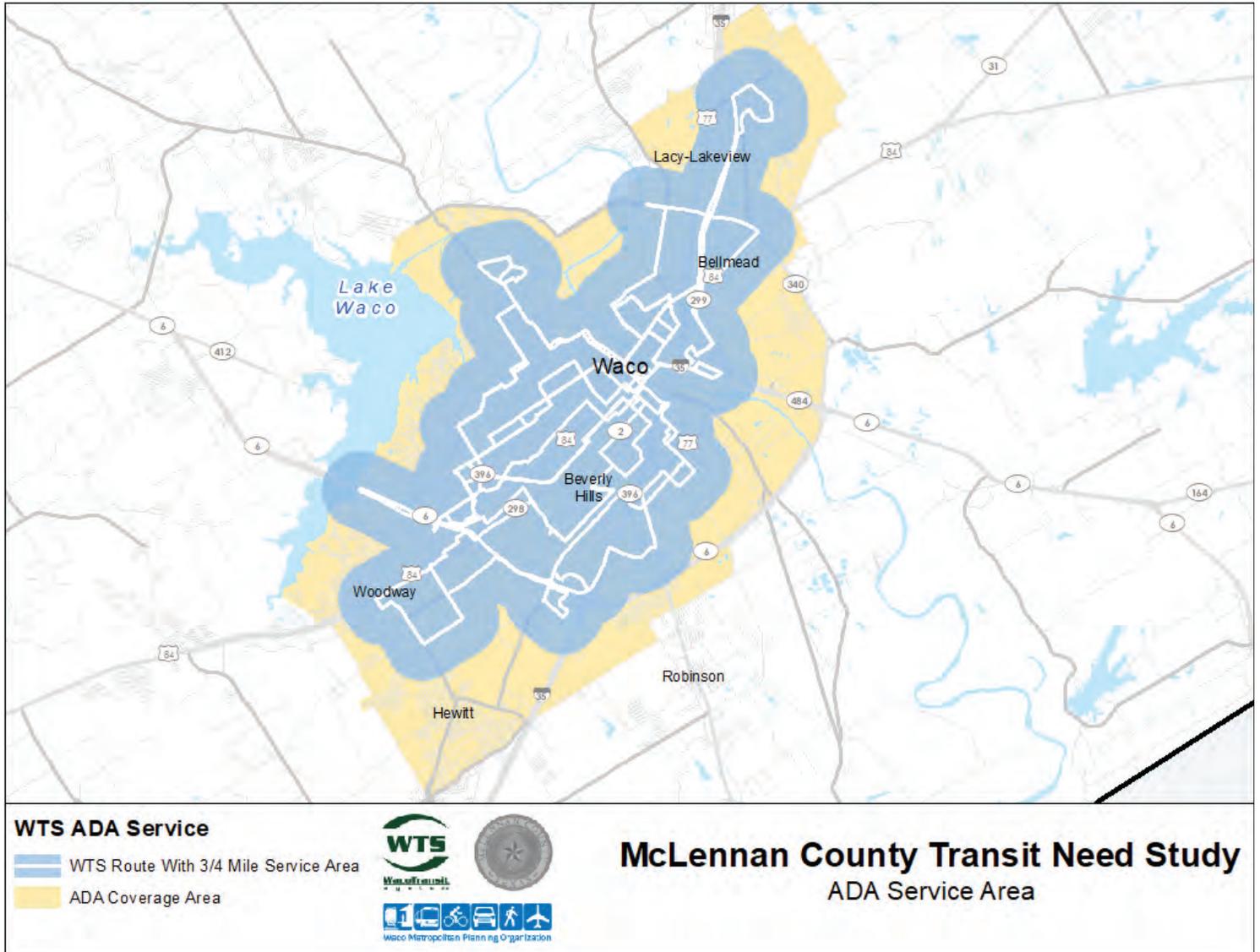
Several different demand response transportation services are offered throughout McLennan County:

- WTS’ complimentary Americans with Disabilities Act (ADA) services around fixed-routes;
- WTS’ employment (Evening LINK) and Airport Shuttle;
- WTS/MCRTD’s general public transit services for those in rural communities outside of the urbanized area (FTA Section 5311 transit); and
- WTS/CTSM’s Specialized transportation services for seniors and those with disabilities (FTA Section 5310 transit).

ADA Service

The WTS demand response van service offers door-to-door transportation within the ADA coverage area, which encompasses a majority of the designated Waco urban area, and can be seen in Figure 10. Demand response service is public and a shared-ride system. Reservations are required and can be made up to 14 days prior to pick-up or on the same day (for an increased fare price).

Figure 10: McLennan County ADA Service Area



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Per ADA and WTS, the Waco service area is defined as “any area within three quarters of a mile on either side of a fixed-route service, or up to an additional three quarters of a mile to the nearest landmark”. Eligible customers are those who are unable to use the fixed-route services due to a disability. All users must go through an ADA certification process prior to use. The fleet consists of ADA accessible high-floor vans operated by Professional Paratransit Operators trained to provide minimal assistance (note: different than medical service). This is a grant funded service with current funding guaranteed through 2020. Table 16 shows the minimal assistance delineation. Table 17 shows ADA Service operating characteristics.

Table 17: ADA Service Characteristics

Service Characteristics	
Frequency	Demand Response
Weekday Span	5:15 am - 7:15 pm
Saturday Span	6:15 am - 8:15 pm
Days of Week	Monday - Saturday
Cost	\$3 one way, \$4 same day, \$30 DRS 10 ticket booklet

Evening LINK

The Evening LINK is demand response service available to anyone who works or attends training and lives in the Greater Waco Area. Fleet assets for the Evening LINK overlap with those used for the Airport Shuttle, therefore service is typically limited, increasing the importance of making prior reservations. Reservations can be made up to two weeks in advance until 24 hours prior to a trip. Table 18 shows Evening LINK operating characteristics.

Table 18: Evening LINK Characteristics

Service Characteristics	
Frequency	Demand Response
Weekday Span	8:30 pm - 11:45 pm
Saturday Span	8:30 pm - 11:45 pm
Days of Week	Monday - Saturday
Cost	\$3 one way

Airport Shuttle

The Waco Regional Airport Shuttle provides demand response service and connectivity to Waco Regional Airport (WRA) with trips strictly based on availability. Clients must call WTS 24 hours prior to the requested pick-up time to secure a trip. Trips can be scheduled up to two weeks in advance. Service spans the entirety of McLennan County and expands into adjacent counties. Table 19 shows Waco Regional Airport Shuttle operating characteristics.

Table 19: Waco Regional Airport Shuttle Characteristics

Service Characteristics	
Frequency	Demand Response
Weekday Span	5:15 am - 9:15 pm
Saturday Span	7:15 am - 10:15 pm
Days of Week	Monday - Saturday
Cost	\$3 each way, \$5 each way for adjacent counties/ same day trips

McLennan County Rural Transit

Rural transit in Waco is provided by the MCRTD but is operated by WTS through an interlocal agreement with the City of Waco. Transit is provided to anyone living outside of the Waco Urbanized Area in McLennan County through a

demand response system. The goal of the MCRTD is to increase accessibility for rural citizens to jobs, education, healthcare, and much more. Service runs from Monday to Saturday. Trips must be scheduled prior to pick-up, with a reservation window of up to 2 weeks prior to 24 hours before the pick-up. MCRTD services also extend to adjacent counties for an increased fee. Table 20 shows MCRTD operating characteristics.

Table 20: MCRTD Characteristics

Service Characteristics	
Frequency	Demand Response
Weekday Span	5:15 pm - 7:15 pm
Saturday Span	6:15 am - 8:15 pm
Days of Week	Monday - Saturday
Cost	\$3 one way, \$5 one way for trips to adjacent counties

Transportation Services for Seniors & Those with Disabilities

In addition to the ADA paratransit services provided by WTS, Central Texas Senior Ministry (CTSM), in partnership with WTS, provides transportation services for senior citizens (those age 65 and older) and individuals with disabilities in McLennan County. The service is catered towards those who do not qualify for ADA service or live outside of the ADA service area but may be transportation-disadvantaged due to age or condition. Transportation is provided to jobs, medical facilities, grocery stores, hospitals, human service agencies, and other destinations throughout McLennan County. Rides must be scheduled, typically at least 48 hours in advance, and the service operates from 7:00 am to 6:00 pm. Information about transit assets was self-reported in the online provider survey and can be noted in Table 21. Table 22 shows self-reported ridership for various service types in McLennan County.

Table 21: Regional Transit Assets Self-Reporting

Provider	# of Vehicles in Fleet	ADA Vehicles in Fleet	Avg. Seating Capacity	# of Contingency Vehicles
Waco Transit 5310 Program	7	2	5	5
Waco Transit 5307 Program	18	18	10 + 2 wheelchair positions	4
Waco Transit Medicaid Program	28	28	10 + 2 wheelchair positions	5
McLennan County Rural Transit District (5311 Program)	10	10	10 + 2 wheelchair positions	2
Heart of Texas Council of Governments (5310 and 5311 Programs)	24	24	10 passengers, 3 passengers	4
Connally ISD	34	2	71	5

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Table 22: Regional Ridership Self-Reporting

Provider	Annual Ridership
Waco Transit 5311 Rural Area Funding Program	Rural Company: 7,014 trips. Urban Company: 267 trips
Waco Transit 5310 Senior/Disabled Persons Mobility Funding Program	Rural Company: 4,865 trips. Urban Company: 250 trips
Waco Transit 5307 Urbanized Area Funding Program	Rural Company: 116 trips. Urban Company: 44,400 trips
Waco Transit Medicaid Program	Rural Company: 93 trips. Urban Company: 21,793 trips
Waco Transit GPU	Rural Company: 3,365 trips. Urban Company: 3,751 trips
McLennan County Rural Transit District (5311 Program)	4007 urban trips, 177 Medicaid trips, 12,975 Rural trips
Heart of Texas Council of Governments (5310 and 5311 Programs)	47,436

Other Transportation Services

WTS, MCRTD, and CTSM are the major FTA-funded transportation service providers in McLennan County. However, there are other private for-profit, public, and non-profit agencies and organizations within the county that provide and coordinate transportation services. It is crucial to incorporate these agencies into the coordination planning process because it helps develop a more accurate inventory of services and maximizes the outcomes of transportation coordination efforts. Non-FTA-funded agencies that provide transportation services in McLennan County include agencies such as Visiting Angels Waco, which provides 24/7 demand response transportation service for seniors and/or those with disabilities. The Heart of Texas Region MHMR Center, whose main office is in Waco, also provides limited transportation

services to its customers throughout the region. These agencies are two examples of the agencies included in coordination planning, but Waco MPO and HOTCOG will continue working to identify and engage all agencies providing and coordinating transportation, including but not limited to:

- Nursing homes;
- Workforce development boards;
- Taxi and transportation network companies;
- Churches;
- Child services agencies;
- Local area agencies or councils on aging
- Veterans' affairs organizations; and
- Community action agencies.

Intercity transportation services are also important to consider given that they provide connections to other destinations in the region and throughout the United States for those without the ability to operate or own a personal vehicle. In Waco, the Downtown Transfer Center for WTS bus routes also acts as a Greyhound stop providing connections to Houston, San Antonio, and Dallas. An Amtrak train station located in McGregor which provides access to the Texas Eagle line connecting Los Angeles to Chicago.

Demand Response Service Analysis

Demand response transportation services are provided throughout the entirety of McLennan County through WTS, MCRTD, and CTSM. The ADA service, rural transit service (5311), and specialized service for seniors and those with disabilities (5310) ensure there is substantial coverage across the county for all potential customers. Though there are no coverage gaps in demand response transportation service, there are still opportunities to improve the level of transportation service currently offered by the different demand response services. Service improvements may include coordination between different types of service and/or implementation of regularly schedule trips to areas with consistently high demand.

Methodology

To better understand where demand response transportation services are being provided throughout McLennan County, this study observed pick-up/drop-off location data for rural (5311) service and service for seniors and those with disabilities (5310).¹ The data was collected over three months throughout the year to account for seasonal variation. Data was collected for trips provided under

each program, and it provided specific locations of where passengers were picked up or dropped off. Information was provided for 5,112 trips, and after cleaning and geocoding the data approximately 86 percent of all pickups and drop-offs were mapped using GIS geolocation tools. Pickups or drop-offs occurring at the same location over the data collection period were aggregated and represented using larger symbology to show concentrations of activity at the specified locations.

Findings

MCRTD and WTS provided 2,674 rural (5311) transit service trips over the three month-data collection periods. Figures 10 and 11 show the corresponding pick-up and drop-off locations by boarding activity for the majority of these trips. This figure reveals significant pick-up/drop-off activity in McGregor, Mart, West, Robinson, and around China Springs. Specific destinations experiencing the most pick-up/drop-off activity by multiple customers include Friends for Life, C3 Call Center, Waco Transit, Bellmead Dialysis, Reinforced Earth Co., and Sunny Day Center (Adult Day Care Center). The Friends for Life center experiences the most activity with double the number of trips to/from this facility compared to the destination with the second highest amount of activity.

Only 2.3% of all rural (5311) transit trips began and ended within the Waco urbanized area, indicating minimal overlap or duplication of services in conjunction with urban services. Conversely, only 2.7% trips had an origin and destination outside of the urbanized area (i.e. passengers were picked up and dropped off outside of the urbanized area). This finding reveals that the majority of rural (5311) transit trips are taking passengers to and from Waco. It is

¹ ADA services were not included in the analysis because this is a required service with specific guidelines on the coverage that can be provided (i.e. within a three quarters of a mile of fixed-route services).

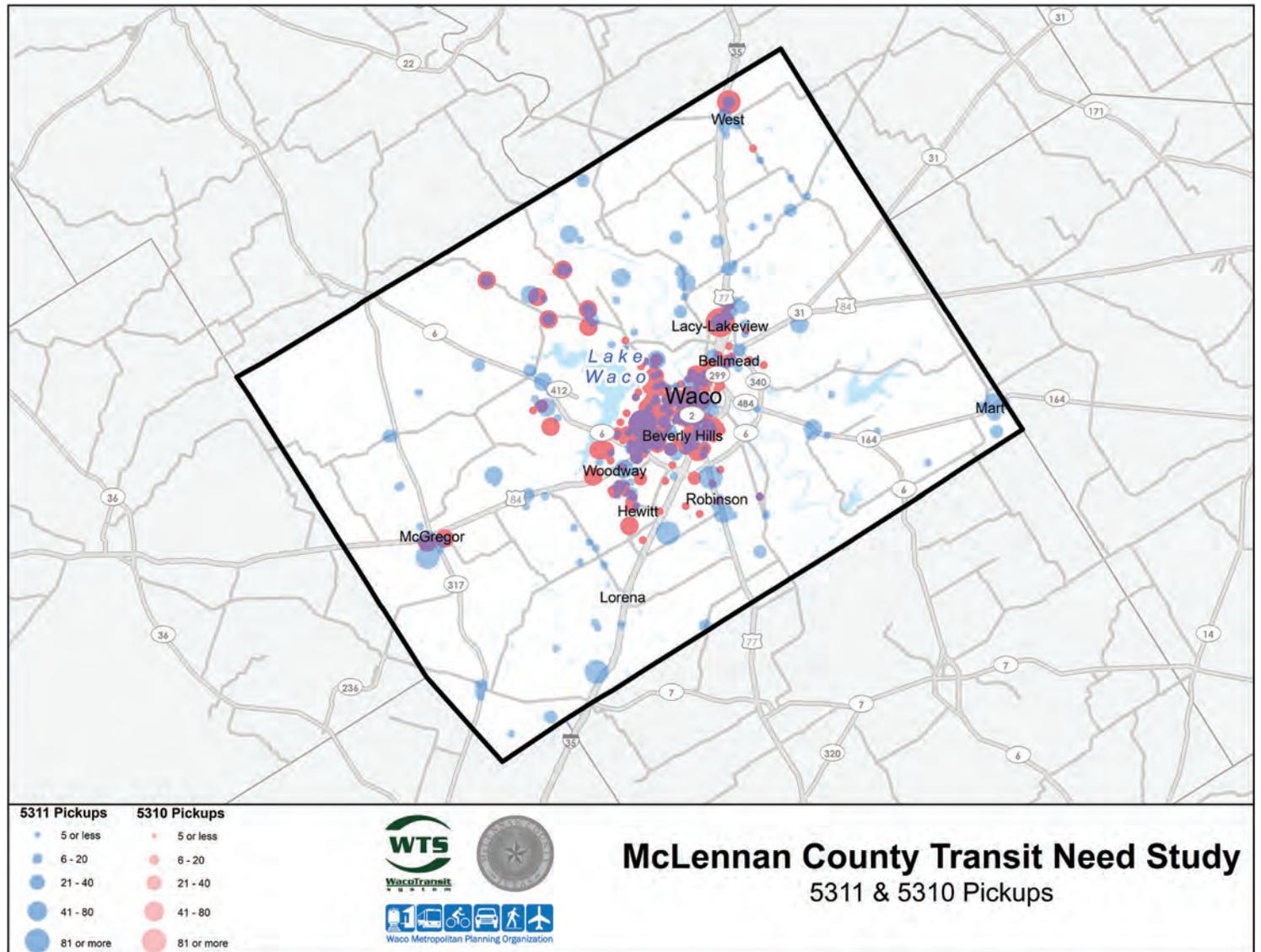
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important that services are coordinated between rural (5311) and urban (5307) transit to maximize efficiency, connectivity, and mobility for transit patrons. Scheduled connections and designated transfer points may be appropriate solutions to help coordination between these two types of services.

CTSM provided 2,437 trips for seniors and those with disabilities (i.e. 5310 service) over the two-month data collection period. Figure 11 and Figure

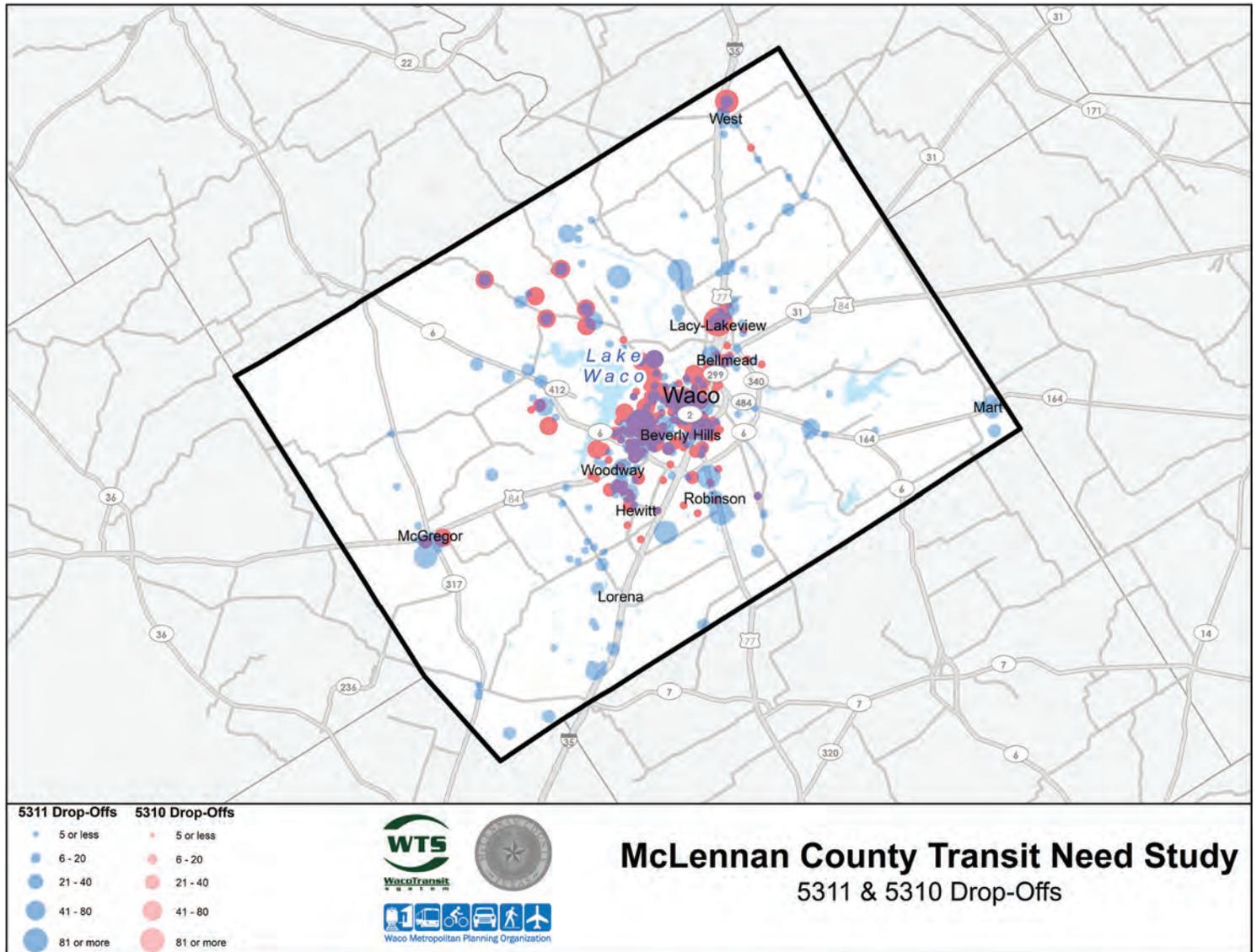
12 show the pick-up and drop-off locations of the 5310 trip activity. Most of the activity for this type of service is within the Waco urbanized area. However, there is a concentration of pickups and drop-offs in McGregor, West, and near China Springs. All trips originating outside of the Waco urbanized area have destinations within Waco. The top locations for pickups and drop-offs include Friends for Life, Sunny Day Center (Adult Day Care Center), Bellmead Dialysis, Crosslake Dialysis, Waco West

Figure 11: 5311 & 5310 Pickups



Kidney Center, and East Waco Goodwill. 63% of all specialized service (5310) trips provided by CTSM during the data collection period were to or from the Friends for Life or Sunny Day Center.

Figure 12: 5311 & 5310 Drop-Offs



Chapter 3: Demographic Analysis

INTRODUCTION

It is imperative to first understand what the needs of McLennan County's residents are, as well as the resources available to meet those needs, to set appropriate goals and develop effective strategies for the coordination of public transit services. This understanding is accomplished through analyzing public transit services and transportation needs/demand in the county. The main objective of this analysis is to identify areas where public transit services are lacking.

DATA

Data was collected and compiled from a variety of sources. The demographic and transportation need analysis was done using the most recent population data from the ACS 5-year estimates from 2015. This data included total population, elderly population, poverty status, number of households, vehicle availability, disabled population, and urban/rural population. All data were collected at the block group level except for the institutionalized/non-institutionalized group quarters population and urban/rural population data, which were both derived from 2010 Census records.

METHODOLOGY

Analysis was conducted by collecting and assessing data representing both the availability and need for transportation services within McLennan County. This general assessment helped determine what transportation resources were available, where they were available, and where these resources would likely be needed based on supportive demographics. Comparison throughout the County to determine spatially where services may need to be improved or coordinated more effectively.

More specifically, a demographic analysis was conducted for McLennan County to identify "transit-dependent" and "at-risk" populations. Staff used relevant data to conduct a GIS overlay analysis, comparing the demographic outputs with transit routes to measure how well the existing transit system serves these populations. At-risk population for the purposes of this analysis includes citizens over the age of 65, the disabled, household units with no automobile, minorities, and those living below the poverty line.

Analysis then focused on developing metrics to measure the relationship between the indicators of transportation resources and needs. These metrics help show how well needs are met by the available transportation resources and provide a basis for comparison throughout the County to determine spatially where services may need to be improved or coordinated more effectively.

Transit-Dependent Population:

Represents transit need based primarily on age (those too young/old to drive), number of drivers in the household, group quarters populations, and household vehicles.

At-Risk Population:

Represents populations more likely to need transit in comparison to the general population.

DESTINATION ANALYSIS

A key component to understanding transportation needs within McLennan County is to analyze the number of transit attractors that are served by various service types. Transit attractors, which were identified by the Waco MPO, are businesses and other locations that generate transit trips. Transit attractors are categorized as key locations where McLennan County residents need and want to travel to daily. Attractors within 1/4 mile of transit are considered served and those that are outside of a 1/4 mile are unserved. This can be seen in Figure 13. Note that population, Transit Dependent Population, at-risk population, and employment coverage were identified as in or out of the service area using the same process. Attractors were grouped into seven categories, and concentrations of attractors by type were identified to guide this analysis.

The seven classes include:

- Government & Public Services: Courthouses, Libraries, Social Services, Post Offices, Utilities Offices;
- Medical & Health Services: Hospitals, medical centers, dentists, outpatient facilities;
- Shopping Centers: Grocery stores, shopping malls, convenience stores;
- Job Locations: Office buildings, hotels, manufacturing;
- High-Density Residential: Apartment complexes and senior housing;
- Services: Childcare facilities, movie theaters, pharmacies, hair salons; and
- Parks and Community Centers: Public parks, sports and recreation complexes, museums, churches.

The number of attractors and percentage of overall attractors by type is shown in Table 23. Figure 14 shows a map of attractors throughout McLennan County by type. As expected, most transit attractors are located within the City of Waco and nearby communities. While most attractors are near the main population centers in central McLennan County, several key attractors are in communities outside of the census-defined urban area.

To assess service delivery to transit attractors, the project team completed a destination analysis that identified the number and percentage of transit attractors served by both the Waco Transit fixed-routes service and the Waco Transit ADA service. Any attractor within walking distance (1/4 mile) of a transit route was determined to be adequately served by the Waco Transit fixed-routes. Any attractor within the ADA service area was deemed adequately served. Table 24 and Table 25 illustrate the number and percent of attractors served by Waco Transit fixed-routes and ADA service. Figure 15 shows attractors that are served and not served by Waco Transit fixed-routes. Figure 16 shows transit attractors within the Waco Transit ADA service area.

Chapter 3: Demographic Analysis

Table 23: McLennan County Transit Attractors by Type

Attractor Type	Totals	Percent of Attractors
Government & Public Services	154	11%
Parks and Community Centers	383	27%
High-Density Residential	166	12%
Job Locations	320	23%
Medical	122	9%
Services	150	10%
Shopping Centers	108	8%
Totals	1,403	100%

Chapter 3: Demographic Analysis

Figure 14: McLennan County Transit Attractors

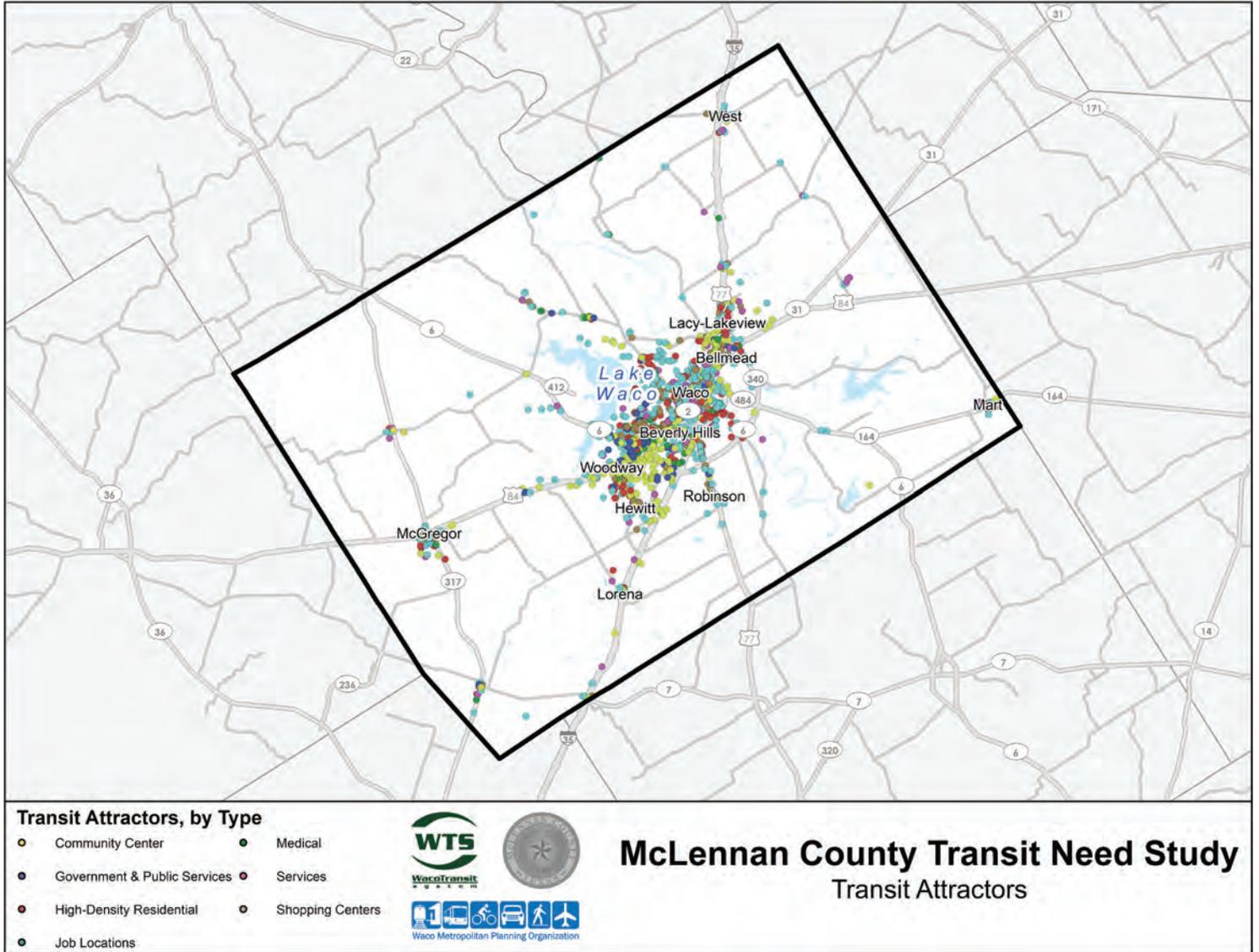
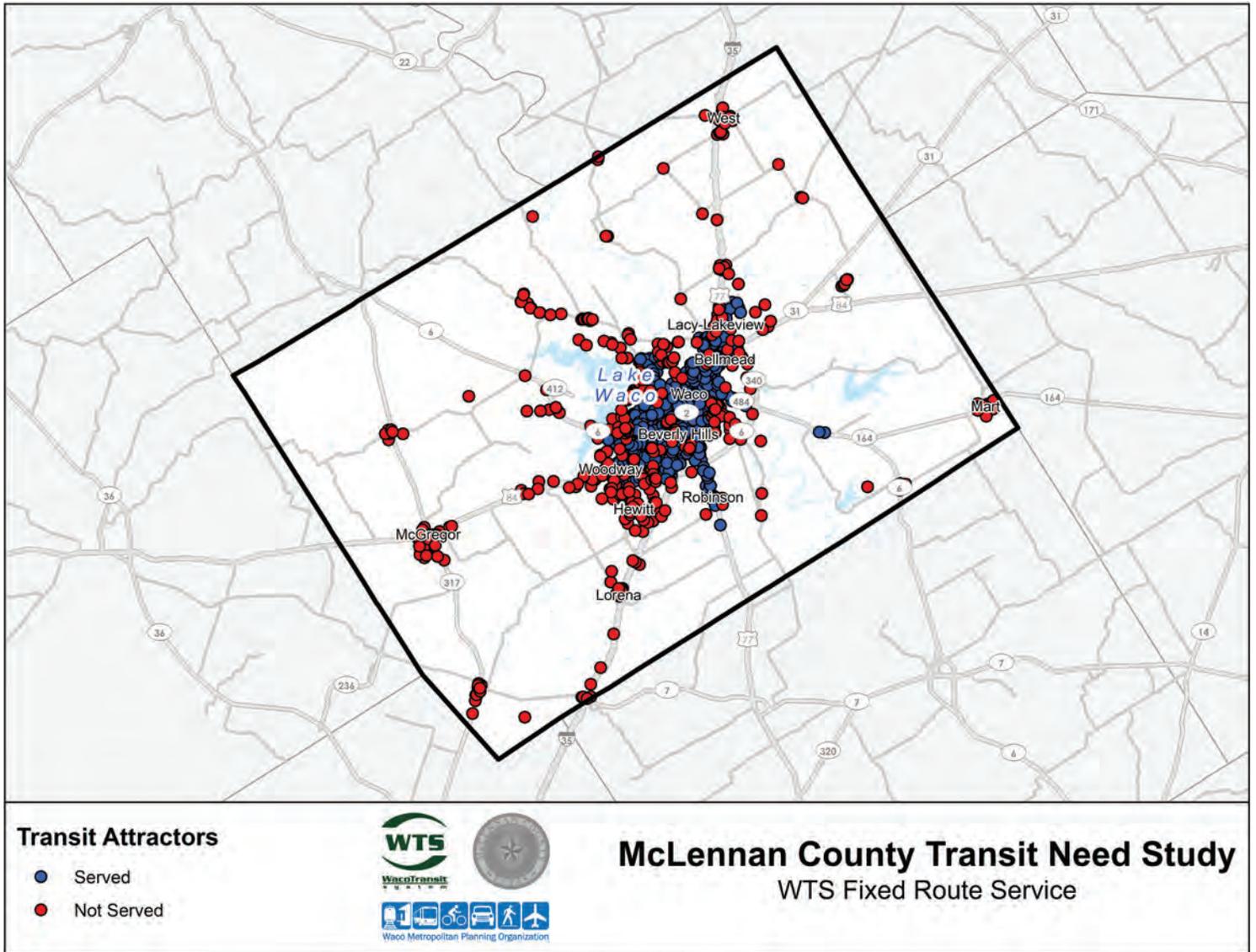


Figure 15: Waco Transit Fixed-Route Attractor Coverage



Chapter 3: Demographic Analysis

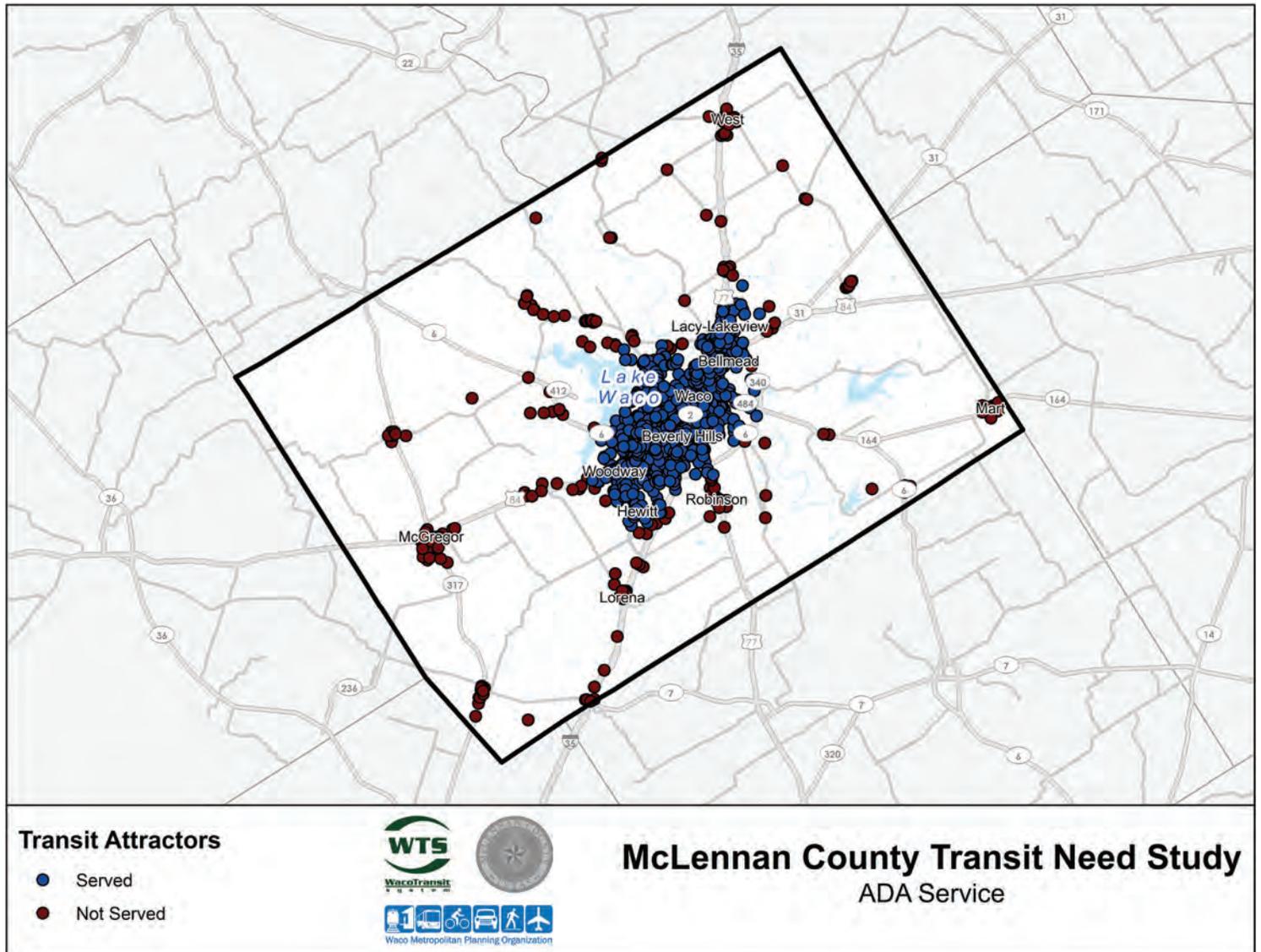
Table 24: McLennan County Transit Attractors Served by Waco Transit Fixed-Routes

Attractor Type	Number Served by WTS Fixed-Route	Percent of Attractors Served
Government & Public Services	97	63%
Parks and Community Centers	201	52%
High-Density Residential	111	66%
Job Locations	213	66%
Medical	100	81%
Services	110	73%
Shopping Centers	84	77%
Totals	916	65%

Table 25: McLennan County Transit Attractors Served by Waco Transit ADA Service

Attractor Type	Number Served by WTS ADA Service	Percent of Attractors Served
Government & Public Services	106	68%
Parks and Community Centers	279	73%
High-Density Residential	149	90%
Job Locations	260	81%
Medical	112	92%
Services	128	85%
Shopping Centers	86	80%
Totals	1,120	80%

Figure 16: Waco Transit ADA Service Attractor Coverage



TRANSIT-DEPENDENT POPULATION

Transit-dependent population (TDP) as a percent of the total population is an indicator for transit demand and measures captive riders (i.e. those whose mobility is almost entirely dependent on public transportation). TDP represents transit demand primarily by utilizing age (those too young/old to drive), number of drivers in the household, group quarters population, and household vehicles available. This study utilized a U.S. Department of Transportation (USDOT) formula to locate larger concentrations of driving age citizens with limited to no access to personal automobiles. The analysis was performed at the block group level and used data from the 2015 ACS, which provides detailed demographic information applicable to transit-dependent population calculations not attainable from the Decennial Census. The following displays the various formula steps and necessary inputs for each step:

1. Identify Potential Drivers:

Household Drivers = (population age 18 and over) - (persons living in group quarters)

2. Identify population in households without access to a vehicle:

Transit-Dependent Household Population = (household drivers) - (vehicles available)

3. Identify Transit-Dependent Population:

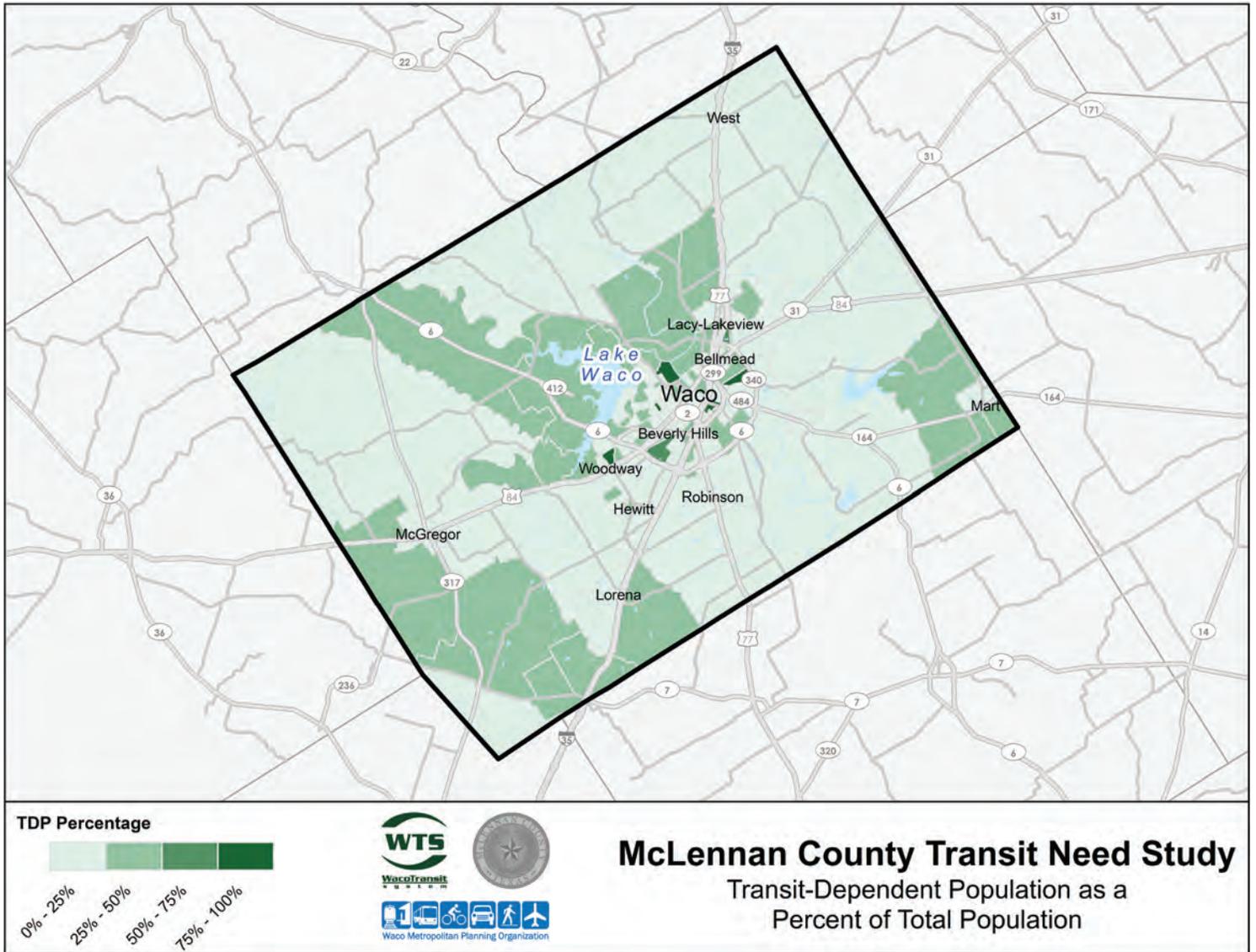
Transit-Dependent Population = (transit-dependent household population) + (population ages 10-17) + (non-institutionalized population living in group quarters)

4. Establish the percentage of TDP within the Census Area.

While it is feasible for anyone 16 years of age and older to obtain a driver's license, it is substantially less likely for anyone between the ages of 16 and 18 to own or have consistent access to a personal automobile. The ACS also does not provide data sets with breaking points at the age of 16. Further, ACS data does not distinguish between institutionalized and non-institutionalized populations within group quarters arrangements. Accordingly, this statistic was based on the relative proportion of institutionalized to non-institutionalized populations provided by the 2010 Census.

This method for measuring transit-dependent population provides a conservative estimate and serves as a base number for transit dependency. Disabled populations, elderly populations, or people living in poverty are not specifically factored in this methodology. This approach is meant to provide an overall sense of how many people are likely to be more dependent on public transit service (urban or rural), while the more vulnerable populations are considered through other means of analysis that focus on specialized transportation service (5310) and ADA Demand Response Service. Figure 17 and Figure 18 show where there are higher concentrations of TDP.

Figure 17: Transit-Dependent Population Percentage



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Figure 18: Transit-Dependent Population Density

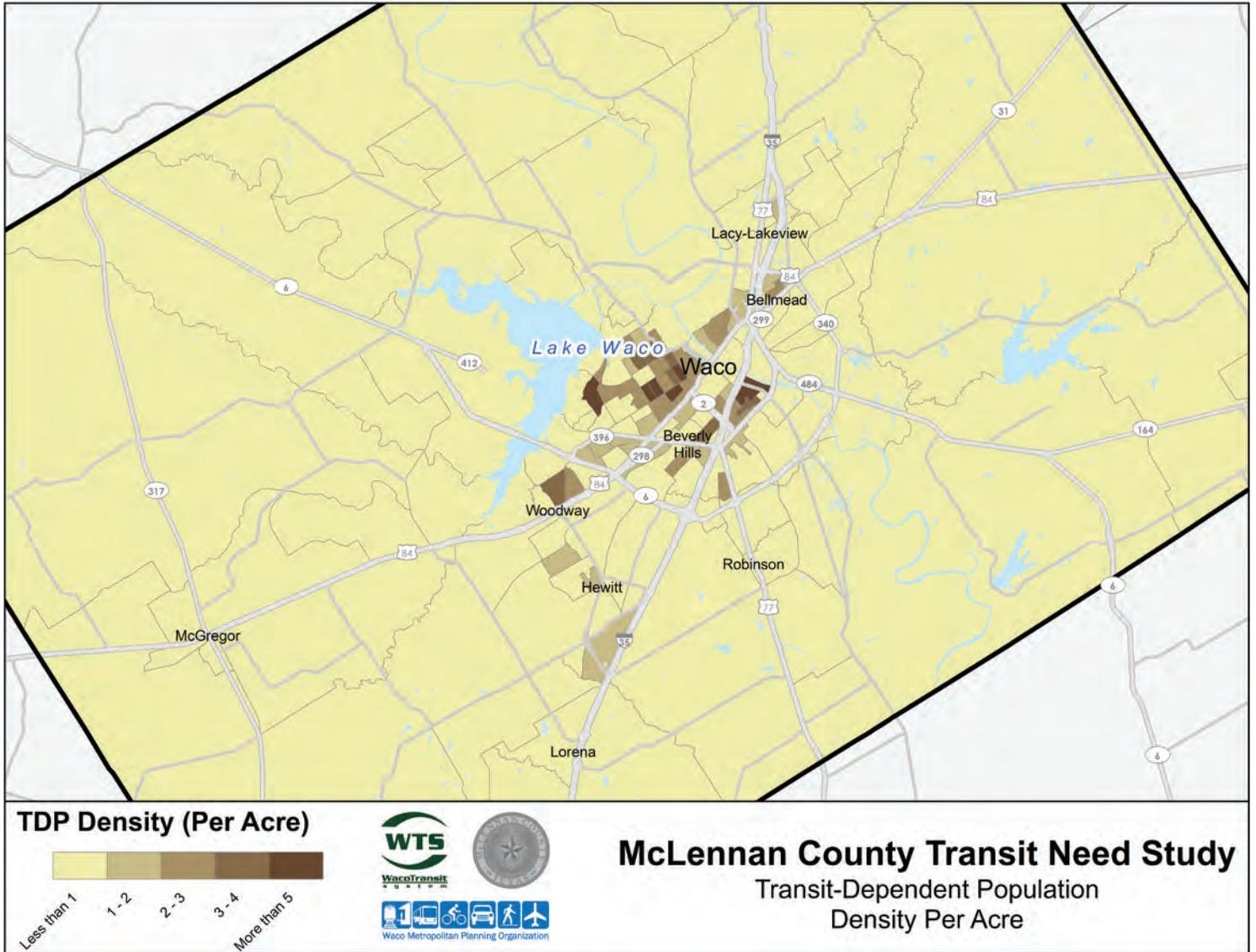
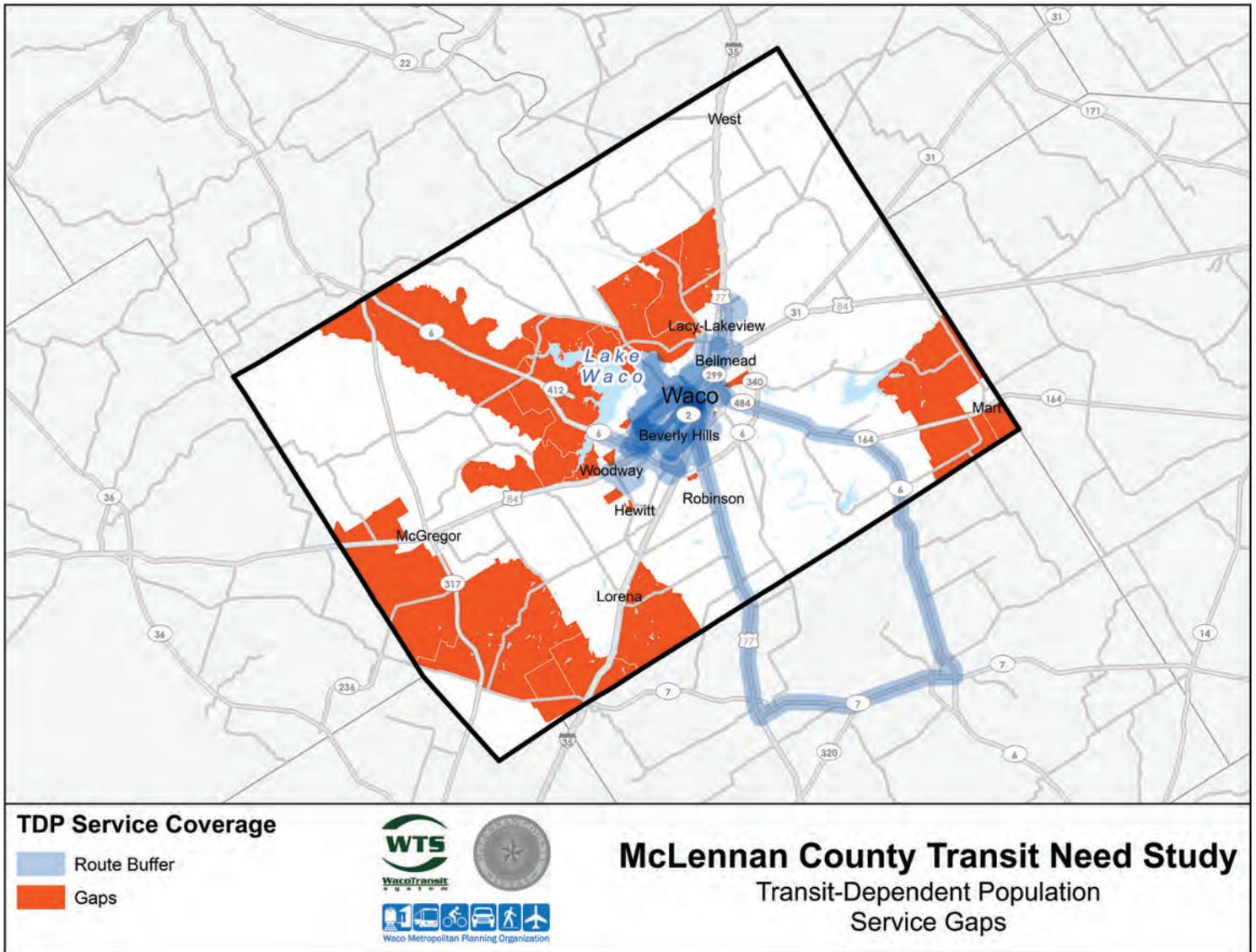


Figure 19: Transit-Dependent Population Service Gaps

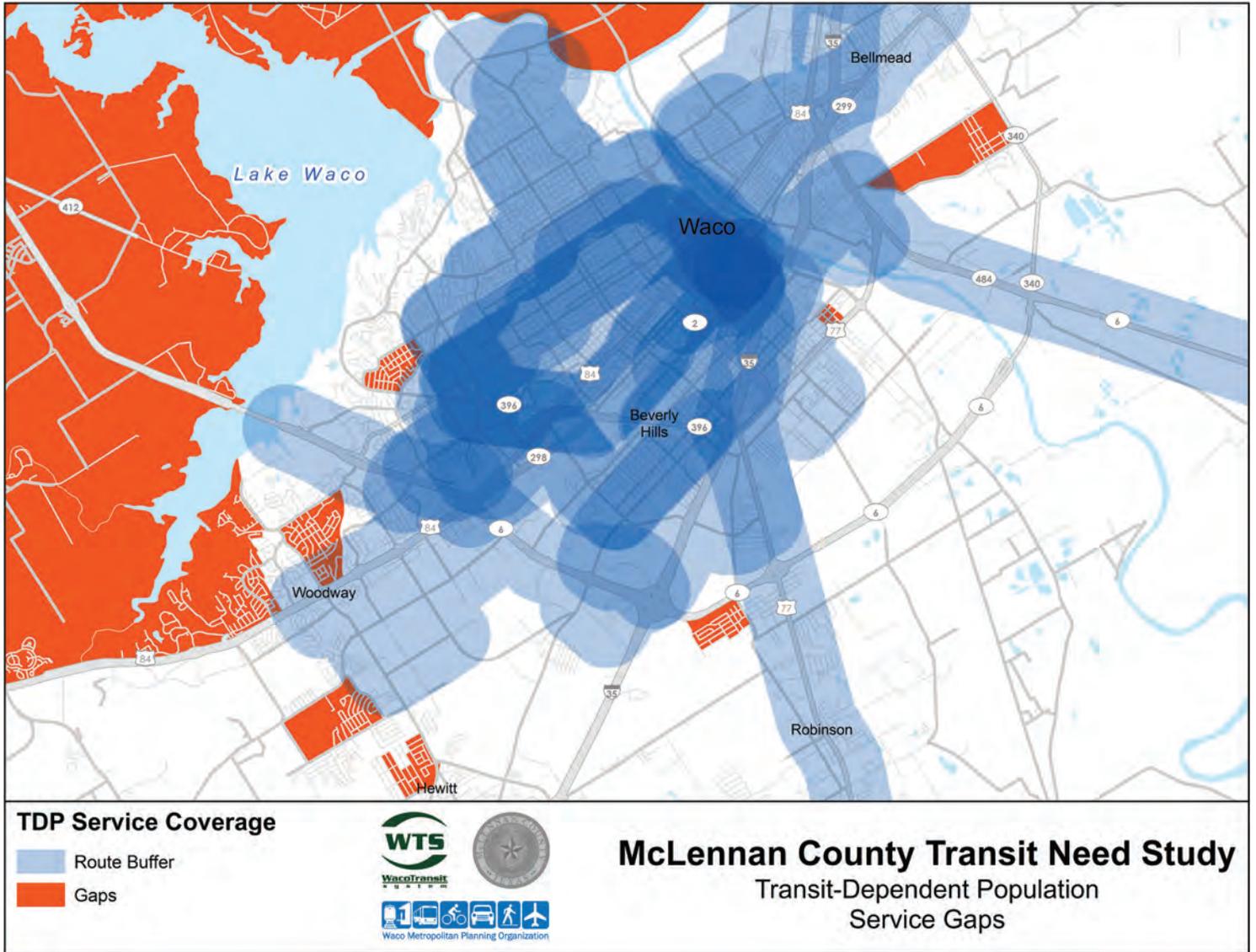


Understanding where there are high concentrations of transit-dependent population in relation to current transit services is integral in identifying transit gaps. Figure 19 shows areas with a high percentage of transit-dependent population that are not served by the existing Waco Transit fixed-route network. These areas are concentrated on the fringes of the City of Waco to the north and are semi-rural to rural in nature. Concentrations of unserved transit-dependent populations also exist in the south and

east portion of McLennan County near McGregor, Lorena, and Mart. While there are areas where a high proportion of the population is transit-dependent, many of those areas are low populated rural areas, with a low ratio of transit-dependent populations per acre. Figure 20 provides a closer view of the service gaps in the Waco area. Block groups were flagged as 'service gap' if the majority of the block group population was beyond the route buffer.

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Figure 20: Transit-Dependent Population Service Gaps



AT-RISK POPULATION

Although transit-dependent population is an important metric to estimate the need for public transportation services, there are other population groups who may have special needs when it comes to transportation. Referred to in this study as “at-risk population”, the metric may also be used as an indicator of transit demand. This population differs from transit-dependent population in that it represents those who are more likely to need transit in comparison to the general population. This is a much less conservative estimate for transit demand compared to transit-dependent population estimates.

Elderly & Disabled Populations

For this analysis, elderly population includes all persons 65 and older. Disabled population was obtained from the 2015 ACS, which denotes disabled population by age classifications.

Low-Income Population

Low-income population is obtained from available ACS data that reports poverty status. In this case, low-income population is equivalent to the population determined by the ACS to be in poverty. The ACS calculates poverty status by assigning poverty thresholds (in dollar amounts) to individuals or families and comparing household income to that threshold. If family income falls under that threshold, every person in that family is in poverty.

Households with No Automobile

Counts for households with no automobile available were obtained from the 2015 ACS vehicles available database, which provides household automobile counts ranging from zero to more than three automobiles. Households with no vehicles available were counted to represent those who have no means of motorized personal transportation.

Minority Population

Minority population is represented by ACS counts which includes all persons of Hispanic ethnicity as well as those who identified in the Census as one or more of the following; Black or African American, American Indian, Alaskan Native, Asian, Native Hawaiian, Other Pacific Islander, or some other race.

TRANSIT NEEDS INDEX

The different population groups that make up the at-risk population were combined to create a needs index, which indicates the relative demand for transit services. The at-risk variables were recorded as a proportion of the area’s total population per block group. All block group measures were then given an index score. For example, for minority population, the percentage of minority population in one block group is divided the percentage of minorities for the entire county. Following this, each unique variable was given a weight to represent its impact on transit dependency. Accordingly, the transit needs index distributed final scores incorporating each at-risk population variable and their accompanying weights to every block group in McLennan County. Figure 21 displays the county’s transit need by block group based on the transit needs index. Figure 22 provides a closer look at the transit need by block group in the Waco area.

Staff prioritized accurate representation of these populations, avoiding instances of double counting whenever possible.

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Figure 21: Transit Needs Index

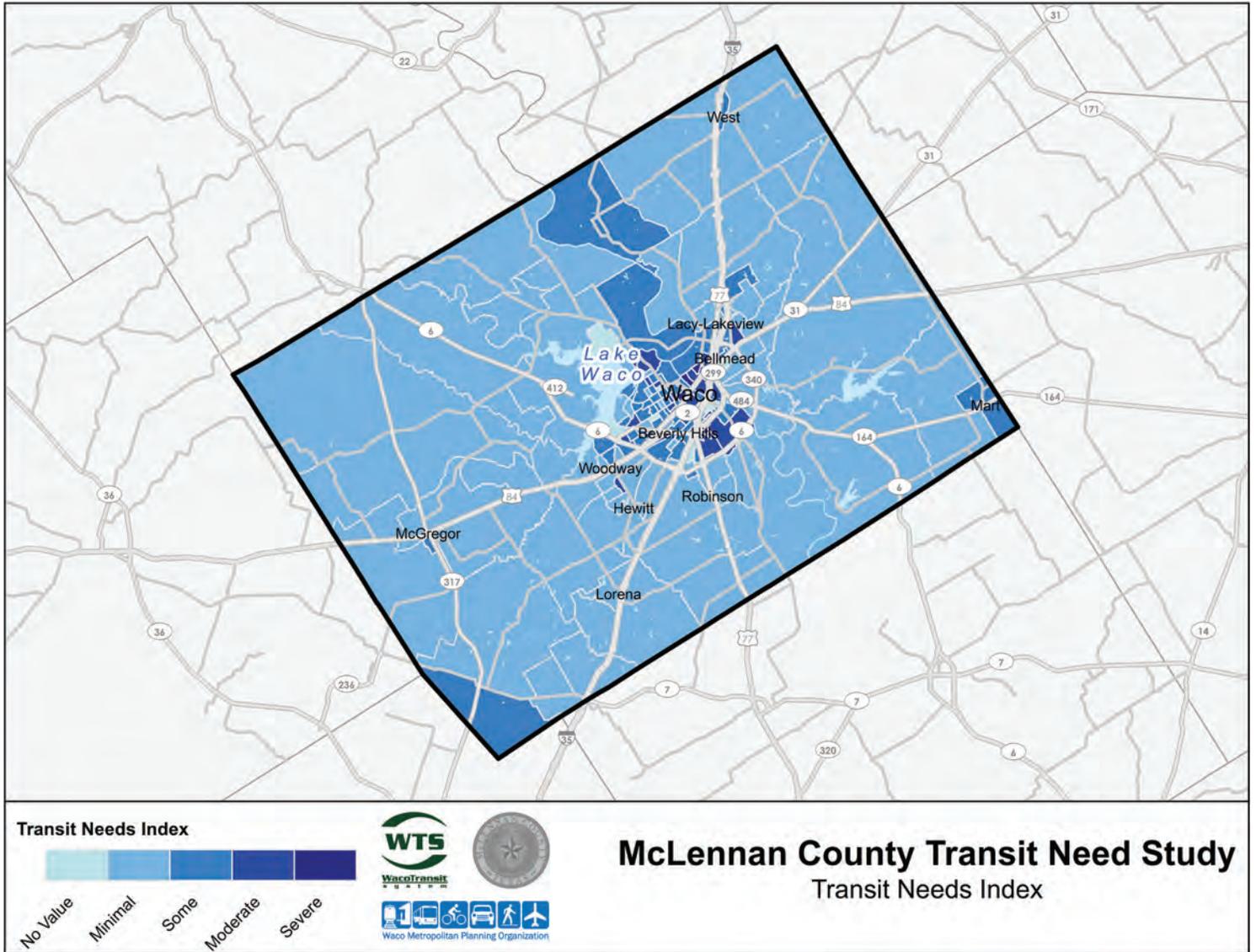
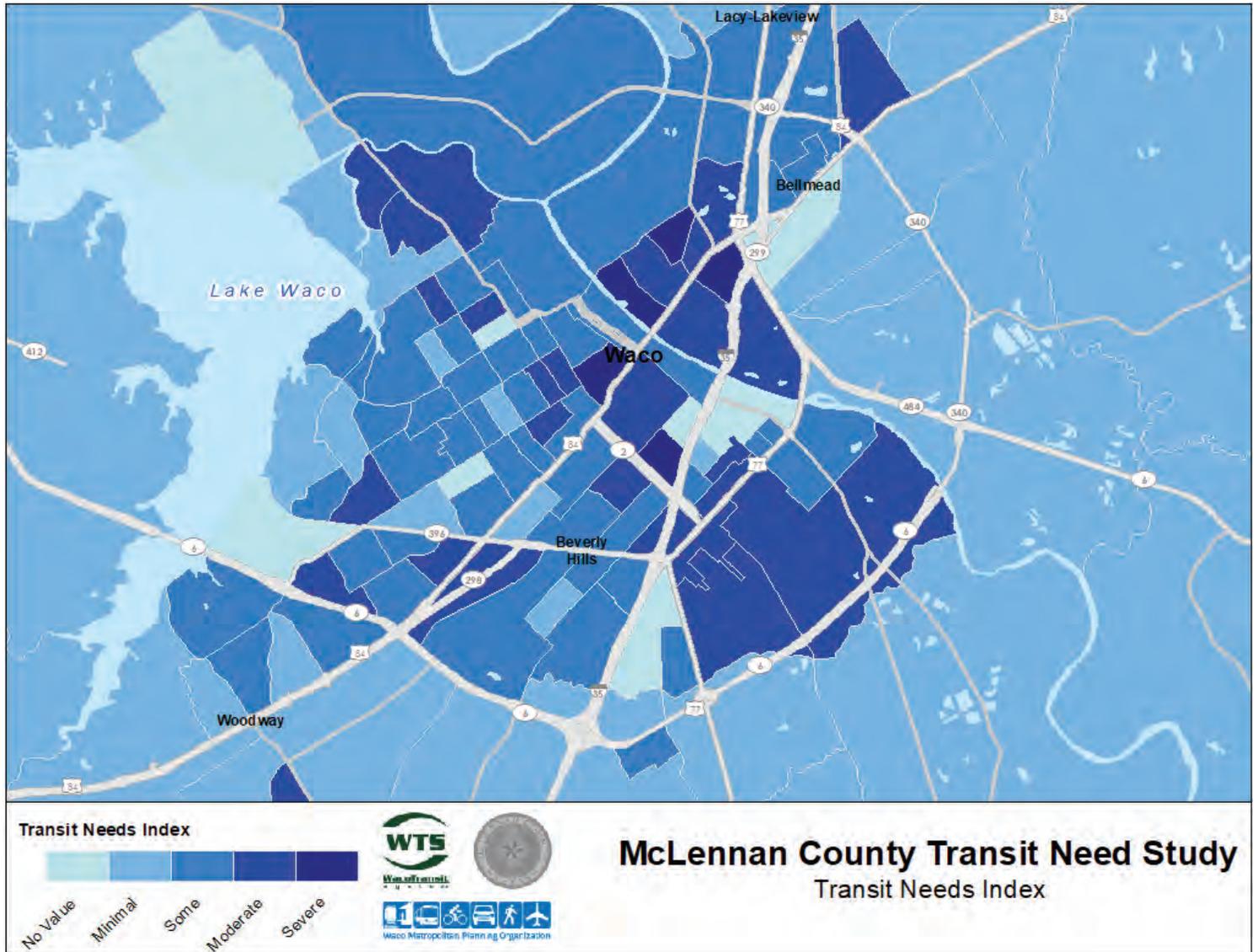


Figure 22: Transit Needs Index Zoomed to Waco



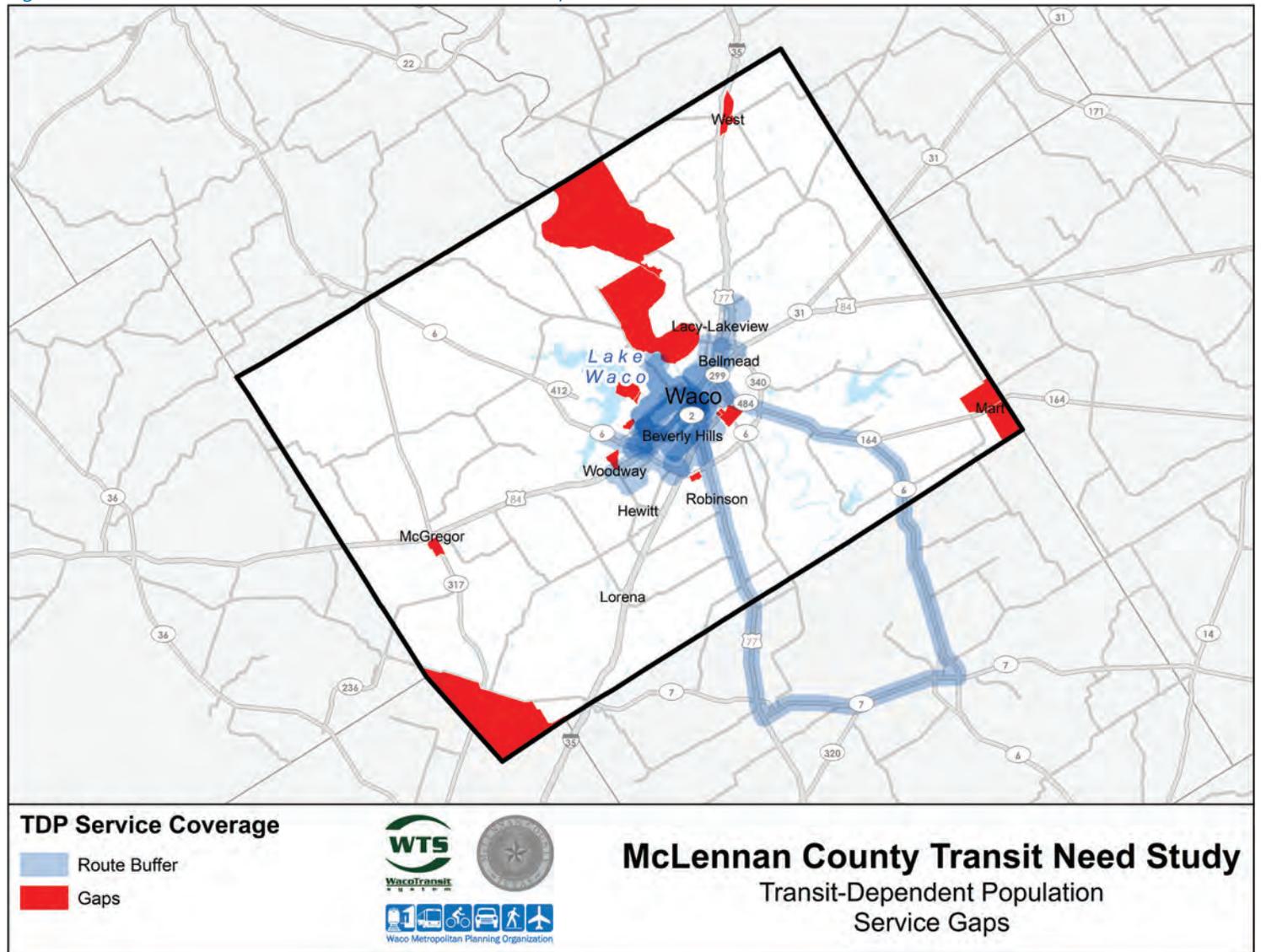
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POPULATIONS SERVED

Using buffer analysis GIS tools, the needs index by block group was mapped and compared to WTS (Waco Transit Service) fixed-route network coverage. A quarter-mile buffer (roughly five minutes walking) was used to represent coverage, as it is the standard assumption for how far people are willing to walk to transit. This buffer analysis revealed where there are areas of moderate or high transit need that are not

served by fixed-route service. Figure 23 shows key locations where no fixed-route service is provided to areas with moderate to high need.

Figure 23: Transit Needs Index Fixed-Route Service Gaps



TDP & AT-RISK POPULATION TRANSIT COVERAGE

Using the information generated from the gap analysis, Table 26 displays roughly 37% of the total population and 36% of jobs in the county to be located within a quarter-mile of the transit system's service area. Routes 8 and 3 serve the most population, each reaching more than 20,000 people, while route 6 serves the fewest people in the region (5,901). Route 10, WTS' rural service, covers roughly 9,300 people within the quarter-mile buffer. The transit buffer provides service to roughly 46% percent of McLennan County's transit-dependent population (53,246 total).

Table 27 further breaks down this analysis for the county's at-risk population. To avoid double counting, each demographic group was analyzed separately. Both minority and low-income populations are well covered, with 55% and 57% of the populations falling within the quarter-mile buffer, respectively. McLennan County's elderly population (65-years or older) of 15,827 within a quarter-mile of WTS service represents only 32% of the total elderly population. This is the lowest coverage experienced in the study area. For better understanding of Tables 26-29, please refer to the table heading definitions below.

Table Headings

Definition

Route	→	Singular fixed transit route with a quarter-mile buffer.
Route Count	→	Indicates the number of routes by which an area within the fixed route system is served.
Served %	→	Metric total (e.g. Transit-Dependent Population) within the route buffer divided by the total metric count within all route buffers.
Total %	→	Metric total (e.g. Transit-Dependent Population) within the route buffer divided by the total metric in McLennan County.

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Table 26: McLennan County Population, Transit-Dependent Population, & Employment Transit Coverage

Route	1	2	3	4	5	6	7 (Odd)	7 (Even)	8	9	10	System
Population	16,700	18,048	20,503	17,086	9,711	5,901	6,517	6,596	21,051	11,610	9,304	89,636
Served Population %	12%	13%	14%	12%	7%	4%	5%	5%	15%	8%	7%	-
Total Population %	7%	7%	8%	7%	4%	2%	3%	3%	9%	5%	4%	37%
TDP	4,477	4,823	5,861	4,801	2,884	1,039	2,100	2,122	5,595	3,497	3,245	37,518
Served TDP %	11%	12%	14%	12%	7%	3%	5%	5%	14%	9%	8%	-
Total TDP %	8%	9%	11%	9%	5%	2%	4%	4%	11%	6%	6%	46%
Employment	9,330	9,843	10,683	10,568	5,125	4,470	3,602	3,624	10,946	6,201	4,403	40,931
Served Employment %	23%	24%	26%	26%	13%	11%	9%	9%	27%	15%	11%	-
Total Employment %	8%	9%	9%	9%	4%	4%	3%	3%	10%	5%	4%	36%

Table 27: McLennan County At-Risk Population Transit Coverage

Route	1	2	3	4	5	6	7 (Odd)	7 (Even)	8	9	10	System
65+ Population	1,907	2,132	1,973	2,000	1,280	1,145	997	1,011	2,091	747	658	9,955
Served 65+ %	19%	21%	20%	20%	13%	11%	10%	10%	21%	8%	7%	-
Total 65+ %	64%	7%	6%	6%	4%	4%	3%	3%	7%	2%	2%	32%
Disabled Population	2,024	2,242	2,496	2,162	1,473	674	1,150	1,158	2,361	811	865	10,599
Served Disabled %	19%	21%	24%	20%	14%	6%	11%	11%	22%	8%	8%	-
Total Disabled %	7%	8%	9%	8%	5%	2%	4%	4%	9%	3%	3%	39%
Minority Population	4,649	5,184	7,614	6,252	5,386	1,376	4,532	4,603	6,890	2,422	2,619	29,821
Served Minority %	16%	17%	26%	21%	18%	5%	15%	15%	23%	8%	9%	-
Total Minority %	9%	10%	14%	12%	10%	3%	8%	8%	13%	4%	5%	55%
Population in Poverty	4,862	5,286	7,208	5,539	3,535	786	2,112	2,148	6,304	4,906	2,967	28,509
Served Poverty %	17%	19%	25%	19%	12%	3%	7%	8%	22%	17%	10%	-
Total Poverty %	10%	11%	14%	11%	7%	2%	4%	4%	13%	10%	6%	57%

SERVICE DUPLICATION

Understanding where transit service duplication exists is as equally important as understanding who it serves. Table 28 and Table 29 display the breakdown of overlapping service. The “Route Count” row represents the number of routes that intersect in a given area. The tables show TDP and at-risk population experiencing duplicate service within the urban fixed route system. An example of how duplicate service areas can affect service levels can be seen in Figure 24. Identifying population, Transit Dependent Population, employment, and

at-risk population estimates receiving duplicate service was calculated using similar methodology. Some of the routes naturally intersect with other routes as they utilize similar roadways, resulting in portions of the city having access to several services (Figure 25). Roughly 59% of McLennan County’s total population falls within an area served by either 3 or 4 routes. Similar results are seen regarding the county’s transit-dependent population (61%). At-risk population subgroups saw the most population fall within areas served by 3 routes across the board.

Table 28: McLennan County Duplicate Service Coverage - Total Population, Transit-Dependent Population, & Employment

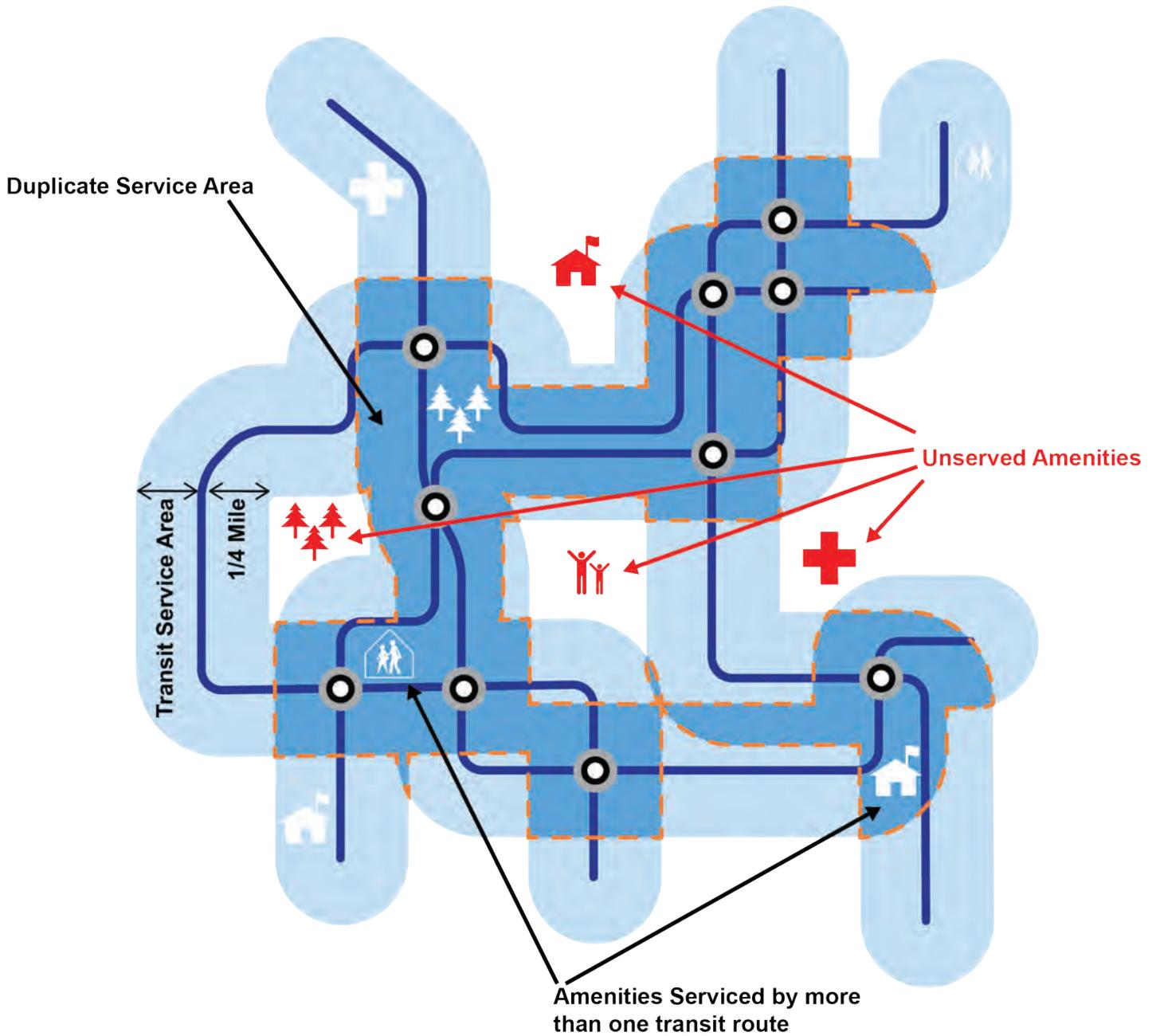
Number of Routes	1	2	3	4	5	6	7	8	9	10	11	System
Population	14,988	15,271	52,853	29,986	14,992	10,804	730	831	-	-	-	89,636
Served Population %	17%	17%	59%	33%	17%	12%	1%	1%	0%	0%	0%	-
Total Population %	6%	6%	22%	12%	6%	4%	0%	0%	0%	0%	0%	37%
TDP	2,474	3,952	13,054	9,773	3,853	3,998	45	369	-	-	-	24,477
Served TDP %	10%	16%	53%	40%	16%	16%	0%	2%	0%	0%	0%	-
Total TDP %	5%	7%	25%	18%	7%	8%	0%	1%	0%	0%	0%	46%
Employment	1,858	3,605	7,796	9,518	19,599	6,367	2,958	3,568	-	23,525	-	40,931
Served Employment %	5%	9%	19%	23%	48%	16%	7%	9%	0%	57%	0%	-
Total Employment %	2%	3%	7%	8%	17%	6%	3%	3%	0%	20%	0%	36%

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Table 29: McLennan County Duplicate Service Coverage - At-Risk Population

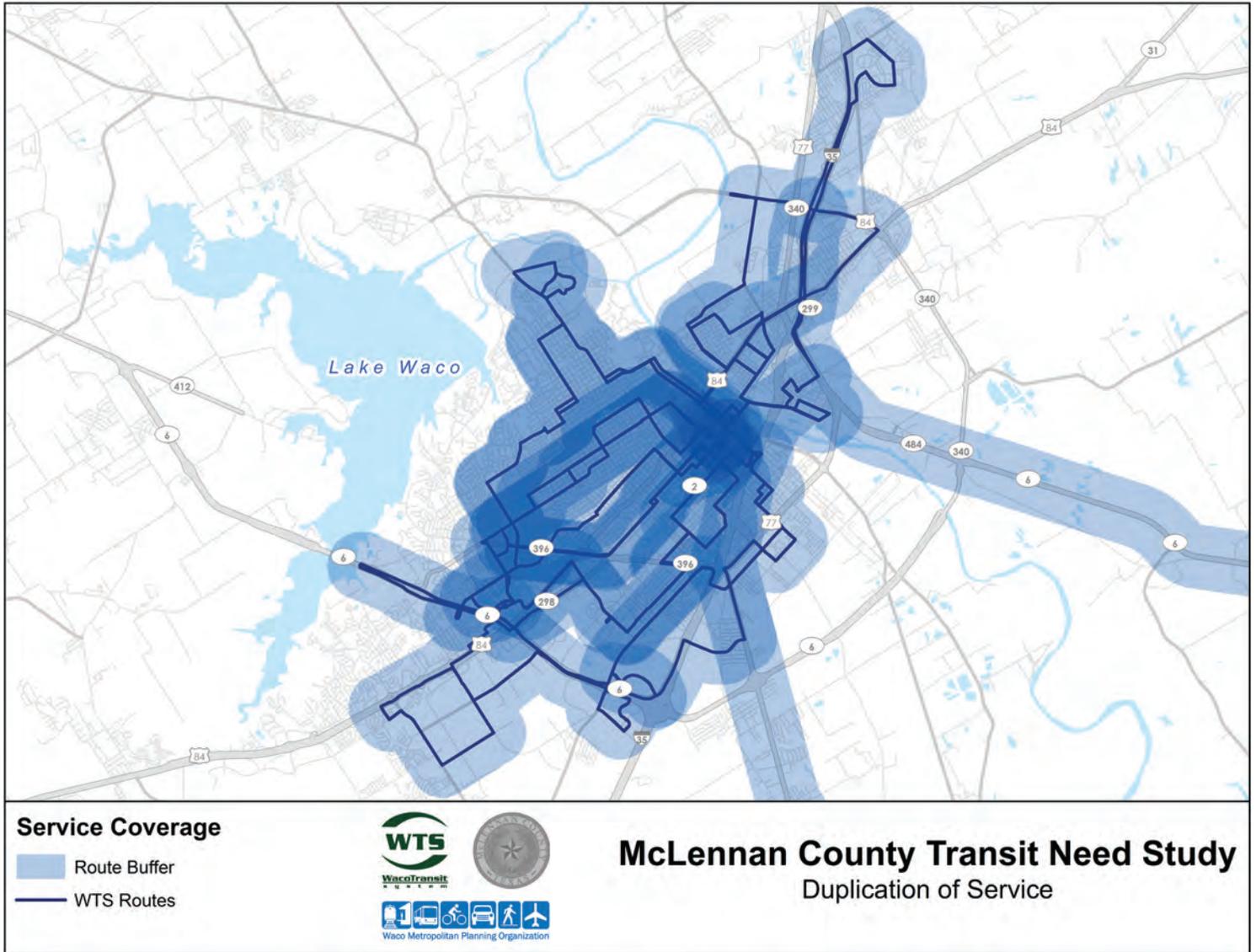
Route Count	1	2	3	4	5	6	7	8	9	10	11	System
65+ Population	2,475	1,958	5,120	3,339	1,822	983	16	39	-	-	-	9,955
Served 65+ %	25%	20%	51%	34%	18%	10%	0%	0%	0%	0%	0%	-
Total 65+ %	8%	6%	16%	11%	6%	3%	0%	0%	0%	0%	0%	32%
Disabled Population	2,133	1,863	6,257	2,948	1,940	2,298	18	64	-	-	-	10,599
Served Disabled %	20%	18%	59%	28%	18%	22%	0%	1%	0%	0%	0%	-
Total Disabled %	8%	7%	23%	11%	7%	8%	0%	0%	0%	0%	0%	39%
Minority Population	1,676	5,058	20,212	7,960	5,565	6,992	189	371	-	-	-	29,821
Served Minority %	6%	17%	68%	27%	19%	23%	1%	1%	0%	0%	0%	-
Total Minority %	3%	9%	37%	15%	10%	13%	0%	1%	0%	0%	0%	55%
Population in Poverty	2,395	5,168	13,885	7,608	4,017	6,086	418	412	-	-	-	28,509
Served Poverty %	8%	18%	49%	27%	14%	21%	1%	1%	0%	0%	0%	-
Total Poverty %	5%	10%	28%	15%	8%	12%	1%	1%	0%	0%	0%	57%

Figure 24: Duplicate Service Areas and Service Levels



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Figure 25: Transit Service Duplication





Chapter 4: Public Engagement

INTRODUCTION

As noted in the project overview, public engagement was a critical component in the development of this Study and is one of the primary components of transit coordination. The public engagement process lasted from December 1st, 2017 through June 2018 and included methods such as surveys, public workshops, and activities to reach various members of the public. The engagement process and a summary of the feedback gathered is summarized in the following sections.

STAKEHOLDER INVOLVEMENT

The stakeholder involvement process included the formation of a stakeholder list (and from that list an Advisory Committee), a service provider survey, and a stakeholder kick-off event. First, the project team assembled a list of potential stakeholders and invited them to participate in the process in number of ways such as serving on the Advisory Committee, conducting interviews, and attending public meetings. A list of organizations represented on the list of potential stakeholders can be found in Appendix M.

The list of stakeholders was eventually narrowed down based on responses from the invitation to participate on the Advisory Committee and a review of the participants to ensure a good distribution of representation from the community. Representatives from the following stakeholder groups agreed to participate on the Advisory Committee:

Stakeholder Advisory Committee Meeting.



- Waco Transit (urban, rural, and mobility transit providers)
- Demand Response Passenger
- McLennan County (elected officials and veterans' services)
- Waco Habitat for Humanity
- City Manager of McGregor
- Caritas of Waco
- Workforce Solutions
- Greater Waco Chamber
- Heart of Texas Homeless Coalition
- Mission Waco

Provider Survey

Prior to the formation of the Advisory Committee and the Kick-off event, the transit service providers of the area were invited to participate in a survey. The purpose of this survey was to gather information about public transit providers throughout McLennan County in order to foster better coordination and improved service to transit users. The questions on the survey asked respondents to provide information on their agency's attributes, such as:

- What type of program they operate
- What type of federal funding they utilize
- What are their service hours of operation and coverage area
- If they maintain passenger manifests
- Information about their fleet size
- Vehicle capacity
- Maintenance condition
- ADA accessibility
- Annual ridership

Feedback also included opportunities to provide feedback on service opportunities, barriers to

coordination, existing coordination, and what kind of scheduling technology their agency uses.

When asked what transit services were needed in their communities, a majority of providers responded that late night service was needed, while most respondents also noted that both commuter and weekend services were needed.

When asked what major obstacles or concerns needed to be addressed in order for public transportation services to be improved both now and in the future, respondents noted the following barriers (noted in order of frequency of mention) in Table 30.

The majority of respondents to the survey noted that while coordination does exist between agencies, there are overlaps in service both in the rural and urbanized areas. These overlaps in service provide project opportunities for further coordination where possible.

Table 30: Transit Providers, Barriers

Barrier	% Respondents Noted
Funding (lack thereof)	100%
Lack of drivers	83.3%
Road quality	83.3%
Lack of vehicles	66.7%
Rural environment	66.7%
Maintenance funding	33.3%
Dispatching	16.7%
Political barriers	16.7%
State of good repair	16.7%

Chapter 4: Public Engagement

Kick-Off Event

The project team held a public kick-off event on February 1st, 2018 at the Waco Transit building on 8th Street that was open to the public and stakeholders alike. The event served as the starting point for the public engagement effort and a springboard to activate the Advisory Committee. The event had two portions; the first portion was a tabling event (discussed further in the Public Involvement section) and the second portion was a workshop.

Tabling Event

The first portion of the kick-off was a tabling event, which was held at the terminal of the Waco Transit building because it specifically aimed at reaching members of the public who already use public transit. The project team set up tables and maps at the terminal to foster a discussion about the transit needs of the community. Refreshments and giveaways were also provided to participants. The primary goal of the tabling event was to get the public to take the public survey and to understand what transit elements were working well and what could use improvement. Staff also rode buses on various routes during these events to allow passengers that do not pass through the Transit Center the opportunity to provide feedback and take the survey. All of the results from this event

are reflected in the survey results in Figure 26. The purpose of the tabling event was to:

- Identify what works and what needs improvement
- Understand how easy it is to get information on transportation resources
- Understand issues with the current system
- Identify suggested route changes
- Better understand public perception of transportation in the county

Workshop

The workshop, which was held in the conference room inside the Waco Transit building on February 1st, 2018 following the tabling event, was open to both stakeholders and the public. This open house-style workshop encouraged interactive discussions about transportation needs and how to best meet those needs. The purpose of the workshop was to:

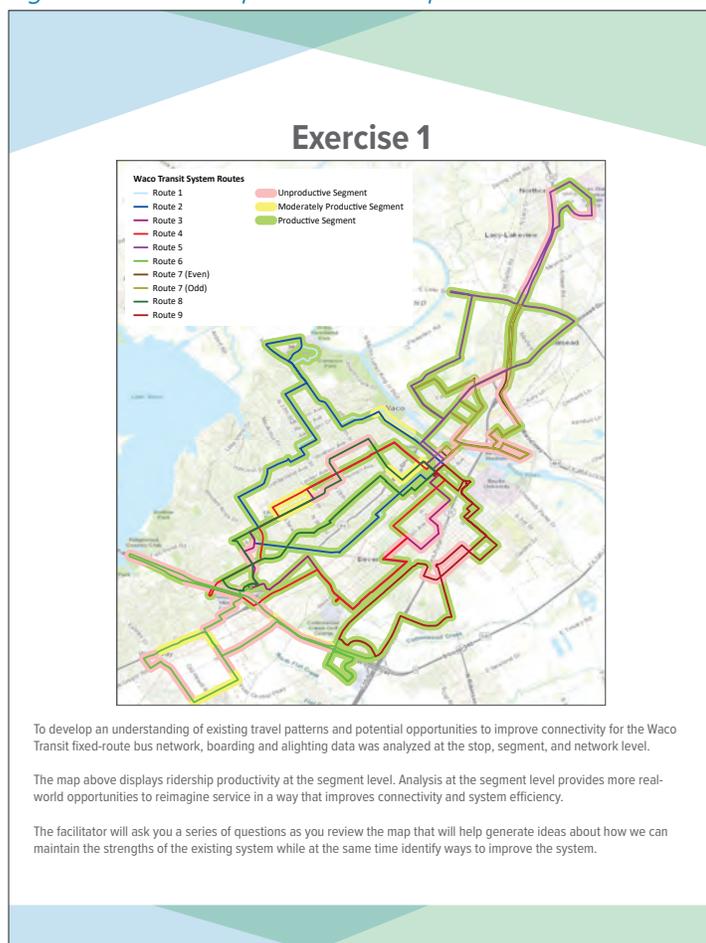
- Develop a shared understanding of what coordination is and what it means to McLennan County;
- Learn about the public transit needs of the community; and
- Identify ways to improve public transit in and through McLennan County.

As part of the Tabling Event, the project team talked with people at the bus stops outside the Transit Center.



About 18 stakeholders representing a range of human service agencies and transit providers, as well as a Demand Response passenger, attended the workshop, where attendees were asked to participate in a set of three exercises using a participant workbook and response sheet. The first exercise provided participants with a map of existing fixed-route bus service and how well each segment of the service performed in terms of ridership productivity. Participants used this map to answer a set of questions meant to help generate ideas about how to maintain the strengths of the existing system while also identifying ways to improve the system. Figure 26 shows the map from the first exercise as included in the participant workbook.

Figure 26: Workshop Exercise 1 Map



For the second exercise, participants were provided two maps, this time at the county level, with one showing locations and numbers of customer pickups for both rural services (5311) and seniors/individuals with disabilities services (5310), and the other showing drop-off locations and numbers for the same services. These maps helped participants answer a new set of questions meant to help generate ideas about how to improve demand response service throughout McLennan County. Figure 27 shows the maps that were provided for the second exercise in the participant workbook.

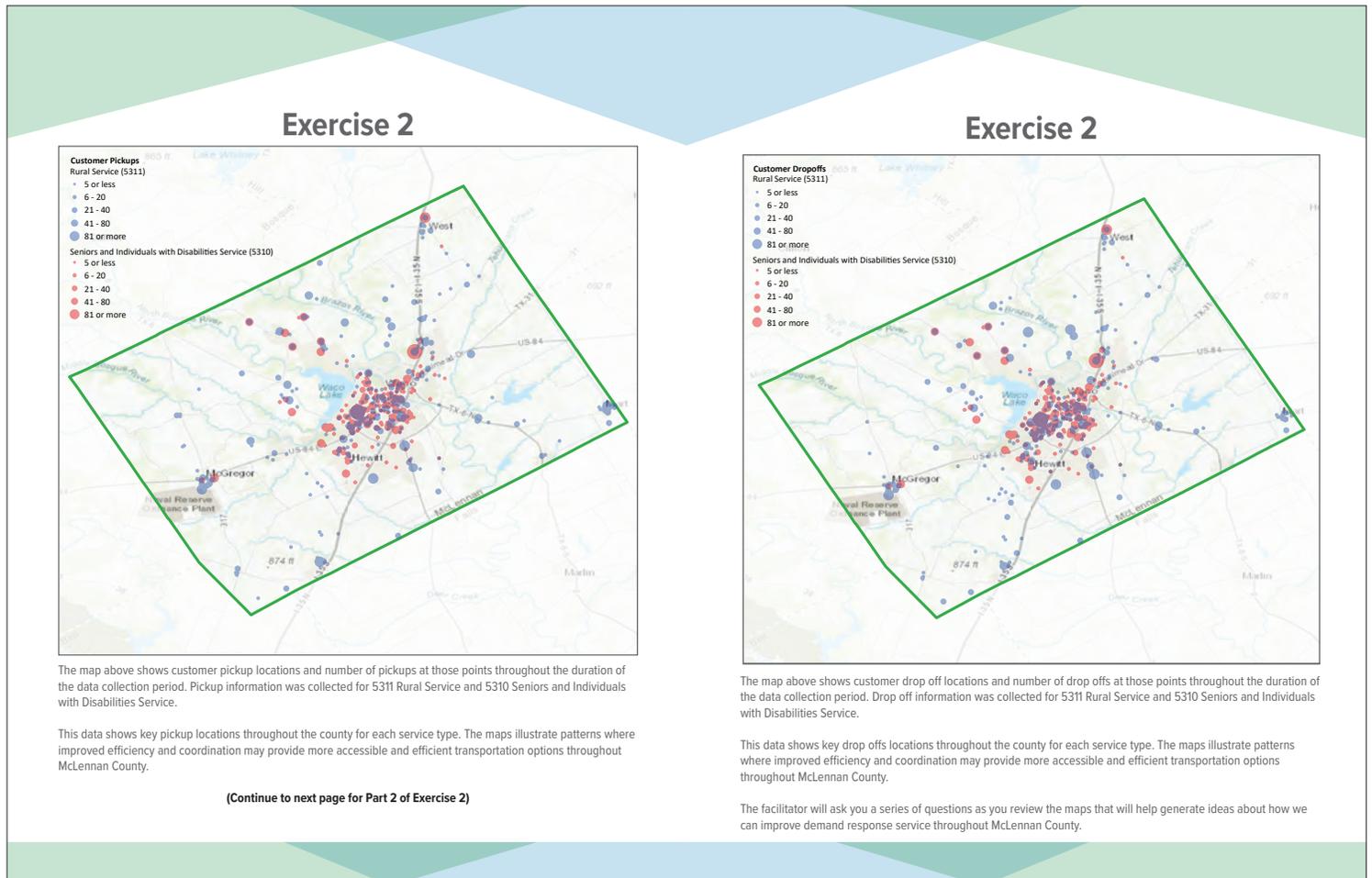
The third and final exercise provided the participants with a set of coordination opportunities along with a description for each. They were then asked to rank each of the coordination opportunities in terms of their importance to the future of transit coordination in McLennan County. The rankings were made on a scale of 1-5, with 1 being the least important and 5 being the most important. Figure 28 shows the list of opportunities and their descriptions.

Workshop Feedback

For the first exercise, stakeholders generally agreed with the ridership productivity classifications displayed in the exercise map. When questioned about areas that do not already have service that need it, the participants named various locations such as employment and service centers, shopping/retail destinations, roadways corridors, and community areas. When asked about areas that need expanded service, participants named the same types of locations, with the addition of education centers. A few of the participants left additional comments on this exercise, discussing some of the issues with existing service and facilities as well as identifying areas and locations that need improved or increased service.

Chapter 4: Public Engagement

Figure 27: Workshop Exercise 2 Maps



On the second exercise, stakeholders listed other various agencies that provide forms of transportation services in the county, including charity organizations/non-profits, senior services companies, rideshare companies, employers, and HOTCOG, the regional council of governments for the area. When asked if any of the areas with concentrations of pickups/

drop-offs have similar characteristics, participants responded primarily that employment centers have similarities. Participants were also asked about what types of improvements are needed to transportation services in McLennan County. Responses included ideas like expanded services (days, times), improved service characteristics such as wait times and efficiency, fixed-routes to prominent destinations and population centers, and service to employment centers outside of Waco. When asked if there are any major employment centers or attractions outside of the urban area that could benefit from being served by transit, there were several destinations that multiple stakeholders listed, including C3,

“Jobs in Waco are well served but jobs in the rural area need help.”

Space X, and Youth Facility. This exercise also asked participants about whether or not the days and hours of operation for demand response services are adequate, and whether late or weekend service is needed. Most responded that both later and weekend services would be appropriate and that the gap between other services and demand response services needs to be addressed. Some participants left additional comments on this exercise as well, which generally related to identifying areas that need services.

In the third exercise, all but two of the coordination opportunities received an average score of 4.0 or higher from the stakeholders. The opportunity with the highest average score (4.6) was “Rural Community to Waco Connectivity Project,” indicating that stakeholders are highly prioritizing the need to connect Waco, the region’s largest urban area,

“How can we eliminate the gap between when fixed-route service ends and the evening LINK service begins?”

with some of the smaller rural communities that surround it. For many of these communities, Waco may be a top destination for employment and entertainment, so it is important for them to have public transportation service options to and from Waco. The two opportunities that scored the lowest average ranking (2.2 each) were “Alternative Fuels” and “Terminal Expansion.” “Alternative Fuels” refers to addressing coordination with other public agencies to retrofit vehicle fleets to reduce emissions and decrease per-vehicle costs. “Terminal Expansion” refers to expansion of and improvements to the WTS terminal building, spanning increased bathroom/lobby/customer service capacity, central cooling/

Figure 28: Workshop Exercise 3 - Opportunities & Descriptions

Exercise 3	
Coordination Opportunity	Description
Rural Community to Waco Connectivity Project	Provides city access to a wide variety of citizens from Falls and McLennan Counties. This project provides accessibility options (e.g. hospitals, employment, etc.) that enhance quality of life opportunities.
Improve Commuter Services	Includes projects aiming to reduce commuter travel times as well as pose viable solutions for congestion mitigation.
Standard of Good Repair	This includes day to day operations maintenance, as well as the operation of complimentary ADA services. Presents the opportunity for reimbursement of 5310 funds for costs relating to complimentary ADA services provided.
Alternative Fuels	Addresses coordination with other public agencies to retrofit vehicle fleets to reduce emissions and decrease per vehicle costs.
Bus Stop Improvements	Addition of bus shelters/bus pullouts to meet or exceed ADA accessibility requirements, provision of route information, enhanced lighting and safety features, and kiosks (at high volume stops) for real time updates and pass purchasing.
Increase Fixed Route Services	Projects focused on understanding the feasibility of increasing service frequency, expanding service downtown, and extending hours of operation for specific routes.
Gap Service	Provides funding for curb to curb service for those (living in urbanized Waco) who do not qualify for ADA service but struggle to use public transportation.
Terminal Expansion	Calls for expansion and improvements of the WTS terminal building, spanning increased bathroom/lobby/customer service capacity, central cooling/heating, and safety/security.
Reimagine Fixed Route Service	Projects include implementation of a rapid transit system, higher transit frequency with increased hours of operation, and realignment of the current fixed route system.
Transit Asset Management Plan Development	Aims to identify existing critical assets and the resources necessary to preserve said assets in good operational and structural condition.

heating, and safety/security. Though both of these opportunities provide benefits, their low average rankings indicate that presently, stakeholders are much more concerned with direct improvements to mobility first before addressing amenities or efficiencies.

Chapter 4: Public Engagement

PUBLIC INVOLVEMENT

The Public Involvement phase of the Public Engagement process consisted of a user survey and a public kick-off event which included a tabling event and a public workshop.

User Survey

A user survey was made available to the public from February 1st to 28th, 2018. The purpose of the survey was to gather information about public transit users throughout McLennan County in order to foster better coordination and improved service. The questions on the survey asked respondents to provide information on:

- Their current travel habits;
- How much they know about current transit services;
- How often they use current transit services;
- Why they use public transportation;
- What their destinations are;
- How good they think current services are;
- Why they don't use current services;
- What they think would improve the services;
- Other relevant questions to understand current conditions and the public's needs;

The survey was promoted in multiple online locations to encourage as many people as possible to take it. These online locations included:

- The McLennan County website;
- The Waco Metropolitan Planning Organization website;
- The Waco Tribune-Herald website;
- The Act Locally Waco website;
- The City of Waco website; and
- The Waco Transit website.

A link to the survey was also provided on a promotional postcard that was distributed at the

Waco Transit Center on Fixed-Route and Demand Response vehicles.

Survey Results

A total of 223 responses were submitted on the user survey. To see a graphic representation of some of the results from the survey, see Figure 29.

About half of respondents said that they normally travel by car, just under a third of respondents travel by bus, and a tenth of respondents use demand response services. Almost 80% of respondents answered that they are aware of McLennan County transit services and ride assistance services, and just under 75 percent of respondents who have used McLennan County public transportation within the last year said that they would be "very likely" to use it again. This indicates that for those people already using transit services, the McLennan County transit is serving them well enough that they would continue using it.

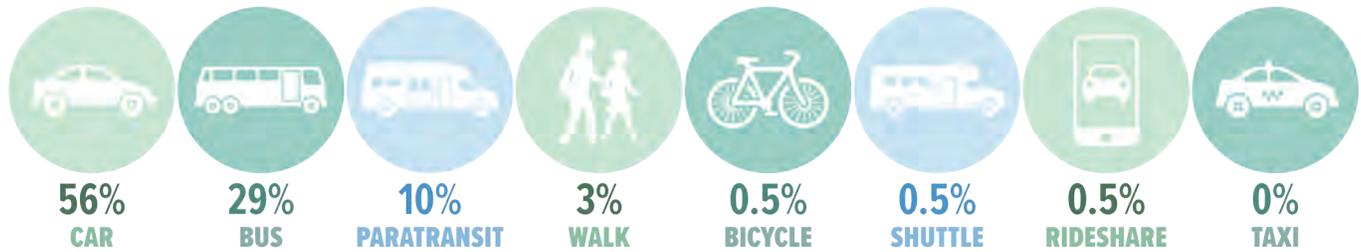
Similarly, just over half of respondents rated the adequacy of public transportation in McLennan County as either "good" or "excellent" while the remaining respondents (41%) rated the public transportation services as "average" or "poor." This indicates that although McLennan County public transportation is adequately serving many of its customers, there is still room for service expansion and improvement to address the needs of a greater segment of the population.

The top three reasons that respondents said they use public transportation were to reach their work (38%), to reach medical services (29%), and to reach leisure activities (10%). These results revealed that public transportation is important for users to access essential needs and that there may be more of an appetite to use it for leisure activities if certain improvements make it a viable alternative.

Figure 29: User Survey Responses

THIS SURVEY RECEIVED **223** TOTAL RESPONSES.

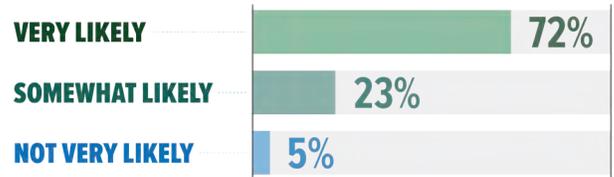
How do you normally travel?



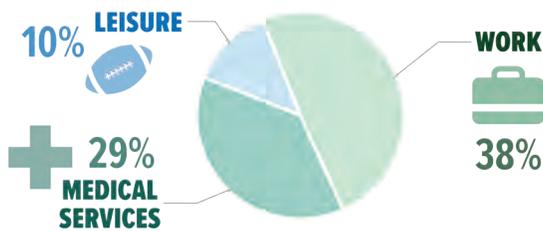
Are you aware of any rural or urban public transportation or ride assistance services in McLennan County?



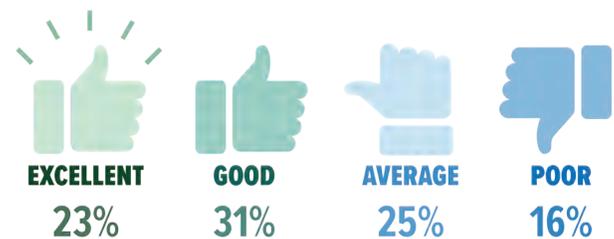
If you have used public transportation within the last year, how likely would you be to use it again?



What is the main reason you use public transportation?



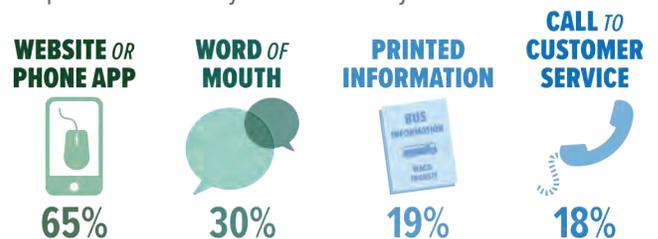
Overall, how would you rate the adequacy of public transportation in McLennan County?



What are the reasons you choose not to use public transportation?



What sources do you use to get information about public transit in your community?



Chapter 4: Public Engagement

The survey aimed to gather information about people who choose not to use public transportation too. Out of the respondents who do not use public transportation, 64% said it was due to the fact that they have their own vehicle, meaning that they consider driving their own vehicle to be more advantageous than using transit. Out of the respondents who do not use public transportation, a quarter of said that they don't use public transportation because the wait times are too long, and a quarter don't use public transportation because they don't know enough about the available services. These findings indicate that even though 78 percent of total respondents said they were aware of McLennan County public transportation and ride assistance services, many of the respondents don't use public transportation due to a lack of knowledge about the services.

Among respondents, the most prevalent source for obtaining information on public transit was the service website or phone application (65%). If McLennan County continues to update and improve its methods of disseminating service information and makes it as easy as possible for potential users to access and understand this information, the number of people who use public transportation may potentially to increase.

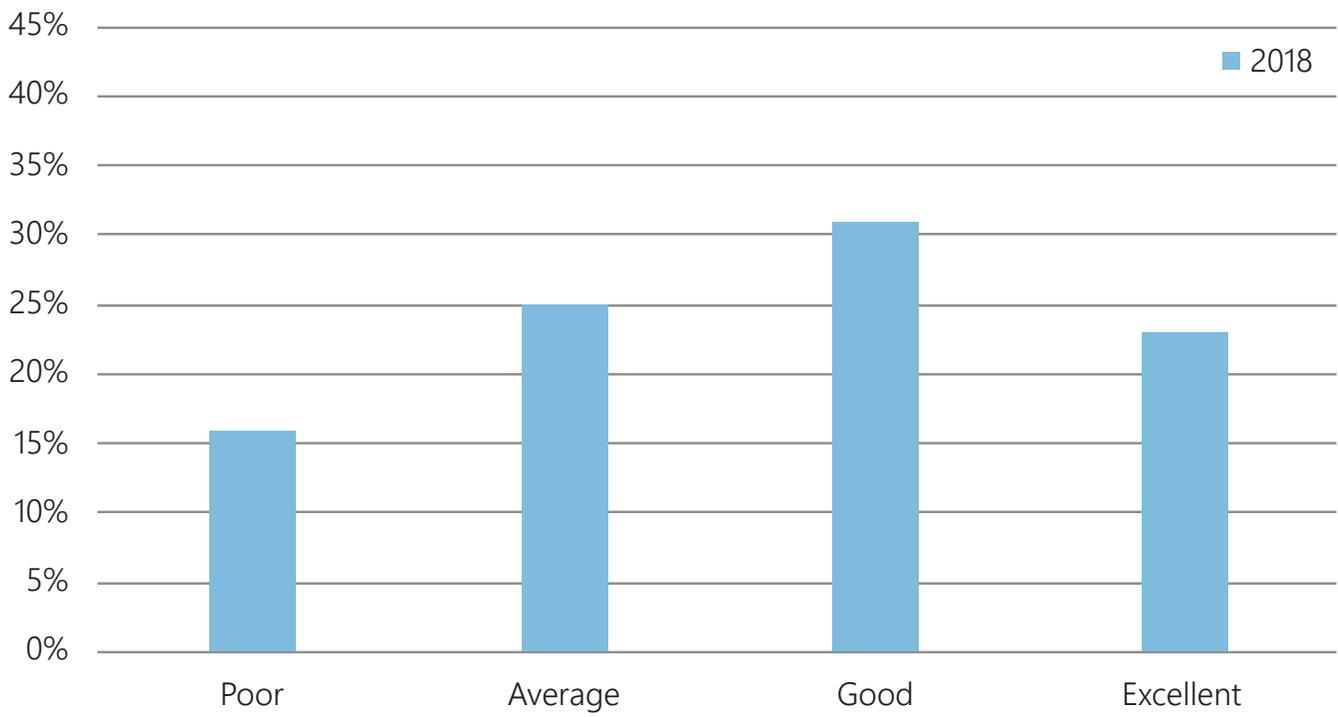
Trend Analysis in Survey Feedback

The results from several questions in the user survey distributed for this study can be compared to results from a similar survey distributed in 2010 as part of the HOTCOG Regionally Coordinated Transportation Plan. The comparison of results between the two surveys provides insight into how the perceptions of public transportation have changed over the eight-year period between the time the surveys were distributed. Note that the survey developed for this study (2018) did not replicate the questions from the previous survey (2010) exactly and that some of the questions for comparison were worded or structured

differently. This may lead to slight differences in how the people who took the surveys responded to the questions; however, the questions are similar enough to ensure the comparisons are legitimate.

Survey responses from the two years indicate that overall, general awareness of public transportation services offered in McLennan County has remained the same between 2010 and 2018, with 82% and 78% of respondents, respectively, indicating that they were aware of the services offered within the county. The lower percentage of respondents could indicate a decrease in exposure for provided services; however, it is likely that the difference in awareness is due to sampling or how the questions were worded between the two surveys. Figure 30 shows how respondents rated the adequacy of public transportation services in McLennan County in the 2018 survey. In this survey as well as in 2010 the positive rating of the services provided has remained consistent with 54% of respondents in both surveys rating service as Good or Excellent. However, the percentage of those who believe service is Excellent has increased significantly from 14% to 23%.

Figure 30: Respondents' Ratings of Public Transportation Service Adequacy



PUBLIC COMMENTS

There was an array of comments and suggestions during the public and stakeholder engagement process. Below is a list of common themes expressed throughout the public engagement process.

- Improved sidewalks and ADA amenities;
- Improved communication/publication on route service (how routes work);
- Increased hours of service;
- Increased frequency of service;
- Increased service area;
- Improved commuter options;
- Lack of funding;
- Lack of drivers;
- Road quality;
- Lack of vehicles;
- Rural environment;
- Maintenance funding;
- Dispatching;
- Political barriers ;
- State of good repair;
- Improve road conditions;
- Reimagine how the fixed-route service works; and
- Provide gap services.

PUBLIC COMMENT ON DRAFT STUDY

The 45-day public comment period for the adoption of this draft study began April 23 and ended June 7. The Waco Metropolitan Planning Organization (MPO) maintains and enacts a Public Participation Program (PPP), which serves as a program guide for the public participation process of the MPO by providing policies and principles that guide communication and coordination with residents, neighborhood associations, private and public agencies, transportation providers, and a wide array of interested parties and members of the public. Many of the planning activities of Waco Transit overlap with the activities of the MPO. Similarly, all significant public transportation projects or services are incorporated within the documents produced by the MPO. As a result, the PPP is used to meet Federal Transit Administration public participation requirements for the City of Waco and Waco Transit. The Primary purpose of the PPP is to ensure that all

policy actions of the MPO Policy Board are made only after the public and key transportation stakeholders have been informed about the issue and been given a reasonable opportunity to comment. To this end, a presentation and three public meetings were held throughout the 45-day comment period for this study. Table 31 represents a timeline of the steps involved during the adoption process for this study. The draft plan was also made available on the Waco MPO website (Figure 31) April 23 – June 7 as part of the 45-day public comment period for the adoption of this study. Table 31 provides information about the various public events that gave participants opportunities to provide comments. Table 32 shows the Public Comments received during this 45-day period along with responses from the Waco MPO, Table 33 shows the comments provided by the Technical Committee members along with responses from the MPO, and Table 34 shows the comments received via the project website or email along with the MPO's responses.

Figure 31: Waco MPO Website Screenshot

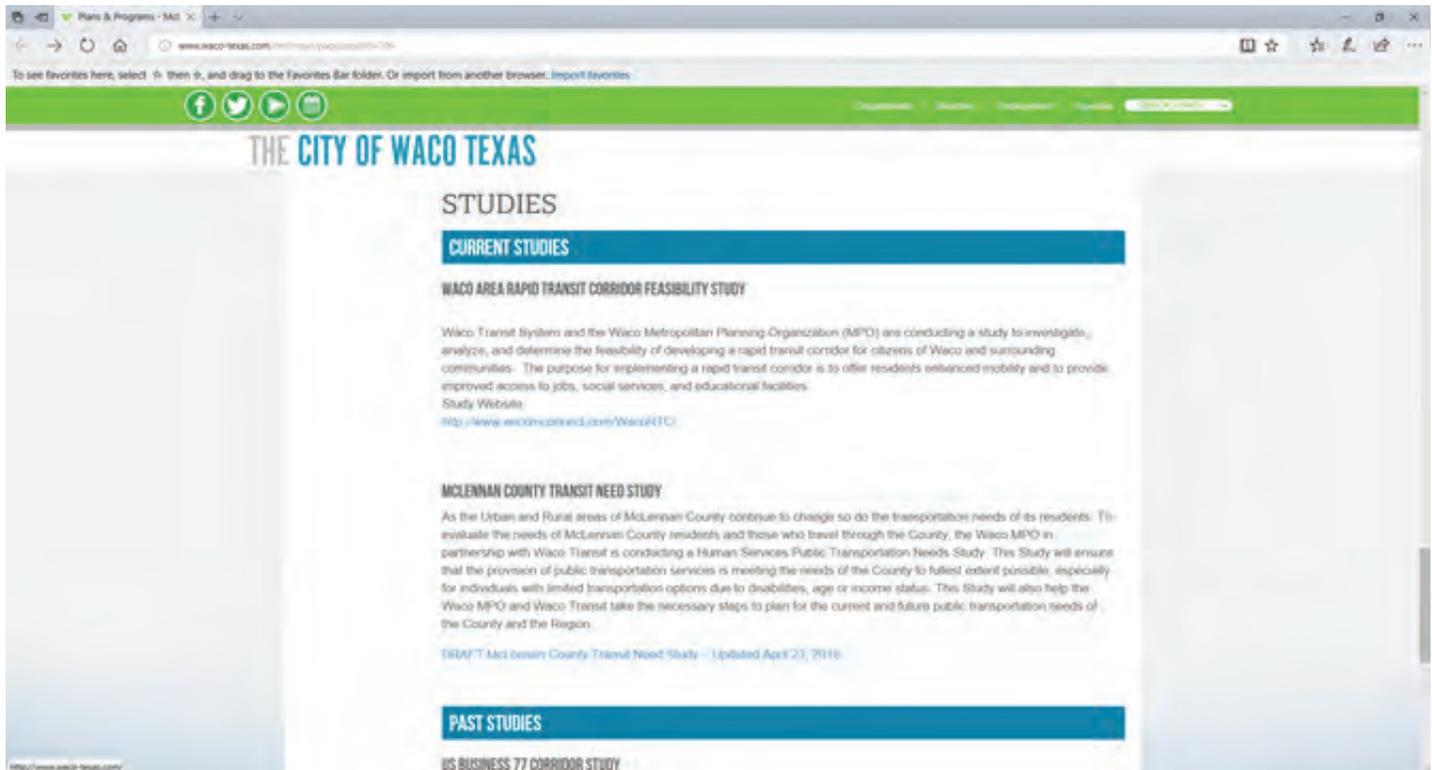


Table 31: 45-Day Comment Period Meeting Dates and Location

Date	Location	Event Type
April 19, 2018	Waco MPO	Presentation of the DRAFT Plan to MPO Policy Board
April 23, 2018	NA	Begin date for the 45-day public comment period
April 30, 2018 6:00PM	South Waco Community Center	Public Meeting
May 3, 2018 12:00PM	Waco Transit Administrative Building	Public Meeting
May 3, 2018 6:00PM	Waco Transit Administrative Building	Public Meeting
June 7, 2018	NA	End date for the 45-day public comment period

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Table 32: 45-Day Comment Period - Public Comments with MPO Responses

Date	Comment	MPO Response
Public Comment		
April 30, 2018 6:00PM	No public comments recorded	
May 3, 2018 12:00PM	Bicycle Lanes on 4th/5th Street between IH-35 and Waco Drive need to be repainted.	MPO staff noted and will request street maintenance (paving) schedule for 4th and 5th Street from the City of Waco.
May 3, 2018 12:00PM	She attended this public meeting because she saw the notice on the bus.	MPO staff noted and will pass along comment and thank you to Waco Transit System (WTS).
May 3, 2018 12:00PM	Why was the public bench outside of Wal-Mart removed?	MPO staff responded the bench had been placed in TxDOT right-of-way and TxDOT requested removal.
May 3, 2018 12:00PM	Is it feasible to transition the Waco Transit System from a flag stop system to a physical stop system?	MPO Director Evilia stated WTS has considered the associated costs of a physical stop system and believes it is cost prohibitive at this time.
May 3, 2018 12:00PM	Although the Waco Transit System is a flag stop system, disabled passengers often use the same stops each day, so couldn't those stops be identified and then made accessible in the interim?	Transit Need Study Consultant (TNS), Tim Simon, stated this is a strategy WTS could consider and 2 project recommendations in the TNS and current survey address this issue directly.
May 3, 2018 2:00PM	No public comments recorded	

Table 33: 45-Day Comment Period - Technical Committee Comments with MPO Responses

Date	Comment	MPO Response
Technical Committee Members Comments		
May 3, 2018 2:00PM	Suggestion to track businesses receiving tax breaks in the Waco area using New Employment Forecasts provided through the Waco-McLennan County Economic Development Corporation (WMCEDC). Those forecasts may provide information for service coordination opportunities with large employees coming to Waco. Contact Kris Collins through the Greater Waco Chamber of Commerce.	MPO staff noted.

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Table 34: 45-Day Comment Period - Website and Email Comments with MPO Responses

Date	Comment	MPO Response
Website and Email Comments		
<p>May 7, 2018 (Part 1 of 2)</p>	<p>A better public communication network must be enacted in Waco-McLennan County. If citizens in certain areas have little or no access to the public agenda then alternative modes must be created. No one should be disenfranchised! A more inclusive approach must be enacted instead of a one size fit all! Leave your office and reach out to the public so their needs will be identified and addressed. A library will not assure the public will retrieve a copy of a survey. Someone, anyone, could have brought copies of the survey to our 2018 monthly meetings. Use all forms of communication networks! There is not enough of field work enacted! Also, everyone does not have technical skills or own a computer. I feel too much responsibility is placed on the neighborhood associations. We are volunteers not paid employees.</p>	<p>MPO staff has noted your comment and will include it as part of the McLennan County Transit Need Study.</p> <p>If you have a moment, please review the attached summary of the public user survey for this study which targeted transit users during the month of February, 2018. You will likely be encouraged by the participation. Over 200 responses were received via website, phone application, on-board transit interviews and transit terminal interviews conducted by consultant, and phone surveys conducted by Waco Transit. City of Waco Neighborhood Services employees helped Waco Transit and the Waco MPO to promote the survey in February. Thank you for helping to make that survey such a success.</p>
<p>May 7, 2018 (Part 2 of 2)</p>		<p>The survey left for you at the East Waco Library is a second survey to prioritize the consultant recommendations included in the draft study. This 2nd survey is targeted to identified stakeholders and Advisory Committee members and to interested members of the public. Because there was such a great turnout of transit passengers in February for the first survey, MPO/WTS staff did not attend Neighborhood Association meetings.</p> <p>Thank you for your continued interest in transit improvements.</p>

In addition to general public involvement described earlier in this section, both the Stakeholder Advisory Committee and the public were invited to participate in a project prioritization survey. This survey gave participants a chance to rank the list of projects and coordination opportunities according to what level of impact these projects might have on improving transit in McLennan County. The Advisory Committee ranked individual projects and opportunities based on the FTA prioritization criteria (i.e. resources, time, and feasibility) and overall perceived effectiveness in addressing identified transportation gaps or improving transportation services. Participants of the online public survey ranked projects and opportunities according to overall the level of impact they had on improving transit in McLennan County. Scores from the online public input and from the Advisory Committee workbook were averaged together to generate the overall ranking of projects. This ranked list was presented to the MPO Policy board for review and approval on 06/21/2018. The project prioritization process is discussed in greater detail in Chapter 5.

Chapter 5: Opportunities & Implementation

INTRODUCTION

The following opportunities and projects are intended to address the transportation needs identified for McLennan County and improve public transportation services provided to the community. The opportunities were developed based on gap analysis findings and information provided during the public engagement process. In many cases, the information provided by the public reaffirmed conclusions drawn from the gap analysis. Opportunities in this plan also include coordination projects outlined in the HOTCOG Coordination Plan to build upon previous coordination efforts of the region. The opportunities and projects are not fiscally constrained. The implementation of these strategies can be augmented by utilizing existing funding mechanisms and regional plans.

The coordination projects are broken down into three sections:

Section 1 includes existing projects specific to McLennan County that were presented in the most recent HOTCOG Coordination Plan that are in the process or have yet to be implemented.

Section 2 includes value-added projects from the HOTCOG Coordination Plan with enhancements drawn from strategies and findings identified in this study. These projects preserve previous coordination efforts and include additional objectives that bolster the existing projects and ensure they address the needs of those who take public transportation in McLennan County.

Section 3 introduces new projects that specifically address barriers and issues identified in the analysis or during the public engagement process. Several of

the opportunities were provided by stakeholders or participating members of the public.

SECTION 1: EXISTING McLENNAN COUNTY COORDINATION OPPORTUNITIES

The following list of coordination opportunities are existing projects from the HOTCOG Coordination Plan (identified by project number). The recommendation is to make no changes to these projects from the HOTCOG plan.

- **Project 2: *Vehicle Maintenance Program***
 - **Description:** Continue regional and inter-agency coordination of vehicle maintenance and repairs through WTS' regional maintenance facility. Coordination of vehicle maintenance (which has been ongoing since 2010) consolidates costs and specialized training for maintenance.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; State of Good Repair; Vehicle Maintenance.
 - **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input.
 - **Status:** Executed and Implemented; Ongoing.
- **Project 3: *Regional Consolidation of Rolling Stock***
 - **Description:** Implement regional inter-agency agreement for preventive maintenance and coordination of rolling stock procurement can result in cost savings.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; State of Good

Repair; Vehicle Maintenance.

- **Plan Support:** Provider Survey; Stakeholder/Advisory Committee Input.



- **Status:** Executed and Implemented; Ongoing.
- **Project 6: Centralized Dispatching and Scheduling for Regional Trips**
 - **Description:** Establish a regional center for dispatching and scheduling. Provide regional oversight and coordination of day-to-day functions.
 - **Addressing Transit Needs/Gaps:** Inter-Agency Coordination; Commuter Options; Funding Utilization.
 - **Plan Support:** Provider Input.
 - **Status:** Executed and Implemented in McLennan County; Ongoing.
- **Project 12: 5310 Funding – The McLennan County Rural Transit District – Purchase of Service**
 - **Description:** Leverage local match funding with Section 5311 State Public

Transportation funds to provide additional trips and continue providing transportation services to seniors and persons with disabilities.

- **Addressing Transit Needs/Gaps:** Commuter Options; Funding Utilization; ADA Accessibility.
- **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input; Public Input.
- **Status:** Ongoing.
- **Project 13: 5310 Funding – Waco Transit System – Purchase of Service**
 - **Description:** Reimburse equipment maintenance costs for transporting elderly and disabled passengers on fixed-route and paratransit services.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; State of Good Repair; Vehicle Maintenance.
 - **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input.
 - **Status:** Funds were previously used for preventative maintenance.
- **Project 15: Conversion of Public Transportation Vehicles to Alternative Fuels**
 - **Description:** Retrofit the public transportation fleet to utilize alternative fuels. Converting public transportation vehicles minimizes ozone and greenhouse gas emissions. Multiple agencies can partner to reduce fleet conversion costs overall. Project is dependent on when funds become available and market conditions determine feasibility.

Chapter 5: Opportunities & Implementation

- **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; Vehicle Maintenance.
- **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input.
- **Status:** The Waco Region continues to be in attainment for air quality and will continue to monitor conditions. An implementation strategy will be considered should regional air quality observations approach EPA limits.
- **Project 17: *Mobility Management Program***
 - **Description:** Provision for a Mobility Management Coordinator to improve mobility and services to the region through the matching of various transportation needs with appropriate resources or set of resources. Transportation needs are continually changing and evolving, and it will be critical for the Mobility Management Coordinator to maintain open channels of communication and engage with the various service providers to ensure transportation needs are being met.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; Improved Mobility; Grow Service Area; ADA Accessibility; Commuter Options; Connectivity.
 - **Plan Support:** Stakeholder/Advisory Committee Input.
 - **Status:** Ongoing.
- **Project 18: *Waco Transit Operational and Preventative Maintenance Tasks***
 - **Description:** Includes day-to-day operational and preventative maintenance, as well as short-range transportation planning performed by the WTS staff.
- **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; Vehicle Maintenance; State of Good Repair.
- **Plan Support:** Stakeholder/Advisory Committee Input; Provider Input.
- **Status:** Waco Transit vehicles and assets remain in good operational condition; Ongoing.
- **Project 24: *WTS Terminal Expansion and Improvements***
 - **Description:** Includes day-to-day operational and preventative maintenance, as well as short-range transportation planning performed by the WTS staff.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; Commuter Options; ADA Accessibility; State of Good Repair.
 - **Plan Support:** Stakeholder/Advisory Committee Input; Provider Input.
 - **Status:** Future role and services provided at the WTS terminal to be determined as a result of BRT and Fixed-Route Realignment Projects. Future services at the terminal may also be impacted by the implementation of passenger rail services which requires additional study by TXDOT.
- **Project 25: *Development of Bus Rapid Transit Service within Waco Urbanized Area***
 - **Description:** Develop reliable, frequent, and high capacity transit service with limited stations and corridor frequency every 15 minutes (Bus Rapid Transit). This project will improve connectivity and greatly reduce travel times throughout the urbanized Waco area and for rural

and demand response passengers connecting to the urbanized area. This project will overcome the physical barriers to employment or other opportunities experienced by the transit dependent and at-risk populations. It will also make transit a viable alternative for potential passengers looking to make a mode change.

- **Addressing Transit Needs/Gaps:** Funding Utilization; Inter-Agency Coordination; Commuter Options; ADA Accessibility; Frequency of Service; Improved Mobility; Grow Service Area;



Travel Time Savings.

- **Plan Support:** Stakeholder/Advisory Committee Input; Provider Input; Public Input; Fixed-Route Analysis.
- **Status:** Approximately five years to complete; Locally preferred alternative approved by Waco City Council. Request pending for FTA small starts program consideration. Funding for design and engineering phase under consideration.
- **Project 27: Development of Transit Asset Management Plans**
 - **Description:** Develop plan to identify transit assets and determine necessary activities and resources to preserve good operational and structural condition. Ensures compliance with federal requirements identified within MAP-21 and then the FAST Act.
 - **Addressing Transit Needs/Gaps:**

Funding Utilization; Inter-Agency Coordination; Vehicle Maintenance; State of Good Repair.

- **Plan Support:** Stakeholder/Advisory Committee Input; Provider Input.
- **Status:** In the process of completing.

SECTION 2: VALUE-ADDED / ENHANCEMENT OPPORTUNITIES

The following are existing opportunities from the HOTCOG Coordination Plan (identified by project number) that were identified separately from Section 1 because of their potential for enhancement based on findings from this Study.

- **Project 1: Plan for and Sustain the Coordination Planning Process**
 - **Description:** Maintain coordination of transit and human services planning efforts and continue engagement of stakeholders. This project will maintain a good distribution of representatives from the community and provide convenient and effective ways to participate in the coordination process.
 - **Addressing Transit Needs/Gaps:** Inter-Agency Coordination.
 - **Plan Support:** Demographics Analysis; Stakeholder/Advisory Committee Input.
 - **Enhancement:** Utilize technology to enhance outreach and engagement methods that increases participation by making it meaningful and convenient for participants.
 - **Status:** Ongoing.
- **Project 14: Increase Utilization of Public Transportation for the Aging and Persons with Disabilities**
 - **Description:** Provide training for both providers and passengers on how

to utilize transportation and how to self-advocate for transportation for those with special needs. Support improvements and projects that increase the utilization of public transportation for people with disabilities and aging within McLennan County.

- **Issue(s) Addressed:** Commuter Options; ADA Accessibility; Improved Mobility.
- **Plan Support:** Stakeholder/Advisory Committee Input; Public Input; Demand Response Analysis.
- **Enhancement:** Utilize technology as well as the existing coordination process and relationships to maximize resources and augment impact of advocacy.
- **Status:** Ongoing.
- **Project 16: *GPS Tracking and Remote Monitoring of Public Transportation Vehicles***
 - **Description:** Track and remotely monitor all public transportation vehicles within the region in real-time.
 - **Addressing Transit Needs/Gaps:** Passenger Amenities; Safety and Security.
 - **Plan Support:** Demographics Analysis; Stakeholder/Advisory Committee Input; Provider Input; Demand Response Analysis.
 - **Enhancement:** GPS technology, in addition to improving safety and security can provide a platform for the development or utilization of existing smart phone apps, which can greatly improve user experience and routing choices. With the increased use of such technologies comes improved data that can be monitored and analyzed to improve service delivery and efficiency.
 - **Status:** All public transportation vehicles within the Heart of Texas region have GPS tracking & remote monitoring capabilities. All future vehicle purchases will incorporate technologies permitting real-time tracking of vehicles for security and for communicating schedules and delay to the public.
- **Project 19: *Installation and Improvement of Passenger Amenities and Bus Pullouts for Urban Fixed-Route Services***
 - **Description:** Identify and prioritize locations for bus shelters, kiosks, and amenities, as well as priority locations for bus pullouts that will help improve safety and traffic flow.
 - **Addressing Transit Needs/Gaps:** Passenger Amenities; ADA Accessibility; Travel Time Savings.
 - **Plan Support:** Demographics Analysis; Stakeholder/Advisory Committee Input; Fixed-Route Analysis; Public Input; Provider Input.
 - **Enhancement:** This opportunity will contribute and help accomplish the goals of various other Projects such as: Increase Utilization of Public Transportation for Aging and Persons with Disabilities; Development of Bus Rapid Transit Service; Realignment of WTS Fixed-Route Service; and WTS Fixed-Route Service Implementation Program. Coordination with the implementation of the Waco Active Transportation Plan would also extend the impact of this opportunity. This project will also contribute to improved safety and reliability of WTS Fixed-Route Service.
 - **Status:** Public input from the 45-day Public Comment Period lead to the development of prioritized lists and maps of bus stops in Appendix L that

WTS can use to evaluate potential bus stop improvements throughout the system.

- **Project 22: *Expansion of Service Hours for Waco Transit***

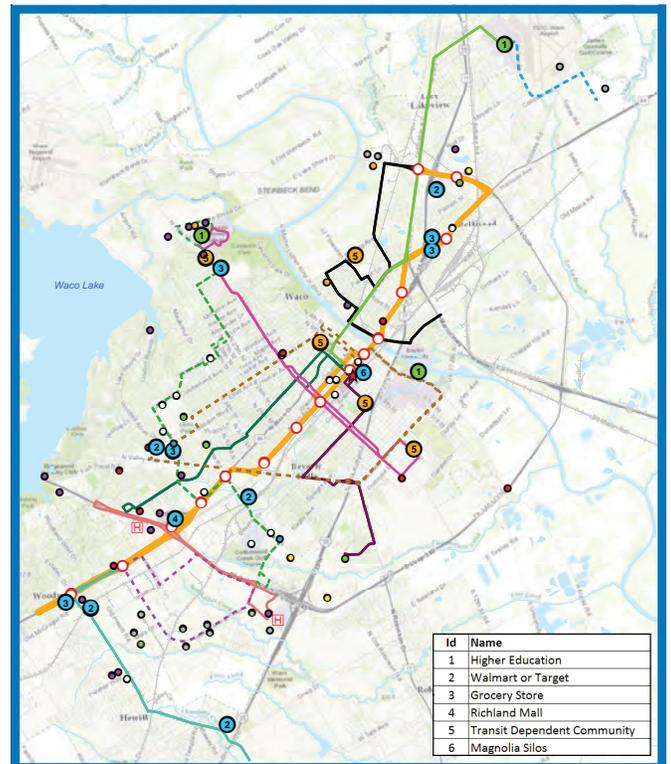
- **Description:** Expand service hours to later in the afternoon and on Sundays. Continue coordination between fixed-route services and the LINK to eliminate the gaps between when fixed-route service stops running and when the LINK begins.
- **Addressing Transit Needs/Gaps:** Expanded Service Hours; Commuter Options; Gap Service.
- **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input; Public Input; Demand Response Analysis; Fixed-Route Analysis.
- **Enhancement:** One of the most consistent transit need expressed from the public was the need for later service. Expanding service later into the evening and adding service on Sundays would allow more people to use the Waco Transit System as a viable alternative. Many nontraditional work schedules such as the service industry and industrial jobs require service outside of the traditional work day. An interim recommendation would be to end service at 8:00 pm with the eventual goal of ending service at 10:00 pm.

- **Project 26: *Realignment of Waco Transit Fixed-Routes***

- **Description:** Realign and adjust fixed-route transit service to increase frequencies and improve connectivity throughout the WTS network and with the Bus Rapid Transit Corridor

at major stops. Construct sidewalks and pedestrian-friendly crosswalks at significant destinations. Route design will provide for transit service expansion and contraction as needed.

- **Addressing Transit Needs/Gaps:** Funding Utilization; Commuter Options; Gap Service; Passenger Amenities; Connectivity; Grow Service Area; Travel Time Savings; Frequency of Service; Improved Mobility
- **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input;



Public Input; Demand Response Analysis; Fixed-Route Analysis; Travel Time Savings; Frequency of Service; Improved Mobility.

- **Enhancement:** Utilizing the segment analysis performed in the Inventory of

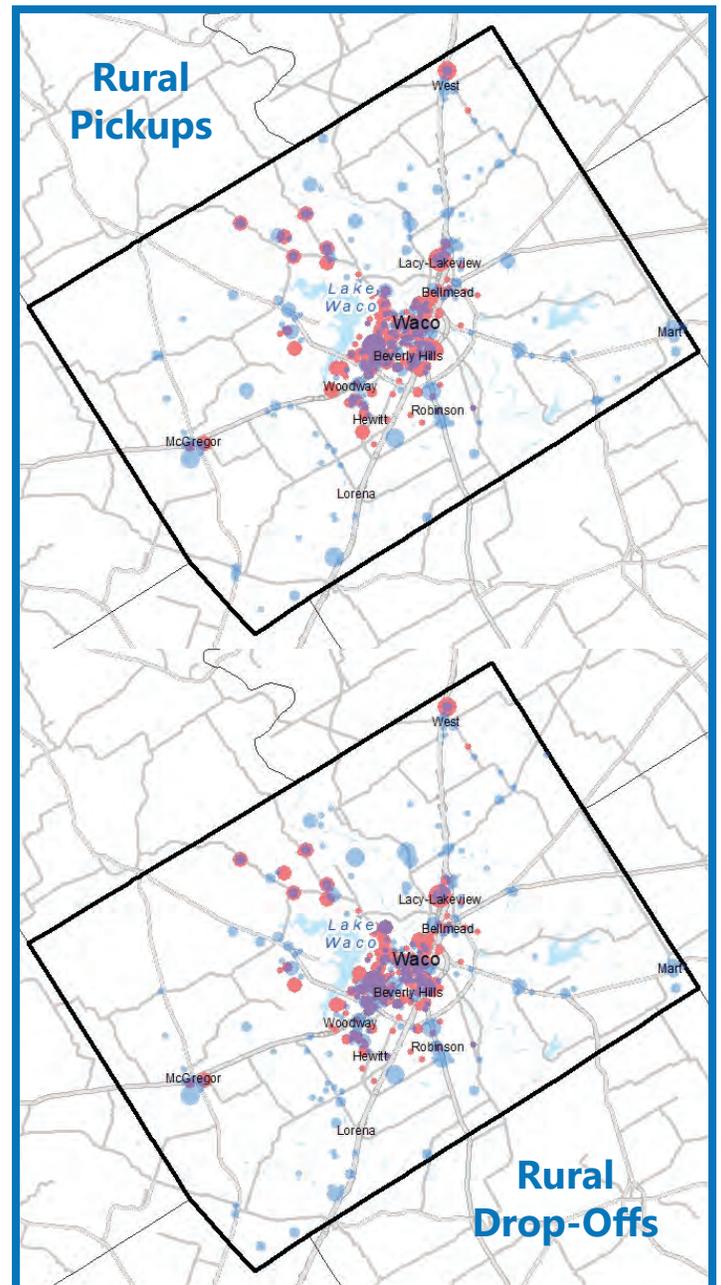
Chapter 5: Opportunities & Implementation

Services along with reimagined fixed-route system identified in the Waco RTC Study will provide a foundation on which to explore and develop a more connected network that provides more bi-directional service, reduces out of direction travel and travel time. Coverage will be maintained or improved throughout.

SECTION 3: NEW COORDINATION OPPORTUNITIES / PROJECTS

In addition to the existing and value-added projects listed in Sections 1 and 2 of this chapter, new opportunities and projects have been identified during this Study through the analysis, public participation, and stakeholder engagement efforts.

- **Project 27: Fixed-Route Service Implementation Program**
 - **Description:** Develop a plan (similar to a phased work program for the construction of a new roadway) that considers funding, efficiencies, and interrelationships of various fixed-route transit projects and program a comprehensive delivery of projects over time. Example: The bus stops and passenger amenities associated with Project 19 are dependent of the completion the fixed-route realignment of Project 26.
 - **Addressing Transit Needs/Gaps:** Inter-Agency Coordination; Funding Utilization.
 - **Plan Support:** Provider Input; Stakeholder/Advisory Committee Input.
- **Project 28: Coordinate Rural (5311) Transit Trips**
 - **Description:** Establish regularly-scheduled trips and identify



opportunities to combine trips where there is high demand for rural transit. The results from this study's demand response analysis in the inventory of services chapter can be utilized to identify where and when the most

demand is occurring. The service could be a hybrid service utilizing components of both demand response and fixed-route services. Provides more efficient service for the provider and more reliable service for the passengers.

- **Addressing Transit Needs/Gaps:** Funding Utilization; Connectivity; Inter-Agency Coordination; Gap Service; Travel Time Savings; Improved Mobility.
- **Plan Support:** Stakeholder/Advisory Committee Input; Public Input; Demographics Analysis; Demand Response Analysis.
- **Project 29: *Coordinate Transfers Between Rural (5311) and Urban (5307) Transit When Possible***
 - **Description:** Create strategies for assessing location and time to coordinate transfers between providers. Results from this study's rural-to-urban commute analysis in the inventory of services chapter can be utilized to identify appropriate transfer locations. This project would begin the process for better coordination of transfer activities.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; Connectivity; Inter-Agency Coordination; Gap Service; Travel Time Savings.
 - **Plan Support:** Stakeholder/Advisory Committee Input; Public Input; Demographics Analysis; Demand Response Analysis; Fixed-Route Analysis.
- **Project 30: *Coordinate Transit Services with Major Employers***
 - **Description:** Contact major employment centers and establish regular fixed-route trips to/from facilities based around worker shift schedules. Form

partnerships with businesses to provide an employment shuttle connecting to the WTS network.

- **Addressing Transit Needs/Gaps:** Funding Utilization; Connectivity; Inter-Agency Coordination; Gap Service; Commuter Options; Grow Service Area.
- **Plan Support:** Stakeholder/Advisory Committee Input; Demand Response Analysis; Fixed-Route Analysis.
- **Project 31: *Develop Partnerships with top destinations for DR services***
 - **Description:** Develop partnerships with organizations that are top destinations for demand response transportation services (e.g. Friends for Life and Sunny Day Center) to enable customization and strategic service delivery options that respond to the gaps and needs throughout the County.
 - **Addressing Transit Needs/Gaps:** Funding Utilization; Connectivity; Inter-Agency Coordination; Gap Service; Commuter Options; Grow Service Area.
 - **Plan Support:** Stakeholder/Advisory Committee Input; Demand Response Analysis.
- **Project 32: *Expansion of Service Hours and Days for McLennan County Rural Transit District***
 - **Description:** Expand levels of service by running later in the evenings, extending Saturday service and offering new service on Sundays for the McLennan County Rural Transit District to address the service level gaps for persons residing in the Waco urbanized area who do not qualify for the ADA paratransit demand response service, yet have a difficult time using the Waco Transit fixed-route system.

- **Addressing Transit Needs/Gaps:** Expand Service Hours; Funding Utilization; Commuter Options; ADA Accessibility.
- **Plan Support:** Demographics Analysis; Stakeholder/Advisory Committee Input; Public Input; Demand Response Analysis.
- **Project 33: *Expand and Improve the Rural Community-to-Waco Connectivity Project***
 - **Description:** Expand hours of service for the LINK and coordinate improvements with other urban commuter programs and WTS fixed-route services. The LINK provides selected areas in Falls and McLennan Counties access to the City of Waco for employment, educational, and other necessary services to enhance quality of life opportunities.
 - **Addressing Transit Needs/Gaps:** Commuter Options; Gap Service; Frequency of Service.
 - **Plan Support:** Demographics Analysis; Stakeholder/Advisory Committee Input; Public Input; Demand Response Analysis.

PROJECT & OPPORTUNITY PRIORITIZATION

Pursuant to FTA regulations, all coordinated transportation plans must include a prioritized implementation plan based on funding and feasibility within the horizon period. After the Advisory Committee reviewed the recommended coordination opportunities and projects, the project team helped them execute a prioritization process of recommended strategies. To decide which projects had more value, participants scored them according to FTA prioritization standards (i.e time, feasibility, resources). During the scoring process, participants also considered how effectively each strategy would improve the accessibility and overall quality of their transportation services.

The following definitions for each of the criteria were provided to the committee for reference:

- **Resources:** Demonstrates coordination with other community transportation and/or human service operators/resources, and/or maximizes existing resources.
- **Improve Time Performance:** Improves average travel time, and/or improves time performance.
- **Feasibility:** Does not face major funding and/or other hurdles.
- **Enhances Transportation Services:** Through implementation, addresses geographical and/or accessibility gaps in service and improves user experience and/or delivery of services.

For each criterion, a score of 0 meant the project has no impact on the criterion, a score of 1 meant the project has low impact on the criterion, a score of 2 meant the project has some impact on the criterion, and a score of 3 meant the project has a high impact on the criterion. An average total score for each project was generated using each committee member's score on a criterion.

For example, Project 2's score for Feasibility = (committee member 1 score for feasibility + committee member 2 score for feasibility + committee member 3 score for feasibility, etc.) divided by the number of committee members who took part in the scoring. These averaged scores per criterion were summed to produce a total score for each project within the range of zero to twelve.

In advance of providing the scoring sheets to the Advisory Committee, the technical staff scored the projects. Those scores were averaged and provided to the Advisory Committee as technical reference only.

If the an advisory committee member agreed with the staff score, they were able to adopt staff scores by leaving their ranking cell blank, otherwise they were able to fill in their own score. Where the committee member input their own score for a criterion on a project, the staff score was disregarded, and a sum was totaled of the committee members' scores, substituting staff scores for blank cells.

Higher project scores reflect a need for fewer resources, better feasibility, and more effective methods of filling in transportation service gaps. Therefore, higher-scored strategies require higher prioritization. Staff conducted a final review of the results and provided a reasonableness check of the results to ensure consistency with and incorporation of the FTA criteria.

It should be noted that though there are 20 projects listed, the ranking from the committee scoring ranges from 1-18, where two projects were tied in scoring for 6th place and two tied in the 17th rank. Similarly, in the staff scoring a range of 1-16 is seen in ranking of 20 projects where two projects tie for 3rd, two in 4th, two in 10th, and two in 11th place. It should also be noted that some of the projects from the coordination opportunities and projects list were not included in the scoring exercises because those projects are required by federal law, such as the development of a Transit Asset Management (TAM) Plan.

The public was asked to score each of the projects on a scale of one to four on how well it improved public transportation. 23 people participated in the public survey. Averaging the scores of the public surveys places more projects in tied positions for ranking than in the committee and staff scoring as the public survey scored only one criteria, resulting in a smaller scoring range.

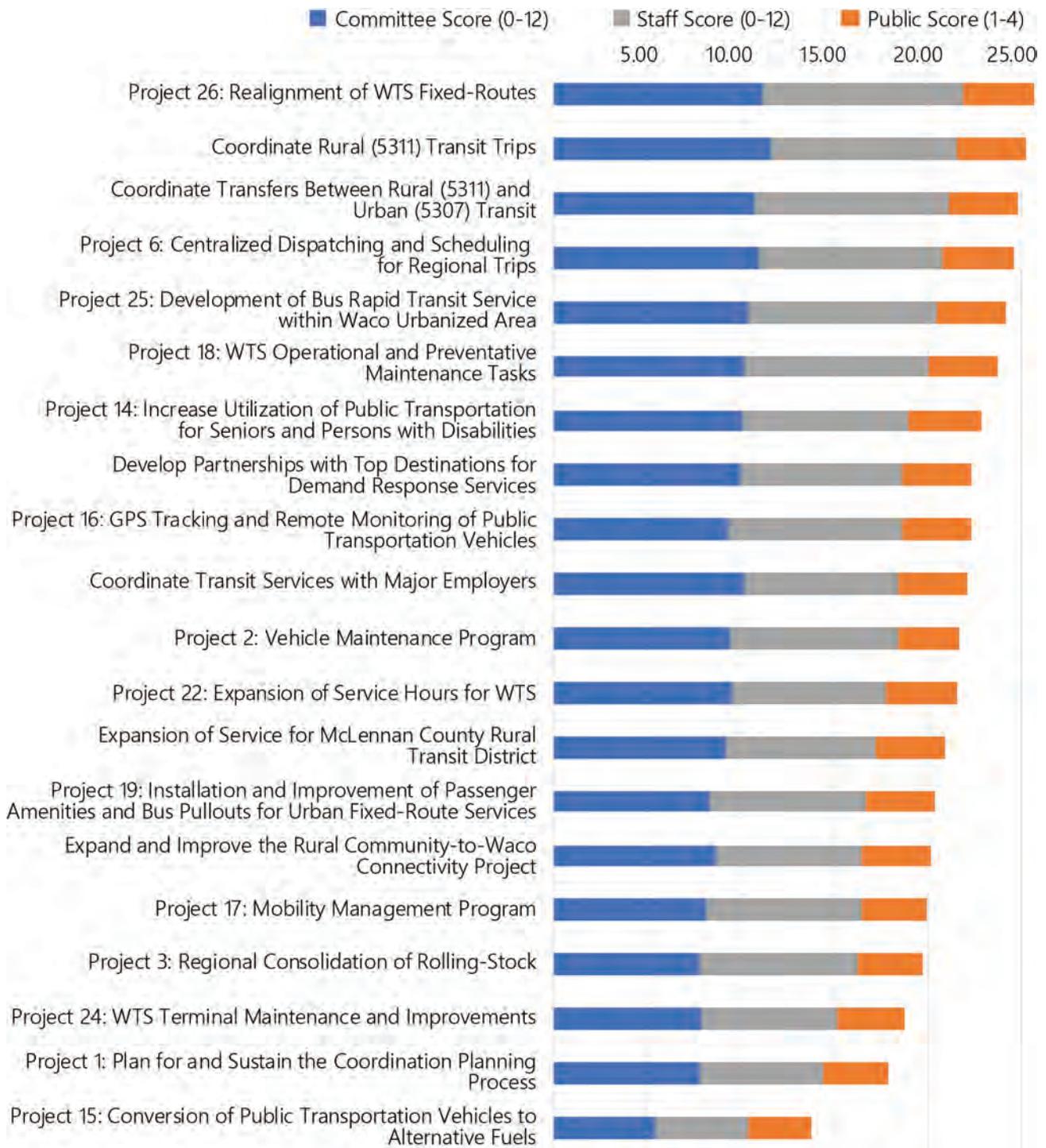
All three sets of scoring results - technical staff, advisory committee, and public - and subsequent average rank are represented in the Table 35. Figure 32 illustrates the general trend in prioritization of projects by the three different groups, with only several projects being scored distinctly different priority between the committee scoring and the staff scoring.

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Table 35: Project Prioritization Scores and Ranking

Project	Committee Score (0-12)	Committee Rank	Staff Score (0-12)	Staff Rank	Public Score (1-4)	Public Rank	Average Rank (All)
Project 26: Realignment of WTS Fixed-Routes	11.22	2	10.67	1	3.818	3	2.00
Project 28: Coordinate Rural (5311) Transit Trips (NEW)	11.56	1	10.00	3	3.696	7	3.67
Project 6: Centralized Dispatching and Scheduling for Regional Trips	11.00	3	9.83	4	3.783	4	3.67
Project 29: Coordinate Transfers Between Rural (5311) and Urban (5307) Transit (NEW)	10.78	4	10.33	2	3.696	7	4.33
Project 25: Development of Bus Rapid Transit Service within Waco Urbanized Area	10.44	5	10.00	3	3.739	5	4.33
Project 14: Increase Utilization of Public Transportation for Seniors and Persons with Disabilities	10.11	7	8.83	7	3.870	1	5.00
Project 18: WTS Operational and Preventative Maintenance Tasks	10.22	6	9.83	4	3.636	9	6.33
Project 22: Expansion of Service Hours for WTS	9.56	9	8.17	11	3.826	2	7.33
Project 30: Coordinate Transit Services with Major Employers (NEW)	10.22	6	8.17	11	3.696	7	8.00
Project 31: Develop Partnerships with Top Destinations for Demand Response Services (NEW)	10.00	8	8.67	8	3.619	10	8.67
Project 16: GPS Tracking and Remote Monitoring of Public Transportation Vehicles	9.33	11	9.33	5	3.609	11	9.00
Project 19: Installation and Improvement of Passenger Amenities and Bus Pullouts for Urban Fixed-Route Services	8.33	14	8.33	10	3.739	6	10.0
Project 2: Vehicle Maintenance Program	9.44	10	9.00	6	3.261	15	10.33
Project 32: Expansion of Service for McLennan County Rural Transit District (NEW)	9.22	12	8.00	12	3.652	8	10.67
Project 33: Expand and Improve the Rural Community-to-Waco Connectivity Project (NEW)	8.67	13	7.83	13	3.696	7	11.0
Project 17: Mobility Management Program	8.11	15	8.33	10	3.435	13	12.67
Project 3: Regional Consolidation of Rolling-Stock	7.78	17	8.50	9	3.435	13	13.0
Project 24: WTS Terminal Maintenance and Improvements	7.89	16	7.33	14	3.478	12	14.0
Project 1: Plan for and Sustain the Coordination Planning Process	7.78	17	6.67	15	3.478	12	14.67
Project 15: Conversion of Public Transportation Vehicles to Alternative Fuels	5.44	18	5.00	16	3.304	14	16.0

Figure 32: Project Prioritization Scoring Trend



PERFORMANCE MEASURES

Performance measures for the McLennan County Transit Needs Study are meant to help evaluate how well McLennan County public transit and human services transportation providers are meeting the demands of their communities and how well they are coordinating amongst one another. Tracking the measures over time allows McLennan County and subsequently HOTCOG monitor the effectiveness of transportation investments and coordination strategies. The performance measures located in Appendix A for this study were developed using the existing HOTCOG Coordination Plan performance measures and incorporating McLennan County specific data and results from the various analyses described in previous sections. Data for these measures also included information from the provider and user surveys.

CONCLUSION

Public transit provides a crucial connection to employment, goods, and services for many residents in McLennan County. However, for residents who are at a disadvantage—seniors, persons with disabilities, and low-income individuals—McLennan County public transit and human service agencies can be life-changing. Not only do these services allow residents to get from one place to another, they provide opportunity for people who would otherwise have to go without the economic and social benefits that can come with owning a car. The transit agencies and providers in McLennan County often operate with a short supply of resources in a rural area. Yet, they have persevered in the midst of great difficulty, striving to provide access for all residents no matter the limitations. With collaboration between these vital agencies and an effective plan for managing their transit assets, the McLennan County public transit service can be better utilized to its fullest capability. Adoption of this implementation plan and its coordination strategies will launch McLennan County toward a brighter future with higher-quality and more equitable transportation.