



KTMP
KILLEEN-TEMPLE
metropolitan planning organization

2050
MTP

Metropolitan
Transportation Plan





Approved by the KTMPO Transportation Planning Policy Board: July 24, 2024

Effective Date: July 24, 2024

The 2050 Metropolitan Transportation Plan development and adoption was consistent with requirements identified in the KTMPO 2023 Public Engagement Plan. The KTMPO 2050 Metropolitan Transportation Plan was developed from a process marked with early involvement from regional transportation stakeholders that served on an MTP Steering Committee and an online public engagement survey. The draft plan was available for public comment for a 45-day period beginning June 3, 2024, and ending July 17, 2024. Public meetings on the draft plan were held at ADA accessible locations, with one in the eastern portion of the KTMPO boundary and one in the western portion of the KTMPO boundary. KTMPO staff went above and beyond the regulatory requirements by hosting multiple public meetings.

Dates and locations of the public meetings were as follows:

- June 18, 2024 - Public Meeting #1: Harker Heights Public Library
- June 22, 2024 – Public Meeting #2: Copperas Cove Public Library
- June 26, 2024 – Public Meeting #3: Central Texas Council of Governments
- July 8, 2024 – Presentation to the City of Troy City Council Meeting
- July 9, 2024 – HOP Ride-A-Long Survey
- July 11, 2024 – Pop-Up Event at the Rogers High School Cafeteria, Rogers
- July 16, 2024 – HOP Ride-A-Long Survey

Public comments received during the public comment period were considered in the development of a draft plan. Documentation of the 2050 MTP public participation is included in **Appendix C – Public Engagement Summary**.

Federal Certification Review

Every four years, the Secretary of the U.S. Department of Transportation (DOT) must certify that each metropolitan planning organization (MPO) serving a transportation management area (TMA) – a designation by DOT of an urbanized area with a population over 200,000 as defined by the Bureau of the Census or smaller urbanized areas on request by the Governor and MPO – is carrying out the metropolitan planning process in adherence with federal statutes and regulations. FTA and FHWA conduct a review of the metropolitan planning process within each TMA and jointly issue this certification on behalf of the DOT Secretary, in accordance with 49 U.S.C. 5303(k).

In May 2022, KTMPO underwent the four-year Federal Certification Review. A public involvement session held by FTA/FHWA was held on Wednesday, May 25, 2022 at the Central Texas Council of Governments to assess the public's perspective on KTMPO transportation planning processes.

During their review FTA and FHWA found the KTMPO Congestion Management Process (CMP) to be out of compliance and issued one corrective action. An updated CMP was submitted to FTA/FHWA on October 30, 2023. A letter from FTA and FHWA dated March 7, 2024, determined that “the KTMPO CMP has been found acceptable” and that “with the new CMP implemented, the certification status of the Killeen-Temple Metropolitan Planning Organization is now acceptable.”

The Letter from FTA/FHWA and full Summary Report is included in **Appendix J**.

2050 METROPOLITAN TRANSPORTATION PLAN CONTRIBUTORS

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ACKNOWLEDGMENT

This plan was developed in cooperation with rules and regulations set forth by:

- The U.S. Department of Transportation (USDOT)
- The Federal Highway Administration (FHWA)
- The Federal Transit Administration (FTA)
- The Texas Department of Transportation (TxDOT)

The preparation of this plan was funded in part through grants from FHWA and FTA. The views and opinions of KTMPO expressed herein do not necessarily state or reflect those of the USDOT.

PHOTOGRAPHY CREDITS

Your creative work has contributed to the visual appeal and informative nature of this plan.

John Ancheta

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City of Belton

City of Copperas Cove

City of Killeen

City of Nolanville

City of Temple

Fort Cavazos

Hill Country Transit District

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TRANSLATIONS

If this information is needed in another language, please contact KTMPO's Title VI Specialist at (254) 770-2200.

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Si necesita esta información en otro idioma, comuníquese con un especialista del Título VI de KTMPO al (254) 770-2200.

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RESOLUTION NO. 2024-06

A RESOLUTION OF THE KILLEEN-TEMPLE METROPOLITAN PLANNING ORGANIZATION REGARDING THE 2050 METROPOLITAN TRANSPORTATION PLAN

- WHEREAS;** 23 CFR Part 450 requires Metropolitan Planning Organizations (MPOs) to develop a long-range, multimodal, financially constrained transportation plan for each metropolitan area every five years; and
- WHEREAS;** the Killeen-Temple Metropolitan Planning Organization (KTMPO) is the designated MPO for the Killeen-Temple planning area; and
- WHEREAS;** through a continuing, comprehensive and coordinated transportation planning process in conformance with applicable federal and state requirements, KTMPO has developed the latest Metropolitan Transportation Plan (MTP) with a 2050 horizon year; and
- WHEREAS;** the 2050 MTP contains an integrated set of strategies and investments to maintain and improve the transportation system in the planning region through the year 2050 and calls for development of an innovative and sustainable multi-modal system that prioritizes safety, bolsters economic vibrancy, and enhances quality of life; and
- WHEREAS;** the 2050 MTP considers, analyses and reflects, as appropriate, the metropolitan transportation planning process as identified in federal law, including the FAST Act and Bipartisan Infrastructure Law (BIL); and
- WHEREAS;** the 2050 MTP utilizes a Congestion Management Process (CMP) to identify and evaluate the most serious congestion problems in the region, and propose mitigation activities to reduce those congestion issues; and
- WHEREAS;** the 2050 MTP is fiscally constrained based upon reasonable available funding provisions and future estimates; and
- WHEREAS;** the KTMPO meets federal air quality standards and is in attainment status for these standards; and
- WHEREAS;** the 2050 MTP was developed through a strategic, proactive, comprehensive public outreach and involvement program, which included: advertising in local and regional newspapers; distribution of public information materials; one workshop, three public hearings, and three pop-up events to facilitate and receive public comments on the draft 2050 MTP; and interagency coordination and involvement.



NOW, THEREFORE, BE IT RESOLVED that the Killeen-Temple Metropolitan Planning Organization hereby approves the 2050 Metropolitan Transportation Plan; and

PASSED AND ADOPTED on this 24th day of July 2024 at a regular meeting of the Killeen-Temple Metropolitan Planning Organization Transportation Planning Policy Board meeting which was held in compliance with the Open Meetings Act, Texas Government Code, 551.001, *et seq.*, and at which meeting a quorum was present and voting.

ATTEST:



Judge Roger Miller, Chair



Uryan Nelson, KTMPD Director

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CHAPTER 1

INTRODUCTION



INTRODUCTION

Purpose

The Killeen-Temple Metropolitan Planning Organization (KTMO) is a federally designated regional transportation planning agency in Central Texas that is responsible for coordinating a comprehensive transportation planning process in the greater Killeen and Temple area. MPOs were established by the United States (U.S.) Federal-Aid Highway Act in 1962 as intergovernmental organizations to provide elected officials input into the planning and implementation of transportation funds to urbanized areas with populations greater than 50,000. As of the most recent census, there are 420 MPOs across the U.S. with 24 MPOs in Texas (National Association of Regional Councils, n.d.; U.S. Department of Transportation, n.d.).

Structure

Locally appointed and elected officials serve with federal, state, and local transportation agencies and stakeholders on a policy board and/or technical advisory committee to create a fair and impartial setting for regional transportation decision-making. The policy board is advised by the technical advisory committee. Elected officials can include U.S. representatives, state senators, state representatives, county judges, county commissioners, city mayors, and city council members. Appointed officials include city managers, representatives from Fort Hood (formerly known as Fort Cavazos, which was formerly known as Fort Hood), and transportation agencies like the Hill Country Transit District (HCTD also known as The HOP), Texas Department of Transportation (TxDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and Federal Aviation Administration (FAA).

Similar representatives and members of the public may serve on other advisory committees and workgroups with special interests such as bicycle, pedestrian, freight, and safety. KTMO values the unique perspective from citizens and community advocates. These focus groups serve to review key transportation issues and provide recommendations to policy leaders.

The transportation policy board and advisory committees are supported by professional and administrative staff to carry out the core activities and responsibilities of transportation planning.

Core Activities & Responsibilities

MPOs are authorized to plan, prioritize, and program government funding for transportation projects in metropolitan areas. They are also responsible for the continuous, cooperative, and comprehensive (3C) transportation planning process within their planning boundary (Federal-Aid Highway Act, 1962). MPOs accomplish this through a data and performance-driven process using various tools to forecast population and employment growth trends, project future land uses, and identify major transportation needs and opportunities for investment. Long- and short-range transportation improvement priorities and investments are determined and documented in transportation plans (USDOT, n.d.). Example MPO activities include planning roadway and sidewalk projects, setting regional safety goals using crash data, planning studies for traffic signal improvement, and teaching transportation principles to facilitate public engagement. KTMPO does not construct projects as that is the responsibility of project sponsors (cities, counties, and transportation agencies).

HISTORY

With the passing of the Federal Highway Transportation Act of 1962, the U.S. Congress placed particular emphasis on the needs for transportation planning in urbanized areas and made long-range transportation planning a condition for receipt of federal highway funds in urban areas. All cities with a population of 50,000 or more that desired to use federal funds for transportation were required to have a comprehensive, cooperative, and continuing (3C) regional transportation planning process. This Act specifically states:

“The Secretary [of Transportation] shall not approve...any projects in any urban area of more than 50,000 population unless he finds that such projects are based on a CONTINUING, COMPREHENSIVE transportation planning process carried on COOPERATIVELY by the States and Local Communities.”

In compliance with this Act, the cities of Temple, Belton, Nolanville, Harker Heights, Killeen, and Copperas Cove along with the counties of Bell, Coryell, and Lampasas, and the Texas Department of Transportation (TxDOT) formed the Killeen-Temple Urban Transportation Study (K-TUTS) in 1975, later renamed as the Killeen-Temple Metropolitan Transportation Organization (KTMPO) in 2009. The planning region was and still is primarily located in TxDOT’s Waco District, with a small portion in the Brownwood District.

In 2012, KTMPO was redesignated as a Transportation Management Area (TMA) following the release of 2010 Census data which estimated the population of the Killeen UZA to be 217,630. MPOs which contain an urbanized area (UZA) with a population greater than

200,000 attain TMA status. TMA's enjoy enhanced benefits and are also subject to additional requirements beyond those of smaller MPOs. These are further detailed in Chapter 2.

Metropolitan Planning Area Progression

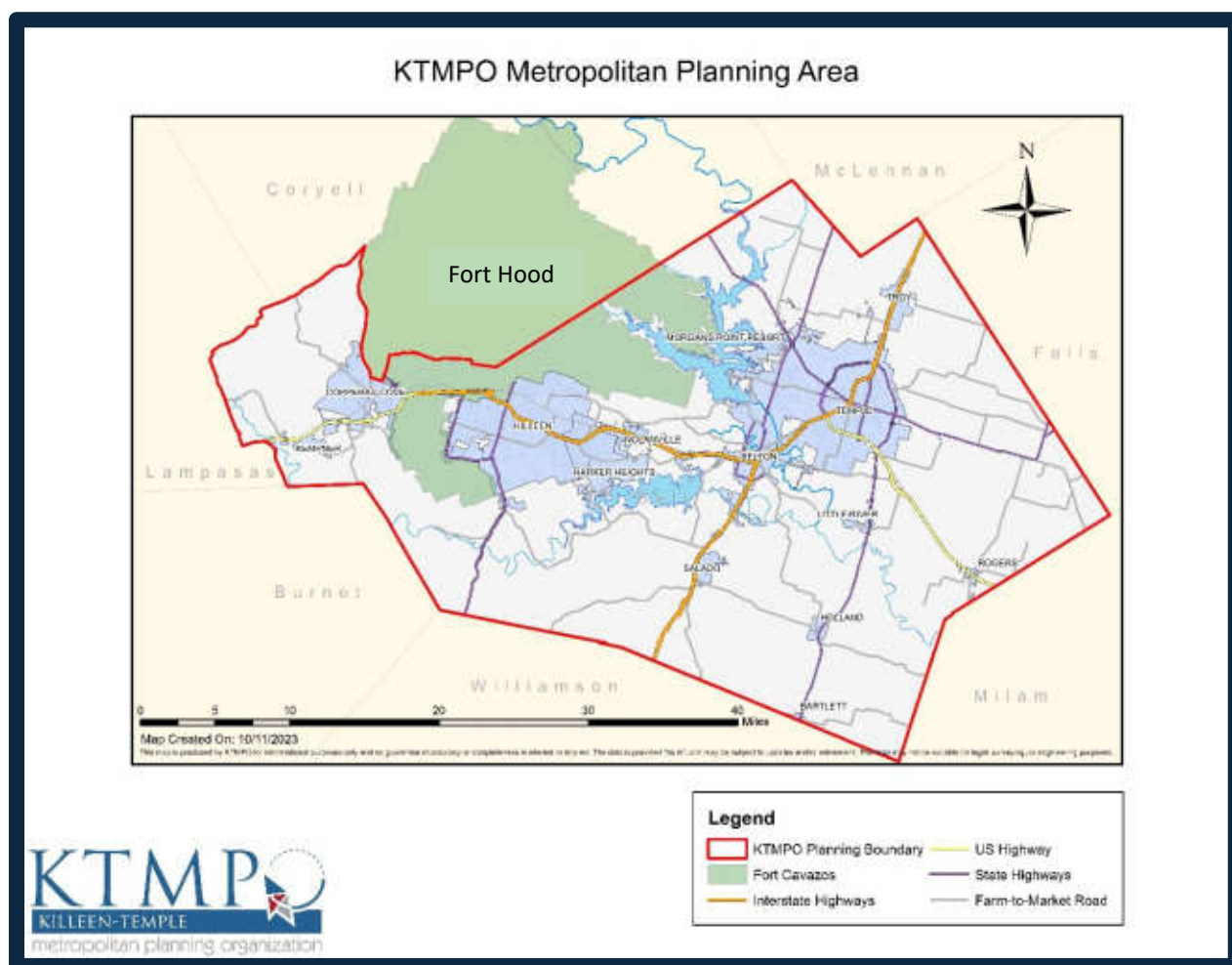
In August of 2008, the K-TUTS Transportation Planning Policy Board (TPPB) directed staff to study a possible MPO boundary expansion due to population growth in the rural areas of Bell, Coryell, and Lampasas Counties. TPPB members believed that the growth rates in rural portions of these counties were indicative of urban growth, making urbanization reasonably expected within the next 25 years. The study supported this assumption, and the K-TUTS TPPB approved the adjusted Metropolitan Planning Area (MPA) boundary on January 21, 2009, and petitioned TxDOT for approval. The Governor of Texas delegated authority to approve MPA boundary changes to the Texas Transportation Commission (TTC) in October 2005. The TTC approved the MPA boundary changes on June 25, 2009.

Effective June 25, 2009, the K-TUTS Metropolitan Area Boundary (MAB) was expanded to encompass all of Bell County, larger portions of Lampasas and Coryell Counties, and portions of Fort Hood. The current physical extent of the MPO planning area resulting from that action is depicted on Figure 1.1, "KTMO Metropolitan Planning Area" map. The boundary encompasses the urbanized area and the contiguous geographical area likely to become urbanized within the 25-year forecast period covered by the Metropolitan Transportation Plan.

After this action, a task force comprised of a subset of the K-TUTS TPPB was charged with reviewing the K-TUTS Bylaws, specifically focusing on membership. On November 18, 2009, the K-TUTS TPPB voted to accept two recommended actions resulting from this effort:

- Membership Change - modify membership to represent population distribution more accurately within the K-TUTS MAB following MAB expansion (detailed in the Bylaws section of this chapter and in **KTMO Official Bylaws, Appendix D**).
- Organization Name Change - change the name of the organization from Killeen-Temple Urban Transportation Study (K-TUTS) to Killeen-Temple Metropolitan Planning Organization, or KTMO.

Figure 1.1 – KTMPO Metropolitan Planning Area



THE REGION

It is important to understand the region and its citizens at the state and local levels before effective and equitable transportation planning goals and strategies can be developed.

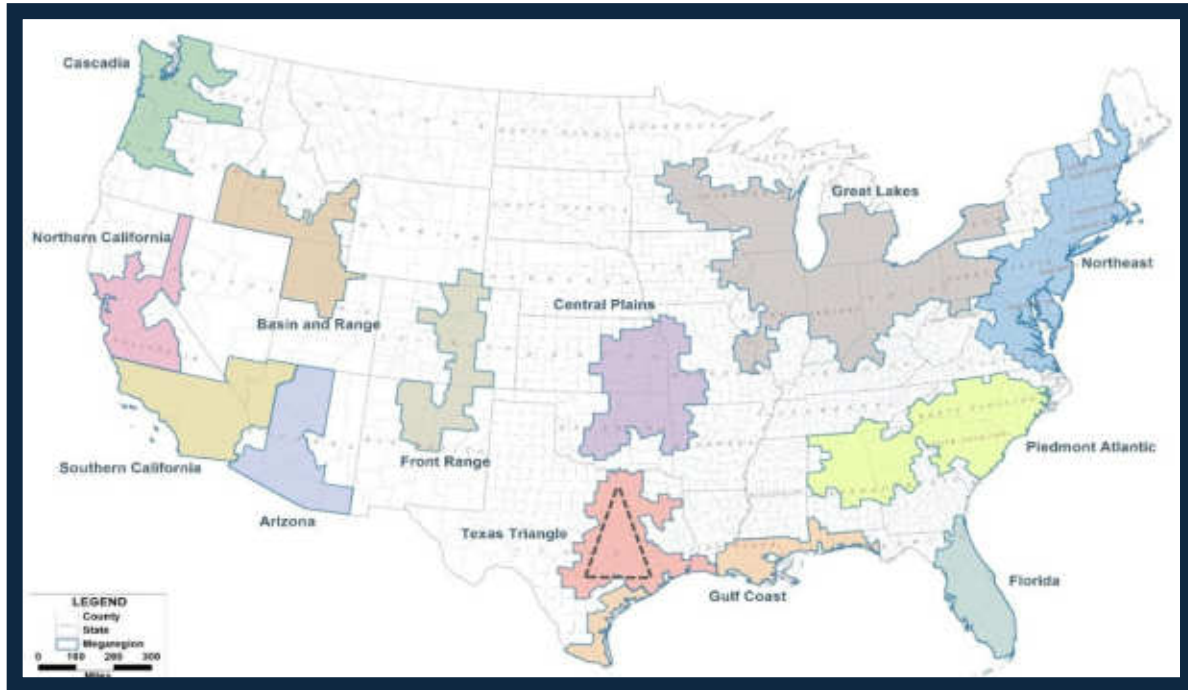
Population

Texas has a population of 30,029,572, containing 3 of the 10 most populated cities in the United States. Texas' growth rate places it among the nation's fastest-growing and largest-gaining states (U.S. Census Bureau, 2023).

Sixty-six percent of Texas' population resides in what is known as the Texas Triangle, a megaregion that comprises 35 of Texas' 254 counties, is bordered by interstates IH 35, IH 45, and IH 10 and connects the major urban areas Austin, Dallas-Fort Worth, Houston, and San Antonio (see Figures 1.2 and 1.3). Demographically, the Texas Triangle is younger, less

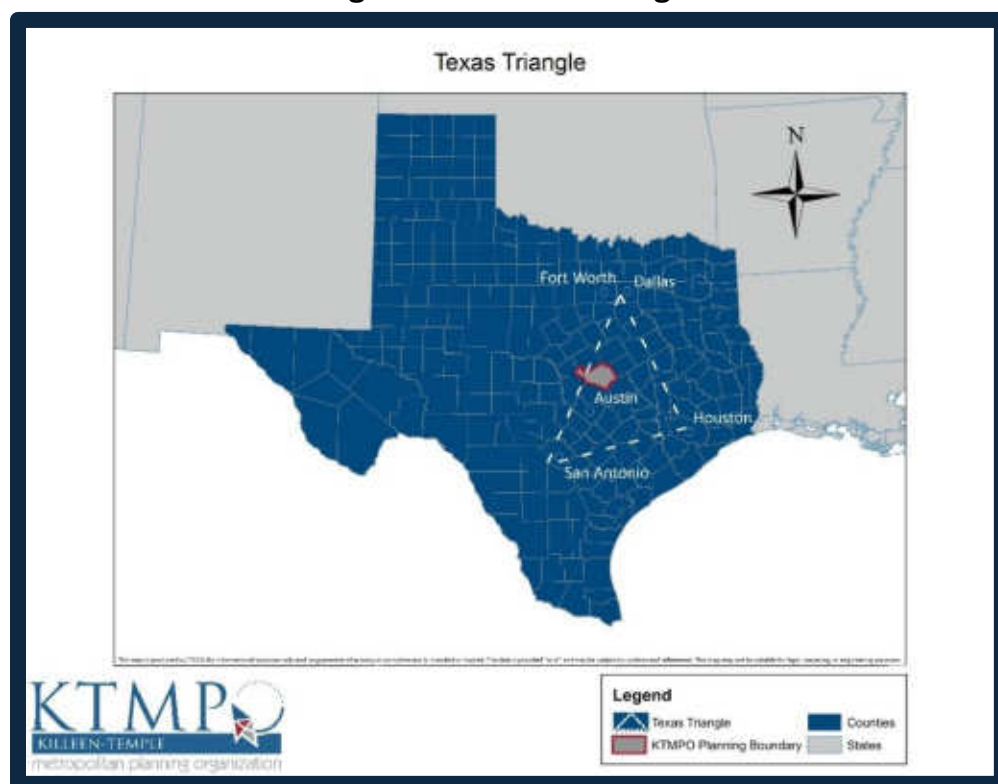
white, more Hispanic, and is the fastest growing megaregion in the U.S. (Clark, 2021). By 2050, about 35 million people will live in the four metropolitan areas of this megaregion (Tomlinson, 2021).

Figure 1.2 – U.S. Megaregions



(Yaro, Zhang, & Steiner, 2022)

Figure 1.3 – Texas Triangle



Over the last decade, KTMPO’s region and its neighboring counties between Dallas and Austin have experienced unprecedented growth. KTMPO has a total population of 432,886 based on the 2020 U.S. Census, up from 293,209 and 365,368 during the 2000 and 2010 Censuses, respectively. By 2050, the expected population in KTMPO’s planning area will be about 571,290, reflecting a growth of 138,404 people; The amount of jobs in the KTMPO region is projected to grow by 67,000 from 139,988 in 2020 to 206,988 in 2050 (University of Texas at San Antonio, 2022; U.S. Census Bureau, 2021; Texas Demographic Center, 2018).

Planning for anticipated growth now is critical to ensuring that people and goods can continue to move throughout the region reliably and that the quality-of-life residents enjoy today will remain in the future.

Geography

Texas is the second largest state by land mass (268,596 sq mi.) in the United States. KTMPO’s 1,222 square mile planning area is centrally located in the Texas Triangle megaregion and encompasses all of Bell County and parts of Coryell and Lampasas Counties including the main cantonment of Fort Hood. Due to population size, two urbanized areas have been designated in the region: the Killeen Urbanized Area (UZA) and the Temple Urbanized Area. The eastern UZA includes the cities of Temple, Belton, and

Morgan’s Point Resort, and the western UZA includes the cities of Killeen, Copperas Cove, Harker Heights, and Nolanville. All KTMPO counties and cities are organized in Table 1.1.

Table 1.1 – KTMPO Membership

Bell County		
Bartlett	Killeen	Rogers
Belton	Little River - Academy	Village of Salado
Harker Heights	Morgan’s Point Resort	Temple
Holland	Nolanville	Troy
Coryell County		
Copperas Cove		
Lampasas County		
Kempner		

Quality of Life

Quality of life events are vital in Central Texas, attracting businesses and workers. KTMPO benefits from two large U.S. Army Corps of Engineers reservoirs: Belton Lake (12,300 acres) and Stillhouse Hollow Lake (6,430 acres), which support water resources, flood control, and offer 15 parks for recreation.

Temple hosts the Central Texas AirFest, while Belton is celebrated as a top place to fly the flag on the 4th of July and is home to the Cadence Bank Center, a major event venue. Fort Hood, known for its premier Army training, features the Belton Lake Outdoor Recreational Area (BLORA), famous for its annual Nature in Lights event.

Killeen, one of America's fastest-growing cities, offers parks and community events like the Cen-Tex Race Series. Harker Heights, a Certified Music Friendly Community, blends diverse cultures and traditions. Copperas Cove hosts the annual Rabbit Fest with over 42,000 attendees, featuring live entertainment and the Jackrabbit Run.

Economy & Roadway Inventory

Texas is the leading state in the U.S. for gross domestic product, exports, and job creation and has the 9th largest economy in the world and 2nd largest in the United States (Texas Economic Development Corporation, 2022). Texas is a major freight hub, particularly for industries such as petroleum, manufacturing, agriculture, and construction, with 3.7 billion tons of freight valued at \$2.87 trillion moving in and around the state in 2019. This freight value is expected to grow 151% to 8.24 billion tons in 2050 valued at over \$7 trillion (Texas Delivers 2050, 2023). The Texas Triangle has greater economic diversity, attractive tax

incentives and more permissive business and land-use regulations than other megaregions (Clark, 2021).

KTMPO's region contains major roadway facilities and a significant regional rail hub that are vital to commerce, farming, manufacturing, and Fort Hood, one of the largest, most populated U.S. military installations in the world. KTMPO's regional roadway system features 3,700 miles of roadway with 71 miles of interstate, 107 miles of U.S. highway, and 135 miles of state highway. On average, there are approximately 4,500,000 daily vehicle miles traveled through the region. There are two interstates located in the KTMPO region, IH 35, which connects Canada to Mexico, and IH 14, part of the Forts to Ports initiative. IH 14 is currently designated for 25 miles from Copperas Cove/Fort Hood to IH 35 in Belton. Plans for future expansion will extend IH 14 eastward towards Bryan/College Station and westward to Lampasas. IH 35 is also one of the largest freight corridors in the United States, with 402 million tons valued at \$690 billion of freight moving into, within, out, and through the corridor generating over 97,000 freight related businesses and 4.3 million jobs (The Economic Role of the IH 35 Corridor in Texas, 2018). In addition, the Samsung Austin Semiconductor manufacturing facility in the neighboring city of Taylor will lead to increased pressure on infrastructure, housing, and resources in the Southeast KTMPO area.

With unique traffic generators of each urbanized area, the transportation users in the KTMPO planning area truly travel on a regional level. The proximity of businesses, schools, Fort Hood, and other traffic generators to the major arterial roads and other modes of transportation are what defines the transportation characteristics and future needs in the region.

Planning our system's expansion for anticipated population and economic growth, in conjunction with public engagement, is critical to ensure that KTMPO regional objectives are met.

System Expansion

As the KTMPO region grows in population, demand on the transportation system will grow as well. The 2050 MTP identifies 73 roadway projects, and 34 bike/pedestrian projects in our region over the 25-year planning horizon (**MTP Project Listing, Appendix A**). Through KTMPO's Congestion Management Process (Chapter 10), the region's most congested segments have been identified and are continually monitored. Highly congested segments are prioritized for system expansion along with enhanced bike/pedestrian projects (Chapter 6), transit services (Chapter 7), and multi-modal projects (Chapter 8).

OPERATIONS

The KTMPO Transportation Planning Policy Board provides regional transportation policy guidance for KTMPO member entities and operates by a set of Official Bylaws. A Technical Advisory Committee (TAC), made up of appointed representatives from participating entities and agencies, reviews technical issues and develops preferred technical alternatives for TPPB action. Since initial adoption in 1982, amendments have been made to the KTMPO Bylaws in 1997, 1999, 2003, 2004, 2009, 2013, 2020, and most recently, October 25, 2023, to amend the membership makeup of KTMPO's Policy Board following the 2020 Census counts and to provide a process for future membership reviews.

KTMPO meetings are currently held on a schedule determined by a majority vote of the members. The TPPB and the TAC must hold at least four public meetings a year but make it a practice to meet monthly. Annual meetings are normally held in September.

The MPO director is responsible for all meeting notices and publicity. Specifics of the meeting will be provided to each TPPB member in writing and to the general public in accordance with the Texas Open Meetings Act. Except for emergency meetings, all members are notified at least three days prior to a meeting. As part of the Open Meetings Act, a record of the proceedings is generated from a video recording and documentation. Fifty-one percent of the membership, with a minimum of four agencies in attendance, satisfies the established quorum.

MEMBERSHIP

TPPB Voting Membership

The voting membership of the Transportation Planning Policy Board strives to be representative of the region and is primarily based on population. Each city with 10,000 or more residents receives at least one voting member with a maximum of three for cities over 75,000 in population. Each county within the MPO planning area also receives one voting member, except for Bell County which receives two voting members as it is the largest of the three counties. In addition, each TxDOT District included in the MPO planning area and the local transit district also receives one voting member. The **KTMPO Official Bylaws (Appendix D)** further details the makeup of the TPPB Voting Membership. The current TPPB membership is as follows:

Table 1.2 – TPPB Voting Membership

Large Cities	
Killeen	3 members
Temple	3 members
Belton	1 member
Copperas Cove	1 member
Harker Heights	1 member
Counties	
Bell County	2 members
Coryell County	1 member
Lampasas County	1 member
TxDOT/Transit	
TxDOT Waco	1 member
TxDOT Brownwood	1 member
Hill Country Transit District	1 member

Individuals serving on the Transportation Planning Policy Board must be elected officials and are designated in writing by the following:

City – Mayor, City Council, or designee

County – County Commissioners Court

TxDOT Districts – Waco and Brownwood District Engineers

Transit District – Hill Country Transit District Board of Directors

Fort Hood– III Corps Commander, or their designee

Cities with a population under 10,000 are represented by their county in voting matters and are encouraged to attend all meetings and participate in deliberations. Other important partner agencies are allowed one non-voting member.

Table 1.3 – TPPB Non-Voting Membership

Small Cities
Bartlett
Holland
Kempner
Little River - Academy
Morgan's Point Resort
Nolanville
Rogers
Village of Salado
Troy
Partner Agencies
Fort Hood
State or Federal elected officials serving the KTMPO area
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Federal Aviation Administration (FAA)
Airport Managers – Killeen & Temple
Texas Air Control Board
Central Texas Council of Governments (CTCOG)
Others, as appropriate

TAC Voting Membership

The Technical Advisory Committee is tasked with reviewing technical issues and developing preferred technical alternatives for TPPB action. The voting membership of this committee consists of one representative from each city above 10,000 in population, each county in the MPO planning area, each TxDOT District, and the transit district. Additionally, one member represents all cities under 10,000 in population. Important partner agencies are also allowed a non-voting membership spot.

Individuals serving on the Technical Advisory Committee are designated in writing by the following:

City – Mayor, City Council, or designee

County – County Commissioners Court

TxDOT Districts – Waco and Brownwood District Engineers

Transit District – Hill Country Transit District Board of Directors

Small and Rural Rep. – Majority vote of the TAC

Table 1.4 – TAC Voting Membership

Cities	
Belton	1 member
Copperas Cove	1 member
Harker Heights	1 member
Killeen	1 member
Temple	1 member
Small and Rural City Rep.	1 member
Counties	
Bell County	1 member
Coryell County	1 member
Lampasas County	1 member
TxDOT/Transit	
TxDOT Waco	1 member
TxDOT Brownwood	1 member
Hill Country Transit District	1 member

Table 1.5 – TAC Non-Voting Membership

Small Cities
Bartlett
Holland
Kempner
Little River-Academy
Morgan’s Point Resort
Nolanville
Salado
Troy
Partner Agencies
Fort Hood
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
TxDOT Other

CONCLUSION

KTMPO serves as an intergovernmental agency to provide elected officials, regional partners, and the public input into the planning and implementation of transportation funds and projects within the region. KTMPO strives to ensure transparency, engagement, and informed decision-making during all phases of the long-range planning process discussed throughout the chapters of this plan.

CHAPTER 2

MTP DEVELOPMENT REQUIREMENTS AND PROCESS



MTP DEVELOPMENT REQUIREMENTS AND PROCESS

With KTMPO's growing population and unique landscape, it is the task of KTMPO to engage the public and stakeholders to develop a transportation planning process and supporting plans that contain long and short-range strategies to promote an integrated, intermodal transportation system.

KTMPO Plans

The Killeen-Temple Metropolitan Planning Organization (KTMPO) commits to aligning the transportation strategies of our region through coordination with member entities and consideration of public input (USDOT, 2022).

KTMPO is tasked with developing and carrying out the core activities and responsibilities of transportation planning in the following plans:

- Metropolitan Transportation Plan (MTP);
- Transportation Improvement Program (TIP);
- Public Engagement Plan (PEP) included in **Appendix K, Public Engagement Plan**;
- Congestion Management Process (CMP); and
- Other transportation planning initiatives and studies that have a significant scope or impact.

Though these plans are separate documents with different planning horizons and update cycles, they are meant to inform one another so each planning effort progresses towards common planning goals.

Metropolitan Transportation Plan (MTP)

Title 23, U.S.C. Section 134 requires that MPOs develop a Metropolitan Transportation Plan (MTP) approved by the Transportation Planning Policy Board. The MTP serves as a long-term planning document and framework developed through a continuing, cooperative, and comprehensive (3C) regional planning process that outlines the state of current transportation, anticipates future needs, identifies financial resources, and offers projects and strategies to keeping people and freight in the KTMPO region moving efficiently. The MTP vision, values, and goals guide the development of regional transportation projects that are nominated, prioritized, and selected based on available federal or state funding and construction readiness. This document spans a 25-year planning period and is updated every five years. Additionally, it is amended regularly to reflect changes in federal or state

requirements and planned projects. KTMPO seeks public review and comment on the MTP during each plan update or amendment.

Transportation Improvement Program (TIP)

Title 23, U.S.C. Section 450.326 requires that MPOs develop a Transportation Improvement Program (TIP) approved by the Transportation Planning Policy Board and the Governor. The TIP serves as a short-range planning document for transportation projects that are funded and expected to begin construction within the next four years. It is essentially the first four years of the MTP's 25-year plan. The TIP is updated every two years and amended regularly. Copies of any updated or revised TIPs must be provided to TxDOT, FHWA, and the FTA. KTMPO seeks public review and comments on the TIP during each plan update or amendment.

Public Engagement Plan (PEP)

The PEP in **Appendix K, Public Engagement Plan**, serves as a living document and resource to KTMPO staff, member entities, and the public, which outlines equitable public engagement strategies and supports transportation planning practices. KTMPO's PEP is reviewed every three years and updated as needed to reflect changes in federal or state requirements, demographic shifts, and outreach techniques. KTMPO requests public review and comment on the PEP during each plan update or amendment.

Other Complementary Guiding Documents

Although not required for public review, KTMPO also follows additional guidance to complement our public engagement practices:

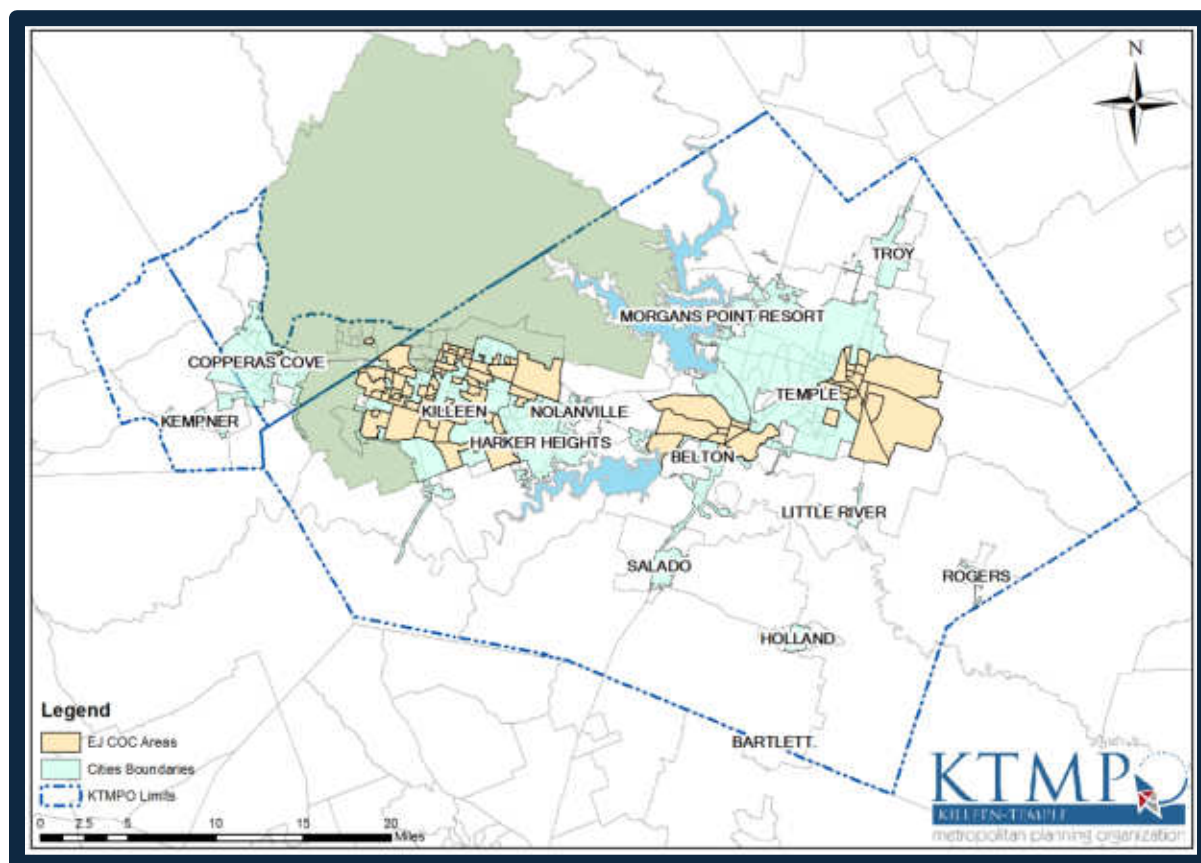
- The **Limited English Proficiency (LEP) Plan** identifies reasonable steps for providing language assistance to persons with Limited English Proficiency (LEP) who wish to engage in KTMPO programs and activities. LEP persons are those who do not speak English as their primary language and have limited ability to read, write, or understand English. This plan outlines how to identify a person who may need language assistance, the ways in which assistance may be provided, staff training that may be required, and how to notify LEP individuals that assistance is available.
- The **Title VI Plan** ensures all programs, policies, and activities comply with various nondiscrimination laws and regulations included in Title VI of the Civil Rights Act of 1964. This federal law protects individuals, groups, and organizations from discrimination based on race, color, or national origin in federally assisted programs and activities. Since other nondiscrimination authorities have expanded the scope

and range of Title VI application and reach (i.e., religion, sex, disability, age), reference to Title VI includes other provisions of federal statutes and related authorities to the extent that they prohibit discrimination in programs and activities receiving federal financial assistance.

- The **Environmental Justice (EJ) Methodology** identifies where underserved populations, known as Environmental Justice Communities of Concern (EJCOC), reside so decision-makers can plan transportation projects that improve quality of life for these communities that face barriers to affordable, equitable, reliable, and safe transportation (USDOT, n.d.).

The EJCOC within KTMPO's boundary are identified below. To learn more, see **Appendix K, Public Engagement Plan**.

Figure 2.1 – Environmental Justice Areas: Selected Census Tracts



Congestion Management Process (CMP)

Title 23, U.S.C. Section 450.322 states the transportation planning process in a TMA should address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system. The

development of a Congestion Management Process (CMP) should result in multimodal system performance measures and strategies that can be reflected in the MTP and the TIP. Because KTMPO's planning area exceeds a population of 200,000, we are federally mandated to develop a process to monitor and reduce congestion in the region. The CMP is a playbook of strategies designed to improve the safe and efficient movement of people and goods. CMP review and update is encouraged every five years. The document is amended regularly in response to federal requests. KTMPO seeks public review and comments on the CMP during each plan update or amendment.

Other Transportation Planning Initiatives and Coordination

KTMPO often partners with member jurisdictions to engage the public in support of regional transportation planning initiatives and studies that have a significant scope or impact. Examples include Transportation Visioning sessions, City Master Plan Updates, Interstate/Highway Feasibility Studies, and Thoroughfare Plans.

In addition, KTMPO routinely encourages coordination and information exchange among the KTMPO member jurisdictions at KTMPO monthly meetings. Planners have an opportunity to discuss and compare practices and views on a variety of topics to include bike/pedestrian issues, GIS information, new development projects, roadway needs, transit needs, freight issues, air quality, environmentally sensitive areas, operating procedures/ordinances, etc. Regional coordination efforts are enhanced when all parties are engaged in discussions and aware of other's activities and concerns.

TRANSPORTATION PLANNING REQUIREMENTS & BEST PRACTICES

The Killeen-Temple Metropolitan Planning Organization (KTMPO) commits to going above and beyond the regulatory requirements of our agency to ensure diversity, equity, inclusion, and accessibility to the transportation decision-making process for our community (USDOT, 2022).

Diversity, Equity, Inclusion and Accessibility (DEIA)

Engaging users of the transportation network in our region requires the implementation of equitable public engagement strategies that comply with state and federal requirements. The transportation plans and improvement programs developed by KTMPO are incorporated into TxDOT's long-range plans and improvement programs. KTMPO is responsible for self-certifying to TxDOT and FHWA that its MPO planning process conforms to both state and federal rules for transportation planning. This Plan is reviewed as part of the four-year certification process conducted by FHWA and FTA during the MPO certification process.

MPOs must allow for:

- Adequate public notice of public participation activities;
- Opportunities to review and comment at key decision points in the development of the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP); and
- Multiple, accessible participation formats, including electronic, virtual, and in-person (23 CFR 450).

The USDOT encourages transportation entities to make public involvement efforts a core practice that is integrated into all aspects of organizational work and transportation decision-making. KTMPO strives to develop well-thought-out plans using various communication tools and intentional outreach methods connecting with the public early and often throughout the planning process (USDOT, 2022).

Figure 2.2 – Diversity, Equity, Inclusion and Accessibility (DEIA) Statement

At KTMPO, we are committed to promoting a culture that welcomes and respects the diversity of our employees, citizens, and the communities we serve. We believe that a diverse and inclusive environment is not only the right thing to do, but it also fuels innovation, enhances creativity, and drives the collective success of our region and the State of Texas.

KTMPO commits to fostering two-way communication that connects the public's points of view and interests to the transportation decision-making process and ensures equitable access including but not limited to race, ethnicity, gender, age, sexual orientation, religion, disability, zip code, socio-economic background, or limited English proficiency.

KTMPO commits to advancing transportation planning by creating an environment free from discrimination and harassment, removing barriers to public involvement, and having zero tolerance for any form of discrimination or exclusionary behavior.

This Diversity, Equity, Inclusion, and Accessibility statement serves as a foundation for our ongoing commitment and actions. We recognize that achieving true diversity, equity, inclusion, and accessibility is an ongoing journey, and we remain dedicated to continuously improving and evolving in these areas.

Environmental Justice (EJ)

Title VI of the Civil Rights Act of 1964 built the legal foundation for what Environmental Justice (EJ) is today. KTMPO acknowledges and promotes the importance of Environmental Justice as a key factor in the transportation planning process through project scoring and prioritization (**Project Scoring Guidelines, Appendix B, and Public Engagement Plan, Appendix K**).

In agreement with the National Environmental Policy Act of 1969, and to the greatest extent possible, KTMPO's PEP aims to ensure equitable opportunity among all citizens. (National Environmental Policy Act, 1969).

FHWA defines three basic principles of Environmental Justice (USDOT, 2019):

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction of, or significant delay in the receipt of benefits by minority and low-income populations.

Together, these Environmental Justice federal acts and objectives support an EJ practice which informs how KTMPO strives to reduce transportation disparities.

Federal Transportation Bills

The most notable multi-year federal transportation bills in the history of transportation planning include:

- The Federal Highway Transportation Act of 1962, which required that all urban areas with populations of 50,000 or greater develop and maintain a comprehensive, cooperative, and continuing (3C) regional transportation planning process that includes the development and maintenance of a long-range transportation plan and defines a vision for the region's transportation system;
- The Intermodal Surface Transportation Efficiency Act (ISTEA), signed in 1991, which emphasized the efficiency of the intermodal transportation system to include highway, rail, air, and marine transportation;
- The National Highway System Designation Act (NHS), signed in 1995, which designated the NHS developed by the Department of Transportation (DOT) in cooperation with states, local officials, and metropolitan planning organizations (MPOs);
- The Transportation Equity Act for the 21st Century (TEA-21), signed in 1998, which built upon the initiatives established in ISTEA with a particular focus on equity through access, opportunity, and fairness;

- The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), signed in 2005, which authorized the Federal Surface Transportation Programs for highways, highway safety, and transit;
- The Moving Ahead for Progress in the 21st Century Act (MAP-21), signed in 2012, which created a streamlined, performance-based surface transportation program and built on many of the highway, transit, bike, and pedestrian programs and policies established since 1991;
- The Fixing America's Surface Transportation Act (FAST Act), signed in 2015, which provided long-term funding certainty for the Federal Surface Transportation Programs, streamlined project delivery, included dedicated funding for freight transportation, and provided new safety tools; and
- The Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law (IIJA/BIL), signed in 2021, which authorized continuation of the Federal surface transportation programs through 2026. The IIJA/BIL created several new formulas and competitive funding programs focused on safety, bridges, resiliency, equity, and climate change. The legislation also encouraged MPOs to coordinate transportation planning with housing, resiliency, and equity.

Transportation Management Area (TMA) Roles & Responsibilities

In July of 2012, the KTMPO was designated a Transportation Management Area (TMA) triggered by the release of 2010 census information officially declaring that the population of the Killeen urbanized area (Killeen, Copperas Cove, Harker Heights, Fort Hood, Nolanville) exceeded 200,000. An area designated as a TMA enjoys certain benefits and incurs additional requirements beyond those of smaller urbanized areas (23 USC 134 and 49 USC 5303) such as:

- Transportation plans and programs within a TMA must be based on a continuing and comprehensive transportation planning process carried out by the MPO in cooperation with the State and transit operators;
- The transportation planning process must include a Congestion Management System (CMS) or Congestion Management Process (CMP) within 18 months of their designation. Congestion management is the application of strategies to monitor and improve transportation system performance and reliability by reducing the adverse impacts of congestion on the movement of people and goods (the CMP is discussed in more detail in Chapter 10);
- At a minimum, the policy board of an MPO that serves a TMA must include local elected officials, appropriate state officials, and officials of public agencies that administer or operate major modes of transportation in the metropolitan area. The

MPO should review its policy board membership to determine if all of these groups are represented and add new members, as appropriate (23 CFR 450.306);

- The FHWA and the FTA must certify the transportation planning process at least once every three years; and
- TMAs receive additional state funding categories that non-TMAs do not such as Category 7 (Surface Transportation Program-Metropolitan Mobility—STPMM), Category 9 (Transportation Alternatives Program), and Category 10 (Carbon Reduction). Projects selected for these funds complete a competitive process for project selection.
- In upholding the responsibility of the TMA designation, KTMPO will continue to develop Metropolitan Transportation Plans (MTP) on a 5-year cycle. The current and future MTP development will identify policies, programs, and prioritized projects for development that respond to anticipated demand for regional transportation services over the next 25-year period. Each plan includes long-range and short-range strategies that will lead to the development of an integrated multi-modal transportation system that facilitates the efficient movement of people and goods and guides expenditures for state and federal funds within the 25-year horizon. The MTP Project Listing will be fiscally constrained, which will be discussed in more detail in Chapter 3.

Performance-Based Planning Requirements

Performance-based planning and programming refers to the application of performance management to achieve desired performance outcomes for the multimodal transportation system. The objective is to ensure transportation investment decisions are made based on their ability to meet established goals.

The cornerstone of MAP-21's highway program transformation, signed in 2012, was the transition to a performance and outcome-based program. States and MPO's must invest resources in projects to achieve individual targets that collectively will make progress toward national goals. Specific quantitative criteria published by the Secretary of Transportation measure whether these goals have been achieved. More information on performance measures and targets can be found in **Appendix I, Performance Based Planning**.

KTMPO has embraced performance measures by adding expected standards to various category project selection processes and reporting measures to appropriate boards and agencies as required. The national performance goals for the Federal Highway Programs as

established in MAP-21 are (23 USC 150):

- **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair.
- **Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System.
- **System Reliability** - To improve the efficiency of the surface transportation system.
- **Freight Movement and Economic Vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced Project Delivery Delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The FAST Act (23 CFR 450.306), signed in 2015, required MPOs to develop long-range transportation plans and Transportation Improvement Programs (TIPs) through a performance-driven, outcome-based approach to planning for metropolitan areas of the State. The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive (3C), and provide for consideration and implementation of projects, strategies, and services that will address the following factors:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency in transportation improvements with State, local growth, and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system;
- Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation; and
- Enhance travel and tourism.

The Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law (IIJA/BIL), signed in 2021, continues efforts of performance-based planning initiated in previous Acts with no major modifications.

Addressing Planning Factors through the MTP Development Process

A continuous, cooperative, and comprehensive (3Cs) planning process provides for consideration and implementation of projects, strategies, and services addresses factors from FHWA and FTA's 2021 Planning Emphasis Areas and 23 CFR 450.

The 2021 Planning Emphasis Areas (USDOT, 2021) are:

- Tackling the Climate Crisis
- Equity and Justice⁴⁰ in Transportation Planning
- Complete Streets
- Virtual Public Involvement (VPI) Tools
- Strategic Highway Network (STRAHNET)/U.S. Department of Defense (DOD) Coordination
- Federal Land Management Agency (FLMA) Coordination
- Planning and Environment Linkages (PEL)
- Data in Transportation Planning

KTMPO's development of the 2050 MTP supports federal transportation planning requirements and emphasis areas, upholds TMA roles and responsibilities, and ensures performance-based project selection, monitoring and reporting measures are incorporated into long-range plans to better inform future decision-making.

DEVELOPMENT OF THE 2050 METROPOLITAN TRANSPORTATION PLAN

The KTMPO 2050 Metropolitan Transportation Plan (MTP) was developed through a continuing, cooperative, and comprehensive regional planning process in partnership with local entities, TxDOT districts, and the public to identify transportation goals, strategies, needs, financial resources, priorities, and projects for the KTMPO area.

Figure 2.3 – The MTP Development and Project Selection Process



Early Public Involvement

The KTMPO 2050 Metropolitan Transportation Plan was developed from a process marked with early involvement from regional transportation stakeholders that served on an MTP Steering Committee and from everyday users of the transportation system identified in KTMPO’s Public Engagement Plan (PEP) included in **Appendix K, Public Engagement Plan**.

KTMPO staff hosted 3 meetings in which the MTP Steering Committee was tasked with evaluating the previous MTP vision, values, and goals and offering new recommendations to reflect the ever-changing landscape, population growth, development patterns, and demands on the transportation system in the region. Transportation planning focus areas among other similar-sized and megaregion MPOs were also considered when developing recommendations for new vision, values, and goals.



In our continuous effort to foster community involvement and gather insights that inform the development of the MTP, KTMPO staff conducted three online public engagement surveys beginning mid-May 2024 and ending July 17, 2024. All these surveys were hosted online, ensuring accessibility and convenience for participants from various backgrounds and locations. However, the third survey adopted a hybrid format, combining both online and in-person engagement methods to enhance participation from public transit users. These initiatives aimed to capture a wide array of opinions and feedback, ultimately

guiding our current and future transportation planning efforts and decision-making processes.

The first survey consisted of five questions about transportation topics and one question offering respondents the opportunity to subscribe to the KTMPO email distribution list. The survey received 24 responses. Of the 24 responses, five respondents requested to be added to the email distribution list. The feedback also informed staff that although 54% of the respondents owned two or more vehicles, 50% of the respondents ranked safe routes for children to bike and walk to school as their top priority.

While the first survey informed KTMPO staff of the public's desire for safer routes for children to bike and walk to school, the second and third surveys focused on assessing the inventory, quality, accessibility, and connectivity of sidewalks, crosswalks, and trails. These surveys also evaluated which transportation facilities were funding priorities, offered respondents an opportunity to subscribe to the KTMPO email distribution list, and assessed the public's confidence in KTMPO's ability to effectively fulfill its vision statement, values, and goals. The major difference between the second and third survey is that the second was administered solely online, and the third survey combined both online and in-person engagement for public transit users. The "Last Chance Survey" (solely online) received 202 responses. Of the 202 responses, 84 respondents requested to be added to the email distribution list. The feedback also informed staff that 75% of the respondents owned two or more vehicles. When given the option to select the top three funding priorities, respondents chose sidewalk and pedestrian infrastructure, maintenance and repair of existing roadways and public transit. The "Survey for Public Transit Users" (hybrid) received 22 responses. Of the 22 responses, three respondents requested to be added to the email distribution list. The feedback also informed staff that 81% of the respondents did not own a vehicle or relied on public transit. When given the option to select the top three funding priorities, respondents chose public transit, sidewalk and pedestrian infrastructure, and rails and trains. Finally, the public strongly believes (52%) that KTMPO is capable of effectively accomplishing its mission statement, upholding its values, and achieving its goals. The comprehensive public engagement efforts and results can be found in **Appendix C, Public Engagement Summary**.

Development of Vision, Values & Goals

After considering feedback, the recommendations of the MTP Steering Committee were further refined into newly established vision, values, and goals. Cornerstones of the MTP such as planning strategies, transportation project priorities, and selection processes were evaluated through the lens of the updated vision, values, and goals to maintain, manage, and improve the transportation system in the Central Texas region through the year 2050.

Vision Statement

“The KTMPO Mobility 2050 MTP will foster an innovative and sustainable multi-modal transportation system that prioritizes safety, bolsters economic vibrancy, and enhances quality of life for Central Texas”

Key Values



Equity

Equitably distributing resources to promote connectivity, economic vitality, and environmental justice for all people, especially vulnerable populations.



Quality of Life

Enhancing the overall social and physical well-being of residents by championing safe transportation options that benefit their quality of life and the natural environment.



Fiscally Responsible

Strategically and responsibly using federal, state, and local dollars to advance transportation planning and implement sustainable infrastructure investments in the region.



Future Growth/ Data Driven

Utilizing forward-thinking and measurable decision-making processes informed by robust data to forecast future growth patterns, alleviate infrastructure issues, and preserve natural resources.



Innovation/ Adaptability

Implementing innovative strategies to cultivate a transportation system that is resilient, reliable, and capable of adapting to meet the evolving needs of our diverse communities.



Regional Coordination/ Public Engagement

Collaborating with all regional partners and engaging with the public to advocate for their unique transportation needs, celebrating that each improvement made mutually benefits all stakeholders.

Goals

**Mobility/
Connectivity (PM)**

**Innovation/
Technology**

**Asset
Management (PM)**

Environment

Safety (PM)

Economic Vitality

Figure 2.5 – Vision, Values, and Goals

Project Selection Process

As part of the MTP development process, KTMO issued a Call for Projects in which to award state and federal transportation funding. Member entities such as TxDOT, municipalities, counties, the regional transit agency, and other transportation stakeholders were encouraged to submit proposed roadway, livability (bicycle and pedestrian), and transit projects that align with MTP goals and maintain, manage, and improve the transportation system.

The projects were evaluated and scored based on objective and subjective criteria developed and approved by the TAC and TPPB (**Project Scoring Guidelines, Appendix B**). Regional transportation priorities and performance-based planning targets were considered to the greatest extent possible when developing scoring criteria. KTMO staff and consultants calculated objective scores, while the TAC submitted subjective scores. Combined objective and subjective score totals were then calculated, resulting in a ranked list of projects.

The ranked list of projects was organized into three categories based on project type: Major Roadways, Minor Roadways, and Livability. KTMO staff developed various funding scenarios based on the final rankings, readiness of projects, and fiscal constraints to determine which projects were eligible to receive available funding. The TPPB considered the various scenarios and approved a final funding scenario of short and long-range projects to be included in the 2050 MTP.

For short-range financial projections, staff referred to TxDOT's most recently updated Unified Transportation Program (UTP) adopted by the Texas Transportation Commission. The UTP is a 10-year financial plan organized into 12 funding categories. Each category addresses a specific type of work that meets the State's transportation needs. Financial projections are utilized to fiscally constrain the short-range ranked list of projects in the MTP.

For long-range financial projections, staff referred to the Texas Transportation Institute's (TTI) Transportation Revenue Estimator and Needs Determination (TRENDS) tool. The TRENDS model is designed to provide transportation planners, policy makers, and the public with a tool to forecast revenues and expenses for project planning. A user can control a number of scenarios related to assumptions regarding statewide transportation needs, population growth rates, fuel efficiency, inflation rates, taxes, fees, and other elements. Because the tool is a model, the output scenarios are hypothetical, may not reflect actual policy-based decisions or actual funding received during select years. Nonetheless,

financial outputs from the TRENDS model are utilized to fiscally constrain the long-range ranked list of projects in the MTP.

More information on the financial projection and constraint process is discussed in Chapter 3.

Projects that fall within short-range and long-range funding constraints are categorized as “regionally significant and funded,” while those that do not fall within funding constraints are categorized as “regionally significant and unfunded.”

Once the ranked list of regionally significant funded and unfunded projects is determined, the Transportation Planning Policy Board (TPPB) reviews and preliminarily approves the prioritized project list.

Committee and Board Review

The Technical Advisory Committee (TAC) and Transportation Planning Policy Board (TPPB) are provided an updated draft version of the MTP reflecting the newly established vision, values, goals, project listing, and other statistical and technical elements to support future planning efforts. Input received by the committee and board is considered into the continual development of the plan before the final public involvement process begins.

Final Public Involvement

The MTP development process begins and ends with public involvement. As outlined in the KTMPO Public Engagement Plan (PEP) included in **Appendix K, Public Engagement Plan**, two public meetings are held during a 45-day public comment period. To ensure diversity, equity, inclusion, and accessibility to the transportation decision-making process, our staff went above and beyond the regulatory requirements by hosting a third public meeting with a live virtual option, presenting at a city council meeting, and collaborating with TxDOT by hosting a table at one of their scheduled public meetings. This provided stakeholders and the public with multiple opportunities to review and provide feedback on the draft MTP before the plan is officially adopted.

All public input received during the public comment period is reviewed by staff, the TAC, and the TPPB, and is included in **Appendix C, Public Engagement Summary**. Public feedback is incorporated into the draft MTP as appropriate.

Plan Adoption

Upon completion of the public involvement process, the TAC and TPPB are provided with a final draft version of the MTP. Pending no further revisions are needed, the TPPB officially adopts the newly established vision, values, goals, project listing, and supporting elements guiding future planning efforts as the official Metropolitan Transportation Plan for the next 25-year planning horizon.

CONCLUSION

KTMPO develops and implements various short and long-range plans and strategies to uphold federal planning requirements and incorporate best practices. These efforts engage the public and stakeholders in the planning process and promote equitable planning of an integrated, intermodal transportation system.

CHAPTER 3

FINANCIAL

FINANCIAL

The KTMPO region relies primarily on state and federal funding to implement regional transportation improvements. As a federal requirement, the 2050 Metropolitan Transportation Plan (MTP) project listing must demonstrate that the requested projects' cost does not exceed that amount which can be reasonably expected to be made available to the MPO in the next 25 years. When these costs do not exceed forecasted revenues, the financial plan is considered to be fiscally constrained.

ROADWAY AND LIVABILITY FUNDING SCENARIO DEVELOPMENT AND SELECTION

Following the MTP Development and Project Selection Process outlined in Chapter 2, KTMPO evaluates short-range and long-range planning estimates. Short-range planning includes the first 10 years of the MTP, while long-range planning includes the last 15 years.

Short-Range Financial Projections: MPO Allocations

For short-range financial projections, staff refer to TxDOT's most recently updated Unified Transportation Program (UTP), adopted by the Texas Transportation Commission. The UTP is a 10-year financial plan organized into 12 funding categories, with each category addressing a specific type of work that addresses the State's transportation needs. Because KTMPO is a TMA, it is eligible to receive funds from the following categories:

Category 2 Metropolitan Area (TMA) Corridor Projects: Category 2 addresses mobility and added capacity projects on urban corridors within Metropolitan Planning Organization areas with a population greater than 50,000 but less than 200,000, to mitigate traffic congestion, as well as traffic safety, and roadway maintenance or rehabilitation. Projects must be located on the state highway system. The Texas Transportation Commission allocates funds to each metropolitan planning organization (MPO) in the state, by formula. MPOs select and score projects for this category. Common project types include roadway widening (both freeway and non-freeway), interchange improvements, and roadway operational improvements.

Category 7 Metropolitan Mobility and Rehabilitation: Category 7 addresses transportation needs within the boundaries of MPOs with populations of 200,000 or greater — known as transportation management areas (TMAs). This funding can be used on any roadway with a functional classification greater than a local road or rural minor collector. Common project types include roadway widening (both freeway and non-freeway), new-location roadways, and interchange improvements.

Category 9 Transportation Alternatives Set-Aside Program: Category 9 handles the federal Transportation Alternatives (TA) Set-Aside Program. These funds may be awarded for the following activities: construction of sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic-calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act. Construction of infrastructure-related projects that provide safe routes for non-drivers.

Category 10 Carbon Reduction Program: Carbon Reduction Program addresses improvements designed to reduce transportation emissions, defined as carbon dioxide (CO₂) emissions from on-road highway sources. Carbon Reduction funding is allocated to urbanized areas with populations over 200,000 (TMAs), areas with populations 50,000 to 200,000, and small areas with populations under 50,000. Some eligible projects include traffic management, congestion reduction technology, truck parking, energy efficient streetlights, traffic controls and options to reduce congestion using alternatives to single occupant vehicle trips, including public transportation, pedestrian and bicycle facilities, and shared/pooled vehicle trips.

Short-Range Financial Projections: TxDOT District Allocations

Each TxDOT District also receives funding through separate categories for projects located inside their planning areas. While not under MPO control, projects inside the MPO area sometimes receive funding from these two categories that the Waco and Brownwood Districts manage:

Category 4 Statewide Connectivity Corridor Projects: Category 4 funds are allocated by TxDOT District and not the MPO. These funds address mobility on major state highway system corridors, which provide connectivity between urban areas and other statewide corridors. Projects must be located on the designated highway connectivity network that includes:

- Texas Highway Trunk System
- National Highway System (NHS)
- Connections to major seaports or border crossings
- National Freight Network
- Hurricane evacuation routes

Category 11 District Discretionary: Category 11 funds are allocated by TxDOT District and not the MPO. These funds address transportation maintenance, safety, or mobility needs.

UTP financial projections are utilized to fiscally constrain the short-range ranked list of projects in the MTP.

Table 3.1 shown below summarizes anticipated short-range funding:

Table 3.1 – Short-Range Financial Projections - TxDOT Unified Transportation Program (UTP)

Revenue												
UTP	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	TOTAL
Cat 2	\$ 33,508,869	\$ 39,288,498	\$ 29,947,419	\$ 25,630,801	\$ 23,582,903	\$ 18,381,030	\$ 14,269,030	\$ 16,509,903	\$ 13,915,913	\$ 14,416,319	\$ 24,621,429	\$ 254,072,114
Cat 7	\$ 7,528,612	\$ 7,679,194	\$ 7,832,788	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 7,488,518	\$ 82,948,738
Cat 9	\$ 872,967	\$ 890,428	\$ 908,238	\$ 871,214	\$ 871,214	\$ 871,214	\$ 871,214	\$ 871,214	\$ 871,214	\$ 871,214	\$ 871,214	\$ 9,641,345
Cat 10CR	\$ 3,753,395	\$ 1,329,015	\$ 1,355,595	\$ 1,366,326	\$ 1,365,888	\$ 1,365,888	\$ 1,365,888	\$ 1,365,888	\$ 1,365,888	\$ 1,365,888	\$ 1,365,888	\$ 17,365,547
											10 Year KTMPO	\$ 364,027,744
Cat 4U	\$ 36,714,540	\$ 53,453,139	\$ 54,485,215	\$ 39,303,447	\$ 30,210,690	\$ 30,280,047	\$ 33,606,823	\$ 27,481,263	\$ 23,322,791	\$ 25,173,150	\$ 27,749,475	\$ 381,780,580
Cat 11	\$ 5,997,596	\$ 5,955,580	\$ 4,959,915	\$ 4,990,251	\$ 5,032,836	\$ 4,723,626	\$ 4,865,715	\$ 4,822,762	\$ 4,739,062	\$ 4,785,638	\$ 4,862,127	\$ 55,735,108
											10 Year Waco Dist	\$ 437,515,688
											10 Year Total	\$ 801,543,432

All Draft Targets as of 1/31/24

<u>KTMPO Eligible Categories</u>
Cat 2: Metropolitan & Urban Corridor Projects
Cat 7: Metropolitan Mobility & Rehabilitation
Cat 9: Transportation Alternatives
Cat 10: Carbon Reduction
<u>TxDOT Waco District Eligible Categories</u>
Cat 4: Statewide Connectivity Corridor Projects - Urban
Cat 11: TxDOT District Transportation Maintenance, Safety, or Mobility Projects

Long-Range Financial Projections

For long-range financial projections, staff referred to the Texas Transportation Institute's (TTI) Transportation Revenue Estimator and Needs Determination (TRENDS) tool. The TRENDS model is designed to provide transportation planners, policy makers, and the public with a tool to forecast revenues and expenses for project planning. A user can control several scenarios related to assumptions regarding statewide transportation needs, population growth rates, fuel efficiency, inflation rates, taxes, fees, and other elements. The scenarios developed include a Baseline, Low, Medium, and High (With Local Option), which represent varying extremes of federal and state legislative changes that would generate increased revenue for transportation funding. For each scenario, the TRENDS model outputs a statewide revenue amount. Because the tool is a model, the output scenarios are hypothetical, may not reflect actual policy-based decisions or actual funding received during select years. Nonetheless, financial outputs from the TRENDS model are utilized to fiscally constrain the long-range ranked list of projects in the MTP.

TRENDS Model Inputs

- Basic input: Population Growth Rate. Updates based on migration (Texas Demographic Center).
 - Low: half as previous decade
 - Med: no option
 - High: same as previous decade (Default)
- Basic input: Fuel Efficiency. TVMT by vehicle type (personal/commercial) for fuel tax revenues (FHWA/Cambridge Systematics).
 - Low: Low MPG
 - Low-Med Average
 - Med: Med MPG (Default)
 - High: High MPG
- Basic input: New Capacity. Investment of additional state funds in increased transportation capacity. Additional billions of state dollars to be invested are entered along with year improvements begin/end.
 - 2030 Committee Report of Texas transportation infrastructure needs (Default)
- Advanced input: Other Transportation Variables. Maintenance variables, expense variables, inflation rates, gasoline and diesel taxes, fees, local revenue options, bond finance, economic impact, and other elements.

The table below summarizes anticipated long-range funding inputs and outputs:

Table 3.2 – Long-Range Financial Projections - TRENDS Model Inputs



	Default	Low	Medium	High
	Basic Inputs			
State Population Growth Rate	High	Same as 2010-2015	Same as 2010-2015	Same as 2010-2015
Fuel Efficiency	Medium	Low MPG Personal/ Commercial	Med MPG Personal/ Commercial	High MPG Personal/ Commercial
New Capacity	2030 Committee Report	No	No	\$5B in 2025
	Advanced Inputs			
State Gas Tax	No Increase	\$0.02 increase in 2040 and \$0.05 in 2050	\$0.06 increase in 2040 and 2050	\$0.10 increase in 2040 and 2050
State Diesel Tax	No Increase	\$0.02 increase in 2040 and \$0.05 in 2050	\$0.06 increase in 2040 and 2050	\$0.10 increase in 2040 and 2050
Federal Gas Tax	No Increase	\$0.02 increase in 2040 and \$0.05 in 2050	\$0.06 increase in 2040 and 2050	\$0.10 increase in 2040 and 2050
Federal Diesel Tax	No Increase	\$0.02 increase in 2040 and \$0.05 in 2050	\$0.06 increase in 2040 and 2050	\$0.10 increase in 2040 and 2050
TX Rate of Return on Federal Funds	90%	92%	95%	100%
Indexing the Gas Tax to CPI	No	No	Yes in 2035	Yes in 2035
% of State Gas Tax Increase to Transportation	75%	80%	85%	90%
Vehicle Registration Fees Increase	No Increase	\$5 in 2040	\$15 in 2040	\$25 in 2040
Alternative Fuel	Medium; Bloomberg New Energy Finance trend	Slow	Medium; Bloomberg New Energy Finance trend	Fast

Table 3.3 – Long-Range Financial Projections - TRENDS Model Outputs

Revenue (In Millions)			
Default Scenario			
	Short Range ¹	Long Range ²	Total
Category 2	\$254.1	\$151.0	\$405.1
Category 4	\$381.8	NA	\$381.8
Category 7	\$83.0	\$229.6	\$312.6
Category 9	\$9.6	\$17.3	\$26.9
Category 10 CR	\$17.3	NA	\$17.3
Category 11	\$55.7	\$29.9	\$85.6
Total	\$801.5	\$427.8	\$1,229.3
Low Scenario			
	Short Range	Long Range	Total
Category 2	\$254.1	\$117.6	\$371.7
Category 4	\$381.8	NA	\$381.8
Category 7	\$83.0	\$186.0	\$269.0
Category 9	\$9.6	\$13.5	\$23.1
Category 10 CR	\$17.3	NA	\$17.3
Category 11	\$55.7	\$26.9	\$82.6
Total	\$801.5	\$344.0	\$1,145.5
Medium Scenario			
	Short Range	Long Range	Total
Category 2	\$254.1	\$171.3	\$425.4
Category 4	\$381.8	NA	\$381.8
Category 7	\$83.0	\$256.5	\$339.5
Category 9	\$9.6	\$19.5	\$29.1
Category 10 CR	\$17.3	NA	\$17.3
Category 11	\$55.7	\$31.6	\$87.3
Total	\$801.5	\$478.9	\$1,280.4
High Scenario			
	Short Range	Long Range	Total
Category 2	\$254.1	\$304.8	\$558.9
Category 4	\$381.8	NA	\$381.8
Category 7	\$83.0	\$431.5	\$514.5
Category 9	\$9.6	\$35.0	\$44.6
Category 10 CR	\$17.3	NA	\$17.3
Category 11	\$55.7	\$43.4	\$99.1
Total	\$801.5	\$814.7	\$1,616.2

Table 3.4 – 2050 MTP Short-Range and Long-Range Fiscal Constraints

2050 MTP Revenue (In Millions)		
Short Range:	TxDOT UTP (2024-2034)	\$801.5
Long Range:	TRENDS Default Scenario (2035-2050)	\$427.8
Total:		\$1,229.3

For the 2050 MTP, the 2025 UTP Category projections for short-range fiscal constraints and the default scenario from the TRENDS Model for long range-fiscal constraints were utilized.

Projects that fall within short-range and long-range funding constraints are categorized as “regionally significant and funded,” while those that do not fall within funding constraints are categorized as “regionally significant and unfunded.”

Once the ranked list of regionally significant funded and unfunded projects is determined, the Transportation Planning Policy Board (TPPB) reviews and preliminarily approves the prioritized project list before the public involvement process begins.

Once the public involvement process is completed and any final revisions are made, KTMPO TPPB officially adopts the project listing and demonstrates compliance with fiscal constraints for both short-range and long-range planning horizons in the approved **MTP Project Listing, Appendix A**.

MAINTENANCE FUNDING PROJECTIONS

In regard to maintenance, non-traditionally funded transportation projects, statewide urban connectivity, bridge replacement, safety, supplemental transportation, and strategic priority (Categories 1, 3, 4, 6, 8, 10, and 12 respectively), placeholders for TxDOT grouped CSJ projects are provided in the 2050 MTP project listing. KTMPO participates in the use of certain grouped projects in cooperation with FHWA and TxDOT. TxDOT developed Grouped Project CSJ (Control-Section-Job) numbers for projects that are “not determined to be regionally significant” and typically includes non-mobility projects such as preliminary engineering, right of way, maintenance, rehab, bridges, safety, etc. This allows those projects to be grouped together in the MTP and Transportation Improvement Program (TIP) for faster review and approval from TxDOT and FHWA. For these categories, the MPO assumed that given a 25-year planning period, future allocations would reflect similarly to

past allocations, allowing no additional funding for inflationary purposes.

Both short and long-range maintenance forecasts were determined by the projected Categories 1, 6, and 8 as stated in the 2040 MTP. These amounts will be used as a placeholder for the 2050 MTP and are shown in Table 3.5.

Table 3.5 – 2050 MTP Fiscal Constraints-Maintenance Funding

2050 MTP Update-Maintenance		
Short Range:	Medium	\$165,803,999
Long Range:	Medium	\$295,989,993
Total:		\$461,793,992

ROADWAY & LIVABILITY FUNDING SCENARIO DEVELOPMENT AND SELECTION

107 projects (73 roadway and 34 livability) were received during the call 2023 Call for Projects as part of the 2050 MTP development process. The projects were then scored, ranked, and approved by the Transportation Planning Policy Board. The Policy Board then selected a funding scenario for the FY25-28 TIP and 2050 MTP. The selected funding scenario utilized the approved project rankings and distributed the anticipated funds for Categories 2, 7, 9, and 10CR to maximize the number of projects funded while remaining mindful of each project's local priority preference and construction readiness. The scenario below was approved by the Policy Board on May 15, 2024, for the FY25-28 TIP and 2050 MTP.

Table 3.6 – FY2025-2028 Funding Categories

		Cat 2	Cat 7	Cat 9	Cat 10
FY25-28 Funding	Carry Over	\$ -	\$ 18,328,682	\$ 2,011,710	\$ -
	Budget	\$ 118,449,621	\$ 30,489,018	\$ 3,541,094	\$ 5,416,824
	Programmed	\$ 64,170,000	\$ 18,773,166	\$ -	\$ 5,618,552
	Available	\$ 54,279,621	\$ 30,044,534	\$ 5,552,804	-\$201,728
	Proposed Funding	\$ 57,778,149	\$ 29,594,104	\$ 4,404,000	\$ -
	Remaining	-\$ 3,498,528	\$ 450,430	\$ 1,148,804	-\$201,728

Table 3.7 – Funding Scenario FY2025-2028 TIP and 2050 MTP

Funding Scenario FY25-28 TIP and 2050 MTP					
MPO ID	Rank	Project Name	Funding Category	Estimated Cost	Programmed Amount (80%)
W40-04b	5	Loop 121 Phase 2	2	\$ 21,280,000	\$ 21,280,000
C50-04d	9	BUS 190 Phase 4	2	\$ 10,133,000	\$ 10,133,000
C45-01	10	Fort Cavazos Access Ramps	2	\$ 11,822,489	\$ 11,822,489
T35-36a	5	Veterans Memorial Blvd Enhancements	2	\$ 15,000,000	\$ 10,000,000
H40-03c	8	Chaparral Road Phase 3 (Intersection)*	2	\$ 5,678,325	\$ 4,542,660
K30-13a	3	Chaparral Road Phase 1 a*	7	\$ 54,000,000	\$ 16,000,000
C50-01	4	Ashley Drive Connection	7	\$ 1,267,000	\$ 1,013,600
N40-06	9	Railroad Crossing Safety*	7	\$ 540,000	\$ 432,000
H30-05c	10	Warriors Path Upgrade Phase 3	7	\$ 5,500,000	\$ 4,400,000
B40-07	11	Connell Street Phase 1 *	7	\$ 4,695,000	\$ 3,756,000
D50-02	14	Front Ave Downtown Connector	7	\$ 1,490,630	\$ 1,192,504
T40-13b	3	GT RR Trail Project	7	\$ 3,500,000	\$ 2,800,000
B40-08	1	Sparta Road SUP	9	\$ 845,000	\$ 676,000
H50-04	8	FM 3423 (Indian Trail Drive) Sidewalk Phase 1	9	\$ 1,210,000	\$ 968,000
T50-07	17	Cedar Road Safety Crossing	9	\$ 200,000	\$ 160,000
N40-11	20	Nolan Creek Off System Trail	9	\$ 3,250,000	\$ 2,600,000

On May 20, 2026, the Transportation Planning Policy Board approved the FY27-30 TIP, which continued to utilize projects derived from the approved 2050 MTP project rankings and funding scenario. The FY27-30 TIP maintains consistency with the adopted 2050 MTP and reflects updated programming schedules, funding allocations, and project implementation timelines.

CAT 2											
Carryover FY2025: \$39,288,498	FY25-28 TIP										
		TIP (FY27-30)				Out Years (FY31-35)					
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current Carryover from FY25-28 TIP	\$ (9,284,182)	\$ (28,672,163)	\$ (21,825,471)	\$ (6,813,274)	\$ 8,215,255	\$ 25,210,744	\$ 44,305,742	\$ 62,836,624	\$ 83,995,851	\$ 86,030,870	\$ 110,378,472
UTP Allocations	\$ 13,441,320	\$ 13,092,019	\$ 12,525,017	\$ 15,012,197	\$ 15,028,529	\$ 16,995,489	\$ 19,094,998	\$ 18,530,882	\$ 21,159,227	\$ 23,194,246	\$ 24,347,602
Current FY25-28 TIP	\$ 62,014,000	\$ 32,480,000	\$ 5,678,325	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Desired Added UTP Projects	\$ -	\$ -	\$ -	\$ 10,133,000		\$ 69,550,890	\$ -	\$ -	\$ -	\$ 41,000,000	
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current FY25-28 TIP MPO IDs and Estimated Cost	W35-01: \$62,014,000	W40-04b : \$32,480,000	H40-03c: \$5,678,325	-	-	-	-	-	-	-	-
Desired Added FY27-30 TIP Projects MPO IDs and Estimated Cost	-	-	-	C50-04d: \$10,133,000 T35-36b: \$5,000,000 (To be included once in 2027 UTP)		T35-36a: \$5,000,000 T15-06k: \$40,454,890 C50-04e: \$7,296,000 W30-17: \$16,800,000**				W35-04a: \$18,000,000 W35-04b: \$23,000,000	

UTP (FY27-36)		TIP (FY27-30)	
Carryover FY2026	\$ 11,294,317	Carryover FY2026	\$ 11,194,317
UTP Allocations (FY7-36) Total	\$ 178,980,206	UTP Allocations (FY27-30) Total	\$ 55,657,762
Current FY25-28 TIP (FY27-28) Total	\$ 38,158,325	Current FY25-28 TIP (FY27-28) Total	\$ 38,158,325
Desired Added UTP Projects (FY27-36) Total	\$ 120,683,890	Desired Added UTP Projects (FY27-30 TIP) Total	\$ 10,133,000
			\$ 48,291,325
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 152,116,198	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 28,693,754
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-36) Total")	\$ 31,432,308	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-30 TIP) Total")	\$ 18,560,754

CAT 7											
Carryover FY2025: \$23,652,919	FY25-28 TIP										
		TIP (FY27-30)				Out Years (FY31-35)					
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current Carryover from FY25-28 TIP	\$ 28,573,123	\$ 25,169,248	\$ (8,626,777)	\$ (1,285,172)	\$ 6,056,433	\$ 13,398,038	\$ 20,739,643	\$ 28,081,248	\$ 35,422,853	\$ 35,422,853	\$ 42,764,458
UTP Allocations	\$ 8,020,204	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605	\$ 7,341,605
Current FY25-28 TIP	\$ 3,100,000	\$ 10,745,480	\$ 41,137,630	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Desired Added UTP Projects		\$ 5,039,000	\$ -		\$ -	\$ 35,000,000	\$ -	\$ -	\$ -	\$ 25,000,000	
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current FY25-28 TIP MPO IDs and Estimated Cost	N40-06: \$1,000,000 S45-01: \$2,100,000	B40-07a: \$4,695,000 B45-02: \$2,550,480 T40-13b: \$3,500,000	D50-02: \$1,490,630 H30-05c: \$5,500,000 K30-13a: \$32,880,000 C50-01: \$1,267,000	-	-	-	-	-	-	-	-
Desired Added FY27-30 TIP Projects MPO IDs and Estimated Cost	-	B40-11b: \$4,052,000 B50-01: \$987,000		-	-	K30-13b: \$35,000,000	-	-	-	W50-04: \$25,000,000	

UTP (FY27-36)		TIP (FY27-30)	
Carryover FY2026 (To be Verified)	\$ 23,652,919	Carryover FY2026 (To be Verified)	\$ 28,573,123
UTP Allocations (FY7-36) Total	\$ 73,416,050	UTP Allocations (FY27-30) Total	\$ 29,366,420
Current FY25-28 TIP (FY27-28) Total	\$ 51,883,110	Current FY25-28 TIP (FY27-28) Total	\$ 51,883,110
Desired Added UTP Projects (FY27-36) Total	\$ 65,039,000	Desired Added UTP Projects (FY27-30 TIP) Total	\$ 5,039,000
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 45,185,859	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 6,056,433
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-36) Total")	\$ (19,853,141)	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-30 TIP) Total")	\$ 1,017,433

CAT 9											
Carryover FY2025 \$2,902,138	FY25-28 TIP										
		TIP (FY27-30)				Out Years (FY31-35)					
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current Carryover from FY25-28 TIP	\$ 3,810,376	\$ 4,663,951	\$ 12,526	\$ 866,101	\$ 1,719,676	\$ 2,573,251	\$ 3,426,826	\$ 4,280,401	\$ 5,133,976	\$ 5,133,976	\$ 5,987,733
UTP Allocations	\$ 908,238	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,575	\$ 853,757
Current FY25-28 TIP	\$ -	\$ -	\$ 5,505,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Desired Added UTP Projects	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,759,000	
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current FY25-28 TIP MPO IDs and Estimated Cost	-		B40-08: \$845,000 H50-04a: \$1,210,000 T50-07: \$200,000 N40-11: \$3,250,000	-	-	-	-	-	-	-	-
Desired Added FY27-30 TIP Projects MPO IDs and Estimated Cost	-	-	-	-	-	-	-	-	-	C50-03: \$2,329,000 H50-03: \$1,430,000	

UTP (FY27-36)		TIP (FY27-30)	
Carryover FY2026 (To be Verified)	\$ 2,902,138	Carryover FY2026 (To be Verified)	\$ 3,810,376
UTP Allocations (FY7-36) Total	\$ 8,535,932	UTP Allocations (FY27-30) Total	\$ 3,414,300
Current FY25-28 TIP (FY27-28) Total	\$ 5,505,000	Current FY25-28 TIP (FY27-28) Total	\$ 5,505,000
Desired Added UTP Projects (FY27-36) Total	\$ 3,759,000	Desired Added UTP Projects (FY27-30 TIP) Total	\$ -
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 5,933,070	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 1,719,676
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-36) Total")	\$ 2,174,070	("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-30 TIP) Total")	\$ 1,719,676

CAT 4											
Carryover FY2025: \$72,926,032	FY25-28 TIP										
		TIP (FY27-30)				Out Years (FY31-35)					
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current Carryover from FY25-28 TIP	\$ 93,755,686	\$ 113,740,445	\$ 132,859,685	\$ 155,775,565	\$ 178,716,375	\$ 204,659,719	\$ 233,807,929	\$ 262,095,026	\$ 294,394,249	\$ 297,500,673	\$ 294,394,249
UTP Allocations	\$ 20,829,654	\$ 19,984,759	\$ 19,119,240	\$ 22,915,880	\$ 22,940,810	\$ 25,943,344	\$ 29,148,210	\$ 28,287,097	\$ 32,299,223	\$ 35,405,647	
Current FY25-28 TIP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Desired Added UTP Projects	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Fiscal Year	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036
Current FY25-28 TIP MPO IDs and Estimated Cost	-	-	-	-	-	-	-	-	-	-	-
Desired Added FY27-30 TIP Projects MPO IDs and Estimated Cost	-	-	-	-	-	-	-	-	-	-	-

UTP (FY27-36)	
Carryover FY2026	\$ 72,926,032
UTP Allocations (FY7-36) Total	\$ 256,873,864
Current FY25-28 TIP (FY27-28) Total	\$ -
Desired Added UTP Projects (FY27-36) Total	\$ -

TIP (FY27-30)	
Carryover FY2026	\$ 93,755,686.00
UTP Allocations (FY27-30) Total	\$ 84,960,689
Current FY25-28 TIP (FY27-28) Total	\$ -
Desired Added UTP Projects (FY27-30 TIP) Total	\$ -

("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 329,799,896
("Carryover FY2026" + "UTP Allocations (FY27-36) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-36) Total")	\$ 329,799,896

("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - "Current FY25-28 TIP (FY27-28) Total"	\$ 178,716,375
("Carryover FY2026" + "UTP Allocations (FY27-30) Total") - ("Current FY25-28 TIP (FY27-28) Total" + "Desired Added UTP Projects (FY27-30 TIP) Total")	\$ 178,716,375

KTMO Eligible Categories Cat 2: Metropolitan & Urban Corridor Projects Cat 7: Metropolitan Mobility & Rehabilitation Cat 9: Transportation Alternatives		TxDOT Waco District Eligible Categories Cat 11: TxDOT District Transportation	
Cat 10: Carbon Reduction Cat 4: Statewide Connectivity Corridor Projects - Urban	Maintenance, Safety, or Mobility Projects		

CONCLUSION

The fiscal constraint tables formulated in this section were determined by future funding projections generated by TxDOT's UTP and the TRENDS model. Although the fiscal constraint represents the most feasible funding scenario for the KTMPO region during the 25-year planning period, the future of transportation funding relies heavily on the actions of state and federal legislators and is subject to change and uncertainty. It is imperative that planning agencies monitor future funding forecasts with each long-range plan update.

CHAPTER 4

DEMOGRAPHICS



DEMOGRAPHICS

The Killeen-Temple MPO serves a varied region characterized by multiple cities and urbanized areas in close proximity to rural ranchland. The KTMPO planning boundary takes up all of Bell County, as well as portions of southern Coryell County and eastern Lampasas County. Fort Hood, the largest armored military installation in the nation, is located partially within the planning boundary. The geography is generally flat with occasional steep, rocky hills, and valleys. These valleys lent themselves to the construction of two dams which created two large reservoirs, Belton Lake, and Stillhouse Hollow Lake. The positioning of the two lakes and the military reservation boundary have impacted much of the development and population patterns across the region.

The KTMPO planning area has experienced tremendous growth in terms of people, housing, commerce, and traffic. Due to the influence of Fort Hood, and the combination of two Census- designated Urbanized Areas (UZA), this area is vibrant, active, and diverse.

Table 4.1 – Population Growth (2000-2020)

Entity	2000 Census	2010 Census	Percent Increase Between 2000 and 2010	2020 Population	Percent Increase Between 2010 and 2020	Percent Increase Between 2000 and 2020
KTMPO	293,209	365,368	24.6%	432,886	15.6%	47.6%
Belton	14,713	18,216	24.57%	23,054	20.99%	56.7%
Copperas Cove	29,592	32,032	8.25%	36,670	12.65%	23.9%
Harker Heights	17,309	26,700	54.26%	33,097	19.33%	92.2%
Killeen	86,911	127,921	47.19%	153,095	16.44%	76.2%
Temple	54,514	66,102	21.26%	82,073	20.07%	51.7%
Bell County	237,974	310,235	30.37%	370,647	16.3%	55.8%
Coryell County ¹	N/A	49,235	N/A	54,986	10.46%	N/A
Lampasas County ¹	N/A	5,898	N/A	7,253	18.68%	N/A

¹Populations for Coryell and Lampasas Counties represent Census Block Groups that are within the KTMPO boundary area.

As shown in Table 4.1, between 2010 and 2020, the population of the KTMO region increased by 67,518 people, a 15.6% increase. The City of Belton, with its proximity to Temple and Killeen in the center of the KTMO region, experienced the greatest percentage of population increase in this timeframe at 20.99%. The Lampasas County Census Block Groups saw the greatest growth compared to other KTMO region counties with an 18.68% increase in population. From 2015 to 2020, the population of the KTMO region increased by 50,031 to 432,886, an 11.56% percent increase. The City of Temple was the fastest growing city over this time range with a 15.43% increase. During this time, Bell County saw the greatest percent increase in population of 12.04%. Overall, from 2000 to 2015 the population of the KTMO region increased by 30.6% with the City of Harker Heights having the highest percent increase during this time at 62.9%.

DIVERSITY

Table 4.2 – Racial/Ethnic and Median Income

Entity	Non-Hispanic White/Caucasian	Non-Hispanic Black or African American	Hispanic or Latino ²	Native American or Alaskan Native	Asian	Hawaiian Native or Pacific Islander	Two or More Races	Median Household Income
Killeen-Temple MPO	188,681	90,383	106,101	1,782	12,685	4,535	26,272	\$63,896 ³
Belton	12,518	1,924	7,709	75	378	28	970	\$57,025
Copperas Cove	17,872	6,431	7,284	172	1,021	793	2,893	\$64,798
Harker Heights	13,715	7,198	7,359	132	1,522	412	2,557	\$72,258
Killeen	36,955	54,109	41,425	577	5,764	2,533	10,600	\$54,529
Temple	41,976	12,031	21,523	281	2,090	158	3,660	\$63,219
Bell County	156,780	80,759	93,467	1,448	10,884	3,454	21,792	\$62,137
Coryell County	26,598	9,097	11,524	293	1,661	1,019	4,008	\$61,503.75 ⁴
Lampasas County	4,860	527	1,110	41	140	62	472	\$20,059 ⁴

²Hispanic or Latino population are people who identify as Hispanic or Latino, regardless of race.

³Median Household Income for the KTMPO region was determined by taking an average of the median household income for Bell County with the Coryell and Lampasas KTMPO block groups median household income.

⁴Coryell and Lampasas County's Median Household Income were determined by taking an average of the MHI of each Census Block Group in the KTMPO region.

KTMPO has a diverse population with no single racial/ethnic group comprising a majority of the population. As of 2020, in the KTMPO region approximately 43.59% of residents are considered Non-Hispanic White/Caucasian, followed by 22.54% Hispanic or Latino, 20.88% Black or African American, 6.07% Two or More Races, 2.93% Asian, 0.41% Native American or Alaskan Native, and 1.05% Hawaiian Native or Pacific Islander.

The entity with the highest Median Household Income is Harker Heights at \$72,258 and the lowest is the Lampasas County section of KTMPO at \$20,059. With the median household income at \$74,755 in the US and \$72,284 in Texas, most areas within the KTMPO region are below the state and federal median household income of the US. These areas as well as those that have high minority populations need to be identified so that these marginalized groups receive fair treatment and meaningful involvement in the planning and implementation of transportation projects.

Mapping these populations clearly shows where minority, Hispanic, and low-income populations are concentrated within the KTMPO planning boundary. By analyzing this demographic data, KTMPO determined which areas of the KTMPO region are designated as Environmental Justice areas (areas where there is a higher percentage of minority, Hispanic, and low-income populations compared to the rest of the region) as shown in Figures 4.1 through 4.4. KTMPO will continue to focus our public outreach efforts to specific EJ areas as described in our Title VI Plan. An assessment of these EJ areas and proposed roadway projects will be discussed in Chapter 11, Environment.

Figure 4.1 – Environmental Justice (EJ) Areas

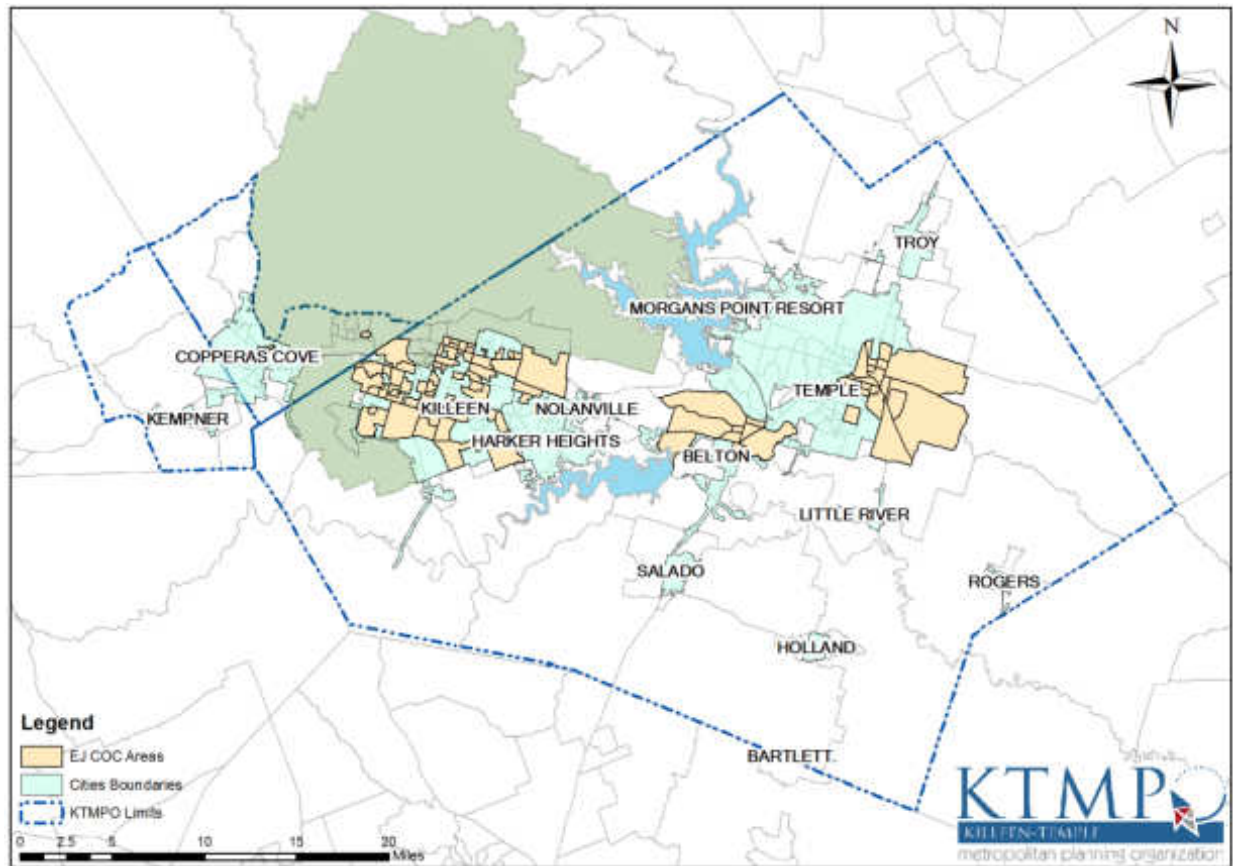


Figure 4.2 – Hispanic/Latino EJ Areas

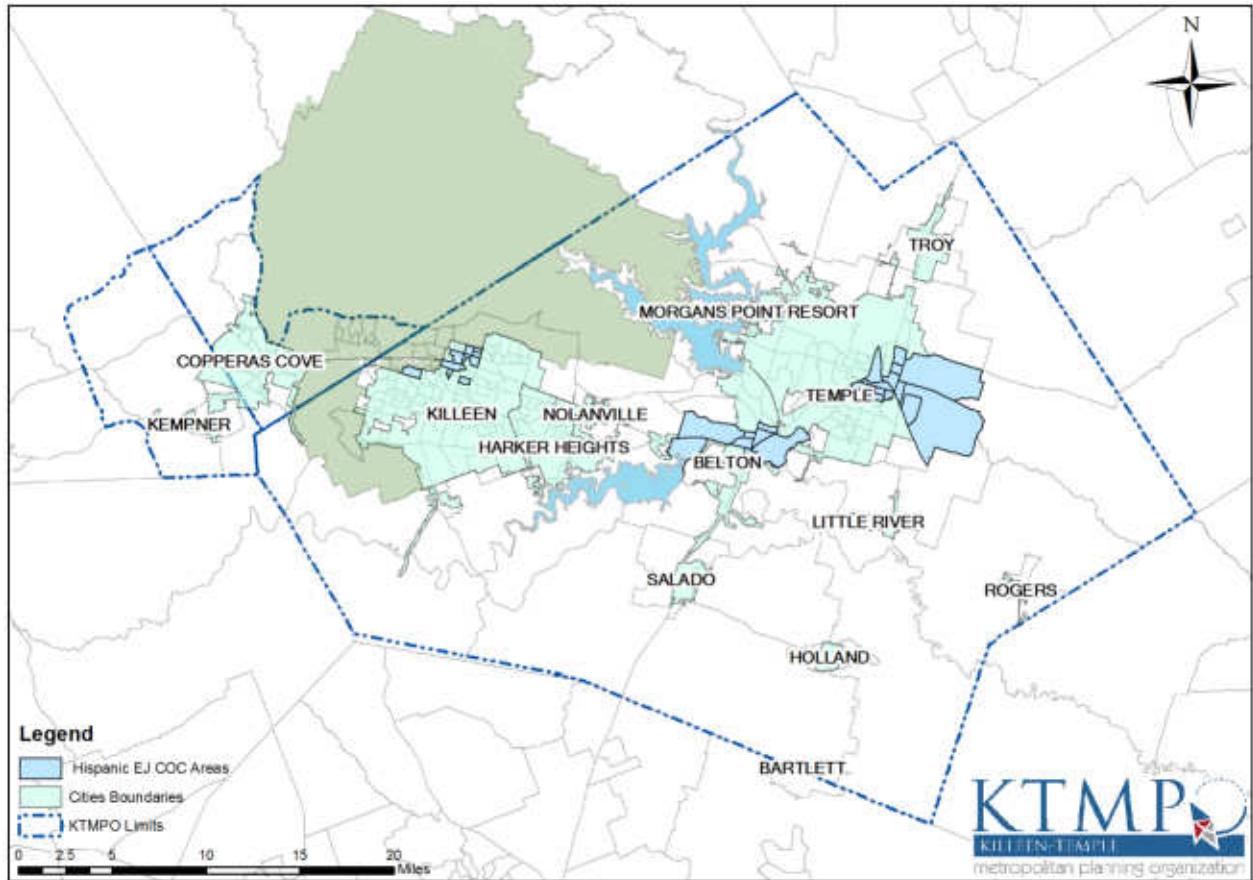


Figure 4.3 – Low Income EJ Areas

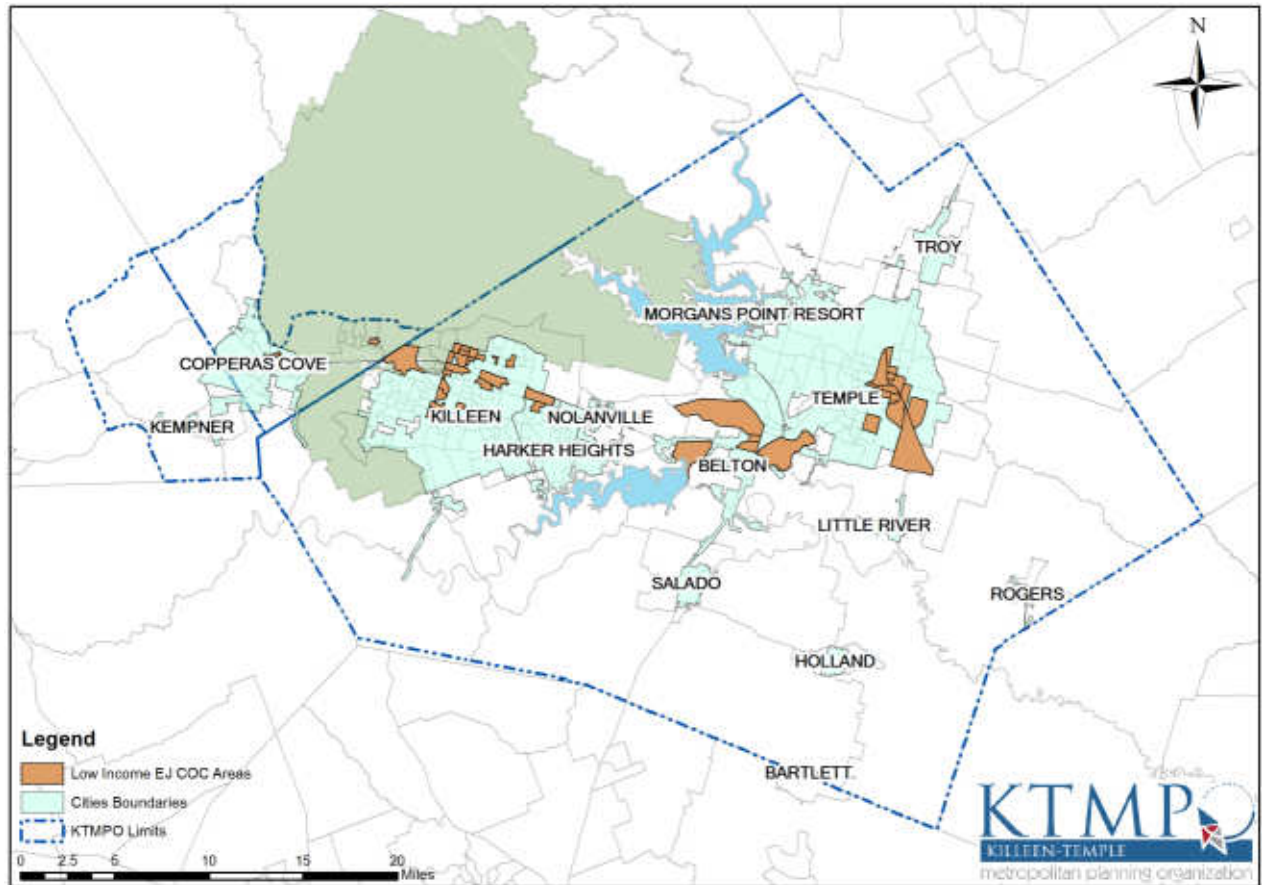
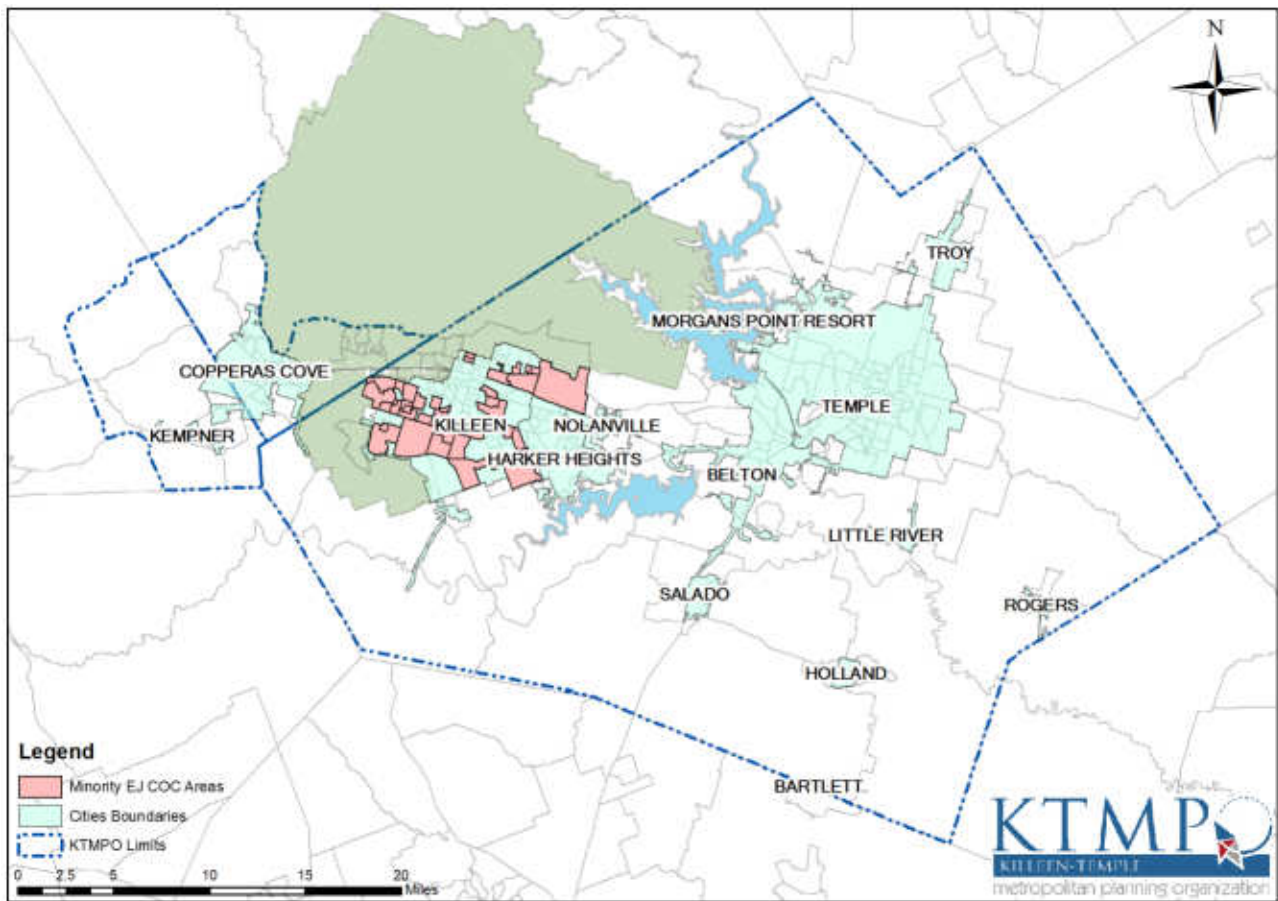


Figure 4.4 – Minority EJ Areas



AGE

The median age is significantly younger in the urbanized areas, compared to the rest of the planning boundary. This shows the effect of Fort Hood’s workforce on the surrounding area. Belton has the lowest median age of the KTMPO planning boundary, followed by Killeen.

Table 4.3 – Median Age

Entity Name	Median Age	Total Median Age for Males	Median Age for Females
KTMPO	34.6	33.4	35.65
Belton	28.7	29.4	27.6
Copperas Cove	31.7	32.1	31.3
Harker Heights	34.5	32.8	35.3
Temple	33.8	33.8	34.0
Killeen	29.9	28.9	31.3
Bell County	32.4	31.0	33.7
Coryell County ¹	32.8	31.0	34.9
Lampasas County ¹	43.8	43.3	44.8

¹ The median age is from the full county population, rather than the KTMPO portion of the county

POPULATION PROJECTIONS

In April 2022, TxDOT’s Transportation, Planning, and Programming Division hired the University of Texas at San Antonio to assist MPOs in developing demographic and network data for inclusion in the updated Texas Travel Demand Model. This work included updating the Traffic Analysis Zones (TAZ), TAZ-level demographics, and the modeled roadway network for the years 2020, 2025, and 2050. The initial step in developing travel demand data for the KTMPO Model Area Boundary (MAB) was to establish future population and employment “control totals.” The consultant team utilized the following data sets:

- 2020 Decennial Census American Community Survey
- (ACS) 5-year data
- Texas Workforce Commission (TWC) Quarterly Census of Employment and

Wages (QCEW)

- Business data from Data Axle Texas Demographic Center

Based upon documented growth rates and projections in the above data sources, the consultant team developed the 2050 population projections shown in Table 4.4, thereby establishing the 2050 population control total for the KTMPO planning area at 571,290.

Table 4.4 – Population Projections (KTMPO Planning Area)

Entity	2020 Estimated Population ^{5, 6}	2050 Population Projections ⁷	Percent Increase
KTMPO Region	432,886	571,290	31.97%
Bell County	370,647	506,886	36.76%
Coryell County	83,093	92,522	11.35%
Lampasas County	21,627	23,312	7.79%
Belton	23,054	N/A	N/A
Copperas Cove	36,670	N/A	N/A
Harker Heights	33,097	N/A	N/A
Killeen	153,095	N/A	N/A
Temple	82,073	N/A	N/A

⁵2020 populations are based on the 2020 Decennial Census and TDC population estimates of Traffic Analysis Zones (TAZ).

⁶The estimated population is the full county population, rather than the KTMPO portion of the county

⁷2050 projections are based on the projected TAZ population for the 2050 Travel Demand Model Refresh.

Employment trends were analyzed by basic, retail, service, and education sectors. Based on the 2014 to 2020 base data, total employment to population ratios were calculated for each county and a range of ratios was used to forecast employment levels among different sectors in 2050. Table 4.6 summarizes the 2050 employment control totals by entity. Chapter 4 includes a more detailed discussion of the work done to update KTMPO's regional travel demand. The complete **Travel Demand Model Update** is included in **Appendix H**.

Table 4.5 – Household Projections (KTMPO Planning Area)

Entity	2020 Households ^{7,9}	2050 Household Projections ^{8,10}	Percent Increase
KTMPO Region	155,794	226,227	45.21%
Bell County	135,673	199,910	47.35%
Coryell County	25,757	34,278	33.08%
Lampasas County	8,486	9,842	15.98%

⁷2020 households are based on TDC estimates of Traffic Analysis Zones (TAZ).

⁸2050 households projections are based on TDC estimates of the TAZs.

⁹The 2020 households are the full county households, rather than the KTMPO portion of the county.

¹⁰The 2050 household projections are the full county households, rather than the KTMPO portion of the county.

Table 4.6 – Employment Projections (KTMPO Planning Area)

Entity	2020 Employment ⁹	2050 Employment Projections ¹⁰	Percent Increase
KTMPO Region	139,988	206,988	18.58%

⁹2020 employment estimates are based on Texas Workforce Commission data in Traffic Analysis Zones (TAZ).

¹⁰2050 projections are based on the projected employment to population ratio of the TAZ from TWC data.

CONCLUSION

The demographic data and projection tables formulated in this section were compiled from various federal and state sources as a measure to determine infrastructure planning, funding decisions, transit facilities for neighborhoods and high traffic generators, as well as regional boundary expansions.

CHAPTER 5

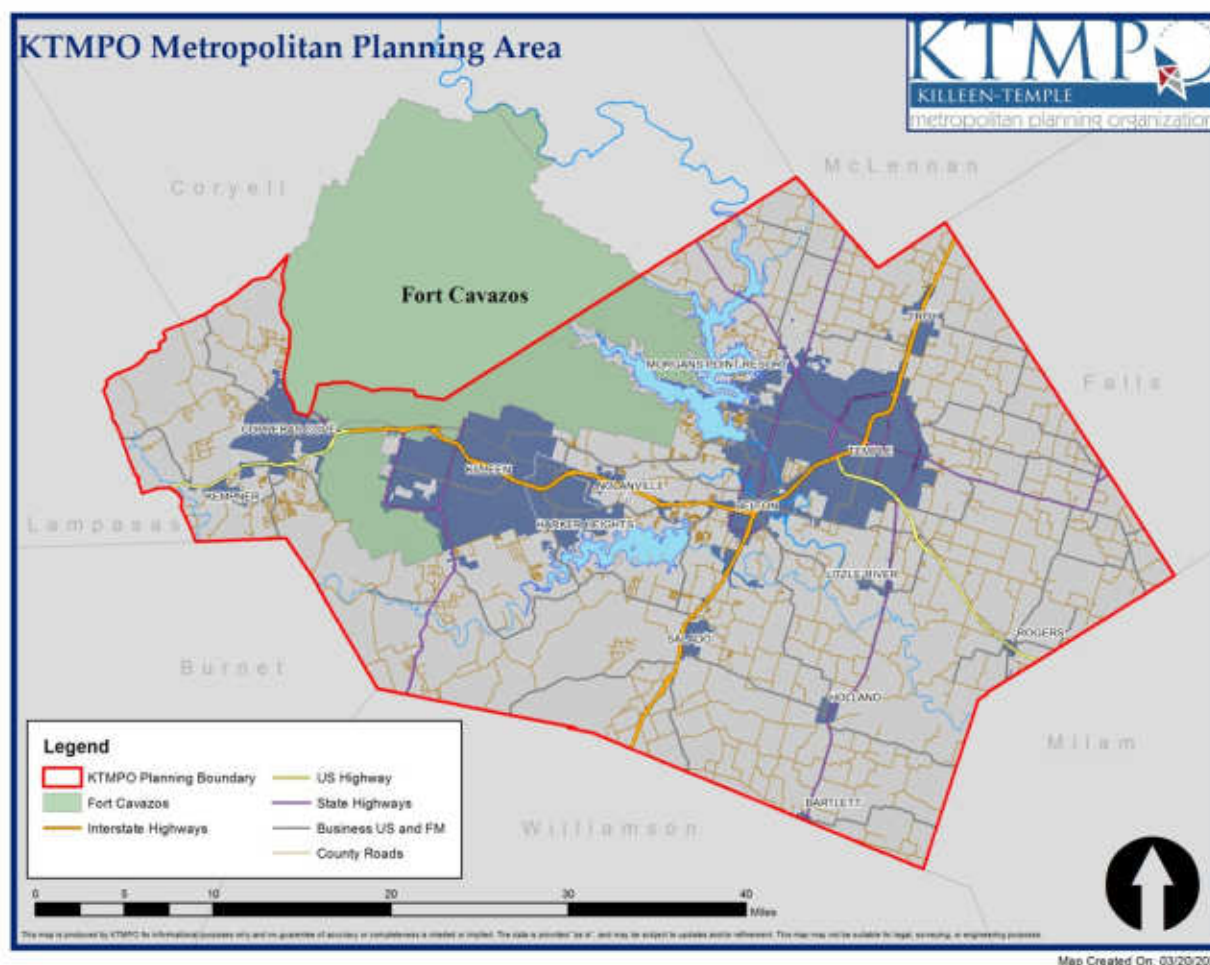
REGIONAL ROADWAYS



REGIONAL FUNCTION OF MAJOR TRANSPORTATION FACILITIES

The Killeen-Temple Metropolitan Planning Organization (KTMPO) is situated in Central Texas and benefits greatly from growth economically. Central Texas maintains major roadway facilities that are vital to commerce, manufacturing, and the military. As stated in the previous chapter, the KTMPO region expects to add another 139,268 in population by 2050. Growth factors and expected pass-through traffic growth on our roadways will continue to warrant major investments for safe and reliable roadway facilities. These investments are essential to the economy and security for Texas and the United States.

Figure 5.1 — KTMPO Regional Roadways



Regional Roadways

The KTMPO region is home to well-known manufacturing and distribution companies, nationally recognized medical facilities, and the largest active-duty armored post in the United States Armed Services. Our location allows for the movement of goods, services, and the military in an economically viable manner. Major highways such as IH 35 and US 190/IH 14 provide a safe and efficient way to move products through the State and the nation, with

IH 35 providing 402 million tons valued at \$690 billion of freight moving into, within, out, and through the corridor generating over 97,000 freight related businesses and 4.3 million jobs (The Economic Role of the IH 35 Corridor in Texas).



Between 2010 and 2020, the population of the KTMPO region increased by 67,518 people, a 15.6% increase, and projections show that growth in the KTMPO region is expected to increase by an estimated 32% by 2050. As previously stated, these growth factors have a significant impact on the future KTMPO transportation facility needs. With

growth comes congestion which has a significant impact on the region's ability to maintain air quality, effectively move goods, people, and services, and to decrease transportation costs. KTMPO's goal is to maintain a safe, reliable, functional, and efficient transportation system for the growing population, growing commerce needs and meet future air quality standards.



The larger cities of the KTMPO region are home to higher education facilities such as Central Texas College in Fort Hood, Texas A&M University - Central Texas in Killeen, University of Mary Hardin Baylor in Belton, and Temple College in Temple. Each of these facilities are experiencing phenomenal growth to meet the demand and contribute to economic growth, cultural enrichment, research and innovation and educational opportunities.

KTMPO's major transportation facilities serve a diverse range of users, including businesses, commuters, students, recreational visitors, freight haulers, military personnel, and medical staff. Ensuring safe, reliable, and efficient transportation systems is paramount to maintaining and enhancing the region's quality of life, a core objective for KTMPO.



THOROUGHFARE PLAN DEVELOPMENT

In 2018, KTMPO developed a Regional Multimodal Plan (RMP), expanding its focus to include various transportation modes such as transit, freight, and air quality, in addition to the roadway and bike/pedestrian networks. The RMP provides a framework for creating an integrated and comprehensive regional transportation network for the KTMPO region.

In early 2022, the Bell County Commissioner's Court tasked KTMPO with creating a new long-range Bell County Thoroughfare Plan (BCTP) to address the significant population and employment growth in Bell County since the last BCTP update in 2001. The BCTP is designed to manage growth and future mobility needs, particularly given the county's strategic location and rapid development. It offers a long-range guide for future transportation projects, though actual construction depends on factors such as funding and local decisions. The BCTP can be found on the [KTMPO website](#). While the BCTP focuses solely on Bell County and not the entire KTMPO region, staff are planning to update the Regional Multimodal Plan following the completion of the 2050 MTP update. The current Regional Multimodal Plan can be found in **Appendix F, Regional Multimodal Plan**.

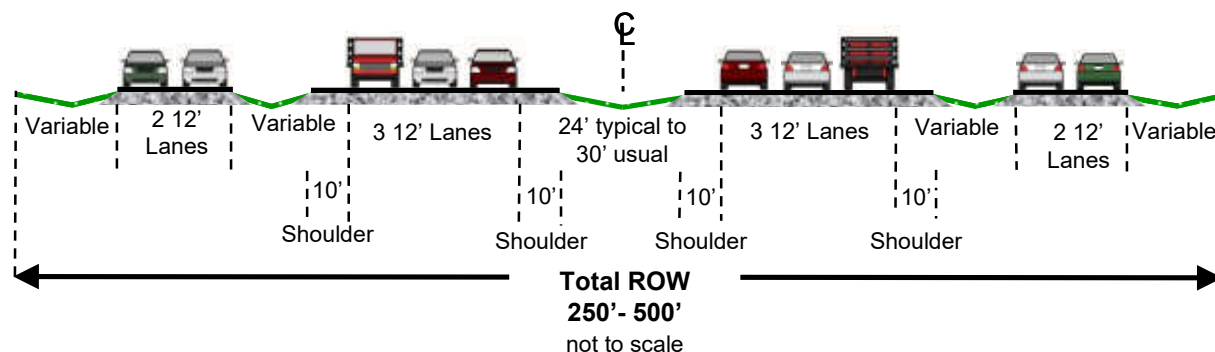
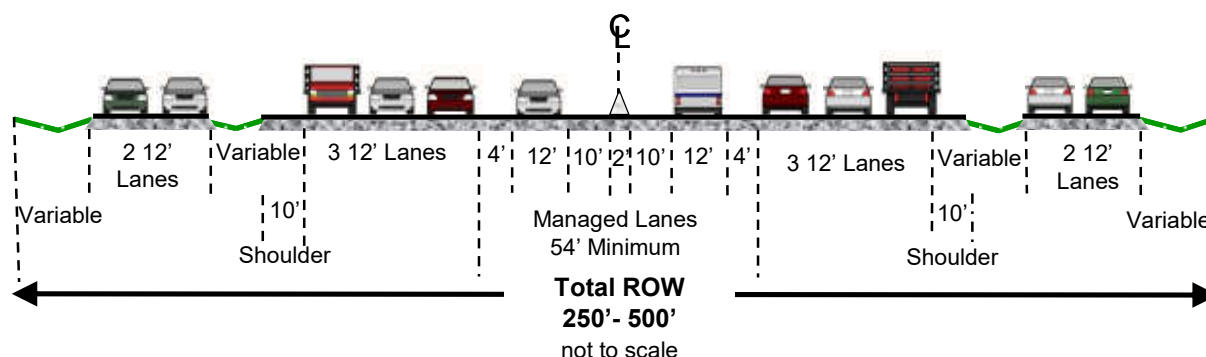
TYPICAL CROSS-SECTIONS BY FUNCTIONAL CLASSIFICATION

The cross-section designs that follow are taken from the Regional Multimodal Plan and are tailored for each classification in the KTMPO planning area. More details on the development of the typical sections can be found in **Appendix F, Regional Multimodal Plan**. Future regional thoroughfare plans are depicted in Figure 5.7 through 5.9.

Controlled-Access Functional Classification

General design standards for Controlled-Access Function Class call for a minimum right-of-way width of 250' for four lanes, with the desirable standard being six lanes and 500'. Design details are determined by TxDOT. Bicycles and pedestrians are prohibited due to the high speeds of these classes of road, so the design of supporting bicycle and pedestrian infrastructure (including shared use of wide shoulders) is not applicable.

Where a wide grassy median is not desired, a raised concrete median such as a "Jersey barrier" can be installed. The use of Jersey barriers can serve as the base for light standards, signposts, bases for the retaining walls between the main lanes and the frontage roads.

Figure 5.2 – Typical Cross-Sections – Controlled-Access Arterials**Controlled Access Facility (4-6 Lanes) with Frontage Roads****Controlled Access Facility (4-6 Lanes) with Managed Lanes and Frontage Roads****Major Arterial Functional Class**

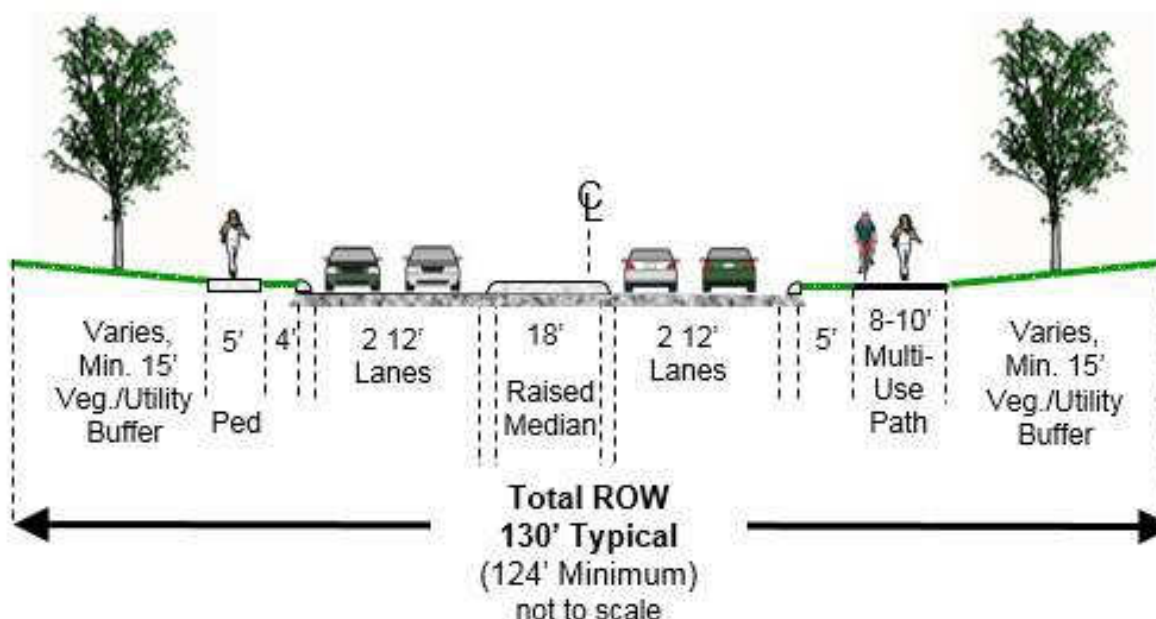
Major Arterial Functional Class general design standards call for a 130' minimum right-of-way for a four-lane facility, with 160' desirable for six lanes. A travel lane width of 12' as specified is common for existing Major Arterials in the KTMPO region, but Complete Streets and Vision Zero guidance calls for narrowing travel lanes to 11' to slow traffic to speeds that are safer for all road users.

For divided Major Arterials, a minimum median width of 18' is desirable. The median divider can be a permanent feature such as a curb or a raised concrete barrier or can be landscaped. For landscaped medians, a minimum width of 15' is recommended. Typical practice in the KTMPO region has been to install wider grassy medians, with widths of 15' typical for older urban streets such as Ave H in Temple, and 20' to 40' typical for new construction streets in suburban areas such as SH 201 in Killeen and S. 5th Street in Temple.

Bicycle and pedestrian facilities are permitted on Major Arterials and lower Functional Classes. Therefore, the cross sections for typical Major Arterials include sample variations in the different classes of bicycle and pedestrian infrastructure as well as differences in the

number of lanes, lane widths, medians, and other road attributes. Typical cross-sections are shown in Figure 5.3.

Figure 5.3 – Typical Cross-Sections – Major Arterials



Minor Arterial Functional Class

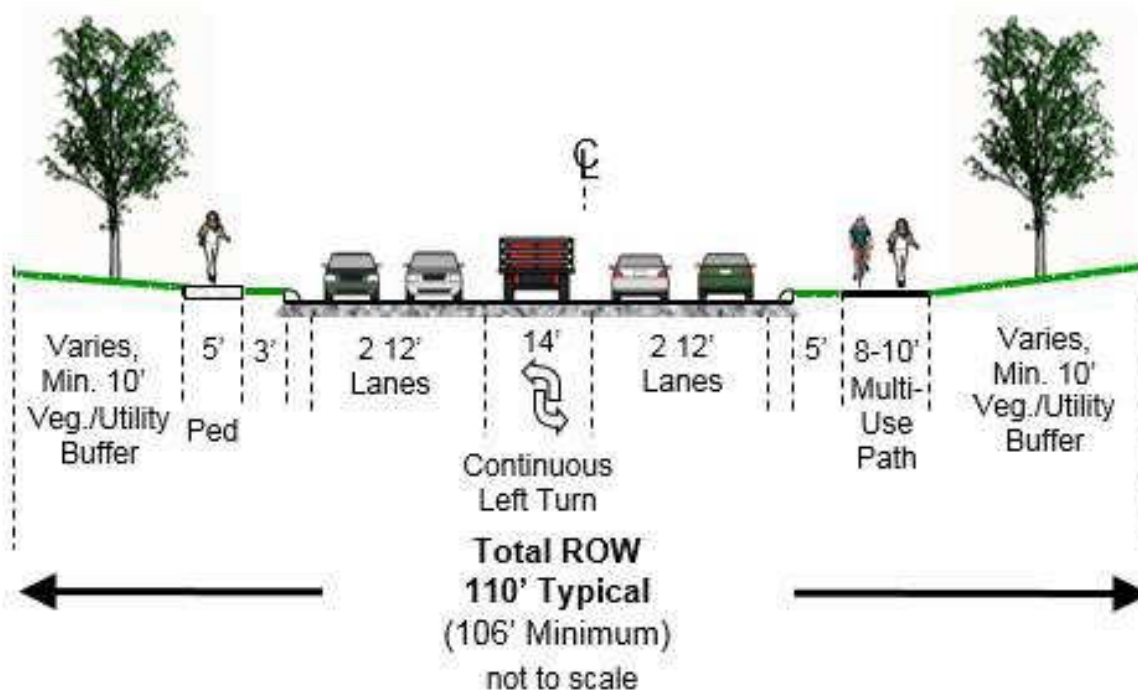
Minor Arterials general design standards call for a minimum right-of-way of 80' for three lanes, increasing to 110' for four lanes. The desirable right-of-way is 120', which will accommodate five lanes.

As with Major Arterials, a travel lane width of 12' is common in the KTMO region. The Complete Streets and Vision Zero guidance calling for travel lanes of 11' to slow traffic to speeds that are safer for all road users is even more pertinent for Minor Arterials, given their position in the access/mobility continuum that has greater emphasis on access and on multimodal uses.

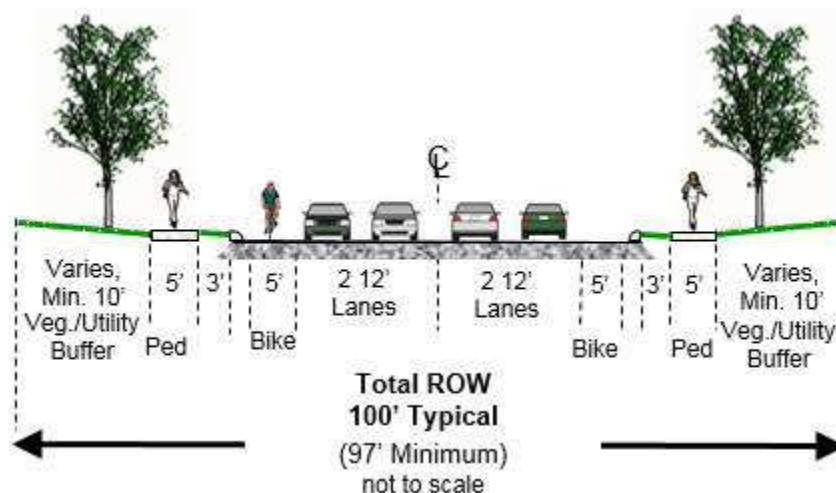
A continuous center turn lane has been recommended as an appropriate median treatment for Minor Arterials, with a desirable width of 16'. Landscaped buffer areas on the edges of Minor Arterials are recommended with a 10' width.

Minor Arterials may have greater accommodations for bicycles and pedestrians than Major Arterials, as they typically have lower speeds, lower traffic volumes, and a smaller percentage of trucks in the traffic stream. Separated off-street paths or sidewalks and a separated off-street multi-use may be included along Minor Arterials.

Figure 5.4 – Typical Cross-Sections – Minor Arterials

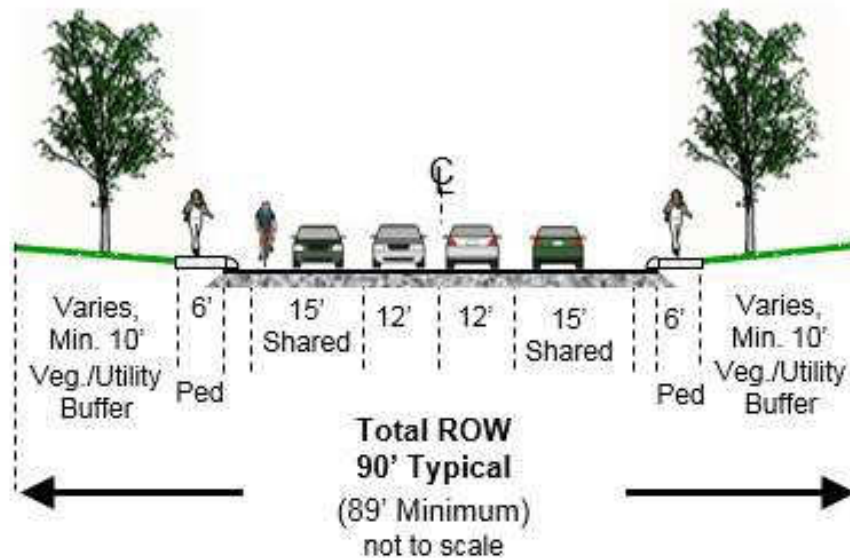


More extensive bicycle and pedestrian accommodations are shown in the cross section below. Separated off-street paths or sidewalks and on-street conventional unbuffered bike lanes are shown.



The next cross-section shows a typical four-lane Minor Arterial with wide outside lanes, intended to permit autos and bicycles to safely share a lane. The recommended width of the shared lane is 15'. The wider outside lanes should be carefully marked with visual clues to discourage excessive vehicle speeds and preserve street safety for all users. The

width of the street may compromise pedestrian crossing safety; however, installing pedestrian refuges and well-marked crosswalks can mitigate this risk.



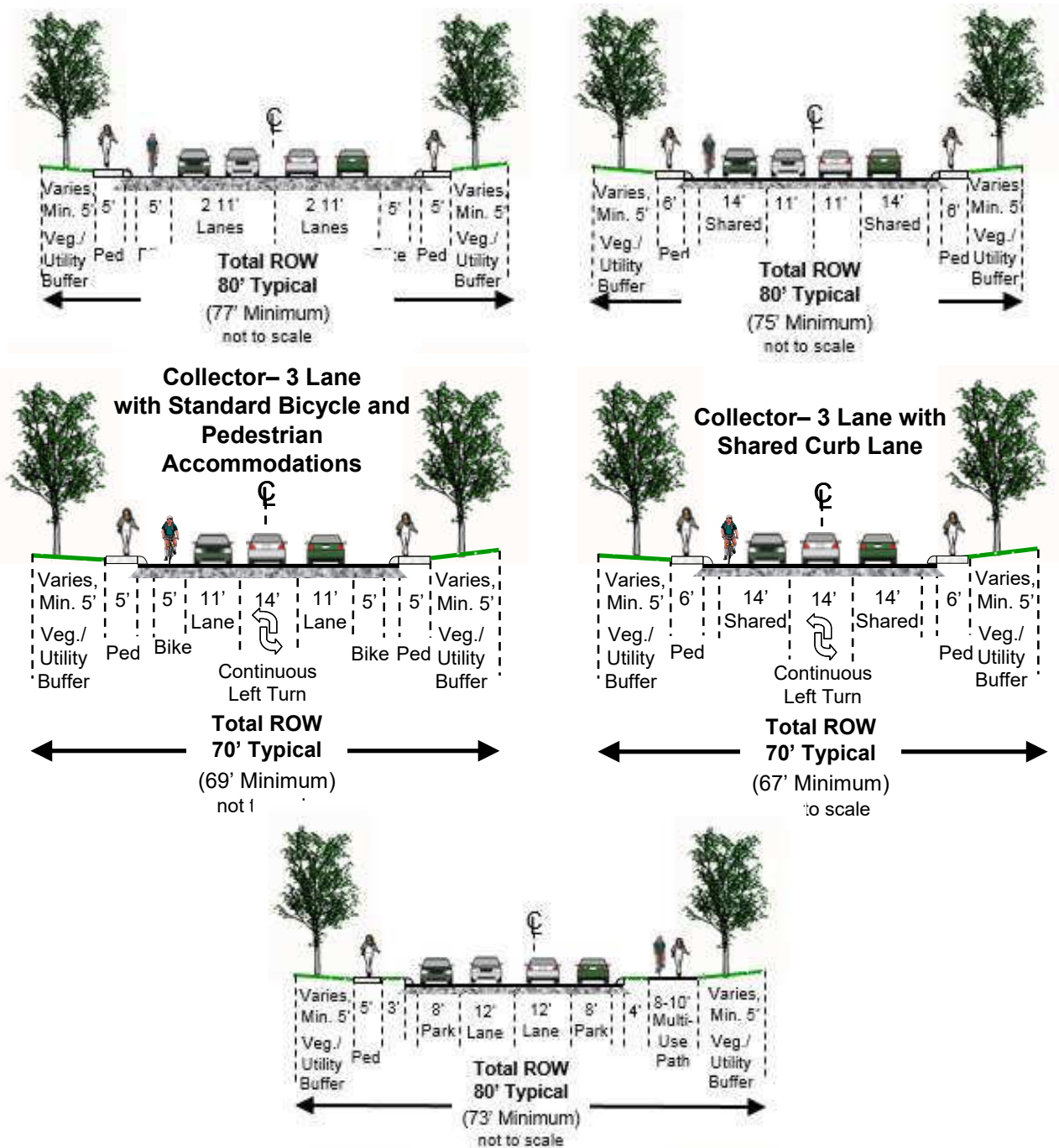
Collector Functional Class

Collector Functional Class is the Functional Class which is most geared to providing access. With mobility as a less critical attribute, narrower lane widths of 11' are recommended, although widths as narrow as 10' are cited in Complete Streets and Vision Zero guidelines. Shared auto and bicycle outside lanes may be as narrow as 14'. Minimum right-of-way of 60' for two lanes and 70' for three lanes are listed in the guidance. For four lanes, a desirable right-of-way is 80'.

Due to the lower speeds and lower volumes of traffic, continuous center turn lanes on Collector Streets may be as narrow as 14'. Medians and buffers should have a minimum width of 5'.

More extensive bicycle and pedestrian treatments should be expected on Collector Streets.

Figure 5.5 – Typical Cross-Sections – Collectors



Local Street Functional Class

Local Functional Class Streets have the lowest speeds and volumes of all the Functional Classes. With these attributes, travel lane widths can consistently be narrower, with 10.5' recommended as a minimum. Widths as narrow as 10' are cited in Complete Streets and Vision Zero guidelines.

A right-of-way width of 50' is recommended for Local streets. The Figure 5.6 shows a typical cross section for a two-lane local street. In this illustration, shared lanes of 13.5' are provided. Narrower travel lane widths may be implemented to reduce traffic speeds to levels that are safe for users of all ages and abilities.

Figure 5.6 – Typical Cross-Sections – Local Street Functional Class

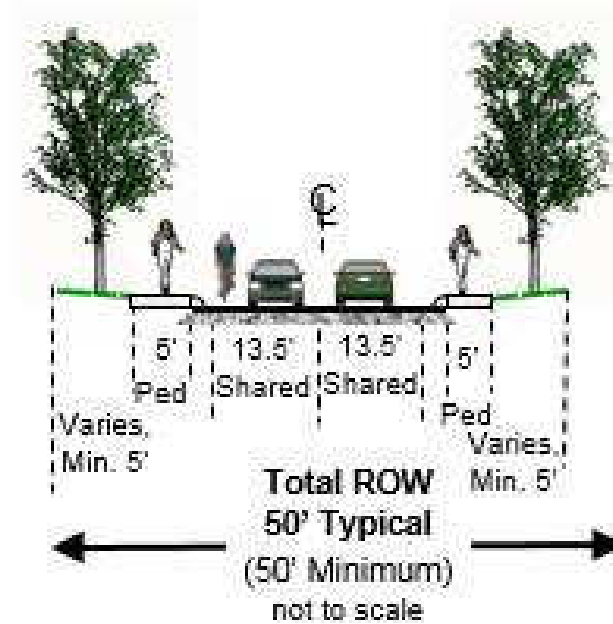


Table 5.1 below summarizes the recommendations for right-of-way (ROW) considerations by street Functional Class. Minimum ROW is based on 4 lanes for Principal Arterials, 3 lanes (two travel lanes and a center turn lane) for Minor Arterials, and 2 lanes for Collectors and Local streets.

Table 5.1 – Right-of-way (ROW) Considerations by Street Functional Class

Design Element	Controlled-Access	Major Arterial	Minor Arterial	Collector	Local
Preferred ROW Width	Varies up to 500'	160'	120'	80'	50'
Minimum ROW Width	250'	130'	80'	60'	44'
Typical Pavement Width (BOC to BOC)	Varies	82' to 106'	47' to 75'	31' to 57'	23' to 29'
Auto Lane Width	Minimum 12'	Preferred 12'	Preferred 12'	Minimum 11'	Minimum 10.5'
Median Treatment	Rural: Minimum 36' Urban: Minimum 10'	Preferred 18'	Continuous Center Left Turn Lane Preferred 14' Minimum	Continuous Center Left Turn Lane Preferred 14' Minimum	None
Outside Vegetation/Utility Buffer (minimum)	Varies	15'	10'	5'	5'
Notes	Inside Shoulder: Minimum 4' Outside Shoulder: Minimum 10' Vertical Clearance: Minimum 14'	ROW may be greater with parking, bicycle and pedestrian facilities, bus stops, and intersection treatments.			

Figure 5.7 – KTMPO 2018 Regional Thoroughfare

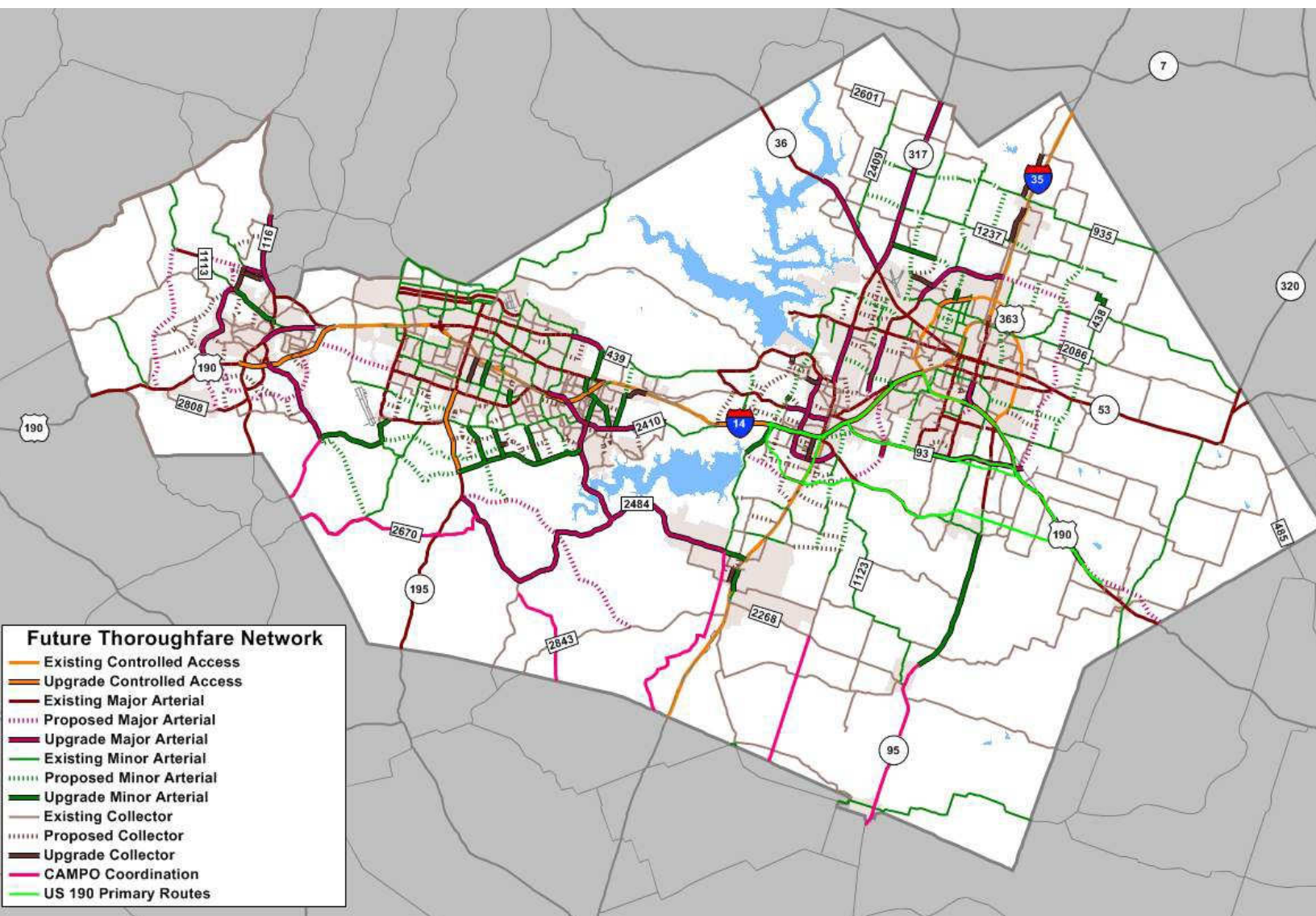


Figure 5.8 – 2023 Bell County Thoroughfare Plan (Killeen)

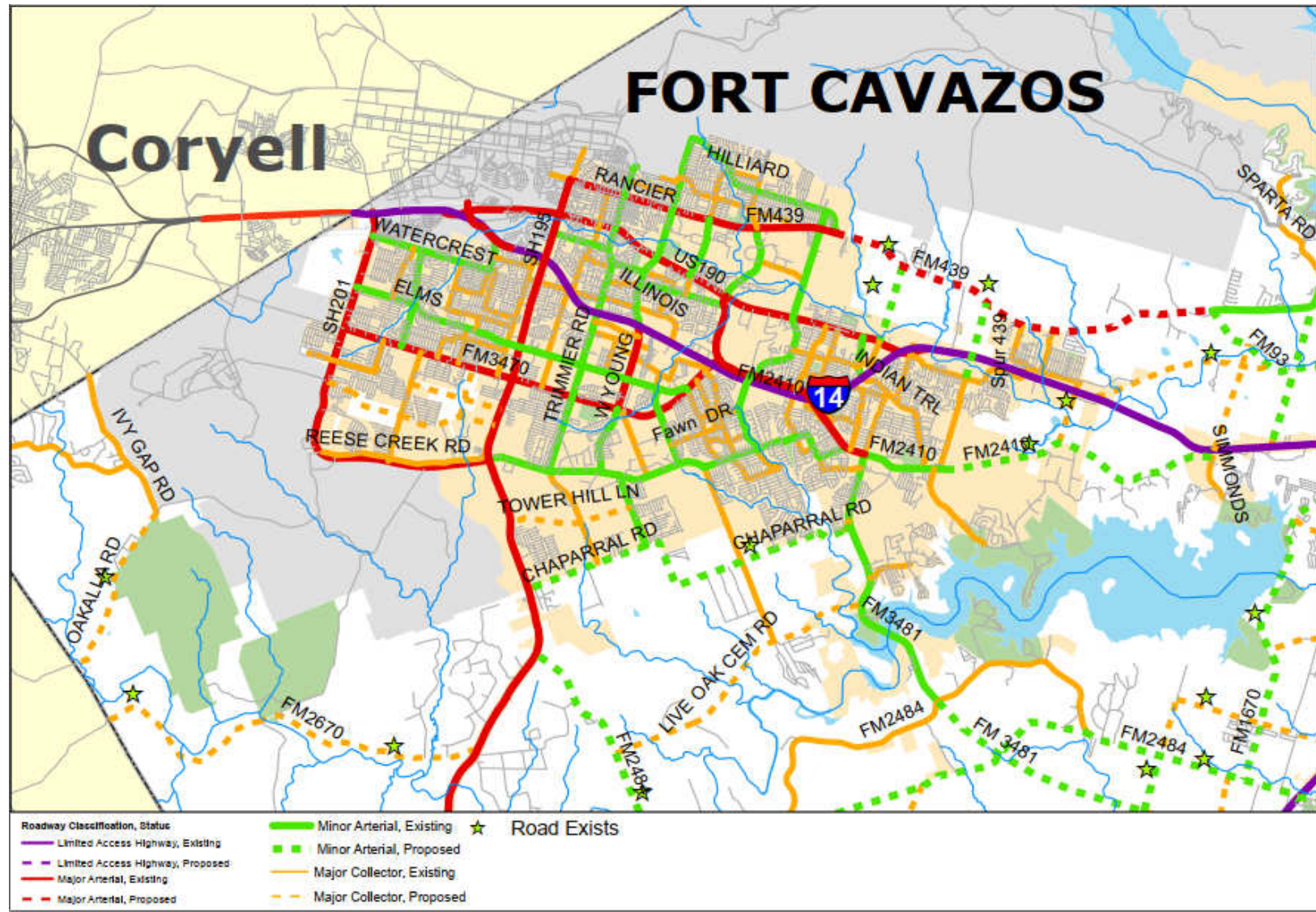
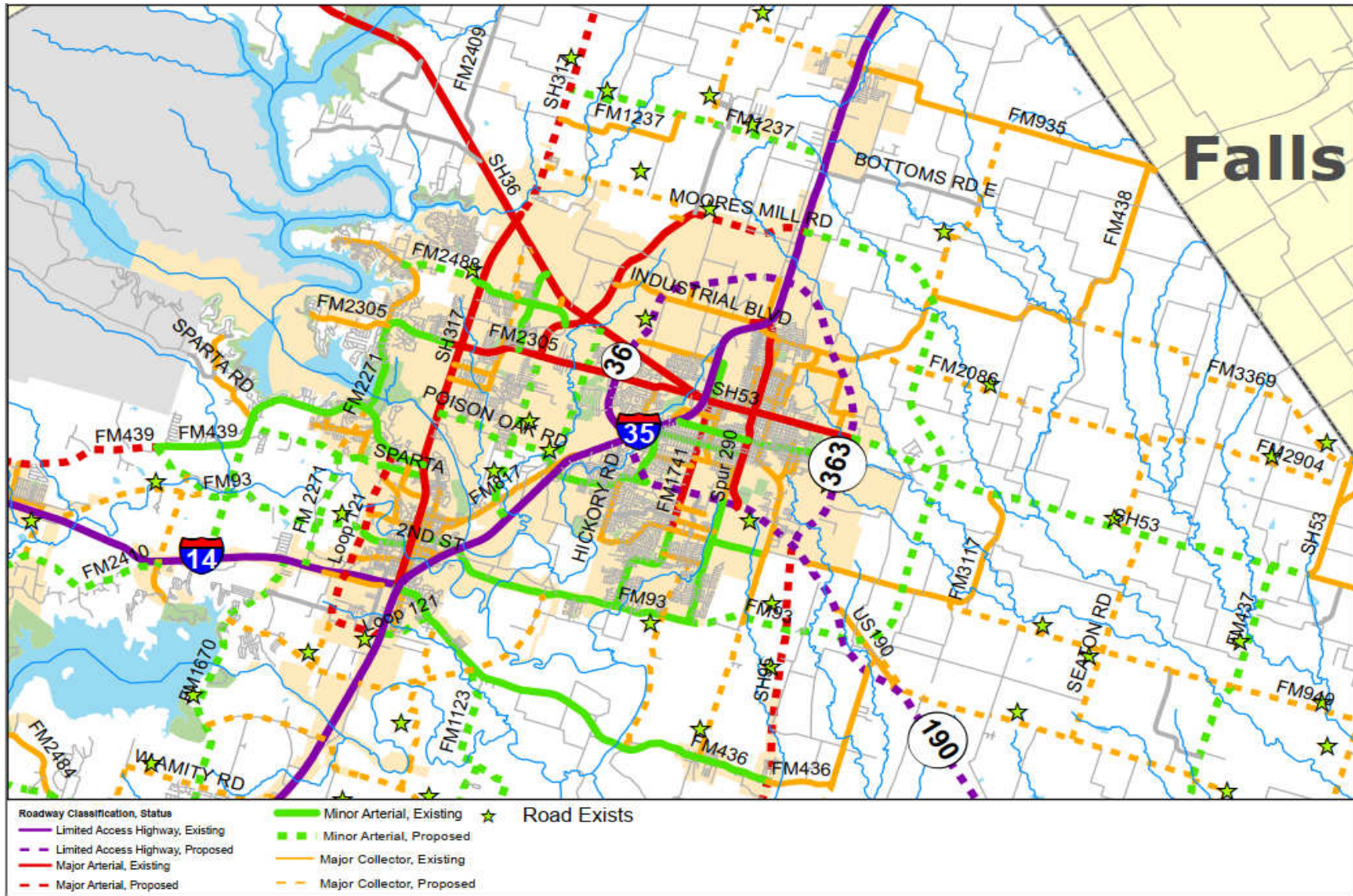


Figure 5.9 – 2023 Bell County Thoroughfare Plan (Temple)



THOROUGHFARE PLAN IMPLEMENTATION, FINANCING, AND MAINTENANCE

Projects required for the implementation of the Thoroughfare Plan are to be constructed by a variety of implementing agencies, including municipalities, counties, Fort Hood, the Texas Department of Transportation, private developers, and in some cases, public-private partnerships. Municipalities are encouraged, while coordinating closely with KTMPO, to continue their own sound planning practices as they relate to zoning, subdivision regulations, building setbacks, access control, and visibility standards so that land and roadway development occurs in such a fashion to be consistent with the Thoroughfare Plan. In addition, municipalities are urged to view the network within their jurisdiction as part of a larger regional system.

Traditionally, funding for the various types of roadway projects related to the development of the regional thoroughfare plan is provided via the local general obligation bond programs, the KTMPO's Transportation Improvement Program (TIP), and developer participation. The prioritization processes that are in-place for the development of these funding programs should continue to be followed to ensure that the most needed projects are the ones that are implemented first.

As with any long-range planning document, this plan is considered a "living" document that responds to changing visions, goals, priorities, and trends of each individual jurisdiction. Alterations to the plan are derived from sound planning practices and are supportive of maintaining an effective transportation system in the KTMPO region. As member jurisdictions make changes to their thoroughfare plan through either an incremental update process or through a complete restructuring as part of an updated Comprehensive Plan, notification should be provided to the MPO planning staff so that this regional plan can remain up to date. Any modifications to this plan should be such that they are harmonious with local plans and sensitive to the needs and constraints found within a local area. In turn, the local area plan must seriously consider the impact their changes have on the mobility needs of the entire region.

It is vital that a plan maintenance process is formalized and incorporates suggested processes when changes are made to this plan. The following is the recommended process for these amending this plan:

- The local entity presents the suggested revision to the MPO staff for initial review
- MPO staff reviews the suggested revision in terms of regional connectivity, impacts to future traffic patterns, and compatibility with the existing plan
- Once common understanding between MPO staff and the requesting entity is reached, MPO staff and the requesting entity present the suggested revision to

- the MPO Technical Advisory Committee
- The MPO Technical Advisory Committee formally considers the proposed change(s) and staff recommendations
 - Should the change be considered “significant” (e.g., in response to a complete overall of a city Comprehensive Plan), the proposed amendments are presented at a public hearing
 - The MPO Technical Advisory Committee recommends approval by the MPO Transportation Planning Policy Board
 - The revised Thoroughfare Plan network is adopted by the MPO Transportation Planning Policy Board

This process should be considered one element of the continuing, cooperative, and comprehensive (3C) transportation planning processes for the KTMPO planning area.

MAJOR FACILITIES IN THE KTMPO REGION



Interstate Highway 35 (IH 35)

As one of the recognized Congressional High Priority Corridors, IH 35 is essential to the movement of goods and services within the state of Texas and from Canada to Mexico. Within KTMPO, IH 35 stretches 36 miles between the northern and southern Bell County lines and is considered a lifeline for economic vitality.

In 2011, the State of Texas organized an IH 35 Advisory Committee, to review the facility and recommend improvements. Through their work a reconstruction of IH 35 throughout the State of Texas was initiated. Since then, projects to improve IH 35 in Salado, Temple, and Troy have been completed. Facility upgrades included: expansion from 4 lanes to 6/8 lanes of traffic, one-way frontage roads, bridge turnarounds, direct-connect bridges, and safer entrance and exit ramps. The only remaining unimproved section of IH 35 in the region is between Belton and Temple. KTMPO project T15-06k will reconstruct and widen IH 35 from IH 14 in Belton to State Loop 363 in Temple, with direct connector ramps constructed at the S. Loop 363 interchange. This segment of IH 35 will be concurrent with future IH 14. TxDOT is in the early stages of development for this project.



Interstate 14 (IH 14)/US Highway 190 (US 190)

Stretching approximately 50 miles, with 25 miles being designated as IH 14, US 190 is another major corridor in the KTMPO region. This facility is the main east to west corridor in the KTMPO region, connecting the two UZAs (Killeen and Temple). TxDOT has been actively widening this facility over the past decade and recently completed upgrades widening the highway to six lanes from the eastern edge of Copperas Cove to Temple.

Work still to be completed is the Copperas Cove US 190 Bypass (W35-01) project which is scheduled to start in 2024 and the Rogers Relief Route which is in the middle of construction. Both projects will enhance safety and reduce congestion on the eastern and western edges of the MPO's area. As a strategic regional corridor, US 190/IH 14 continues to be a top regional priority for the KTMPO region.

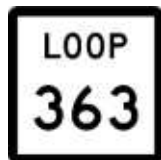
In 2018, KTMPO, in partnership with TxDOT, completed the US 190 Feasibility Study to upgrade and/or relocate US 190 between FM 1670 in Belton to the Rogers Relief Route. As a community-driven effort, KTMPO established a working group to guide the study and provide input. The working group, made up of city/county representatives, elected officials and other stakeholders, developed goals and objectives, route options and evaluation criteria to determine the five route options. Figure 5.10 shows the Pink Route, which was the route selected.

Figure 5.10 – Pink Route: Utilizes existing IH 14 and IH 35; upgrades existing Loop 363 and US 190 between IH 35 and Rogers



The US 190 Feasibility Study was conducted at the request of KTMPO and local officials to gauge the level of public support for the concept and identify potential route options. The information contained in the final study report will be considered by the KTMPO Transportation Planning Policy Board as transportation funding decisions are made and the

Metropolitan Transportation Plan is updated in the future. More about the US 190 Feasibility Study can be found on the [KTMPPO website](#).



Upcoming Projects for Interstate 14 (IH 14)/US Highway 190 (US 190):

US 190 Freeway Extension West (BW50-01)

This project is to construct a controlled access freeway with one way frontage roads and grade separations at Big Divide Rd. and Great Hills Dr. This project is a continuation of the strategic regional corridor, US 190/IH 14.

IH 14 Expansion East phase 1 and 2 (W50-02a / W50-02b)

These projects will reconstruct existing US 190 to interstate standards in anticipation of future IH 14 designations. The main lanes will be access controlled with grade separations at all major intersections.

America's Fords to Ports Strategic Corridor



On November 15, 2021, President signed the Infrastructure Investment and Jobs Act (IIJA), which designated the components of the Gulf Coast Strategic Highway corridor between Brady, Texas and Augusta, Georgia, as High Priority Corridors of the National Highway System, forming a future extension of IH 14.

Loop 363 Expansion

Loop 363 in Temple continues to experience heavy traffic. The expansion of this corridor over the past years appears to have accommodated traffic volume very well. Building Loop 363

to a limited access facility with one-way frontage roads on the southern portion of the loop has allowed better flow of traffic and easier east/west movement through Temple. Notable projects include reconstruction of Loop 363 in Temple from South 57th Street to South 5th Street, construction from South 57th to SH 36, construction of the IH 35 overpass, construction of SH 36 underpass and others. Project W35-07 widens the Loop between Lucius McCelvey to Industrial Blvd, this project has recently started construction.

Upcoming Projects for the Loop 363 Expansion:

Loop 363 Intersection (W30-21)

This project reconstructs the intersection of Loop 363 at FM 2305 (Adams Ave). This project will help improve safety and congestion.

US 190 (W30-23)

This project widens Loop 363 from Spur 290 to SH 95. Project W50-01 phase 1 to reconstruct and widen S. Loop 363 from 2 to 4 lanes divided from IH 35 to US 190.



Loop 121

Loop 121 is a regionally significant roadway that provides a transportation network linking several arterial roadways, such as FM 439, FM 93, IH 14, IH 35, and FM 436. Loop 121 is a two-lane roadway that carries high traffic loads between IH 14 and IH 35. Much of the congestion occurs due to the development activity in the area such as the residential subdivisions, University of Mary Hardin Baylor (UMHB), the Cadence Bank Event Center, and the Bell County Justice Center. . Project W40-04a to widen Loop 121 from Lake Road (FM439) to South of W Ave O; this project has recently begun construction and will help improve the infrastructure along Loop 121.

Upcoming Projects for the Loop 363 Expansion:

Loop 121 Phase 2 (W40-04b)

This project W40-04b to widen Loop 121 between US190/IH 14 to IH 35. This project also includes the addition of a Shared Use Path and sidewalks.

Loop 121 Phase 3 (W40-04c)

This project W40-04c to widen Loop 121 from IH35 to FM 436. his project also includes the addition of a Shared Use Path and sidewalks providing a safe pedestrian network connecting to existing sidewalks on Loop 121 Phase 2, IH 35, S Wall Street, and Royal Loop.



State Highway 195 (SH 195)

SH 195 connects travelers from IH 14/US190 to IH 35 north of Georgetown, Texas. Historically, this facility has been used for commuters to the Austin area and is an important artery in the KTMPO roadway system. Currently, SH 195 is primarily utilized by commuters, students, the military, and regional airport travelers. SH 195 has recently undergone extensive upgrades to accommodate the needs of the public as well as the military as

an alternative deployment artery. South of the KTMPO region, SH 195 was upgraded to a divided four lane highway all the way to I3H 5 in Georgetown.

Upcoming Projects for State Highway 195:

SH 195 (K40-27)

This project will construct a turnaround underpass for northbound and southbound traffic on SH 195 frontage roads and FM 3470.



SH 195 (W35-03)

This project will widen SH 195 to a 4-lane freeway with frontage roads from FM 3470 to Chaparral Road.



State Highway 36 (SH 36)

This two-lane roadway has been used by trucking companies and travelers for many decades as an alternate route from Abilene to Houston. The route alternative is to pass through Fort Worth to Dallas and then to Houston. Just beyond the borders of the KTMPO region, SH 36 passes through North Fort Hood. As a result, SH36 is often a congested corridor with the movement of Fort Hood troops. Oilfield activity in West Texas has also increased the usage of this facility.





State Highway 201 (SH 201)

SH201 begins at IH 14/US190 and ends at SH 195. Recently, SH 201 has undergone extensive upgrade to accommodate the traffic needs of higher education, the regional airport, and the military. Texas A&M University – Central Texas (TAMUCT) has relocated along SH 201. The TAMUCT is continuing to develop and expand which can affect the amount of traffic along SH 201. The Killeen Regional Airport is also located on SH 201. Future considerations may include the extension of SH 201 for a direct connection to IH 35. An SH 201 connection was studied in 2014 that would allow for an alternative route to IH 35, thereby relieving congestion and accommodating the future southern growth trends of Copperas Cove, Killeen, and Harker Heights. On the northern end of SH 201 there are three major businesses that contribute to congestion. Central Texas College, Robert M. Shoemaker High School and AdventHealth Central Texas are all located close in proximity to US 190.



State Highway 317 (SH 317)

SH 317 begins in Belton, Texas and ends at Valley Mills, Texas. This two-lane facility is utilized by a vast array of motorists to include commuters, recreational users, and freight haulers. Located parallel to IH 35, motorists utilize this two-lane facility at times as an alternative route. SH 317 is also located near Lake Belton and many residential neighborhoods.

SH 317 provides major connections to IH 35, Lake Belton and SH 36. SH 317 also acts as an alternate north to south route when IH 35 becomes congested. There are many events that take place during the year on Lake Belton and in the Belton/Temple area. Each of the major holidays brings hundreds and sometime thousands to these communities and Lake Belton. Within the vicinity of SH 317 in west Temple, there are six Belton ISD



facilities that compete with commuters, rock quarry truck traffic and recreational users. With the addition of Lake Belton High School at SH 317 and FM 2483 and a new BISD elementary along Poison Oak Road, traffic along SH 317 is expected to increase.

KTMPO has addressed current and future projections along SH 317 by allocating Proposition One funds to widen SH 317 from FM 439 to FM 2305 (Adams Ave) from two to four lanes with a median, and a shared-use path. This project was completed in fall 2018. The Prairie View Realignment Project, completed in 2020, was also constructed to relieve congestion along this vicinity. The project realigned Prairie View Rd and FM 2483 to a single intersection along SH 317 reducing the number of access points and increasing better traffic flow along each roadway.

Table 5.2 KTMPO Recently Funded Projects

FY2019-2026

Category 2 Projects (Metropolitan Corridors)					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
W35-12	US 190 (Rogers Relief Route)	2.0 mi S of FM 436 in Heidenheimer to Milam County Line	Widen from 2 to 4 lane divided rural highway	\$62,800,000	2020
W40-06 (1)	US 190	Fm 3423 (Indian Trail) to 0.25 MI W of Paddy Hamilton	Widen main lanes from 4 to 6 lane divided freeway and ramp alignments	\$24,180,000	2019
W40-06(2)	US 190	0.25 MI W of Paddy Hamilton to FM 2410 in W Belton	Widen main lanes from 4 to 6 lane divided freeway and ramp alignments	\$14,820,000	2019
C30-03b	BUS 190E	FM 1113 (Ave D) to Constitution Dr	Construction of a raised median and conversion of one travel lane in each direction to a sidewalk/bicycle lane.	\$10,000,000	2020
W40-05	US190	FM 2410 in W Belton to IH 35	Widen main lanes from 4 to 6 lanes and resurface	\$31,800,000	2020
W40-04a	Loop 121	Lake Rd (FM 439) to S of W Ave O	Widen from two to four lane divided roadway with bike/ped improvements	\$30,800,000	2021
W45-01	IH14	Coryell County Line to FM 3423 (Indian Trail)	Construction of fiber optics, traffic cameras,	\$4,166,740	2022

			and dynamic message boards		
T45-18	SH 95 Turn Lanes	Barnhardt Rd to 0.6 MI S of Barnhardt Rd	Construct turn lanes on the west side of SH95 for acceleration and deceleration	\$ 1,219,000	2023
C45-01	Fort Cavazos Access Ramps	Old Georgetown Road to BNSF Railway	Construct exit ramp to Tank Destroyer Blvd and entrance ramp from Old Georgetown Rd	\$11,822,489	2024
C45-02	SH 9 Turnaround	SH 9 to BUS 190	Construct an interchange turnaround from eastbound SH 9 to westbound BUS 190	\$2,156,000	2024
W35-07	Loop 363	Industrial Blvd to Lucius McCelvey	Construct interchange and expand 2 to 4 lanes with frontage roads	\$84,000,000	2024
T35-36a	Veterans Memorial Blvd Enhancements	Ave O to 0.15 MI S of Ave U	Reconstruct and widen existing roadway to a 4-lane divided arterial with curb and gutter, enhanced landscaping and lighting, sidewalks, and trails	\$10,000,000	2026
W35-01	US 190 Bypass	0.6 MI W of FM 2657 to 0.15 MI E of Clarke Rd	Widen from two to four lane divided highway and construct interchange	\$62,014,000	2026
			Total	\$286,978,229	

Category 4 Projects (Statewide Connectivity)					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
W35-01	US 190 Bypass	0.6 MI W of FM 2657 to 0.15 MI E of Clarke Rd	Widen from two to four lane divided highway and construct interchange	\$52,734,000	2026
W35-07	Loop 363	Industrial Blvd to Lucius McCelvey	Construct interchange and expand 2 to 4 lanes with frontage roads	\$2,000,000	2024
			Total	\$54,734,000	

Category 7 Projects (Surface Transportation Program-Metropolitan Mobility)					
KTMP ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
C40-04c	Narrows	Charles Tillman Way from Constitution Dr to Charles Tillman Way @ RG III Blvd.	Construction of sidewalks for pedestrian and bicycle use.	\$170,000	2019
C40-05a	FM 3046	BUS HWY 190 to FM 3046	Construct ADA compliant sidewalks and bike lanes	\$819,000	2019
C40-05b	FM 3046	FM 116 to Dennis St	Construct ADA compliant sidewalks and bike lanes	\$156,000	2019
K40-27	SH195	0.1 MI N of FM 3470 to 0.1 MI S of FM 3470	Turnaround underpass for northbound and southbound traffic on SH 195 frontage roads and FM 3470 (Stan Schlueter).	\$800,000	2019
T40-12	31st Street	Marlandwood Rd to Canyon Creek Rd	Installation of 6' sidewalk on both sides of Fm 1741	\$500,000	2019
T40-15a	Adams	IH 35 to Spur 290	Installation of on-street bike lane and ADA compliant sidewalks traveling east on Central Avenue and west on Adams Avenue.	\$1,492,174	2019
T40-15b	Adams	Spur 290 to Martin Luther King Jr., Blvd	Installation of on-street bike lane and ADA compliant sidewalks traveling east on Central Avenue and west on Adams Avenue.	\$420,870	2019
H35-01	FM 2410	E Central Texas Expy W to E Central Texas Expy E	Construction of a west to east turnaround at FM 2410	\$5,000,000	2020
A45-01	Hill Country Transit	Killeen UZA - Two, Temple UZA - One	Purchase Buses to provide transportation	\$1,145,000	2021
N40-04	Nolanville City Park Connectivity	Park (North Mesquite) along Ave H to 10th Street	Construct ADA compliant sidewalks, ramps, and crosswalks along Mesquite St. beginning at the Park to E Avenue H and from E Avenue H to 10th St	\$1,558,802	2021
D45-01	W Main St/Luther Curtis Rd	Church Ave to 0.4 MI W of Lee Mays Blvd	Rehabilitate and widen W Main St/Luther Curtis Rd from 2 to 3 lanes; add center turn lane and install 12 ft SUP	\$3,200,000	2022

T40-07a	Temple Outer Loop West Phase 1	522 ft S of Jupiter Dr to 20 ft N of Riverside Trail	Widen Old Waco Rd (future Outer Loop West) from two lanes to four lane divided roadway with a curb and gutter, Phase 1	\$10,298,198	2023
N40-03	Old Nolanville Rd Bridge	Bridge at Old Nolanville Rd to IH 14	Reconstruct bridge on Old Nolanville Rd at South Nolan Creek and add a shared use path next to the roadway from Bridge to IH - 14	\$2,676,766	2024
H30-05b	Warrior's Path Phase 2	FM 2410 (E Knights Rd) to Pontotoc Trace	Upgrade Warriors Path by adding a left turn lane, reconstruction the curb & gutter, adding a 6 ft sidewalk on the west side of the road and a 10 ft SUP on the east side of the road.	\$3,581,020	2024
S45-01	Royal St Improvements	Smith Branch Rd to FM 2268 (Main St)	Pulverize the existing asphalt stabilize the remaining base and apply two-inch HMAC surface along Royal Street from Smith Branch Rd to FM 2268; install ribbon curb on both sides of the road	\$2,100,000	2025
K30-13a	Chaparral Rd Phase 1	SH 195 to E Trimmier Rd	Widen Chaparral Rd between SH 195 and E Trimmier Rd from 2 to 4 lanes with a continuous center turn lane. Add 8 ft bicycle lane and 5 ft sidewalk or SUP on both sides of the road	\$12,880,000	2026
B45-02a	E 6th Ave Phase 1	SH 317 (Main St) to FM 817 (Waco Rd)	Construct 5 ft sidewalks along both sides of E 6th Ave (FM93) from SH 317 to IH 35	\$637,620	2026
B45-02b	E 6th Ave Phase 2	FM 817 (Waco Rd) to IH 35	Construct 5 ft sidewalks along both sides of E 6th Ave (FM93) from SH 317 to IH 35	\$1,912,860	2026

N40-06	Railroad Crossing Safety	Pleasant Hill Rd. to Jackrabbit Rd.	Improve the at-grade railroad crossings at Jackrabbit Road and Pleasant Hill Road by leveling track, widening streets, and replacing signals	\$432,000	2025
T40-13b	Georgetown Railroad Trail Project	Leon River (City Limits) to S. 31st St./FM 1741	Construct 10' wide hike/bike trail along old Georgetown Railroad from the Leon River to FM 1741 (S 31st Street) and renovate historic MK&T Truss Bridge	\$2,800,000	2026
Total				\$52,580,310	

Category 7 and Category 9					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
C40-04a	Narrows	Constitution Dr from Bowen Avenue to 0.2 MI S Martin Luther King Jr., Blvd	Construction of sidewalks for pedestrian/bicycle use	\$850,000	2020
Total				\$850,000	

Category 9 (Transportation Alternative Program)					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
C40-04b	Narrows	RG III Blvd from Constitution Dr. to Old Copperas Cove Road @ Constitution	Construction of sidewalks for pedestrian/bicycle use	\$680,000	2020
B40-05	Belton Hike and Bike Trail Extension South (South Belton Shared Use Path)	IH 35 at FM 435 to Confederate Park Drive	Construct 12 ft wide hike and bike trail. Project will extend along FM 436, IH35 northbound frontage road and Confederate Park Drive.	\$1,512,963	2020
N40-05	FM 439 Spur Connectivity	Main St to North Dr	Construct a 10 ft wide SUP, with ADA ramps & crosswalks along the west side of FM 430 Spur	\$995,569	2022

D45-02	Troy - Mays Middle School SRTS	On Lee Mays Blvd and Luther Curtis Rd to Raymond Mays Middle School	Construct 0.2 miles of accessible sidewalks with crosswalks and ADA ramps along Lee Mays Blvd and Luther Curtis Rd ending at Raymond Mays MS	\$277,571	2021
B45-03	13th Ave Sidewalk Improvements	Main street (SH317) to Waco Rd (FM 817)	Construct ADA compliant sidewalks, ramps, and crosswalks on 13th Ave between Main St and Waco Rd; add striping for a bike lane on the south side of the road	\$539,233	2024
B40-08	Sparta Road SUP	Tiger Dr. to Dunn's Canyon Rd. ending at existing sidewalk on Dunn's Canyon Rd.	Construct a 10' Shared Use Path (SUP) on Sparta Rd from Tiger Drive to Dunn's Canyon Road and add protected right turn lanes at Belton ISD and Loop 121	\$676,000	2028
R45-01	Bartlett Elementary SRTS	Robinson St to N Evie St, South to Bell St	Construct approximately 2,050 linear ft of 6ft wide reinforced concrete sidewalk with crosswalk, 2 ADA curb ramps and signage to cross SH 95.	\$835,054	2024
R45-02	Holland Downtown Pedestrian Improvements	Front St to Lexington St	The project will construct 12 ft wide sidewalks along W. Travis St from Front St to Lexington St. The project will include ADA curb ramps, crosswalk, lighting, and signage.	\$1,663,070	2025
R45-04	Morgan's Point Resort TA Path	Lake Belton HS to Sobrante Rd	Construct a SUP along FM 2483 from Lake Belton HS to Morgan's Point Rd and along Morgan's Point Rd from FM 2483 to Sobrante Rd; add crosswalk at intersection of FM 2483 and Morgan's Point Rd.	\$3,848,115	2025
R45-03	Litter River-Academy School & Neighborhood Connector	Lamar St to SH 95	Construct more than a mile of 8ft wide sidewalks along north side of FM 436 (W Main St.) between Lamar St. and SH 95; add	\$4,127,817	2026

			multiple new crosswalks, ADA ramps and new signage		
S45-07	Village of Salado Mill Creek Dr Downtown Connector	N. Chisolm Trail to N. Mian St	The project will construct 6 ft wide sidewalks along Mill Creek Dr from Chisolm Trail to the existing sidewalk at N Main St. The project will also include ADA curb ramps and signage	\$1,080,172	2026
			Total	\$16,235,564	

Category 8					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
W45-01	IH14	Coryell County Line to FM 3423 (Indian Trail)	Construction of fiber optics, traffic cameras, and dynamic message boards	\$4,166,740	2022
			Total	\$4,166,740	

Category 3 Locally Funded Projects					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
B45-13	E Central Ave Bridge Replacement	E Central Ave Bridge @Nolan Creek to Spring St	Remove the E Central Ave bridge over Nolan Creek. Extend Spring St east and construct new bridge over Nolan Creek; reconnect to Central Ave on east side of the creek.	\$4,435,426	2026
C45-01	Fort Cavazos Access Ramps	Old Georgetown Road to BNSF Railway	Construct exit ramp to Tank Destroyer Blvd and entrance ramp from Old Georgetown Rd	\$5,015,690	2026
T35-36a	Veterans Memorial Blvd Phase 2	Ave O to 0.15 MI S of Ave U	Reconstruct and widen existing roadway to a 4-lane divided arterial with curb and gutter, enhanced	\$10,000,000	2026

			landscaping and lighting, sidewalks, and trails		
			Total	\$19,451,116	

Category 10 (Carbon Reduction Program)					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
A45-03	HCTD Micro Transit Technology	Hill Country Transit	Capital expenditures for technology, new fleet types, facilities planning, and wayfinding signage for transition to new Micro Transit services	\$1,136,166	2024
T40-13a	Georgetown Railroad Trail Phase 1	S 31st St (FM 1741) to 0.04MI E of S 5th St	Construct 10 ft wide hike and bike trail along the old Georgetown Railroad route between 31st St and 5th St.	\$2,000,000	2024
S45-03	Williams Road Sidewalks	FM 2484 to W Village Rd	Construct ADA accessible sidewalks adjacent to Williams Rd from FM 2484 to W Village Rd.	\$647,024	2025
			Total	\$ 3,783,190	

Transit Projects					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
A45-02	HCTD Bus Replacement	Killeen UZA - Four, Temple UZA - Two	Purchase Buses to provide transportation	\$2,354,957	2024
			Total	\$2,354,957	

Category 10 NEVI					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
K45-05	Killeen NEVI	2511 Trimmier Rd	Install 4 direct fast charge ports within one mile of the electric alternative fuel corridors (IH 14)	\$1,202,800	2024
B50-09	NEVI - Belton Study Area	308 W Loop 121, Belton, TX 76513	Install 4 Direct Current Fast Charge ports along the Electric Alt Fuel Corridors plus 5 years of Operations and Maintenance.	\$735,478	2026
			Total	\$ 1,938,278	

Table 5.3 KTMPO Future Funded Projects**FY2027-2030**

Category 2 Projects (Metropolitan Corridors)					
KTMP O ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
W40-04b	Loop 121 Phase 2	US 190/IH 14 to IH35	Widen from 2 to 4 lane divided roadway with raised median, 10' SUP on the north and east side, 6' sidewalk on the south and west side	\$21,280,000	2027
C50-04d	BUS 190 Phase 4	S. FM 116 to S. Main St./Hwy Ave./Leonhard St.	Remove two-way shared left turn lane, construct raised median, 11' Shared Use Path (SUP) and 6' sidewalk along BUS 190 between FM 116 and Highway Ave	\$10,133,000	2029
H40-03c	Chaparral Road Phase 3 (Intersection)	FM 3481 to Rosewood Dr. in Killeen	Widen and realign Chaparral Road between Rosewood Drive and FM 3481 from 2 to 5 lanes with 12' Shared Use Path (SUP; add a sound wall, vegetative buffer, and intersection improvements at FM 3481	\$4,542,660	2028
Total				\$ 35,955,660	

Category 7 Projects (Surface Transportation Program-Metropolitan Mobility)					
KTMPO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
C50-01	Ashley Drive Connection	Concord Dr. to FM 116/N. 1st St.	Extend Ashley Drive east from Concord Drive to FM 116 as a 4-lane undivided roadway with sidewalks; Construct new intersection at FM 116	\$1,267,000	2028
H30-05c	Warrior's Path Upgrade Phase 3	Old Nolanville Rd. to Nolan Middle School (end of Phase 1)	Widen Warriors Path between Nolan Middle School and Old Nolanville Road from 2 to 3 lanes with sidewalks; add traffic signal at Old Nolanville Road intersection	\$5,500,000	2028
B40-07a	Connell Street Phase 1	IH 14 to Loop 121	Widen Connell Street between Loop 121 and IH 14 from 2 to 4 lanes; add a 10' Shared Use Path (SUP) and 5' sidewalk	\$4,695,000	2027

D50-02	Front Ave Downtown Connector	E. Main St. to Settlers Point Plaza	Reconstruct Front Ave between E Main Street and Settlers Point Plaza with a curb and gutter; add 10' Shared Used Path (SUP) and reconstruct culvert	\$1,490,630	2028
T40-13b	Georgetown Railroad Trail Phase 2	Leon River to S 31st St (FM 1741)	Construct 10 foot wide hike/bike trail along the old Georgetown Railroad from the Leon River to S 31st St (FM 1741) and renovate the historic MK&T Truss Bridge.	\$3,500,000	2027
B40-11b	Wheat Road Phase 2	IH 14 to FM93/2nd	This project proposes constructing 3 Lanes with 5' Sidewalks on both sides of the road. Minor Collector-T-Plan Classification.	\$4,052,000	2027
B50-01	FM 93 (6th Ave) Pavement Improvements	Main Street (FM317) at 6th Avenue to 6th Avenue to IH-35	Refreshing the streetscape by milling overlaying the travel lanes. Major Arterial -T_Plan Classification.	\$987,000	2027
K30-13a	Chaparral Rd Phase 1A	SH 195 to Chaparral High School	Widen Chaparral Rd between SH 195 and Chaparral High School from 2 lanes to 4 lanes with a continuous center turn lane. Add 8 ft bicycle lane and 5 ft sidewalk or Shared Use Path on both sides of the road.	\$32,880,000	2028
B45-02(1)	E 6th Ave Sidewalk	SH 317 (Main St) to FM 817 (Waco Rd)	Construct 5 ft sidewalks along both sides of E 6th Ave (FM 93) from SH 317 (Main St) to FM 817 (Waco Rd)	\$637,620	2027
B45-02(2)	E 6th Ave Sidewalk	FM 817 (Waco Rd) to IH-35	Construct 5 ft sidewalks along both sides of E 6th Ave (FM 93) from FM 817 (Waco Rd) to IH-35	\$1,912,860	2027
Total				\$ 56,922,110	

MPO Category 9 (Transportation Alternative Program)					
KTMP O ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
H50-04a	FM 3423 (Indian Trail Drive) Sidewalk Phase 1	Veteran's Memorial Blvd./Business 190 to IH 14	Construct sidewalks on FM 3423 (Indian Trail Drive) from the IH 14 eastbound frontage road to 0.03 mi. N of Clore Drive	\$1,210,000	2027

T50-07	Cedar Road Safety Crossing	Cedar Rd. to Cypress Creek Apartments	Install Pedestrian-activated HAWK traffic signal and crosswalk on Cedar Road 0.03 mi. S of Sage Meadow Drive	\$200,000	2028
N40-11	Nolan Creek Off System Trail	Bridge on Old Nolanville Rd. to Main St.	Construct 10 ft multi-use trail along S Nolan Creek from the Old Nolanville Road bridge at Nolan Creek to riverbend near Harvest Drive and then straight north to the IH 14 eastbound frontage road	\$3,250,000	2028
B40-08	Sparta Road SUP	Tiger Dr to Dunn's Canyon Rd	Construct a 10-foot Shared Use Path (SUP) along Sparta Rd from Tiger Dr to Dunn's Canyon Rd and then north along Dunn's Canyon Rd to Tiger Drive.	\$845,000	2028
Total				\$5,505,000	

Category 10 (Carbon Reduction Program)					
KTMO ID	Project Name	Project Limits	Project Description	Estimated Cost	Estimated Let Date
K45-03	W Rancier Ave	Fort Hood St (SH 195) to W S Young Dr	Construct 6 ft concrete sidewalks with pedestrian signals, ADA ramps, and crosswalks along W Rancier Ave	\$30,464,708	2027
Total				\$30,464,708	

TRAVEL DEMAND MODEL

A Travel Demand Model (TDM) is a helpful tool in projecting future traffic demand, and current and forecasted roadway capacity. An updated KTMPO model was completed in summer of 2023. KTMPO with CDM Smith developed the new forecast 2050 scenario within the Killeen-Temple TexPACK scenario manager and made necessary changes to the existing forecast applications based on the latest available information obtained from the prior tasks of this project. This work involved developing and updating the Traffic Analysis Zone (TAZ) structure, TAZ-level demographics, and the modeled roadway network for the year 2050.

During the model development process, KTMPO sought to include the existing land use patterns as well as future trends across the region to provide better, more defined input. KTMPO requested future land use plans, existing zoning, local transportation plans, plat logs, established land use and locations of substantial traffic generators from member cities. Data was also collected from a variety of sources, to include school districts and local colleges, to develop growth projections and determine new generators. This data was then refined by KTMPO staff, and forwarded to consultant, Kimley-Horn. Supporting Documents will be included as **Appendix H, Travel Demand Model**.

TRAFFIC ANALYSIS ZONE GEOGRAPHY

A Traffic Analysis Zone (TAZ) is a unit of geography most used in transportation planning models. The zones are constructed by census block information. Typically, these blocks are used in transportation models by providing socio-economic data. Most often, the critical information is the number of automobiles per household, household income, and employment within these zones. This information helps to further the understanding of trips that are produced and attracted within the zone.

2025 population and household data were derived directly from the 2020 US Census at the block level. Since some TAZs span county boundaries, there are some TAZs that extend slightly outside of the official MPO planning area. Therefore, a query of the TAZ database will show slightly higher population and household values than the official MPO planning area. Education, household, and employment data were identified for each zone using data from the Texas Demographic Center (TDC).

ROADWAY NETWORK

The consultant updated the 2015 roadway network to include all roadways within the expanded metropolitan planning area boundary and assigned attributes for all defined links. Other fields in the network such as area type, capacity, speed, and time are assigned by

TxDOT during the model validation process. The 2015 network is detail coded for higher functional classed facilities as defined by TxDOT. Generally, only links with frontage roads and ramps are shown as separate road links for each direction. Special Generators are locations that generate a large volume of traffic such as a shopping mall, hospital, college, airport, etc.

INTELLIGENT TRANSPORTATION SYSTEMS

Having management and operational strategies in place is crucial if transportation facilities are to function at their peak level of performance. Proper maintenance of facilities and use of Intelligent Transportation Systems (ITS) are key elements in system management and operations. ITS involves the application of advanced information and communication technologies on various transportation elements which ultimately enable users to be better informed and make safer, more coordinated, and smarter use of transportation networks.

Transportation facilities generally cross various jurisdictional lines; therefore, it is important for the entities to work cooperatively to ensure a safe and efficient transportation network for the movement of people and goods. Management and operational policies and strategies at various jurisdictional levels are discussed in the following sections.

State Level

State designated highways in Texas are generally maintained by the Texas Department of Transportation (TxDOT). When these state highways fall within a city's corporate limits, the city and state enter into a Municipal Maintenance Agreement which lays out the responsibilities of both parties to include maintenance of facilities that lie within the right-of-way. TxDOT generally will install, operate, and maintain traffic signals in cities with a population less than 50,000, whereas the city takes on this responsibility if their population is equal to or greater than 50,000. According to TxDOT Waco District officials, most of the Killeen, Temple, and Belton area TxDOT maintained roadway traffic signals have been equipped with Video Image Vehicle Detection System (VIVDS) devices. These devices have a large number of detection zones that can be used limitless ways to control intersections and their flow. The benefit of these devices improves delays at intersections for vehicles. Fewer delays at intersections have a positive impact on quality of life and air quality.

TxDOT generally maintains roadways on a seven-year schedule. Signs and striping are reviewed annually, and preventive maintenance is performed on traffic signals and school flashers on an annual basis. Bridges are inspected on a two-year cycle.

Thanks to increased public awareness, the use of DOT-supplied ITS resources are on the rise in the KTMPO region. There are currently ten Dynamic Message Signs (DMS) locations along IH 35, which is currently undergoing construction, and two along US 190 which are providing drivers with estimated travel times, Amber alerts, and other critical emergency statements. There are also 11 cameras along IH 35, one on Loop 363, and two on SH 36.

TxDOT's My35 ITS project aims at keeping drivers informed of the congestion situations along the region's primary north-south corridor. DMS technology has been placed along the interstate to give drivers real-time alerts of current conditions as they enter the work zone. This data is also used on the My35 website, which offers dynamic traffic maps showing real-time lane closures, incidents, and travel times. Traffic cameras in our region can be viewed online for live feed of current conditions.

KTMPO Regional Level

Increased activity in the area of ITS is motivated in part by an increased focus on homeland security. ITS can play a role in the rapid mass evacuation of people in urban centers after large casualty events such as a natural disaster or threat. Much of the infrastructure planning involved with ITS parallels the need for homeland security systems. As such, KTMPO has coordinated with CTCOG's Homeland Security and other emergency service grants. Contacts at the municipal and county level for these efforts have been made. CTCOG is also coordinating with the Department of Public Safety, the Texas Statewide Interoperability Channel Plan, a narrowband and cross-band plan utilized for emergency services in the region.

In the future, KTMPO anticipates additional inputs, such as real-time GPS tracking utilizing existing resources and staff mobile phones with GIS applications installed. This will better track lane movements and speed progression through given segments. KTMPO also plans to coordinate with contracted transportation consultants in implementing guidelines in this regard.

The use of global positioning system (GPS) source data collected by private companies may soon be available to MPOs via TxDOT and FHWA. The data is collected from GPS fixtures on large trucks and on other vehicles by cell phones that have activated mapping and GPS services and depicts travel delays on major roadways. The MPOs may use this data to compare with other collected data; however, in some areas this may be the only data that is available.

Exploring regional and local ITS resources through interoperability, increasing ITS awareness and implementing new traffic surveillance technologies should prove to be a good return on investment. More specifically, signal timing/coordination in the region's cities could benefit the congestion management aspect of regional mobility. KTMPO will continue to seek ITS methods to implement in order to improve the efficiency of the regional transportation system. Innovative services which promote alternate means of transportation and encourage drivers to make more informed transportation decisions feed a congestion management strategy. KTMPO continues to collect and analyze travel time data on selected roadways identified in the Congestion Management Process.

CONCLUSION

The geographic location of the KTMPO planning region, its varied roadway system, and unique traffic generators offer transportation, economic, and security advantages. KTMPO members and regional agencies work together to ensure investments in roadway maintenance and expansion projects result in safe and reliable roadway facilities.

CHAPTER 6

ACTIVE TRANSPORTATION



ACTIVE TRANSPORTATION

Development Process

In 2011, KTMPO recommended actions to promote pedestrian and bicycle improvements throughout the region. In 2016, the Bicycle Pedestrian Advisory Committee (BPAC) was established to improve bicycle and pedestrian facilities in the KTMPO region by identifying and recommending best practices and policies for cyclists and walkers. BPAC membership is made up of representatives within the KTMPO region who have a bicycle and pedestrian interest and may be an individual stakeholder or represent a stakeholder organization. Since its inception, KTMPO BPAC has become essential for promoting livability in our region by advocating for active transportation, enhancing connectivity, and boosting economic vitality. By championing safe transportation options, BPAC improves the overall social and physical well-being of residents, elevates quality of life, benefits the natural environment, and engages community members in the planning process.

In 2018, KTMPO developed and approved the Regional Multimodal Plan (RMP), which outlined the vision and goals for an integrated multimodal transportation system in the KTMPO area. The plan identified potential projects for thoroughfare, bicycle, pedestrian, transit, and freight systems. As part of the planning process for developing the RMP, results from a national survey were included:

- Trails & Sidewalks are needed along arterial roadways;
- High-volume and higher-speed routes still need access for multiple modes of transportation;
- “Multimodal” systems should ensure smooth transitions between different users;
- Design a network of trails and pathways that fosters connectivity for both walkers and cyclists;
- The significance of landscaping and streets trees for shade should not be underestimated, as they not only enhance the appeal and attractiveness of our pedestrian network but also play a crucial role in protecting the natural environment.

A recurring theme in the survey results highlights a lack of connectivity and essential bike and pedestrian amenities, such as sidewalks, bike lanes, or shoulders, and safe crossing points for cyclists and pedestrians.

Regional Coordination

The efforts of KTMPO Transportation Planning Policy Board (TPPB), Technical Advisory Committee (TAC) and BPAC reflects a continuing collaboration among MPO regional

partners, Texas Department of Transportation (TxDOT), and the Federal Highway Administration (FHWA). BPAC continues to lead initiatives by presenting forward-thinking ideas, leveraging established best practices, and promoting the use of innovative technology like the Bicycle Network Analysis (BNA), a data analysis tool developed by the advocacy group, *People for Bikes*.

Relationship to Other Planning Documents

As mentioned in Chapter 2, the Public Engagement Plan (PEP), included in **Appendix K, Public Engagement Plan**, Transportation Improvement Plan (TIP), Congestion Management Process (CMP), other transportation planning initiatives and studies along with the Project Call are the documents that provide opportunities to prioritize bicycle and pedestrian activities within the transportation framework. Together, these plans and processes shape and determine bicycle and pedestrian activities by integrating them into the overall transportation planning and decision-making process of the 2050 Metropolitan Transportation Plan. The 2023 Project Call identifies and ranks eligible transportation projects based on their alignment with transportation goals, priorities, and available funding. The Project Call closed at the end of October 2023 and over 100 total projects were received including 34 livability projects. As part of the Project Call's scoring process, BPAC was given the opportunity to conduct subjective scoring of all livability projects. Two BPAC stakeholders submitted scores and it was noted that the difference between TAC's and BPAC's scores sparked engaging discussions. KTMPO TAC and TPPB utilized the average of BPAC's scores to provide insight to project prioritization.

BICYCLE AND PEDESTRIAN NETWORK

As livability projects gain higher priority, they can lead to significant impact on active transportation planning. Livability projects also prioritize equity and accessibility for vulnerable populations by focusing on improving access to public transit, reducing barriers to walking and cycling, and addressing transportation disparities in environmental justice communities of concern.

Existing Network

While there is potential for many more people to bicycle and walk for transportation, the lack of a safe, direct, and usable bicycle and pedestrian network often makes it difficult. Like

many regions across the state, and indeed the country, KTMPO region faces the challenge of a less than complete bicycle/pedestrian network.

A bicycle is legally recognized by the State of Texas (and many other states) as a vehicle, with all the rights and responsibilities for roadway use that are also provided to motor vehicles. Rural arterials with shoulders and/or very low traffic volumes attract sports cyclists interested in longer-distance travel with fewer interruptions. As such, cyclists can legally ride on any roadway in the region (except controlled access highways such as the Interstate 35 main lanes). However, certain roadways are more “bikeable” than others. Local and collector streets are suitable for use by most adult bicycle riders, if traffic volumes are not high, and speeds are less than 35 miles per hour. Arterial streets typically carry higher traffic volumes with speeds of 35 to 45 miles per hour and are used by only the more skilled and assertive bicyclists. However, the social norm of sharing the road and prioritizing safety for all road users is essential for creating safer and more inclusive transportation facilities.

The existing pedestrian system is comprised primarily of the roadside sidewalks that are present throughout the region. While many of the older, core urban areas in the region have sidewalk systems, they may lack modern sidewalk infrastructure and have challenges with pedestrian accessibility, connectivity, and other pedestrian friendly amenities. Recent patchwork development and a lack of a consistent regional sidewalk development policy has led to many gaps in the sidewalk network. In recent suburban developments, sidewalks are constructed only along the frontage of the development, with the subsequent gaps left to be filled in when the adjacent parcels are developed. While this sidewalk development policy of the past is perhaps cost-effective, it has the unfortunate result of leaving the full potential of walking as a viable transportation option unrealized.

During the planning and development of the 2045 MTP, KTMPO inventoried the bicycle and pedestrian facilities including sidewalks, bicycle routes and lanes, roadways with shoulders, and trails to provide a more complete picture of the state of non-motorized mobility in the region, as shown in Figures 6.2 through 6.4. For the planning and development of the 2050 MTP, KTMPO did not conduct an inventory of transportation facilities; however, during the December 2023 BPAC meeting, *People for Bikes* provided a comprehensive presentation about the regions’ bike infrastructure based on data from OpenStreetMap. OpenStreetMap emphasizes local knowledge and contributors range from GIS professionals to enthusiastic mappers who use aerial imagery, GPS devices and low-tech field maps. KTMPO has added the BNA and OpenStreetMap as a regular item on the BPAC meeting agenda and is scheduling public education posts on social media.

Encouraging the use of the BNA tool can contribute toward the improvement of the bicycle and pedestrian network. KTMPO has a full-time GIS staff and is planning to update the region's transportation inventory, particularly for cyclists and pedestrians.

Some significant bicycle and pedestrian facilities as identified in the Regional Thoroughfare and Bicycle/Pedestrian Plan are featured below in Figure 6.1.

Figure 6.1 – Significant Bicycle and Pedestrian Facilities

Temple Pepper Creek Trail—3.5 Miles



Belton's Nolan Creek Trail—1.4 Miles



Nolanville Main St. Sidewalks



Not Pictured:

Harker Heights Comanche Gap

Killeen Brookhaven Trail

Copperas Cove South Park Trail

Figure 6.2 – Bicycle and Pedestrian Network (for the KTMPO Region)

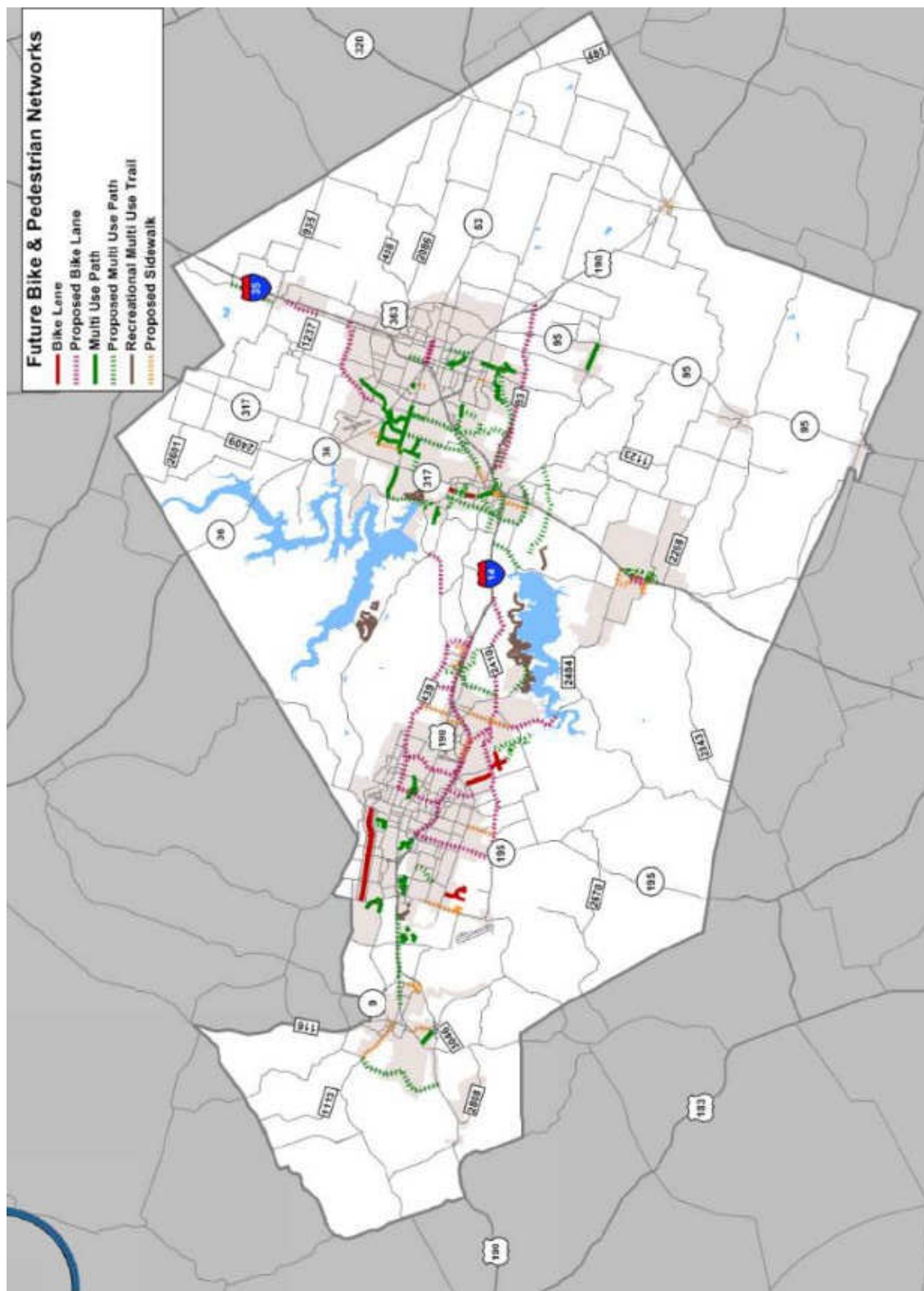


Figure 6.3 – Bicycle and Pedestrian Network (Western KTMPO Region)

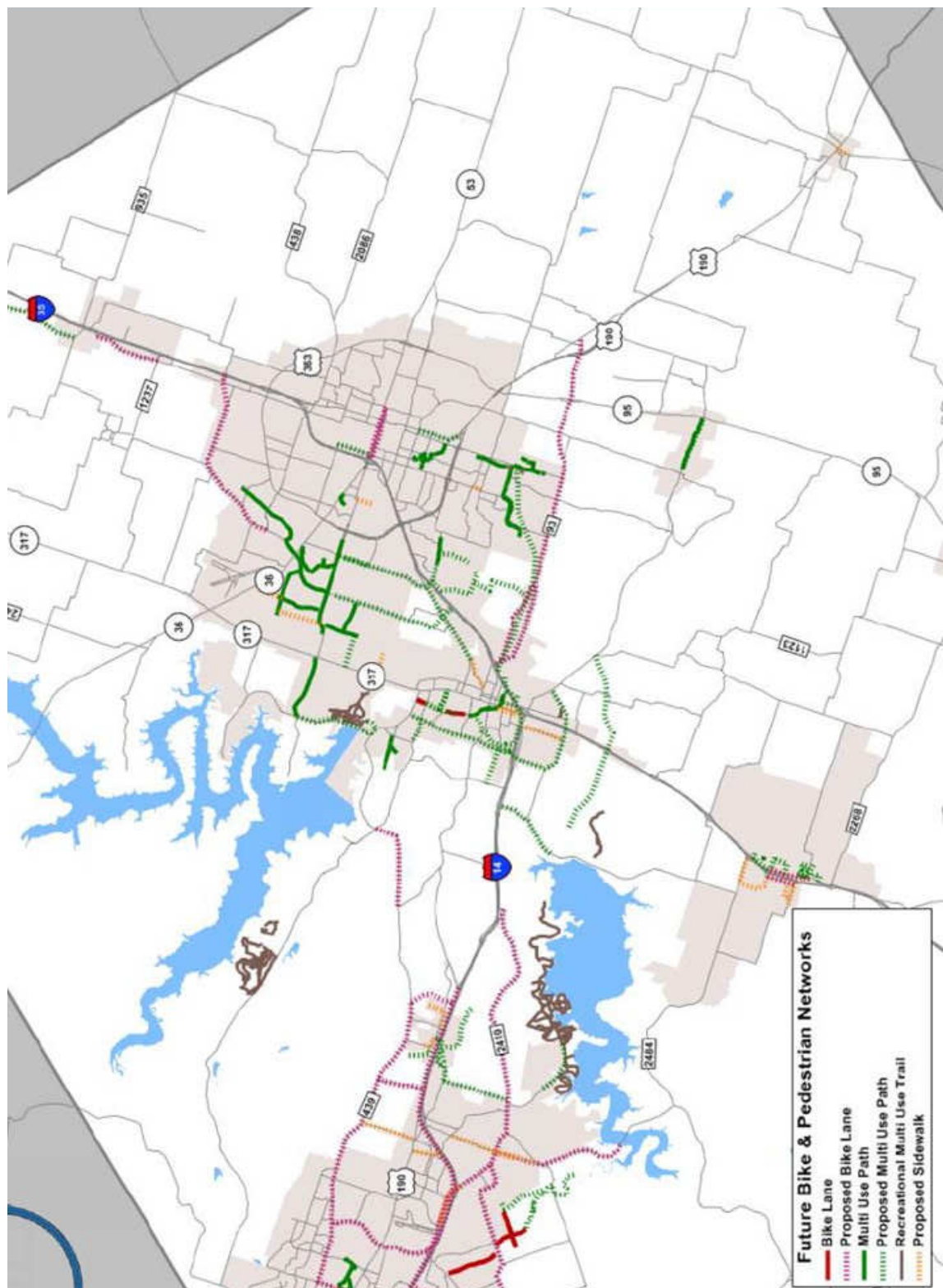
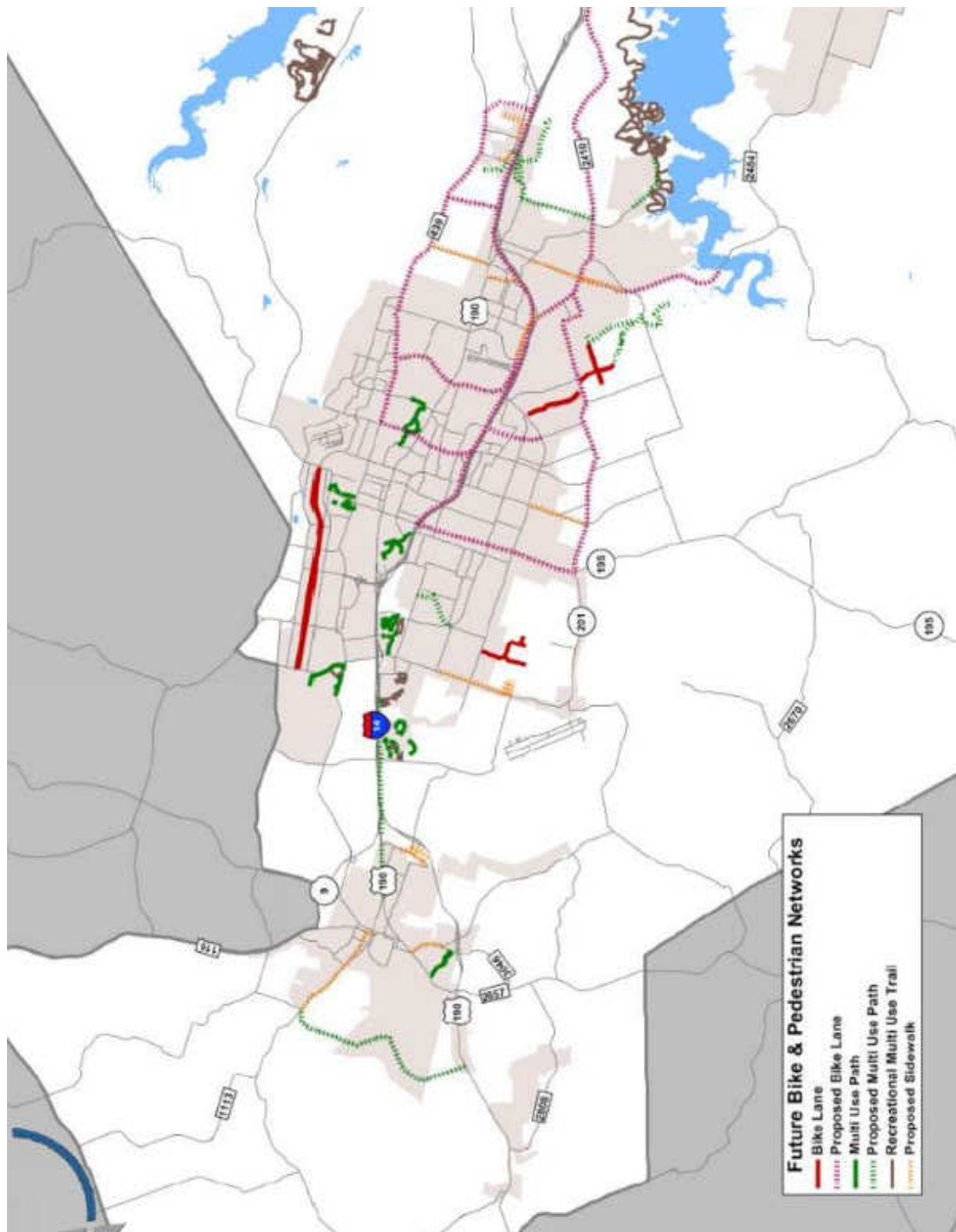


Figure 6.4 – Bicycle and Pedestrian Network (Eastern KTMPO Region)



SAFETY

Lack of infrastructure, distracted driving and walking, and poor visibility are some of the safety issues that bicyclists and pedestrians face. It can be hazardous for bicyclists and pedestrians to navigate a car-dominant transportation system when roadway designs do not adequately accommodate these modes of transportation. Even in locations where a sidewalk or space on the roadway for a bicyclist exists, certain conditions can make public infrastructure basically unusable. Lack of pedestrian crossing indicators or lack of traffic control at free right turns can expose a pedestrian to danger, particularly if that person has no safer alternative to crossing at that location. Extremely long block faces or distances between traffic signals can force pedestrians to make unprotected mid-block crossings.

An analysis using TxDOT's Crash Records Information System (CRIS) for the years 2018–2022 was performed for bicycle and pedestrian-related crashes to identify the safety conditions of current facilities. Table 6.1 shows the number of bicyclists and pedestrian crashes for 2018-2022.

Table 6.1 – 2018-2022 Bicyclists and Pedestrian Crashes

Type of User	Number of Crashes	Number of Non-Serious Injury Crashes	Percentage of Non-Serious Injury Crashes	Number of Serious Injury Crashes	Percentage of Serious Injury Crashes	Number of Fatality Crashes	Percentage of Fatality Crashes
Cyclists	129	92	72%	23	18%	5	4%
Pedestrians	340	197	58%	80	24%	51	15%

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) created design guidelines to ensure that transportation facilities are constructed to a set of standards that ensures accessibility for people with disabilities. Sidewalks are a fundamental component of transportation infrastructure, yet if not accessible, they can pose great challenges and danger to anyone with limited mobility.

Public entities such as city governments and transit agencies are required to construct facilities in accordance with ADA standards. These standards apply to all new construction; however, the ADA also requires that public entities retrofit any public facility to these standards to ensure equal access. These requirements include sidewalks and curb ramps which must be retrofitted to meet all current standards. Any non-compliant sidewalks or curb ramps must be upgraded to meet current standards whenever any alterations, such as road surfacing, are carried out. ADA Requirements are summarized in **Appendix E, Regionally Coordinated Transportation Plan**. KTMPO will continue to inform municipalities about funding opportunities to promote improvements and expansion of the ADA sidewalk network.

Safe Routes to School

“Safe Routes to School” is an approach that promotes walking, biking, and rolling (devices such as scooters, skateboards, or wheelchairs) to and from school through infrastructure improvements. Students will benefit from improved physical fitness and health. Additionally, these initiatives aim to enhance neighborhood conditions, improve student safety at and near schools, reduce traffic congestion and provide transportation options for families who do not have multiple cars.



Safe walking and bicycling routes should be established for every elementary and middle school student living within a reasonable distance of the school. Students should have sidewalks to walk on, rather than being forced to walk in the road. They should have designated street crossing locations, preferably enhanced with crosswalks and crossing aids (e.g., signals, crossing guards, pedestrian refuge islands) to make their crossing safer. School speed zones on roadways around the school that must be crossed are typically designated for specific periods, coinciding with school entry and exit times. Having safe walking and bicycling routes to elementary and middle schools is particularly important for low-income families that may not have a vehicle available to take students to and from school.

Safe Routes to Transit

It is critical to provide a network of ADA compliant sidewalks leading to bus stops and transit transfer points to ensure safe access to the transit system for everyone. When planning where to add sidewalks, special priority should be given to developing the network feeding key transit routes and bus stops. In addition to the general lack of sidewalks along many routes, hazardous roadway crossings present a significant access barrier and safety issue for citizens. Some multi-lane, high-volume arterials are excessively wide for certain citizens, especially the elderly, disabled, and children, to cross safely within a single signal timing phase. Additionally, traffic control at these intersections often prioritizes the flow of automobile traffic over pedestrian access and safety.



Transit Linkages

The ability to link bicycle trips with bus trips provides benefits for both systems—the service area for bus routes may be expanded and the use of bicycles as a travel mode may also grow. Hill Country Transit District has installed bicycle racks on each of their fixed route buses; each rack may hold up to two bicycles. Bicycle racks and/or lockers at the bus stops would also be beneficial and would require funding sources and coordination with municipalities.



FUNDING SOURCES

Transportation Alternatives Program

As a Transportation Management Association (TMA), KTMPO receives funding through the Transportation Alternatives Program (TAP), or Category 9. The TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities. It also covers infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, environmental mitigation, recreational trail program projects, safe routes to school projects, and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided

highways.

Surface Transportation Program – Metropolitan Mobility

As a TMA, KTMPO also receives funding through the Surface Transportation Program Metropolitan Mobility known as Category 7 (CAT 7). These funds can be used for roadways, bike and pedestrian facilities and transit projects. CAT 7 funds are among the most flexible, as they are typically allocated to the priorities set by KTMPO. This enables communities to customize investments according to their specific needs and objectives, ensuring that resources are directed to areas where they can make the most significant difference.

Carbon Reduction Program

The Infrastructure Investment and Jobs Act (IIJA) of 2021, also known as the Bipartisan Infrastructure Law, established the Carbon Reduction Program. The program funds projects designed to reduce transportation emissions, defined as carbon dioxide (CO₂) emissions from on-road highway sources. Projects include traffic management, public transportation, pedestrian facilities, alternative fuels, and port electrification.

Non-MPO Funding Sources

There are several funding programs that support the development of trails and sidewalks through the Texas Parks and Wildlife Department (TPWD) like the Texas Recreational Trails Program, Local Park Grant Program, and the National Recreational Trails Fund which is funded from a portion of the federal gas tax, and finally the Texas Parks and Wildlife Foundation. Although the foundation is not a direct funding source, they support the work of TPWD through private donations and partnerships.

The Active Transportation Infrastructure Investment Program (ATIIP) is a new competitive grant program created by the Bipartisan Infrastructure Law to construct projects that provide safe and connected transportation facilities in the transportation network. The primary goals of ATIIP are to integrate active transportation facilities with transit services, improving access to public transportation.

Another funding mechanism is Formula Funding, which focus is to ensure an equitable distribution of funds across the region based on objective criteria. A good example of Formula Funding is 5310. A program that provides funding to meet transportation needs of older adults and people with disabilities when the current transportation service is unavailable, insufficient, or does not meet individual's needs. A Nontraditional 5310 project example is the construction of an accessible path to a bus stop, including curb-cuts,

sidewalks, accessible pedestrian signals and improvements to signage, or way-finding technology.

By strategically and responsibly using federal, state, and local dollars the KTMPO region can finance a variety of pedestrian and bicycle infrastructure projects that promote active transportation, improve safety, and enhance the overall quality of life for residents while benefitting the environment.

CONCLUSION

KTMPO plans to continue leveraging BPAC to implement regional bicycle and pedestrian policies, programs, and strategies. Since BPAC operates as an advisory committee, public and stakeholder engagement remains crucial for advancing pedestrian and bicycle infrastructure, as it ensures community needs



and preferences are met, fosters local support, and encourages collaboration, ultimately leading to safer, more effective, and sustainable transportation solutions.

The **Regional Multimodal Plan, Appendix F**, aids in planning a comprehensive multimodal system, safeguarding all transportation users. It includes a chapter detailing best practices for bicycle and pedestrian infrastructure design, encompassing sidewalks, trails, shared-use paths, and crosswalk facilities. The RMP also includes a list of funded bicycle and pedestrian projects, alongside those awaiting funding, and desired projects sourced from public feedback. It is a valuable addition to improving pedestrian and cycling safety in our region. BPAC's next steps are to update the RMP, as it was last updated in 2018. Also, all project lists must be inventoried to ensure alignment with current 2050 MTP goals. Lastly, BPAC will tackle sustainability funding challenges by evaluating, revising, or potentially discontinuing the Fitness Friendly Business Program.

CHAPTER 7

PUBLIC TRANSPORTATION



PUBLIC TRANSPORTATION

There have been several efforts over the past few years to improve transportation planning in the region. In April 2018, KTMPO held a series of workshops to solicit public input regarding transportation planning in the region, including public transit. Approximately 50 people participated and were asked to distribute funding among various types of transportation projects. The resulting feedback indicated support for allocating 6% of available funding to transit and 30% to congestion mitigation. Transit projects are considered a strategy for relieving congestion and therefore, public support for transit projects is likely to increase once the correlation between congestion and transit becomes more evident. In 2019 a Bell County Public Transportation Summit was held to determine public transportation needs, brainstorm solutions, and identify potential partnerships. In 2023, a similar transportation summit was held in Lampasas for the entire CTCOG region that expanded on the work of the original 2019 summit. Both summits identified the importance of developing effective and innovative solutions that cater to senior citizens, individuals with disabilities, and other vulnerable populations. 2024 will begin the implementation of several of these solutions, which are designed to expand both service area and hours, as well as increase the frequency of service, and improve client satisfaction by reducing wait and travel time.

HISTORIC PUBLIC TRANSPORTATION PROVIDERS IN THE REGION

Public Transportation resources in the KTMPO region have historically included rail service, bus service (private and public), vanpools, and various Transportation Network Companies (TNCs) such as taxis, Uber, and Lyft. Rail and air service is discussed in Chapter 8. Private bus and taxi service, along with vanpool/rideshare options, are briefly discussed in this chapter with the bulk of the chapter focusing on the region's public transit system—Hill Country Transit District dba "The HOP." KTMPO recognizes the diverse needs of both rural and urban areas of the region, highlighting the necessity of offering a range of transportation choices for the public, and as such, will seek to inform the public of these options through various media, including the KTMPO website and Facebook.

Private Intercity Bus Service

Historically, there have been two providers of private intercity service in the region available to residents of the KTMPO region: Greyhound Lines, Inc., and Arrow Trailways.

Greyhound Lines, Inc. has provided charter bus service, scheduled service across the continental United States, and has a station in Temple (Bell County).

Arrow Trailways of Texas has provided charter bus and tour service to the continental United States for sightseeing and tourist attractions. Scheduled service has been provided as a connector to the Temple/Killeen area as well as Waco, Austin, and Houston. Arrow Trailways operates two stations in Bell County, these include one in Temple and one in Killeen. Connector service to the Greyhound bus line is provided at the Temple station.

Taxi Service

Taxi service is no longer available in Bell County and portions of Coryell County. In 2022, the last taxi service in the area, Cove Taxi, was closed.

Vanpool/TNCs

Vanpool and TNC programs have been other options for travel within the KTMPO region. These programs have been generally implemented by private companies or groups of individuals seeking to coordinate their travel needs with others having the same need.

Non-Emergency Medical Transportation (NEMT)

Historically there have been several private non-profit and for-profit NEMT providers covering all or part of the KTMPO region. Driving Hope of Texas ran a non-profit volunteer driver program for rural medical patients, particularly cancer and kidney disease patients while Integrity-Care NMTS operated a for-profit service for NEMT across the KTMPO region. Both companies had contracts with the Area Agency on Aging to serve seniors with medical appointments, but the programs are now defunct, leaving no NEMT providers based out of the region. However, there are two out of region providers that operate locally.

Ride N' Safe is based out of the Fort Worth area and provides 20-hour a day non-emergency medical transportation for a variety of healthcare facilities, agencies, and private pay individuals. They serve Bell, Coryell, and Hamilton counties and provide ambulatory (walk-on assist), wheelchair, and reclining stretcher-chair transportation.

Lonestar Medical Transportation is based in Round Rock and provides 24/7 long distance ambulatory, wheelchair, and bariatric transportation to and from hospitals, treatment centers, and residences across the United States.

HCTD

Hill Country Transit District (HCTD) operates The HOP, which is the only regional public transit system in the KTMPO region. Historically, they have provided service to a nine-county area as follows: Bell, Coryell, Hamilton, Lampasas, Llano, Mason, Milam, Mills, and San

Saba. The HOP has provided Urban Fixed Route service, Paratransit service including ADA and Non-Emergency Medical Transportation, and On-Demand Rural service. In addition to the rural division in all nine counties, HCTD operates two Urban Divisions: The Temple Urban Division covers Temple and Belton, and the Killeen Urban Division covers Killeen, Copperas Cove, and Harker Heights.

CURRENT REGIONAL TRANSIT OBJECTIVES

The objectives below outline the transit strategies desired within the KTMPO planning region through the year 2050. These objectives support MTP goals to provide increased accessibility, mobility, and travel options; enhance economic vitality; and improve the safety and reliability of the region's transportation system. These objectives also support the goals identified in the Central Texas Council of Government (CTCOG)'s 2022-26 Regionally Coordinated Transportation Plan (RCTP):

Objectives

- Designate and develop priority transit zones and corridors to include various facilities such as transit mobility hubs, park & ride lots, commuter route terminals, hydrogen fuel corridors, and regional multi-modal facilities to facilitate transportation across the region, particularly for the needs of senior citizens, individuals with disabilities, children, and other vulnerable populations.
- Create innovative multimodal transportation strategies, programs and projects that are supportive of mass transit and other alternative modes of transportation. Such strategies should include Transit Management Associations (TMAs), infrastructure and technology development, and various strategic service offerings such as highspeed and commuter rail, no/low-carbon vehicles (including hydrogen), and expanded occupational vanpooling to promote regional growth and economic development.
- Develop a comprehensive program of transit improvements designed to encourage additional ridership for existing facilities.
- Facilitate the implementation of a microtransit system in the KTMPO region, including microtransit zones providing on demand rideshare service for residents in the five major cities fed by a regional commuter connector route from Copperas Cove to Temple as well as throughout the region.
- Pursue grant opportunities to sustain new initiatives for HCTD, such as FTA Bus and Bus Facilities, Low/No Emissions, and Intercity Bus Program grants.
- Where possible enhance ADA accessibility for transportation assets and infrastructure.

CURRENT HCTD SERVICES

HCTD currently operates a fleet of 132 vehicles including 20 fixed route buses, 48 urban para-transit vehicles, and 43 service vehicles in the rural division.

Urban Fixed Route Service

HCTD operates two Urban Divisions—the Temple Urbanized Area (Temple UZA) which includes the cities of Temple and Belton, and the Killeen Urbanized Area (Killeen UZA) which includes the cities of Killeen, Copperas Cove, and Harker Heights. Eleven fixed routes are provided within the Killeen and Temple urbanized areas, and a connector route provides transportation between the two UZAs.



Killeen UZA

HCTD has been operating fixed route and ADA complementary paratransit services throughout the Killeen UZA since the year 2000.

Killeen Route 2: Operates along Lake Road and Rancier Avenue, serving the East Lake Plaza as well as work sites along Twin Creek.

Killeen Route 4: Operates along Lowe's Boulevard, Illinois Avenue, Trimmier Road, and Interstate 14 access roads including the Killeen Mall, Walmart, Baylor Scott and White Clinic, and numerous retail establishments.

Killeen Route 5: Operates along Willow Springs Road, Elms Road, and Fort Hood Street, serving the southernmost H-E-B store as well as residential areas south of Central Texas Expressway.

Killeen Route 100: Operates along Interstate 14, Elms Road, and Clear Creek Road servicing Central Texas College, Metroplex Hospital, the southernmost Walmart, and connecting Killeen to Copperas Cove.

Killeen Route 550: Operates as a flex route that runs north on Trimmier Road, west on Stan Schlueter Loop, south on WS Young Drive, and East on Veterans Memorial Boulevard, serving both Killeen senior centers at Lions Club Park and the Rosa Hereford Center.

Harker Heights Route 35: Operates throughout Harker Heights providing access to residential areas, shopping, and employment sites as well as providing access to Killeen and Temple via connecting routes.

Copperas Cove Route 65: Operates throughout Copperas Cove providing access to residential areas, shopping, and employment sites as well as providing access to Killeen via connecting routes.

Temple UZA

HCTD has been operating fixed route and ADA complementary paratransit services in the Temple UZA for over two decades.

Temple Route 510: Operates from downtown Temple, providing service to the Veterans Administration (VA) Hospital and Baylor Scott & White medical facilities, Temple College, and shopping areas along the S 31st Street corridor.

Temple Route 530: Operates from downtown Temple, serving the northwest side of Temple and returning to the east side of Temple via the West Adams Avenue and Avenue H corridors.

Belton Route 610: Operates as a loop route, providing service to Sparta Road on the north to the Bell County Expo Center and the Justice Center on the south, serving University of Mary Hardin- Baylor in between, as well as providing service to multi-family housing areas in southeast Belton.

Connector Route 200: An express connector service that connects the fixed routes operating on the west side of The HOP's service area in Harker Heights, Killeen, and Copperas Cove with service routes in Belton and Temple.

Special Transit Service (STS)

Section 223 of the Americans with Disabilities Act of 1990 (ADA) requires public entities operating non-commuter fixed route transportation services to also provide complementary paratransit service for individuals unable to use the fixed route system. The HOP Special Transit Service (also referred to as Complementary Paratransit Service or Paratransit Service) is provided to those individuals with disabilities that are unable to use the regular HOP services for their trip needs.

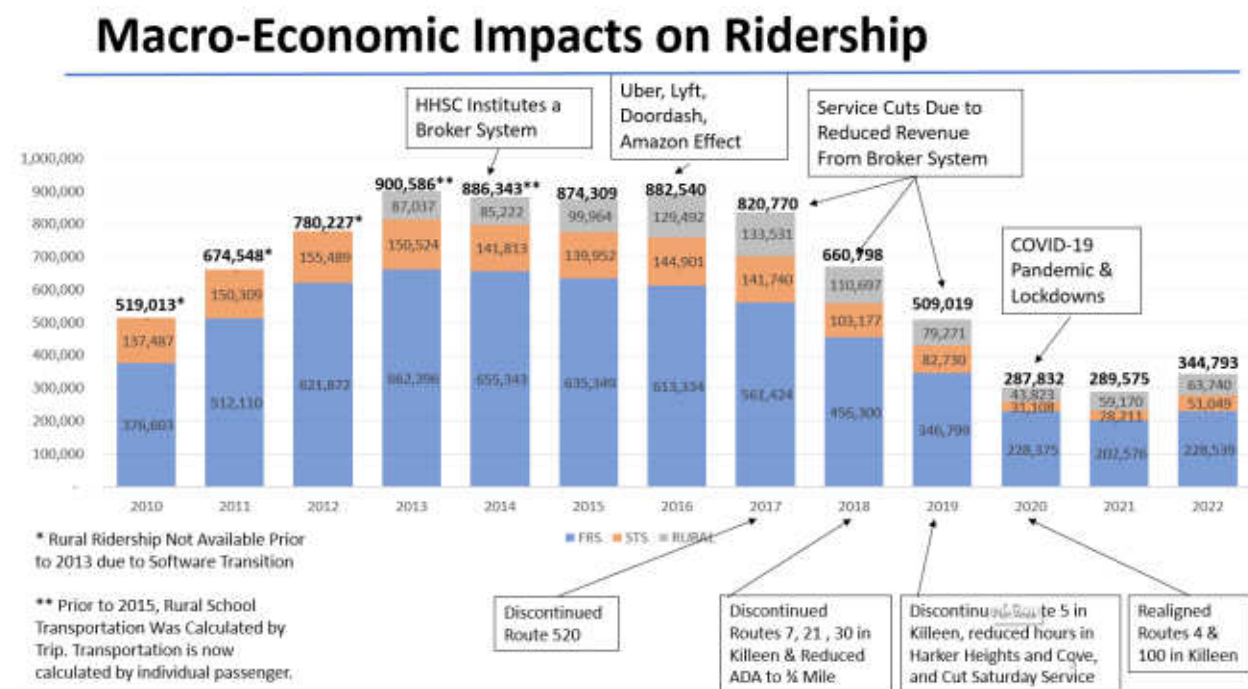
Also included in the STS Service are HCTD's Non-Emergency Medical Transportation (NEMT) services which are Medicaid trips contracted through various brokers for the Texas Health and Human Services Commission (HHSC).

Rural Transit

Hill Country Transit District provides transit services to a broad range of individuals within rural portions of the KTMPO region on a demand-response basis. HCTD provides transportation services across nine counties (three of which are located within the KTMPO region) and provides approximately 64,000 one-way trips annually within the region. Destinations for passengers using these services include Health and Human services agencies, day care centers, public schools, medical facilities and pharmacies, dialysis centers, senior nutrition sites, employment sites, and shopping and retail establishments.

MACROECONOMIC IMPACTS ON TRANSIT SYSTEM

In the past fifteen years, The HOP has seen many trends that affected ridership. From 2010 through 2013, The HOP experienced continuous growth in ridership and grew to over 900,000 trips in 2013. Unfortunately, this rapid growth pattern began to falter in the following years.



HHSC Broker and Negative Impacts on Revenue

Beginning in 2014 as the Texas Health and Human Services Commission (HHSC), who had formerly contracted directly with HCTD on behalf of Medicaid clients, implemented a new broker system. The result of this change was a significant reduction in HCTD's revenue from its NEMT trips. It was assumed that this situation would be temporary, so HCTD maintained

the same level of operations throughout 2015 and 2016 with funding from its reserves, but continued revenue losses made that strategy unsustainable. By 2017, it was clear that the broker system would be the permanent system for transit agencies in Texas and HCTD was forced to begin cutting services. This resulted in a significant decrease in ridership throughout 2017, 2018, and 2019.

COVID-19 Pandemic and Impacts on Ridership

The HOP's ridership was further affected in early 2020 when COVID-19 began to spread across the world. Mass transit was one of the many industries affected by the pandemic because many businesses were shut down and close-quarters transportation was heavily discouraged. Through the course of the pandemic, many former passengers stayed home rather than risk exposing themselves to the virus and remote working boomed as business pivoted. These changes resulted in 2020 overall ridership dropping to 287,832 passenger trips across the entire system, a decrease of 45% from 2019. While ridership has slowly increased since then with total trips up to 344,793 in 2022 the effects of the pandemic are still being felt in 2024, and The HOP's ridership since the pandemic is evidence of this.

Transportation Network Companies (TNCs) and Convenient Home Delivery (The Amazon Effect)

TNCs such as Uber and Lyft were established as early as 2012, but their success and prevalence was not felt in the transit industry until 2016 when it started having a negative impact on ridership. TNCs offered riders the option to book trips from their homes directly to stores and workplaces for a lower price than taxis (but higher than public transportation). Many people that formerly relied on public transportation started supplementing or replacing their daily trips with TNCs for the convenience of being driven directly to their destinations in a comfortable sedan. TNC services have caused the closure of every taxi service in the region, and they are still affecting mass transit as well.

In 2016, Amazon launched their Prime service and the advent of free two-day shipping. Soon other major retailers started following suit and shifted towards a primarily e-commerce business model allowing customers to purchase and receive goods without ever having to leave home. Even before the pandemic this phenomenon had begun negatively affecting the HOP's ridership as fewer and fewer people needed to leave the house to purchase and retrieve their daily essentials.

The effects of TNCs and Amazon's shift to e-commerce were slight and subtle at first, but these services gained momentum in the wake of the pandemic. To avoid potential exposure to COVID-19 on a bus, riders were more frequently opting for trips with Uber and Lyft and

started ordering more online with home delivery. With shopping in stores being discouraged, Amazon's popularity skyrocketed as people were doing their shopping online more frequently. This effect was further felt when other stores such as Walmart and H-E-B began offering curbside pickup and home delivery at little to no cost. The macroeconomic effect of the HHSC's broker system, the pandemic, TNCs, and the popularization of convenient home delivery cut ridership by 43% in 2020.

Factors such as the COVID-19 pandemic and the resulting supply chain issues (shortages) were deemed to be temporary, but they had a massive impact on the traveling habits of the public, and many of these habits have continued after the pandemic has mostly concluded.

MICROTRANSIT PILOT PROGRAM

Considering the macroeconomic effects described above, it was imperative that HCTD reverse the negative ridership trend.

During 2022 and 2023, an analysis of Hill Country Transit District's service model concluded that the Urban Division of The HOP was not operating at peak efficiency primarily due to the Fixed Route Service model. It was determined that for a similar operating cost, The HOP could shift to a more accessible, convenient Microtransit service model connected by a regional commuter route that operates with much improved frequency. This would enhance the regional transit system and optimize ridership by providing shorter, more comfortable rides for all passengers. HCTD is in the process of implementing a microtransit system for the Urban Division in June 2024.

FORT HOOD TRANSIT SYSTEM IMPLEMENTATION

In March 2023, the US Army at Fort Hood requested HCTD to conduct research and recommend solutions to improve morale and quality of life for those residing on and working at Fort Hood (formerly Fort Cavazos). The Department of Defense was pursuing multiple courses of action that would address the needs of soldiers and their families. One such course of action was to establish a fixed route bus system on the installation so that soldiers and families with low incomes could travel around the base more easily and be able to connect with HCTD's urban service to have full regional access. Staff members from The HOP researched and toured the military facility and concluded that because of the size and layout of the base itself and its satellite residential villages, a Microtransit system would better suit the installation, and that a central "circulator" route could operate in the cantonment area to transport soldiers between work and retail sites. After a short period of

deliberation, staff with the US Army agreed to fund a microtransit transportation program, and The HOP was selected to operate this system.

The HCTD launched the “Cavazos Connector” transit system on March 2 of 2024, consisting of 5 microtransit zones with 11 vehicles, and the cantonment circulator with 2 more vehicles. The on-base system will be linked to HCTD’s regional commuter connector when it launches in mid-2024.

In the years prior to this program, the possibility of implementing a Microtransit system in the Urban Division had been considered as a viable alternative to Fixed Route Service. In this spirit, it was decided through Key Performance Indicators (KPIs) that Microtransit on Fort Hood would serve as an ideal Pilot Program for Microtransit in the Regional Urban Division. When the program was first being developed, staff with the Army stated their goal for the system would be to transport 30,000 passengers over the course of a year. Within the first seven weeks of service the program had already passed the halfway mark of that goal (15,200 passenger trips). Feedback from the rider app was used to alter parameters of the service, and through monitoring of user reviews, HCTD found that riders had a satisfaction rate of 97%. On-time performance was over 99%, and the average wait time, which had a target of thirty minutes, currently averages under nine minutes. The pilot proved to be a resounding success, and plans were made to implement Microtransit throughout The HOP’s Urban regional transportation system in mid-2024.

REGIONAL MICROTRANSIT SERVICE IN 2024

Urban Microtransit – Projected to Launch the Second Quarter of 2024

Similar to the Fort Hood transit service, HCTD is in the process of launching microtransit and a regional connector in the five Urban cities. The microtransit services in each of the five cities are designed to link with the regional commuter connector that will operate on an approximately 30-minute frequency to enable seamless and timely connections across the regional service area. Belton consists of one Microtransit Zone, Copperas Cove has two zones, Harker Heights has one zone, Killeen has four zones, and Temple has four zones. Transportation between adjacent zones is allowed as the boundaries of these zones are porous, but traveling between distant zones is not allowed. A 40-mile Regional Commuter Connector route is being implemented in the Urban areas to allow travel between distant microtransit zones. While previously much more limited, this revised route now extends completely from Copperas Cove to Temple and is supported by up to six transit buses, allowing for wait times of only thirty minutes. This route will allow passengers to connect

with Microtransit Zones at mobility hubs in Belton, Copperas Cove, Fort Hood, Harker Heights, Killeen, and Temple. Travel Training is currently being provided by The HOP to educate the public on how to utilize this new transit system. By discontinuing the existing Fixed-Route transit system and replacing it with a regional Microtransit System, HCTD anticipates that ridership across the Urban System will nearly double to 650,000 in FY25.

RURAL MICROTRANSIT – Launch To Be Determined

HCTD plans to provide similar enhanced on-demand services in the near future to the rural portions of KTMPO through improved software and technology solutions. Since the Rural Division is currently served by an on-demand system, this change will not be too different from how they are currently operating. The biggest expected change to Rural operations will be new software that optimizes trip scheduling and enhances passengers' experience. These improvements will reduce wait times and improve the overall efficiency and effectiveness of HCTD rural services.

STRATEGICALLY TARGETED PROGRAMS AND PROJECTS

While transit services will be significantly enhanced in 2024 for Central Texans traveling across the region, HCTD recognizes that regional transit services need to continue evolving to keep up with a growing population. With this in mind, HCTD presents the following Strategically Targeted Programs and Projects that are designed to meet the long-term needs of the region.

Temple Trolley

In support of ongoing business development and the growth of downtown Temple, HCTD and the City of Temple are planning to implement a two-Trolley bus route connecting the proposed Temple Santa Fe multi-modal hub to the Frank W. Mayborn Civic & Convention Center. This Trolley route will provide consistent transit services between two vital business centers allowing each to serve as anchor hubs for transit-oriented development and a connection point for additional business development opportunities throughout the city. Downtown trolleys in other locations have enhanced the quality of city centers and added to their identity and lifestyle. The Temple Trolley initiatives are consistent with the City's leadership vision.

Vanpools

Vanpools are an effective and efficient mode of transportation that can connect multiple riders with similar origins and destinations in an economical way. Vanpool programs are widely used across the nation by transit authorities to reduce vehicle miles traveled and enhance air quality. It is HCTD's intent to introduce a Vanpool initiative once funding for a sustainable program is in place. Below are some possible locations for a program:

- **Temple Industrial Park**

There are many business parks and industrial centers located throughout the HCTD service area where access to a sustainable workforce is a significant challenge that could be addressed with a vanpool program. Demand-shift workers are needed seven days per week across multiple shifts per day, and often cannot rely on fixed-route bus service to meet their commuting needs. A vanpool program would provide increased transit flexibility for the smaller number of workers that need it.

- **Rural Clinics**

The communities in the Rural Division often have more people in need of transportation to medical appointments than The HOP can provide for. One way to address this and provide more access is by using a modified vanpool program where volunteer drivers pick up multiple patients in a specific area and transport them to clinics hospitals in Killeen and Temple.

Hydrogen Corridor

With national efforts to decarbonize public transit and to enhance air quality, federal and local government are focused on providing funding and support for transit agencies to transition to low/no technology. HCTD is committed to contributing to that initiative along the 40-mile Interstate 14 (IH 14) corridor which connects Copperas Cove to Downtown Temple. HCTD plans to utilize a two-step process in developing an IH 14 Hydrogen Corridor. Step one will fund a Zero Emissions Corridor Study to identify facility and infrastructure needs followed by Step Two which includes acquisition of infrastructure, equipment, training, and deployment. This program is consistent with Statewide planning and infrastructure planning. HCTD will focus on EV and or Electric/Hydrogen fuel-cell vehicles. There is strong support amongst the urban cities served by HCTD for transition to clean alternatives.

- **Other Stations (TBD)**

HCTD's existing operations facility has plenty of land and is located strategically on IH 14 and near the IH 14 and IH 35 interchange, which provides a significant opportunity to support regional transformation to zero alternative solutions.

Intercity Bus Program

Intercity Bus connections can provide significant economic development to economically disadvantaged areas by connecting those residents with access to jobs and resources in Copperas Cove, Harker Heights, Killeen, Belton, and Temple. Following are two examples:

- **Rockdale to Temple**

Rockdale is currently a part of the Rural Division, but it sees the highest ridership of all the counties represented in the HCTD primarily due to its proximity to Bell County's many health services and business. Milam County represents the highest percentage of passengers that currently ride to Temple for medical appointments. HCTD estimates that many Milam County residents are not relying on mass transit. A commuter bus service that connects Milam County passengers into the Killeen and Temple urban service areas would likely significantly increase ridership and provide needed transportation for the residents of Rockdale and Milam County.

- **Brownwood to Gatesville to Copperas Cove**

Gatesville would also greatly benefit from an Intercity Bus Route. The city has several large employers including multiple Department of Corrections facilities and two major factories. Many of the employees of the prisons and factories live in other cities such as Copperas Cove, Killeen, and Brownwood. A commuter route connecting Brownwood, Gatesville, and Copperas Cove would provide additional transit options for workers at these facilities and encourage residents within the region to seek living and employment in Gatesville further bolstering their economy.

Connector Terminal Facilities

To ensure the success of the Regional Commuter Connector as an integral community asset, it's important that rather than simple bus stops, the terminus for each end of the future connector route should be developed into multi-modal transit-oriented development hubs integrating hike & bike trails, sidewalks, connections to commuter bus and microtransit, along with retail, entertainment, and housing. Through informed urban design and development, these transit hubs will serve as economic development opportunities throughout the region.

- Temple

Downtown Temple has been identified as a key location for a Terminal Facility. Currently, the route terminates at the VA Hospital, however the planned Commuter Connector route is going to terminate at the Santa Fe Plaza so users can more easily connect to other modes of transportation. Santa Fe Plaza used to serve as the regional terminus for Greyhound, Amtrak, and Intercity Operators. It will now serve as the terminus for the HCTD Regional Commuter Connector and as a multi-modal hub for connections with HCTD's microtransit service as well as Uber and Lyft.

- Copperas Cove

The planned Regional Connector will terminate on the west side of the region in Copperas Cove. While the planned termination site will be near Walmart on Constitution Drive, a more ideal location may be closer to downtown. A facility there would provide better connection to the Copperas Cove Microtransit system and the proposed Intercity Bus route to Gatesville and Brownwood.

Santa Fe Plaza Development

The Santa Fe Plaza in Temple represents a regionally significant transit-oriented development opportunity and historically serviced transit hub. Conveniently located near Amtrak and Greyhound services, the Municipal Court, Temple Square, and a Whistlestop park, the Santa Fe Plaza is the ideal location of economic development that will enhance ridership, quality of life, and integrate multimodal transit.

- HCTD Office

Office space at HCTD's Belton operations center is becoming scarce, and as The HOP transitions to a Microtransit system, it makes more and more sense to house vehicles at sites closer to the areas of operation. The facility at Santa Fe Plaza could be used as a satellite office for The HOP, housing dispatchers and utility workers for daily operations, but it would also be a great building to use for additional office staff.

Connector Park & Rides

Park and Ride facilities are used in many transit systems around the country as a parking alternative supporting a more fluid transportation system. Because the Urban Division is so massive, passengers could save gas money and avoid traffic by parking at a facility for The HOP and commuting to their places of business. There are five areas that would be ideal for Park and Ride facilities.

- Copperas Cove (at Terminal)

A Park and Ride would be perfect in Copperas Cove because of its western terminus for the Regional Connector route and because it could save gas and mileage for commuters traveling to employment centers in Gatesville without having to drive the whole length.

- Killeen (at or near Mobility Hub)

A Park and Ride in Killeen would be ideal because of the number of people living there that are employed at places like Fort Hood, Gatesville, and Temple's Industrial Park. Residents would then be able to park at the area Transfer Station, and board the Connector to get to and from work. Such a Mobility Hub could be conveniently located on Lowes Blvd., or in Downtown Killeen.

- Harker Heights (at or near Mobility Hub)

For reasons similar to those presented in Killeen, a Park and Ride would work well for Harker Heights. The Regional Connector's planned transfer point is going to be behind the Walmart on Modoc, but if a Park and Ride is introduced, a different location will need to be selected to accommodate more cars.

- Belton (at or near Mobility Hub)

Belton is in a unique position in that the Transfer Hub is already perfectly located at Liberty Park. The parking lot there has ample space for additional vehicles, and it already serves as a designated Park and Ride for commuters traveling to Austin, so it would be an all-encompassing Mobility Hub for many people in the region. The location needs to have complementary infrastructure and urban design to fully leverage this location.

- Temple (at Terminal)

As the Santa Fe Plaza is already a planned location for Temple's Terminal Facility, it would also be perfect for a Park & Ride as there is ample parking at this site. Commuters would have access to their own cars, The HOP's Microtransit System, The HOP's Regional Connector, and other transportation methods such as Greyhound and Amtrak. Additional urban planning and design is needed to fully leverage this site.

Dedicated Shoulder Lane for Transit and Emergency Vehicles

Interstate 35 has experienced significant construction work over the years, but despite constant expansion one tool for congestion reduction has not been explored, dedicated

shoulder lanes for transit and emergency vehicles. Commuter traffic tends to cause heavy backups and delays during peak usage hours. Developing a dedicated shoulder lane allows police, paramedics, and firefighters to bypass traffic when responding to emergencies and transit vehicles more certain travel times which can encourage people to use The HOP instead of their own vehicles.

Rail

The KTMPO area is well served by existing freight corridors that if leveraged, can be utilized for passenger rail services to connect the growing region along IH 14 and IH 35 corridors. With Fort Hood proximally located to existing rail corridors and Downtown Temple conveniently located at the nexus of both BNSF and UP rail lines, and with Amtrak already having trackage rights and an existing Rail Station at Santa Fe Plaza, Commuter Rail, Light Rail, and the potential for High-Speed Rail are all justified.

Fort Hood, Killeen, and Temple UZAs scale to a national significance when looking at potential opportunities for economic development and strategically located centers for growth. Currently there are vast greenbelt areas throughout the region making the area prime for economic development. There are two significant lakes, multiple higher educational institutions, a community college, multiple regional airports, and the service area is bisected by a nationally significant highway corridor (IH 35). The region is also conveniently located between The DFW and Austin/San Antonio Metropolitan Transportation Authorities, making the KTMPO region a natural location for State and Federal funding priorities.

The Killeen-Temple Metropolitan area is continuously growing because of the number of employers in Temple, Killeen, and Fort Hood as well as those commuting to and from Austin and Waco. It is estimated that by 2030, the Temple and Killeen UZAs will have grown large enough to merge. Mass Transportation will be a key part of making that merger an effective one.

- **North-South Oriented High-Speed Rail Coordination of Station Location along IH 35**

A proposed high-speed rail system is currently being designed and right-of-way is being purchased to connect the cities of Dallas, Austin, San Antonio, Houston and back to Dallas (the Texas Triangle). To promote growth, HCTD needs to ally themselves with the stakeholders of this system to ensure that Temple becomes a rail stop. Not only would it provide employees for the corporations based out of Austin and Dallas, but it would also promote the growth of the city, allowing people to commute to and from these large

metropolitan areas with ease. Tesla already has a significant fleet that pulls employees from the Killeen and Temple areas daily thereby adding to significant commute time traffic congestion.

- **East-West Light/Commuter Rail along IH 14 connecting to High-Speed Station**

By developing either a light-rail or commuter-rail system for passengers that connects Killeen and Temple, commuters would have ease of access to employers, businesses, and hospitals in both cities without having to endure highway traffic. In addition, connecting this commuter-rail to the High-Speed Rail running through Temple would encourage further regional growth.

General Infrastructure

To better accommodate mass transit systems, several changes can be made to the roadways in the Killeen-Temple Metropolitan area. Many of these changes would also positively affect commuter traffic as well.

- **Curb Cuts**

To make stops more readily and safely accessible to buses, curb cuts could be added to these stops. Curb cuts allow the buses to pull out of the flow of traffic and into a dedicated area in front of the bus stops. This also enables safe loading and unloading for passengers as they will not have to contend with traffic.

- **Deceleration Lanes & Acceleration Lanes**

High-traffic arterial roads and highway-access roads in the region often do not have adequate acceleration or deceleration lanes. These dedicated lanes allow vehicles to safely alter their speed without risking an accident with other vehicles on the road. In particular, stretches of IH 35 and IH 14 feeder roads lack these lanes. In the case of mass transit, this makes it unsafe for buses to travel on the access road on their routes, thus limiting where the bus route can go. Similarly, the lack of these lanes on roads like Fort Hood Street and Stan Schleuter Loop make it unsafe to turn onto these roads.

CONCLUSION

Offering a range of transportation options for the region and its citizens is critical. HCTD and KTMPO strive to continue working in partnership to develop long-range rural and urban transit strategies to provide increased accessibility, mobility, and travel options; enhance economic vitality; and improve the safety and reliability of the region's transportation system.

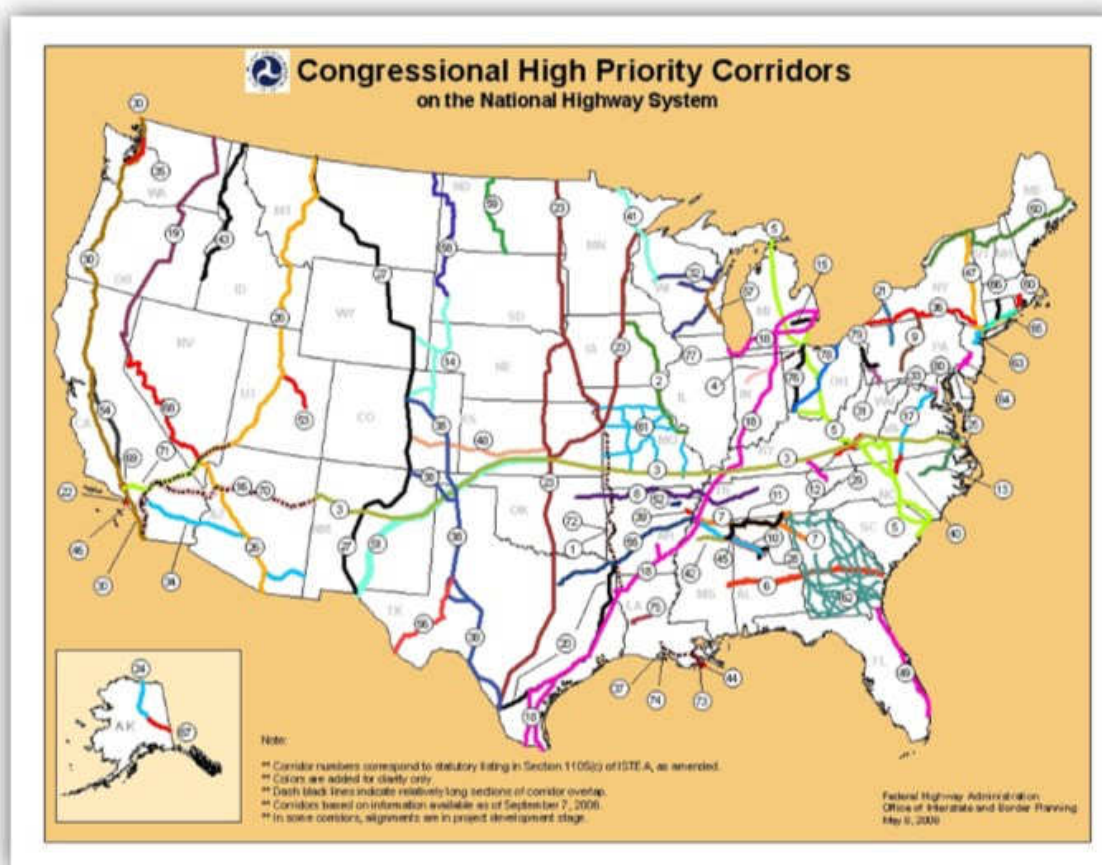
CHAPTER 8

MULTIMODAL



MULTIMODAL

Central Texas is located in the middle of major North American trade routes (including IH 35, its largest freight corridor), serves a truck/rail hub, and has been experiencing extreme freight growth over the past two decades. From 2014 to 2019, freight tonnage traveling through Texas has increased by 26%, much of it traveling through central Texas. The region will continue to experience increased cargo movement via truck, rail, and air in the foreseeable future, with freight volumes expected to double by 2050. As a major connector for national transportation systems, infrastructure in Central Texas is critical for the effective movement of goods and services. The oil industry in the Permian Basin of West Texas impacts the freight corridors through Central Texas. As a truck and rail hub along freight corridors, KTMO services the markets that connect Canada, United States & Mexico. This corridor includes the Dallas to Mexico, Dallas to San Antonio, and Dallas to Houston markets.



Although the KTMO region may be located on a major corridor for international trade, it is also home to the largest active-duty armored post in the United States Armed Services—Fort Hood. This military installation is home to over 41,000 troops and a large variety of

equipment. Troop and equipment movements by all multimodal methods of transportation are a key factor in the security and safety of our nation. Passenger service continues to expand with the movement of Central Texans for military, business, and personal purposes. Focus on national security abroad and area growth are expected to increase the need for passenger service.

RAIL

The Central Texas area has a vital purpose in the state's railroad operation. This central proximity allows for north/south and east/west rail corridors. The KTMPO boundaries are served by two "class 1" railroad companies located in Temple. Burlington Northern and Santa Fe (BNSF) and Union Pacific (UP) are the predominant railroad freight carriers for the area. The City of Temple was founded in 1881 by the Gulf, Colorado, and Santa Fe Railway Company. Santa Fe needed a town at a major junction point to provide services for railroad equipment and passengers. Because of this need, a city was developed. Temple hails its name from Mr. Benard Moore Temple, a chief engineer who built the tracks for the Gulf Colorado and Santa Fe Railway in the Temple area. From its humble beginnings, Temple has played an important role in supporting the railroad's operational needs and continues to operate as a major junction point.



The Temple rail yard performs rail car switching, locomotive fueling and is a strategic point for crew changes. Currently, there is a short-line railroad operation that is providing switching services to specific industries. There are approximately 10 miles of specific industry rail service in the Temple Central Pointe business park.

There is no intermodal facility in the KTMPO region, and the nearest intermodal ramps are in Dallas-Fort Worth. Containerized cargo must be offloaded or loaded in Dallas. Interactions with the railroads suggest that the Class 1 companies envision Central Texas as an untapped resource for shipping/receiving cargo. With the continued growth of Central Texas manufacturing industries and oilfield needs, Central Texas is prime for expansion to

bulkhead/intermodal services. Bulkhead services are critical in the future to ease the congestion within the KTMPO boundaries. As with the city of Temple, most of the towns and cities within the KTMPO region have a rich rail history. The present-day largest city, Killeen, was developed by the Santa Fe Railway in 1881. The initial 70 block town was named after the assistant general manager of the Santa Fe, Frank P. Killeen. From its beginnings as a regional source of shipping farm goods, Killeen has grown exponentially due to the military locating at Camp Hood (currently recommissioned as Fort Hood). Fort Hood utilizes the rail for deployments of equipment and supplies out of two ports – Corpus Christi and Beaumont.



Farming continues to be served regionally using one grain elevator within the region. The City of Rogers grain elevator has a track capacity of 54 cars and 815,000 bushels. Local farmers utilize this facility for rail shipments of their grain crops.

AMTRAK

AMTRAK provides passenger train service from the historic Temple train depot, with daily routes running between Chicago, San Antonio, and Los Angeles. The Temple AMTRAK station has increased ridership by 5.6% from 2016 to 2017. Total ridership in 2017 was 16,461.



High-Speed Passenger Rail Studies

Over the past decade, interest in high-speed passenger rail services in Texas has grown tremendously. IN 2017, TxDOT completed the Texas-Oklahoma Passenger Rail Study (TOPRS) which analyzed potential rail alignments near the IH 35 corridor. The North Central Texas Council of Governments (NCTCOG) followed up with the Fort Worth to Laredo High-Speed Transportation Study that concluded in 2020. KTMPO supported both efforts and has continued to work at facilitating conversations regarding high-speed passenger rail in the region. High speed rail could play a significant and immediate role in providing an alternative mode of travel for the Central Texas region. Local transit service is in place throughout the Killeen-Temple region and offers a connection to this future transportation service.

Freight Shuttle System (FSS)

The Texas Transportation Institute has developed a freight transportation system referred to as the Freight Shuttle System (FSS). The FSS transporter system would utilize current IH 35 right of way, specifically the median. It is a raised transport system that would operate from Dallas to San Antonio. This freight shuttle system would have the capacity to handle 17,000 semi-truck type containers a day thereby relieving IH 35 of approximately 9,000 semi-trucks traveling on the IH 35 corridor a day. As reported in the San Antonio Express News, “this proposal bears watching even though it may be years away from construction.” The project would be privately financed, operated, and maintained. Currently, there is a signed renewable 3-year agreement for “reservation of right-of-way” between TxDOT and Freight Shuttle International. The agreement allows Freight Shuttle International lease rights along IH 35 from Dallas to San Antonio for a Freight Shuttle System. In May 2022, Freight Shuttle Xpress (FSX) and Port Houston entered into a memorandum of agreement to pursue and explore opportunities to connect the Port’s shore-side container facilities to more inland locations via the Freight Shuttle System. This is an innovative solution for moving freight across large land areas.



Smart Freight Corridor

The Texas Department of Transportation (TxDOT) is planning a Smart Freight Corridor along State Highway 130 from Georgetown to Del Valle. This corridor will allow for driverless vehicles to navigate safer with additional sensors and smart technology. In September 2023, TxDOT entered into a contract with Cavnue to work on the project.

MOTOR COACH

Passenger service is readily available with two companies—Arrow Trailways of Texas and Greyhound Lines Inc. There are two bus depots in the KTMPO area, with one located in Killeen and one in Temple. AMTRAK has partnered with the local motor coach services coordinating daily service from Killeen to the Temple AMTRAK depot. Motor coach services are very flexible with schedules that accommodate most larger cities within the United States. There is also international service available to Canada and Mexico. Local transit

service is in place and offers connecting transportation service throughout the Killeen-Temple region.

TRUCKING

Trucking is the predominant freight mover for the Central Texas area. Freight passes through daily on the Interstate 35 corridor for points south to Mexico and north to Canada. Further, Central Texas is a connector to the West Texas oilfields via US Highway 190 and State Highway 36. Transportation systems are continuing to be upgraded throughout



Central Texas to better accommodate the needs of the trucking community. IH 35 has been expanded from 4 to 8 lanes between Troy and Temple. Further expansion to widen IH 35 between Temple and Belton.

In addition to the “through traffic,” Central Texas moves freight by truck for nationally known distributors such as McLane Food Services, Wilson Art International plastic laminate products, ACER computer products, Wal-Mart Distribution Services, and H-E-B Distribution products. There are many other companies that provide goods to market throughout the country that are manufactured and trucked from Central Texas.

Based on the City of Temple logistics study, there is an expectation of strong growth in shipping plastics, machinery, chemicals, food, and alcoholic beverages by 2040 in the Central Texas region. These forecasts also suggest a trend that Mexico will be sending heavy quantities of higher value industrial input products for U.S. manufacturing and finished consumer goods. As stated in the introduction, exports within a 50-mile radius are expected to grow by 42% to 185 million tons.

The IH 35 corridor future growth challenges are being addressed through significant expansion and commitment. The Central Texas region expects a significant increase with both east to west corridors (US 190, SH 36). Continued support of West Texas oil field operations could have significant impact on these roadways soon. Basic infrastructure challenges such as the lack of housing in West Texas is causing oil field support companies to locate manufacturing operations in Central Texas. These factors may increase the truck traffic on the East/West connectors, and it is expected to continue rapid growth. In 2021, the Bipartisan Infrastructure Bill was signed into law by President Biden. This legislation supported the “Forts to Ports” project which will expand IJ-14 from Midland-Odessa, Texas

to Augusta, Georgia. The goal of the infrastructure project is to connect the military installations along the southern United States. The additional infrastructure will support more freight movement to rural areas.

AIR

Killeen Regional Airport

The Killeen Regional Airport (GRK), located along SH 201, opened in August of 2004. Prior to September 11, 2001, Killeen had outgrown facilities at their municipal airport, Skylark Field. Local support for a new airport was received from 17 different communities within the KTMPO region.

GRK is an enterprise fund commercial-service airport, owned by the City of Killeen. AviationPros.com touts the Killeen Regional Airport as a successful “Joint-Use” project. The Joint Management Board created a series of Joint Operating Plans. As a result, in exchange for land use, the city is responsible for runway maintenance and landscape maintenance. The US Army provides rescue and firefighting services for civilian aircraft in exchange for firefighting services by the city for selected military housing.

During the planning phase of the airport project, the tragedy of terrorism/September 11, 2001, attacks occurred. Due to the apparent necessity for airline security, several of the site plans were abandoned. The JMB worked with Transportation Security Administration/Federal Aviation Administration and planned the very first US airport terminal to be built after 9/11. The new GRK incorporated security features that are present in today’s airports.

In November 2017, Delta announced they would be



ceasing operations at GRK, with the last Delta flight taking place in January 2018. United announced they would no longer be servicing the airport as of January 2022, leaving only American Airlines as a commercial airline serving the GRK airport. American Airlines offers service to Dallas and Houston. In September 2023, after Fort Hood was renamed Fort Hood, airport and city administration renamed the airport the Killeen Regional Airport. Local transit service is in place and offering connecting service transportation throughout the Killeen-Temple region.



The GRK facility has accommodated Air Force One and an extensively modified Boeing 747 carrying the Space Shuttle over the years on many occasions. These facilities are equipped to land any aircraft in the world.

A 2018 study completed by the Texas Department of Transportation called the Texas Aviation Economic Impact Study, reviewed the GRK airport and found that the airport had a total impact of 1,557 jobs, \$46.7 million in payroll, and \$134.9 million output.

Skylark Field (Airport)

The existing 180-acre Killeen Municipal Airport remains open after airline service was moved to the Killeen Regional Airport facility. As a result of the transition, Killeen Municipal Airport was renamed Skylark Field. Skylark Field is classified as a general aviation airport within the FAA's National Plan of Integrated Airport Systems and the Texas Airport System Plan.¹ Additional operations consist of general aviation and corporate aircraft. The City of Killeen owns and operates Skylark Field.

The terminal is open during normal business hours (8-5) and offers full-service jet fuel services. Skylark personnel accommodate some after-hours services and a 24 hour per day self-serve jet refueling station. The Skylark Field runway measures 5,495 x 100 feet. Future plans include runway improvements, a new box hangar, and expansion of parking associated with the new box hangar.

Draughon-Miller Central Texas Regional Airport

Draughon-Miller Central Texas Regional Airport is a modern, award-winning aviation facility operated by the City of Temple. Draughon-Miller is a general aviation airport that is certified for air carrier operations. Draughon-Miller also offers a number of services provided by experienced staff as well as contractual agreements to include Airframe Maintenance, Service/Repair, Piston Engine Overhauls, Line Service, Avionics, Flight Training, Pilot Training, and Rental.



Draughon-Miller received the 2008 General Aviation Airport of the Year award at the 2008 Annual Texas Aviation Conference. This award was received due to the airport's efforts to better serve the military. The airport funded an effort to complete a 50,000-square foot hangar facility to enhance the operations of the U.S. Army Aviation and Missile Command operation providing over 200 highly skilled jobs to the City of Temple. In addition to this award, Draughon-Miller has been named one of the best general aviation facilities in the nation in Exxon/Mobil's network of fixed base operators (FBO). The Exxon/Mobile "Premier Spirit Gold Winner" classification reassures the aviation community that they are receiving the highest level of fuel quality and customer service. Winners of this award represent the top 15 percent of Exxon/Mobil's Aviation-branded FBOs in the United States who participated in Premier Spirit.

The airport has completed multiple expansions and improvements to benefit the Central Texas region including T-hangar taxiway improvements, taxiway/runway improvements, terminal expansion, and renovation. The Draughon-Miller



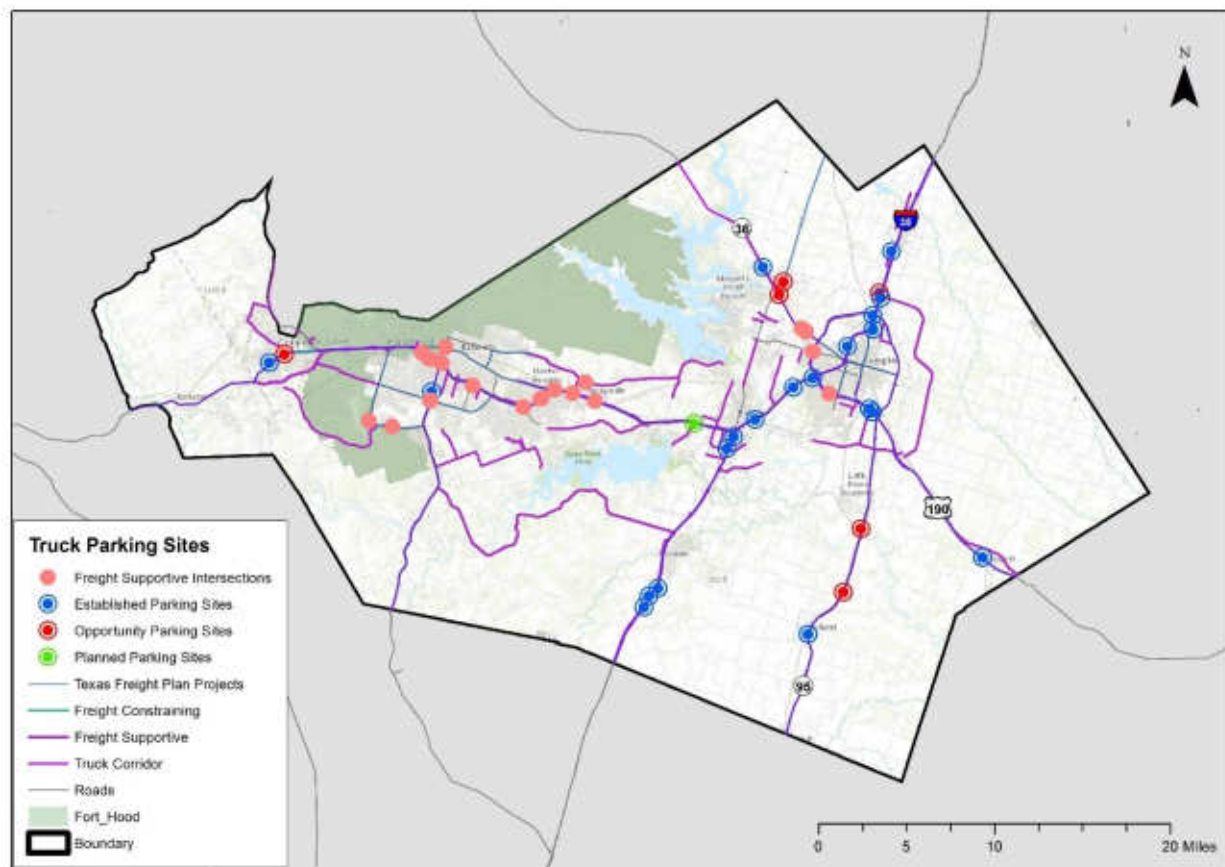
Central Texas Regional Airport continues to play a vital role in the Central Texas area economy and culture.

Draughon Miller began as an Army airfield in 1942 and has grown to a total of 922 acres with a runway 15/33 measuring 7,000 feet by 150 feet and a runway 2/20 measuring 4,740 feet by 100 feet. For the 12-month period ending June 9, 2023, the airport had 41,124 aircraft operations, an average of 113 per day: 81% general aviation and 18% military. Draughon Miller has been owned by the City of Temple since the closure of World War II. There is no future expectation of freight operations for this facility.

FREIGHT ADVISORY COMMITTEE

In 2017 KTMPO staff worked with TxDOT, FHWA, economic development entities, construction material haulers, manufacturing managers, military representatives, airport and motor coach facilities, and other freight industry leaders to establish a Freight Advisory Committee. The original KTMPO Freight Advisory Committee (FAC) held its first meeting on May 17, 2017, and its last meeting on May 29, 2018, accomplishing two tasks of identifying and adopting a regional freight corridor map and conducting a freight parking study. After the committee became inactive, staff reached out to former committee members and new freight industry and municipal stakeholders to restart quarterly committee meetings in 2022. This effort was successful and the FAC currently meets semi-annually with its last meeting on April 23, 2024. Meeting discussions include identifying freight needs and improvements, presentations on resources for the freight industry, and grants, legislation, and other programs that can develop freight infrastructure or efficiency. The needs of freight stakeholders are communicated through the FAC to the KTMPO Technical Advisory Committee and the Transportation Planning Policy Board.

Figure 8.1 – Freight Study



CONCLUSION

KTMPO recognizes freight planning as an essential element to comprehensive transportation planning. Staff will continue to work in partnership the Freight Advisory Committee, industry leaders, economic development directors, and regional partners to identify future expansion of the trucking, rail, motor coach, and air industry facilities to accommodate projected growth in the region.

CHAPTER 9

SAFETY



SAFETY

According to the Federal Highway Administration's Code of Federal Regulations, Highways, Title 23, sec. 450.322, regarding the development and content of the metropolitan transportation plan:

"The metropolitan transportation plan should include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPA contained in the Strategic Highway Safety Plan required under 23 U.S.C. 148, as well as (as appropriate) emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) and safeguard the personal security of all motorized and non-motorized users."

The information obtained by safety and security programs should be implemented into every project planning effort and considered during every phase of the process. The awareness of safety issues and security plans that are unique to the Killeen-Temple region will better inform both the decision makers and public in future efforts to maintain the well-being of its citizens.

The Highway Safety Improvement Program (HSIP), established by SAFETEA-LU in 2005, focuses on reducing traffic fatalities and serious injuries on all public roads. As a major piece of the HSIP, SAFETEA-LU requires all state DOTs to develop a Strategic Highway Safety Plan (SHSP) to identify state safety issues and needs and to guide planning decisions. TxDOT's initial Strategic Highway Safety Plan, approved in 2006, details the crash data analysis, stakeholder surveys, and workshops of safety professionals that were used to assist TxDOT in the identification of special highway safety emphasis areas. The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012 reaffirmed commitment to the national safety program. MAP -21 strengthens the SHSP while the FAST Act continues to build upon safety requirements. Since then, the 2017-2022 Texas Strategic Highway Safety Plan serves as the current publication. The Texas Strategic Highway Safety Plan is structured around seven emphasis areas to include distracted driving, impaired driving, intersection safety, older road users, pedestrian safety, roadway and lane departures, and speeding.

KTMPO utilizes the Texas SHSP as a guidebook in the safety analysis of its regional infrastructure. The roadway safety emphasis areas help staff focus analysis on crash types and locations, system users, user behaviors, and system administration.

Current Safety Conditions

KTMPO uses crash data from the Crash Records Information System (CRIS) database, which is maintained by TxDOT. These data come directly from the CR-3 crash reports that are completed at the time of the incident by local law enforcement for all reported motor vehicle crashes. For the Killeen-Temple MSA, there were 6,256 serious accidents (Fatality, Incapacitating Injury, Non-incapacitating Injury), 987 serious injury accidents, and 251 fatal accidents from 2018-2022. Figure 8.1 and Figure 8.2 detail the total number of fatalities and serious injuries resulting in crashes.

Figure 9.1 – Number of Fatal Crashes from 2018-2022

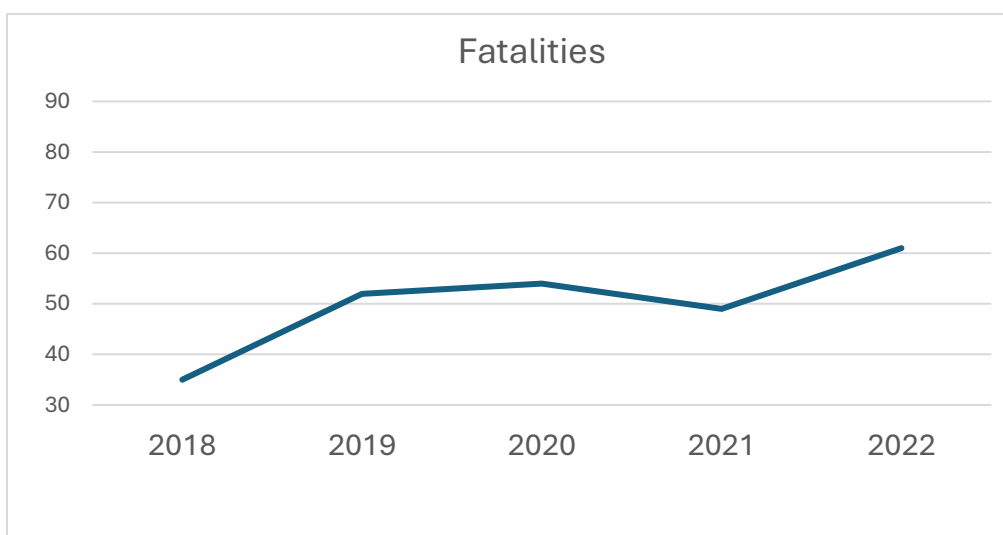
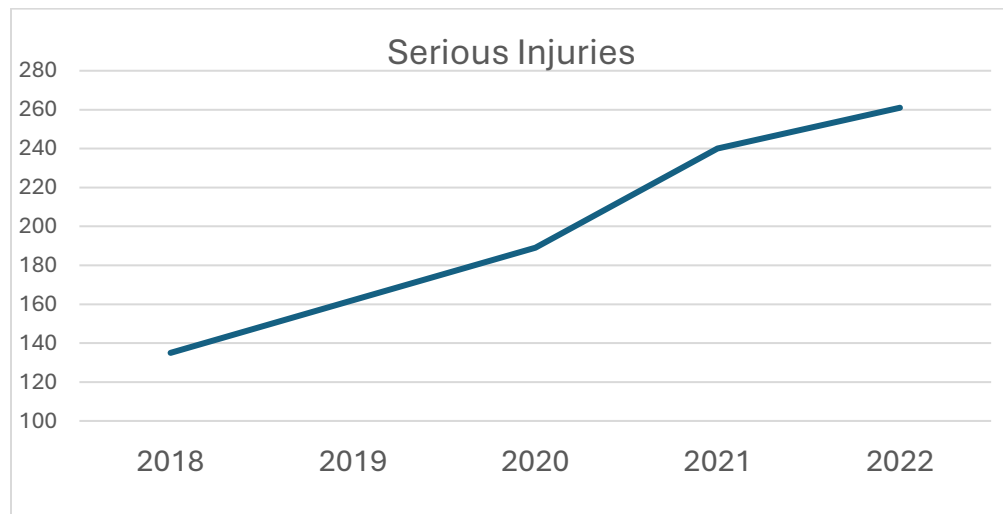


Figure 9.2 – Number of Incapacitating Injury Crashes from 2018-2022



The knowledge of the geographic location of a crash is the first step in determining the safety issue at hand. Staff have used the CRIS data to create heat maps showing the concentration of crashes in the region at intersections and along road segments. Further crash rate analysis was completed for intersections and segments with high crash numbers.

Some recommendations may be made to reduce the recurrence of crashes at particular locations, such as:

- Upgrades to existing transportation infrastructure
- Modification or implementation of safety infrastructure
- Creation of alternative routes to alleviate congestion
- Public campaigns promoting a particular safety issue
- Requirement of the use of motorcycle and bicycle safety gear
- An assessment of the transportation network to determine driver decisions

Another key element to improve safety is identifying and understanding the root causes of crashes. Knowing what caused crashes to occur can help planners and engineers determine if roadway and/or human factors need to be addressed.

The improvement of transportation safety is an ongoing process that requires collaboration with all transportation decision makers in the KTMPO region. Continuing efforts will assist this process as new issues are discovered or updated data can be obtained to inform new decisions. A large part of safety on the roads involves the attention and attitude of the transportation users. Successful safety programs also incorporate a public education element to help the KTMPO public make informed decisions in its driving behavior. KTMPO will continue to push information from national and state safety organizations and keep the public aware of safety issues in our region via online social media methods and in line with the public involvement process.

Safe Streets and Roads for All (SS4A) Grant

The purpose of SS4A grant program is to improve roadway safety by significantly reducing or eliminating roadway fatalities and serious injuries. The program focuses on the development of a comprehensive safety action plan and its implementation for all users of highways, streets, and roadways, including pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micromobility users, and commercial vehicle operators. The program provides funding to develop tools to strengthen a community's approach to roadway safety and save lives and prevent serious harm.

Under the SS4a Grant, The Central Texas Council of Governments (CTCOG) and KTMPO are developing a Safety Action Plan to improve roadway safety for all users. This plan will identify and prioritize safety improvements for everyone who uses roads, including pedestrians, cyclists, public transportation users, and motorists. The study area for this project will include several counties in Central Texas including Bell County, Hamilton County, Lampasas County, Milam County, Mills County, and San Saba County. The main goal of the Safety Action Plan is to reduce or eliminate fatalities and serious injuries on the roads by focusing on the needs of all road users.

More information regarding the SS4A Grant and the Safety Action Plan is available on the [KTMPO website](#).

SAFETY PERFORMANCE MEASURES

The FAST Act builds upon the MPOs requirement to establish safety performance measures. This requirement required MPOs to establish their own safety performance measures or support performance measures established by the State. From January 2018 to January 2023 the KTMPO Policy Board approved the support of the State's safety performance targets. However, when setting the FY24 safety targets, discussions began about the adoption of KTMPO region-specific safety targets, marking the inaugural year KTMPO's safety targets vary from TxDOT. In January 2024, the Policy Board adopted a goal of zero motor vehicle fatalities and a 25% decrease in serious injuries by the year 2050.

Table 9.1 – KTMPO Regional Safety Targets FY24

KTMPO Regional Safety Targets FY24	
Mode	Target
Traffic Fatalities	57
Serious Injuries	286
Fatalities per 100 million VMT	1.45
Serious Injuries per 100 million VMT	7.32
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	33

KTMPO Policy Board will continue the adoption of safety targets on an annual basis as required by the federal planning Rule.

By setting region-specific safety targets, KTMPO plans to do the following:

- Work with the state and safety stakeholders to address areas of concern for fatalities or serious injuries within the MPO planning area; Coordinate with the state and include in the Metropolitan Transportation Plan (MTP) the safety performance measures and targets for all public roads in the metropolitan area;
- Integrate into the planning process the safety goals, objectives, performance measures and targets described in other state safety transportation plans and processes such as applicable portions of the Highway Safety Implementation Plan (HSIP);
- Use data to identify areas that have shown a concentration of accidents and continue to use crash rates as one of our scoring criteria to select projects that support the regional goals;
- Use this information as part of our public outreach efforts to educate drivers about ways they can drive more safely and reduce accidents.

Some recommendations may be made to reduce the recurrence of crashes at particular locations, such as:

- Upgrades to existing transportation infrastructure;
- Modification or implementation of safety infrastructure;
- Creation of alternative routes to alleviate congestion;
- Public campaigns promoting a particular safety issue;
- Requirement of the use of motorcycle and bicycle safety gear;
- An assessment of the transportation network to determine driver decisions

The improvement of transportation safety is an ongoing process that requires collaboration with all transportation decision makers in the KTMPO region. Continuing efforts will assist this process as new issues are discovered or updated data can be obtained to inform new decisions.

A large part of safety on the roads involves the attention and attitude of the transportation users. Successful safety programs also incorporate a public education element to help the

KTMPO public make informed decisions in its driving behavior. KTMPO will continue to push information from national and state safety organizations and keep the public aware of safety issues in our region via online social media methods and in line with the public involvement process.

SECURITY

The transportation system is vital however disasters or attacks can affect the vitality of the system due to its large spread and accessibility. Effective management is important for the system's preparedness and ability to respond and recover from an event to maintain the well-being of the transportation system users.

Coordination Efforts

Security planning starts at the local, municipality level, and progresses up to the state, and eventually, federal level. Coordination amongst the cities, neighboring counties, and the state must occur because the geographic extent of a disaster cannot be predicted. KTMPO works closely with the Homeland Security division of the Central Texas Council of Governments (CTCOG) to increase awareness of the transportation system's role in the security of the region's citizens. CTCOG's Homeland Security division works with the Emergency Management Coordinators of all counties of the CTCOG region and serves as a central clearinghouse for the emergency and evacuation plans of each county. At the MPO level, the information from these plans allows transportation planners to assess the ability of the system to respond to an event as the plan details. The following routes are considered the major evacuation routes of the KTMPO region: IH 35, US 190, US 190/SH 36, SH 95, FM 93, and FM 2268. Bell County's plan, specifically Annex E, details potential evacuation areas with hazardous material locations and evacuation routes as shown below in Table 9.2.

Flood Monitoring

The KTMPO region is susceptible to flooding. When heavy rainstorms occur, flooded roadways can occur, which creates an ineffective way to transport goods, services, and people. Due to the flooding, monitoring was recently enhanced in flood prone areas to gauge water levels, providing advanced notice for thoroughfare closure and evacuation. In the MPO area, USGS has established 11 monitors, which are described below:

- Belton Lake Near Belton Dam;
- Leon River North of FM 817 (Charter Oak Drive);
- Nolan Creek at South Penelope St;
- Lampasas River at SH 195;
- Stillhouse Hollow Lake Near Dam;

- Chalk Ridge Falls Park;
- Lampasas River at IH 35;
- Salado Creek East of FM 2268 (Main St.);
- Little River at SH 95;
- North Elm Creek at FM 485;
- Lampasas River at US 190.

Additional locations in the rural areas are currently utilized by emergency responders and planners involved in flood mitigation.

Scenario Planning

CTCOG's Homeland Security division have outlined a Threat and Hazard Identification and Risk Assessment (THIRA) to estimate the impact to people and infrastructure in the event of natural and/or man-made disasters. An analysis was performed to predict the people involved, infrastructure damage, and roadways affected. The assessments outline the description, impacts, and desired outcome. The various scenarios that were looked at include the following:

- Severe flooding of Nolan Creek;
- A strong tornado hitting the Killeen urbanized area;
- A train derailment that causes HAZMAT materials to leak in Lampasas County;
- An active shooter situation on Ft. Hood and at a hospital;
- Wildfires across Coryell County and Ft. Hood.

For the Critical Transportation Core Capability, the description is to prove transportation (including infrastructure access and accessible transportation services) for response priority objectives, including the evacuation of people and animals, and the delivery of vital response personnel, equipment, and services into the affected areas. The desired outcome is to have an active response within 6 hours of the incident; a response to potential disasters can minimize impacts on the transportation system.

Fort Hood

Fort Hood makes a concerted effort to ensure the safety and security of the military community, both on-post and in the surrounding area. They employ various levels of Force Protection conditions, and in the most threatening emergencies they will elect to seal the facility from all traffic, in or out. This notification is pushed out to local law enforcement and other emergency communications outlets. KTMPO is willing to assist in public messaging to

inform local motorists when such a lockdown takes place, to prevent excessive congestion that may form at the Access Control Points from backing up onto local streets and highways.

Table 9.2 – Potential Evacuation Areas (Hazardous Materials)

ID	Name	Description	Hazard	Estimated Population	Evacuation Routes	Estimated Evacuation Time
E-1	Holland	Best Butane Company, 100 Fannin St.	Butane	500 Homes, 1100 People	Hwy 95, FM 2268 (other routes to be selected based on wind conditions)	3 hours
E-2	Heidenheimer	Blue Bonnet Grain and Storage	Numerous fertilizer chemicals	100 Homes, 950 people	Hwy 36, FM 93 (other routes to be selected based on wind conditions)	3 hours
E-3	Temple, Troy, Belton, Nolanville, Harker Heights, Killeen	BNSF Railroad, cross county railroad system	Transportation of multi-hazard chemicals	Will vary by location	To be selected based on wind conditions	5 hours
E-4	Brazos Cooperative	Fertilizer	Farm chemicals	Will vary due to wind direction	FM 817 & River Road	4 hours
E-5	Belton	Brazos River Authority, 2406 E 6th, Waste Treatment Plant	Chlorine	7000 homes 14,600 people	E. 6th, IH 35 South, IH 35 North	6 hours
E-6	Holland	Chemical Supply Co., 901 Lexington	Chlorine, Calcium Hypochlorite	100 homes, 950 people	Hwy 95 (other routes to be determined at time of evacuation)	5 hours
E-7	Pendleton	Lone Star Gas Co., Bell County Pipeline Distributor	Natural and other gases	Number will be determined by location and wind direction	Refer to company pipeline maps	TBD
E-8	Pendleton	Pendleton Agri. Supply	Agri chemicals	150 Homes, 350 People	IH 35 South and North	4 hours
E-9	Pendleton Water Supply	Pendleton water supply, water distributor	Chlorine	150 Homes, 350 People	IH 35 North and South	TBD

CONCLUSION

KTMPO will continue to utilize crash data, safety performance measures, recommended strategies from the Safe Streets and Roads 4 All (SS4A) plan, and coordinate with various levels of government and planning agencies to ensure the safety and security of the region to the greatest extent possible.

CHAPTER 10

CONGESTION

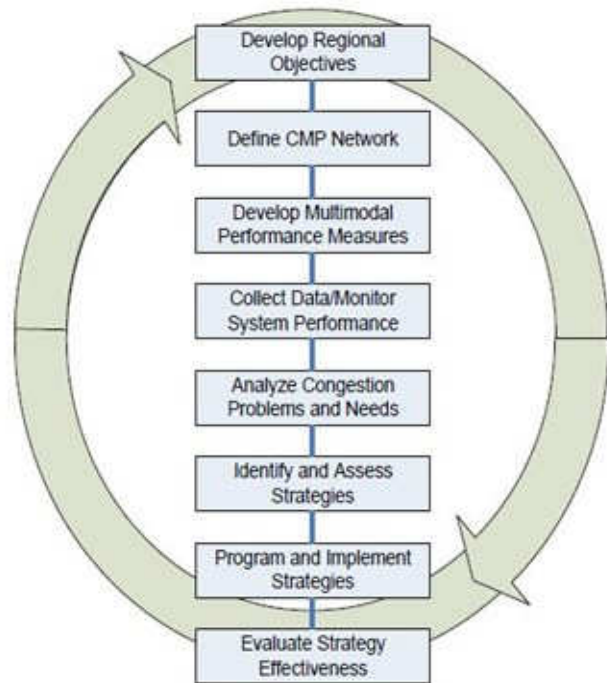


CONGESTION

The Congestion Management Process (CMP) enables MPOs and their operating agency partners to measure performance, manage data, and analyze alternative strategies in a systematic manner. The CMP also enables MPOs to base congestion management strategies on defined objectives; this process allows regions to focus on the most congested areas and achieve maximum benefit by targeting their investments.

Background

KTMPO first developed a CMP in 2013 following designation as a TMA in July 2012. In 2016, KTMPO updated the entire CMP with a revised methodology and new “most congested segments” list. The prioritized list of most congested segments in the region was refreshed in 2018 and 2020. During KTMPO’s 2022 Federal Certification Review (FCR), the CMP was found to be out of compliance with regulations since it did not consider the effects of added capacity projects on the entire system. KTMPO worked with the Texas A&M Transportation Institute in 2023 to analyze each added capacity project completed between 2016-2021 and added that analysis as an appendix to the CMP bringing the document back into compliance.



Development

The CMP has been developed based on the model and guidance included in the Federal Highway Administration’s *Congestion Management Process: A Guidebook* which includes the steps and components listed below.

1. **Develop Regional Objectives** – This step involves determining the desired outcomes of congestion management and defining regional objectives to achieve those outcomes. Some MPOs also define congestion management principles, which shape how congestion is addressed from a policy perspective.

2. **Define Network** – This step involves defining both the geographic scope and system elements (e.g., freeways, major arterials, transit routes) that will be analyzed in the CMP.
3. **Develop Performance Measures** – This step involves developing performance measures to be used to measure congestion on both a regional and local scale. These performance measures should support the regional objectives.
4. **Collect Data/Monitor System Performance** – After performance measures are defined, the next step in the process is to develop a plan to collect data that will be used to monitor system performance. Data collection is an on-going process that involves a wide range of data sources from various planning partners.
5. **Analyze Congestion Problems and Needs** – This step involves using data collected from the previous step and current analytical techniques to identify congestion issues and needs in the region.
6. **Identify and Assess Strategies** – This step involves both identifying and assessing potential strategies to mitigate congestion and may include efforts conducted as part of the development of the Metropolitan Transportation Plan (MTP), corridor studies, or project studies.
7. **Program and Implement Strategies** – This step involves answering the question, "How and when will solutions be implemented?" The step typically involves incorporating strategies in the MTP; determining funding sources; prioritizing strategies; allocating funding in the TIP; and, ultimately, implementing the strategies.
8. **Monitor Strategy Effectiveness** – This step will be tied closely to monitoring system performance and is designed to inform future decision making about the effectiveness of transportation strategies. From the lessons learned in this step, the process begins again in a continuous process of monitoring and improving congestion management processes within the region.

GOALS AND OBJECTIVES

The objectives define what the MPO wants to achieve regarding the congestion management process and are an essential part of an objectives-driven, performance-based approach to planning for congestion management. These objectives will also serve as one of the primary points of connection and coordination between the CMP and the MTP. The MPO developed

goals and objectives for the 2016 CMP Update based on existing KTMPO planning documents and national best practices. These goals and objectives guide the actions necessary to maintain a safe efficient and convenient transportation system throughout the KTMPO region. The MPO will continue working to promote projects and policies that support the stated vision, goals, and objectives of CMP. Goals and objectives can be found in **Appendix G, Congestion Management Process**.

Congestion Data Sources

The KTMPO CMP employs three main quantitative data sets (NPMRDS, INRIX, and KTMPO TDM) and some supplementary data sources including crash data (CRIS) and public surveys.

The public survey was essential in determining the location and other characteristics of regional congestion. KTMPO received 222 unique survey responses. The survey revealed that many of the respondents perceived daily congestion to be a significant problem in the region, mostly caused by roadway construction, inadequate road capacity, or ineffective traffic signals. Respondents also identified locations where congestion was the worst (Table 10.1) and provided information about each respondent’s commuting patterns and strategies to avoid congestion.

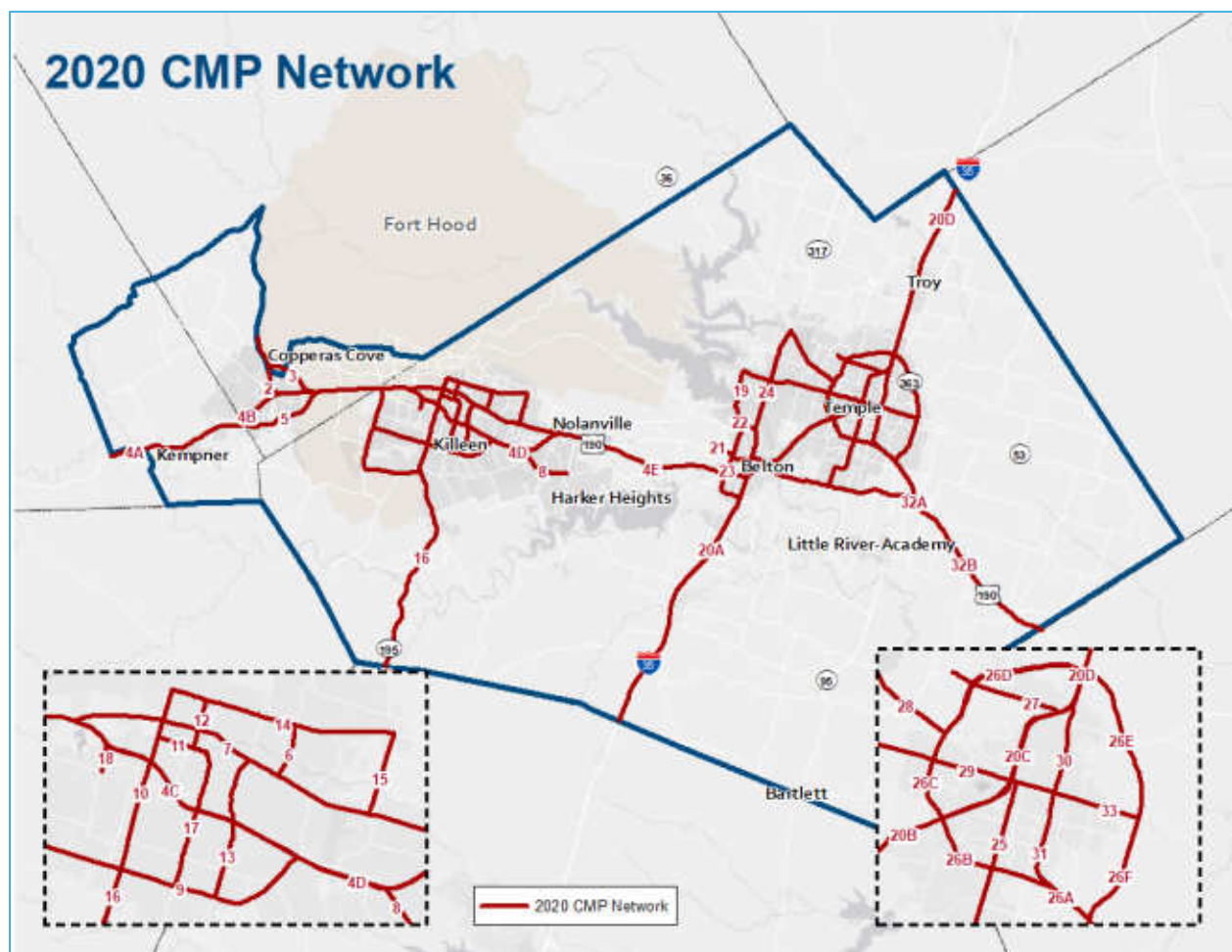
Table 10.1 – 2016 Survey Response-Worst Congestion Locations

Intersection	Segment
WS Young @ US 190	W. Adams Ave. (Temple)
FM 2410 @ US 190	WS Young Dr. (Killeen)
Trimmier Rd @ US 190	Trimmier Rd. (Killeen)

CONGESTION NETWORK

Defining a CMP Network involves specifying the geographic boundaries and transportation system components that form the basis for analysis and serve as the foundation of the congestion management process. Efforts to improve traffic conditions in the region begin on the CMP Network, and the level of congestion on this network serves as a gauge for overall congestion in the region. The updated 2020 CMP Network (Figure 10.1) reflects the region’s highest congested road segments measured by the quantitative data sets listed above.

Figure 10.1 – 2020 CMP Network



IDENTIFYING PERFORMANCE MEASURES

The Federal CMP requirements do not mandate specific performance measures that must be used during the process. Identifying appropriate congestion performance measures is up to each MPO. Although there are a wide range of performance measures available, it was determined by KTMPO that the measures selected for the 2016 CMP Update must be understandable, outcome-oriented, and supported by readily available data sources. The following performance measures were used for the 2016 CMP Update and subsequent 2018 and 2020 refreshes of the congestion hotspot priority lists.

Congestion Measures

- Travel Time Index
 - Average Daily
 - Maximum

- Delay
 - Average Daily
 - Peak Period
 - Annual Hours of Delay
- V/C Ratio (Current and Future)
 - Average Daily
 - Peak Period

Supplemental Measures

- Transit Availability
- Crash Rate
- Rear-end Crash Rate

EVALUATION CRITERIA

Using these performance measures, evaluation criteria were developed to prioritize congestion hotspots. Each segment of the CMP network was given a congestion score that represents a weighted measure of congestion as determined through the quantitative and qualitative congestion data collected for the network. Each of these criteria had different weights as shown in Figure 10.2.

Table 10.2 – 2018 & 2020 Evaluation Criteria Weighting

Criteria		Weight
Congestion Rank		25%
Congestion Rank Change		5%
Volume		20%
Safety	Crashes	15%
	Rear-End Crashes	10%
Transit		15%
School		5%
Public Input		5%
<i>Total</i>		100%

These weights were used to prioritize the congestion hotspots for both highways and arterials. This process was first used in 2016 to create a ranked list of most congested segments in the region. That list was updated in 2018 and again in 2020 using the criteria shown in Table 10.2.

PLAN MONITORING AND PERFORMANCE

The CMP is considered a “living” document and when updated data becomes available, significant time has passed, or added capacity projects are completed, a review and reprioritization of the CMP network will be needed. In 2018 and 2020, KTMPO reprioritized the CMP network segments using the quantitative data sources, performance measures, and evaluation criteria described in the previous sections. Both efforts took advantage of additional, higher-quality data to prioritize segments that were not previously analyzed and to compare changes over time in segments that had been analyzed. The result has been a more accurate and refined CMP Network.

The prioritization process for the 2018 CMP remained the same except for an added evaluation criterion: Congestion Rank Change. This evaluation criteria compared the 2016 and 2018 congestion ranking. Segments where the ranking became significantly worse (i.e., higher congestion ranking) were assigned a higher prioritization score, segments where the ranking dropped significantly were given a lower prioritization score. The same procedure was utilized in 2020 when comparing that year’s data with 2018.

Figures 10.2 and 10.3 show the 2018 and 2020 CMP Networks. The prioritized congestion hotspot rankings and a description of changes over the years can be found in **Appendix G, Congestion Management Process**.

Figure 10.2 – 2018 CMP Network

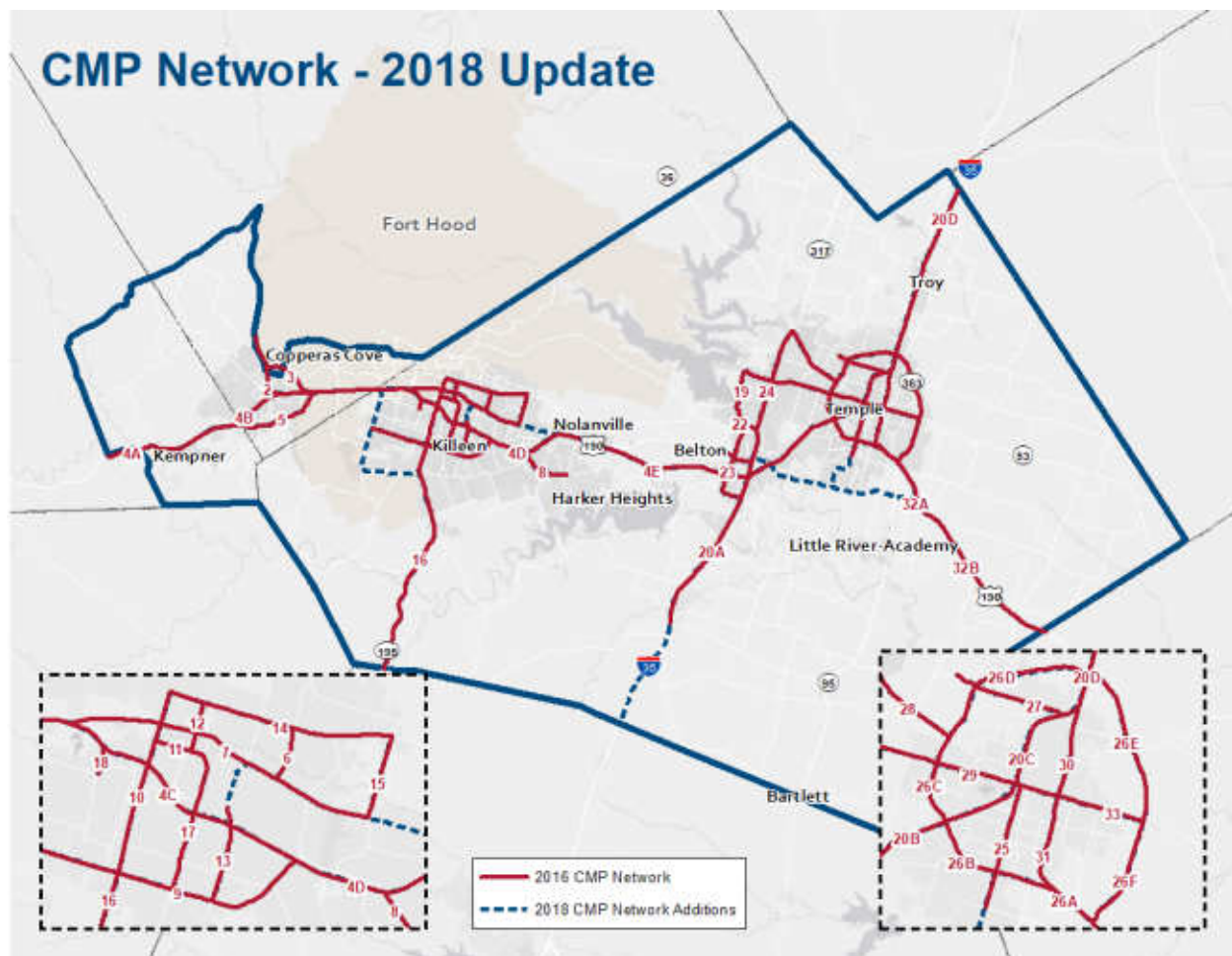
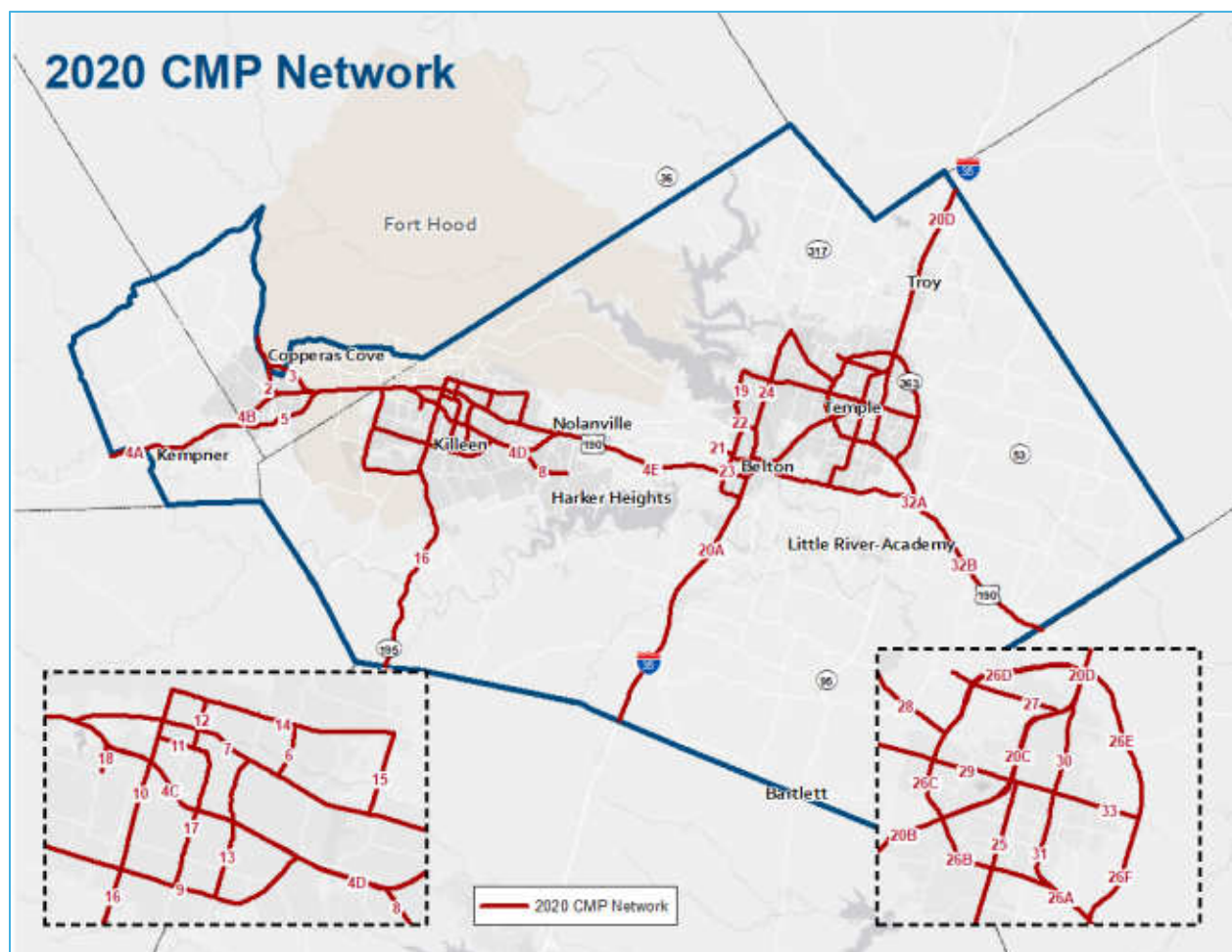


Figure 10.3 – 2020 CMP Network



Another key aspect of monitoring a congestion network and evaluating the plan's performance is to review and consider the impact of added capacity projects on the system. Since one of the main purposes of an added capacity project is to mitigate congestion, it is important that these projects are analyzed post-completion to determine their level of success. In 2023, with the assistance of the Texas A&M Transportation Institute (TTI), KTMPO reviewed all major added capacity projects completed in the region between 2016 and 2021. Staff used TTI's Congestion Management Process Assessment Tool (COMPAT) and three performance measures in the analysis: Person Hours of Delay, Planning Time Index-80th percentile, and Travel Time Index. Of the 10 projects reviewed, most saw a decrease or plateau in congestion, while several needed further monitoring to determine performance. See **Appendix G, Congestion Management Process**, for the entire analysis.

CONCLUSION

An ongoing monitoring program is one of the key steps in implementing an effective congestion performance management strategy. It not only allows KTMPO to identify emerging problems on the transportation system, but it also allows the MPO to measure the outcomes of transportation investment decisions to determine if the planning process is being effective in addressing local transportation challenges. Learning what works and does not work provides a basis for continuous improvement in the outcomes of the metropolitan planning process.

CHAPTER 11

ENVIRONMENT



ENVIRONMENT

The definition of the word “environment” varies depending upon the context, but in general, it is the aggregate of surrounding things, conditions, or influences, i.e., the surroundings. These surroundings may be natural or man-made, physical, or perceived. The environment in which we live affects our quality of life. This Chapter discusses a variety of environmental factors including air quality, climate change, planning and environmental linkages, sustainability, and context sensitive solutions.

AIR QUALITY

KTMPO is bisected by IH 35, one of the nation’s busiest interstate corridors. On average, 65,000 vehicles pass through this corridor daily. Over the last decade, the Killeen and Temple urbanized areas (UZA) have experienced considerable growth, with projections showing that the area is set to maintain and continue this boost in growth. KTMPO is also located between two major urbanized areas—the Austin UZA to the south and the Waco UZA to the north. These factors may have an impact on the air quality of the KTMPO region. As a result, KTMPO has been actively researching and monitoring air quality information to incorporate into regional planning efforts.

Air Quality Standards

The Clean Air Act, which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards. *Primary standards* provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.

Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. These standards are implemented by the EPA to assign limits to the amount of pollution that can be present in the atmosphere. Based on monitoring data, the EPA will determine whether a region complies with the NAAQS. An area may be considered in nonattainment if the thresholds are exceeded. EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants, as listed below:

Ozone Monitoring Station: Temple



- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Ground-Level Ozone
- Particulate Matter
- Sulfur Dioxide

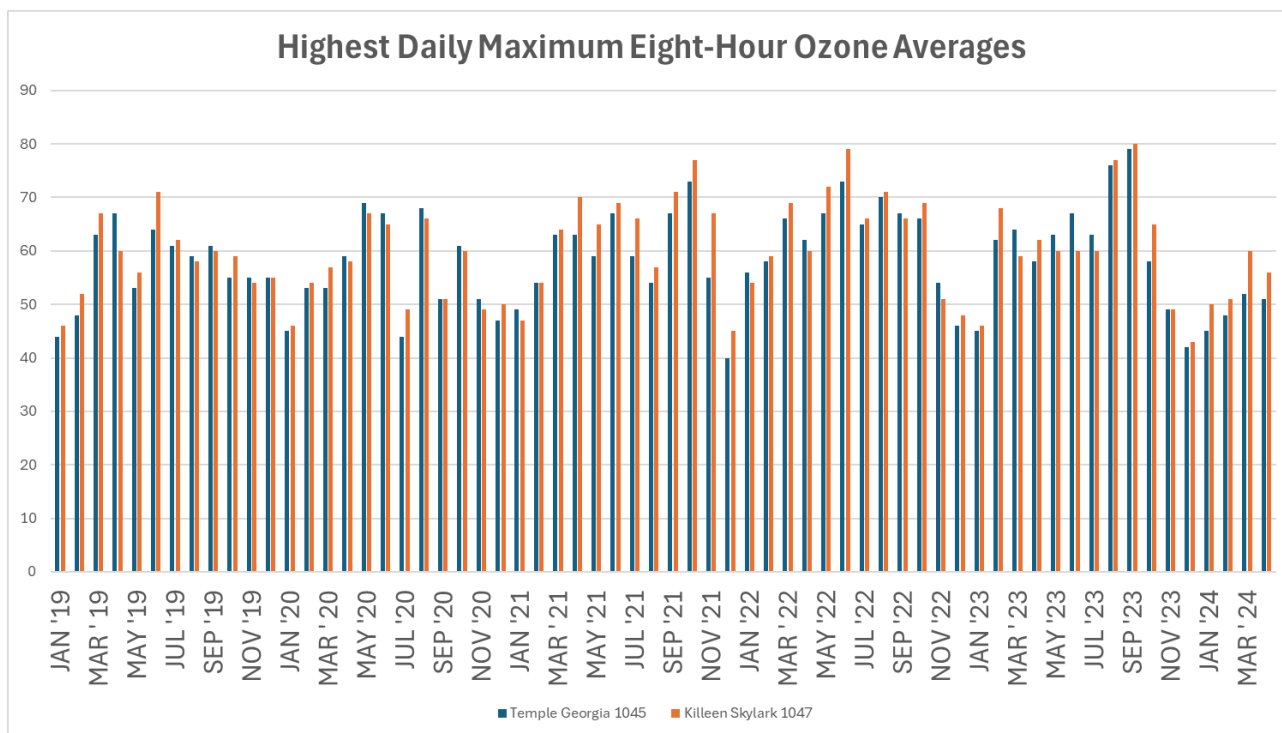
Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).

The EPA reviewed the NAAQS for ground-level ozone that were set in 2008. A reduction in the standards from 0.075 ppm to 0.060 - 0.070 ppm was under consideration. The proposed revised standards were available December 1, 2014, and the EPA finalized the revised standard of 0.070 ppm on October 1, 2015.

KTMPO Air Quality

KTMPO is currently in attainment for all air pollutants. In June 2009, an air quality monitoring station was established at Skylark Field in Killeen. A second monitoring station was established in October 2013, at West Temple Park near Georgia Avenue in Temple. These are the only monitoring stations in the KTMPO boundary and ground-level ozone is the only pollutant that is measured. Ground-level ozone forms when two types of pollutants, volatile organic compounds (VOC) and oxides of nitrogen, combine with sunlight and high temperatures. These pollutants are found in emissions from vehicles, construction equipment, lawn and garden equipment, sources that combust fuel such as industries and utilities, small industries such as gas stations and print shops, and consumer products including some paints and cleaners.

Data collected from the monitoring stations is posted on the Texas Commission on Environmental Quality (TCEQ) website and is available for viewing by the public. These values are collected hourly and averaged over 8-hour blocks. At the end of the calendar year, the highest values are recorded, and the 4th highest daily maximum 8-hour concentration is used for compliance calculations. Once three full years of data are available, the 4th highest values are averaged to determine compliance. Based on current standards, this average cannot exceed 0.070 ppm (70 ppb). If exceeded, the area is considered to be nonattainment for the ozone standard.

Figure 11.1 – Regional Ozone Monitor Data

Implications of Nonattainment

Three full years of certified data is needed to decide whether an area is in attainment with the NAAQS. A nonattainment designation may include an entire county or part of a county. Nonattainment areas must develop a plan to return to compliance within a specified time period. This time varies from 3 to 20 years, depending upon the severity of the classification. Failure to comply may trigger sanctions, such as a loss of federal transportation dollars.

The Texas State Implementation Plan (SIP) is the state's comprehensive plan to clean the air and meet federal air quality standards. The SIP must be revised to include areas (counties) classified as nonattainment. Components of a SIP Revision Include:

- Monitoring Data
- Emissions Inventory
- Photochemical Modeling
- Control Measures

The SIP revision process typically takes 3 – 4 years and is initiated upon nonattainment designation. This is an intense period of data collection and modeling; control measures and strategies are proposed and tested, and the revision is drafted. TCEQ goes through a rule making process which involves public meetings, hearings, review of public comments, etc.

TCEQ then adopts final rules and the SIP revisions. The State's SIP revision package is then submitted to the EPA for review and approval.

Metropolitan Planning Organizations (MPO's) in nonattainment areas must demonstrate that their Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) conform to the purpose of the SIP, i.e., "transportation conformity." Transportation Conformity only addresses air pollution from on-road sources which includes emissions created by cars, trucks, buses, commuter rail, and motorcycles. Federal Projects receiving FHWA/FTA funding and/or approval are also subject to Transportation Conformity. Conformity to a SIP means:

- Activities will not cause or contribute to any new violations of the NAAQS
- Activities will not increase the frequency or severity of NAAQS violations
- Activities will not delay timely attainment of the NAAQS or any required interim milestone

A conformity determination demonstrates that implementation of the MTP, TIP or project will not cause any new violations of the air quality standard, increase the frequency or severity of violations of the standard, or delay timely attainment of the standard or any interim milestone. Total projected emissions for the MTP or TIP must be within the "emissions budgets" established by the SIP. Transportation Control Measures (TCM) must be implemented in a timely fashion and State and local agencies consulted on data, modeling, and other issues. The development and implementation of TCMs are the responsibility of the MPO's participating local governments and includes both regulatory and non-regulatory measures.

Examples of TCMs include the following:

- Programs for improving public transit
- Developing high occupancy vehicle (HOV) lanes
- Employing ordinances to promote non-motor vehicle travel

MTP/TIP transportation conformity determination occurs within 12 months of a nonattainment designation. This determination is based upon the SIP; however, if SIP revisions have not been developed, conformity is determined by "Build/No Build" evaluation and comparison to determine impact of the proposed projects on air quality.

Future Steps

It is in the best interest of the KTMPO region to remain in compliance with the NAAQS and avoid a nonattainment designation. Steps/measures that will be undertaken by KTMPO are discussed below.

CMP Development and Implementation: KTMPO will continue developing and implementing the Congestion Management Process (CMP) which involves collecting data to identify congested corridors and developing strategies to alleviate congestion. Reducing vehicle emissions will help provide cleaner air for our region. Objectives may include the following:

- Promote policies and projects to reduce travel delay
- Promote awareness of alternative transportation modes
- Promote policies and projects to reduce number of crashes and crash severity
- Promote policies and programs to increase transit ridership on existing services
- Promote awareness of multi-modal facilities
- Promote carpool/shared-ride opportunities
- Consider participation in air quality improvement programs
- Encourage community land development plans that balance access to all modes of transportation

Ozone Advance Participation:

One tool that may be available to KTMPO is the Ozone Advance program. This voluntary program has the following goals:

1. Help attainment areas take action to keep ozone levels below the level of the standard to ensure continued health protection
2. Better position areas to remain in attainment
3. Efficiently direct available resources toward actions to address ozone problems quickly

The Ozone Advance program offers participating entities the opportunity to work in partnership with EPA and each other within a framework that focuses on efforts to keep their air clean. Participation in the program is not a guarantee that an area will avoid a future nonattainment designation or other Clean Air Act requirements; however, it can better position the area to comply with the requirements associated with such a designation.

Staff is working to obtain more information to educate and inform the public about air quality issues such as ozone and will work with the Policy Board to consider participation in this program. Program participation will include collaboration and support of the KTMPO

member entities to identify measures for consideration to lower ozone concentrations. These measures may include transportation demand management programs such as ridesharing, carpooling, telecommuting, transit, and bike/pedestrian travel.

Steps involved in enrolling and participating in the Ozone Advance program include the following:

1. Signup letter to EPA
2. Identify available information regarding area's ozone issue
3. Secure stakeholder participation
4. Coordinate control strategy development
5. Submit path forward letter to EPA
6. Implement control strategy per schedule and provide annual status updates
7. Apply for federal grants if desired/available

Before the KTMPO region signs up for the Ozone Advance program, preliminary steps are needed. KTMPO plans to proceed as follows:

1. Collect existing information and data to help determine pollution sources;
2. Identify stakeholders and form an air quality coalition/advisory group;
3. Focus on public education and awareness programs highlighting information about ozone and associated pollutants.

These preliminary measures will prepare the KTMPO region for participation in the program and will lead to the Signup Letter and subsequent steps. KTMPO may enroll in the Ozone Advance Program until the effective date of nonattainment designation.

TWG Participation: The Technical Working Group for Mobile Source Emissions (TWG) was formed by the Texas Department of Transportation (TxDOT) in the early 1990's. It was originally designed for a small group of technical staff to work out problems or strategies for modeling on-road mobile source emission inventories. Since then, topics have grown to include policy discussions and membership has grown considerably.

TxDOT Transportation Planning and Programming (TPP) Division has overall management responsibility for the TWG. The Texas Transportation Institute (TTI) facilitates the meetings and provides other staff support for the TWG as part of a contract with TxDOT. KTMPO has been participating in TWG meetings and will continue to do so. TWG meetings are currently held twice a year or as often as needed. Topics have included Ozone Advance Program,

State Implementation Plan (SIP), NAAQS, MOVES (Motor Vehicle Emissions Simulator) Model, CMAQ (Congestion Mitigation and Air Quality Improvement) Program, Transportation Conformity reviews, etc.

Other Data Sources: KTMPO is coordinating with TCEQ and EPA to identify sources of air quality data relevant to the KTMPO region. TCEQ's Point Source Emissions webpage provides a list of entities throughout the state who are reporting their emissions to TCEQ. Nine have been identified in Bell County and 16 from the adjacent counties to the north, east, and south. Nitrogen Oxides and Volatile Organic Compounds are among the pollutants that are reported. KTMPO is reviewing this information and will encourage these entities to participate as stakeholders as air quality issues for the region are examined. Other sources of information that will be reviewed include TCEQ's Air Modeling webpage and Air Quality Research webpage.

Public Education: Educating the public regarding air quality issues and obtaining public support is a key factor for any program to be successful. KTMPO will continue to review data from the ozone monitors at Skylark field in Killeen and West Temple Park (Georgia Avenue) in Temple. Information will be provided on the KTMPO website to educate the public regarding ozone and other pollutants and inform the public of ways to reduce pollutant levels and improve air quality.

CLIMATE CHANGE

Extreme weather events can damage transportation networks and affect air quality. Extreme heat contributes to high ozone levels which can be harmful to our health and affect our ability to breathe. Heat waves and flooding can be particularly taxing on the road infrastructure. Higher temperatures can cause road pavement to soften and expand resulting in potholes, buckling of roads, and stress on bridge joints. Heavy rains and flooding can disrupt traffic, delay construction activities, and weaken or wash out the soil and culverts that support roads and bridges. These extremes in weather can shorten the life expectancy of the roadway, resulting in a need for more frequent maintenance and repairs.

High temperatures can also affect railways causing rail tracks to expand and buckle. Heavy rains can cause delays and disrupt service, and flooding can damage the rail lines resulting in repairs and/or replacement of the line and possible relocation to avoid future flooding events.

Weather extremes can also impact air travel. Extreme heat may result in cargo restrictions, flight delays, and cancellations. Heavy rains and flooding can cause disruptions by delaying service and forcing airports to close. Air related infrastructure, including runways, may also be damaged by flooding and higher temperatures.



According to FHWA, “Many state DOTs and MPOs are recognizing the role that transportation policies and investments play in contributing to the emissions of GHGs and conversely, the potential impact of climate change on transportation systems.” Promoting the reduction of CO₂ gases and other pollutants that make up “greenhouse gases” (GHG) is in the best interest of our region to extend the life of the infrastructure and ensure a healthy air supply for our population.

KTMPO is researching this issue to collect information that will promote awareness of the damaging effects of GHG and encourage practices to reduce these gases. These efforts will include publishing educational material on the KTMPO website and discussions with the Transportation Planning Policy Board to enlist support of future programs to promote a healthy environment and lengthen the lifespan of the transportation infrastructure.

In addition, through CTCOG, KTMPO is coordinating with the Homeland Security Advisory Council to assimilate information from Emergency Management Plans for counties within and adjacent to the MPO boundary. This information includes evacuation routes which may be needed during extreme weather events such as flooding, hurricanes, etc. These routes should be given top priority with regard to maintenance.

Information Resources

Federal Highway Administration (FHWA) is a resource KTMPO may use in assimilating information on climate change. FHWA supports transportation and climate change research and dissemination of information, technical assistance to stakeholders, and coordination within USDOT and other Federal agencies. FHWA is also involved in climate change initiatives with the USDOT Center for Climate Change and Environmental Forecasting and other partners. The FHWA website provides information on FHWA research, publications, and resources related to climate change science, policies, and actions along

with current state and local practices in adapting to climate change and reducing GHG emissions. The following areas of focus have been identified by FHWA and are discussed in detail on the following page:

Mitigation: Identifying strategies that reduce GHG emissions from transportation sources;

Adaptation: Preparing for the impacts of global climate change on the nation's transportation infrastructure and systems;

Sustainability: Ensuring that balanced choices are made among environmental, economic, and social values that will benefit current and future road users;

Energy: Promoting the use of alternative and renewable fuels, and vehicle technologies to reduce oil dependence, vehicle pollution and energy use.

Mitigation Strategies:

- Improve system and operational efficiencies by optimizing the design, construction, operation, and use of transportation networks. The strategies range from anti-idling ordinances to traffic management to congestion pricing. The objective of this group of strategies is to reduce the energy use and GHG emissions associated with a given unit of passenger or freight travel (e.g., person-miles, vehicle-miles, or ton-miles of travel).
- Reduce travel activity by reducing growth in vehicle-miles traveled. The objective of this group of strategies is to influence travelers' activity patterns, thereby reducing total travel, shifting travel to more efficient modes, increasing vehicle occupancy, or otherwise taking actions that reduce energy use and GHG emissions associated with personal travel.
- Introduce low-carbon fuels. The objective of this group of strategies is to develop and introduce alternative fuels that have lower carbon content and generate fewer transportation GHG emissions. These alternative fuels include ethanol, biodiesel, natural gas, liquefied petroleum gas, synthetic fuels, hydrogen, and electricity.
- Increase fuel efficiency by advancing and bringing to market advanced engine and transmission designs, lighter-weight materials, improved aerodynamics, and reduced rolling resistance. The objective of this group of strategies is to use less fuel and generate fewer GHG emissions.

Adaptation:

- Planning, designing, constructing, operating, or maintaining transportation infrastructure while incorporating consideration of climate changes. The impacts of climate change should be considered as transportation systems are planned and as transportation projects are developed. Highways are an integral part of the broader context of sustainable development.

Sustainability:

- A sustainable highway should satisfy the functional requirements of societal development and economic growth while striving to enhance the natural environment and reduce consumption of natural resources. Significant advances are being made to improve the overall efficiency of the energy sector, particularly with regards to fuel economy. However, further fuel savings is needed. The traveling public is increasingly investing in alternative fuels, plug-in hybrid, and other electric vehicle (EV) technologies. States and localities in the U.S. are beginning to build the necessary infrastructure to support the use of these fuels and vehicle technologies.

Energy:

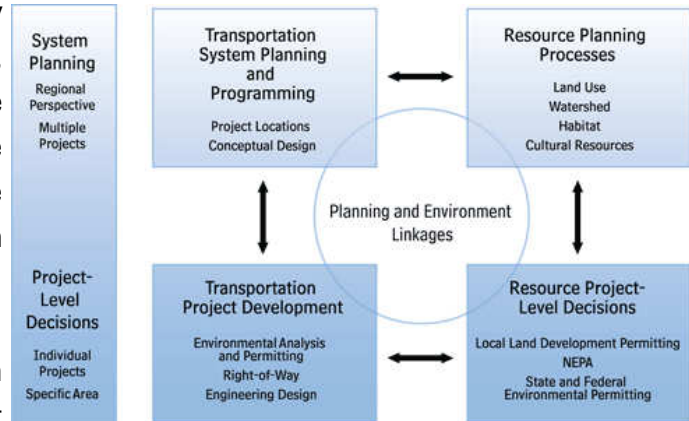
- KTMPO will use these resources and others to promote awareness of climate change and the impact it may have on the transportation network, as well as methods and strategies to mitigate these impacts.

PLANNING AND ENVIRONMENTAL LINKAGES (PEL)

When planning transportation projects, it is important to consider the effect a project may have on the environment. Environmental issues should be considered early in the transportation planning process and should focus on the following principles: 1) avoid; 2) minimize; and 3) mitigate. When possible, projects should avoid environmentally sensitive areas and natural resources. If avoidance is not possible then efforts should be made to minimize adverse effects on the environment. When environmental impacts are known, mitigation efforts may be necessary and involve implementing projects or programs to offset the known impacts.

By including environmental analysis early in the project planning stage, environmental, regulatory, and resource agencies are actively involved from the beginning which will help to streamline environmental reviews that occur later in the process.

Potential problems may be identified in the early stages which may result in cost savings and more efficient project delivery times.



When considering environmental impacts of transportation planning, it is important to include the following:

Define and Identify Environmentally Sensitive Areas and Natural Resources

It is important to define “environmentally sensitive areas” and “natural resources” within a region. Once defined, these areas can then be identified and mapped. Defining and identifying these areas will involve coordination with various agencies and groups and review of local conservation plans and programs.

Evaluate Impact

When projects are proposed it is important to determine what impact, if any, the project may have on the environment. By obtaining geospatial data of the sensitive areas and overlaying potential infrastructure projects over them in GIS, potential impacts can be easily assessed from a geographic perspective.

Coordinate with Agencies

As previously stated, it is important to communicate with environmental agencies and groups, as well as TxDOT Environmental Coordinators, early in the planning process to identify potential conflicts and evaluate possible action

Environmentally Sensitive Areas

KTMPO actively researches the geographic location of environmentally sensitive areas and natural resources in the region, as depicted in Figure 11.2. The identification of these areas began with the established statewide datasets from state agencies and has been augmented with local data from member entities. The southwestern portion of the KTMPO region has the most concentration of sensitive areas, largely due to the watersheds and recharge zones for two major aquifers. Detailed information on the identified sensitive areas is discussed below.



Natural or Recreational Areas: A database is maintained of natural or recreational areas in the region, consisting of data from a variety of sources, including Texas Parks and Wildlife, TxDOT, and local entities.

Archaeological Sites: The Gault archaeological site is in the KTMPO region, west of Salado and south of Stillhouse Hollow Lake. Considered one of the major excavation sites in Texas, it is receiving international attention because of the wealth of new information on Clovis culture that is being discovered.

The MPO coordinates with TxDOT on issues related to identifying Native American tribal lands and potential artifact locations. Maps are available depicting historic tribal territories in Texas and KTMPO has access to a tribal representative database to obtain more information on tribal lands within the KTMPO region. The available maps indicate the KTMPO region is within historic tribal territories for two tribes—the Comanche Nation of Oklahoma and the Tonkawa Tribe of Oklahoma. KTMPO will continue coordination efforts to determine whether the MPO region lies within historic tribal territories of other Indian tribal groups with interests in Central Texas and will contact these groups as needed.

Historical Structures or Areas: Data for the National Register of Historic Places was obtained from the National Park Service for structures and districts, and additional local historic data has been received. These historic places are listed below in Table 11.2.

Environmental Justice Communities of Concern (EJCOC): EJCOC areas were discussed in Chapter 2, Demographics, and are areas containing a higher percentage of low income or

minority groups. The purpose of an environmental justice review is to ensure that federally funded transportation projects do not adversely impact minority populations and low-income populations.

Landfills: The identification of closed landfills and waste disposal sites is important for new transportation projects, as soil testing may indicate poor load-bearing qualities, unsupportive of the weight of the roadway and heavy vehicle traffic. In this case, a costly and time-consuming process of removing the buried waste may be necessary. Hazards of excavating a previously closed landfill include contaminated water and the release of disease-causing pathogens to the surrounding area.

Watersheds: Of the Brazos River Basin, the watersheds present in the planning area include the Lampasas, Leon, Little, Lower Brazos-Little Brazos, Cowhouse, and San Gabriel watersheds. Though not depicted on the map, KTMPO has geospatial data detailing the location of the watersheds for use in analysis. Particularly sensitive, the Nolan Creek watershed, a part of the Leon River watershed, covers a large portion of the Killeen urbanized area and Little Nolan Creek from confluence with Nolan Creek/South Nolan Creek upstream has been determined by TCEQ to have elevated bacteria concentrations. These segments are classified as 5b, indicating that a review of the water quality standards for this water body will be conducted before a total maximum daily load (TMDL) will be scheduled.



Aquifers: The Trinity Aquifer underlies all of the planning area, while the Edwards Aquifer underlies the south-central portion. In an aquifer recharge zone, or outcrop, water from precipitation and/or storm water runoff may easily enter the aquifer system. If the runoff carries pollutants, these pollutants will also enter the aquifer system. Structural damage to the aquifer is also a concern as this could affect the ability of an aquifer to recharge.

The Edwards Aquifer is a karst limestone aquifer consisting of porous, honeycombed, rock in which water easily moves through. In the recharge zone where the aquifer is exposed at the surface, the Edwards is highly faulted and fractured allowing large quantities of water to flow into the aquifer with little if any filtration. As a result, the Edwards aquifer recharge zone is considered particularly sensitive. In the downdip area of an aquifer, the water-bearing layers underlie other layers and are under artesian pressure. Construction projects in these areas should be carefully planned and monitored to ensure there is no loss of artesian

pressure which can result in declining spring flows.

It should be noted that both the Trinity and Edwards BFZ aquifers are considered major aquifers by the Texas Water Development Board. Within the KTMPO planning boundary, there are several other groundwater resources that are smaller in extent and capacity and are not classified as major or minor aquifers. These other groundwater resources supply most water wells in the eastern half of the KTMPO area and are relatively close to the surface, i.e., generally less than 100 feet below the surface.

Endangered species: While the KTMPO region is the home to several endangered species, the U.S. Fish and Wildlife Service has not identified any critical habitats in the region; therefore, there are currently no specific areas designated as essential for the conservation of an endangered species. Both U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife maintain a county level inventory of species of special concern in Texas.

Table 11.1 depicts the rare, threatened, or endangered species that are present in Bell County, the largest portion of the KTMPO planning area. The most well-known endangered species present include the black-capped vireo, the golden-cheeked warbler, and the whooping crane. Recently, there has been much discussion regarding the Salado Springs salamander. On February 24, 2014, the USFWS officially listed the Salado Springs salamander as threatened; critical habitat has not been designated at this time.



Table 11.1 – Rare, Threatened, or Endangered Species in KTMPO Region

Rare, Threatened, or Endangered Species in KTMPO Region				
Taxon	Scientific Name	Common Name	Federal Status	State Status
Amphibians	<i>Eurycea chisholmensis</i>	Salado Springs salamander	LT	T
Amphibians	<i>Anaxyrus woodhousii</i>	Woodhouse's toad		
Amphibians	<i>Pseudacris streckeri</i>	Strecker's chorus frog		
Birds	<i>Plegadis chihi</i>	white-faced ibis		T
Birds	<i>Mycteria americana</i>	wood stork		T
Birds	<i>Haliaeetus leucocephalus</i>	bald eagle		
Birds	<i>Buteo albonotatus</i>	zone-tailed hawk		T
Birds	<i>Laterallus jamaicensis</i>	black rail	T	T
Birds	<i>Grus americana</i>	whooping crane	LE	E
Birds	<i>Charadrius melodus</i>	piping plover	LT	T
Birds	<i>Charadrius montanus</i>	mountain plover		
Birds	<i>Calidris canutus rufa</i>	rufa red knot	LT	T
Birds	<i>Leucophaeus pipixcan</i>	Franklin's gull		
Birds	<i>Athene cunicularia hypugaea</i>	western burrowing owl		
Birds	<i>Anthus spragueii</i>	Sprague's pipit		
Birds	<i>Vireo atricapilla</i>	black-capped vireo		
Birds	<i>Setophaga chrysoparia</i>	golden-cheeked warbler	LE	E
Birds	<i>Calamospiza melanocorys</i>	lark bunting		

Birds	<i>Calcarius ornatus</i>	chestnut-collared longspur		
Fish	<i>Notropis buccula</i>	smalleye shiner	LE	E
Fish	<i>Micropterus treculii</i>	Guadalupe bass		
Fish	<i>Agonostomus monticola</i>	mountain mullet		
Mammals	<i>Myotis velifer</i>	cave myotis bat		
Mammals	<i>Perimyotis subflavus</i>	tricolored bat		
Mammals	<i>Eptesicus fuscus</i>	big brown bat		
Mammals	<i>Lasiurus borealis</i>	eastern red bat		
Mammals	<i>Lasiurus cinereus</i>	hoary bat		
Mammals	<i>Lasiurus intermedius</i>	northern yellow bat		
Mammals	<i>Nyctinomops macrotis</i>	big free-tailed bat		
Mammals	<i>Sylvilagus aquaticus</i>	swamp rabbit		
Mammals	<i>Geomys texensis texensis</i>	Llano pocket gopher		
Mammals	<i>Mustela frenata</i>	long-tailed weasel		
Mammals	<i>Spilogale putorius</i>	eastern spotted skunk		
Mammals	<i>Conepatus leuconotus</i>	western hog-nosed skunk		
Mammals	<i>Puma concolor</i>	mountain lion		
Reptiles	<i>Graptemys versa</i>	Texas map turtle		
Reptiles	<i>Terrapene carolina</i>	eastern box turtle		
Reptiles	<i>Terrapene ornata</i>	western box turtle		
Reptiles	<i>Apalone mutica</i>	smooth softshell		
Reptiles	<i>Ophisaurus attenuatus</i>	slender glass lizard		
Reptiles	<i>Phrynosoma cornutum</i>	Texas horned lizard		T

Reptiles	Nerodia paucimaculata	Concho water snake		
Reptiles	Thamnophis sirtalis annectens	Texas garter snake		
Reptiles	Crotalus horridus	timber (canebrake) rattlesnake		
Reptiles	Sistrurus tergeminus	western massasauga		
Crustaceans	Caecidotea bilineata			
Insects	Rhadine reyesi			
Insects	Texamaurops reddelli	Kretschmarr Cave mold beetle	LE	
Insects	Batrisodes dentifrons			
Insects	Batrisodes fanti			
Insects	Batrisodes incispes			
Insects	Batrisodes pekinsi			
Insects	Batrisodes feminiclypeus			
Insects	Batrisodes gravesi			
Insects	Batrisodes wartoni			
Insects	Tortopus circumfluus			
Insects	Bombus pensylvanicus	American bumblebee		
Insects	Amblycorypha uhleri			
Insects	Taeniopteryx starki	Texas willowfly		
Arachnids	Tartarocreagris hoodensis			
Arachnids	Cicurina coryelli			
Arachnids	Cicurina caliga			
Arachnids	Cicurina hoodensis			

Arachnids	Cicurina mixmaster			
Arachnids	Cicurina troglobia			
Arachnids	Tyrannochthonius muchmoreorum			
Mollusks	Potamilus streckersoni	Brazos heelsplitter		T
Mollusks	Cyclonaias petrina	Texas pimpleback	PE	T
Mollusks	Fusconaia mitchelli	false spike	PE	T
Mollusks	Truncilla macrodon	Texas fawnsfoot	PT	T
Mollusks	Marstonia comalensis			
Mollusks	Phreatodrobia micra			
Plants	Matelea edwardsensis	plateau milkvine		
Plants	Echinocereus coccineus var. paucispinus	Texas claret-cup cactus		
Plants	Cuscuta exaltata	tree dodder		
Plants	Argythamnia aphoroides	Hill Country wild- mercury		
Plants	Croton alabamensis var. texensis	Texabama croton		
Plants	Astragalus reflexus	Texas milk vetch		
Plants	Astragalus wrightii	Wright's milkvetch		
Plants	Dalea hallii	Hall's prairie clover		
Plants	Pedimelum cyphocalyx	turnip-root scurfpea		
Plants	Pedimelum reverchonii	Reverchon's scurfpea		
Plants	Lythrum ovalifolium	Plateau loosestrife		
Plants	Clematis texensis	scarlet leather-flower		

Plants	Crataegus viridis var. glabriuscula	Sutherland hawthorn		
Plants	Prunus minutiflora	Texas almond		
Plants	Agalinis densiflora	Osage Plains false foxglove		
Plants	Styrax platanifolius ssp. platanifolius	sycamore-leaf snowbell		
Plants	Carex edwardsiana	canyon sedge		
Plants	Hexalectris nitida	Glass Mountains coralroot		
Plants	Festuca versuta	Texas fescue		

Table 11.2 – National Register of Historical Places in the KTMO Region

National Register of Historic Places				
County	City	Name	Facility	Address
Bell	Salado	Anderson House and Store	Historic House	Main St.
Bell	Salado	Armstrong-Adams House	Historic House	Main St. and Thomas Arnold Rd.
Bell	Belton	Austin, F. K. and Mary, House	Historic House	702 N. Penelope St.
Bell	Belton	Baggett, Ele, House	Historic House	1019 N. Main St.
Bell	Belton	Baggett, Silas and Ellen, House	Historic House	1018 N. Main St.
Bell	Salado	Baines, George Washington, House	Historic House	Royal St.
Bell	Salado	Barbee-Berry Mercantile Building	Historic Building	Main and Royal St.
Bell	Temple	Barclay-Bryan House	Historic House	804 S. 25th St.
Bell	Bartlett	Bartlett Commercial Historic District	Historic District	E. Clark St.
Bell	Salado	Barton House	Historic House	Main St.
Bell	Belton	Baylor Female College Historic District	Historic District	Bounded by King, College and W. Ninth Sts.
Bell	Belton	Beamer, William, House	Historic House	1202 S. Beal St.
Bell	Belton	Bell County Courthouse	Courthouse	Public Sq.
Bell	Belton	Belton Academy	School	404 E. Ninth St.
Bell	Belton	Belton Commercial Historic District	Historic District	Roughly bounded by Nolan Valley Rd., Penelope St., and Nolan Creek

Bell	Belton	Belton Farmers' Gin Coop	Cultural Monument	219 S. East Ave., Building 4
Bell	Belton	Belton Standpipe	Cultural Monument	NW of jct. of TX 317 & IH 35
Bell	Belton	Belton Yarn Mill	Cultural Monument	805 E. Fourth St.
Bell	Belton	Birdwell, T. Hamp and Beulah, House	Historic House	503 N. Wall
Bell	Belton	Burford, R. F. and Lena, House	Historic House	920 N. Penelope St.
Bell	Belton	Carnegie Public Library	Historic Library	201 N. Main St.
Bell	Belton	Cornelison House	Historic House	1102 N. Pearl St.
Bell	Salado	Davis House	Historic House	Main St.
Bell	Belton	Elliott, Joel, House	Historic House	716 N. College St.
Bell	Temple	Ferguson House	Historic House	518 N. 7th St.
Bell	Belton	Ferguson, James A., House	Historic House	1123 N. Beal St.
Bell	Belton	Ferguson, James E. and Miriam, House	Historic House	604 N. Penelope St.
Bell	Belton	First Christian Church Parsonage	Historic Church	608 N. Penelope St.
Bell	Salado	Fowler House	Historic House	Main St.
Bell	Belton	Frazier, Dr. Jacob Moore, House	Historic House	618 N. Wall
Bell	Florence	Gault Archaeological Site	Archeological Site	Address Restricted
Bell	Belton	Gray Rental Houses	Historic House	702--708 N. Pearl St.
Bell	Salado	Halley, Capt. Robert, House	Historic House	Main St.
Bell	Belton	Hammersmith, John P., House	Historic House	520 S. Main St.
Bell	Belton	Harris, Capt. Andrew Jackson, House	Historic House	1001 W. Tenth St.
Bell	Salado	Hendrickson-Caskey House	Historic House	Center Circle
Bell	Killeen	High View	Historic District	731 Wolf St.
Bell	Belton	House at 402 N. East St.	Historic House	402 N. East St.
Bell	Belton	House at 730 N. Beal St.	Historic House	730 N. Beal St.
Bell	Belton	Hudson, Dr. Taylor, House	Historic House	324 N. Main St.
Bell	Belton	James House	Historic House	805 N. Beal St.
Bell	Killeen	Killeen Downtown Historic District	Historic District	Roughly bounded by Ave. A, Santa Fe Plaza, N. 4th & N. 8th Sts.
Bell	Killeen	Killeen High School	School	101 N. College St.
Bell	Belton	Kinchion, L. B., House	Historic House	702 S. Pearl St.
Bell	Temple	Kyle Hotel	Historic Inn	111 Main St.
Bell	Belton	Lee, Walter J., House	Historic House	804 N. College St.

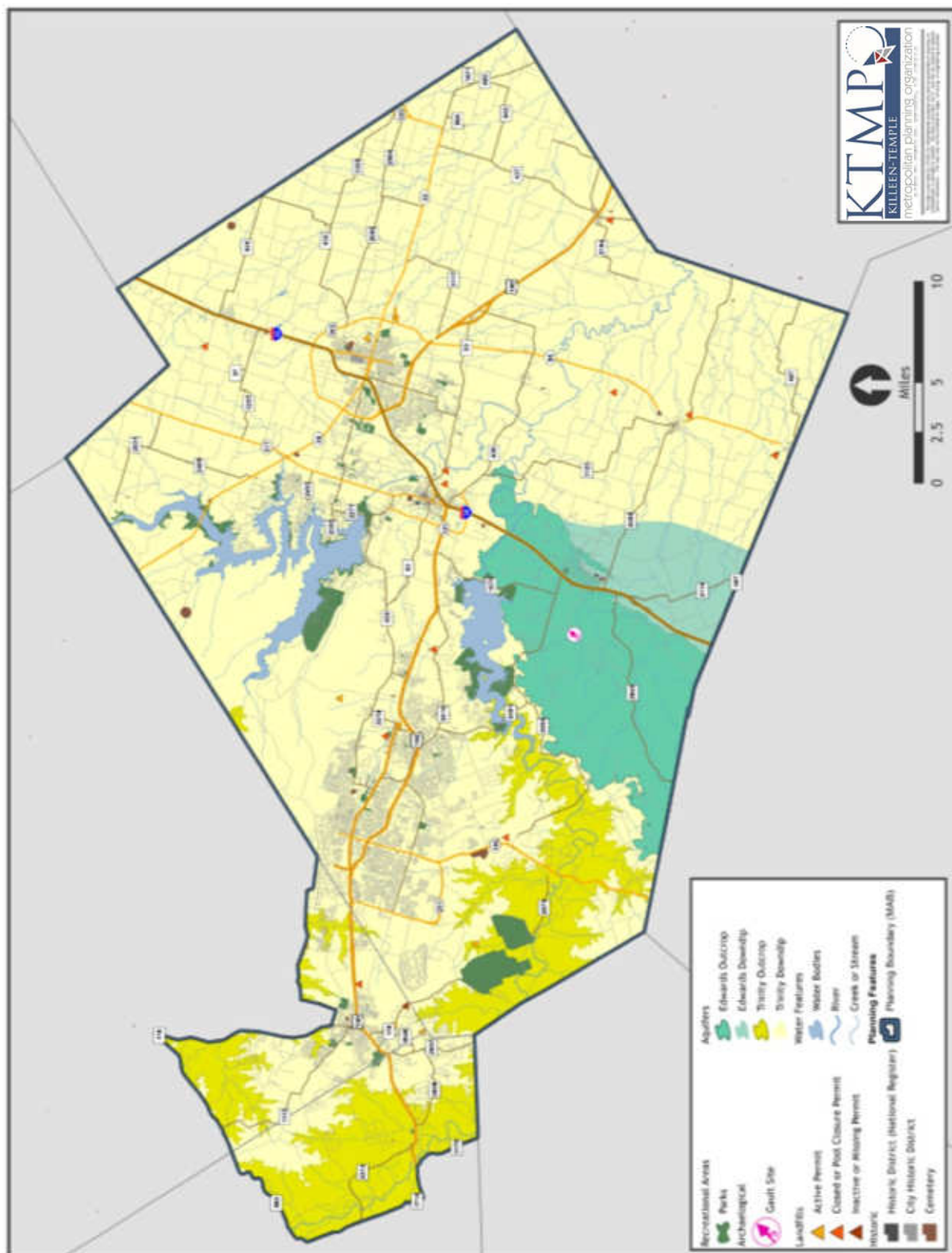
Bell	Belton	McWhirter, George and Martha, House	Historic House	400 N. Pearl St.
Bell	Belton	Means, V. R., House	Historic House	609 E. 14th St.
Bell	Belton	Miller, J. Z., House	Historic House	804 N. Penelope St.
Bell	Belton	Miller-Curtis House	Historic House	1004 N. Main St.
Bell	Belton	Missouri, Kansas & Texas Railroad Bridge at the Leon River	Historic Bridge	Across the Leon R. at Taylor's Valley Rd.
Bell	Temple	Missouri, Kansas, and Texas (MK&T-Katy) Railway Passenger Depot	Historic Depot	620 Central Ave.
Bell	Belton	Morey House	Historic House	328 N. Main St.
Bell	Belton	Mount Zion United Methodist Church	Historic Church	218 Alexander St.
Bell	Belton	Naismith, Robert, House	Historic House	440 N. Penelope St.
Bell	Salado	Norton-Organ House	Historic House	Main St.
Bell	Belton	Old St. Luke's Episcopal Church	Historic Church	401 N. Wall St.
Bell	Belton	Potts, Arthur, House	Historic House	445 N. Wall
Bell	Salado	Robertson, Col. Elijah Sterling Clack, Plantation	Historic Plantation	IH 35
Bell	Salado	Rose, Maj. A. J., House	Historic House	Wm. Rose Way and Royal St.
Bell	Salado	Salado College Archeological Site	Archeological Site	Address Restricted
Bell	Salado	Salado United Methodist Church	Historic Church	Thomas Arnold Rd. and Church St.
Bell	Salado	Stagecoach Inn	Historic Inn	Main and Front Sts.
Bell	Salado	Stagecoach Inn (Boundary Increase)	Historic Inn	401 S. Stagecoach Rd.
Bell	Belton	State Highway 53 Bridge at the Leon River	Historic Bridge	FM 817, 2.5 mi. E of jct. with FM 93
Bell	Temple	Temple Commercial Historic District	Historic District	Roughly bounded by French Av., 3rd St., Av. D & 6th St.
Bell	Salado	Tenney, Levi, House	Historic House	Pace Park Dr.
Bell	Salado	Twelve Oaks	Historic House	Center Circle
Bell	Salado	Tyler House	Historic House	Main St.
Bell	Belton	Venable, W. J., House	Historic House	426 N. Wall
Bell	Salado	Vickrey House	Historic House	Main St.
Bell	Belton	Ware, H. A. and Helena, House	Historic House	401 N. Pearl St.
Bell	Salado	White-Aiken House	Historic House	IH 35
Bell	Temple	Wilson, Ralph, Sr., and Sunny, House	Historic House	1714 S. 61st. St.
Coryell	Copperas Cove	Copperas Cove Stagestop and Post Office	Historic Post Office	1.6 mi. SW of Copperas Cove off U.S. 190

Coryell	Gatesville	Coryell County Courthouse	Courthouse	Public Sq.
Coryell	Gatesville	Leon Street Bridge at the Leon River	Historic Bridge	Leon St. at Leon R.
Coryell	Moody	Mother Neff State Park and F. A. S. 21-B(1) Historic District	Historic District	Jct. of TX 236 and the Leon R.
Lampasas	Lampasas	Lampasas Colored School	School	514 College St.
Lampasas	Lampasas	Lampasas County Courthouse	Courthouse	Bounded by S. Live Oak, E. 4th, S. Pecan, and E. 3rd Sts.
Lampasas	Lampasas	Lampasas Downtown Historic District	Historic District	Roughly bounded by Second St., Pecan St., Fourth St., and Chestnut St.
Lampasas	Lampasas	Markward Homestead	Historic House	101 East FM 580
Lampasas	Lampasas	Phillips and Trosper Buildings	Historic Building	408 and 410 E. Third St.
Lampasas	Lometa	US 190 Bridge at the Colorado River	Historic Bridge	US 190 at the Lampasas and San Saba County line

Evaluate Impacts

The evaluation of potential impacts of new transportation projects on sensitive areas helps prevent damage to the natural or historical environment of the region. Proposed transportation projects that intersect with any of the identified environmentally sensitive areas are shown on Figure 11.2. The awareness of the potential effects on these sensitive areas early in the planning process ensures that efforts and resources are not spent towards a project only to fail during the National Environmental Policy Act (NEPA) process, costing more resources as the project is changed or refined. It should be noted that the entire KTMO region lies within one watershed or another, so this factor was not considered in listing a project.

Figure 11.2 – Environmental Sensitive Areas



Coordination with Agencies

KTMPO initially coordinated with statewide agencies in the identification of areas of environmental sensitivity, followed by outreach to local entities. These agencies and entities are shown below. An inventory of groups and agencies with interests in the KTMPO region will be maintained and augmented for use in coordination efforts as more groups are discovered and participate.

- Environmental Protection Agency
- Texas Commission on Environmental Quality
- Texas Historical Commission
- U.S. Fish & Wildlife Service
- Texas Parks & Wildlife
- Texas Water Development Board
- Clearwater Underground Water Conservation District
- City of Belton
- City of Temple
- City of Killeen
- City of Harker Heights
- City of Copperas Cove

Environmental Mitigation Activities

KTMPO will continue coordination with appropriate entities to identify environmentally sensitive areas and develop mitigation activities. To the extent possible, transportation projects should minimize off-site disturbance in sensitive areas and develop strategies to preserve air and water quality, limit tree removal, minimize grading and other earth disturbance, provide erosion and sediment control, and limit noise and vibration. Where feasible, alternative designs or alignments may be developed that would lessen the project's impact on environmentally sensitive areas. Federal Regulation 40 CFR 1508.20 suggests that typical steps for mitigation include the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance

operations during the life of the action.

- Compensating for the impact by replacing or providing substitute resources or environments.

Effective mitigation starts at the beginning of the environmental process and should be included as an integral part of the alternatives development and analysis process. There are a variety of possible mitigation activities and measures that can be considered when dealing with environmental impacts, most of which should be considered during the project development process. The environmental mitigation strategies and activities shown on the following page are intended to be regional in scope and may not necessarily address potential project-level impacts. As the location and magnitude of the proposed projects are determined, appropriate project level mitigation measures will be developed in consultation with appropriate entities.

Potential Environmental Mitigation Activities

Resource	Mitigation Measures
Natural/Recreational Areas	Avoidance; minimization; replacement property for open space easements to be of equal fair market value and of equivalent usefulness; design exceptions and variances; environmental compliance monitoring.
Archaeological Sites/Historic Structures and Areas	Avoidance; minimization; landscaping for historic properties; preservation in place of excavation for archeological sites; Memoranda of Agreement with the Department of Historic Resources; design exceptions and variances; environmental compliance monitoring.
EJCOC	Impact avoidance or minimization; context sensitive solutions for communities (appropriate functional and/or aesthetic design features).
Landfills	Avoidance; minimization; design exceptions and variances; environmental compliance monitoring.
Watersheds/Aquifers	Avoidance; minimization; design exceptions and variances; environmental

	compliance monitoring.
Endangered Species	Avoidance; minimization; time of year restrictions; construction sequencing; design exceptions and variances; species research; species fact sheets; Memoranda of Agreements for species management; environmental compliance monitoring.

SUSTAINABILITY

Sustainability is defined as the capacity to maintain, support, or endure. Since the 1980's,

sustainability has been used more in the sense of human sustainability on planet Earth and this has resulted in a definition related to the concept of sustainable development

as follows: sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (United Nations, 1987).



Incorporating Sustainability into the Planning Process

Sustainable transportation is the process of designing transportation systems to improve livability and mobility by simultaneously meeting social, environmental, and economic goals. It is not an end state, but it is an interlocking series of processes, guided by a collection of principles to meet the needs of present and future members of the community by conserving natural resources. KTMPO may choose any combination of accepted best practices to implement sustainability principles:

Triple Bottom Line – Considering the Social, Environmental and Economic impacts equally.

Life Cycle Assessment – Considering environmental impacts over the life of a project.

Project Scoring and Selection – Placing higher value on projects or methods that combine a positive effect on quality of life with minimal impact on the natural environment.

Performance Measures – Collecting data from multiple sources related to the Triple Bottom Line. Public Surveys, Air Quality Monitoring, Cost Analysis, and other metrics may be used.

INVEST – Employing the web-based tools developed by FHWA:
www.sustainablehighways.org.

Congestion Management – implementing a broad policy to improve mobility and reduce emissions, resulting in a higher quality of life for our region.

Materials Selection – Seeking ways to use recycled materials during construction and maintenance and eliminate use of non-renewable resources.

Energy Efficiency – Developing projects to maximize efficient travel in terms of time and fuel.

KTMPO will strive to inform and educate the public on sustainability through various media to include the KTMPO website, and incorporate the practices and principles discussed above into the transportation planning process.

KTMPO seeks to include as many of the principles of sustainable transportation as described by FHWA, American Association of State Highway and Transportation Officials (AASHTO), American Society of Civil Engineers (ASCE), TxDOT, and other organizations. These principles are in line with KTMPO goals and include but are not limited to:

Strategies for Implementing Sustainable Principles

Access	providing the same level of service to all members of the community
Movement	balancing the need to move people and goods, free from congestion
Choice	providing a range of options, including public transit, bicycles and walking, and alternate routes to alleviate bottlenecks
Environmental Justice	ensuring that low-income or minority communities do not suffer adverse effects of construction or design of transportation systems
Economic Impact	considering the local and regional financial effects
Environmental Impact	examining the impact during construction as well as the impact of obtaining, processing and transporting various road-building materials, and the long-term impact of the different components of the transportation system

KTMPO acknowledges that sustainable transportation planning is a complex and challenging undertaking. Sustainable principles may be applied to any of our planning focus areas, listed below:

- Long and Short-Range Planning
- Project Scoring and Prioritization
- Project Selection and Funding
- Traffic Modeling and Forecasting
- Congestion Management
- Intelligent Transportation Systems (ITS)
- Environmental Justice
- Air Quality
- Safety
- Public Involvement, Outreach, and Education

Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions.

Source: Results of Joint AASHTO/FHWA Context Sensitive Solutions Strategic Planning Process, Summary Report, March 2007

CONTEXT SENSITIVE SOLUTIONS

Overall, context sensitive solutions techniques provide a more enjoyable experience of the transportation system. Community participation is encouraged in developing the project design concept and considering community needs and concerns in project implementation. As a result:

- Local leader commitments to the project are enhanced
- Dialogue between local entities and the MPO is further supported
- Purpose of a given project is clearly defined
- Land use decisions in the area are coordinated
- Lines of communication regarding multi-modal transport are opened
- Environmental, aesthetic, and scenic harmony is promoted
- Overall system user safety and security is improved
- Project expectations yield more positive results
- More stakeholders are integrated, and efficiency of resources is increased
- Local issues are addressed while increasing long-term value for community

Currently, TxDOT Waco and Brownwood Districts have taken the lead on Context Sensitive Solutions for a variety of projects in the KTMPO area, most notably the IH 35 expansion. With this aspect being shifted towards the MPO, KTMPO is researching methodologies to integrate CSS into the public participation process through TxDOT's experience. Of note, the City of Harker Heights recently adopted “Designing Walkable Urban



IH 35 Northbound Main Lanes Mural at Salado Plaza Dr

Thoroughfares: A Context Sensitive Approach” as the design manual for use in the Development Overlay District 1—The Knights Way Corridor (FM 2410 Overlay). TxDOT has also adopted this publication as an appropriate design manual and city officials have encouraged TxDOT to implement the recommendations for projects in Harker Heights.

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