History of the MTP and MTP Amendments

The MPO Policy Board approved the Forward 45 MTP on November 18, 2019.

Amendment No. 1 was approved on February 16, 2021 by the Permian Basin MPO Policy Board. The purpose of the amendment was to remove certain projects along the I-20 corridor to remain fiscally constrained during the FY 2021-2024 period. The projects removed from the MPO's previously approved TIP remain in the ten year planning period but beyond the FY 2021-2024 TIP in Appendix D of this document.

Record of Public Participation

The Public Participation process included for Forward 45 MTP Amendment No 1:

- The Permian Basin MPO conducted a public meeting using an electronic meeting tool on Wednesday, January 20, 2021 at 9:00 a.m. to begin a 10-day public comment period. The public was encouraged to review and comment on the draft MTP Amendment No 1. Notice of the public meeting was placed in the Midland Reporter-Telegram and the Odessa American newspapers and on the MPO's website.
- The public was given a minimum of ten (10) days to submit comments on the projects for consideration prior to the adoption of the MTP Amendment No 1.
- A draft MTP Amendment No 1 was made available on the Permian Basin MPO website (www.permianbasinmpo.com).
- In a regularly scheduled meeting of the Permian Basin MPO Policy Board Tuesday, February 16, 2021 interested parties were again given the opportunity to review and comment on the MTP Amendment No. 1 prior to the final approval by the Policy Board. The final MTP Amendment No. 1 was approved for submission into the TxDOT STIP on or before February 16, 2021.
- The approved documents and any amendments will remain on the Permian Basin MPO website for ongoing reference by the public.

Permian Basin MPO Metropolitan Planning Organization

Solving Midland and Odessa's Transportation Challenges

Forward 45

Forward 45 Plan Approved November 18, 2019.

Amendment No. 1 Approved February 16, 2021.

VISUALIZE.

PLAN.

IMPLEMENT.

What has Changed since the adoption of the 2015-2040 MTP?

The 2015-2040 MTP was adopted in November 2014. Since that time, economic and social changes in the Midland Odessa region have occurred on a large scale. Energy and energy related companies have moved headquarters or regional offices to the area, these include Occidental Petroleum, Apache Corporation, Chevron, Weir, and many other regional distribution businesses such as Frito Lay. Advancements in the oil and gas extraction technologies along with horizontal drilling along with a national desire to become less dependent on foreign oil have fueled a significant increase in the region's energy activity resulting in a tremendous impact on the local economies. Population growth, as reflected in the Census data and population projections, housing starts, and employment opportunities have occurred at unprecedented levels. "Help wanted" signs are commonplace since a low unemployment rate means that the workforce is saturated and additional help is difficult to find for all employment types. School enrollments are higher in the public and private institutions, health care facilities have expanded, housing shortages continue exist, and construction have spiraled upward. An accompanying effect resulting from the overall economic growth has been the impact on the transportation system. A region-wide increase in traffic volumes, freight (trucks and rail) movement including the pervasiveness of oversize/overweight trucks carrying oil and gas industry cargo, is expected to continue over the long term. The 2014 approval by Texas voters to implement Proposition 1 along with Proposition 7 in 2015 have provided needed additional funds for use in the metropolitan area boundary; however, there are many important transportation projects that will remain unfunded. Each of these factors was considered and documented during the preparation of the *Forward 45* Plan. Additionally, since the adoption of the 2040 MTP, a new federal highway bill known as the Fixing America's Surface Transportation (FAST) Act became effective in December 2015. Major requirements in the Act involve the MPO adopting performance measures related to safety, road and bridge condition, and system reliability. With new data availability, the MPO has met the requirements of the federal legislation.

The document includes eleven chapters, each one covering an important aspect of the transportation planning process as follow:

- Chapter 1 covers the planning context including a legislative update, requirements of a Transportation Management Area, MPO member agencies and roles of the Technical Advisory Committee and Policy Board;
- Chapter 2 covers the characteristics and social fabric of the population in the MPO boundary including projections for growth of people and employment. Also included is a brief summary of the region's geographic and climate features;
- Chapter 3 describes the region's existing transportation network including all modes and condition of the transportation assets;
- Chapter 4 covers safety including an analysis of 5-year trends over all mode types;

- Chapter 5 discusses freight, oversize/overweight vehicle permits, rail and air freight as well as important fright corridors;
- Chapter 6 covers congestion including its effects and how the MPO plans to continue addressing this issue;
- Chapter 7 gives a summary of the requirements outlined in the FAST Act and how the MPO has responded;
- Chapter 8 covers security on the transportation system along with responsibilities;
- Chapter 9 is the list of projects split into the periods 2020-2029 and then 2030-2045, thus reflecting short term and long range priorities;
- Chapter 10 describes the financial aspect of the planning and project funding process including state and federal funds, and local funds;
- Chapter 11 is a short summary of threats and opportunities to the MPO including cost of living, project delivery, and potential new interstate corridors in the region.

The MPO staff is pleased to have the opportunity to provide the region's stakeholders and interested parties with this *Forward 45* Metropolitan Transportation Plan to help guide investment decisions designed and prioritized to address the issues in the area such as safety, congestion, and economic development. Permian Basin MPO and its member agencies have a vision to provide and maintain a safe and efficient transportation system for citizens and visitors to the Midland Odessa region. The vision, as reflected in the plan, is always open for public review and discussion

Permian Basin MPO may be contacted through the website, www.permianbasinmpo.com, by phone at 432-617-0129, or by email using info@permianbasinmpo.com. The Permian Basin MPO mailing address id P.O. Box 60916, Midland, Texas 79711. Permian Basin MPO encourages input and comment. Se habla Espanol.

Mission Statement

- Provide leadership to the region in the planning, funding, and development of a safe, efficient multimodal transportation system.

Vision Statement

- To develop a sustainable multimodal transportation system that meets the future needs of all users.

Goals and Objectives

Livability

Goal 1: Improve the overall quality of life for the traveling public.

Objective: Work with partner entities and stakeholders to address livability issues and local policies affecting transportation, neighborhoods, and safety.

Goal 2: Incorporate multiple modes of transportation in the planning process.

Objective: Facilitate discussions with the member agencies, the public and transit providers related to transit service.

Objective: Partner with public agencies and private companies to increase bicycle and pedestrian traffic.

Goal 3: Address transportation needs in unincorporated communities.

Objective: Work with community groups in unincorporated areas to improve public transportation accessibility.

Safety

Goal 4: Incorporate best practices related to safety during the planning process.

Objective: Reduce crashes resulting in fatalities, injuries, and property damage within the region.

Objective: Promote regional efforts to maintain the existing system to keep it in optimal condition.

Goal 5: Assist with educational efforts to bring awareness to users of the transportation system.

Objective: Provide and promote opportunities to educate the public on transportation safety.

Cohesive/Cooperative

Goal 6: Increase collaboration with member entities to provide continuous, cooperative, and comprehensive transportation planning.

Objective: Attend planning meetings, workshops, and public hearings to gather information and provide input on regional transportation projects and issues.

Goal 7: Increase outreach efforts to further educate the general public and Title VI/Environmental Justice communities of how the transportation planning process impacts them.

Objective: Inform the public of the MPO's role regarding current and future transportation decision-making efforts.

Objective: Increase participation from the public throughout the transportation planning process.

Connectivity/System Continuity

Goal 8: Connect infrastructure and services by reducing gaps and conflicts in the multimodal transportation system.

Objective: Utilize Planning and Environmental Linkage studies and other tools for developing new infrastructure prior to considering significant investment.

Goal 9: Ensure that freight is moved safely, efficiently, and seamlessly throughout the region.

Objective: Coordinate efforts with partner entities and stakeholders to improve the movement of freight.

Congestion/Mobility

Goal 10: Reduce congestion and decrease time delays on the transportation system.

Objective: Implement and maintain the Congestion Management Process as a tool to analyze and identify congestion problems and needs.

Objective: Encourage ride sharing and alternative working hours to alleviate congestion.

Goal 11: Promote awareness of alternative transportation modes.

Objective: Encourage increased participation in transit, cycling, and walking for purposes beyond recreation.

Efficient Use of Funding

Goal 12: Identify critical system issues and areas as identified through the Congestion Management Process.

Objective: Employ tools such as Intelligent Transportation Systems and enhanced technology to maximize system efficiency.

Goal 13: Identify non-traditional funding sources or apply for resources beyond what is allocated.

Objective: Increase available funding sources to complete more projects on the transportation system.

Disclaimer

This report has been prepared in cooperation with and financed in part by the U.S. Department of Transportation – Federal Highway Administration, the Federal Transit Administration and the Texas Department of Transportation. The contents of this report reflect the views of the Permian Basin Metropolitan Planning Organization (MPO), which is responsible for the facts and data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration, Federal Transit Administration and the Texas Department of Transportation. This report is not a legal document, and does not constitute a standard, specification, or regulation. Although much care was taken to ensure the accuracy of information presented in this document, the Permian Basin Metropolitan Planning Organization does not guarantee the accuracy of this information. Acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvement, nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

Non-Discriminatory Statement

The Permian Basin Metropolitan Planning Organization complies with Title VI of the Civil Rights Act of 1964 and related statues and regulations in all programs and activities. For more information, or to obtain a Title VI Complaint Form, see www.permianbasinmpo.com or call (432) 617-0129. Communication material in alternative formats can be arranged given sufficient notice.

Additional copies of this document may be obtained by contacting:

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TITLE VI POLICY STATEMENT

The Permian Basin MPO assures that no person shall, on the grounds of race, color, national origin, sex, age, disability or income status, as provided by Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987 (P.L. 100.259), and other related federal orders, directives, and guidelines, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination or retaliation under any program or activity. Additionally, per Executive Order 12898 (Environmental Justice) and subsequent United States Department of Transportation, Federal Highway Administration, and Federal Transit Administration directives, the Permian Basin MPO shall make every effort to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of the Permian Basin Metropolitan Planning Organization's programs, policies, and activities on Title VI/Environmental Justice protected populations. Furthermore, the Permian Basin MPO assures that every effort will be made to ensure nondiscrimination in all of its programs and activities, whether those programs or activities are federally funded or not. In the event that the Permian Basin MPO distributes federal aid funds to another entity, the MPO will include Title VI language in all written agreements. The Title VI Coordinator is responsible for carrying out the activities documented in the Permian Basin MPO's Title VI/Environmental Justice Program.

This Metropolitan Transportation Plan was developed in collaboration with the following entities:

Permian Basin MPO Policy Board

Midland County
Robin Donnelly, County Commissioner
Chair

City of Midland
John B. Love III, City Councilman
Vice-Chair

City of Odessa
David Turner, Mayor

Ector County
Debi Hays, County Judge

Martin County
Bryan Cox, County Judge

Midland Odessa Urban Transit District
Douglas Provance, General Manager

Texas Dept. of Transportation
John Speed, P.E. – Odessa District Engineer

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Lorrine Quimiro, Senior Transportation Planner
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Alyssa Chavez-Sommer, Office Manager

Permian Basin MPO Technical Advisory Committee

Voting Members	**Participants**
Permian Basin MPO Cameron Walker, AICP, Chair	*TxDOT* Bill Frawley, AICP
City of Midland Matt Carr, P.E. , Vice-Chair Taha Sakrani	*City of Midland* Jose Ortiz, P.E. Mike Pacelli, P.E.
City of Odessa Hal Feldman Randy Brinlee	*City of Odessa* Tom Kerr, P.E.
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Midland County Brooks Baca, P.E. Jessica Schuttler, P.E.	*TxDOT – Odessa District* Gene Powell Gabriel Ramirez, P.E.
Martin County Vacant	
TxDOT – Odessa District Robert Ornelas, P.E. Chad Windham, P.E.	
MOUTD (EZ-Rider) Kaleen Hamilton	

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1.1 About the Permian Basin Metropolitan Planning Organization

History

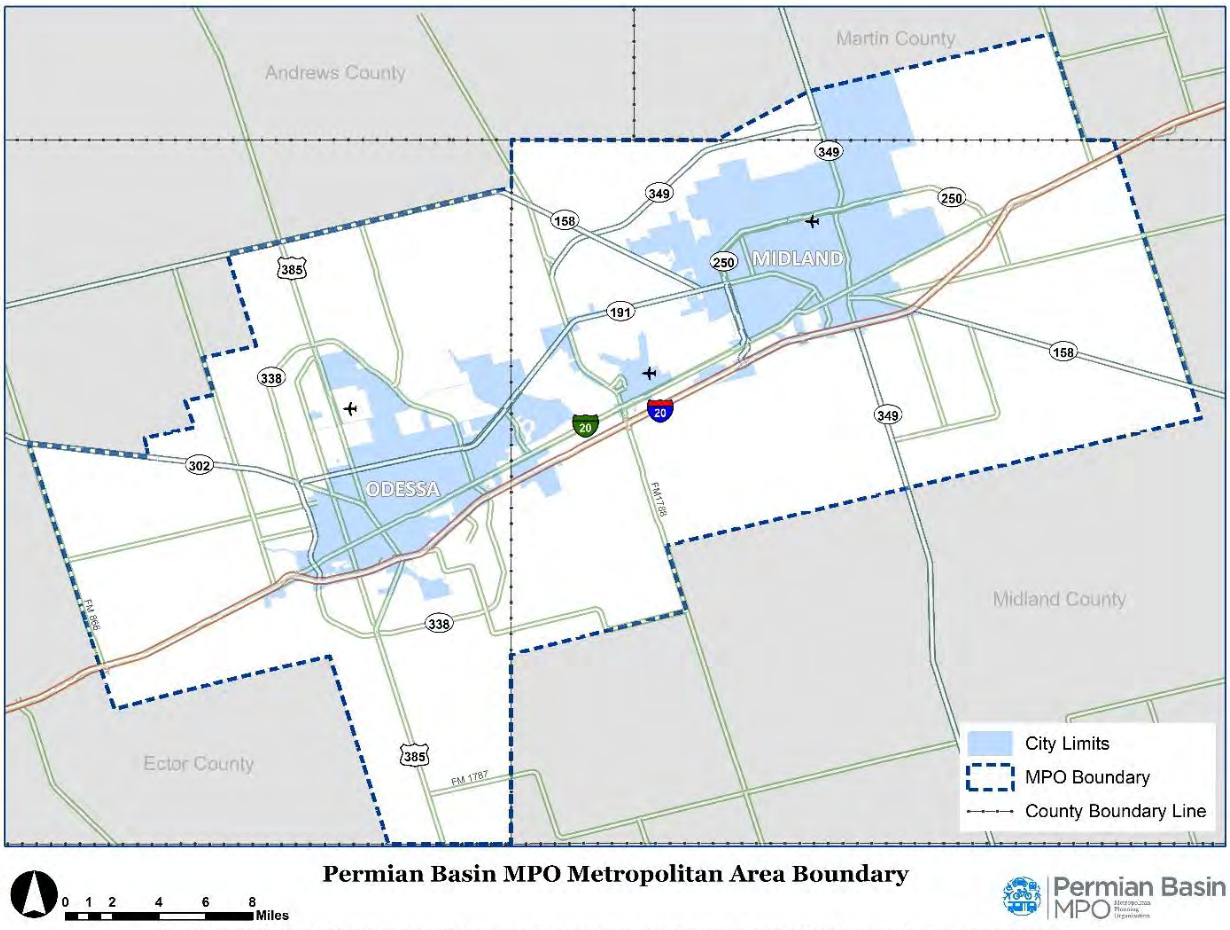
The Permian Basin Metropolitan Planning Organization is responsible for long-range transportation planning in a defined area known as the Metropolitan Area Boundary (MAB). The MAB is a geographic area determined by agreement between the local MPO and the Governor of Texas in which the metropolitan transportation planning process is carried out (U.S.C. 23 CFR Part 450). The Permian Basin MPO MAB includes the incorporated land within the City of Midland, City of Odessa, and portions of Ector, Midland, and Martin Counties as shown on Map 1.1. In 2013, the MAB was adjusted to include urbanizing areas on both sides of US 385 in southern Ector County, as well as an area near unincorporated Greenwood in eastern Midland County. In 2014, the MAB was adjusted again to include a portion of western Martin County.

The region's transportation system is a major component of the local Midland and Odessa economies and it has a direct effect on commerce, employment, and the quality of life of citizens living in the area and visitors as well. As a result of the Federal Aid Highway Act of 1962, the Midland-Odessa Regional Transportation Study (MORTS) was initiated in April 1965. This was the first Metropolitan Planning Organization (MPO) in the region. An MPO is a federally mandated, quasi-governmental agency responsible for coordinating transportation planning, establishing planning policies, and programming approved construction funding and corridor studies in urbanized areas with populations over 50,000, all within a defined urban boundary. Guidance and direction of activities in the initial phase was furnished by the Coordinating Committee composed of representatives from the various participating governmental agencies. It was at this time that the cities of Midland and Odessa passed the minimum population threshold of 50,000 to become an MPO; however, rather than establishing two adjacent MPO jurisdictions, the Federal Highway Administration (FHWA) decided to establish a single MPO to represent the Midland-Odessa area.

Although Federal transportation planning laws have been amended numerous times over the decades, it has remained consistent that MPOs must have a continuing, cooperative, and comprehensive planning process with their partner agencies. In 1973, the organizational structure was revised to create a Policy Advisory Committee (PAC) and a Steering Committee. The PAC consisted of one elected official from each member entity plus the TxDOT Odessa District Engineer. The Steering Committee was composed of staff members from participating entities, representatives of State and Federal agencies, key regional stakeholders, and local, state, and federal elected officials until the MPO was reorganized in August 2006. Following reorganization, MORTS became known as the Midland Odessa Transportation Organization (MOTOR) MPO and the PAC and Steering Committee were renamed the Policy Board and the Technical Advisory Committee respectively. In August 2015, the Policy Board voted to rename the organization to Permian Basin MPO. In 2014 and 2015, the Policy Board membership was increased to include the Midland Odessa Urban Transit District (MOUTD) and Martin County following the adjustment to the MPO boundary. It is important to note these historic details early in the process of preparing this 2020-2045 Metropolitan Transportation Plan since the same entities still form the core of the Permian Basin MPO.

Permian Basin MPO has a multi-level structure consisting of a Policy Board, a Technical Advisory Committee (TAC), a Freight Advisory Committee (FAC) and a Bicycle and Pedestrian Advisory Committee (BPAC). The Freight Advisory Committee currently includes members from the public sector, energy industry, chamber and economic development representatives, and others serving on the ongoing 24-county Permian Basin Freight Plan study under TxDOT's guidance. Some of the membership of this large regional committee will serve on the MPO's urban committee beginning in early 2020. The Policy Board serves as the decision-making body. The Policy Board meets on a regular basis and the meetings are open to the public. Public participation is encouraged.

Map 1.1 Permian Basin MPO Metropolitan Area Boundary



1.1.1 Transportation Management Area

In July 2012, the MPO was designated a federal Transportation Management Area (TMA) by the Secretary of the U.S. Department of Transportation. Several regulations became effective following the TMA designation. Permian Basin MPO is now required to generate and maintain a Congestion Management Process (CMP), add the local transit provider to the Policy Board as mentioned above, and be prepared to complete a federal certification review within four years of becoming a TMA. To date the following TMA related accomplishments have occurred:

- Adopted initial Congestion Management Process and Congestion Monitoring Network in 2014.
- Updated Congestion Monitoring Network 2014.
- Midland Odessa Urban Transit District (MOUTD) voting member added to Policy Board August 2014.
- Bylaws amended to have 2-year leadership terms to improve continuity July 2019.
- Maintained datasets for crash records, system reliability, and road, bridge, and transit fleet condition.
- Achieved a unified regional perspective on projects and corridor planning October 2018.
- Leveraged funding by using TxDOT Category 2, Midland Development Corporation, Odessa Development Corporation, and city funds to attract additional Category 4, Category 11 and Category 12 funds from the Texas Transportation Commission since 2018.
- Regional Freight Advisory Committee formed in 2019; MPO committee in 2020.
- Bicycle and Pedestrian Advisory Committee formed in September 2017.

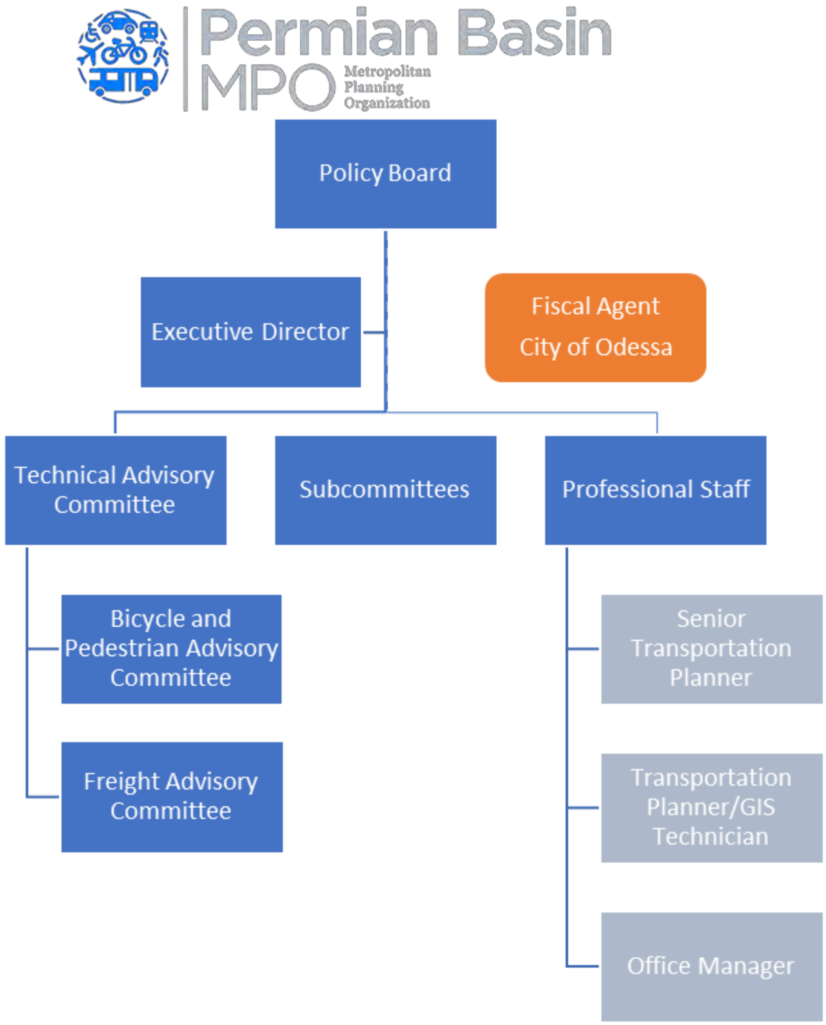
1.1.2 City of Odessa - Permian Basin MPO Relationship

The City of Odessa serves as the administrative and financial agent for the Permian Basin Metropolitan Planning Organization (PBMPO) under a three-party agreement with the Texas Department of Transportation (TxDOT). Although the Permian Basin MPO is an independent body, its staff receives similar benefits as City of Odessa staff. Permian Basin MPO administers a Unified Planning Work Program (UPWP) in accordance with the requirements of the Fixing America's Surface Transportation (FAST) Act. The UPWP is the MPO's budget and annual work schedule. In September 2018 the MPO renewed its contract with the City of Odessa as fiscal agent and with TxDOT to reestablish agency responsibilities over the next six-year period.

1.1.3 Permian Basin MPO Staff

Permian Basin MPO staff consists of four positions – an office manager, a transportation planner/GIS technician, a senior transportation planner and an executive director. All four are full-time funded positions. The following Organizational Chart displays the Permian Basin MPO hierarchy.

Figure 1.1 Organizational Chart



1.1.4 Legislative Mandates

Legislative mandates from the Federal and State level direct the MPO planning process and must be followed by the MPO and all its working committees. Under federal legislation, the Permian Basin MPO works with its member agencies to promote and lead transportation planning in the MAB. As of September 2019, the MPO consists of seven member agencies including Midland, Ector, and Martin Counties, the City of Odessa, the City of Midland, the TxDOT Odessa District, and Midland Odessa Urban Transportation District (MOUTD). These entities are all represented on the Policy Board whose duty is to oversee the policy making and decision-making process from general oversight of planning efforts to approval of the funding of specific transportation construction work. An important advisory

Committee of the MPO is known as the Technical Advisory Committee (TAC). This group consists of representatives of each of the member entities plus additional non-voting members with skill specialties that are tied to long range planning such as GIS, economic development and communications. The TAC meets on a monthly basis to review transportation planning needs and to provide recommendations to the Policy Board. The TAC often holds special meetings in addition to the regularly scheduled meetings when key documents are under review. These extra meetings occur during MTP preparation process and any future amendments. Other documents that the MPO is responsible for may also involve special meetings of the TAC for review and comment purposes.

In 2015, the Texas Legislature passed House Bill 20 (HB 20) which requires TxDOT and MPOs to implement a performance-based planning and programming process tied to the state's ten-year planning horizon. The ten-year planning horizon is the TxDOT Unified Transportation Program. The UTP authorizes projects for construction, development and planning activities and includes projects involving highways along with planning and project selection processes for state funding in modal areas of aviation, rail, public transportation, and state and coastal waterways. MPOs must provide TxDOT with documentation indicating that the region is in alignment with statewide goals and objectives. HB 20 also requires the establishment of a scoring system to prioritize projects shown in Figure 9.1 that would be funded by TxDOT. The scoring methodology and weighting system used by the Permian Basin MPO meets the requirements proscribed under federal and state legislation.

1.2 MTP and Other Key Documents

1.2.1 Metropolitan Transportation Plan

The FAST Act and previous highway bills require that each MPO and state develop a multimodal transportation plan with at least a 20-year horizon. The plan must be updated at least every five years to keep consistent with existing conditions, re-evaluate proposed plans, programs, and projects, and validate air quality conformity analysis should the region become non-attainment under the Environmental Protection Administration regulations. It also includes an analysis of the existing transportation system for all modes as well as a constrained financial plan for prioritized projects over the life of the plan. The plan shall "include both long-range and short-range program strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods."

In November of 2019, the Policy Board adopted *Forward 45* containing a multimodal needs plan for the entire MPO and a financially constrained project plan. The plan also contains a discussion of regional land use and its effects on the transportation system that continue to build on goals, objectives and the Permian Basin MPO's Travel Demand Model. Lastly, it utilizes a defined prioritization methodology for technical ranking of potential highway and transit projects that was subject to a comprehensive public outreach effort. The FAST Act includes performance-based planning and system resiliency. These are discussed in Chapter 7.

The purpose of *the Forward 45* is to build upon the findings and initiatives identified in the 2040 MTP and to detail the multimodal transportation improvements and programs to be carried out within the Permian Basin during the plan's timeframe and demonstrate the financial means within the MPO area by which these improvements and programs will be implemented. This MTP is therefore a key product of the Permian Basin MPO planning process and provides a conceptual basis and specifics for the transportation improvements planned for implementation by the year 2045. For a project to be eligible to receive federal transportation funds within the MPO's jurisdiction, it must be included in the financially constrained portion of *Forward 45*.

As stated above, the *Forward 45* MTP contains both a needs plan and a financially constrained plan. The needs plan acts as an inventory of all surface transportation needs including highways, bicycle, pedestrian and transit, as identified through public outreach effort and the TAC, but it is not fiscally constrained. Projects considered in the needs plan are illustrative only. The constrained plan is tied to the revenue stream under federal and state rules and allocates funds for the highest priority improvements from forecasted federal, state, and local revenues that are expected to be available over the life of this plan. In the fiscally constrained plan, highway and bicycle and pedestrian improvements are assumed to be part of the design considerations made at the time a project is reviewed.

The adoption of this plan and any future amendments will follow the MPO's policy for public participation. All plan updates or amendments will be advertised to the public through various media outlets, including publications that target specific interest groups, minorities and Spanish-speaking audiences. A minimum 30-day comment period and public hearings will be held prior to adoption. The Permian Basin MPO Policy Board also encourages comments at regular public meetings. The TAC will make recommendations on the update or amendment to the Policy Board. The Permian Basin MPO Policy Board will then act to approve, reject or defer approval at a public meeting.

MTP Updates

Although the Permian Basin MPO's MTP is required to be updated every four years, amendments during the interim years are quite common and ensure the MTP contains relevant information in response to changing conditions. Amendments to the MTP are often the result of project and/or funding allocation changes (such as following the adoption of a new TIP). MTP amendments require public outreach and demonstration of fiscal constraint and must also be approved by the MPO's Policy Board.

1.2.2 Other Key Documents

Transportation Improvement Program (TIP)

The Transportation Improvement Program (TIP) is a financially constrained list of transportation projects planned for the Permian Basin MPO Region for a four-year period. The TIP is updated at a minimum of every two years and includes on-system projects intended for the Interstate, Primary, Urban and Secondary Highway Systems that are on roadways owned or managed by TxDOT. Projects in the TIP also include those that will improve safety, provide transportation alternatives and public transportation improvements. The TIP may also include funding for feasibility studies, preliminary engineering (PE) activities and environmental studies, as well as right-of-way and construction activities. Federal law requires that all federally funded transportation projects within an MPO's study area be endorsed by the MPO and included in the TIP and MTP. The total cost of all TIP projects cannot exceed the amount of funding that is reasonably expected to be available during the period covered by the TIP.

Congestion Management Process (CMP)

Permian Basin MPO is required to develop a Congestion Management Process (CMP). In February 2014, the Policy Board adopted its initial Congestion Management Network. This CMP was developed in accordance with federal regulations, and its guidance supports the Permian Basin MPO planning process through identification of strategies that promote efficient transportation system management and operation by minimalizing the effect of congestion on the on-system corridors. It is anticipated that the MPO will update its CMP by 2021.

Title VI Environmental Justice

The Title VI Nondiscrimination Plan assures that no person shall on the grounds of race, color or national origin, as provided by Title VI of the Civil Rights Act of 1964 and the Civil Rights Restoration Act of 1987, be excluded from participation in, be denied of benefits of or be otherwise subject to discrimination under any agency-sponsored program or activity. Nor shall sex, age or disability stand in the way of fair treatment of all individuals. The Permian Basin MPO ensures compliance with Title VI by analyzing and documenting the effect of programmed funds on certain population groups including those with limited access to vehicles, families and individuals below poverty, those with limited English-speaking proficiency, and low income.

Public Participation Plan (PPP)

The purpose of the Public Participation Plan (PPP) is to serve as a guide in the development of public outreach methods in the regional transportation planning process. It is intended to encourage, facilitate and follow through on public comments, concerns, and suggestions by establishing procedures for providing full public access to information and decisions, timely public notices, and early and continuing public involvement in plan development. The MPO is planning to update its PPP in early 2020.

Metropolitan Transportation Plan 2015 – 2040 (MTP)

The Midland-Odessa 2040 MTP is the previous transportation plan for the Midland-Odessa area. As with most planning documents, it both builds upon and incorporates the ideas, issues, and recommendations of past and current planning efforts.

Permian Basin Region Intelligent Transportation Systems (ITS) Architecture and Deployment Plan

Developed in March 2005, this plan was part of a series of statewide plans that identified market packages and interfaces tailored to the needs of the region as well as a consensus-based architecture for regional ITS strategies. This topic is further discussed in the Chapter 6.

Unified Planning Work Program (UPWP)

The Unified Planning Work Program (UPWP) is the MPO's budget and a summary of the work tasks that are anticipated to be completed by the MPO staff and/or member agencies during the fiscal year. Because the UPWP reflects local priorities, the content differs from one metropolitan area to another. The UPWP contains several elements:

- Summary of previous year's completed tasks
- The planning tasks and studies that will be conducted over a one-year period;
- Identification of all federally funded studies as well as all relevant state and local planning activities to be conducted without federal funds;
- Funding sources identified for each project and task;
- A schedule of activities; and
- The agency responsible for each task or study.

This document and others are available on the MPO's website at www.permianbasinmpo.com.

1.3 The Metropolitan Planning Process

History

Metropolitan transportation planning provides the information, tools and public input needed for improving transportation system performance. Transportation planning should reflect the region's vision for its future. It should also include a comprehensive consideration of possible strategies; an evaluation process that encompasses diverse viewpoints; the collaborative participation of relevant transportation-related agencies and organizations; and an open, timely, and meaningful involvement of the public. Transportation planning requires a comprehensive, holistic look at the future needs of the region and its inhabitants.

Transportation planning in metropolitan areas is a collaborative process, led by the metropolitan planning organization and other key stakeholders in the regional transportation system. The process is designed to foster involvement by all interested parties, such as the business community, local interest groups, environmental organizations and the public, through a proactive public participation process conducted by the MPO in coordination with TxDOT and EZ-Rider. It is essential to extend public participation to include people who have been traditionally underserved by the transportation system and services in the region. Neglecting public involvement can result in proposed solutions that do not address the region's needs and could create unnecessary delays.

The *Forward 45* plan has been developed to comply with the ***Fixing America's Surface Transportation Act (FAST Act)***. FAST Act provides for a streamlined, performance based, and multi-modal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, addressing tourism and reducing delays in project delivery. Existing programs are simplified, substantially consolidating the program structure into a smaller number of broader core programs.

Since the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century of 1998 (TEA-21), Congress showed support for metropolitan and statewide transportation planning by emphasizing seven distinct areas which metropolitan planning organizations and states should consider when developing their plans.

In 2005, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA- LU), added emphasis in two areas: security and the environment. Transportation security is now a standalone factor, signaling an increase in importance from prior legislation. The factor relating to the environment was expanded, to promote consistency of the long-range transportation plan with planned growth and development.

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law. Major changes to the Metropolitan Planning Program under MAP-21 include the establishment of a performance-based planning process. It requires MPOs and States to establish performance targets that address national performance measures established by the Secretary that are based on the national goals outlined in the legislation.

The most recent highway bill, Fixing America's Surface Transportation Act (FAST Act), was signed into law in December 2015. The FAST Act continues most of the Metropolitan Planning program from MAP-21 with some changes including an increased emphasis on an intercity bus and commuter vanpools. The FAST Act also expands the scope of the metropolitan planning process to include improving transportation system resiliency and reliability, reducing stormwater impacts on surface transportation and enhancing tourism.

One key additional point to emphasize is that the FAST Act legislation also requires recipients of planning funds to establish performance measures and targets. MPOs must coordinate with the state, member agencies and public transportation providers to establish performance goals, measurement tools and targets that address federal performance measures.

Seven national goals are listed in the FAST Act:

1. **Congestion Reduction** – To achieve a significant reduction in congestion on the National Highway System
2. **Safety** – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
3. **Infrastructure Condition** – To maintain the highway infrastructure asset system in a state of good repair

4. **System Reliability** – To improve the efficiency of the surface transportation system
5. **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
6. **Environmental Sustainability** – To enhance the performance of the transportation system while protecting and enhancing the natural environment
7. **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.

In addition, the metropolitan planning process shall provide for consideration of projects and strategies that will address the following factors:

The ten FAST Act Planning Factors (23 U.S.C. 450.306) are:

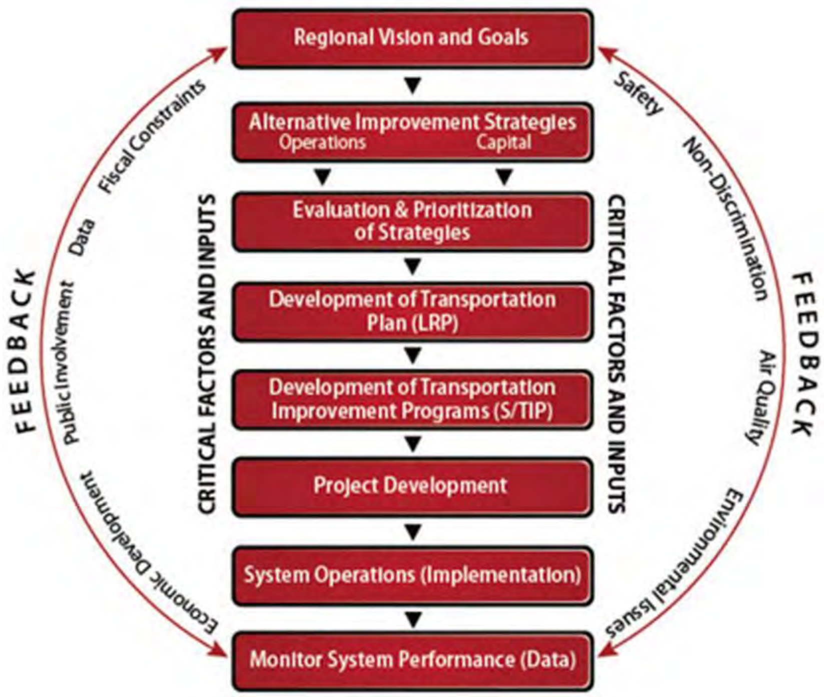
1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase the accessibility and mobility of people and for freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate Stormwater impacts of surface transportation; and
10. Enhance travel and tourism.

Each of these factors was included in the MPO's project selection criteria scorecard and project prioritization process. Further discussion on this topic is in Chapter 9, Project Selection & Projects. The *Forward 45* MTP identifies policies, programs, and projects for each mode of transportation that will be necessary to meet the region's transportation needs through year 2045. It is the guide for major transportation improvements and investments in the Midland-Odessa region for the next 25 years. As part of the MTP development process, current and future regional issues as well as existing transportation conditions were analyzed in order to prioritize future transportation programs and projects. Moreover, available financial resources and funds have also been identified in order to implement the programs and projects in the MTP. The plan must be a fiscally constrained document, meaning that funding for a project must be reasonably assured to be available prior to it being listed as a priority project in the MTP. In addition to identifying a list of fiscally constrained projects, the MTP update will also identify a list of unfunded transportation needs which may become priority projects depending on available funding. Projects in the list are considered illustrative.

The steps in the planning process include:

1. Monitoring existing conditions;
2. Forecasting future population and employment growth;
3. Assessing projected land uses in the region and identifying major growth corridors;
4. Identifying problems and needs and analyzing, through detailed planning studies, various transportation improvements;
5. Developing alternative capital and operating strategies; and
6. Developing a financial plan that covers operating costs, maintenance of the system, system preservation costs and new capital investments.
7. Post project monitoring to determine effectiveness of investment decisions.

Figure 1.2 Metropolitan Transportation Planning Process



1.4 Statewide Planning and Programming

TxDOT is responsible for planning, designing, building, operating, and maintaining the state's transportation system, in cooperation with local and regional entities. TxDOT is governed by the Texas Transportation Commission, which is a five-member commission appointed by the governor with the advice and consent of the Texas Senate. TxDOT's Odessa District works in cooperation with Permian Basin MPO to carry out transportation planning tasks and activities in the Midland Odessa MAB to ensure compliance with federal and state laws and regulations. In addition, it oversees the implementation of federal and state funded transportation projects in the Midland Odessa regional transportation system. These include project construction letting and inspection, environmental review, preparation of schematics and plans.

1.4.1 Texas Transportation Plan 2050 - Metropolitan and Rural Long-Range Planning; Statewide Transportation Improvement Program

TxDOT is currently updating its long-range multimodal statewide transportation plan. Public meetings began in March 2019 and will continue in the Fall of 2019.

The Texas Transportation Plan (TTP 2050) will be the most recent update to the state's long-range transportation plan. The TTP will set the direction for the future of Texas' multimodal transportation system by informing investment strategies tailored to make progress towards TxDOT's performance goals and objectives. TTP 2050 will provide an objective and transparent decision-making framework to prioritize multimodal needs and align resources to achieve the most beneficial performance outcomes to meet long-term goals and objectives in the urban and rural areas.

Fixing America's Surface Transportation Act (FAST Act) contains several requirements related to both metropolitan and rural planning within the state. The Statewide Transportation Improvement Program (STIP) incorporates metropolitan and rural area Transportation Improvement Programs (TIPs) into the 2019-2022 Statewide Transportation Improvement Program (STIP) as required under Title 23, U.S.C., Section 135 - Statewide Transportation Planning. The Permian Basin Policy Board approves a Transportation Improvement Program (TIP) every two years. Once the Permian Basin MPO TIP is approved, the document becomes part of the STIP to be approved by the Texas Transportation Commission to reflect local and statewide transportation projects in urban settings and rural areas within a four-year time frame. In order to be included in the TIP, or the STIP, a project must have identified funding and be ready to let in the last two years of the four-year period. TIP amendments may occur during the four-year time frame should additional funding become available for other timing related reasons.

Statewide Transportation Improvement Program (STIP)

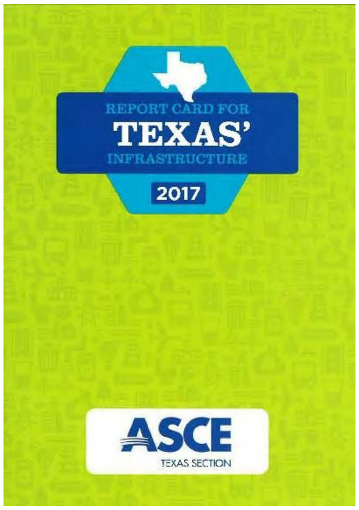
The Statewide Transportation Improvement Program (STIP) is Texas's federally required transportation improvement program that identifies transit and highway construction and maintenance projects that are programmed to use federal funding, or for which federal approval will be required. The federal requirement for updating the STIP is four years; however, TxDOT elects to update the STIP every two years. The STIP includes all federally funded and regionally significant transportation projects, multimodal projects (highway, passenger rail, freight, public transit, bicycle and pedestrian) and projects on roadways in Texas National Parks and National Forests. The STIP must also include all projects in a Metropolitan Planning Organization's (MPO) Transportation Improvement Plan (TIP) as well as projects in non-MPO areas.

Texas Strategic Highway Safety Plan (SHSP)

In 2005, Section 1401 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) required each state to develop and implement a Strategic Highway Safety Plan (SHSP). The purpose of the SHSP is to identify key safety needs and guide investment decisions to achieve significant reductions in highway fatalities and serious injuries on all public roads. SAFETEA-LU required that each state have a SHSP signed and in place by October 1, 2007, in order to receive a fully apportioned share of federally allocated Highway Safety Improvement Program (HSIP) funds. This program was continued under Map-21 and the FAST Act.

Report on Texas Bridges

This report describes Texas publicly owned vehicular bridges and their condition as of September 2018 based on information in the TxDOT Bridge Inspection Database. It describes bridges categorized by location either on or off the state highway system. It also describes the condition of Texas bridges in terms of sufficiency: "sufficient" bridges (bridges in good or better condition), structurally deficient bridges, functionally obsolete bridges, and sub-standard-for-load-only bridges. The report tracks the progress toward TxDOT's goal to improve Texas bridges by the end of FY 2023.



Tall City Tomorrow and Envision Odessa Comprehensive Plans

The Tall City Tomorrow and the Envision Odessa Comprehensive Plans are long-term planning tools for the future of both cities as they develop and grow. This vision, created with input from the public, provides community leaders with the tools necessary to make sound decisions based on the aspirations of residents and community leaders. Both were adopted in 2016 by the City Councils.

1.4.2 10-Year Plan HB 20

HB 20 was approved by the 84th Texas Legislature in June 2015 and relates to the operations and transportation planning and expenditures by the Texas Department of Transportation and planning organizations, including the Permian Basin MPO. The Texas Transportation Commission, TxDOT and MPOs. Each planning organization must develop a 10-year transportation plan for the use of the funding allocated to the region. TxDOT assists the planning organizations by providing information requested by the MPO. The first four years of the plan are developed to meet the transportation improvement plan requirements of 23 U.S.C., where applicable. In addition to the 10-year planning requirement, HB 20 also requires TxDOT and MPOs to develop and implement a performance-based planning and programming process. The process involves a project scoring and selection exercise that requires the MPO to meet FAST Act and HB 20 requirements. The project selection criteria, scoring and selection are further discussed in Chapter 9.

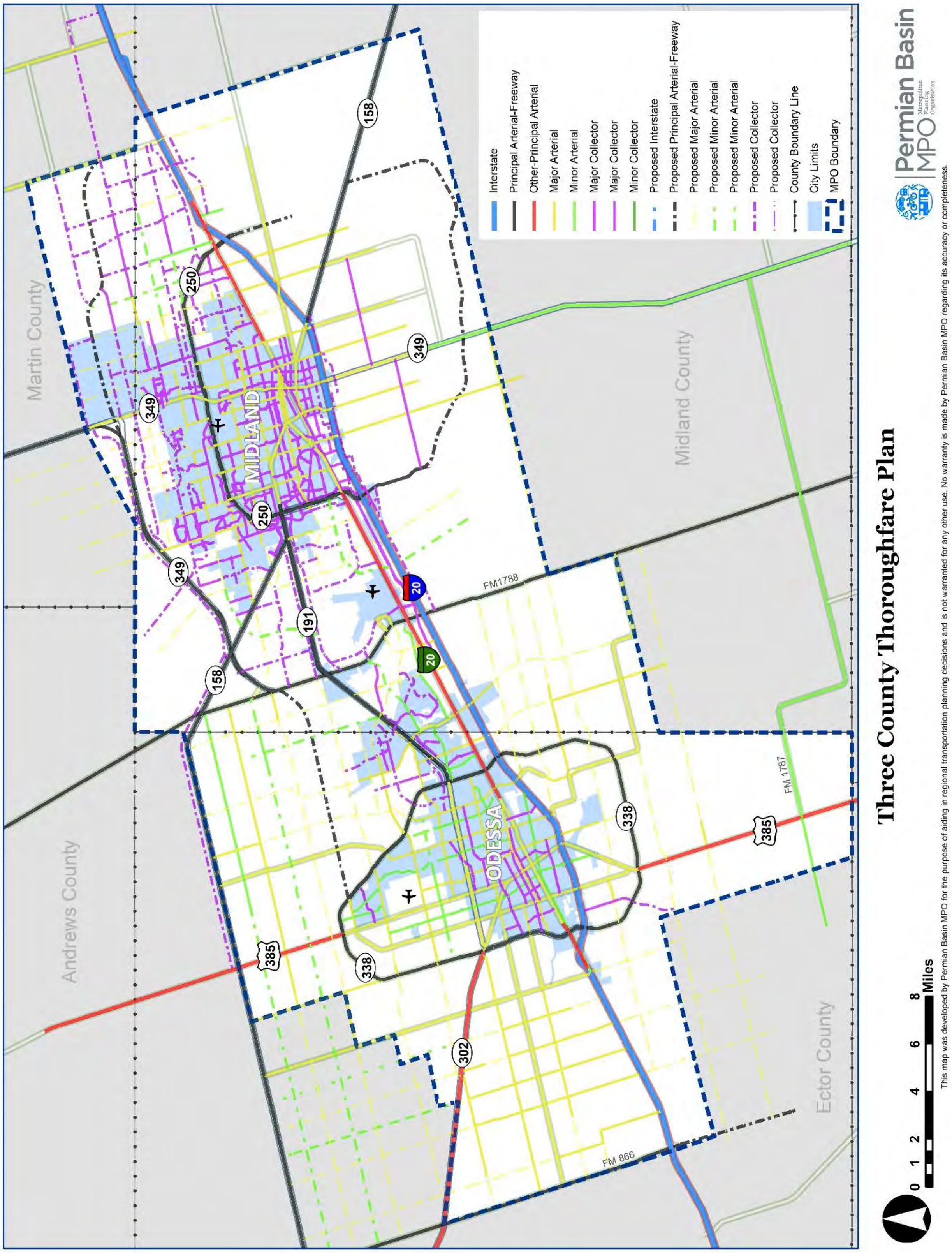
1.5 Stakeholder Plans

1.5.1 Local Governments – City of Midland and Odessa, Midland, Ector and Martin Counties

The Permian Basin MPO staff has a long history of working with local government staff on the Technical Advisory Committee and in other professional meeting settings. MPO staff have been given the opportunity to review local government Comprehensive Plans, bicycle, pedestrian and trail plans, downtown revitalization plans, park plans, as well as large area preliminary plats scheduled for consideration by the city's Planning and Zoning Commissions. In each of these examples, highway and other transportation modal needs are identified and alternative ideas discussed. These highway and transit needs were comprised primarily of efficiency, safety and connectivity in the surface system and access to planned new developments.

Of importance within the region is a three-county thoroughfare plan that the MPO's Policy Board concurred with in October 2018. This document was recommended by the TAC following extensive review of the existing and planned transportation network to provide a working tool for each entity to work toward minimum standards and consistency where arterial streets and other corridors are planned for off-system improvements. It is important for the MPO and its member entities to take steps to preserve right-of-way and promote continuity with road standards and alignments. The three-county thoroughfare plan was a coordinated and cooperative six-month effort between representatives from the three counties, two cities and the Permian Basin MPO. Map 1.2 shows the three-county thoroughfare plan.

Map 1.2 Three-County Thoroughfare Plan



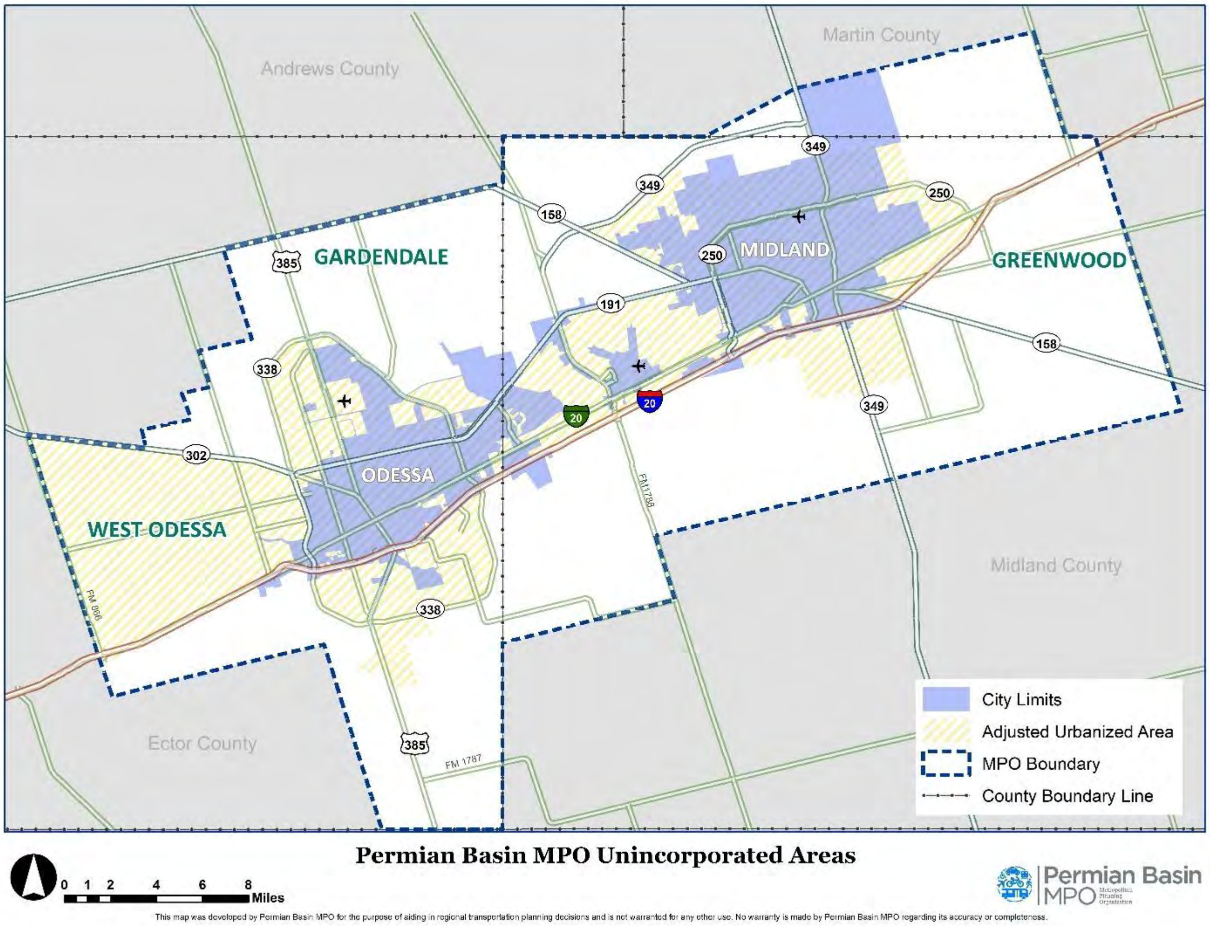
2.1 Regional Overview

2.1.1 History

The western expansion of the United States and the discovery of oil were two major factors that contributed to the establishment and subsequent growth of the Midland Odessa region. Settlers were seeking an alternate route around the Rocky Mountains to the West Coast and Texas became a prime location for transportation routes. The arrival of the Texas and Pacific Railroad in the late 1880s established Midland and Odessa as midway destination points between Dallas and El Paso. The two communities began as cattle ranching settlements but would change significantly due to the discovery of oil in the mid-1920s. The petroleum industry has helped to change and shape the people, culture and economy of the Permian Basin. The cities and counties within the Permian Basin, Ector and Midland Counties specifically, have become the epicenter of the nation's oil and gas industry. The growth of the petroleum industry has allowed the Midland Odessa region to attract people and diversify the regional economy.

The cities of Midland and Odessa are located in the north eastern portion of the Permian Basin. The two cities comprise the only urbanized area in the Permian Basin since no other city has a population base exceeding 50,000 people. The urbanized area of the MPO also includes nearby unincorporated communities such as Gardendale, West Odessa, and Greenwood.

Map 2.1 Unincorporated Communities

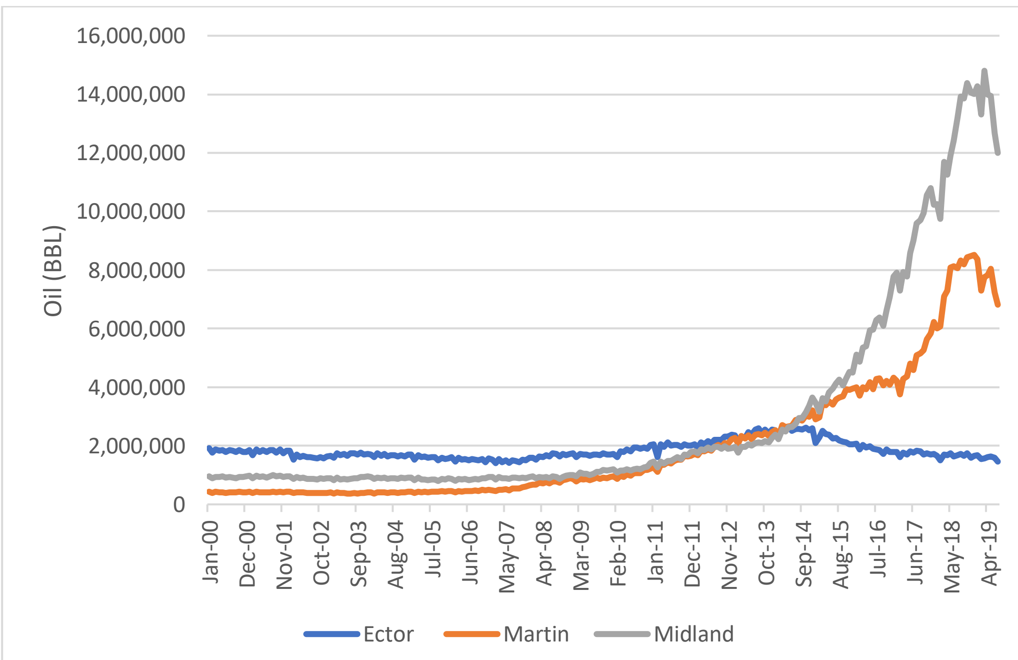


The two cities have diversified economically and culturally to meet the needs of residents and visitors. Over the past three decades the cities have grown toward each other. In 2019, the City of Odessa completed an annexation that resulted in the cities having a common boundary on SH 191, west of FM 1788. Midland and Odessa have capitalized on the economics of the petroleum industry; a major source of income for the two cities lies in the strength of the oil and gas sector. Since the completion of the *Vision 2040* Metropolitan Transportation Plan (MTP), capital investment support of the energy sector has been ramped up to meet the demands of increasing energy production. These investments include trucking, fleet expansion, new pipelines, additional rail sidings, large multimodal transload facilities near the UP-Railroad lines, and large corporate office complexes. Specifically, many of the larger petroleum companies have relocated or expanded their presence in the Midland Odessa area since 2015 to serve the Permian Basin region. These include Occidental USA, Chevron, Schlumberger, Apache, Weir, Concho, Pioneer and other smaller companies. The transition of the industry toward hydraulic fracturing and horizontal drilling in the early 2010 decade has dramatically changed the risk/reward factors that were formerly involved when "wildcatting" for oil. The lifting of the federal prohibition against sales of petroleum products and oil outside the US in late 2015 has also been an important piece of the growth of oil and gas development in the Permian Basin with oil, gas production reaching new records.

Midland and Odessa both benefit from their locations on Interstate Highway 20, a major east-west corridor that is the only federally designated Primary Freight Corridor in the region. Other important highways providing mobility and connectivity in the region include U.S. Highway 385, a main north-south corridor, State Highways 349, 302, 191, 158, as well as the loops around the cities. Union Pacific's Class 1 rail service and the Midland International Air & Space Port are long established facilities that provide rail freight service and scheduled/chartered air service. The movement of people and goods across the region has always been a high priority but this is especially true since the region, and specifically, the urban area has returned as a center of oil and gas production in the U.S. over the past decade.

Figure 2.1 shows a record of monthly production totals by county from January of 2000 to September of 2019.

Figure 2.1 Oil Production by Month January 2000 – September 2019



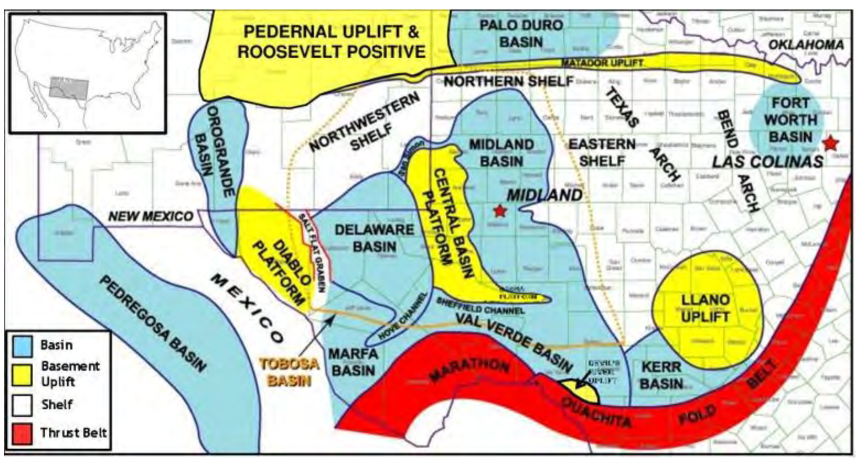
Source: Railroad Commission of Texas

2.1.2 Energy Industry

The name of the Permian Basin was derived from the unique area in which the world's largest deposits of rock were formed during the Permian geologic period. The Permian Sea, a shallow body of water densely populated with animals and plants once covered the area. As the sea dried up, it left decaying plants and animals, which aided in the formation of the region's oil and gas reserves. The Permian Basin includes several basins and platforms, including the Northwestern Shelf, Diablo Platform, Central Basin Platform, Southern Shelf, Ozona Arch, Delaware Basin, Midland Basin and the Val Verde Basin. The minerals and natural resources found in the Permian Basin have helped shape the economic landscape for the western portion of the state of Texas and eastern New Mexico. The Delaware and Midland Basins contain multiple layers of tight shale formations that are ideal for horizontal drilling and hydraulic fracturing technologies.

Due to its vast hydrocarbon reserves, the Permian Basin is extremely important to the oil and gas industry and is considered a significant part of the Mid-Continent Oil Producing Area. Midland and Odessa are in the heart of oil production country and they also serve as a transportation hub for exporting oil and gas to other parts of the country. As the largest petroleum-producing basin in the U.S., the Permian Basin plays a large role in the geography, economy, and culture of Texas.

Figure 2.2 Geological Formations



Source: Pioneer Natural Resources

The economic potential of the Basin itself is immense, boasting oil stores ranging in depth from a few dozen feet below the surface to over five miles down. Many of these resources are only 10,000 feet below the surface, making access by conventional and horizontal drilling equipment fast and easy. Until the last decade, more traditional extraction techniques have been primarily used, leaving much of the potential in the Basin untapped. As technology evolves, more efficient methods of extracting oil have been developed and put into use. With these new developments, production in the area has accelerated in the past years, with 312 million barrels produced in 2012 compared to 253 million barrels in 2005 according to the U.S. Energy Information Administration (EIA). Table 2.1 and Figure 2.3 below show the Permian Basin production contrasted with other top producing Texas counties in 2018. Production figures from January 2017 through May 2018 along with a forecasted projection through December 2019 are shown in Figure 2.4.

Table 2.1 Texas Top Oil & Gas Production by County May 2019

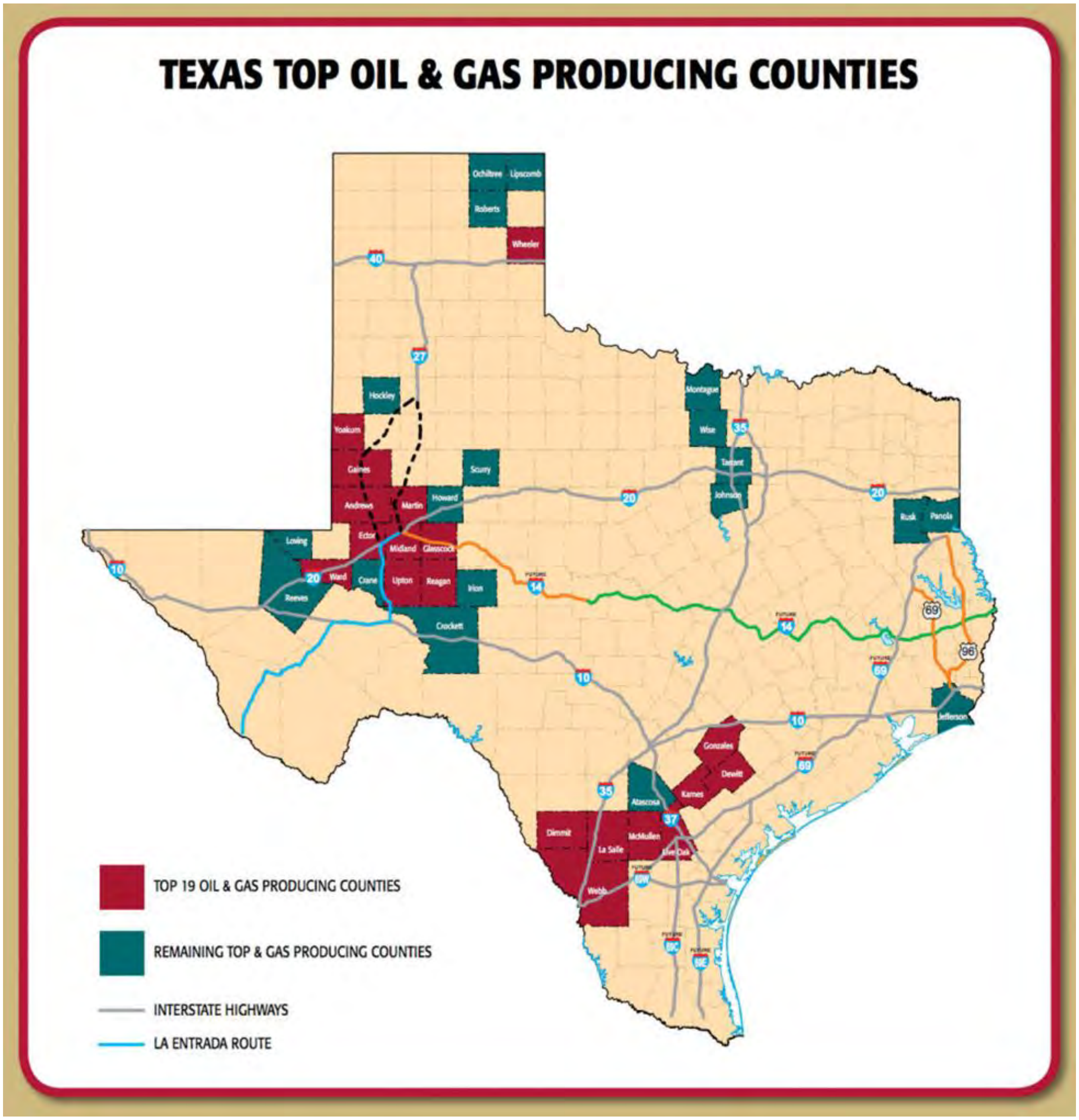
COUNTY	TOTAL GAS PRODUCTION*	CRUDE OIL PRODUCTION**
Midland	33,137,619	12,453,445
Karnes	27,175,778	7,709,631
Reeves	53,589,514	6,653,076
Martin	13,290,560	6,539,819
Loving	25,427,932	5,520,063
Upton	19,575,094	5,456,668
La Salle	15,975,037	4,536,886
Howard	7,670,419	4,406,287
Reagan	17,653,044	3,502,452
Gonzales	5,270,368	3,227,305
De Witt	22,321,405	3,075,405
Glasscock	11,109,732	2,872,296
Andrews	4,749,132	2,848,765
Dimmit	12,316,161	2,368,983
Atascosa	2,430,484	2,366,100
Ward	6,330,886	2,360,009
McMullen	5,044,170	2,092,275
Pecos	7,195,848	1,855,923
Yoakum	2,332,232	1,780,865
Gaines	1,601,200	1,743,545
Ector	3,709,076	1,525,498

Source: Railroad Commission of Texas

* Natural Gas production measured thousand cubic feet (MCF), which includes Gas Well Gas and Casinghead Gas.

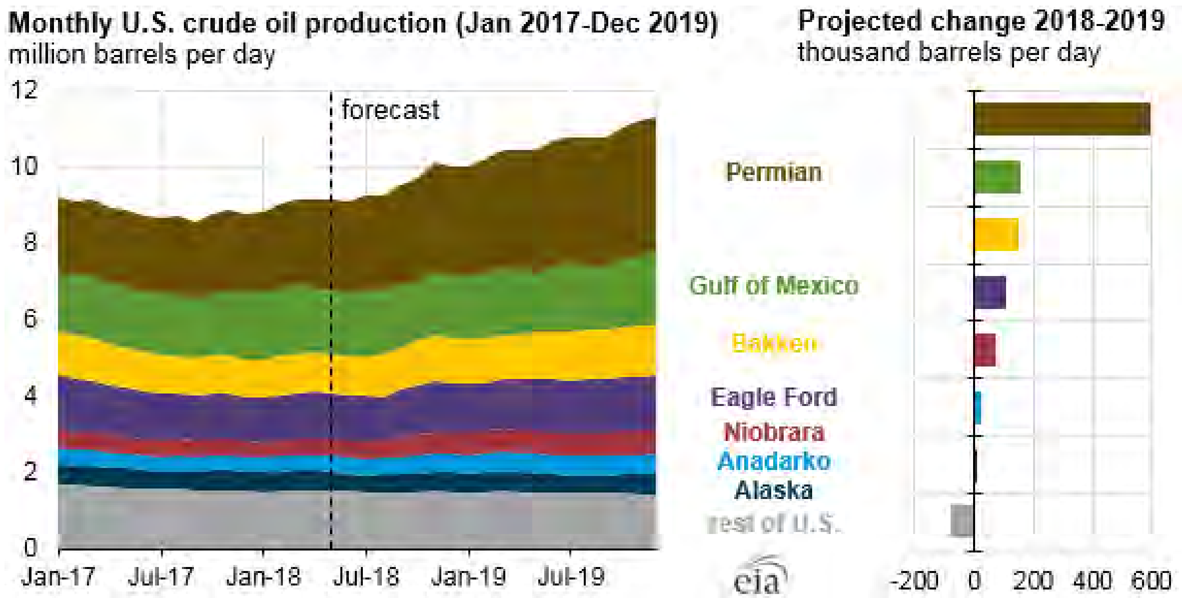
**Crude Oil production from oil wells, measured in barrels (BBL).

Figure 2.3 Texas Top Oil & Gas Producing Counties



Source: Midland Odessa Transportation Alliance

Figure 2.4 Monthly U.S. Crude Oil Production by Region (Jan 2017 – Dec 2019)



Source: U.S. Energy Information Administration (EIA)

As previously stated, traditional methods of oil extraction have been highly effective, newer technologies like hydraulic fracturing and horizontal drilling have led to a massive increase in the number of barrels of oil produced each day in the Permian Basin and in shale plays across the country. However, that increased production played a role in the decrease in oil prices, thus creating a tricky balance between cost effective oil production and industry supply and demand. According to a recent study completed by the Perryman Group and funded by the Midland Development Corporation, these important factors mean that the region, and particularly the Midland Odessa area will benefit from larger drilling programs with increased cycle times, a larger permanent workforce with high earnings, less industry volatility, and a larger permanent population. As stated earlier, investment in the region has been enormous and now with projected stability and growth, ongoing payroll outlays, local spending by supply companies, and local spending by employees will ensure a robust economic picture for the region.

The EIA released the following brief report in August 2018. "EIA's August *Short-Term Energy Outlook* (STEO) forecasts that U.S. crude oil production will average 10.7 million barrels per day (b/d) in 2018 and 11.7 million b/d in 2019. If realized, both of these forecast levels would surpass the previous record of 9.6 million b/d set in 1970. This national increase is almost entirely driven by tight oil. In particular, the Permian region in western Texas and eastern New Mexico is expected to account for more than half of the growth in crude oil production through 2019."

EIA expects Permian regional production to average 3.3 million barrels per day (b/d) in 2018 and 3.9 million b/d in 2019. Although favorable geology combined with technological and operational improvements have contributed to the Permian region becoming one of the more economically favorable regions for crude oil production in the United States, recent pipeline capacity constraints have dampened wellhead prices for the region's oil producers. Lower wellhead prices in the region are contributing to slower growth in Permian crude oil production in 2019 compared with 2018.

2.1.3 Natural Environment

The land surface is flat plain with mesquite-mixed grassland terrain; however, features changes toward hilly and small mountain characteristics to the south and west of the Midland Odessa area. The climate of the area is described as semi-arid with long, hot summers and short, moderate winters. The Midland Odessa region does not experience much precipitation throughout the year and rainfall occurs more frequently during the spring and early summer months.

Climate

The Midland-Odessa region is on the southern extension of the South Plains of Texas. The terrain is level with only slight occasional undulations. The climate is typical of a semi-arid region. The vegetation of the area consists mostly of native grasses and a few trees, mostly of the mesquite variety. Most of the annual precipitation in the area comes as a result of very violent spring and early summer thunderstorms. These are usually accompanied by excessive rainfall, over limited areas, and sometimes hail. Due to the flat nature of the countryside, local flooding occurs, but is of short duration. Tornadoes are occasionally sighted. Other climate factors in the region are drought, ice storms, fog, and flooding.

During the late winter and early spring months, blowing dust occurs frequently. The flat plains of the area with only grass as vegetation offer little resistance to the strong winds. The sky is occasionally obscured by dust but in most storms, visibilities range from 1 to 3 miles. Daytime temperatures are quite hot in the summer, but there is a large diurnal range of temperature and most nights are comfortable. The temperature drops below 32 degrees Fahrenheit in the fall about mid-November and the last temperature below 32 Fahrenheit degrees if spring comes early in April. Winters are characterized by frequent cold periods followed by rapid warming. Cold frontal passages typically last for two or three days. Summers are hot and dry with numerous small convective showers.

The prevailing wind direction in this area is from the southeast. This, together with the upslope flow of the terrain from the same direction, causes occasional low cloudiness and drizzle during winter and spring months. Snow is infrequent. Maximum temperatures during the summer months frequently are from 2 to 6 degrees cooler than those at places 100 miles southeast, due to the cooling effect of the upslope winds. Very low humidity is conducive to personal comfort, because even though summer afternoon temperatures are frequently above 90 degrees, the low humidity with resultant rapid evaporation, has a cooling effect. The climate of the area is generally quite pleasant with the most disagreeable weather concentrated in the late winter and spring months. Table 2.2 indicates significant weather events documented by the National Weather Service Midland Station from January 2014 through December 2018.

Table 2.2 Significant MAB Weather Events -January 2014 – December 2018

SIGNIFICANT WEATHER EVENTS JANUARY 2014 – DECEMBER 2018							
Event Type	Tornado (F0-F5)	Heavy Snow	Ice Storm	Hail	Dust Storm	Dense Fog	Severe Thunderstorm
MAB	2	4	4	2	30	72	9

Source: National Weather Service – Midland

Even though the climate is generally desirable the events shown in the table require the MPO to consider system resiliency in the project selection process as shown in Chapter 9.

2.1.4 Built Environment

Providing affordable housing, community infrastructure/services, and economical transportation options are essential in ensuring the region's economic competitiveness and quality of life for residents. The cities have grown toward one another over the past three decades. In the early 1990s the Midland Odessa region became a single urban area, accordingly, rather than being shown on national real estate investor work sheets as two separate communities with under 100,000 population each, the region was listed as a single area of approximately 225,000 population. The net effect of this Census Bureau decision to combine the populations resulted in numerous retailers, hoteliers, and others viewing the region as being much more attractive for investment. It was around this time period that both communities began to attract more restaurants, grocery stores, movie theaters, and other community features.

The strength of the energy sector has included the drilling of new oil wells and the installation of gathering facilities inside the urbanized area making surface development more challenging than typical pastureland or grass field. The region's transportation system is straining to keep up with the rapid growth that has taken place over the past 30 years, and particularly with the even faster growth that has occurred since 2010. The Interstate is the backbone of the transportation system in the region, being the only road on the National Highway Freight Network. Although congestion on the corridor is not extreme by large urban area standards, the increase in truck traffic and crashes including bridge strikes have all negatively impacted traffic flow. Following a bridge strike on I-20, it is common for the corridor to be limited to one lane in each direction dramatically reducing roadway reliability. With limited state and federal financial resources, maintaining the existing transportation system is becoming an increasing challenge. Options for local public transportation service are limited due to the dispersed land use pattern and the current operational standards of the transit provider which ceases operation at 6:00 p.m. daily with no Sunday service. Bicycle and pedestrian facilities are also limited although efforts are underway to expand facilities in both cities and between the two. The overall transportation system is discussed in more detail in Chapter 3 of this plan.

Public Utilities – Water

The public sources of usable ground water for residents living in Midland come from the Colorado River Municipal Water District, water wells in Martin County, Winkler County and Ward County. In 1965, the City of Midland purchased the T-Bar Ranch as a future water supply. Through a public-public partnership, the City of Midland built the T-Bar pipeline and well field in 2012. This groundwater supply can be used to supplement surface water supplies and provide Midland's needs through 2060 and beyond. In 2005 the Texas Legislature authorized the creation of the Midland County Fresh Water Supply District No. 1 to supply residents and businesses located outside of the city in the area shown in Figure 2.5. To date, that entity has not found a source for water. The unincorporated area known as West Odessa gets its water under contract with the City of Odessa; approximately 5,000 water connections exist. In July of 2019 the Texas Water Development Board approved a $45,765,000 loan from the Drinking Water State Revolving Fund to the Ector County Utility District. The financial assistance is to finance planning, design, and construction costs associated with water system improvements in West Odessa. Once operational, this water source should result in increased development density and therefore traffic in West Odessa. Gardendale has its own water district as well with approximately 800 customers. The Gardendale Water District has a waiting list of 200+ names for additional requested connections; however, the District will need to drill another water well in order to provide the service since current facilities are at capacity. Greenwood Water Corporation was founded in 1982 and has been providing residential and commercial water to Greenwood residents and businesses. In 2015, the Public Utility Commission of Texas approved the sale and transfer of stock to Permian Basin Water Resources, LLC. Greenwood Water Corporation will continue to serve its customers and look to expand water and wastewater solutions to the Greenwood market.

Odessa was one of the original cities to contract with the Colorado River Municipal Water District to supply water from three lakes approximately 150 miles to the northeast. The CRMWD is still the city's largest supplier of untreated water. Collecting, pumping and delivering an average of 52 million gallons of quality water every day is no simple task. Not only does it require a complex network of infrastructure, but also the constant management, repairs and ongoing development of water resources necessary to keep quality water flowing. CRMWD relies upon 27 pump stations and 600 miles of pipeline to deliver water to West Texas communities. Odessa is one if its largest customers. All the public agencies described are seeking to expand their water sources.

Figure 2.5 CRWMD Infrastructure Map

Source: CRMWD

Chapter 2, Section 2.2.1, includes a discussion of population, employment history and projections through the period covered by the *Forward 45* MTP. This section, Built Environment, is a brief companion discussion on residential and commercial development in the region.

2.1.5 Cultural Environment

The Midland Odessa region and west Texas in general are relatively modern cultural centers in American history. Like all major cities' activity centers perform an important role in the culture, quality of life, and the social fabric of the cities. Traffic volumes and flow patterns of a transportation system are influenced by the location and characteristics of activity centers. Activity centers meet the basic needs of a growing community as well as amenities which make public life enjoyable. The MPO's Travel Demand Model considers activity centers as special traffic generators with varying projected impact on the transportation system depending on the intensity of the land use.

Public Facilities

Government buildings such as city halls, post offices and courthouses attract traffic because business and public services are conducted at these locations. While many of these services are offered online, many people still prefer the traditional method of interacting in-person. Also, major event venues, such as the Scharbauer Sports Complex, Midland County Horseshoe Arena, Ector County Coliseum, Ratliff Stadium and the Wagner Noël Performing Arts Center, generate substantial traffic as crowds gather for athletic games, musical concerts and other region events.

Medical Facilities

Medical Center Hospital, Odessa Regional Medical Center, Midland Memorial Hospital, and the newly constructed Veteran's Affairs clinic are four of the major medical facilities in the region. The hospitals are located adjacent to major roadways and corridors in the area. In addition, there is one behavioral health facility in the Permian Basin MAB.

- Midland Memorial Hospital Main
- Midland Memorial Hospital West Campus
- Medical Center Hospital
- Odessa Regional Medical Center
- Oceans Behavioral Health Center

Educational Institutions

The major educational institutions located in the Midland Odessa region include:

- Midland Independent School District– Midland Independent School District consists of 25 elementary schools, five middle schools and eight high schools.

- Greenwoods Independent School District – Greenwood Independent School district consists of one elementary school, one intermediate school, one middle school and one high school.

- Midland Academy Charter School – Midland Academy Charter School is a public, tuition-free school located in Midland. They are a charter school that serves students in grades pre-k through 8th grade. The campus is open to any student residing in Midland County.

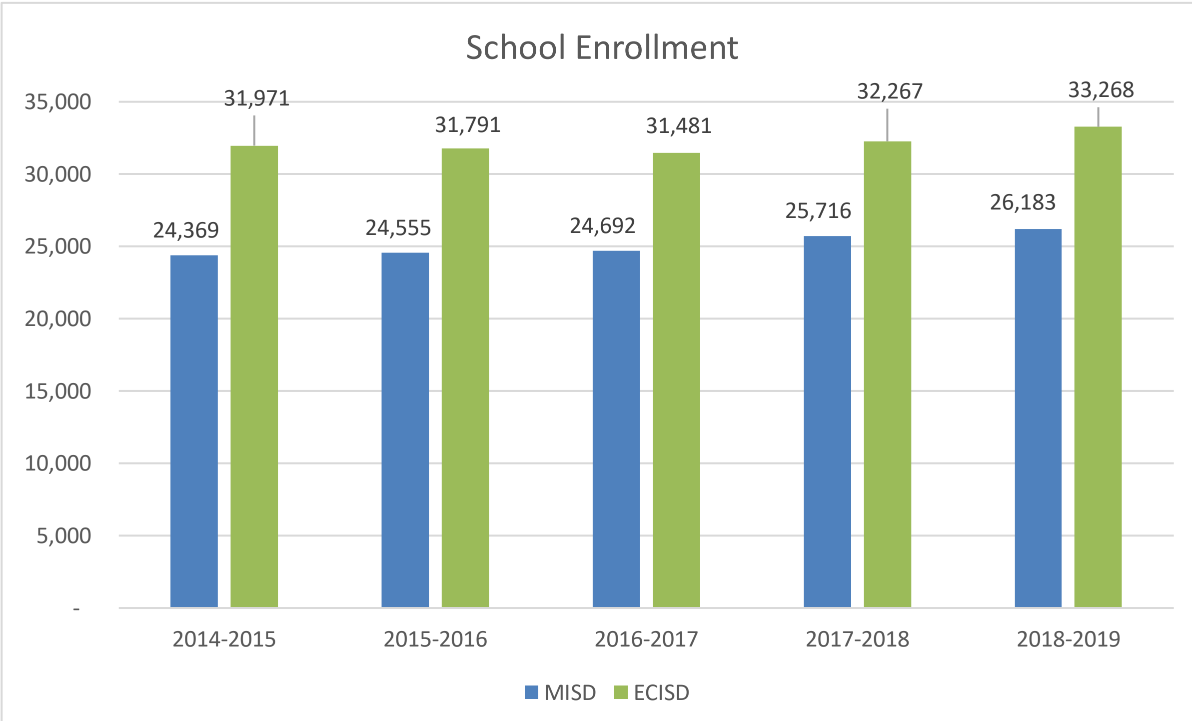
- Ector County Independent School District - Ector County Independent School District consists of two pre-k schools, 28 elementary schools, six midland schools and seven high schools.

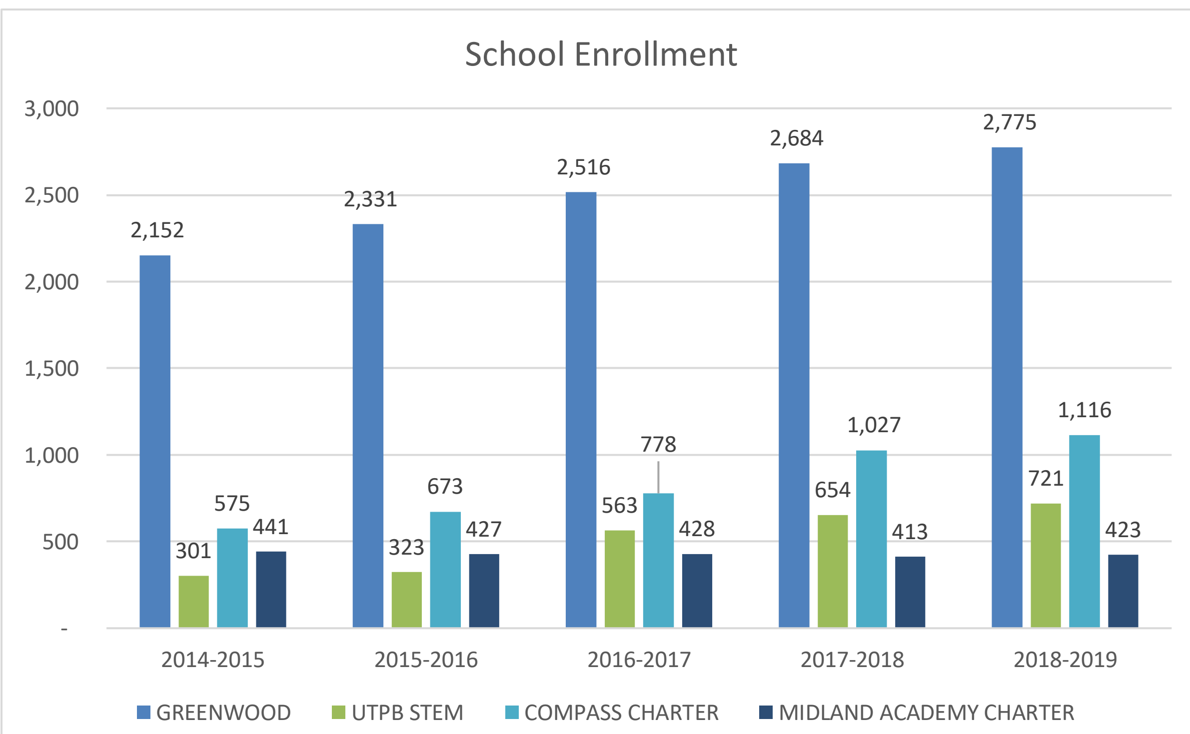
- Compass Charter School – Compass Charter School is a public charter school located in Odessa. The charter school serves students in grades kindergarten through 10th grade.

- UTPB STEM Academy - The UTPB STEM is a public, open-enrollment charter school currently located on the UTPB campus in Odessa. The charter was approved by TEA for a total of 3,900 students in its service area of Ector and Midland counties. The Academy serves students in grades kindergarten through 11th grade. The UTPB STEM Academy is dedicated to implementing the newest and most promising practices in education with an emphasis in science, technology, engineering and mathematics (STEM).

Throughout the years, school enrollments have become higher. The following charts provide a visual representation of the rise in school enrollments.

Figure 2.6 MISD & ECISD School Enrollment (2014-2019)





Higher Education Institutions:

- The University of Texas of the Permian Basin is part of the University of Texas system and offers undergraduate and graduate degrees. The university is in Odessa on University Avenue and John Ben Sheppard Parkway. Due to increases in student enrollment, the campus has expanded with newly constructed dorms and buildings. Also, in recent years the university has added a petroleum and mechanical engineering program to its list of academics; a new building to support this program was completed in 2019. The new building is located next to the Center for Energy and Economic Diversification (CEED). The CEED is located midway between Odessa and Midland, Texas. Today, UTPB is a growing and vibrant four-year university serving over 7,000 students from all over the U.S. and the world.

- Odessa College has an estimated 5,000 students each year. The college is located along US 385 on the north side of Odessa. Odessa College offers a 160-hour course to prepare individuals for taking the CDL tests through the Texas Department of Public Safety (TxDPS). Students are taught the fundamentals of tractor trailer driving with key emphasis on safety. The amount of safety taught through this program cannot be determined by course segments or time, it's an element that is included throughout the course - every chapter, every section. Once the course is complete, students should be able to pass the five written exams, air brake test, backing test, and driving test. Each person must also pass a federal Department of Transportation (DOT) physical which is repeated every two years. A federal pre-trip test consisting of naming parts and functions of large-scale vehicles will be reinstated in 2015.

- Midland College focuses on providing higher education, community services, and cultural enrichment to the Midland community. Although MC offers two bachelor's degrees, courses in the college's academic programs transfer easily to four-year universities. Midland College has kept a steady enrollment of 6,000 students per year. The main campus sits on 224 acres and is located on Garfield St. in close proximity to Loop 250.

- Texas Tech University Health Sciences Center of the Permian Basin has campuses in Midland and Odessa that include the School of Allied Health Sciences, the School of Medicine, and the

School of Nursing. Texas Tech Health Science Center has increased enrollment and is expected to be the #1 Medical School in Texas. The Odessa location graduates dozens of residents yearly and 27% of those graduates begin practicing in the area of their residency.

Shopping Centers

Two large regional shopping malls, and a variety of retail centers and chain grocery stores in both Midland and Odessa provide residents and visitors with commercial shopping opportunities. Music City Mall, Midland Park Mall, the Colonnade Shopping Center, Westgate Plaza, Walmart and H-E-B (4) are all examples of major shopping centers in the Midland Odessa region.

Transportation Hubs

Midland International Air & Space Port, Odessa-Schlemeyer Field, Midland Airpark and EZ-Rider's Multi-Modal Facility are all facilities that serve the multimodal travel needs of people living in the area. The transportation hubs within the Permian Basin MPO area boundary have been essential to connecting people to a desired location.

Educational and Recreational Destinations

The region has a rich history of western heritage including ranching, farming, and for a century: oil and gas production. Tourist destinations include:

- Ellen Noel Art Museum, Permian Basin Petroleum Museum, and Museum of the Southwest are some of the art and history museums in the area.
- Jackalopes ice hockey, RockHounds baseball, and football leagues for all ages and skills.
- Sibley Nature Center, George Bush Childhood Home and Museum are some examples of interpretive trails and historic buildings that help tell the story of the region.
- Wagner Noël Performing Arts Center is home to numerous concerts, symphony and chorale performances, and civic events.
- Downtown environments including convention centers and meeting spaces.
- Nationally known chains and local restaurants, hotels, theaters.
- Golf and country clubs.
- Community learning centers and libraries.

2.2 Demographic Trends and Projections

Increased oil and gas production brought on by innovations in hydraulic fracing and horizontal drilling has also resulted in an influx of workers from all over the United States to west Texas. Midland and Odessa have expanded their position as the metropolis of the Permian Basin. This recent growth in economic activity comes with the anticipation of demands on the existing transportation system and other infrastructure discussed within this Plan. The Permian Basin MPO has analyzed the trends of population and economic growth in the region in order to plan and implement projects that address the travel patterns and transportation needs of the metropolitan area. The population of urbanized counties as depicted in Table 2.3 shows that the region has steadily increased in population by every census, while the rate of growth has varied. While Martin County has gained and lost population over that time period it is a largely rural county and only a small portion is included in the Metropolitan Area Boundary (MAB). The MAB is overseen by the MPO and has included Martin County data when available for completeness. It is anticipated that a larger portion of the county will be added to the MAB in the future.

Table 2.3 Total Population for Texas and by County from 1950 to 2010

COUNTY	1950	1960	1970	1980	1990	2000	2010
Ector	42,102	90,995	92,660	115,374	118,934	121,123	137,130
Martin	5,541	5,068	4,774	4,684	4,956	4,746	4,799
Midland	25,785	67,717	65,433	82,636	106,611	116,009	136,872
Texas	7,711,194	9,579,677	11,198,655	14,225,513	16,986,335	20,851,820	25,145,561

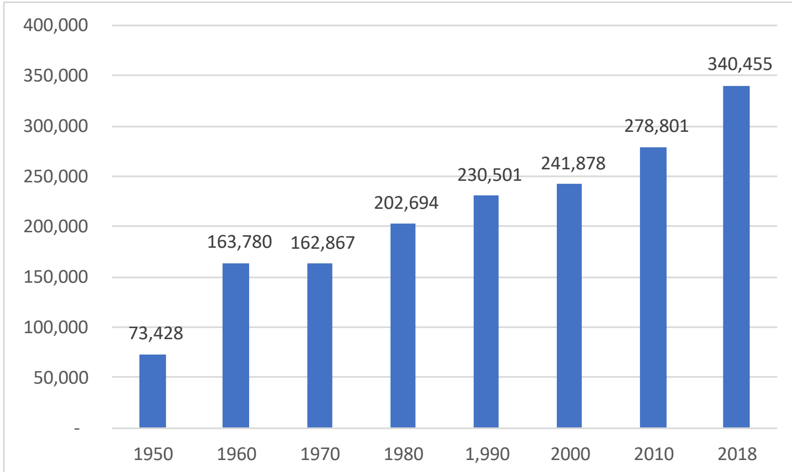
Source: U.S. Census Bureau

2.2.1 Population

Trends

The 2013 annual estimate by the Census Bureau of the population for Ector County was 149,714, 152,395 for Midland County, and 5,753 for Martin County. Considerable growth has occurred in Midland and Ector counties with a regional total of 340,455 in 2018. Table 2.4 illustrates the overall population growth from 2010 and 2018 according to Census Bureau estimates. This table also shows the rate of growth, where Midland County witnessed a rapid increase in population growth at 3.4% per year; Ector County at 2.4% per year, and Martin County 2.6% per year.

Figure 2.7 Metropolitan Region Population from 1950 to 2018



Source: U.S. Census Bureau

Table 2.4 Total Population and Growth Rate 2010 to 2018

COUNTY	POPULATION			GROWTH (2010-2018)	
	2010	2013 Annual Estimates	2018 Annual Estimates	Annual Growth (2010-2018)	Percent Change (2010-2018)
Ector	137,130	149,714	162,124	2.42%	18%
Martin	4,799	5,272	5,753	2.62%	20%
Midland	136,872	152,395	172,578	3.37%	26%
Totals	280,811	307,381	340,455		

Source: U.S. Census Bureau

As the state's lead agency on the production, interpretation, and distribution of demographic data, the Texas Demographic Center (TDC) also produces annual estimates of the total population of counties and places. By their estimate, population growth in the Midland and Odessa area exceeds the growth in other metropolitan areas of comparable size as shown in Table 2.5.

Table 2.5 Projected Population of Similar Sized Metropolitan Statistical Areas

METROPOLITAN STATISTICAL AREA	POPULATION 2010	POPULATION 2018 ESTIMATE	PROJECTED POPULATION GAIN*
Abilene	165252	173433	4.95%
Amarillo	251933	261790	3.91%
Lubbock	290805	317537	9.19%
Midland	141671	171812	21.28%
Odessa	137130	159477	16.30%
San Angelo	112966	120557	6.72%
Wichita Falls	151306	151422	0.08%
State Of Texas	25145565	28525596	**13.44%**

Source: Texas Demographic Center

To aid in the transportation planning process the TxDOT Transportation Planning and Programming Division, Alliance Transportation Group, and the MPO collaborated on an effort to produce a Travel Demand Model (TDM) for the Metropolitan Area Boundary. Delivered in 2017, one product of this effort includes an analysis of demographics. Map 2.2 shows population density per square mile by Traffic Analysis Zone (TAZ). For both the urbanized areas of Midland and Odessa the higher density residential development is outside the downtown core and toward northwest Midland and northeast Odessa. While heavily populated, the unincorporated areas of West Odessa and south Midland County have densities below 1,500 persons per square mile. The TDM comprises 815 small areas for purposes related to modeling traffic projections through the year 2045. These smaller analysis areas are known as Traffic Analysis Zones; a definition is shown below.

Traffic Analysis Zones (TAZs)

TAZs are polygons depicting geographic subareas within the study area. The TAZs contain various attributes related to land use, demographics, household characteristics, employment, and other location based or geographic information. The most reliable, consistent, and abundant source of demographic information available at varying geographic scales is the U.S. census. Therefore, the census geography boundaries were employed as the source for creating the TAZ geography of the Permian Basin MPO TDM.

Source: Permian Basin MPO Travel Demand Model - Model Development Report

Figure 2.8 Travel Demand Model Fact Sheet

Permian Basin MPO Metropolitan Planning Organization

Fact Sheet

Permian Basin Travel Demand Model

To Learn More:
permianbasinmpo.com

What is a travel demand model (TDM)?

- A software tool used to predict how people will use the transportation system.
- TDMs answer important questions about where people travel and how they get there.
- The Permian Basin Metroplitan Planning Organization (MPO) TDM will be used by the MPO to evaluate the ability of the existing transportation system to accommodate future growth in the region.

Why are TDMs important?

- Given the high price tag and longer implementation timeline of infrastructure improvements, it is important that decision makers proactively address the transportation needs of the region and invest limited resources in projects that will best improve mobility over the long term – the TDM is one tool that can be used in this process.

How do TDMs predict traffic?

- Traditionally, travel demand models use a four-step process that uses an area's population, the location of different land uses, and the configuration of the existing and future transportation system (as programmed in various state, regional, and local plans) to answer the following questions:
  1. How many trips will people take?
     - TDMs use population and household characteristics to estimate the number of trips that people will make in the study area – determining the number of trips originating in each traffic analysis zone (TAZ) during the Trip Generation step.
  2. Where will people travel to?
     - Certain land uses are assumed to be trip attractors, or destinations that people commonly travel to: employment centers, restaurants, shopping and entertainment centers, etc.
     - Completion of the Trip Distribution step provides the geographic distribution of origin and destination points within the study area and the number of trips that are predicted to take place between each TAZ pair.
  3. Which routes will they take?
     - The final step, Traffic Assignment, determines the actual routes on the transportation system that people will take from start to finish.
     - The traffic assignment is an iterative process that takes congestion, travel time and class of vehicle into account.

What can a TDM tell us?

- TDMs predict the number of vehicles using each roadway. From this information, other traffic-related measures can be derived, such as travel times, travel speeds, level of service and classes of vehicle using the road.

Fact Sheet

Permian Basin Travel Demand Model

To Learn More:
permianbasinmpo.com

Page 2

Are the results accurate?

- A TDM undergoes a 'reality check' before traffic conditions can be forecasted for future years or different scenarios. A 'base year' is selected for which travel data is known, and the model outputs are compared to the data to see how well the model predicts existing conditions. This process is call validation.
- The TDM must meet an established level of accuracy. If the results do not meet this level of accuracy, adjustment must be made to the inputs until the results are deemed acceptable.

Delphi Process

What is a Delphi process?

- A consensus building process to help understand an issue when historic trends don't necessarily provide a guide to future outcomes.
- In this case the process will be used to identify patterns in regional growth and development through an interactive dialogue with local experts and community leaders.
- The process involves an initial workshop to be held in the region, followed by several rounds of interactive online review and feedback by participants.

Why are we doing one?

- This process is designed to account for newly emerging patterns of development and growth in the Permian Basin region – such as anticipated levels of activity in oil and gas drilling – that are not necessarily reflected in data based on previous historical trends.

How will it be used?

- In the context of this project, the results of the Delphi process will be used to develop regional population and employment forecasts that serve as inputs to the Permian Basin MPO TDM.

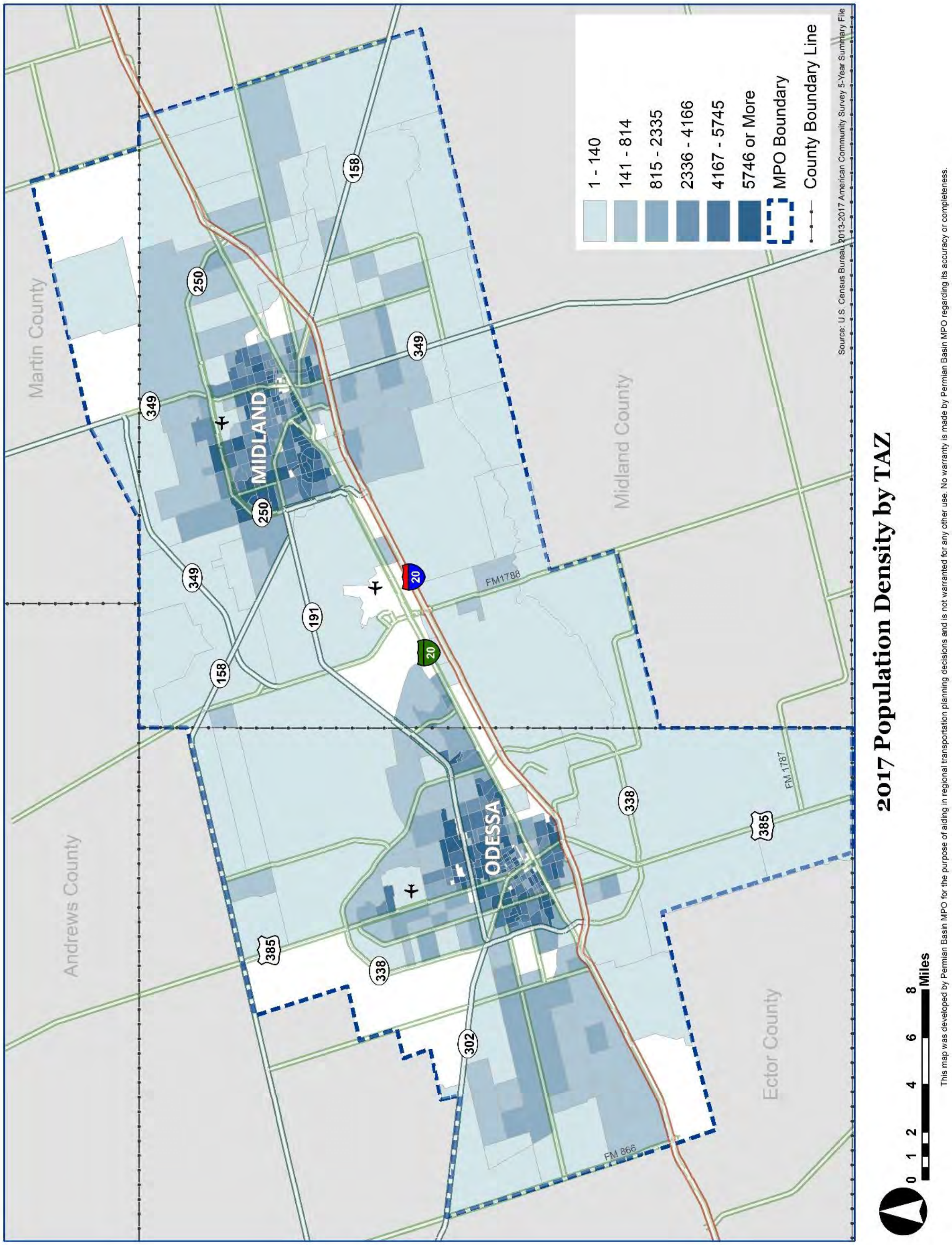
Who is on the Delphi panel?

- The MPO is in the process of recruiting panel participant from the following areas:
  - » TxDOT Odessa District
  - » Colleges
  - » MPO (select staff and very select Technical Committee Members)
  - » County governments/departments
  - » Downtown development corporations
  - » Oil and gas industry representatives
  - » Public Utility Commission of Texas
  - » Real estate brokers
  - » Freight carriers
  - » Business leaders
  - » All area Chambers of Commerce
  - » Employers
  - » Utility companies
  - » Financial professionals
  - » School districts
  - » Long-term residents familiar with the history and legacy of the area
- A panel comprised of participants from these sources will be well-balanced and produce a high-quality projection of the area's future growth.

Permian Basin MPO Metropolitan Planning Organization

Texas Department of Transportation

Map 2.2 2017 Population Density by TAZ



Projections

The history of the region has been closely tied to the ebbs and flows of the oil and gas industry; however, industry experts and nationally recognized economists have stated that the recent advancements in oil and gas extraction combined with major shale discoveries will ensure that the region will be more predictable. This new trend will provide further stability to the area which will affect personal and corporate decisions regarding long term investment. Efforts to plan for and stay ahead of the growing impacts that industry has on the infrastructure to sustain it is the focus of a Regional Freight Study currently underway by TxDOT. This study is further discussed in Chapter 5, Freight. The MPO presents three population projections to consider as part of the *Forward 45* MTP and to prioritize transportation projects in the region.

Permian Basin MPO TDM

The Permian Basin TDM contains demographics for a base year of 2012, as well as years 2017, 2040 and 2045 as shown in table 2.6. The TDM developer's base year population control total was developed using the following reliable sources.

- 2010 U.S. Census Bureau estimates;
- 2012 U.S Census Bureau's American Community Survey (ACS) - 2008-2012 5-Year Estimates.
- 2014 U.S. Census Population Estimates for 2012;
- 2014 Texas State Data Center (TSDC) and
- 2015 Woods & Poole Economics, Inc. Complete Economic and Demographic Data Source (CEDDS);

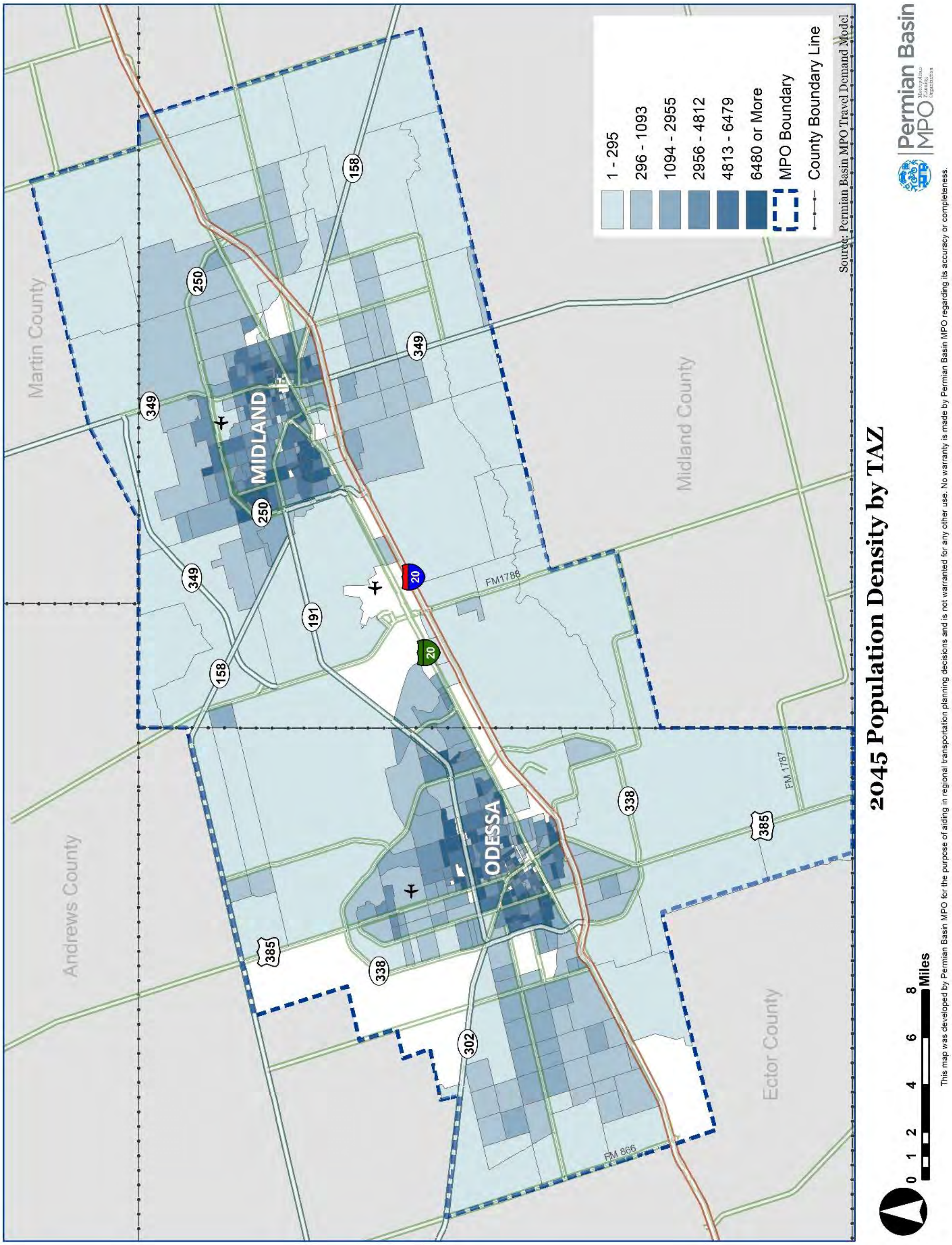
Forecast years were then extrapolated from the control total and allocated to TAZs based on information gathered from planning partners, and stakeholders consulted through community input during a Delphi process. Map 2.3 shows the projected 2045 population density per square mile. At the time of publication, infrastructure and resource limitations in West Odessa and South Midland County were considered limitations to population growth in the area. While the current developments toward east and northeast Odessa as well as northeast and northwest Midland are expected to continue.

Table 2.6 Permian Basin MPO Travel Demand Model Population Totals

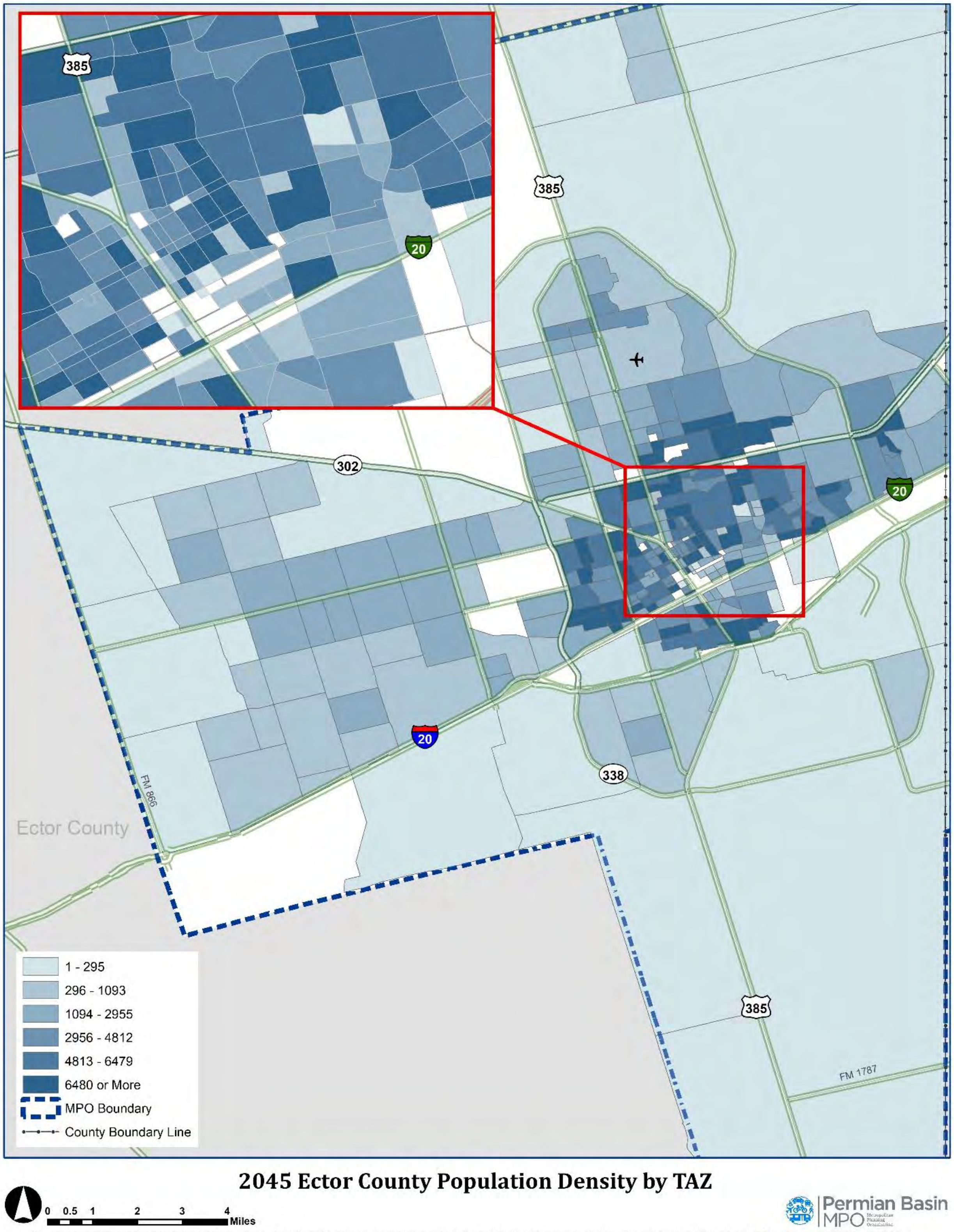
MODEL YEAR	POPULATION
2012	288,262
2017	306,871
2040	406,917
2045	427,163

Source: Permian Basin Travel Demand Model

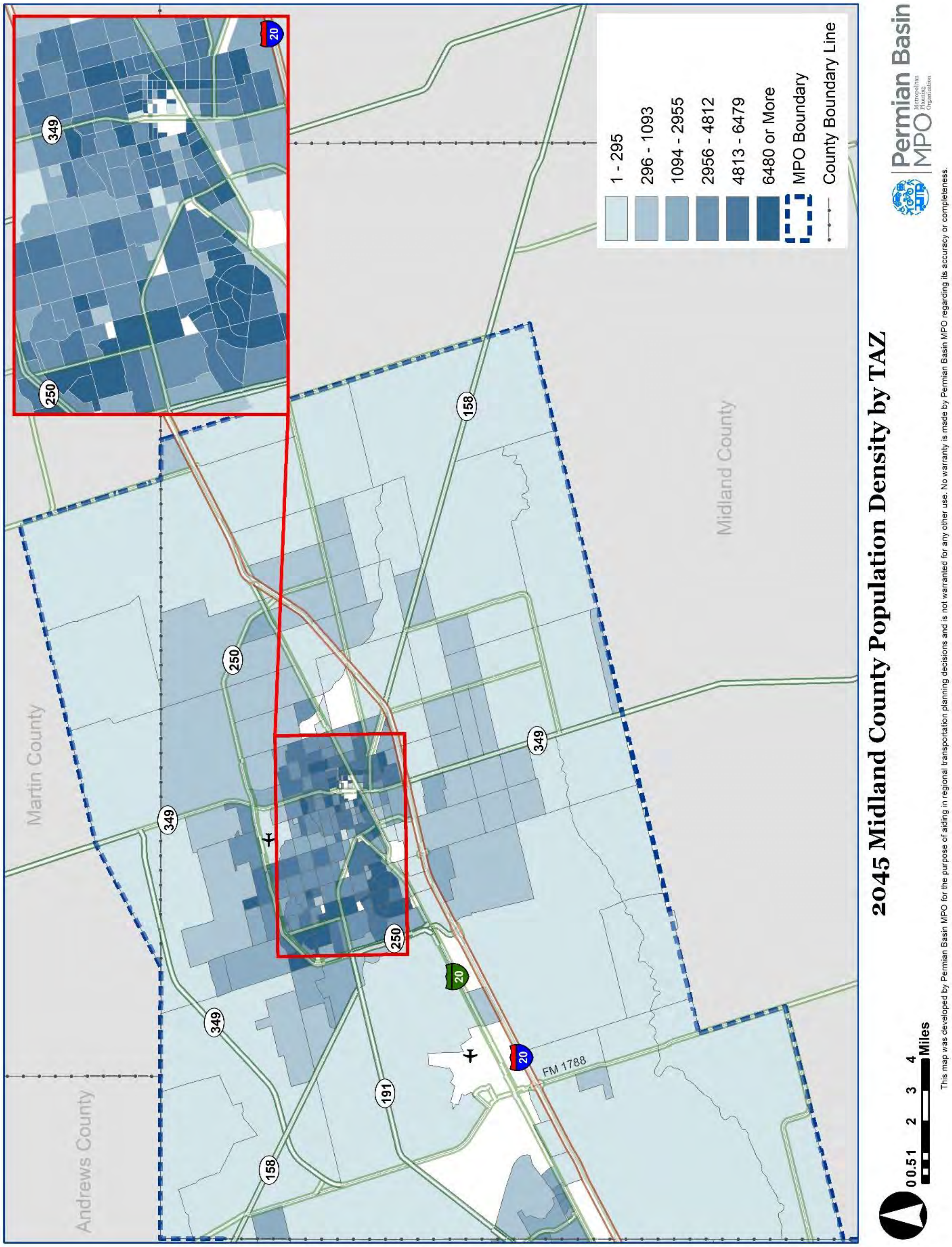
Map 2.3 2045 Projected Population Density by TAZ



Map 2.4 2045 Ector County Projected Population Density by TAZ



Map 2.5 2045 Midland County Projected Population Density by TAZ



Texas Demographic Center (TDC)

The TDC (previously the Texas State Data Center) has provided official estimates of future population by decade through 2050. In a January 2019 published report, the TDC projected Ector and Midland Counties to be in the top ten counties for population growth between 2010 and 2050 (Table 2.7). Growth is anticipated in and around urban centers such as Dallas-Fort Worth, Austin, San Antonio, Houston, and the Permian Basin as shown in Figure 2.5. In addition, population projections by decade for the time frame of the MTP forecast year and slightly beyond are shown in Table 2.8. It should be noted here that the MPO regional population is projected to reach population growth beyond the rate for Texas as a whole. Texas is projected to grow at a rate 88.27% through the year 2050. The new population will add more traffic and traffic related needs, specifically requiring the MPO to continue to address safety and congestion on the transportation system. Of the three data resources evaluated, the TDC projections showed the largest increase.

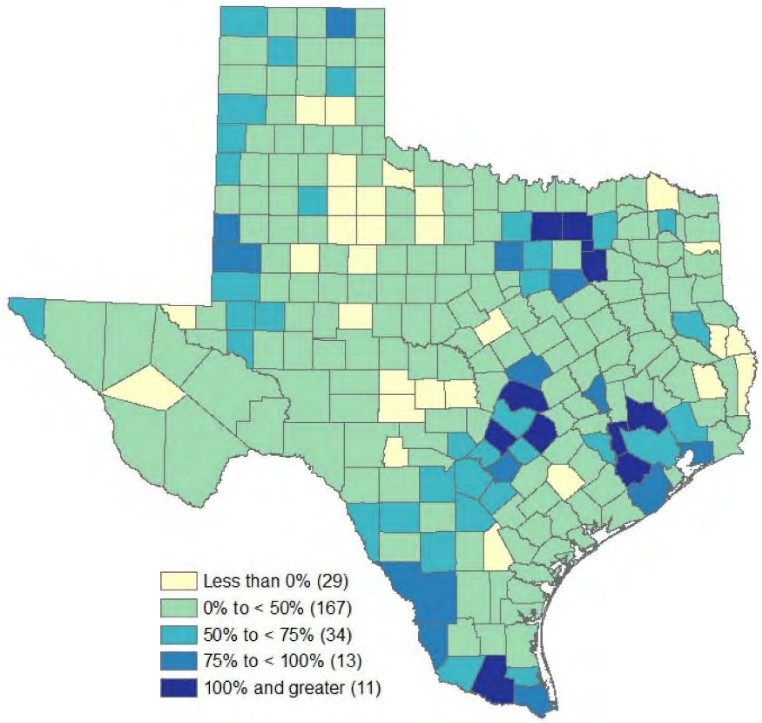
Table 2.7 Top 10 Texas Counties with Greatest Percent Change between 2010 and 2050*

COUNTY	RANKING	2010 POPULATION	2050 POPULATION PROJECTION	NUMERIC CHANGE	PERCENT CHANGE
Andrews	1	14786	100655	85869	580.7%
Hays	2	157107	746149	589042	374.9%
Crane	3	4375	18425	14050	321.1%
Midland	4	136872	573981	437109	319.4%
Kendall	5	33410	137844	104434	312.6%
Williamson	6	422679	1645982	1223303	289.4%
Fort Bend	7	585375	2267998	1682623	287.4%
Ector	8	137130	494892	357762	260.9%
Comal	9	108472	389584	281112	259.2%
Denton	10	662614	2332629	1670015	252.0%

Source: Texas Demographic Center

****2010-2015 Migration Scenario***

Figure 2.8 Projected Percent Population Change in Texas Counties 2010 to 2050*



Source: Texas Demographic Center
2010-2015 Migration Scenario

Table 2.8 Texas Demographic Center 2018 Population Projection for 2010-2050

ENTITY	2010	2020	2030	2040	2050	PERCENT CHANGE (2010-2050)
Ector County	137,130	184,841	255,418	357,013	494,413	261%
Midland County	136,872	187,364	268,123	391,055	573,085	319%
Martin County	4,799	6,044	7,618	9,376	11,695	144%
Texas	25,145,561	29,677,668	34,894,452	40,686,496	47,342,417	88.27%

Source: Texas Demographic Center

Woods & Poole Economics, Inc.

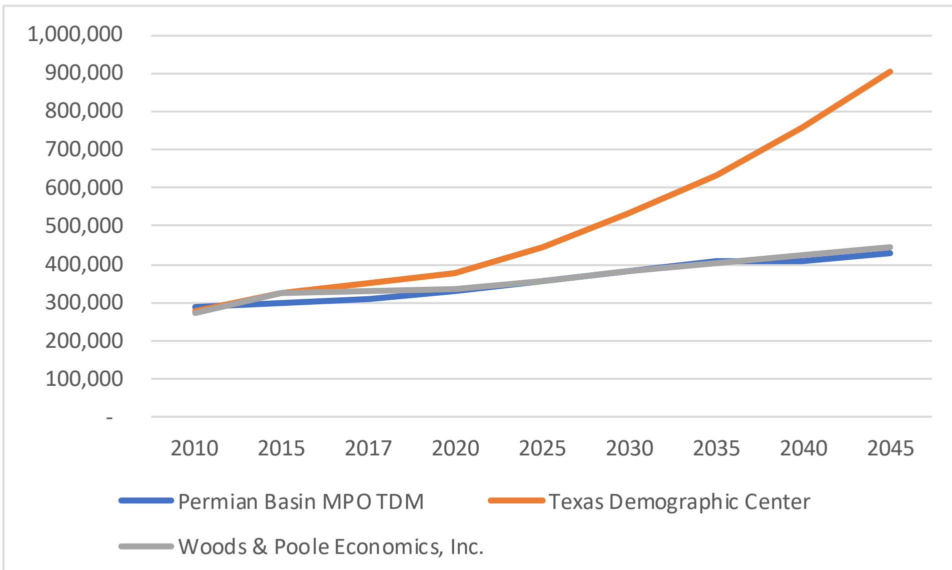
The third data set gathered was from Woods & Poole Economics, Inc. They produce economic and demographic data at county, Core Based Statistical Area (CBSA) and state levels. An excerpt from their economic and demographic data available for 2019 by county is shown in Table 2.9. show the population estimates for the three counties by decade into 2050. The forecast year for this MTP is 2045. As noted previously the TDC projections were the highest of the three sources with a 2045 regional total of 905,650, second was the Woods & Pool data with 445,971, and with only slightly less, the Permian Basin MPO TDM with 427,163. The trends among the three population projections is depicted in Figure 2.7.

Table 2.9 Woods & Poole Economics, Inc. 2019 Population Projection for 2010-2050

COUNTY	2010	2020	2030	2040	2050
Ector County	137,079	162,651	181,326	199,061	216,473
Midland County	136,979	172,524	198,512	224,929	252,464
Martin County	4,809	5,742	6,147	6,580	7,044

Source: Woods & Poole Economics, Inc.

Figure 2.9 Comparison of Population Projections



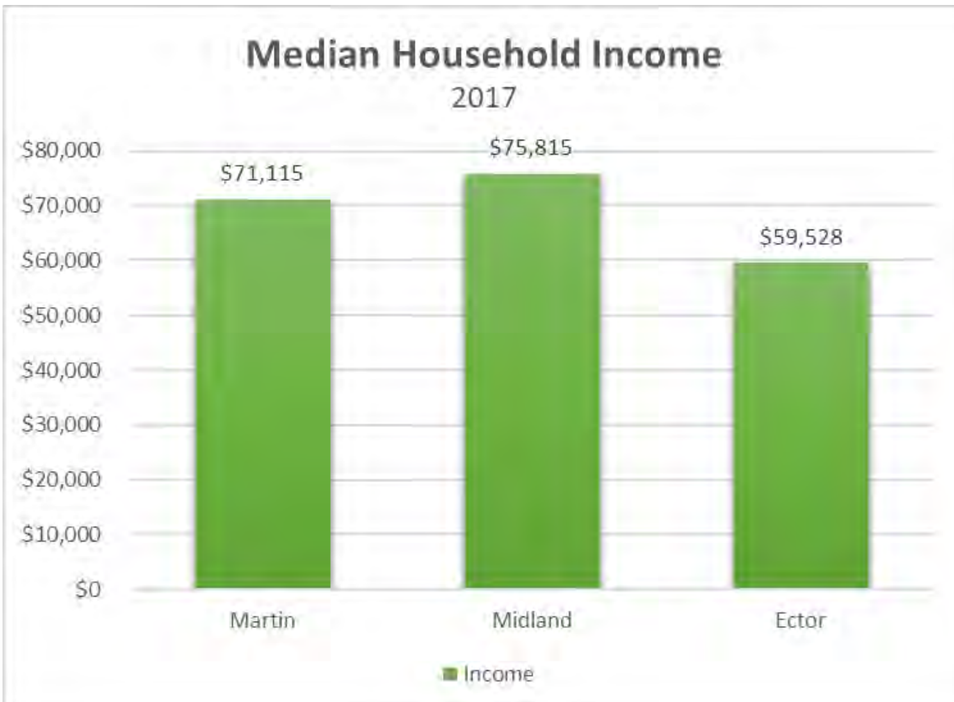
These population estimates all project growth for the area, but the TDC takes a dramatic shift upward just after 2020 and shows a 2040 estimated population a little over 757,000. The Woods & Poole estimate as well as the Travel Demand Model estimates show a more conservative growth rate when compared to that of the TDC. The Woods and Poole estimate of 430,570 persons in 2040 and is just above the Travel Demand Model estimate of 406,914. The forecast year for this MTP is 2045.

2.2.2 Households

Trends

In 2010, the number of households was 48,688 in Ector County and 50,845 in Midland County. The table below illustrates the historic growth in households from 2000 through 2017. Midland County has experienced significant growth as compared to the households in Ector County. In addition, recent 2017 American Community Survey estimates from the U.S. Census Bureau report the median household income for Ector County as $59,528, Midland County $75,815, and Martin County as $71,115.

Figure 2.10 Median Household Income 2017 by County



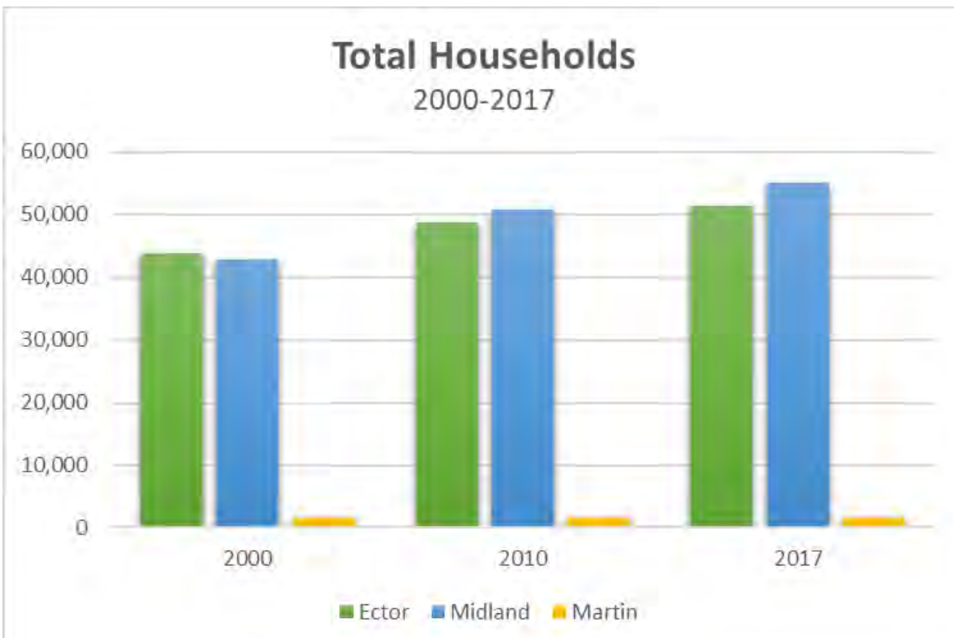
Source: U.S. Census Bureau

Table 2.10 2017 Total Households

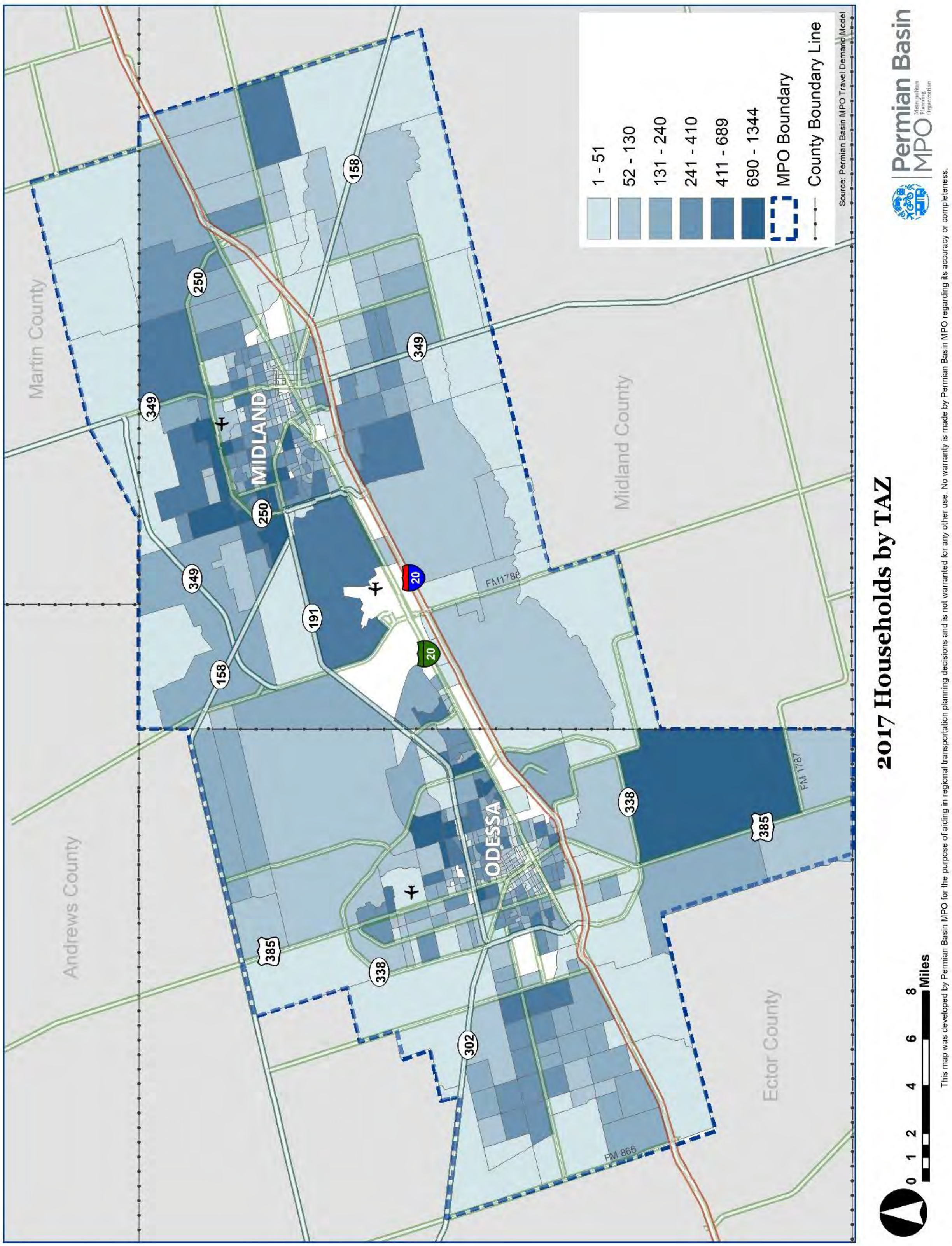
				GROWTH (2000-2017)			
	2000	2010	2017	Annual Growth (2000-2010)	Percent Change (2000-2010)	Annual Growth (2010 - 2017)	Percent Change (2010-2017)
Ector	43,846	48,688	51,475	0.6%	11.0%	0.9%	17.4%
Martin	1,624	1,649	1,635	0.1%	1.5%	0.04%	0.7%
Midland	42,745	50,845	55,045	1.0%	18.9%	1.5%	28.8%
Total Households	86,591	99,533	120,539	0.8%	14.9%	2.0%	39.2%

Source U.S. Census Bureau

Figure 2.11 Total Households 2000 – 2017 by County



Map 2.6 2017 Households by TAZ



Vehicle Availability

Data concerning vehicle availability is collected by the U.S. Census Bureau with the latest available data from 2017. The following table presents the percentages of vehicle availability in Midland and Ector County compared to Texas and the United States.

Table 2.11 2017 Vehicle Availability

Vehicle Availability	Ector	Martin	Midland	Region Total	Percentage for Region	Texas	Percentage for Texas	United States	Percentage for U.S.
Occupied housing units	51,475	1,635	55,045	108,155		9,430,419		118,825,921	
No vehicles available	2,396	24	1,931	4,351	4%	517,945	5.5%	10,468,418	8.8%
1 vehicle available	17,134	470	16,385	33,989	31.4%	3,150,038	33.4%	39,472,759	33.2%
2 vehicles available	20,449	689	22,756	43,894	40.6%	3,801,252	40.3%	44,402,282	37.4%
3 or more vehicles available	11,496	452	13,973	25,921	24%	1,961,184	20.8%	24,482,462	20.6%

Source: U.S. Census Bureau

A lower percentage of occupied housing units in the Midland Odessa region have no access to vehicles, 4% as compared to the rest of the state at 5.5% and the nation 8.8%. However, the percentage of occupied housing units owning three or more cars, 24%, was more than the state and national average, both at 21%. The data would suggest that the residents living in the Midland Odessa region have a high dependency on automobiles and availability to pay for them. Most people use an automobile in order to have access to the transportation network for daily activities such as employment, education, shopping, medical and recreation. The following figure illustrates a historical trend in vehicle availability from 2010, 2014, & 2017. Over the years, the percentage of households with no vehicles has declined, while the percentage of households with two or more vehicles has increased through 2017.

Figure 2.12 Vehicle Availability by Household 2010, 2014, & 2017

Source: U.S. Census Bureau

Means of Transportation to Work

People travel to work by using a mix of travel modes. Automobiles, walking, bicycles, public transit, Uber, Lyft, and taxis are all means of transportation that serve the daily needs of individuals in the MPO. Based on the 2017 American Community Survey census data, most residents living in the Midland Odessa region relied heavily on private automobiles as their means of transportation to work. The table below illustrates a comparison of rates by mode for 2017. The counties Ector, Martin, and Midland are compared to the state and the nation. Percentages were higher in the Midland Odessa region as compared to state and the nation as the total number of workers preferred to drive alone. The use of public transportation to get to work was the least preferred mode of choice for the Midland Odessa region.

Table 2.12 2017 Transportation Mode of Choice Comparison

	ECTOR COUNTY		MARTIN		MIDLAND		TEXAS		UNITED STATES	
	Estimate	Percent	Estimate	Percent	Estimate	Percent	Estimate	Percent	Estimate	Percent
Workers, 16 years and over	71,555		2,521		79,698		12,550,476		148,432,042	
Drove Alone	58,060	81.1%	2058	81.6%	67,786	85.1%	10,097,917	80.5%	113,464,765	76.4%
Carpooled	9,719	13.6%	274	10.9%	7,832	9.8%	1,299,410	10.4%	13,588,952	9.2%
Public Transportation	310	0.4%	0	0.0%	194	0.2%	187,311	1.5%	7,607,907	5.1%
Walked	1,183	1.7%	86	3.4%	671	0.8%	195,192	1.6%	4,049,337	2.7%
Other Means	724	1.0%	19	0.8%	1,286	1.6%	208,437	1.7%	2,693,671	1.8%
Worked at home	1,559	2.2%	84	3.3%	1929	2.4%	562209	4.5%	7027410	4.7%

Source: U.S. Census Bureau

Travel Time to Work

Mean travel times from home to work are from the U.S. Census Bureau's American Fact Finder Survey with data from 2014 and in 2017. The data indicates trends in travel time to work over a five-year period. According to the data the mean travel time for workers in the area was lower than the state and national travel times. However, travel time percentage in all counties was higher in the 10 to 19-minute range as compared to state and national averages. The assumption is made that people living in the region commute to either city or county for work.

Table 2.14 2014 Versus 2017 Travel Times to Work

2017	ECTOR COUNTY	MARTIN COUNTY	MIDLAND COUNTY	TEXAS	UNITED STATES
Workers, 16 years and over	71,555	2,521	79,698	12,550,476	148,432,042
Less than 10 minutes	16.0%	33.8%	16.0%	12.2%	12.7%
10 to 14 minutes	19.6%	14.6%	22.7%	13.5%	13.6%
15 to 19 minutes	20.7%	3.3%	23.3%	15.8%	15.3%
20 to 24 minutes	15.6%	9.5%	15.8%	14.5%	14.6%
25 to 29 minutes	4.0%	5.4%	3.4%	5.9%	6.4%
30 to 34 minutes	11.6%	25.8%	9.7%	14.9%	13.7%
35 to 44 minutes	2.6%	2.5%	2.2%	6.5%	6.8%
45 to 59 minutes	3.0%	4.3%	2.8%	8.6%	8.1%
60 or more minutes	6.9%	0.8%	4.3%	8.1%	8.9%
Mean travel time to work (minutes)	22	17.9	19.5	26.1	26.4
2014	**ECTOR COUNTY**	**MARTIN COUNTY**	**MIDLAND COUNTY**	**TEXAS**	**UNITED STATES**
Workers, 16 years and over	66,280	2,222	72,747	11,685,902	141,337,148
Less than 10 minutes	17.1%	35.0%	17.0%	12.9%	13.3%
10 to 14 minutes	21.1%	8.7%	21.4%	14.1%	14.1%
15 to 19 minutes	22.2%	5.6%	24.6%	16.0%	15.5%
20 to 24 minutes	15.4%	15.6%	14.8%	14.8%	14.8%
25 to 29 minutes	3.2%	3.7%	3.9%	5.9%	6.2%
30 to 34 minutes	10.0%	21.5%	8.8%	15.0%	13.7%
35 to 44 minutes	2.6%	3.2%	2.7%	6.2%	6.5%
45 to 59 minutes	2.6%	3.9%	2.4%	7.9%	7.7%
60 or more minutes	5.7%	2.7%	4.4%	7.3%	8.3%
Mean travel time to work (minutes)	20.6	18.4	19.4	25.2	25.7

Source: U.S. Census Bureau

Commuters

To further illustrate the point that workers travel from throughout the region, Tables 2.14 & 2.15 show workers in the Midland and Odessa Metropolitan Statistical Areas (MSA) and where they live. This is important data because it shows that of the top 19 counties with the greatest number of commuters into these MSAs, 20,831 workers travel into the Midland MSA while 11,235 workers travel to the Odessa MSA for employment purposes.

Table 2.14 Workers in Midland, TX MSA and Where They Live – 2019 1st Qtr.

REGION	COMMUTERS
Midland County, Texas	90,475
Ector County, Texas	12,396
Martin County, Texas	2,645
Andrews County, Texas	823
Howard County, Texas	794
Tarrant County, Texas	649
Gaines County, Texas	434
Dallas County, Texas	404
Ward County, Texas	334
Denton County, Texas	324
Dawson County, Texas	314
Winkler County, Texas	266
El Paso County, Texas	231
Taylor County, Texas	206
Harris County, Texas	190
Reagan County, Texas	187
Crane County, Texas	178
Collin County, Texas	177
Lubbock County, Texas	145
Upton County, Texas	137
Reeves County, Texas	136
Total from Outside Midland MSA	20,967

Source: JobsEQ®

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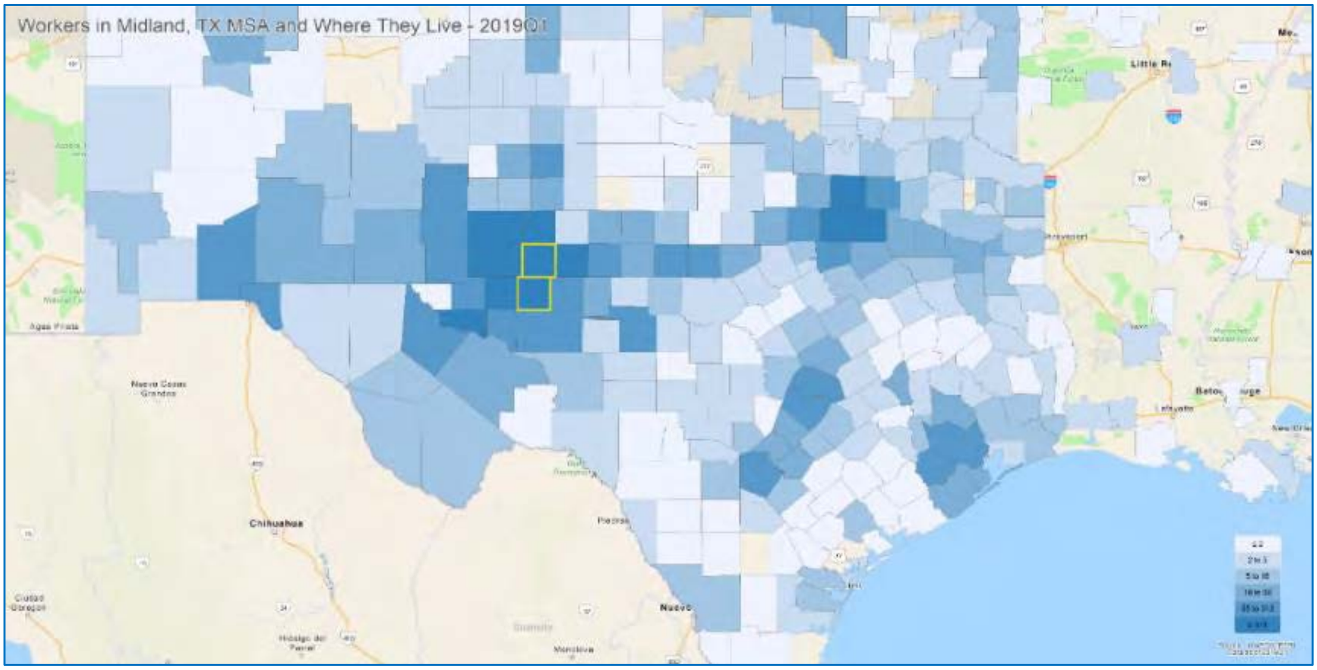
Figure 2.15 2017 Workers in Midland, TX MSA and Where They Live – 2019 1st Qtr.



Source: JobsEQ®
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Table 2.15 Workers in Odessa, TX MSA and Where They Live - 2019 1st Qtr.

REGION	COMMUTERS
Ector County, Texas	70,745
Midland County, Texas	7,459
Andrews County, Texas	628
Ward County, Texas	365
Tarrant County, Texas	324
Gaines County, Texas	286
Howard County, Texas	244
Winkler County, Texas	243
Crane County, Texas	210
El Paso County, Texas	207
Dallas County, Texas	165
Martin County, Texas	150
Reeves County, Texas	139
Taylor County, Texas	138
Harris County, Texas	133
Collin County, Texas	123
Dawson County, Texas	109
Denton County, Texas	107
Doña Ana County, New México	103
Upton County, Texas	102
Williamson County, Texas	87
Total from Outside Odessa MSA	11,322

Source: JobsEQ®

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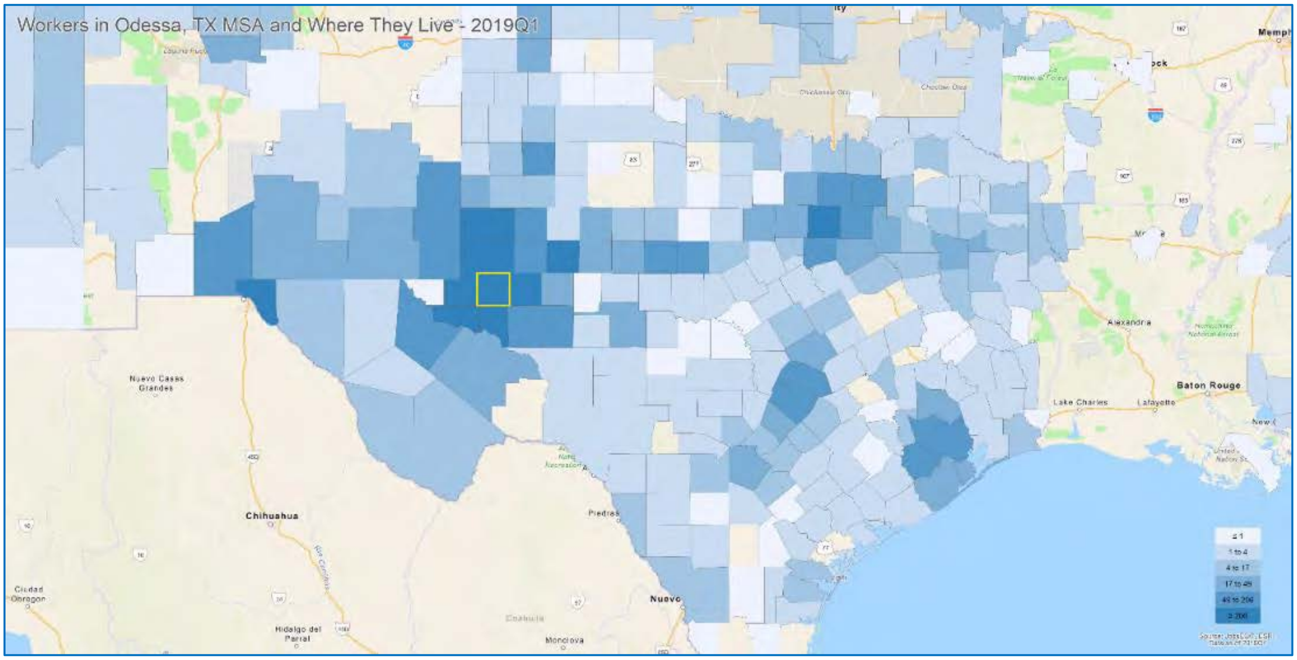
Figure 2.16 2017 Workers in Odessa, TX MSA and Where They Live - 2019 1st Qtr.



Source: JobsEQ®

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Projections

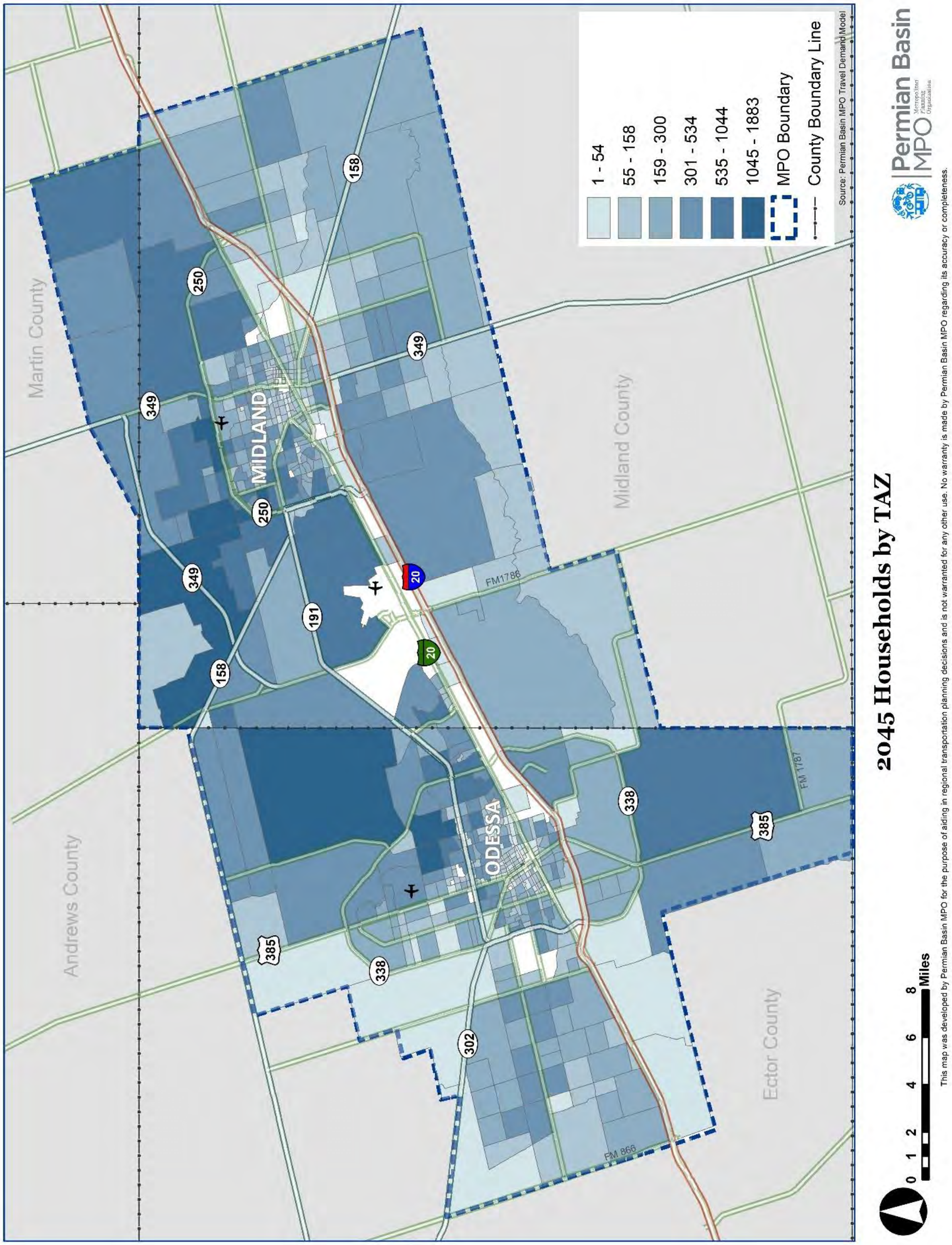
Included in the development of the Permian Basin TDM were household forecasts. The number of households estimated for 2017 was 108,861 within the MAB. An additional 28,947 households are projected for the area by 2040. Over the following five years the households are projected to increase to 144,515.

Table 2.16 Permian Basin MPO Travel Demand Model Household Totals

MODEL YEAR	HOUSEHOLDS
2012	103,083
2017	108,861
2040	137,808
2045	144,515

Source: Permian Basin Travel Demand Model

Map 2.7 2045 Households by TAZ



2.2.3 Employment

Trends

The table below is a list of the major employers in the Midland Odessa region. The information was compiled from Midland and Odessa's Economic Development Corporations and data from the Texas Labor Market Information website. The data indicates that the school districts followed by the medical facilities are the largest employers in the Midland Odessa region. The slight majority of the large employers on this list are private and range from Oil & Gas to service industry employers. The *Vision 2040* MTP also indicated top employers by number of employees. The employers from the top several tiers remain from the 2040 list and there are more employers now in the 500 to 750 tiers including HEB, UTPB, Texas Tech University Health, and Family Dollar Distribution Center to name a few.

The Midland Odessa region is recognized as an economic generator for employment among workers and industries. The economy of the Midland Odessa region continues to be fueled by the petroleum industry but in recent years has diversified with jobs from the educational and health services industries. Map 2.6 shows the employment density per square mile according to the Permian Basin Travel Demand Model 2017 model year. Figures 2.11 illustrates the distribution of employment by industry sector in year 2019 for the Odessa and Midland MSAs. The type of employment with the largest share of jobs in the Midland Odessa region is the natural resources, mining and construction sector with 30.8 percent. However, the trade, transportation and utilities sectors are close behind with 21.4 percent of all employment in the region as shown in Figure 2.12. The two sectors have had steady gains over the last five years since the data was last reported in the previous MTP. Diversification is an important goal of the local economy, but the petroleum industry is still the driving force behind the surges of employment in the Midland Odessa region. This activity has also resulted in low unemployment rates.

Table 2.17 2018 Top Employers

EMPLOYEES	EMPLOYER	SECTOR	TYPE
<2,550	Ector County ISD	Public	Education
	Midland ISD	Public	Education
	Saulsbury Industries	Private	Electric & Construction
1,500 to 2,000	Medical Center Hospital	Public	Medical Services
	Midland Memorial Hospital	Public	Medical Services
	Keane Group	Private	Oil & Gas
1,000 to 1,500	Warren Equipment Companies	Private	Compressor Systems
	Halliburton Services	Private	Oil & Gas
	Dawson Geophysical	Private	Oil & Gas
	Weatherford	Private	Oil & Gas
750 to 1,000	City of Midland	Public	City Government
	Walmart	Private	Retail
	City of Odessa	Public	City Government
	Odessa Regional Medical Center	Public	Medical Services
	Select Energy Oil Field Services	Private	Oil & Gas
500 to 750	Holloman Construction	Private	Oil Field Construction
	Ector County	Public	Government
	Midland County	Public	Government
	Bobby Cos Companies, Inc.	Private	Retail/Restaurants
	HEB	Private	Grocery
	Albertsons/Market Street	Private	Grocery
	Texas Tech University Health	Public	Education/Medical Services
	University of Texas Permian Basin	Public	Education
	Compressor Systems Inc	Private	Compressor Systems
	Concho Resources Inc.	Private	Oil & Gas
	Family Dollar Distribution Center	Private	Distribution Center
	Oceans Behavioral Hospital Permian Basin	Private	Medical Services

Source: U.S. Census Bureau

Map 2.8 2017 Employment Density by TAZ

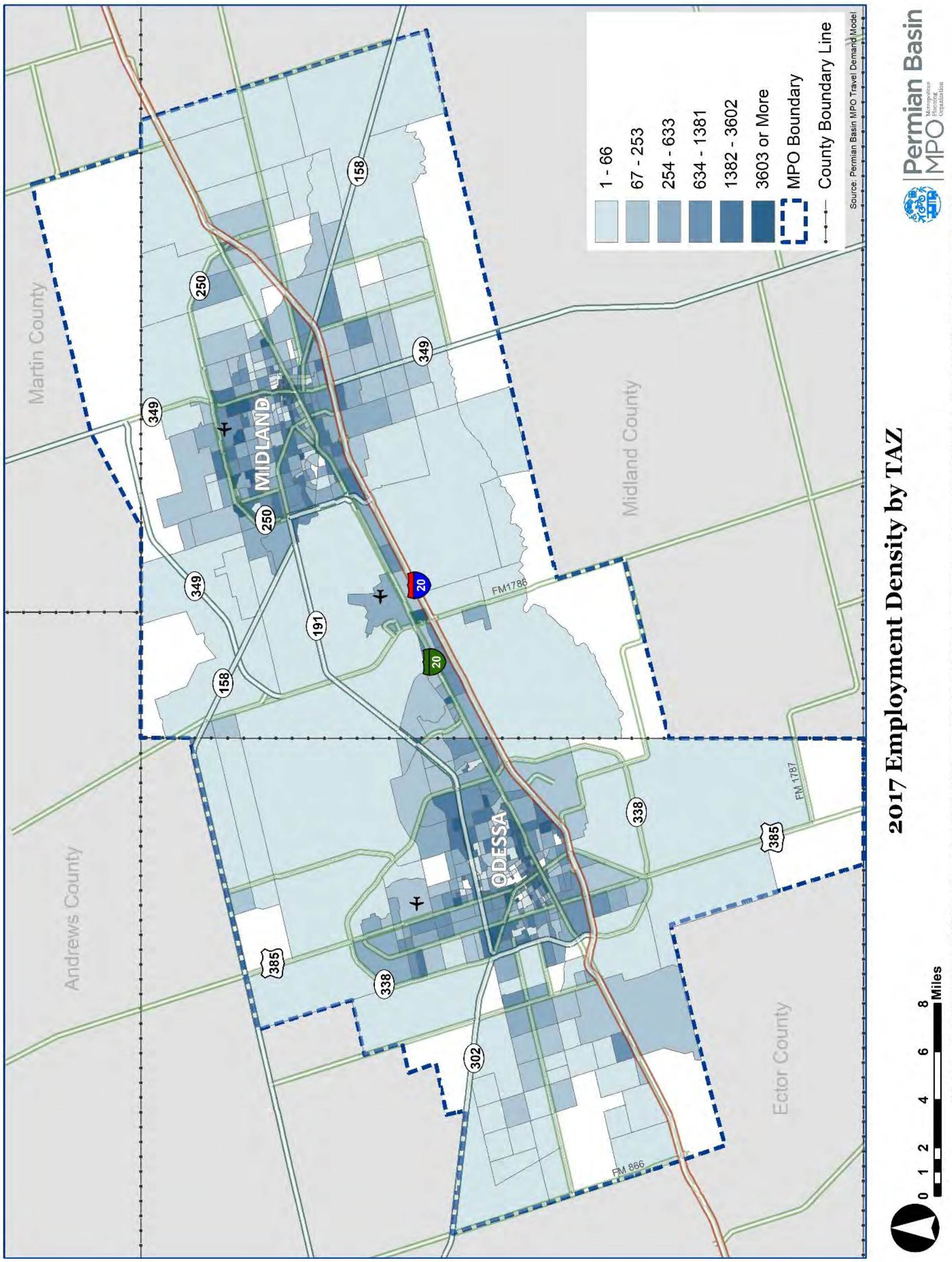
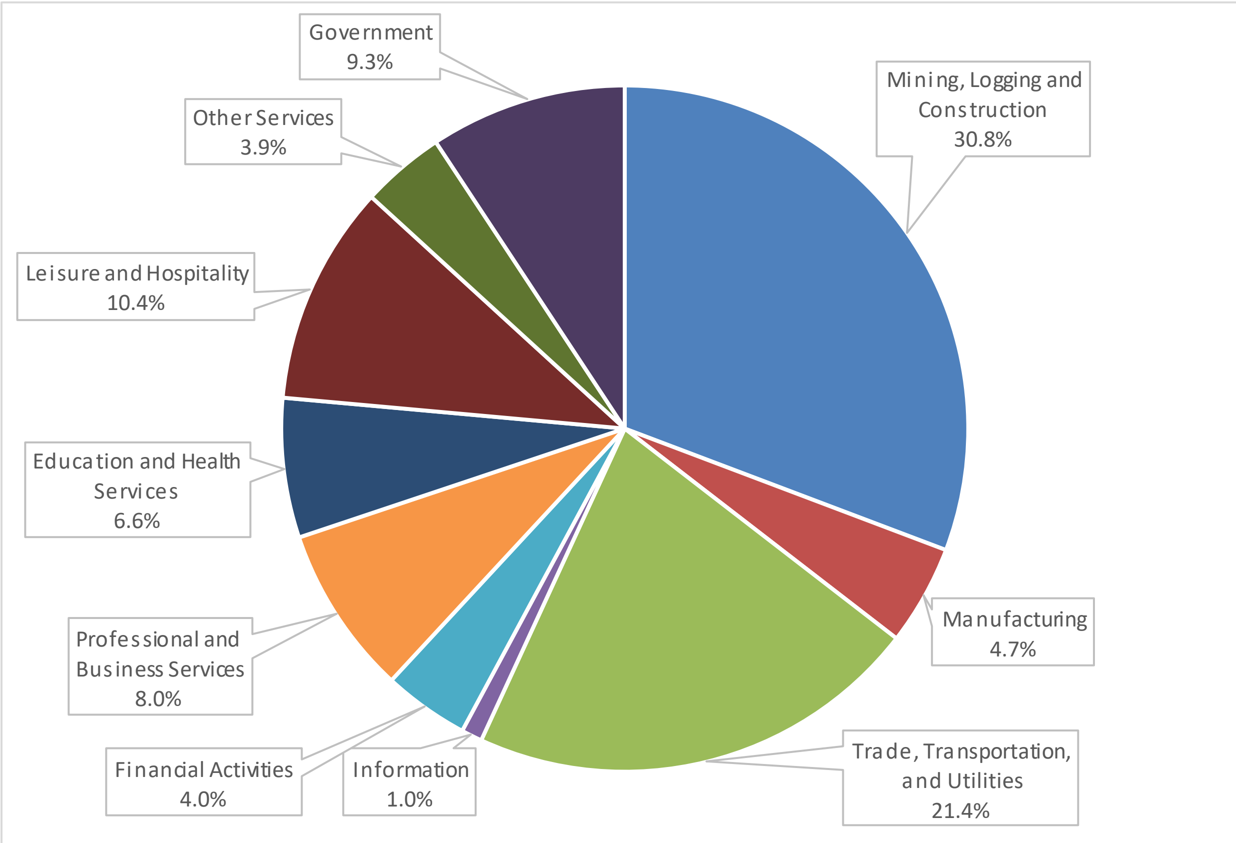


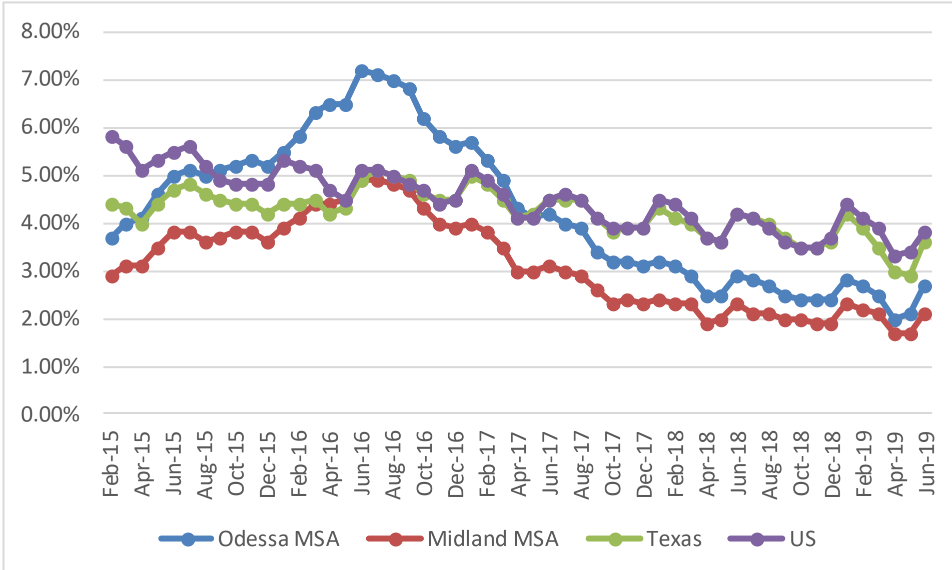
Figure 2.17 June 2019 Employment by Industry Sector



Source: Texas Labor Market Information

The unemployment rates for the Midland and Odessa MSAs are considerably lower than the state and national rates. Figure 2.13 and Table 2.18 show a historical record of unemployment rate for both MSAs and for the state and the nation from February of 2015 to June 2019.

Figure 2.18 Historical Unemployment Rates 2015-2019



Source: Texas Labor Market Information

Table 2.18 June 2018 and 2019 Labor Force Statistics

ODESSA MSA LABOR FORCE STATISTICS				
	Jun-19	May-19	Jun-18	Yearly Change
Civilian Labor Force	86,045	86,161	85,030	1,015
Employed	83,758	84,348	82,524	1,234
Unemployed	2,287	1,813	2,506	-219
Unemployment Rate	2.7%	2.1%	2.9%	-0.2%
MIDLAND MSA LABOR FORCE STATISTICS				
	Jun-19	May-19	Jun-18	Yearly Change
Civilian Labor Force	106,549	106,103	104,751	1,798
Employed	104,308	104,315	102,331	1,977
Unemployed	2,241	1,788	2,420	-179
Unemployment Rate	2.1%	1.7%	2.3%	-0.2%
TX LABOR FORCE STATISTICS				
	Jun-19	May-19	Jun-18	Yearly Change
Civilian Labor Force	14,043,429	13,966,995	13,866,660	176,769
Employed	13,542,322	13,558,482	13,281,765	260,557
Unemployed	501,107	408,513	584,895	-83,788
Unemployment Rate	3.6%	2.9%	4.2%	-0.6%
US LABOR FORCE STATISTICS				
	Jun-19	May-19	Jun-18	Yearly Change
Civilian Labor Force	164,120,000	162,655,000	163,277,000	843,000
Employed	157,828,000	157,152,000	156,465,000	1,363,000
Unemployed	6,292,000	5,503,000	6,812,000	-520,000
Unemployment Rate	3.8%	3.4%	4.2%	-0.4%

Source: Texas Labor Market Information

Table 2.19 Employment by Industry Sector June 2019 Percent Change

INDUSTRY	JUN-19	MAY-19	JUN-18	PERCENT MONTHLY CHANGE	PERCENT YEARLY CHANGE
Total Nonfarm	193,100	192,700	189,300	0%	2%
Mining, Logging and Construction	59,400	58,700	57,900	1%	3%
Manufacturing	9,100	9,000	8,700	1%	4%
Trade, Transportation, and Utilities	41,300	40,800	39,200	1%	5%
Information	1,900	1,900	1,600	0%	16%
Financial Activities	7,800	7,800	8,000	0%	-3%
Professional and Business Services	15,400	15,300	14,700	1%	5%
Education and Health Services	12,700	12,900	12,700	-2%	0%
Leisure and Hospitality	20,000	20,000	19,400	0%	3%
Other Services	7,600	7,500	7,800	1%	-3%
Government	17,900	18,800	19,300	-5%	-8%

Source: Texas Labor Market Information

Projections

Base year employment control totals were developed using the following sources:

- 2012 U.S. Census Bureau's Longitudinal Employer – Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES);
- 2012 U.S. Census Bureau's County Business Pattern Data (CBP);
- 2012 U.S. Bureau of Economic Analysis (BEA) Table CA25N5;
- 2015 Woods & Poole Economics, Inc. Complete Economic and Demographic Data Source (CEDDS);
- 2015 Texas Workforce Commission's Sites on Texas 2.0 (SOTv2.0) Public Education and Government Employment Data (2015 Dun & Bradstreet dataset) provided by PB MPO;
- 2012 U.S. Census Bureau's Census of Governments; and
- 2012 Texas Workforce Commission (TWC) Dataset.

The 2014 U.S. Census Bureau's mid-year county-level employment and population estimates for 2012 were used for the county-level control totals. Employment control totals were derived from 2012 CBP employment estimates with some adjustments. The 2012 CBP employment contains inefficiencies for farm and government employment.

Table 2.20 Permian Basin MPO Travel Demand Model Employment Totals through 2045

MODEL YEAR	EMPLOYMENT
2012	141,873
2017	152,823
2040	215,168
2045	231,079

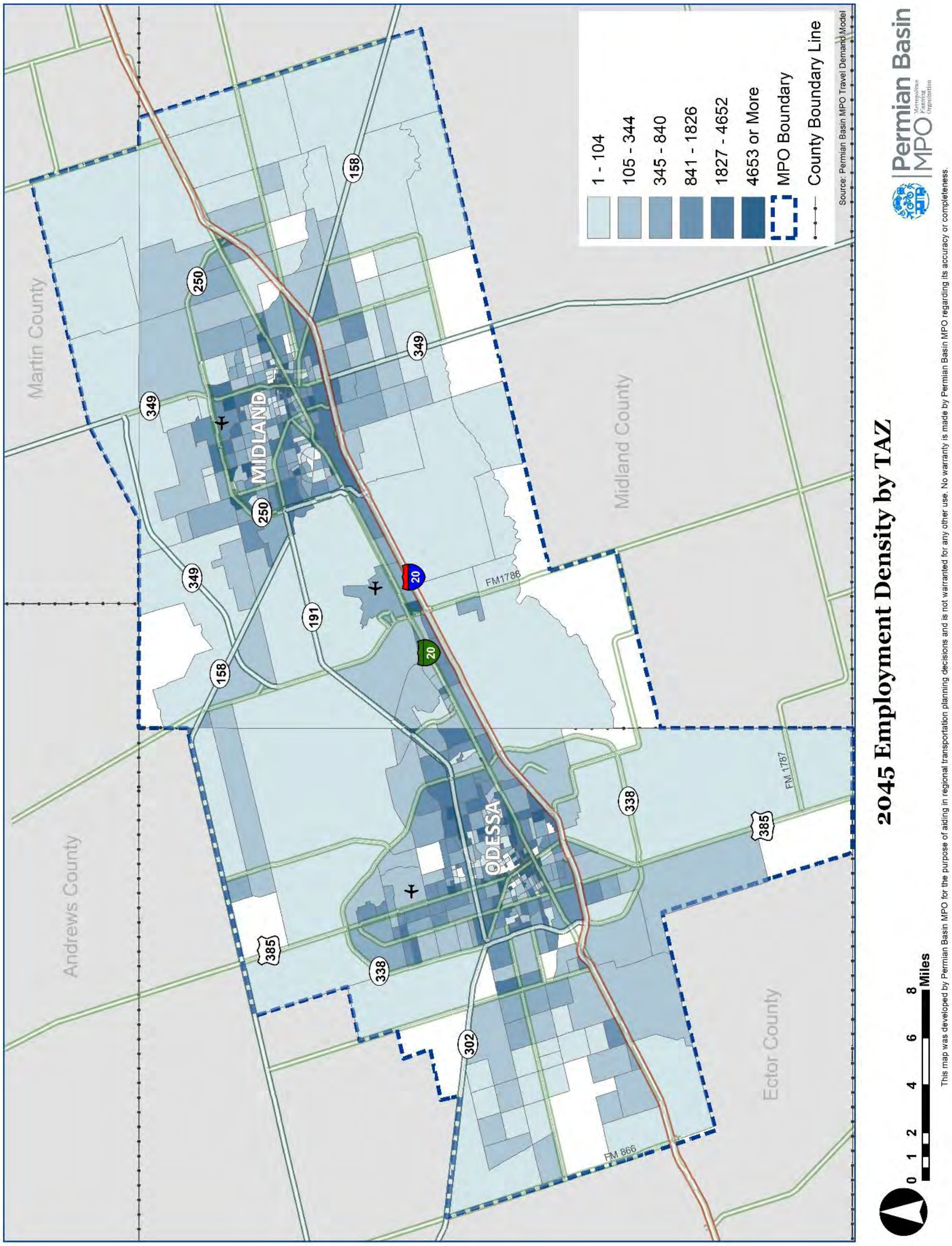
Source: Permian Basin Travel Demand Model

Table 2.21 Woods & Poole Employment Projections

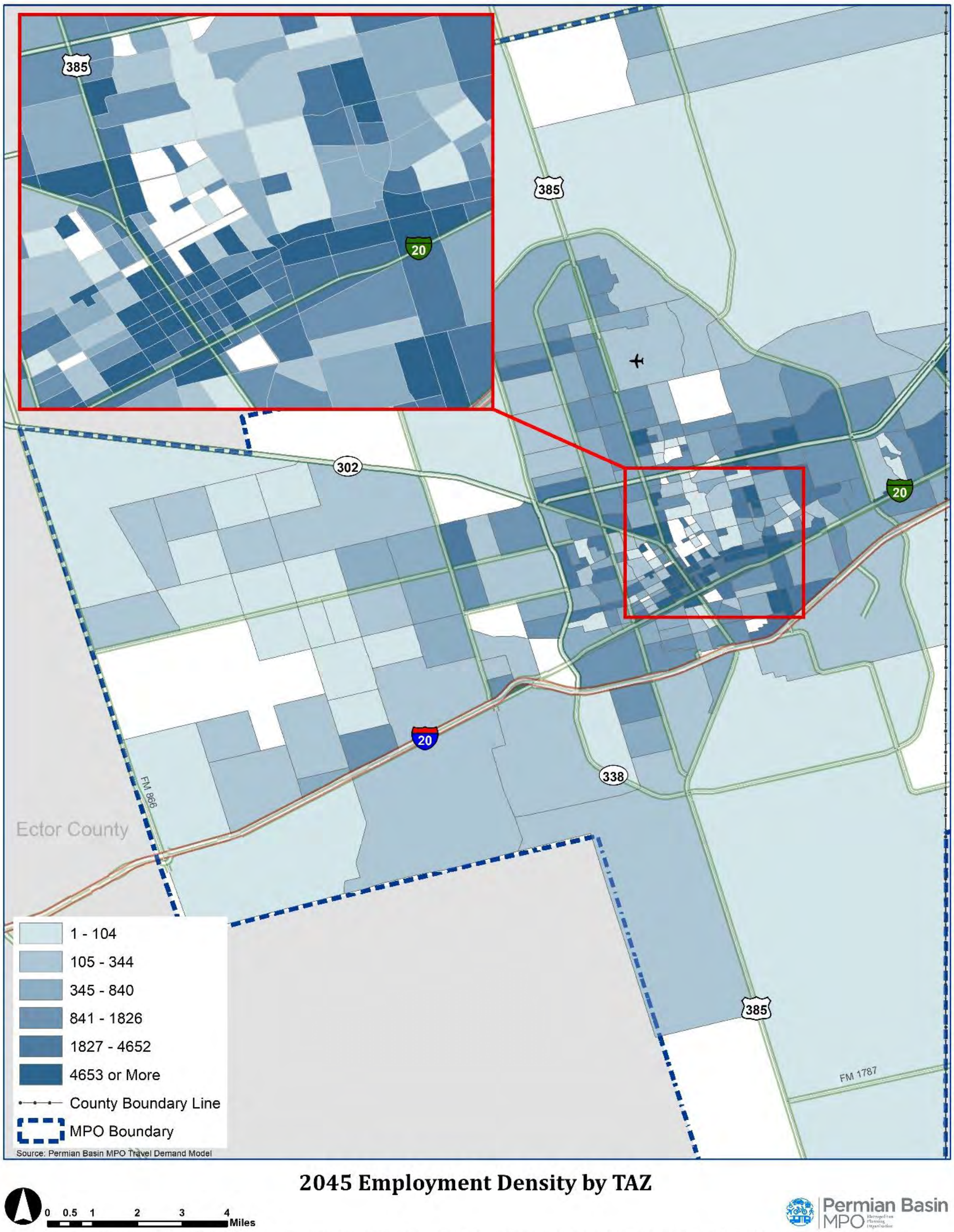
COUNTY	2010	2020	2030	2040	2050
Ector County	78,317	100035	116788	133374	151492
Midland County	105388	155214	188970	225878	268097
Martin County	2536	3763	4452	5200	6123
Total	186,241	259,012	310,210	364,452	425,712

Source: Woods & Poole Economics, Inc.

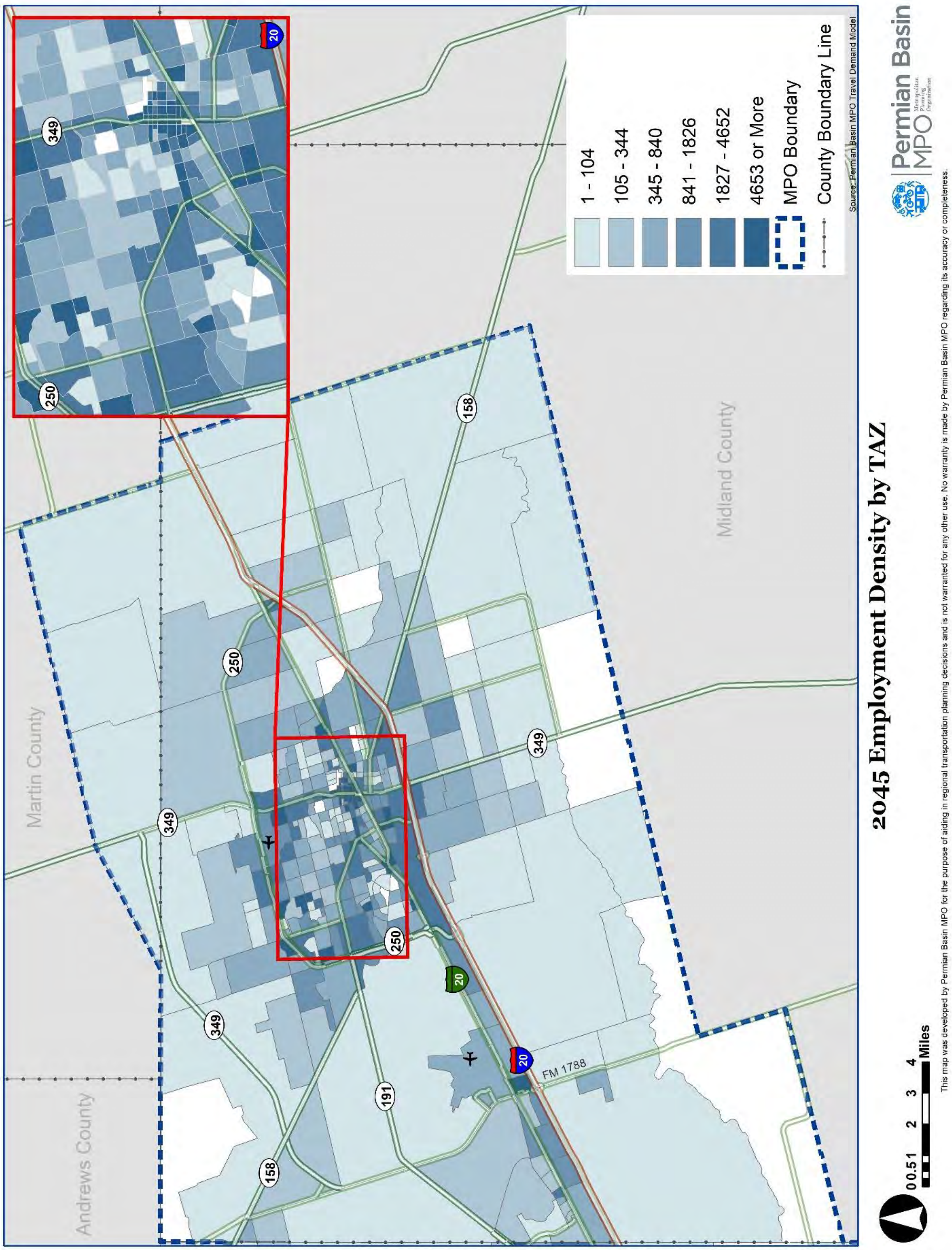
Map 2.9 2045 Employment Density by TAZ



Map 2.10 2045 Employment Density by TAZ



Map 2.11 2045 Employment Density by TAZ



2.3 Environmental Justice and Title VI

Title VI of the Civil Rights Act of 1964 is a federal law that protects individuals, groups and organizations from discrimination based on race, color or national origin in federally assisted programs and activities. Since then, other nondiscrimination laws have expanded the scope and range of Title VI application and reach, reference to Title VI now includes other provisions of federal statutes and related authorities to the extent that they prohibit discrimination in programs and activities receiving federal financial assistance. On February 11, 1994, President Clinton signed *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The Executive Order requires that each Federal agency shall, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid "disproportionately high and adverse" effects on minority and low-income populations. Permian Basin MPO's EJ initiatives are considered in all phases of planning and focuses on enhanced public involvement and an analysis of the distribution of benefits and impacts. The *Forward 45* MTP is based on the following EJ principles derived from the United States Department of Transportation (USDOT):

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

As part of the MTP update, U.S. Census, 2013-2017 American Community Survey (ACS) 5 Year estimates was used to identify the geographic distribution of poverty, low-income, limited English proficiency, and minority populations. The level of census data from the 2017 ACS data utilized is at the census tract level. This limitation is a challenge when attempting to analyze the data available for the portion of Martin County as these census tracts stretch way beyond the MAB.

2.3.1 Minority Population

The maps 2.12 and 2.13 below illustrate the 2017 distribution of African American and Hispanic population over the census tracts within the MPO boundary. The census tracts with high concentrations of minority populations are located on the west and south sides of Odessa and the east and south sides of Midland. Also, the following figures represent the distribution of different races and the percentage comparison between all population groups.

Map 2.12 2017 African American Population Distribution by Census Tract

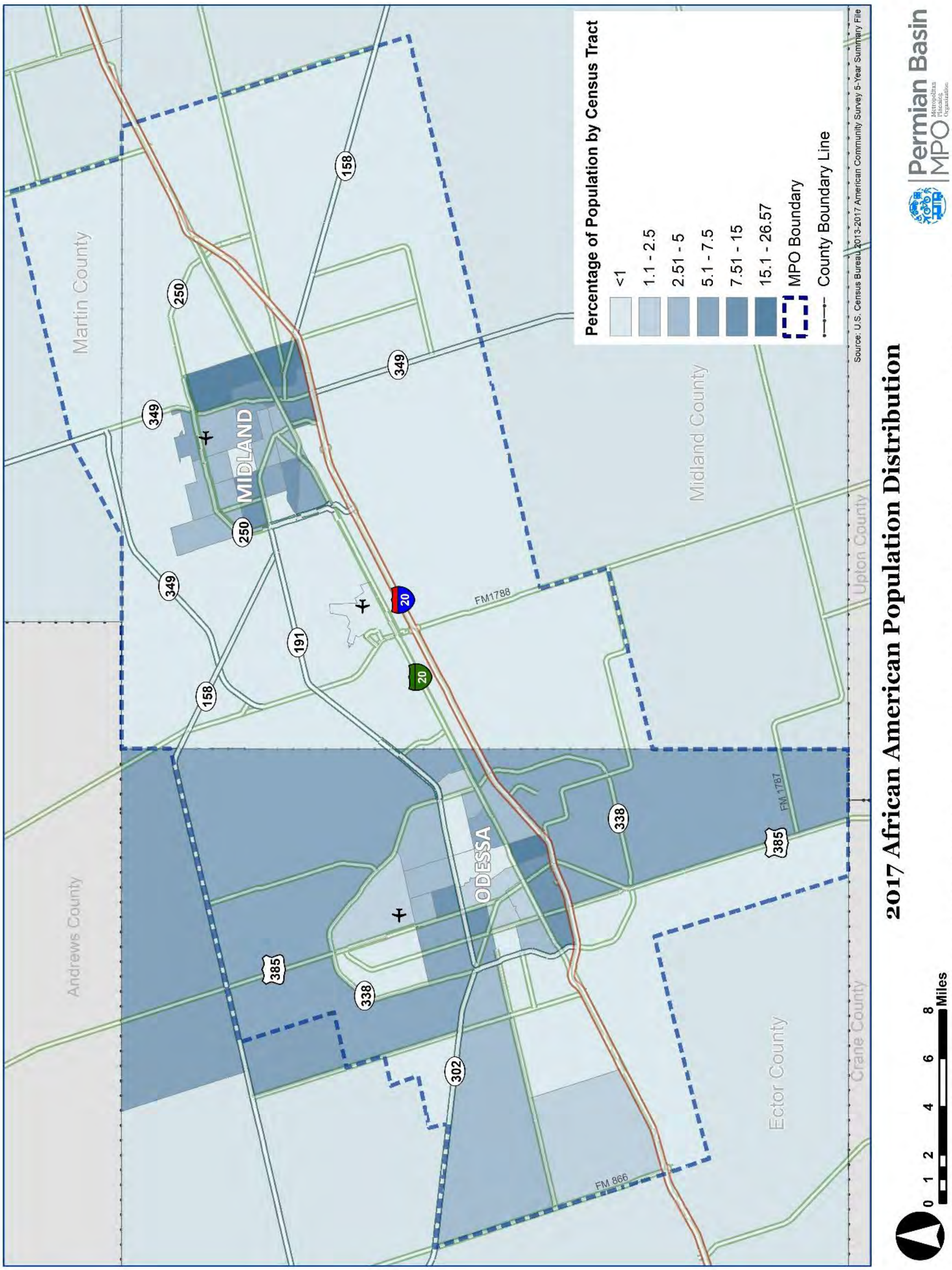


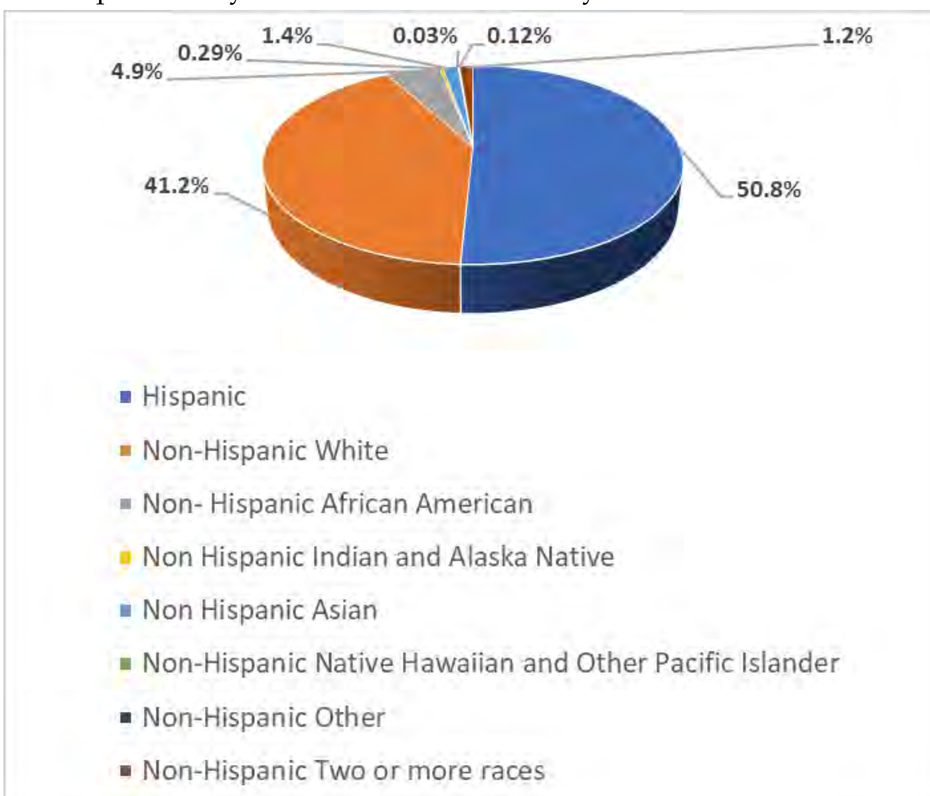
Table 2.22 below indicates that all three counties lying in the metropolitan planning area have a high percentage of Hispanic population, as shown, Ector County has the highest Hispanic population with over 60%. The other two counties are approximately equal in Non-Hispanic White and Hispanic population.

Table 2.22 2017 Population Hispanic or Latino and Race

COUNTY	TOTAL POPULATION	HISPANIC	NON-HISPANIC WHITE	NON-HISPANIC AFRICAN AMERICAN	NON-HISPANIC INDIAN AND ALASKA NATIVE	NON-HISPANIC ASIAN	NON-HISPANIC NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	NON-HISPANIC OTHER	NON-HISPANIC TWO OR MORE RACES
Ector	155,744	91,475	53,705	6,451	283	1,628	26	238	1,938
Martin	5,547	2,500	2,977	36	26	0	5	0	3
Midland	159,883	69,124	75,630	9,374	608	2,913	74	146	2,014

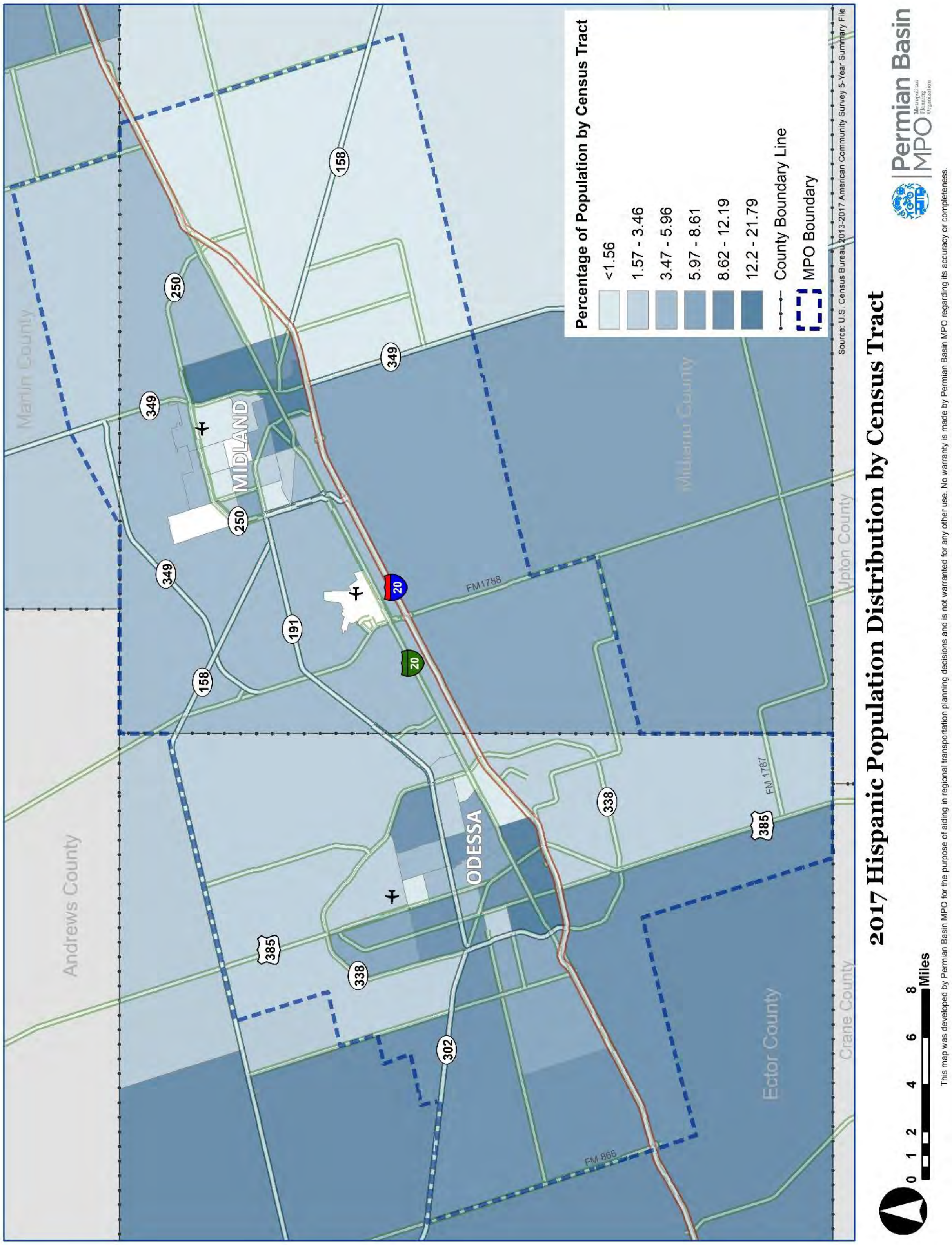
Source: U.S. Census Bureau

Figure 2.14 2017 Population by Race Within Three County Area



Source: U.S. Census Bureau

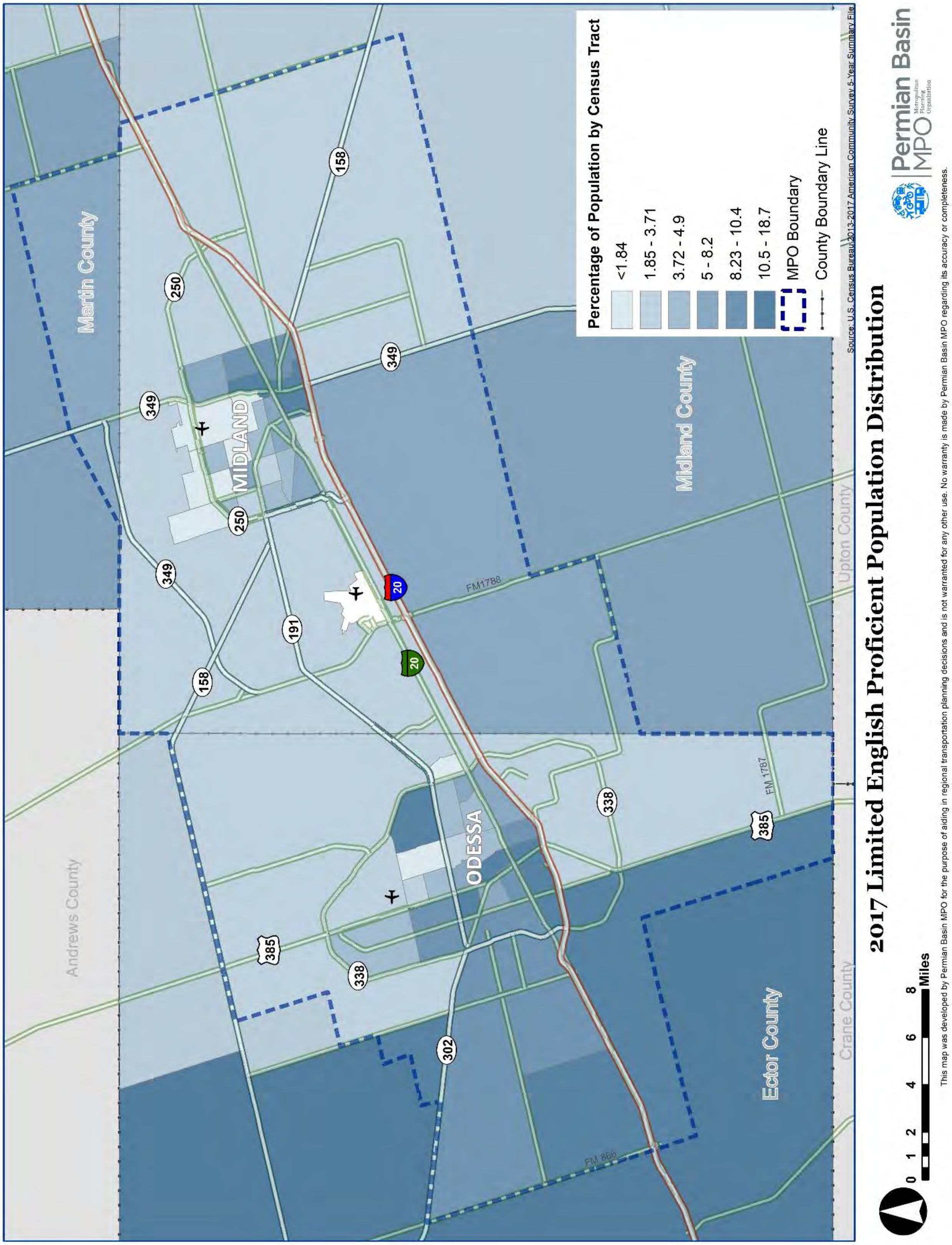
Map 2.13 2017 Hispanic Population Distribution by Census Tract



2.3.2 Limited English Proficient Population

Executive Order 13166: Improving Access to Services for Persons with Limited English Proficiency, defines Limited English Proficiency (LEP) persons as those who do not speak English as their primary language and have limited ability to read, speak, write or understand English. Permian Basin MPO has identified the geographic concentrations of LEP individuals in the metropolitan area boundary. LEP populations are in the areas of west Odessa and south Midland. The U.S. Census Bureau has listed Spanish as the largest language spoken by LEP individuals within the MPO boundary.

Map 2.14 2017 Limited English Proficiency Population



2.3.3 Poverty and Low-Income

As previously mentioned, low-income populations are included in *Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The U. S. Census Bureau determines poverty thresholds annually. They are determined for size of family and number of children. The U.S. Department of Health and Human Services then simplifies those figures and releases its own poverty guidelines. Many Federal programs use these guidelines to determine eligibility. The 2017 Poverty threshold for the three counties in the MPO boundary is $24,600 per year for a family of four.

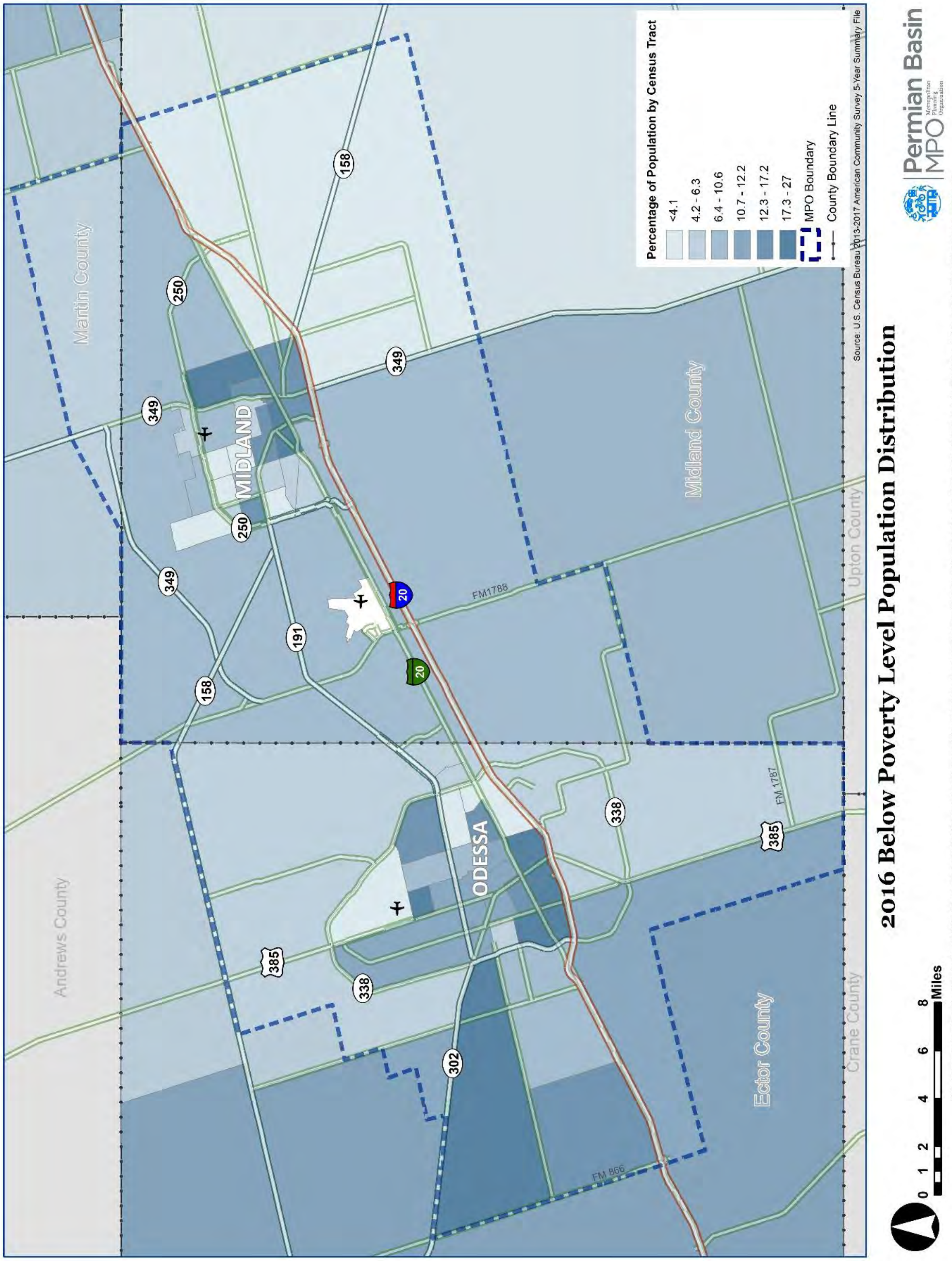
As a recipient of federal funds TxDOT and the MPO are committed to considering Title VI and EJ populations in its mission. TxDOT have furthermore published a Handbook as a guideline for its agents.

- Low-Income – A person whose median household income is at or below the Department of Health and Human Services poverty guidelines for a family of four for the current year.

- Low-Income Population – This term is used to describe any readily identifiable group of low-income persons living in geographic proximity and, if circumstances warrant, geographically dispersed/transient persons, such as migrant workers or Native Americans, similarly affected by a proposed TxDOT project.

Source: TxDOT Environmental Handbook Community Impacts, Environmental Justice, Limited English Proficiency and Title VI Compliance

Map 2.15 2017 Poverty Households



2.4 Public Participation Process

2.4.1 Public Participation Plan

Chapter 1 also mentions the Permian Basin MPO's Public Participation Plan since it is an important document in the planning process. The PPP is the core document under which interested and affected persons, organizations, agencies, and government representatives are consulted and included in the metropolitan transportation planning process. The Permian Basin's PPP will be updated in FY 2020; it is currently compliant with the federal FAST Act (23 CFR 450.316); however, the MPO has expressed a desire to maximize public participation using technology and other communication means to derive a higher level of public interest in its planning programs. In FY 2020 the MPO will revise its PPP and enhance its methods of reaching out to the public. The Permian Basin MPO maintains a database of email addresses and phone numbers for persons, groups, and agencies interested in being notified when new information or updates are available including when public meetings are scheduled. In order to facilitate the expansion of consultation and stakeholder involvement, this database was updated to include regional contacts for public ports, intercity bus, regulatory and disaster preparedness organizations, and tourism and economic development agencies.

2.4.2 Additional Outreach

Since the adoption of the *Vision 2040* MTP, MPO staff have made regular presentations to stakeholders and interest groups. These include the Midland and Odessa Rotary Clubs, the Permian Basin Builders Association, the Permian Basin Realtors Association, both Chambers of Commerce, the Midland Economic Development Corporation, the Odessa Development Corporation, and the EZ-Rider rural transit partnership. Typical attendance at these types of meetings is 40 persons.

2.4.3 *Forward 45* Public Participation Outreach

The Permian Basin MPO's 2045 Metropolitan Transportation Plan is a comprehensive planning document covering the period 2020 – 2045. The FAST Act along with previous federal highway bill legislation requires MPOs and states to engage stakeholders in the transportation planning process; this means the general public, public and private agencies, and numerous interest groups. Preparation of this *Forward 45* plan included numerous documented efforts to gather input from the following sources:

- cities, including Midland, Odessa, and unincorporated communities
- counties, including Ector, Martin and Midland
- state, including TxDOT, Permian Basin Regional Planning Commission, Texas A&M Transportation Institute, Texas Railroad Commission, Texas Demographic Center
- federal agencies, FHWA, FTA, US Fish and Wildlife,
- business community, Odessa Chamber of Commerce, Midland Chamber of Commerce, Odessa Development Corporation, Midland Development Corporation, Permian Basin Builders Association, Permian Basin Petroleum Association, Permian Strategic Partnership, Priority

Midland, Permian Road Safety Coalition, MOTRAN, other interested stakeholders, and the general public.

This chapter includes a summary of the efforts completed by the Permian Basin MPO to solicit input into the development of this Metropolitan Transportation Plan.

Public Meetings Record

A major component of the development of the *Forward 45* MTP was a succession of public meetings which were held to provide an update to proposed transportation planning developments. These meetings were held to educate the public and to engage and receive feedback on MPO's *Forward 45* MTP. Four public meetings were held at various locations across the MPO region, Table 2.23 indicates the schedule details for the first set of public meetings. The purpose of the first series of public meetings was to gain participants' perspectives on existing and future transportation issues across the Midland Odessa region. Attendees had the opportunity to provide input and feedback through written comment cards, map locations, and prioritization of spending by mode preference. The meetings also included an exchange of ideas with study team members and other present stakeholders.

Information was presented at the first set of public meetings using display posters mounted on easels throughout the meeting room for early viewing by participants. A PowerPoint presentation was made by staff for approximately one-half hour to inform attendees about the nature of the meeting and to introduce the MPO and the region in general as well as the proposed planning programs specifically. A direct tie to the MPO's vision and goals was incorporated during the meetings to permit attendees to understand the link behind decisions being considered and long-range goals to improve transportation in the region.

Among the topics presented at the meetings was a discussion on the federal planning factors and the Texas HB 20 requirements for consideration in the MTP, the process of project development from concept to construction, an update on crash data, and the current project list and the proposed MTP/TIP amendment. For discussion on these topics, aerial maps and static maps were made available for the initial presentation and subsequent opportunity for markup by the public.

Stakeholder Involvement

The Permian Basin MPO hosted a variety of outreach activities to seek additional input from the public safety providers, bicycle and pedestrian advocates, and economic development strategists.

Policy Board Meetings

The Policy Board is the governing body for the MPO and makes all decisions regarding transportation policies and adopts all plans and programs developed by the MPO. The Policy Board provided regular and continuing general policy guidance during the development of this plan. The Board meets monthly and its meetings are open to the public. All MPO Policy Board meetings were announced in accordance with the MPO's Public Participation Plan and were compliant with the Texas Open Meetings Act.

Technical Advisory Meetings

The Technical Advisory Committee (TAC) is an advisory committee to the MPO's Policy Board. The MPO staff presented all analyses of numerous planning topics for inclusion into the *Forward 45* MTP and project selection for their review and recommendations. The TAC also participated in evaluating and recommending candidate projects for inclusion in the MTP. The TAC had a significant role in the review and modification of the project scoring system required under federal and state laws as well as the project selection process. Additionally, the TAC helped to establish the financial plan since the *Forward 45* plan must be fiscally constrained for the first ten years to meet federal requirements (CFR 450.324(11)(v).

Figure 2.15 Media Release

MEDIA RELEASE

2045 METROPOLITAN TRANSPORTATION PLAN DEVELOPMENT WORKSHOPS

Permian Basin Metropolitan Planning Organization Staff and Policy Board Invite the Public to Participate in the Development of a New Long-Range Transportation Plan.

Midland, Texas, April 9, 2018 - The Permian Basin Metropolitan Planning Organization (MPO) will open the development of its new 25-year regional Metropolitan Transportation Plan (MTP) with public workshops throughout the Midland Odessa area. The 2045 MTP reflects the community's vision for long-term community growth supported by a wide variety of regional transportation system investment priorities.

Participants at these workshops will be given the opportunity to share their vision for the community and its transportation future. Feel free to bring questions about projects that you are interested in or to get help and insight on issues from the presenters. Discuss how agencies, local governments, and the private sector can work collaboratively to improve the Midland Odessa area. Visit the Permian Basin MPO website (www.permianbasinmpo.com) to learn more about current MPO plans and regular meeting schedules.

For media inquiries, contact Lorrine Quimiro at lquimiro@permianbasinmpo.com or (432) 617-0129.

Centennial Library
2503 Loop 250 Frontage Rd
Midland, TX
April 17, 2018; 3:30 – 5:30 p.m.

Woodson Community Center
1020 E Murphy St.,
Odessa, TX
April 18, 2018; 5:30 – 7:30 p.m.

Music City Mall
Community Area by Carousel
4101 E 42nd St., Odessa, TX
April 19, 2018; 5:30 – 7:30 p.m.

EZ-Rider Administration Building
10300 Younger Rd, Midland, TX
April 24, 2018; 3:00 – 5:00 p.m.

Martin Luther King, Jr. Community Center
2300 Butternut Lane, Midland, TX
April 26; 5:30 – 7:30 p.m.

Permian Basin MPO

The Permian Basin MPO is a regional agency mandated under federal law to conduct a cooperative, continuous and comprehensive transportation planning process. The agency plans and commits funds for the construction of transportation improvements across multiple transportation modes. MPO funding comes from the Federal Highway Administration and the Federal Transit Administration through the Texas Department of Transportation. The area of MPO responsibility includes portions of Martin, Midland and Ector Counties, and the Cities of Midland and Odessa. Planning and transportation project prioritization decisions and MPO staff directives are made by the Policy Board which consists of elected officials from the five entities named above and two other Board positions filled by the TxDOT Odessa District Engineer and the EZ Rider transit service manager. A key priority of the Policy Board is to ensure that federal and state tax dollars are spent wisely and in accordance with the region's most vital needs.

2.5 Public Involvement

2.5.1 Overview

The MPO has utilized both proven conventional and cutting-edge innovative outreach strategies that were customized to maximize the reach of targeted audiences in Midland/Odessa and parts of Ector, Martin, and Midland counties. Notification content was crafted to create perceived value in actively participating in *Forward 45* MTP public meetings. Outreach content was crafted to effectively resonate with both traditional and non-traditional audiences including residents, businesses, public agencies and stakeholders. Emphasis was placed on inclusion of disadvantaged and underserved segments of the population.

2.5.2 Scope

Forward 45 MTP public involvement strategies were designed to inclusively engage the public, effectively convey information extrapolated from the MTP draft, and obtain meaningful input from public meeting participation as well as through social media channels through which the public could review, access and comment on the MTP overview and draft document. The process for promoting MTP public meeting and web-based participation included identification and utilization of public sector agencies, private sector businesses, and community-based organizations and institutions through which information was disseminated. A total of three public meetings were scheduled in locations that were both familiar and conveniently accessible to Midland, Odessa, and surrounding area residents, especially underserved populations.

2.5.3 Approach

A multi-pronged approach was utilized to maximize public involvement among a target audience that included diverse community sectors including residents, public agencies, nonprofit organizations and faith-based institutions. In addition, public meeting agendas and protocol were structured to create a relaxed atmosphere of cooperation and inclusion with the intent to provide informative information delivered in an informal way, to cultivate relationships and elicit meaningful input to be incorporated into the final decision-making process.

2.5.3 Outreach Strategies

The MPO's strategies for the *Forward 45* MTP public involvement component revolved around two key areas; in person participation at public meetings, and digital web-based participation through email and social media. Promotional channels utilized to create awareness of *Forward 45* MTP public participation opportunities included the issuance of press alerts, press releases, Public Service Announcement content and meeting notifications to print and broadcast media. In addition, a stakeholder contact information database was created, comprised of governmental agencies, public utility companies, nonprofit organizations and large employers. These stakeholders were periodically notified of public meetings throughout the outreach campaign. Additionally, stakeholders were contacted by phone to confirm contact information accuracy and the receipt of notifications.

2.5.4 Public Meetings

A total of three public meetings were held to present the *Forward 45* MTP draft. The first meeting was held on October 17, 2019 at the Holiday Inn Express, 1800 S. Hwy 385, Odessa. The second public meeting was held on October 29, at the Hispanic Cultural Center of Midland, 1311 E. Wadley, Midland, and the third meeting was held at the Permian Basin MPO offices, 9601 Wright Drive by Midland International Air & Space Port. The number of participants at the public meetings totaled 58 attendees. A Power Point presentation of an overview of the *Forward 45* MTP draft was made and requests for questions and answer session followed. The following questions were asked by participants during the meetings. "Is Midkiff going underneath the way the Loop and Midland Drive meet?" "Are service roads going to be one way in 2020?" "Where do road roughness measurements originate?"

2.5.5 Public Meeting Input Exercises

At each public meeting, attendees were given the opportunity to provide input through two exercises. The participants were each issued prioritization stickers to rank projects based on their perceived priority. Each participant was also issued play money to allocate to three different areas of funding based on their perceived significance. The funding areas included highways, transit and bicycle/pedestrian needs. The results of the exercises are illustrated on the following tables.

Table 2.24 Project Prioritization

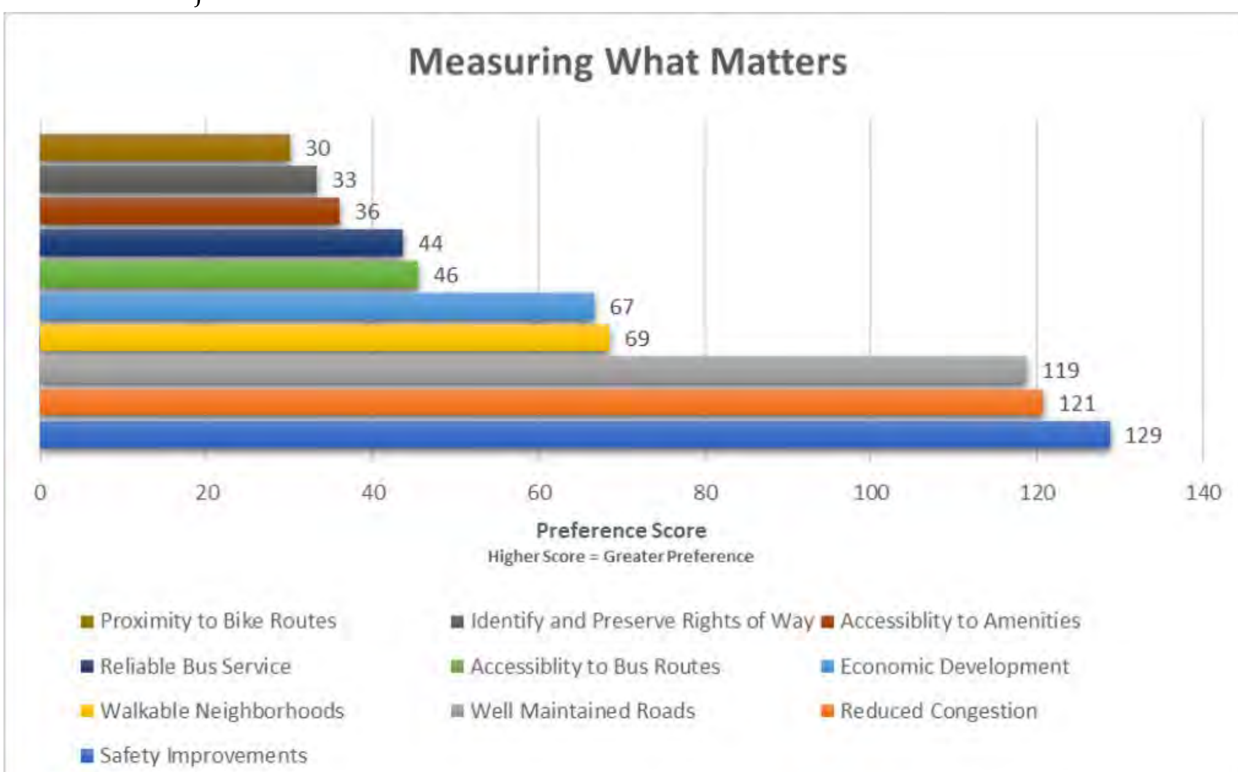
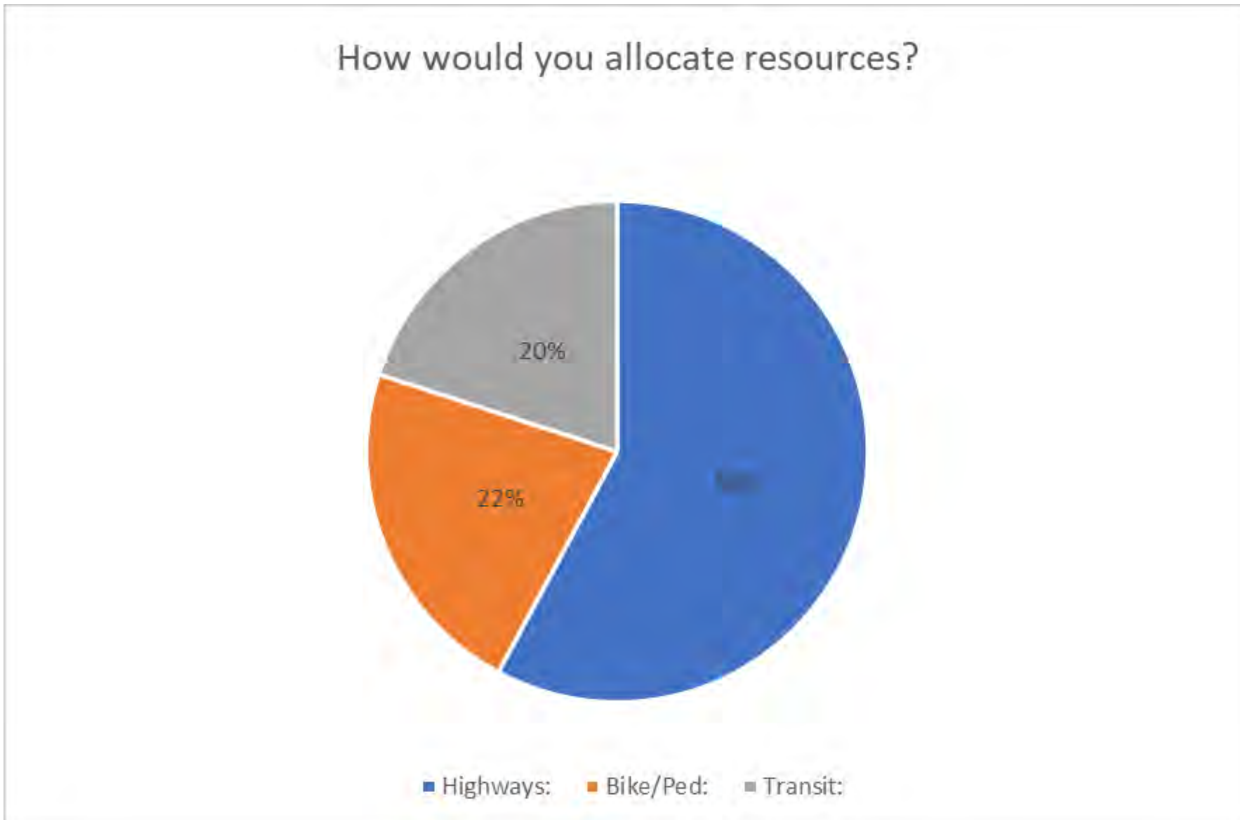


***Table* 2.25** Funding Allocation



2.5.6 Digital Outreach Objective

The objective of the MPO's digital platform strategy was to generate a significantly higher level of public comment and engagement across the primary digital platforms than had been generated in the past.

2.5.7 Digital Outreach Approach

The concept of engagement on digital platforms has evolved over the years. What has become clear is that those organizations who utilize digital platforms like Facebook on a consistent but strategic basis see greater effectiveness in their messaging, branding and engagement strategies. Through the use of simple messages and compelling visual elements deployed on the most frequently used platforms, the MPO was able to obtain substantial, candid public feedback. It is this philosophy that guided the MPO's approach.

A small survey was conducted to identify the key words which reflected how the public felt when utilizing the transportation systems in the area covered by the Permian Basin Metropolitan Planning Organization. Respondents were asked to respond with the one word that described how they felt about the region's transportation systems including roads, buses, trucks and bike systems.

A variety of terms were provided in this survey. Each word or term was given a frequency score (an indication of how often a word was used) and a power score (a subjective measure of the word's strength.) Because all of these words contained an emotional underpinning, they were the ideal trigger for generating interest in, encouraging engagement and obtaining public feedback on the *Forward 45* plan. These words and associated images would come to drive the design and development of all digital content.

2.5.8 Digital Outreach Content

Yuck, Duck, Stuck. These three words formed the basis of the public engagement campaign. This campaign was developed to focus the public on some common transportation system pain points identified in the survey. These pain points were:

1. Traffic Congestion: STUCK
2. Potholes: YUCK
3. Bridge accidents with High Vehicles: DUCK

Using this approach to grab attention, stakeholders became more inclined to engage and comment. The content was also designed as a call to action. Participants inspired to engage, and comment were able to do so in conjunction with an invitation to attend the public meetings.

The campaign's simple messaging using the three words resulting from the survey, was combined with images that reflected the words. This approach ensured that the messages and intentions were emphasized. The content designed and distributed in the digital space is printed below.

Figure 2.16 Graphic to elicit feedback on road congestion

Figure 2.17 Graphic to elicit feedback on road safety

Figure 2.18 Graphic to elicit feedback on freight traffic

2.5.9 Digital Outreach Promotion

The content's initial distribution was across the Google Search and Display network and on Facebook through regular posts which were then boosted. Although both platforms were essential to the Digital Engagement approach each platform was utilized for a specific purpose.

Facebook was used to:

1. Invite the public to the public meetings
2. Generate interest in the *Forward 45* planning process and
3. Generate direct comments on the state of our transportation systems in the area covered by the Permian Basin MPO.

Google was used to direct the public to Permianbasinmpo.com where they could:

1. Learn about the Permian Basin Metropolitan Planning Organization
2. Review and or download the Forward45 Plan and
3. Obtain information about the Public Meetings.

2.5.10 Social Media

Facebook was the primary platform used for digital engagement and comment. On this platform digital engagement takes the form of Likes, Comments and Clicks. Critical to maximizing the benefits of this platform is inviting the public to like the Permian Basin MPO Facebook page and then pushing the content to those who like to the page so that the content can reach the people who like the MPO page and their friends.

The content was distributed on Facebook through posts. Posts are an organic means to reach the target audience. Members of the public who like the Permian Basin MPO's Facebook page and their friends will be reached through posts. The content was also shared with a number of different Facebook Groups whose members were determined to potentially be interested in providing feedback. Content was shared with Facebook Groups such as:

1. West Texas Oil Field Traffic Update – Estimated Facebook Membership 41,671
2. Midland Odessa Trading Post – Estimated Facebook Membership 14,000

Over 100 comments were received over the course of the engagement campaign. These unedited comments are listed below.

- David H. MOTRAN has been working on TX DOT with data showing where state and federal roads need widening and upgrading. Midland County is reassessing residential roads for upgrade to industrial grade.
  So far I'd do what these two entities are doing....See More

- Raul S. Off ramp interstate to 158, more roads beside scr1270 and 1788 to access service rd south service rd to I20. Need a on ramp between 1788 and loop 250, south service rd.

- Joseph J. Change the two-way frontage roads to one way.
- Cody-April L. Make all CdL trucks drive in the right lane no left lane access. If caught in left lane 1500.00 as well as a fine to the company. This eliminates the big trucks switching lanes all the time. This will help with alot of our traffic flow and wrecks.

- Raul S. How about a truck route that will bypass both midland and Odessa? Just an idea.

- Wendall E. Widen and improve roads. More lighting, better lane marking, better paving on auxillary roads.

- Amy D. Well I'm waiting to see what great plans are for this town and all the traffic/ and roads?!? Can't fix the broken ones yet😠😠😠😠

- Sandra F. A bypass from Midland to Odessa would be nice or make I 20 four lanes each direction with truck traffic restricted to only two of those lanes.

- Abin O. Time and again, we got a lot of cases of accident along Andrews highway between Segment of Yukon and Loop 338. With great development of housing projects in Northpark Odessa, we residents are in danger. Wide/Divided Andrews Highway without any proper protected traffic Stoplights plus drivers who ignores the right of way makes it chaotic during morning rush. Please please we beg for safer roads.

- Luis Joey A. Intersection of I-20 and West Loop 250 at the north traffic light. When traveling east bound on the north side service road, traffic does not have a protected turn signal to turn onto the loop to head north bound on the loop. During rush hour traffic t…See More

- Ethan S. Create mandatory detour roads for commercial traffic, and produce revenue by requiring permitting for commercial traffic to stifle the short cutting through city roads and connecting block roads while simultaneously promoting the commercial detour roads.

- David B. Put in stoplights at busy intersections that currently have 4 way or 2 way stop signs. Fix roads such as fairgrounds road.

- David B. Make all frontage roads 2 way on the loop and on i20, expand to 3 lane interstate on I20 east and west through midland and odessa.
- Bobbi M. trucking routes work great in other states...
- Danny N. I would realize that if not for that truck traffic we wouldn't be here.
- JFuentes R. All those Semi Trucks need to be on the Service Road! That's what service road means. That's why they were created, until DPS starts enforcing that law then unfortunately this will Continue.
- Michael E T. A lot of the issues are the attitudes of the driver. It's not the vehicle, it's the irresponsible attitude of the person behind the wheel.
- Leah C. Hire an engineer.
- H.Juan It is time for a sensor invention that Reads the height of the bridge or electrical wiring
- Trisha W. Enforce stopping people on their cell phones 🙅 It's like it's easier to blame the big trucks; yet regular car drivers jump in front of them, merge immediately in front of their front bumper... wait 2-3 car lengths and merge back in front of them. It will probably save your lives one day.
- Steven S. Make it higher the bridge
- Brandey P. A stop light at 158\briarwood cr 60 and Wadley exertions to 158
- Carlie D. Larger infrastructure. Better designed roads, construction during the night time hours (like Dallas). We have been given to opportunity to expand and grow, let's not keep wasting it. Let's stop the greediness so that all industries grow. .. not just oil companies. Let's grow our community right and prosperous so it will sustain for generations.
- Janie O. We are not equipped in west tx for the traffic we have. ! There is way to much greed going on here in the Permain Basin ! It's a loosing battle !
- Kat C. Better planning for road repairs. Recently just about every road was closed to get to downtown Midland from the west side of town. Planning by season, too. Not at the beginning of school and other busier than normal times. Repair roads in the county and outskirts of the city, too.
- Stephanie S. At least 3 lanes on 20 from Big Spring to Monahans, 3 lanes on the loop, and flyaway ramps connecting the loop and 191 and the loop and 20
- Gaby G. More exits and bridges to let the tragic flow.

- Becca P. #odessa #Midland #gardendale # #Permian
- Brenda H. And make several busy intersections have the far right lane a "right turn only" lane!!!
- Loly A. U know what...wadley is the worst in midland!!! Fix itttt✋
- Brenda H. Check CDL's and insurance and pretty sure that would clear up a bunch of this
- Terry M. The biggest thing is to have every oil producer along with city and state governments force the following.
Every lease road entrance has to be a smooth transition to the federal, state or county road it makes ingress or egress with. Making these ...See More
- Greg D. 3 or 4 lanes on 20 at least through far east Midland to far west Odessa or farther. When there's a wreck it turns in to a parking lot. Add exits on 1275 "Schlumberger office" and push Midland Dr. to 20 and have an exit there. Dig out Front Street from Wall east all the way to 20 so we can have at least 1 freeway in the city. They did that in Lubbock . Took a lot of 4th street away and made it Marsha Sharp freeway.
- Julie B. tell those who have come to just make oil $$$ to go home...we are full!
- Bobbi M. round up and deport all the illegals and californians
- Veronica H. Traffic light on 87th & NE 338 to give everyone a chance to move one with a turning lane not like the one on grandview & NE 338 where you have to play a guessing game on whether they are gonna turn left or not coming out of Gardendale which is still so...See More
- Jamie A M. We need a lot of changes! More traffic lights; especially where there are more accidents. Lower the speed limits on I20, business 20, 191 and loop 338. This could help curtail traffic fatalities. Higher taxes and fees to the commercial trucks, be...See More
- Linda Beasley H. "Single family" housing should be enforced, as most older neighborhoods in Odessa cannot accommodate all of the vehicles when 2 or 3 families live in one house.
- Rosa B. Install some of those florescent lights in between a two lane (or more) roads , highways . For nighttime traveling. And for areas where accidents happen frequently. 🙏
- Bobby L. The city of Odessa and TXDOT have not planned one day ahead on roads in the Odessa area in 40 years. Loop 338 was built with no future planning. No Frontage road. No elevated roadways to move traffic smoothly. No more one way streets.....Spending tax m...See More
- Betty W. Make everyone who works and lives here needs to register their vehicles here, not in their home state or corporate home town...

- Abin O. Having proper road planning in Andrews highway in Odessa between Loop 338 and 52nd St. will greatly alleviate possible accidents. Divided Highway without proper stop lights causes high probabilities of road accidents. Someone should take lead to address these concerns.

- Logan F. Inforce speeding laws and tailgating. Going 65 or more with tailgating is the worst.

- John S. Fix 8th street, 2nd street, West County Road!

- David T. Better drainage in odessa, build roads to handle heavier loads

- Natalee I. I can't make the meeting but PLEASE widen Faudree and Yukon to 4 lanes. Also, we need lights at 52 & 338, PKWY & 338 and 87th & 338. Those intersections are dangerous.

- Monica L. Make COMMERCIAL ROADS ON THE outskirts town for commercial vehicles to use- with Toll Bridges so they can PAY towards THE DAMAGES THEY CAUSE TO OUR STREETS!!

- Amy D. New board members/fix those lakes called pot holes

- Amber P. Drainage systems these roads flood horribly

- Melissa K. Change yukon back to 4 lanes from andrews hwy to grandview

- Rosa B. FIX AS MANY POT HOLES AS POSSIBLE #1 PRIORITY!

- Wormo M. All the streets like dixie and 42nd for sure

- Sharon O. Little to no drainage ditches for heavy rains-building in flood areas....sheer stupidity!

- Kim M. All the people that are here from somewhere else need to go back wherever they came from so we can have our quiet town back again people not dying every day on the streets in a car wreck then you won't have to worry about fixing the roads are utility b…See More

- Charles P. All the people that openly drink and drive

- Allen S. One of the worst things is the shape the roads through there are in. I haul machinery through there all the time and they are soooo bad in places that the holes and Ruts in the roads litterally throw me around and out of my lanes. I've litterally had a truck jump right out of a lane with an over size load and cross the yellow line into on coming traffic. I know there is a lot of traffic on the roads, but they honestly look like no one or nobody really gives a hoot in hell about them at all.

In addition to the comments elicited from content distribution tactics (unedited comments are listed in the appendix of this section), Facebook Insights also provided several metrics used to evaluate the effectiveness of the campaign.

A summary of the Facebook Insights and Key Metrics used to evaluate the performance of the digital engagement activities are below. The results have been significant. Interest in the region's transportation system and the Permian Basin Metropolitan Planning Organization is exponentially higher.

Insights Summary

Figure 2.19 Facebook page views

Page views represents the number of times the Permian Basin MPO's Facebook Page has been viewed by those who have logged in or out of Facebook.

Figure 2.20 Facebook post reach

Post Reach represents the number of people who say any post by the Permian Basin MPO during the period indicated above.

Figure 2.21 Facebook Post Engagement

Post Engagement represents the number of times people engaged with Permian Basin MPO posts through reactions, comments, shares and clicks.

Figure 2.22 Facebook Page Likes

Post Reach represents the number of people who say any post by the Permian Basin MPO during the period indicated above.

Figure 2.23 Facebook Permian Basin MPO likes.

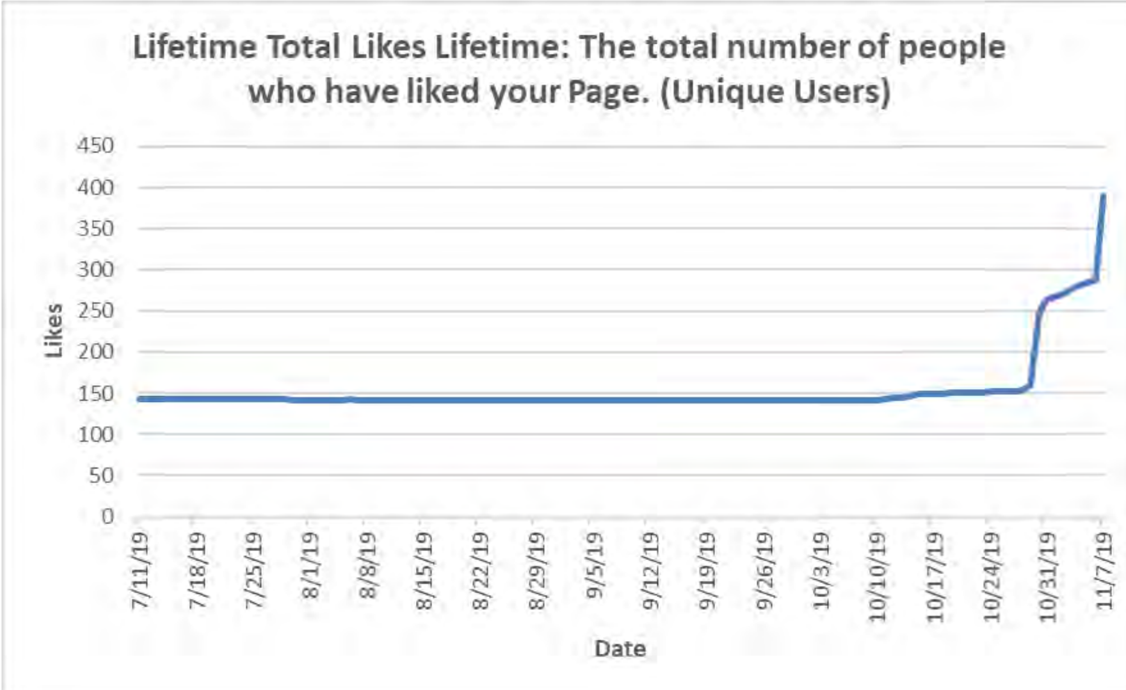


Figure 2.24 Facebook Permian Basin MPO Page Post Reach

Figure 2.25 Permian Basin MPO Facebook Page Post Impressions

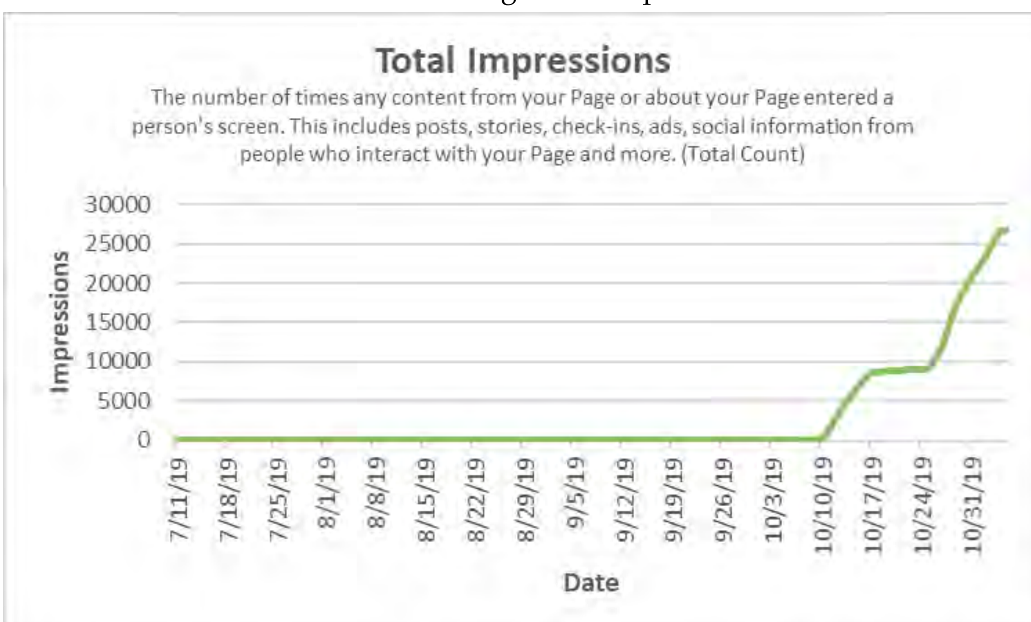
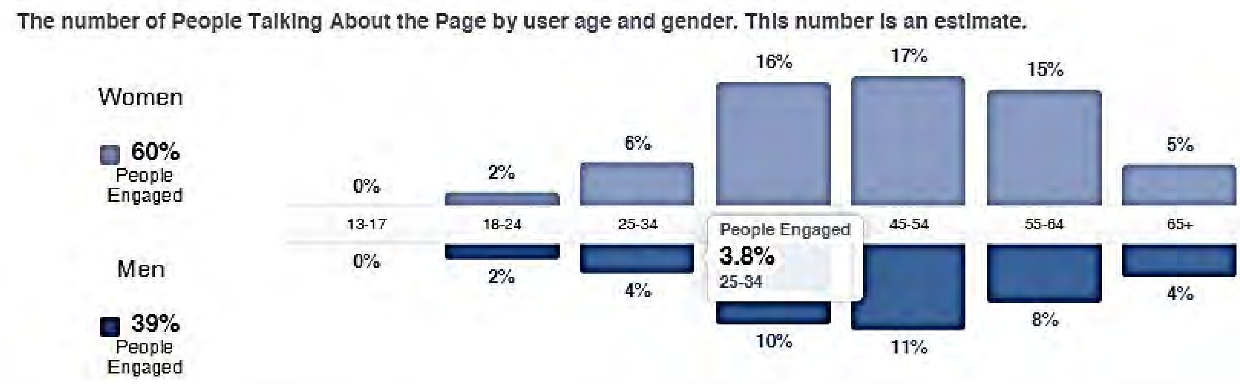


Figure 2.26 Permian Basin MPO Facebook Page Demographics



Country	People Engag...
United States of America	394

City	People Engag...
Midland, TX	234
Odessa, TX	109
Lubbock, TX	4
Andrews, TX	3

Language	People Engag...
English (US)	387
Spanish	5
English (UK)	3

Table 2.27 Public Meetings March 2018 through November 2019

ODESSA WORKSHOPS	
March 18, 2018- Sherwood Community Building	1020 E. Murphy St.
March 19, 2018- Music City Mall	4101 E. 42nd St.
October 1, 2018- Odessa College	201 W. University Ave.
October 17, 2019– Holiday Inn Express & Suites	1800 S Hwy 385
MIDLAND WORKSHOPS	
March 17, 2018- Centennial Public Library	2503 W. Loop 250
March 24, 2018- EZ-Rider	10300 Younger Rd.
March 26, 2018- Martin Luther King Jr. Community Center	2300 Butternut Lane
October 4, 2018- Martin Luther King Jr. Community Center	2300 Butternut Lane
October 29, 2019- Hispanic Cultural Center	1311 E Wadley Ave.
MID-CITIES WORKSHOP	
October 2, 2018- Permian Basin MPO	9601 Wright Drive
November 5, 2019- Permian Basin MPO	9601 Wright Drive

A sample press release notifying the public about the workshops is shown below in Figure 2.15.

3.1 Trends

3.1.1 National

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act authorizes $305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. The FAST Act maintains the federal focus on safety, keeps intact the established structure of the various highway-related programs, continues efforts to streamline project delivery and provides a dedicated source of federal dollars for freight projects. With the enactment of the FAST Act, states and local governments are now moving forward with critical transportation projects with the confidence that they will have a federal partner over the long term.

A major component of the FAST Act is the requirement for Performance Based Planning and Programming. Although language was contained in the previous highway bill known as MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), the guidance and regulations for states and MPOs to operate within a transportation performance based planning system weren't clarified until the passage of the FAST Act. In 2017 and subsequently, states and MPOs have begun to incorporate performance based measures and targets addressing safety (PM1), system condition (PM2), and system reliability (PM3). In addition, the FAST Act continued the Congestion Mitigation and Air Quality (CMAQ) program to provide a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. The Permian Basin MPO is an attainment area under EPA's National Ambient Air Quality Standards, therefore target setting and project selection relevant to air quality are not included in the MPO's decision making process or in its regulatory situation.

3.1.2 State

The National Highway System (NHS) is further described in Chapter 5, Freight. In Texas the NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. The NHS was developed by the Department of Transportation (DOT) in cooperation with the states, local officials, and metropolitan planning organizations.

According to the Texas Demographic Center, the population in Texas is expected to exceed 47.4 million people by 2050. As people continue to move to Texas, and the economy continues to grow, the transportation system must expand to accommodate this growth in a manner consistent with the priorities and desires of Texans and business leaders. One of many challenges continues to be the increasing disparity between demand and available capacity. According to preliminary data from the Texas Transportation Plan 2050, TxDOT maintains 314K miles of public roads. Total Annual Vehicle Miles Traveled on all Texas roadways in 2016 totaled 273.2 Billion; 72% of that VMT occurs on state-owned highways. Figure 3.2 contains historical trends for Total Centerline Miles, Daily Vehicle Miles of Travel, and Truck Daily Vehicle Miles of Travel for the state from 2000 to 2016.

Figure 3.1 National Highway System in Texas Facts

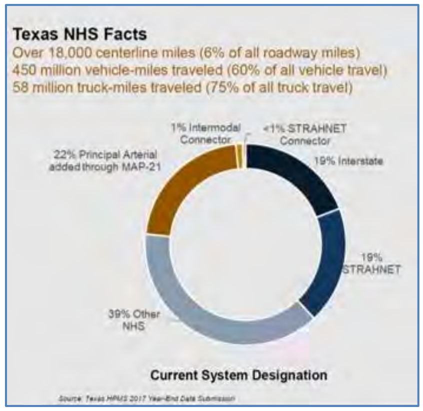
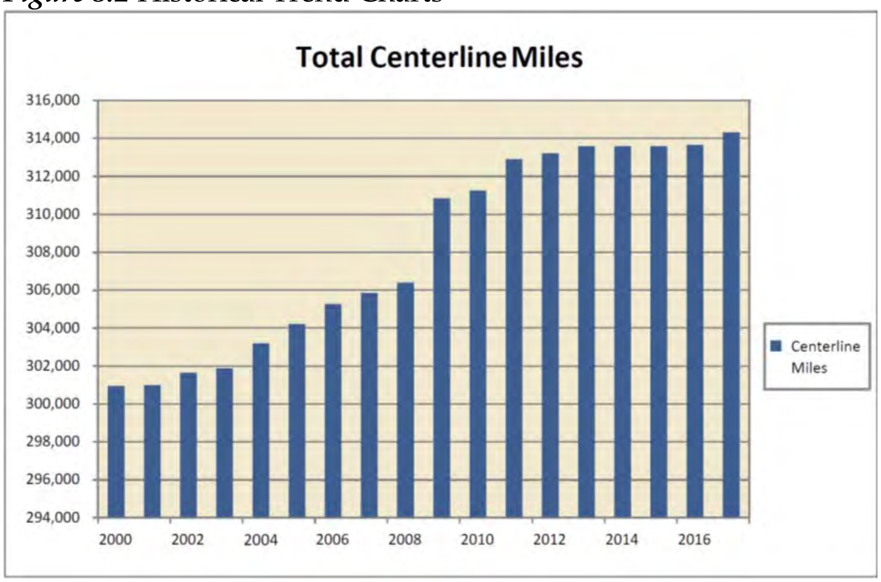
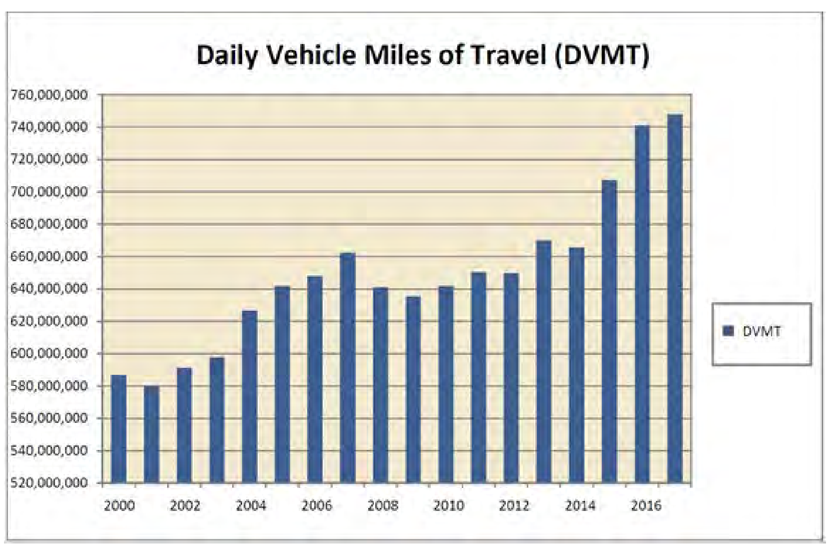
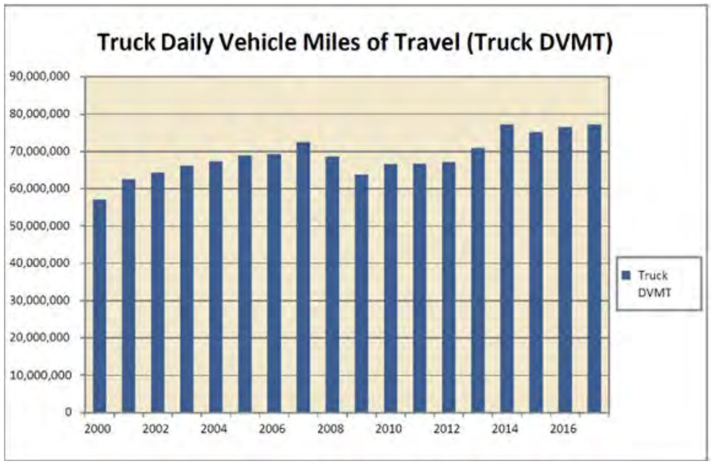


Figure 3.2 Historical Trend Charts







Source: TxDOT Roadway Inventory Annual Reports

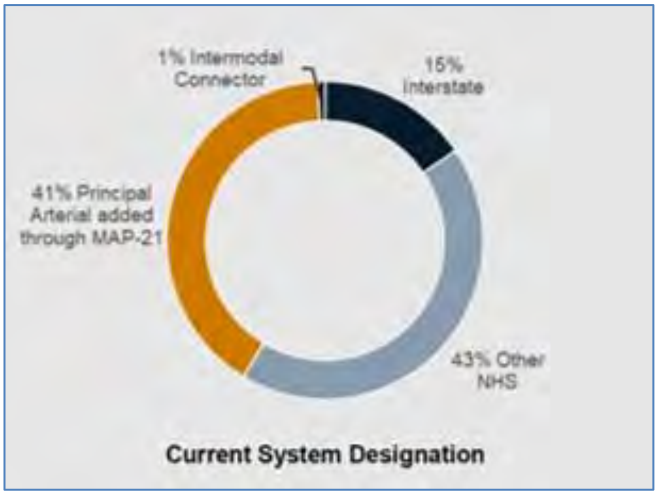
Through the first half of 2019 TxDOT has conducted public outreach to support its effort to draft the Texas Transportation Plan 2050. The plan will encompass a multimodal transportation system that supports the people of Texas, their needs, and their futures. The overarching goals of this plan include the following:

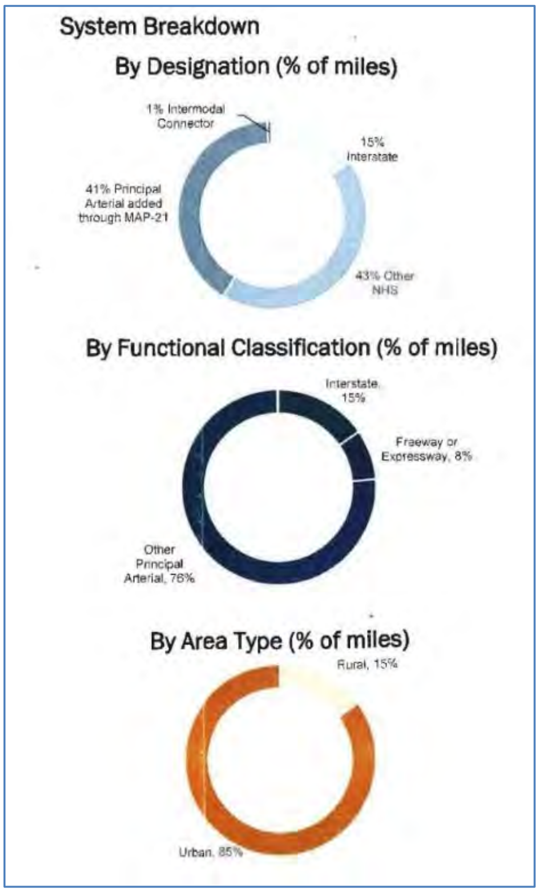
- **Enhance Safety**
- **Preserve our Infrastructure**
- **Optimize Movement of People and Goods**
- **Communicate Effectively**
- **Sustainably Fund and Effectively Deliver the Right Projects**
- **Protect and Preserve the Human and Natural Environment**

3.1.3 Permian Basin MPO

In 2019 TxDOT undertook an analysis of the statewide NHS System and met with MPOs across the state to evaluate the roads on the NHS. According to a 2017 year-end data submission from Texas Highway Performance Monitoring System, the Permian Basin MPO contained 290 centerline NHS miles which make up 12% of the total centerline miles, on which six million daily vehicle-miles are traveled constituting 60% of total travel. TxDOT also documented 725 thousand daily truck-miles traveled (74% of all truck travel). Figure 3.3 elaborates on the arterial road types that make up the MPO's National Highway System. The review mentioned above was completed in the Spring of 2019; any changes to the system should be complete by the end of 2019.

Figure 3.3 Permian Basin National Highway System Facts





Source: TxDOT GRID

3.2 Infrastructure Inventory

3.2.1 Highway and Bridges

Federal Functional Classification of Highways

A roadway's functional classification reflects a balance between providing access and mobility. Providing mobility means there are few opportunities for entry and exit, therefore creating low travel friction from vehicle access/egress. Providing accessibility means there are many opportunities for entry and exit, which creates potentially higher friction from vehicle access/egress. Functional classification is the process by which public streets and highways are grouped into classes according to the character of service they are intended to provide. The U.S. Department of Transportation divides roadways into four broad categories:

- Principal Arterial
    - Interstate

      Interstates are the highest classification of Arterials. They are defined as a series of continuous, limited-access routes that have trip lengths and volumes indicative of substantial statewide or interstate travel. This classification is for highways designated as interstate and includes I-20 in the Permian Basin.

    - Other Freeways and Expressways

      These roadways look very similar to interstates in that they must be divided with limited access and egress points that are typically grade-separated. They primarily serve through-traffic and major circulation movements. Some examples of this classification in the Permian Basin include State Highway 191 (Midland/Ector County) and Loop 250 (I-20 to Fairgrounds Road (Midland).

    - Other Principal Arterial

      These roadways provide long-distance connections, but do not fit the two categories above. Other Principal Arterials are not access-controlled, so abutting land uses can have direct access. Some examples of this classification in the Permian Basin include State Highway 158 (Midland), 349 (Midland), 338 (Odessa) and U.S. Highway 385 (Odessa).

- Minor Arterial

  These roadways serve trips of moderate length, provide for relatively high overall travel speeds with minimum interference to through-movement. Examples of minor arterials include State Highway 302 (Odessa), North County Road West (Odessa), Midland Drive (Midland) and Lamesa Road (Midland).

- Collectors

  These roadways collect traffic from the local roads and direct it to the arterials. In rural area's collectors generally serve intra-county travel (Midland – Ector - Martin), with distances shorter than Arterials. In urban areas, they provide both land access and traffic circulation within residential neighborhoods and commercial and industrial areas. Collectors are divided into two categories:

  - Major Collector

    The difference between a Major and Minor Collector is very subtle. Major Collectors are typically longer in length than Minor Collectors, with fewer access points, higher speed limits, higher traffic volumes and more travel lanes. Examples of Major Collectors in the Region include: Dawn St (Odessa), Illinois (Midland), and many others.

  - Minor Collector

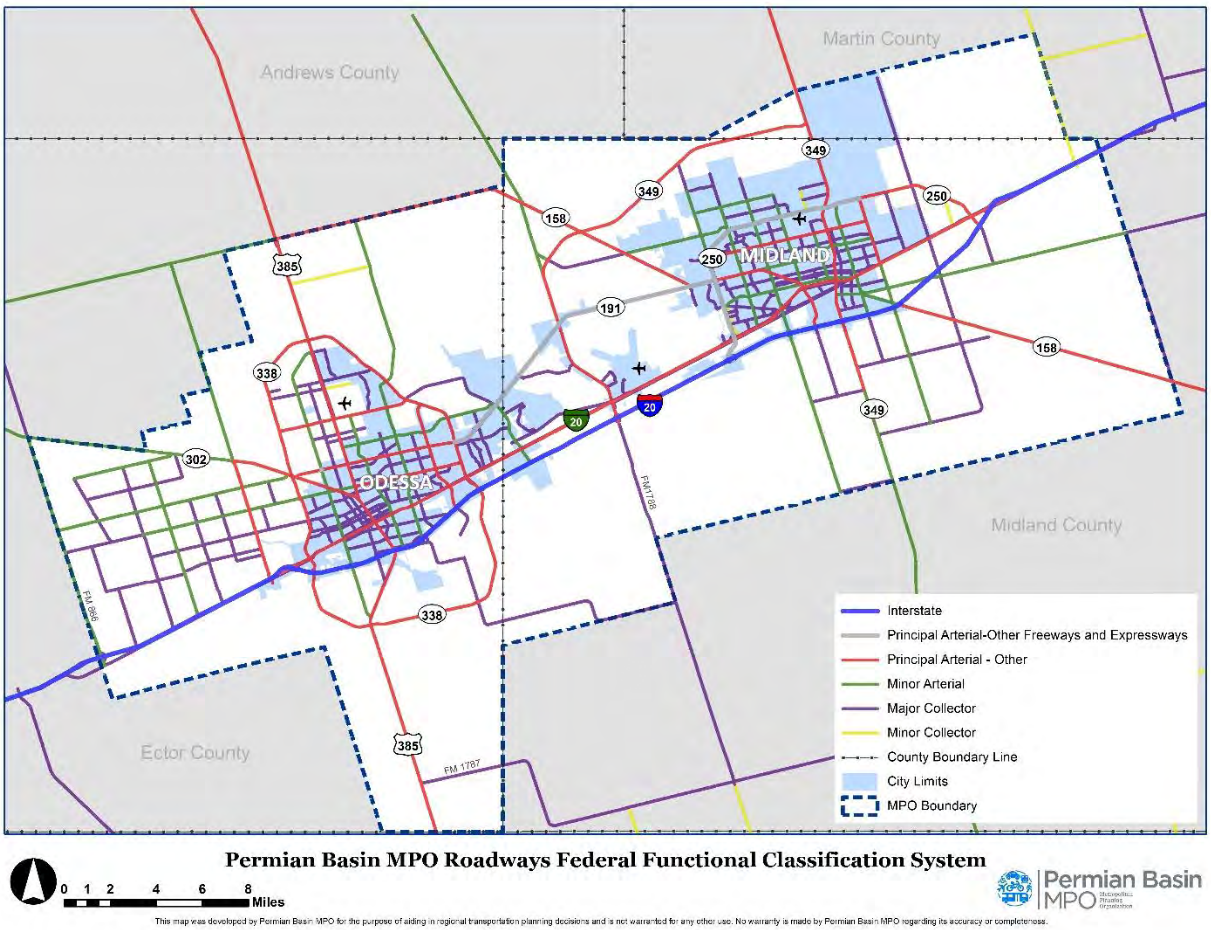
    Minor Collectors are typically shorter in length, with more access points, lower speeds, lower volumes and fewer travel lanes. Examples of Minor Collector roads in the Permian Basin MPO region include: CR 1140 (Midland), Beal Pkwy (Midland), and E Cottonwood Rd. (Odessa)

- Local Roads

This category accounts for the largest percentage of all roadways in terms of mileage. Local roads provide access to adjacent private property or low-volume public facilities. Travel distance on local roads is relatively short when compared to the higher classifications.

Map 3.1 indicates the Federal Functional Highway Classifications in the Permian Basin MPO Region. These classifications are periodically reviewed and amended by TxDOT, FHWA in cooperation with the MPO.

Map 3.1 Permian Basin MPO Federal Functional Highway Classifications



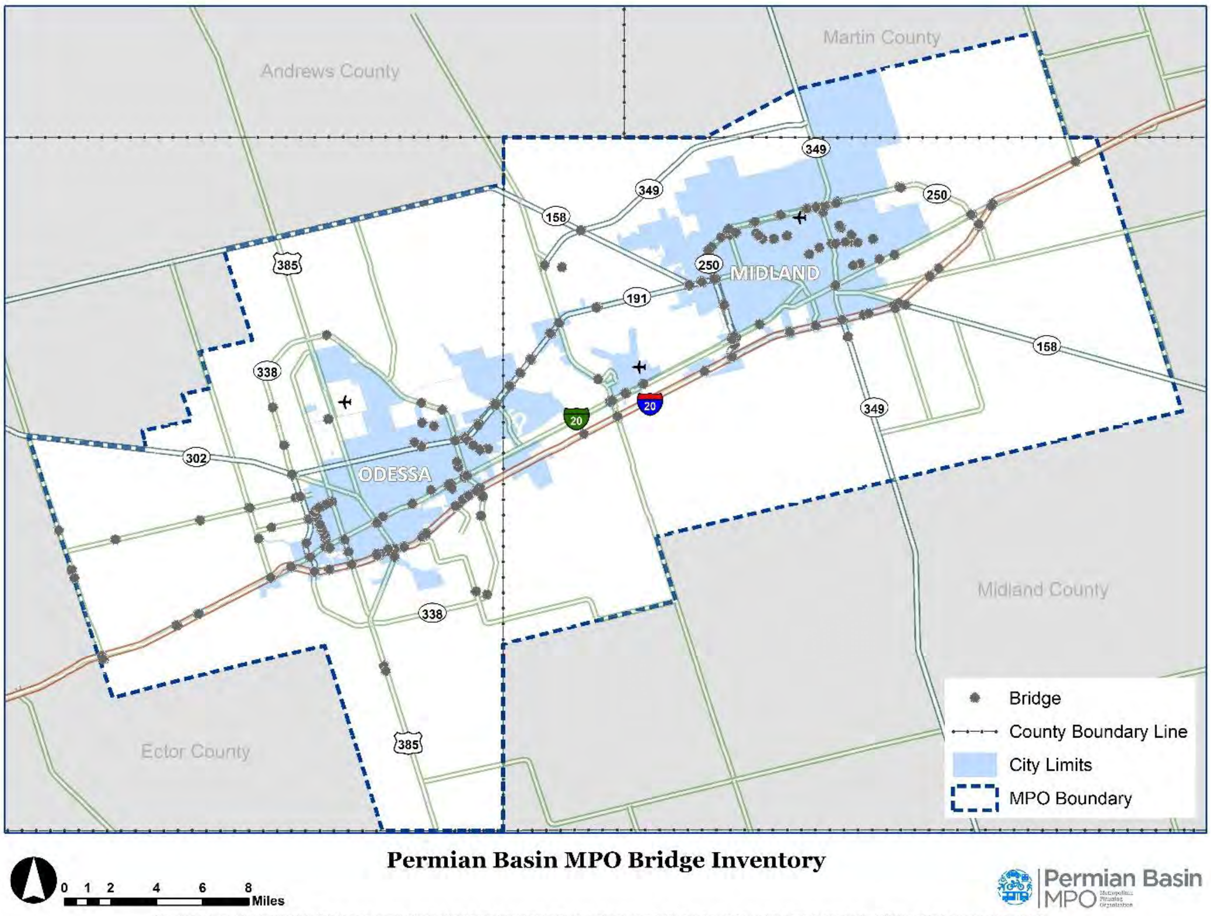
Interstate System in the Permian Basin MPO Region

There are 42 miles of Interstate 20 in the Region, which serves as the primary east/west interstate highway for the movement of people and freight for west Texas and traverses both municipalities of the Permian Basin Region. Interstate 20 carries most of the east/west through-traffic in the region and is currently being designed to become a modern urban interstate with U-turns, new ramp reconfigurations, and one-way service roads.

Bridges

According to TxDOT's 2019 bridge inventory system, there are a total of 246 bridges within the MPO boundary including highway, railroad, waterway, and pedestrian crossings.

Map 3.2 Permian Basin MPO Bridge Inventory



3.2.2 Transit

The recent growth in the Midland Odessa area has led to significant increases in traffic. Public transit provides an alternative method to move people around the cities. A key strategy of EZ-Rider's is to plan for the enhancement of public transportation services within and around the metropolitan area. A secondary mode of transportation such as public transportation has the potential of servicing the necessities of individuals for purposes such as job access, education, medical care, recreation, and other related services. A transit system such as EZ-Rider serves as a mechanism that connects people to a desired destination or location.

Transit Service

EZ-Rider operates the transit system for the cities of Midland and Odessa under the direction and guidance of the Midland-Odessa Urban Transit District (MOUTD). The MOUTD is governed by a board of 12 members, some elected, and others appointed, as shown below:

- City of Midland - 6
- City of Odessa - 6

EZ-Rider also consults a citizen advisory group known as the Transit Advisory Committee who represent various interest groups in both cities and provide formal ongoing input into EZ-Rider Services. The committee is appointed by the MOUTD Board. The public transportation system has been in existence since 2003 through an Interlocal Agreement between the two cities and is operated by an independent contractor, RATP, Dev, formerly McDonald Transit Associates, Inc. The urban transit system encompasses the services of a fixed route, paratransit, and an inter-city connectivity route between the cities of Midland and Odessa. Collectively, the transit operations of EZ-Rider form a structure that best serves the urban population and the needs of the elderly and individuals with disabilities. Public transportation is not by any means considered or classified as a "one size fits all" service commodity. However, EZ-Rider is a transit system that provides potential riders with the best transportation option that is suitable to the passenger. The following sections list the types of services provided by EZ-Rider.

Figure 3.4 Ridership Odessa Connect Schedule 2019

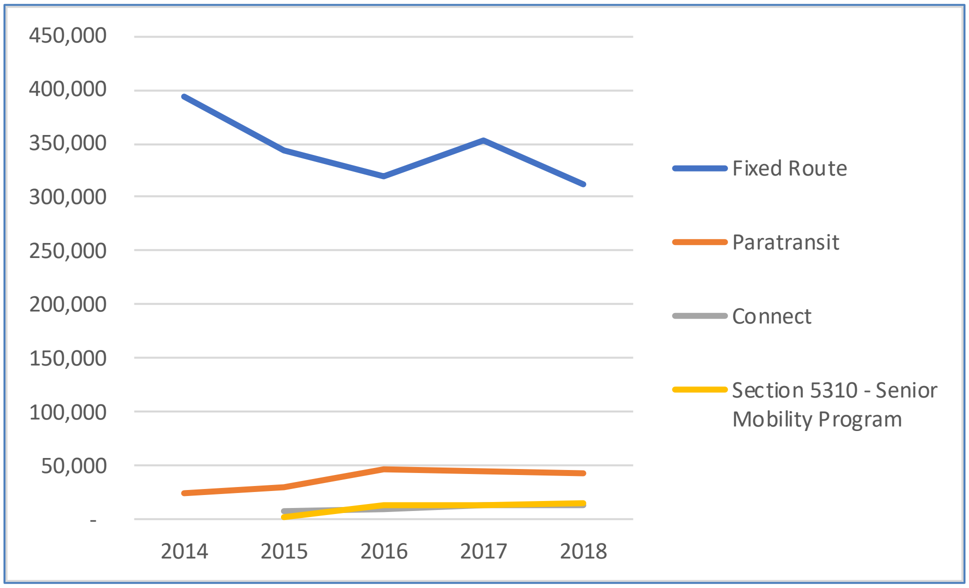


Table 3.1 EZ-Rider Annual Ridership, Revenue Miles and Revenue Hours 2014 – 2018

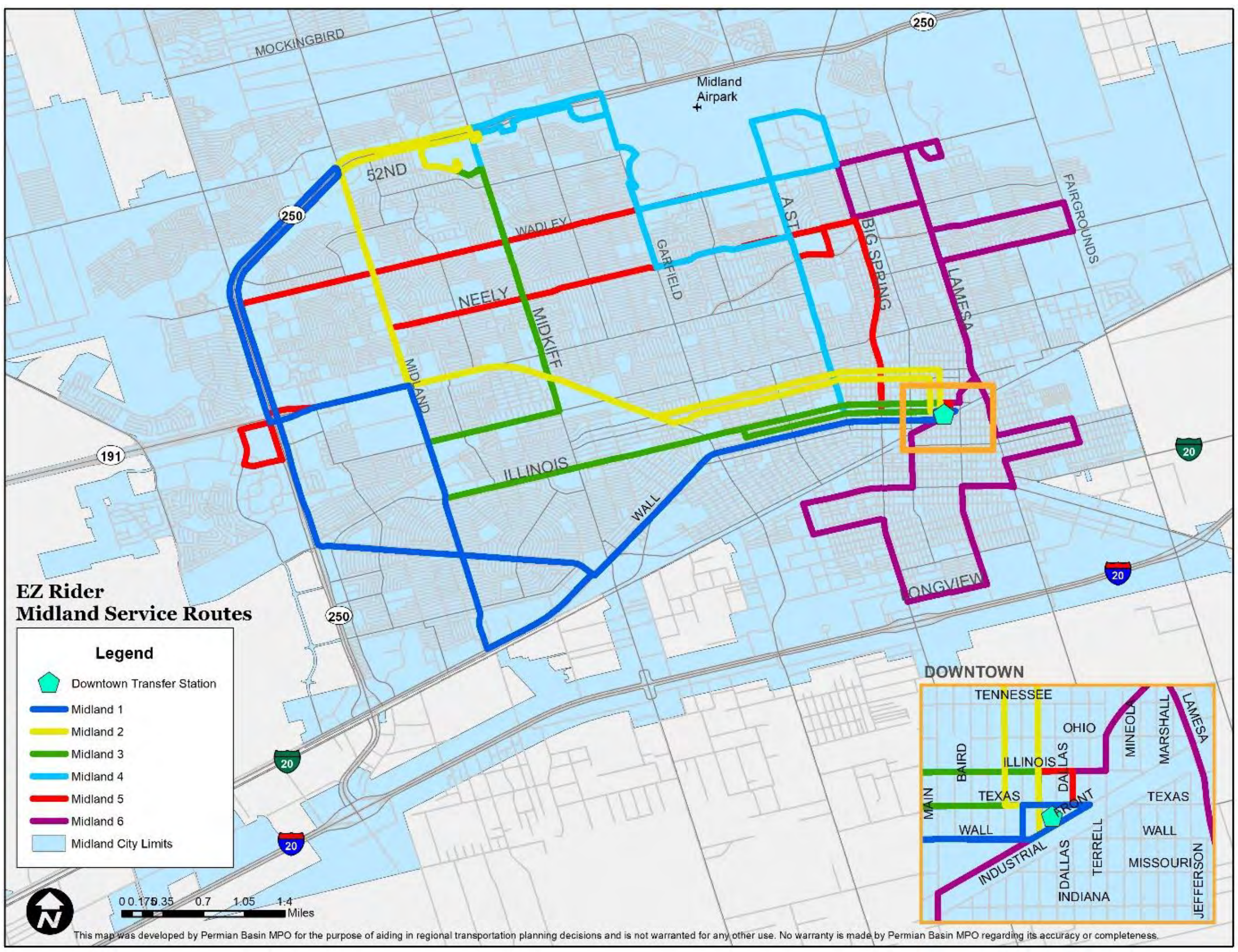
		2014	2015	2016	2017	2018
Fixed Route						
	Ridership	394,026	343,059	319,481	353,423	312,673
	Revenue Miles	632,777	630,714	649,580	637,953	644,989
	Revenue Hours	40,645	40,334	41,765	41,455	41,336
	Fare Revenue	$ 249,069	$ 203,178	$ 202,607	$ 160,621	$ 157,791
Paratransit						
	Ridership	24,917	30,016	45,872	43,834	43,246
	Revenue Miles	148,178	151,301	199,683	202,494	200,375
	Revenue Hours	13,935	14,159	19,219	19,024	18,737
	Fare Collections	$ 56,799	$ 63,887	$ 39,900	$ 21,781	$ 24,070
Connect						
	Ridership		7,543	9,952	13,246	12,615
	Revenue Miles		93,541	107,338	104,941	107,256
	Revenue Hours		3,698	3,571	3,822	3,301
	Fare Collections		$ 2,544	$ -	$ 249	$ 823
Section 5310 - Senior Mobility Program						
	Ridership		1,156	13,263	12,617	15,562

Fixed Route Service

EZ-Rider operates 12 fixed routes, six each within Midland (Map 5.1) and Odessa (Map 5.2). All the routes begin in each city's Downtown Transfer Plaza and then disperse to the various service locations of each city. The fixed route service allows passengers to wait for pick-ups and drop-offs at designated locations. All buses are equipped with wheelchair ramps and each vehicle includes a bicycle rack allowing passengers to bring their bicycles to complete the multimodal experience.

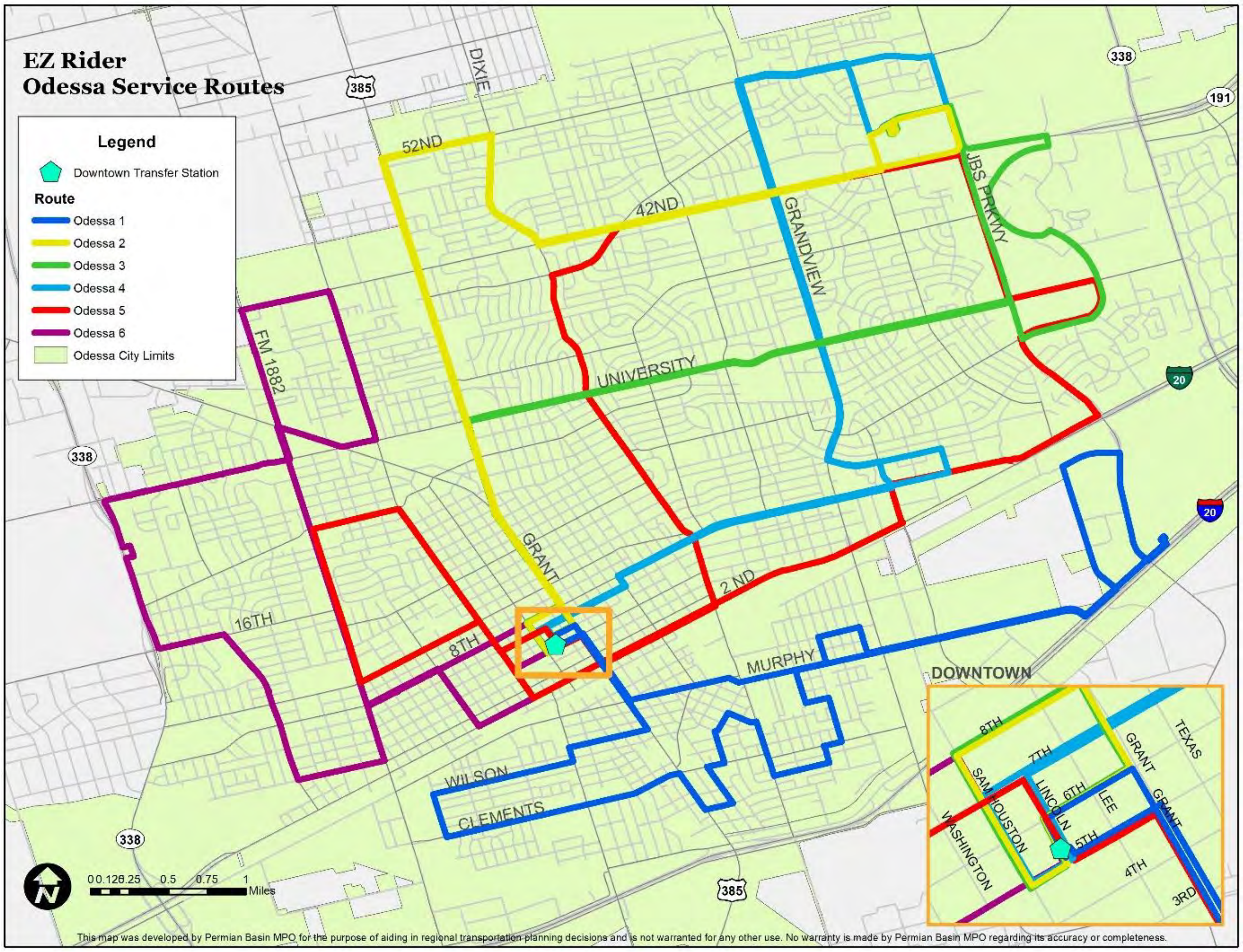
The hours of operation for all buses are Monday through Friday 6:15 a.m. to 6:10 p.m. and from 8:15 a.m. to 4:10 p.m. on Saturday. The travel time to complete each route is one hour. Located along each route are bus stop signs and/or shelters with posted schedules indicating arrival and departure times. The fixed route service is the most commonly used method of public transportation in the area.

Map 3.3 Midland Service Route



Source: www.ez-rider.org

Map 3.4 Odessa Service Route



Source: www.ez-rider.org

Paratransit Service

The federal government, through the Americans with Disabilities Act (ADA), requires paratransit services be offered to customers with a disability or a health condition that prevents the person from accessing a regular fixed route service. Paratransit is a demand response service that allows eligible applicants to pre-arrange a trip. Individuals seeking paratransit services complete an application, have it reviewed by a medical professional and schedule an assessment with a licensed occupational therapist. EZ-Rider then determines the person's ability to access the fixed route service for certain trips. The cost for each one-way trip within ¾ mile of a fixed route is $2.50 and is $5.00 for each one-way trip outside the ¾ mile of a fixed route. Paratransit and any other public transportation services outside the city limits are provided by rural transit operators. West Texas Opportunities, Inc. (WTO) is a transit provider that offers public transportation for the rural areas of Ector, Midland, and Martin counties and the surrounding 15 counties. WTO and EZ-Rider have continued the joint effort in coordinating trips for individuals that need access to paratransit services.

Intercity Bus Service

The idea of an intercity bus route between the cities of Midland and Odessa was previously addressed in Permian Basin MPO's 2010-2035 MTP. The concept of an intercity connection originally arose from a concern raised during the public involvement process conducted in accordance with the development of the MPO's 25-year plan. Subsequently, a feasibility study was initiated by Permian Basin MPO to determine if there was enough potential ridership to support a bus route connecting both cities. The study was funded through TxDOT's annual coordinated call for projects and focused on potential routes along State Highway 191 and Business Interstate 20. The results indicated that with the amount of future growth and travel patterns between the two cities, an intercity bus route seemed plausible and beneficial to the Midland-Odessa metropolitan area. It was initially operated by All Aboard America through a separate contract and funded through a Sect. 5307 Federal Transit Administration (FTA) grant called Job Access Reverse Commute (JARC).

When the JARC grant ran out the intercity bus service was resumed by EZ-Connect. It is managed and operated by the MOUTD with funds from a Section 5307 Federal Transit Administration (FTA) grant. EZ-Connect operates Monday through Friday 5:30 a.m. – 6:10 p.m. and 7:50 a.m. to 4:10 p.m. on Saturday. The route connects the MOUTD office/Greyhound Station and the Midland International Air and Space Port to the Music City Mall in Odessa and the Midland Park Mall in Midland. From there passengers can then access the EZ Rider fixed rate service in both cities.

The intercity bus route continues to serve its purpose to provide the connection between the cities of Midland and Odessa. The established connectivity allows for people to travel to work, school or shop in either city. The public transit service provides many benefits to individuals and to the communities in

general. Citizens can save on costs associated with maintaining a vehicle and alleviate the amount of congestion on certain roadways and corridors within the Permian Basin MPO MAB. Through the EZ-Connect, MOUTD strives to make the transit system user-friendly and affordable. The local urban transit service has existed for the last fifteen years and has evolved into a vital element of the public transportation system.

Figure 3.5 Odessa Connect Schedule 2019

Odessa Connect: Monday - Friday

	Greyhound	Sunset Lodge	Chimney Rock Shopping Center	Music City Mall	Conn's HomePlus (Tx-191 Frontage Road)	ProCare VA Clinic (Will Call)	Midland Int'l Airport (Will Call)	DPS Mega-Center (Will Call)	Greyhound
AM	5:50			6:15	*"Early Express directly from Music City Mall to Midland Park Mall"*				
				6:45	6:55	7:00	7:05	7:05	7:10
	7:15	7:30	7:35	7:45	7:55	8:00	8:05	8:05	8:10
	8:15	8:30	8:35	8:45	8:55	9:00	9:05	9:05	9:10
	9:15	9:30	9:35	9:45	9:55	10:00	10:05	10:05	10:10
	10:15	10:30	10:35	10:45	10:55	11:00	11:05	11:05	11:10
	11:15	11:30	11:35	11:45	11:55	12:00	12:05	12:05	12:10
PM	12:15	12:30	12:35	12:45	12:55	1:00	1:05	1:05	1:10
	1:15	1:30	1:35	1:45	1:55	2:00	2:05	2:05	2:10
	2:15	2:30	2:35	2:45	2:55	3:00	3:05	3:05	3:10
	3:15	3:30	3:35	3:45	3:55	4:00	4:05	4:05	4:10
	4:15	4:30	4:35	4:45	4:55	5:00	5:05	5:05	5:10
	5:15	5:30	5:35	5:45	5:55	6:00	6:05	6:05	6:10
	End of Service								

Odessa Connect: Saturday

	Greyhound	Sunset Lodge	Chimney Rock Shopping Center	Music City Mall	Conn's HomePlus (Tx-191 Frontage Road)	ProCare VA Clinic (Will Call)	Midland Int'l Airport (Will Call)	DPS Mega-Center (Will Call)	Greyhound
AM	7:50			8:15	*"Early Express directly from Music City Mall to Midland Park Mall"*				
				8:45	8:55	9:00	9:05	9:05	9:10
	9:15	9:30	9:35	9:45	9:55	10:00	10:05	10:05	10:10
	10:15	10:30	10:35	10:45	10:55	11:00	11:05	11:05	11:10
	11:15	11:30	11:35	11:45	11:55	12:00	12:05	12:05	12:10
PM	12:15	12:30	12:35	12:45	12:55	1:00	1:05	1:05	1:10
	1:15	1:30	1:35	1:45	1:55	2:00	2:05	2:05	2:10
	2:15	2:30	2:35	2:45	2:55	3:00	3:05	3:05	3:10
	3:15	3:30	3:35	3:45	3:55	4:00	4:05	4:05	4:10
	End of Service								

Source www.ez-rider.org

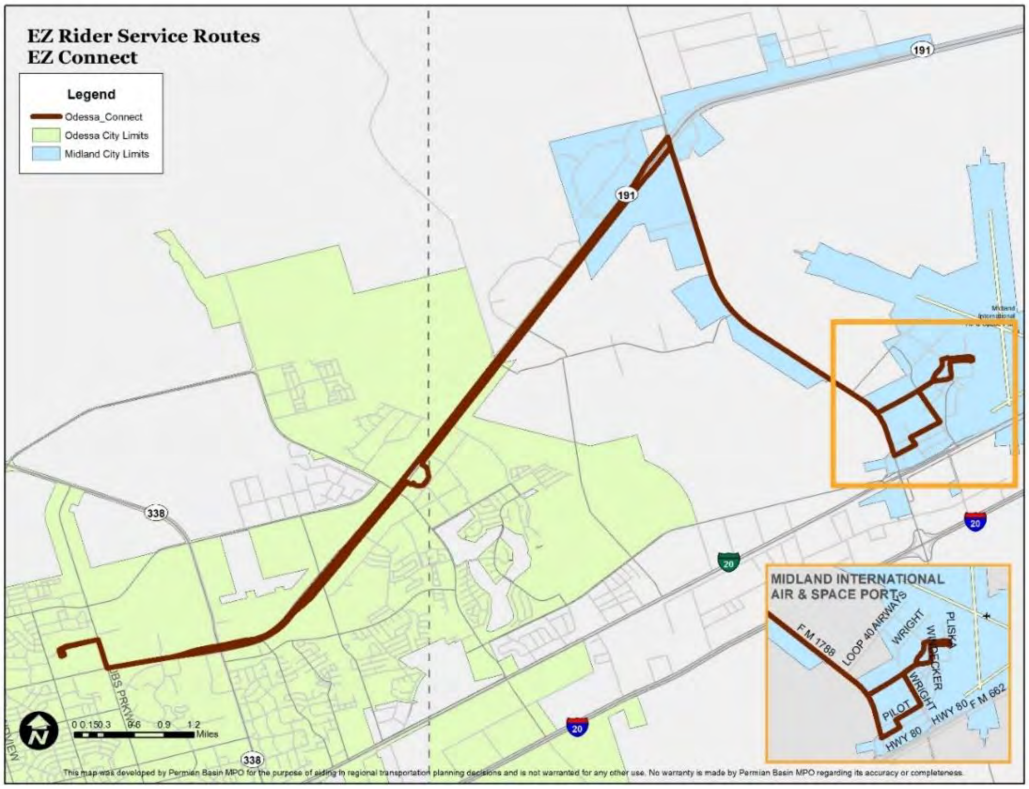
Figure 3.6 Midland Connect Schedule 2019

Midland Connect: Monday - Friday										
	Greyhound	UTPB CEED Bldg (Will Call)	Oxy Bldg (Deauville)	Sam's (Tradewinds Blvd)	Midland Park Mall	Walmart North (250 Frontage Road)	H.E.B. (250 Frontage Road)	DPS Mega-Center (Will Call)	Midland Int'l Airport (Will Call)	Greyhound
AM	5:50				6:15	*"Early Express directly from Midland Park Mall to Music City Mall"*				
					6:45	6:50	6:55	7:05	7:05	7:10
	7:15	7:19	7:30	7:32	7:45	7:50	7:55	8:05	8:05	8:10
	8:15	8:19	8:30	8:32	8:45	8:50	8:55	9:05	9:05	9:10
	9:15	9:19	9:30	9:32	9:45	9:50	9:55	10:05	10:05	10:10
	10:15	10:19	10:30	10:32	10:45	10:50	10:55	11:05	11:05	11:10
	11:15	11:19	11:30	11:32	11:45	11:50	11:55	12:05	12:05	12:10
PM	12:15	12:19	12:30	12:32	12:45	12:50	12:55	1:05	1:05	1:10
	1:15	1:19	1:30	1:32	1:45	1:50	1:55	2:05	2:05	2:10
	2:15	2:19	2:30	2:32	2:45	2:50	2:55	3:05	3:05	3:10
	3:15	3:19	3:30	3:32	3:45	3:50	3:55	4:05	4:05	4:10
	4:15	4:19	4:30	4:32	4:45	4:50	4:55	5:05	5:05	5:10
	5:15	5:19	5:30	5:32	5:45	5:50	5:55	6:05	6:05	6:10
	End of Service									

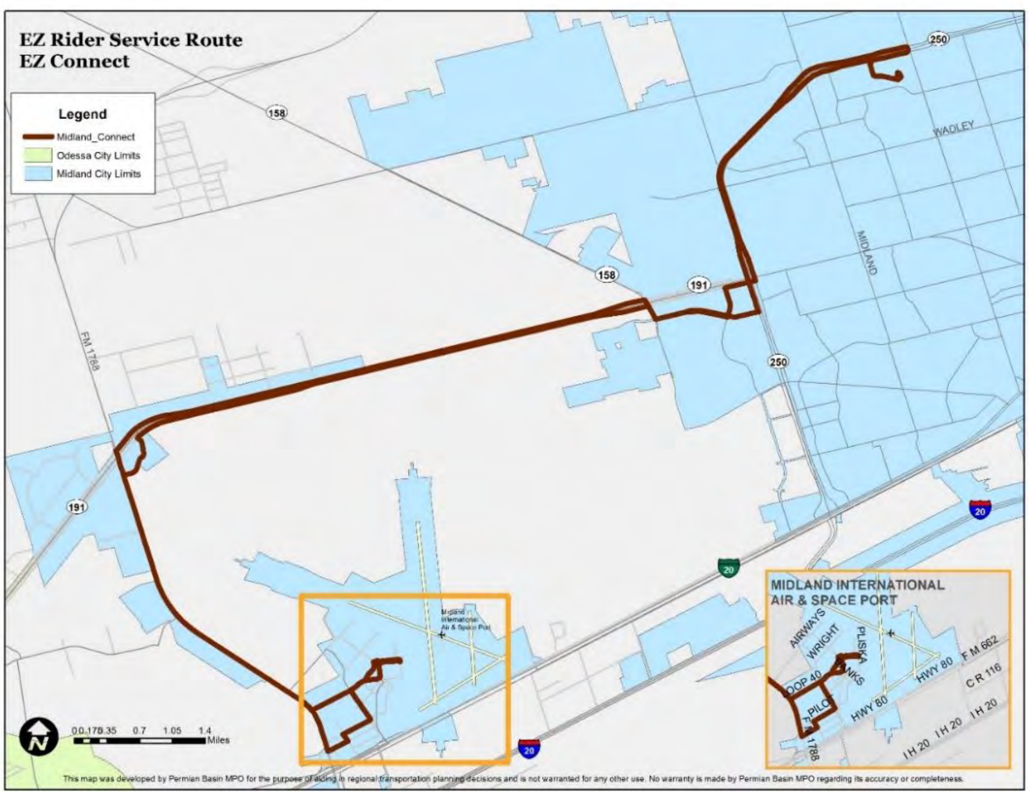
Midland Connect: Saturday										
	Greyhound	UTPB CEED Bldg (Will Call)	Oxy Bldg (Deauville)	Sam's (Tradewinds Blvd)	Midland Park Mall	Walmart North (250 Frontage Road)	H.E.B. (250 Frontage Road)	DPS Mega-Center (Will Call)	Midland Int'l Airport (Will Call)	Greyhound
AM	7:50				8:15	*"Early Express directly from Midland Park Mall to Music City Mall"*				
					8:45	8:50	8:55	9:05	9:05	9:10
	9:15	9:19	9:30	9:32	9:45	9:50	9:55	10:05	10:05	10:10
	10:15	10:19	10:30	10:32	10:45	10:50	10:55	11:05	11:05	11:10
	11:15	11:19	11:30	11:32	11:45	11:50	11:55	12:05	12:05	12:10
PM	12:15	12:19	12:30	12:32	12:45	12:50	12:55	1:05	1:05	1:10
	1:15	1:19	1:30	1:32	1:45	1:50	1:55	2:05	2:05	2:10
	2:15	2:19	2:30	2:32	2:45	2:50	2:55	3:05	3:05	3:10
	3:15	3:19	3:30	3:32	3:45	3:50	3:55	4:05	4:05	4:10
	End of Service									

Source www.ez-rider.org

Map 3.5 Odessa Connect Service Route



Map 3.6 Midland Connect Service Route



Demand Response

For persons who live outside the EZ-Rider service area, WTO provides demand response transportation service including the unincorporated areas of Ector, Midland, and Martin Counties, and the surrounding 15 counties. Demand response is a non-fixed route system in which passengers call ahead to schedule pick up and are provided curb to curb service. Same-day local trips are accommodated depending upon driver availability, but it is preferred that passengers call the day prior. WTO drivers provide door-to-door service and will assist individuals to the door but may not cross the threshold into the passenger's home. Rides may be shared if more than one passenger has the same destination or is traveling within close proximity during a similar time frame. Demand response does not include school bus service or charter service. Charter service is exclusive, whereas demand response service is shared ride. If the transit provider mixes passengers from a trip sponsor with other demand response passengers on the same trip, then the trip is a shared-ride service with reasonable fares. The public transportation service is subsidized by TxDOT. Demand response transportation is available from 8:00 a.m. until 5:00 p.m. Monday through Friday except on holidays. Vehicles in use by the service are equipped with a lift or ramp for persons using a mobility device. When calling to schedule a trip, individuals should mention any necessary accommodations. If an individual requires an attendant to travel along for mobility assistance, the attendant may ride at no charge.

3.2.3 Bicycle and Pedestrian Network

The objective of bicycle and pedestrian transportation planning within the Permian Basin MPO MAB is to ultimately create and maintain a safe, effective bikeway, sidewalk and trail network that is integrated into the transportation system, that links together resources and destinations, provides an alternative to automobile travel, increases recreational opportunities, advances healthy lifestyles, and enhances the quality of life in the region.

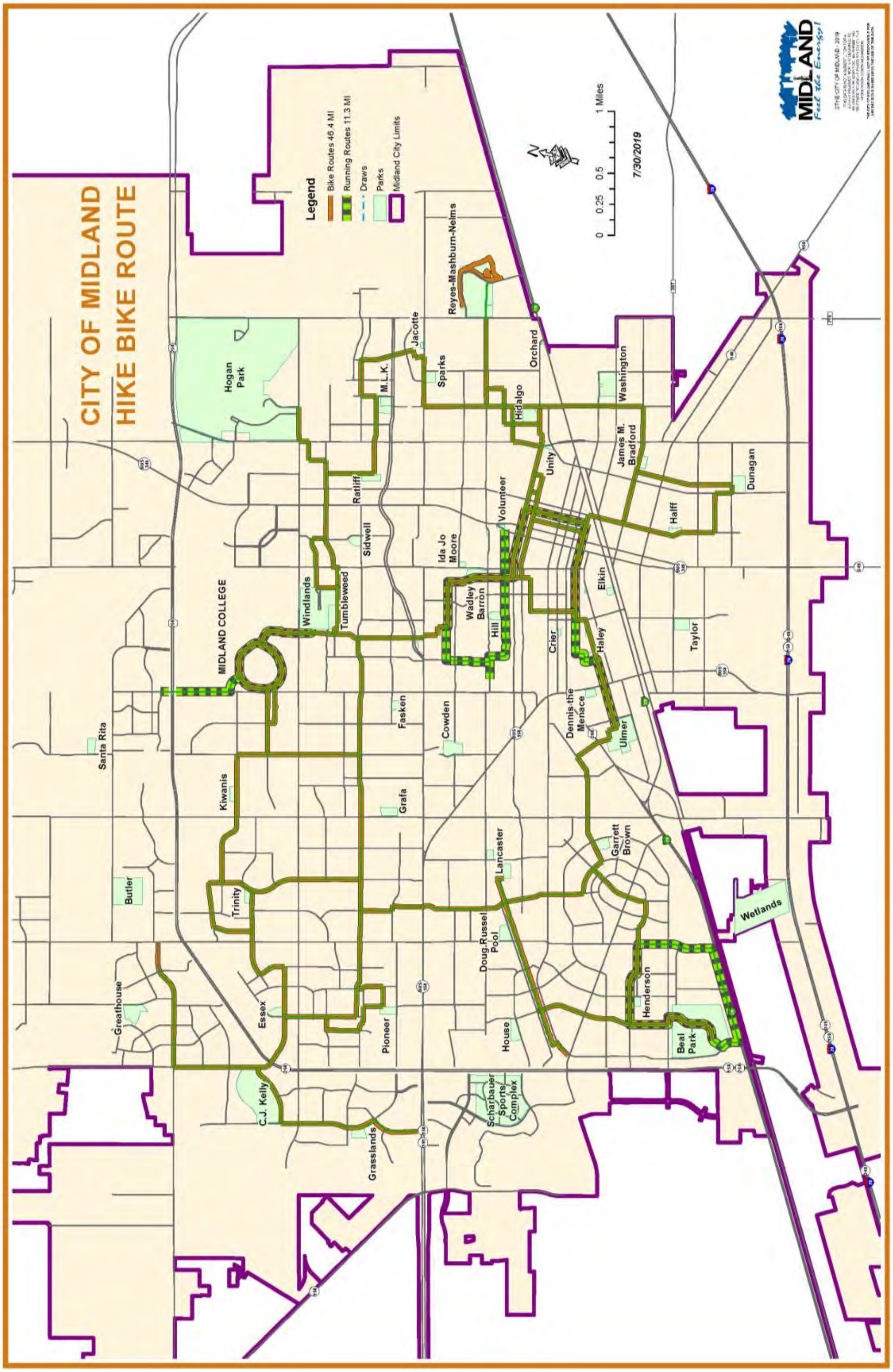
Walking and bicycling are important modes of transportation. Both activities provide relaxation, recreation, exercise, and the opportunity to enjoy nature, and can also serve as an alternative, affordable means of transportation for travel to school, work, and other destinations. Pedestrian and bicycle pathways that are safe, convenient, accessible and well-connected are instrumental in supporting a high quality of life in a region. They also contribute to societal and environmental enhancements through reduced vehicle miles traveled, decreased roadway congestion, overall improved public health, and improved mobility for those without access to a personal automobile. Moreover, environmental advantages from non-motorized transportation include reduced air and noise pollution and improved water quality. However, like many other urban areas throughout the nation, Permian Basin MPO and its member agencies have spent most of their transportation improvement dollars on road and transit improvements, rather than on non-motorized transportation. In September of 2017 the Permian Basin MPO established a Bicycle and Pedestrian Advisory Committee to assist in the planning and development of bicycle and pedestrian oriented transportation projects.

Existing Infrastructure – Non-Motorized

The *Forward 2045* plan later highlights the results of an initial study conducted in 2019 to promote a regional trail between Midland and Odessa to connect the two hike and bike trails. In order to stay abreast of continuing bicycle and pedestrian needs, it is critical for regions and communities to maintain a database of pedestrian and bicycle facilities. This database should first involve creating an inventory of the existing system and contain information as to the conditions and features of the infrastructure. In addition to facility conditions and other basic features, the database could also include the location of missing links in sidewalks and pathways, and the conditions of existing traffic operations and geometric conditions which impact a pedestrian or bicyclist's decision in using certain roadways. The database should be updated regularly to help in planning for future improvements to better accommodate bicyclists and pedestrians and include future planned facilities. Both the cities of Midland and Odessa have a good start on a bicycle network inventory and sidewalk inventory. In 2019 the City of Midland and the City of Odessa both initiated updates to their parks and open space plans. The previously discussed Park and Recreation Master Plan and Trails Plans in Odessa and Midland, the cities completed in 2016, with significant emphasis placed on quality of life issues including bicycle and pedestrian infrastructure and public health which was reflected in the previous MTP.

This MTP recommends extensive integration of bicycle needs into the design and construction specification of new highways and other ongoing or future transportation projects. Highway and transit project designs assume the provision of bicycle racks and other bicycle and pedestrian amenities at key locations such as intermodal connection facilities, transit hubs, and major activity centers. Park and ride centers are also great locations for the integration of bicycle racks.

Figure 3.7 City of Midland Existing Hike and Bike Route

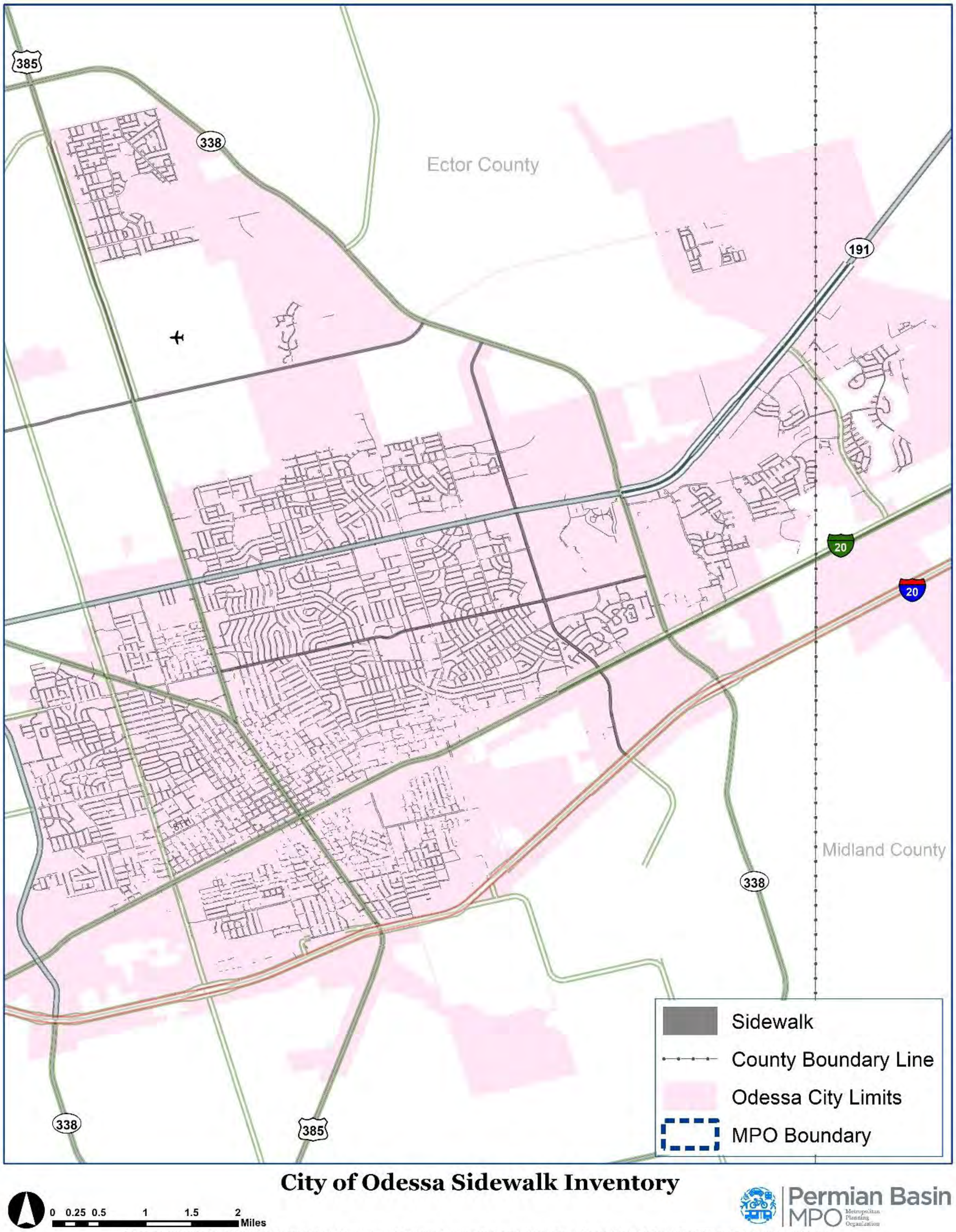


Map 3.7 City of Odessa Bike Lanes and Trails

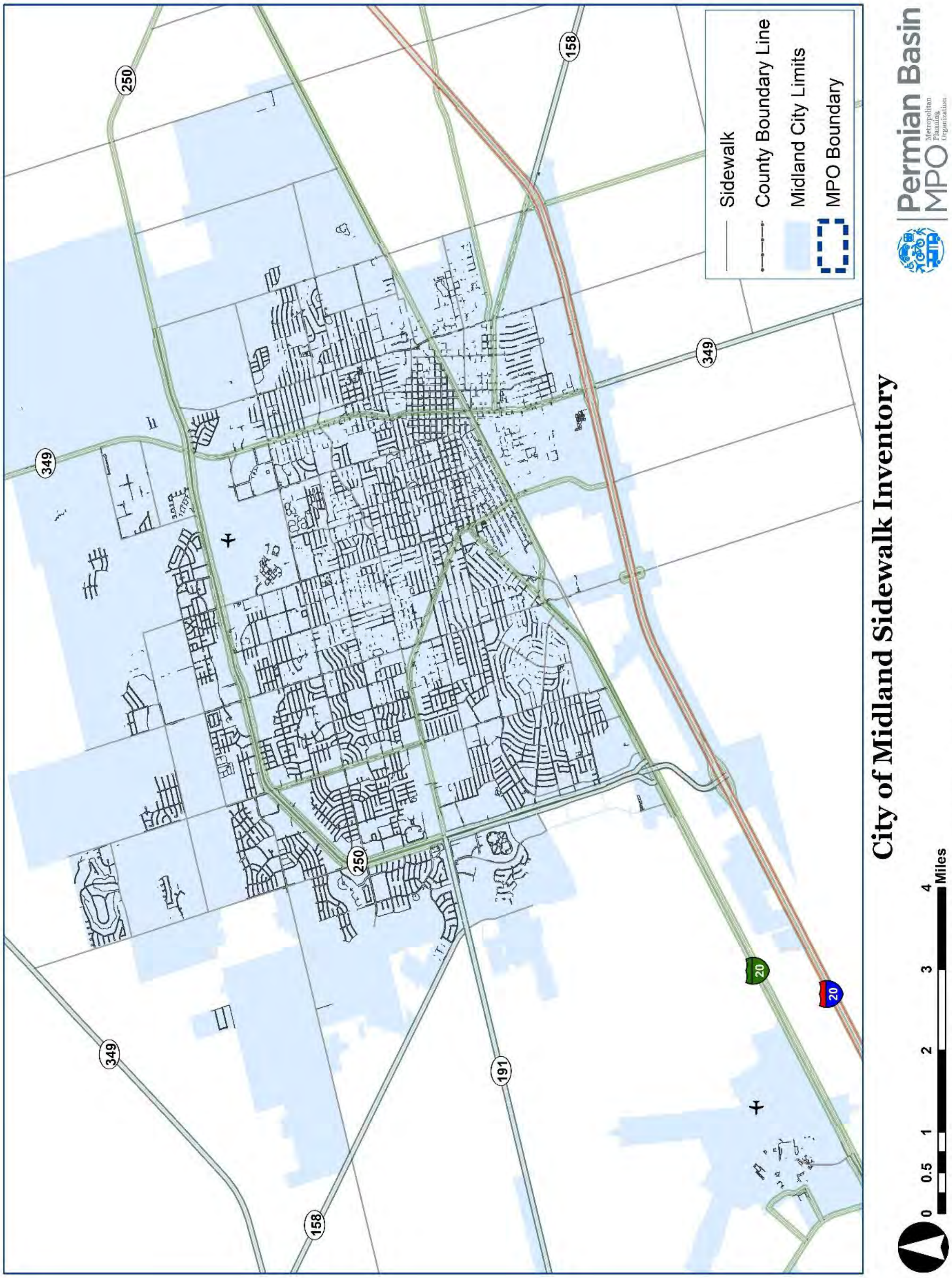
Sidewalks

Pedestrian facilities in the Permian Basin MPO region vary by type and condition. Urban areas within the MPO boundary are often constructed with suitable sidewalk facilities and are installed as part of each city's development requirements. However, many thoroughfares lack any pedestrian accommodations or relegate pedestrians to one side of the roadway. Incomplete pedestrian networks exist within highly populated commercial and residential areas. Also, many areas once classified as rural are being developed, and citizens are demanding pedestrian access from their neighborhoods to adjacent commercial or institutional uses. The cities of Midland and Odessa recognize these pedestrian needs and are working toward filling the missing links in local sidewalk networks. As mentioned previously, both city governments have instituted sidewalk requirements for new development, and sidewalk upgrades are generally included in roadway construction projects. Most roadway projects in the 'Roadway Element' of Forward 45 are expected to provide appropriate accommodations for pedestrians, concurrent with roadway improvements. Missing links and gaps in the pedestrian networks will be constructed retroactively. Priority is generally given to areas with heavy pedestrian traffic generators, such as schools, parks and business districts. In 2019, handicap ramps were constructed in numerous neighborhoods in both cities.

Map 3.8 City of Odessa Preliminary Sidewalk Inventory



Map 3.9 City of Midland Preliminary Sidewalk Inventory

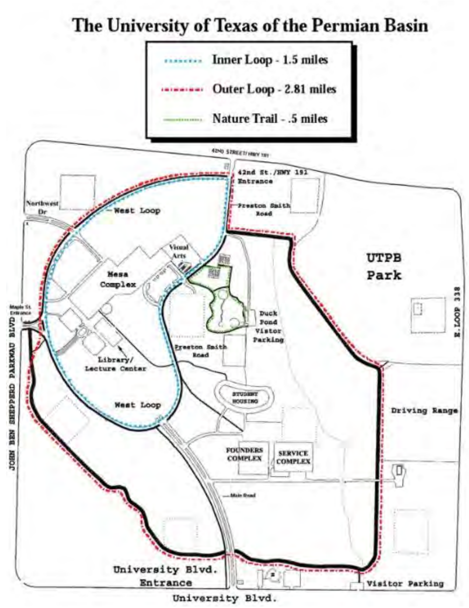


Nature and Recreational Trails

There are various off system recreational trails in the Midland and Odessa area, and a few are highlighted below.

University Texas Permian Basin (UTPB) Walking Trail

The UTPB campus has a highly utilized trail system around its Odessa campus. Stretches of the trail are cement sidewalk, while others are caliche paths. The trails are well lit and can be used for walking, running and biking. Other amenities exist along the paths such as a duck pond, a nature trail, and sculptures.



I-20 Wildlife Preserve

The I-20 Wildlife Preserve is a 100-acre wild space which includes an 86-acre urban playa lake. While the mission of the non-profit organization is conservation and education, the approximately 1.5 mile trail surrounding the park offers ample opportunity to visit with nature and admire the playa wildlife.

Comanche South Trail Park

Comanche Trail Park is a long linear park with a 3.2-mile trail, disc golf stations, and a large community fishing lake.

Odessa Mountain Bike Park

Built and maintained by the Permian Basin Bicycle Association through a lease agreement with the City of Odessa. The club continues to add and improve on the over nine miles of trail inside the 95-acre property. There are trails for beginner to intermediate mountain bike riders.

3.2.4 Aviation

The MTP's characterization of the Midland Odessa transportation system would be incomplete without a description of the movement of people, goods and resources across the air and rail segments of the network. People in the Midland Odessa region wishing to travel long distances quickly and efficiently may do so by air and are served by one primary commercial service airport, and two general aviation airports. All area airports have seen steady growth in passenger activity over the last five years due to the strength of the economy and the fact that air travel is timely and convenient, especially over long distances.

Midland International Air and Space Port

The Midland International Air and Space Port is located midway between the communities of Midland and Odessa. It is a medium hub facility serving the region by accommodating both commercial and private air travel. In 2014, the Midland International Airport successfully applied to the Federal Aviation Administration to obtain a Part 139 certification to operate a space port. Since approval by F.A.A to conduct space flights, the private company that intended to utilize the Part 139 permit no longer exists. Currently, the City of Midland intends to maintain the Part 139 permit. Currently, three commercial airlines serve the area. American Eagle, Southwest, and United Express offer on average 25 daily departures with non-stop service to DFW, Dallas Love Field, Houston Intercontinental, Houston Hobby, Las Vegas, Phoenix, and Denver. In June of 2014, airport operations added its first CRJ700 aircraft allowing American Airlines to offer first class service to DFW. Various general aviation services are also provided at the airport such as charter service, flight training, aircraft sales, maintenance, airplane maintenance training, military and non-military fuel sales and avionics. In June 2019 American Eagle began to offer first class seats of five of eight flights to Dallas. Midland International Air & Space Port has a long history of military activities beginning with its role as a bombardier training base during World War II. The relationship with the military continues today. The airport has been part of the Roving Sands exercise and the location of several Air Force and Navy deployments. As a full-service military fuel stop, the airport's fixed base operator provides service with all amenities and required equipment. Minor repairs and full security are available. Accommodation for T-37s, rotary wing aircraft, to 117As and B-1Bs is available. Civilian commercial flights experienced a 19.8 percent increase in enplanements between 2017 and 2018, Table 3.2 shows this detail.

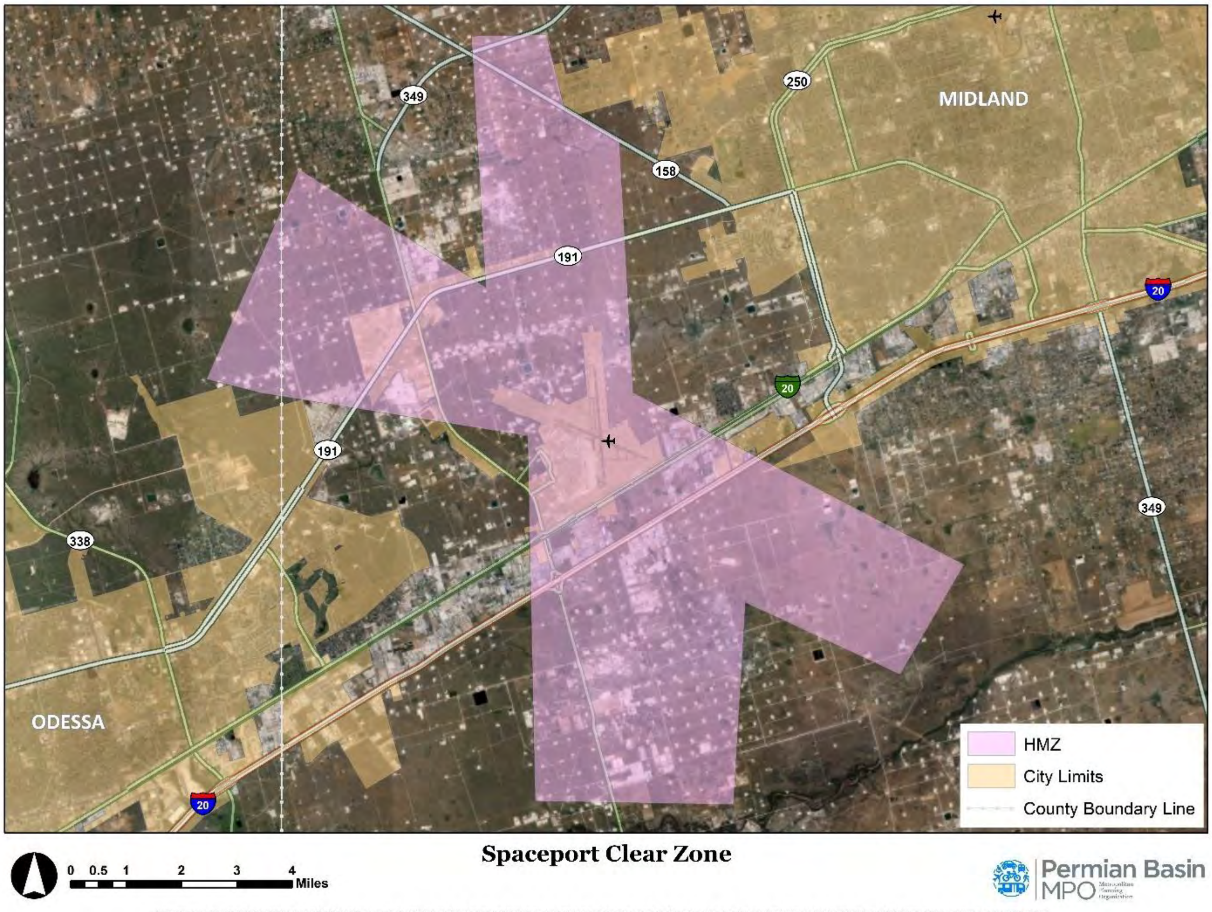
Table 3.2 Midland International Air and Space Port Number of Enplanements, 2012 – 2018.

YEAR	2012	2013	2014	2015	2016	2017	2018
	497,193	506,726	547,355	518,509	471,490	516,983	619,325

Source: Passenger Boarding (Enplanement Data for U.S. Airports. Federal Aviation Administration

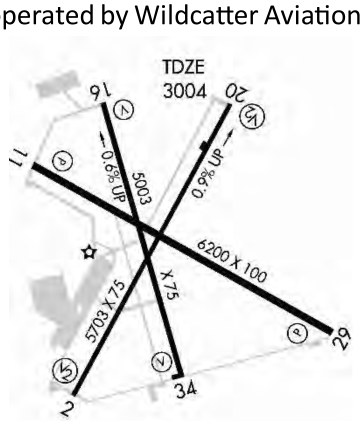
Cargo and package shipments at Midland International Air and Space Port are served by Southwest Airlines Cargo, Total Logistics Corporation, Federal Express, and UPS. Midland International has one cargo terminal and outbound air cargo remains relatively close to 2010 levels while inbound air cargo has dropped. Together, increases in air passenger and cargo activity have prompted several improvements at Midland International Air and Space Port.

Map 3.10 Space Port Clear Zone



Odessa-Schlemeyer Field

Odessa-Schlemeyer Field, located three miles north of the City of Odessa, serves as a general aviation airport. It is owned by Ector County and operated by Wildcatter Aviation but will soon transition to the Fixed Base Operator Texas Arrow. Schlemeyer Field has three runways but does not operate commercial passenger service. Flight training, aircraft rental, aircraft sales, maintenance, fuel sales, and avionics are the general aviation services available at Schlemeyer Field. One indication of the level of activity at Schlemeyer Field is the increase in fuel sales. Figure 3.7 shows the increase in fuel sales from January 2016 to August of 2019.

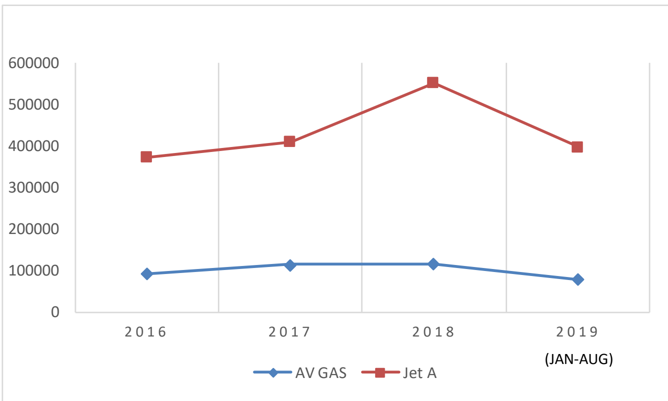


Another indicator is hangar occupancy and new construction. Since October of 2014 five hangars have been completed and one is under construction. Schlemeyer Field has also recently received funds for improvement projects.

In December of 2016 The Transportation Commission approved approximately $439,800 for engineering, design, construction for electrical improvements. Project costs were funded through Ector County and TxDOT's Aviation Facilities Grant Program, which preserves and improves the state's general aviation system. And then again in March of 2019 the same grant program and the county partnered for approximately $903,800 for construction of lighting and pavement improvements. Additional improvements have included a resurfaced runway, signage upgrades, and a new beacon tower.

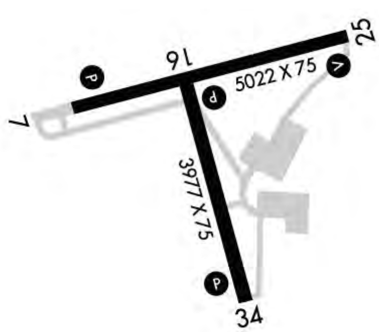
A $1.1 million dollar capital improvement project is underway to an extension of the concrete runway by a third of its existing length.

Figure 3.7 Odessa-Schlemeyer Fuel Sales



Source: Wildcatter Aviation

Midland Airpark



Midland Airpark is on the northern side of the City of Midland south of Loop 250. It is a general aviation airport with two runways and provides many general aviation services including charter, flight training, aircraft rental, maintenance, fuel sales and avionics. The Airpark is under the operational control of the City of Midland Department of Airports with Basin Aviation as the Fixed Based Operator.

In August of 2018 TxDOT Aviation Division provided a $200,000 grant to fund the installation of automated weather observing system.

3.2.5 Rail

The existing east-west rail line connects Midland and Odessa to the state and national rail network. Rail service has increased due to the demand for raw and finished materials used in the oil and gas well fracking process. Rail service is further discussed in Chapter 5, Freight. Rail passenger service, however, is no longer an option in the region. Union Pacific provides rail service in the MPO boundary. The company owns and operates the largest Class I railroad in North America.

A Class I Railroad is a freight railroad with an operating revenue exceeding $457.9 million. Class II Railroads are often called a “regional railroad.” Class II railroads have operating revenues between $36.6 million and $457.9 million. A Class III Railroad is often called a “short line railroad.” Class III railroads have operating revenues of $36.6 million or less. Source: Surface Transportation Board.

In 2018, UP revised its strategy and will focus on implementation in 2019. UP plans the following changes in 2019:

- Safest and Most Reliable Freight Rail Products and Services.
- Highly Efficient Operations.
- Industry-Leading Customer Experience.
- Optimal Investment.
- Proud and Engaged Workforce.

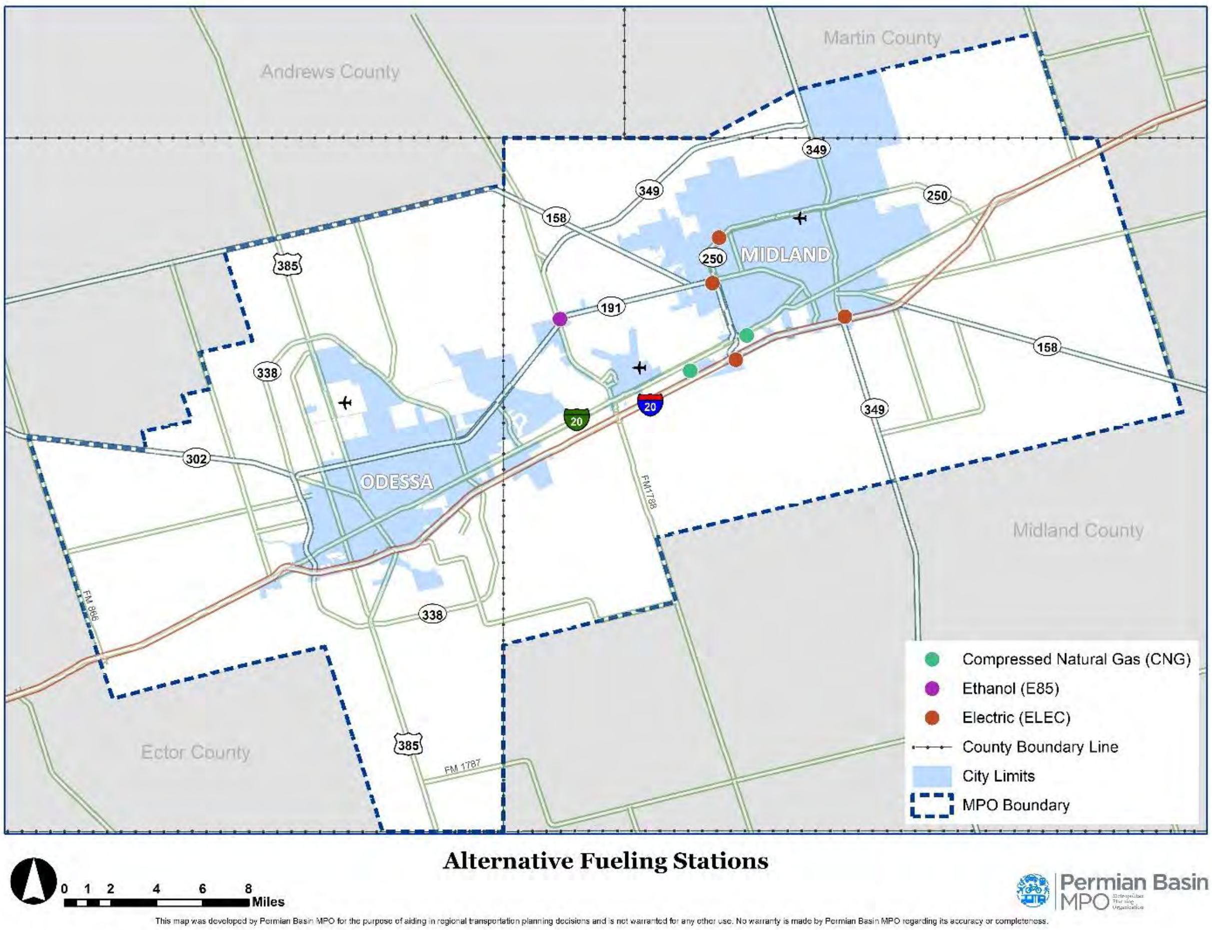
Source: UP Railroad

As discussed in Chapter 5, Freight, UP has made significant investments in the MPO boundary and throughout the Permian Basin primarily to serve the growing energy sector.

3.2.5 Alternative Fuel Sources

With the designation of alternative fuel corridors under the FAST Act, FHWA is establishing a national network of alternative fueling and charging infrastructure along national highway system corridors. Within the MPO boundary the following map shows the locations of alternative fueling stations.

Map 3.11 Alternative Fueling Stations



3.2.6 System Preservation

Emphasize Preservation of Existing Transportation System

The Permian Basin MPO is committed to preserving the transportation system in coordination with the TxDOT Odessa District, which includes maintaining or improving both the safety and capacity of the existing system with a goal to maximize utilization of existing facilities, increasing operational efficiency, alter travel demand when appropriate, and minimizing adverse impacts to the natural, social, and economic environments. Typical strategies employed in the roadway preservations process include access management and corridor safety improvements such as installing medians, restricted turns, and consolidated driveways to improve safety and increase capacity on existing roadways without significantly expanding rights-of-way. Well-planned corridor and intersection improvements can improve efficiency and life of the road surface without significant expansion. The preservation of the system is largely managed by TxDOT Odessa District and includes maintaining or improving the condition of the transportation system through asset management. Asset management strategies, which seek to use data-driven methods to regularly fund and improve the transportation system, have become increasingly important as many highways and arterial roadways near the end of their useful lives or have experienced high traffic volumes as a result of the energy sector development. Both the MTP and the Transportation Improvement Program (TIP) identify operations and maintenance funds to preserve the existing infrastructure, in recognition of the importance of maintaining a safe, efficient, and sustainable transportation system. Preservation of the system also has the effect of providing better road surfaces for the operation of EZ-Rider buses and para-transit vehicles as well as rural transit providers coming in and out of the MPO boundary.

4.1 Trends

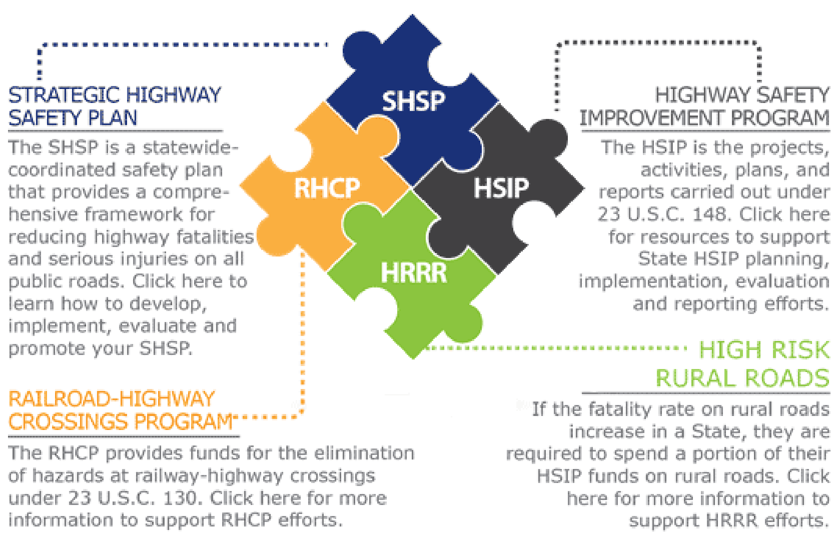
4.1.1 Permian Basin MPO

Aforementioned in Chapter 2, significant growth in the area has made a positive impact on the economy. However, along with increased economic activity comes transportation related challenges including safety and traffic congestion. TxDOT and the MPO have initiated efforts to address transportation safety and congestion in a coordinated manner as required under the MAP-21 and FAST Acts. Congestion is further discussed in Chapter 6. This chapter will focus on safety. Throughout this chapter, there are documented statistics, including crash data, for use by decision makers to analyze the safety of the transportation system for motorized and non-motorized users.

HSIP

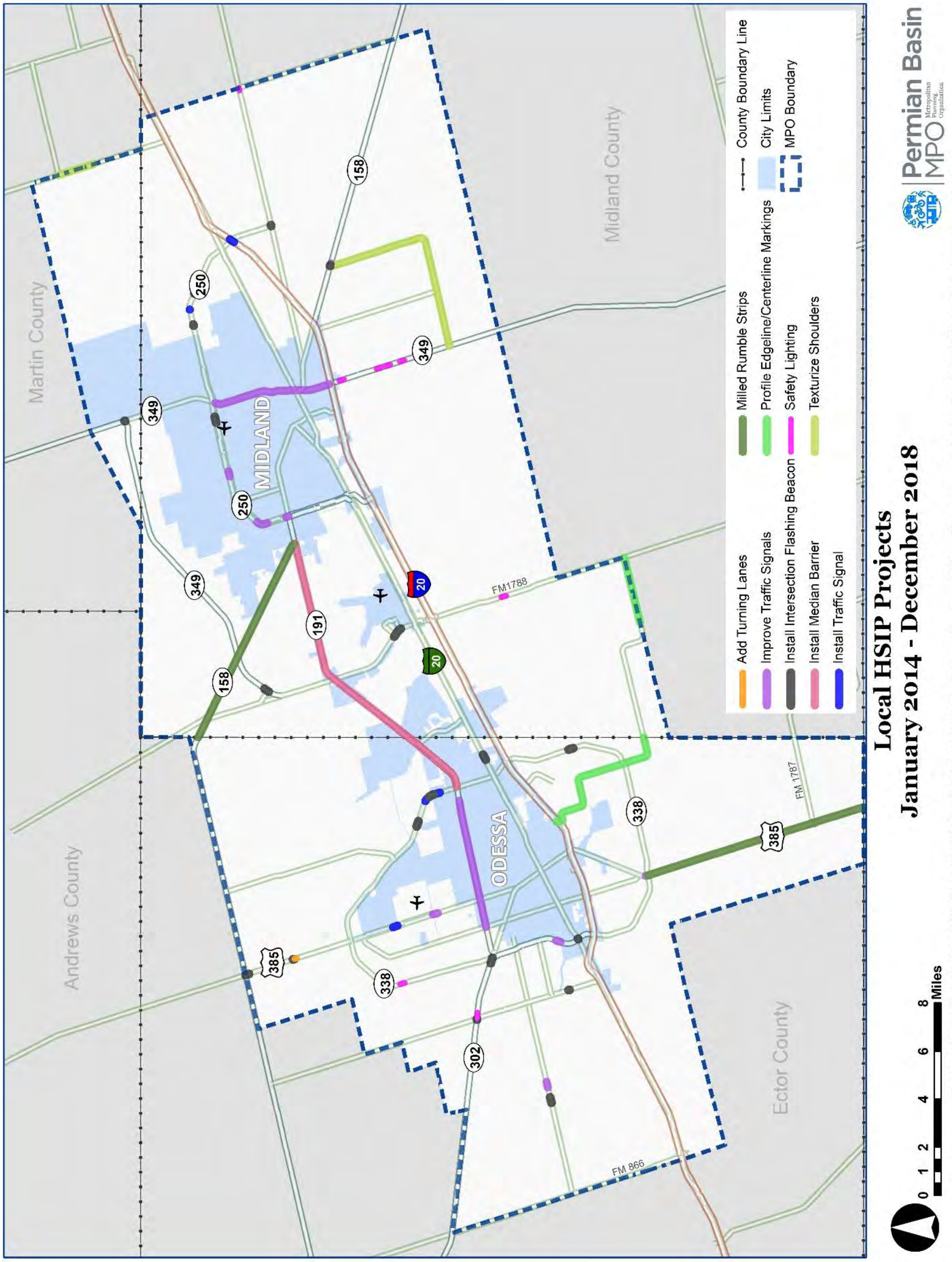
The Highway Safety Improvement Program (HSIP) was a key program in MAP 21 and continued with the FAST Act. The HSIP is a core Federal-aid program with the purpose of significantly reducing reduction in traffic fatalities and serious injuries on all public roads, non-State-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. The cities and counties both apply for HSIP funding when projects calls are issued. HSIP funding contributes additional projects for the purpose of construction or installing traffic safety measures. The improvements include rumble strips, widening of shoulders, permissive left turn signals, and enhanced signage. To consider future safety improvements both cities and the TxDOT Odessa district commission corridor speed studies. A 5-year map of completed HSIP projects is below, Map 4.1.

Figure 4.1 HSIP Chart



Source: FHWA

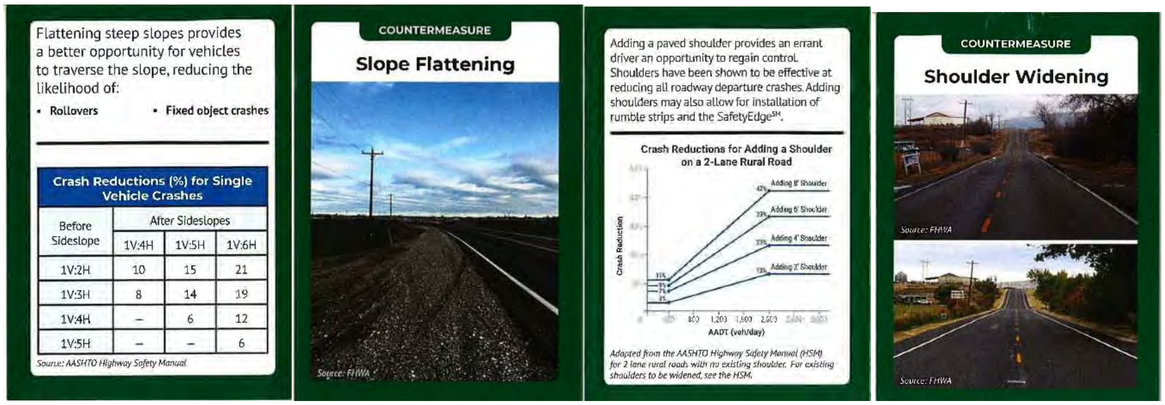
Map 4.1 HSIP Projects 2014-2018



According to the Federal Highway Administration (FHWA):

Safety throughout all transportation programs remains DOT's number one priority.

The HSIP emphasizes a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The foundation for this approach is a safety data system, which each State is required to have to identify key safety problems, establish their relative severity, and then adopt strategic and performance-based goals to maximize safety. Every State is required to develop a Strategic Highway Safety Plan (SHSP) that lays out strategies to address these key safety problems. Every State now has an SHSP in place, and FAST Act ensures ongoing progress toward achieving safety targets by requiring regular plan updates and defining a clear linkage between behavioral (NHTSA funded) State safety programs and the SHSP. A State that fails to have an approved updated plan will not be eligible to receive additional obligation limitation during the overall redistribution of unused obligation limitation that takes place during the last part of the fiscal year. The SHSP remains a statewide coordinated plan developed in cooperation with a broad range of multidisciplinary stakeholders.



MAP-21 and FAST Act

- States will set targets for the number of serious injuries and fatalities per million vehicle miles of travel. If a State fails to make progress toward its safety targets, it will have to devote a certain portion of its formula obligation limitation to the safety program and submit an annual implementation plan on how the State will make progress to meet performance targets.

- Although the federal bills eliminate the requirement for every State to set aside funds for High Risk Rural Roads, a State is required to obligate funds for this purpose if the fatality rate on such roads increases.

- States are required to incorporate strategies focused on older drivers and pedestrians if fatalities and injuries per capita for those groups increase.

Source: FHWA

Goals and Objectives

The Permian Basin MPO plans to achieve the Goal and Objectives from the approved *Vision 2040* MTP pertaining to transportation system safety. These will continue in the *Forward 45* MTP by addressing strategies and measuring the progress through federally Mandated Performance Measures (Chapter 7).

Safety related goals and objectives from page i are:

Goal 4: Incorporate best practices related to safety during the planning process.

Objective 1: Reduce crashes resulting in fatalities, injuries, and property damage within the region.

Objective 2: Promote regional efforts to maintain the existing system to keep it in optimal condition.

Goal 5: Assist with educational efforts to bring awareness to users of the transportation system.

Objective 1: Provide and promote opportunities to educate the public on transportation safety.

Performance Measures: Specific measures related to safety are identified in Chapter 7, Performance Based Planning.

Contributing Factors

There are many factors contributing to the root cause of vehicular crashes– faulty evasive action, driver inattention, driving under the influence – just to name a few. However, the four most common issues that have contributed to fatal and serious injury crashes over the past five years in the MPO boundary are failing to control speed, failing to yield right of way at stop signs, following too closely, and failing to yield right of way when turning left. As shown in Table 4.1, over 22% of all crashes from 2014-2018 have involved one of these factors.

Table 4.1 2014-2018 MAB Top Contributing Factors

Contributing Factors	Count	Percentage
Failed to Control Speed	8694	11.3
Failed to Yield Right of Way - Stop Sign	3275	4.2
Followed Too Closely	2570	3.3
Failed to Yield Right Of Way - Turning Left	2467	3.2

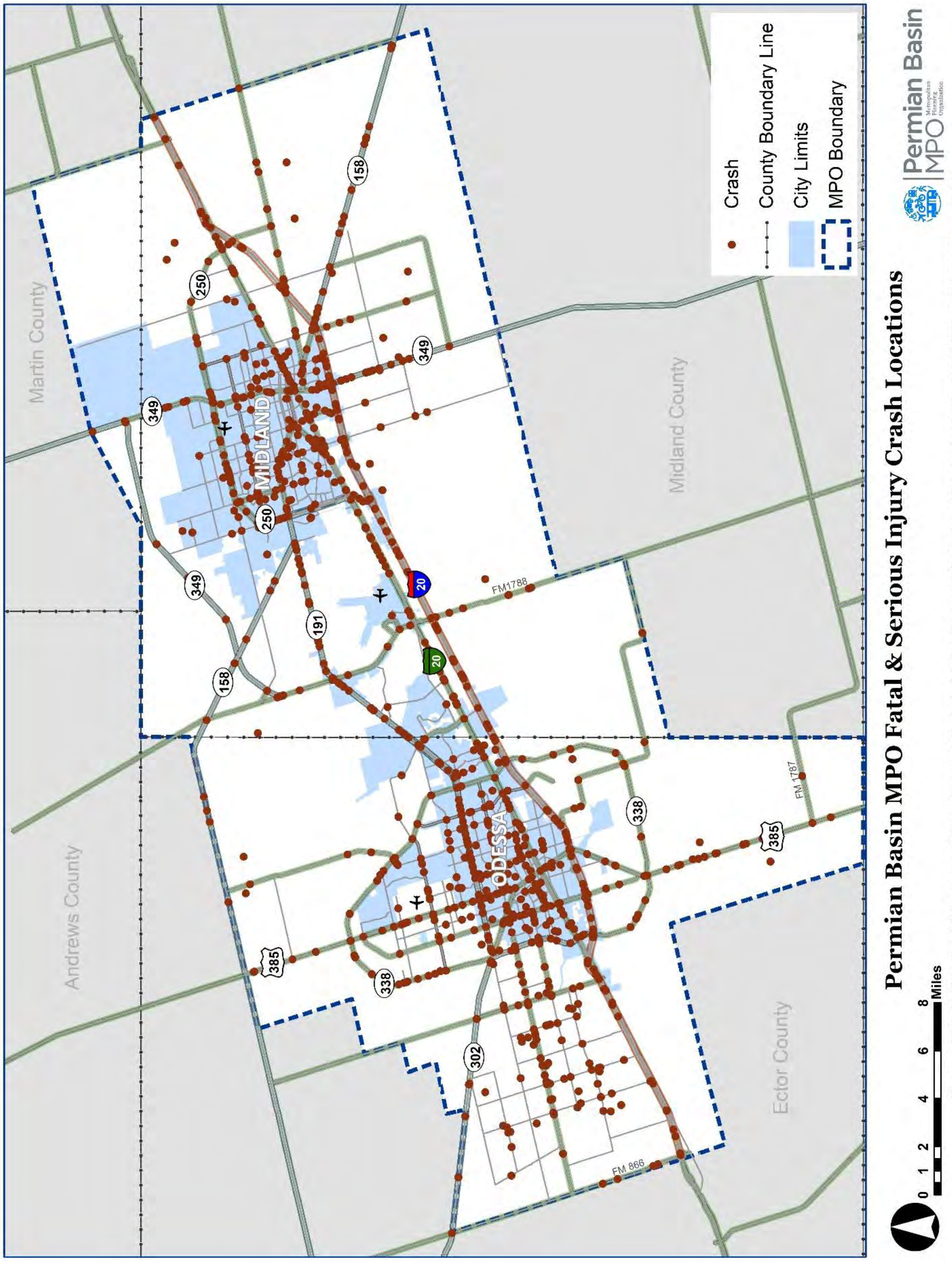
Types of Vehicles

The type of vehicle involved in most crashes is the automobile. However, motorcycles, commercial motor vehicles, and other alternative modes of transportation are often involved in crashes which cause fatalities and/or serious injuries. Vehicles are often involved in crashes with pedestrians and bicyclists as well.

Crash Locations

It is important to analyze the locations of fatal and serious injury crashes to determined how the transportation system may be reconfigured to improve safety. Map 4.2 below displays fatal and serious injury crash locations in years 2014-2018.

Map 4.2 2014-2018 Crash Locations



Desired Safety Improvements

Safety initiatives and the implementation of needed improvements to the roadway system are intended to add safety measures to its users; however, advancements in technology, increased traffic, and changes in legislation illustrate that this effort must be continuous. This section features the efforts of the Permian Basin MPO and its member entities, the community colleges, and citizens of Midland and Ector counties.

Permian Basin MPO

Permian Basin MPO leads transportation planning in the region. The MPO utilizes a cooperative, continuous, and comprehensive process with its member entities to address concerns for safety. Permian Basin MPO has dedicated time and resources to address the issues and find practical solutions. Permian Basin MPO continues to gain the support of the Policy Board and TAC to further implement plans that assert safety as the top priority within the MPO's MAB.

TxDOT Unified Transportation Program

The Unified Transportation Program (UTP) is TxDOT's ten-year plan that guides transportation project development. It is developed annually in accordance with the Texas Administrative Code (TAC § 16.105) and is approved by the Texas Transportation Commission. This document authorizes projects for construction, development, and planning activities.

The 2020 UTP contains a safety category and includes the following project descriptions and the determining factors:

- Safety related projects on and off the state highway system. Projects are evaluated using three years of crash data and ranked by Safety Improvement Index.

- Future High-Risk Rural Roads projects will be managed under the HSIP if required by special rule.

- Allocations for the safety bond program are approved by the Texas Transportation Commission, with the program managed as an allocation program on a statewide basis.

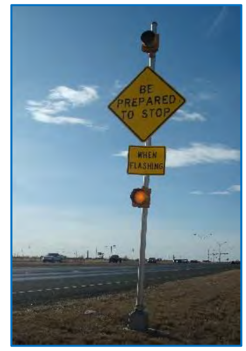
- Projects evaluated, ranked, prioritized and selected by the Traffic Operations Division.

- Roadway widening projects on the state highway system are evaluated using Roadway Safety Features for Preventable Severe Crash Types. Projects evaluated, ranked, prioritized and selected by the Traffic Operations Division.
  ftp.dot.state.tx.us/pub/txdot-info

TxDOT – Odessa District

Safety improvement projects vary in scope and include bridge replacements and new or rebuilt interchanges, warning signs or flashing beacons, projects that improve safety along an entire corridor.

Other improvements in the Permian Basin MPO MAB include the installation of rumble strips, shoulder widening, pavement markings, and signage including regional ITS that are all designed to improve safety.



TxDOT is creating a climate so that safety is inherent in everything it does. It is not an afterthought; it is part and parcel of every process, every design and every project. Safety discussions are a part of the conferences attended by TxDOT personnel to improve technical procedures and bring training to apply to projects being developed. It is a process of continual learning; as vehicles change and as driver behavior changes, TxDOT must incorporate those variables within each project's safety factors. TxDOT maintains a culture of safety.

It is a goal of the MPO to improve safety and functionality of corridors within the MPO's MAB. Some big-picture goals include:

- reconfiguring I-20 to an urban design complete with one-way service roads, adding U-turns, ramp reconfigurations, and interchanges
- continuing the development of Loop 338 in Odessa and Loop 250 in Midland
- completing Loop 250 main lanes and overpasses

Continued growth and an increase in available funding keep such projects moving forward. Other improvements include safety railing in the medians of I-20 and Loop 250 to prevent head on collisions resulting from lane departures on high speed corridors.

City of Midland

In order to continue safety improvements within the Midland city limits, officials are currently in the planning/design stages of the following proposed projects:

- A Street/Wadley Ave. – Using a $1.5 million TxDOT grant from HSIP to increase capacity, add dual left turn lanes, and improve pedestrian accessibility beginning September 2019.
- Mockingbird/SH 349 – Signal installation and a geometric reconfiguration of the intersection have been completed; new paving is currently being completed.
- A Street/Texas; A Street/Illinois– Currently in design with bidding set for early 2020.

- Continuing Hike/Bike Trail and adding multiuse lanes to bike routes as part of larger maintenance/capital improvement projects.
- Paving improvements for Briarwood Ave, Market Street, and Tradewinds Boulevard.
- Construction of a new bridge and pedestrian crossing on Carver St. funded by the City of Midland and the Midland Development Corporation.

Source: City of Midland

City of Odessa

In order to continue safety improvements within the Odessa city limits, officials are currently in the planning, design or construction stages of the following projects:

- Widening of Faudree Rd. & Highway 191 to Yukon Rd.
- Traffic signal installation at E Loop 338 & Trunk Rd., Yukon Rd. at Dawn Ave., Faudree Rd. at Dorado Dr., and Billy Hext Rd. at Eastridge Rd.
- East Channel drainage improvements.
- Various improvements to downtown roads including lighting, and sidewalks, and public safety improvements.
- Study and design of Dawn Ave. from 87th Street to Yukon Rd., 56th from Faudree to East Loop 338, and South Dixie Blvd. from I-20 to South Loop 338.
- University Blvd. widening with protected center turn lane.
- Loop 338 at 52nd/56th St. grading improvements and signalization.
- TxDOT Road fund participation for future projects.

Midland College Transportation Training

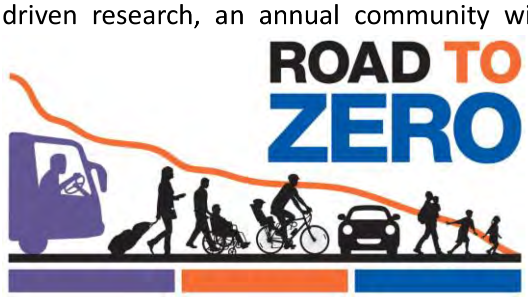
The Midland College Transportation Training program provides individuals with training to obtain a CDL License in order to operate a commercial motor vehicle (CMV) safely within the rules and regulations set by the Department of Transportation. The program is 160 hours completed over four weeks. According to the director, the courses are fast paced so attendance and punctuality are imperative to ensure all information is received. Students learn how to perform pre-trip inspections, Federal Motor Carrier Safety Regulations, hazardous materials transport, and H_2S safety training. The information encompasses safety in all areas through hands-on training, videos, and lectures. Drivers must be aware of what it takes to maneuver a large-scale vehicle in order to take necessary precautions in the event of an emergency.

Odessa College – Professional Truck Driving School

Odessa College also offers a 160-hour course to prepare individuals for taking the CDL tests through the Texas Department of Public Safety (TxDPS). Students are taught the fundamentals of tractor trailer driving with key emphasis on safety. The amount of safety taught through this program cannot be determined by course segments or time, it's an element that is included throughout the course - every chapter, every section. Once the course is complete, students should be able to pass the five written exams, air brake test, backing test, and driving test. Each person must also pass a federal Department of Transportation (DOT) physical which is repeated every two years. A federal pre-trip test consisting of naming parts and functions of large-scale vehicles was reinstated in 2015.

Permian Road Safety Coalition

The PRSC is a broad cross-section of stakeholders invested in addressing and solving road safety issues throughout the Permian Basin of New Mexico and Texas. These stakeholders are private industry leaders from the oil and gas industry, tucking industry, and public transportation and safety agencies. The PRSC advocates for road infrastructure improvements at the federal, state, and local levels as well as the implementation. The Coalition regularly holds quarterly forums to convene oil and natural gas operators, service companies, trucking companies, government agencies, and non-government organizations to leverage expertise and share best practices, and collaborate on data-driven research, an annual community wide safety initiative is conducted to educate the broader community on the shared responsibility of road safety. From improving personal driving habits to including the use of technology in vehicles, the Coalition has played a role in making the roadways of the Permian Basin safer. The fifth Stand Down for Safety event is planned for November 7, 2019 in Monahans.



https://www.nsc.org/road-safety/get-involved/road-to-zero

Citizens of Midland and Ector Counties

During the three public workshops periods held in the fall of 2018, spring of 2019, and fall of 2019 as part of the MTP development process, citizens expressed safety concerns. The information indicated key areas the residents observed as needing safety improvements. The chart below depicts the frequency of the top safety-related matters as communicated by the attendees.

Pipeline Safety Is Everyone's Responsibility.

Did you know that Americans consume more than 700 million gallons of petroleum products each day in the form of gasoline, diesel fuel, heating oil and jet fuel?

Much of the petroleum you use is trans-ported through underground pipeline systems. Each day, millions of gallons of oil and petro-leum products are quietly delivered with minimal impact on the environment.

According to the Department Of Transpor-tation (DOT), pipelines are the safest means of transportation for oil and petroleum products.

Pipelines In Your Community: Your Neighbor.

Written agreements, or easements, between landowners and pipeline companies, allow pipeline and utility companies to construct and maintain pipeline right-of-ways across public and privately owned property. Your property may be one of many in your community which contains an underground pipeline easement.

To determine if a pipeline runs through your property:

- Check for pipeline markers posted on your property or in your neighborhood.
- Check the National Pipeline Mapping system @ npms.phmsa.dot.gov

Look For Pipeline Markers On Your Property or In Your Neighborhood.

For your safety, markers have been installed along the pipeline route to indicate the approximate location and provide vital emergency information. Take time to familiarize yourself with the pipeline markers on your property or in your community. Write down the names and phone numbers of pipeline companies or operators listed on the markers in case of an emergency.

Pipeline Accidents Are Preventable. Call Before You Dig.

Accidental "dig-ins" by property owners or con-tractors make up the majority of pipeline accidents. Dig-ins are preventable only if owners or excavators will contact pipeline companies BEFORE they attempt to dig. A pipeline marker will not necessarily indicate the exact location or direction of the pipeline.

Before you dig on your property, please contact your local One-Call System listed in this brochure, wait the proper amount of time, and then dig safely.

In case of an emergency, call the appropriate phone number listed on the back of this card, or the pipeline company listed on a pipeline marker on or near your property. Please remember to call 811 at least 48 hours prior to excavation activity. In the State of Texas the life of locate ticket is 14 days.

If you are an excavator in the state of Texas, you need to be aware of the new Texas Railroad Commission Damage Prevention Rule (Chapter 18) that can be found at www.rrc.state.tx.us/rules/rule.html

For more information on pipelines in your area please visit the National Pipeline Mapping System at www.npms.phmsa.dot.gov

La Seguridad de los Oleoductos es la Responsabilidad de todos.

¿Sabía usted que en los Estados Unidos de Norteamérica se consumen diariamente más de 700 millones de galones de derivados del petróleo en forma de gasolina, combustible para calefactores, diesel, y combustible de aviación?

Mucho del petróleo que usted utiliza en sus diferentes derivados es transportado a través de sistemas subterráneos de oleoductos. Cada día, milliones de galones de petróleo y derivados son silenciosamente entregados con un mínimo impacto al ambiente.

De acuerdo con el Departamento de Transporte (DOT por sus siglas en inglés), los ductos son la forma mas segura de transportar petróleo y sus productos.

Oleoductos En Su Comunidad: Su Vecino.

Acuerdos escritos, o derechos de paso entre los terratenientes y las compañías de ductos, permiten que las campañías de servicios públicos y de ductos puedan construir y mantener el derecho de paso a través de la propiedad privada y pública. Su propiedad podría ser una de las varias en su comunidad en la cual exista un paso de ducto subterráneo.

Para determinar si un ducto pasa a través de su propiedad:

- Revise o busque marcadores de ductos puestos en su propiedad o en su vecindario.
- Consulte los archivos de la propiedad en la oficina del condado.

Busque Marcadores o Señalamientos de Oleoductos en su Propiedad o Vecindario.

Por su seguridad, se han instalado marcadores a lo largo de la ruta de los oleoductos para indicar aproximadamente su localización y proveerle con información vital en caso de emergencia. Tome tiempo para familiarzarse con los marcadores de oleoductos en su propiedad o comunidad. Escriba los nombres y números telefónicos de las compañías de oleoductos o de los operadores que se encuentran en los marcadores.

Los Accidentes en Oleoductos son Prevenibles. Llame Antes de Excavar.

Los accidentes en las excavaciones hechas por dueños de la propiedad o contratistas forman parte de la mayoría de los accidentes en los oleoductos. Estos accidentes son prevenibles solamente si los dueños de la propiedad o excavadores contactan a las compañías de ductos ANTES de tratar de excavar. Los marcadores o señalamientos de ductos no indican necesariamente la localización exacta o la dirección de los ductos.

Antes de cavar en su propiedad, por favor contácte a su sistema local de One-Call (Una Llamada) enlistado en este folleto, espere a que marquen la línea o ducto y después cave con cuidado. En caso de emergencia, llame al teléfono indicado en el reverso de esta tarjeta, o la compañia de oleoductos enlistada en el marcador o señalamiento cerca de su propiedad. Por favor recuerde llamar al 811 usted debe dar aviso por adelantado en minimo 48 horas de la actividad de excavación. En el estado de Texas, si usted tiene un tiquete de Dig Safe es valido tiquette por 14 días.

Si usted es un excavador en el estado de Texas, usted debe saber acerca de la nueva Regla de Prevención contra Daños de la Comisión de Ferrocarriles de Texas (Capítulo 18). la cual puede ver en ul sitio web www.rrc.state.tx.us/rules/rule.html

Para obtener más información sobre las tuberías en su área, por favor visite la National Pipeline Mapping System en www.npms.phsma.dot.gov

Para obtener más información sobre planes de respuesta de emergencia del Medallion por favor visite a www.medallionmidstream.com

For more information on Medallion 's Emergency Response Plans please visit us at www.medallionmidstream.com

Table 4 .2 Citizen Safety Comments from Public Workshops

Problem	Road	Location	Frequency
Running Red Lights		**City of Midland**	
	Garfield	At Loop 250	2
	Wadley Ave.	At Midkiff Rd.	2
		City of Odessa	
	42nd St.	At Grandview	8
	42nd St.	At JRS Parkway	6
	University	At Dixie	4
	42nd St.	At Andrews Hwy.	4
	42nd St.	At Dixie	3
Speeding		**City of Midland**	
	W. Loop 250	Entire Loop	3
		City of Odessa	
	US 385	IH 20/Loop 338	5
	42nd St.	At Andrews Hwy.	4
	42nd St.	At JBS Parkway	3
Ramps		**City of Midland**	
Ramp too short	Loop 250	At SH 191	2
Congestion	Loop 250	At SH 191	2
Congestion	IH 20	At Loop 250	2
Congestion	IH 20	At SH 349	
		City of Odessa	
Steep ramps	IH 20	At US 385	3
Steep ramps	IH 20	At Loop 338	2
High Volume of Traffic		**City of Midland**	
	Loop 250	Entire Loop	4
	N. A St.	At Loop 250	4
	Garfield	At Andrews Hwy.	2
	Midland Dr.	At Andrews Hwy.	2
		City of Odessa	
	42nd St.	At JBS Parkway	4
	FM 1788	SH 191 to BI 20	3
	University	Dixie to Grandview	3
	42nd St.	Entire 42nd St.	3
	IH 20	At Co. Road W.	3
Intersections		**City of Midland**	
	Nothing Reported		
		City of Odessa	
Stop Sign Only	N. Loop 338	At 52nd St.	3
Stop Sign Only	US 385	At Co. Road W.	2
Stop Sign Only	N. Loop 338	At Yukon Rd.	2

4.2 Crash Statistics

For all the transportation modes in the region, Permian Basin MPO's priority is to safeguard the citizens and visitors by identifying areas of safety concern, analyzing crash data and traffic trends, and then relaying this information to decision-makers as project selection priorities are established.

Please note: All crash data collected is within Midland and Ector Counties, however a portion occurred outside the Permian Basin MPO Metropolitan Area Boundary (MAB). Data for Martin county is unavailable. All data was collected through the TxDOT Crash Records Information System (CRIS) unless otherwise noted.

4.2.1 Highways and Bridges

Crashes Causing Fatalities and Serious Injury

The volume of vehicles on the roads in the Midland Odessa region has increased to such a degree that there are more crashes resulting in fatalities and serious injuries. Tables 4-2 through 4-5 indicate crash rates and total crashes from the beginning of 2014 through 2018. Map 4.6 is a heat map showing crash location by density in the region.

A lieutenant with the Midland Police Department's Special Operations Division indicated that increased traffic congestion, driver inattention and speed are the biggest issues he has seen on Midland's city streets. The Texas Department of Transportation (TxDOT) - Odessa District Public Information Officer stated that many fatalities are preventable, and the decisions drivers make impact the rates of serious to fatal crashes across the state. "Numerous drivers speed, text, and engage in activities that take their attention away from driving." (mrt.com) Representatives from the Odessa Police Department agree, saying "a lot of wrecks occur here because of speeding and driver inattention; running red lights, another safety hazard, has led to wrecks as well." "Pay attention, look both ways, be a defensive driver."

Table 4.3 2014 - 2018 County Crash Rate and Total Crashes (100 million VMT)

TOTAL CRASHES AND CRASH RATE PER COUNTY						
County		2014	2015	2016	2017	2018
Ector	Crash Rate	185.14	159.65	128.62	182.04	279.45
	Total Crashes	1,722	1,554	1,157	1,633	2,480
Martin	Crash Rate	70.65	68.76	54	84.32	92.05
	Total Crashes	216	190	140	218	238
Midland	Crash Rate	241.17	210.62	190.71	234.61	287.28
	Total Crashes	2,899	2,488	2,222	2,726	3,338

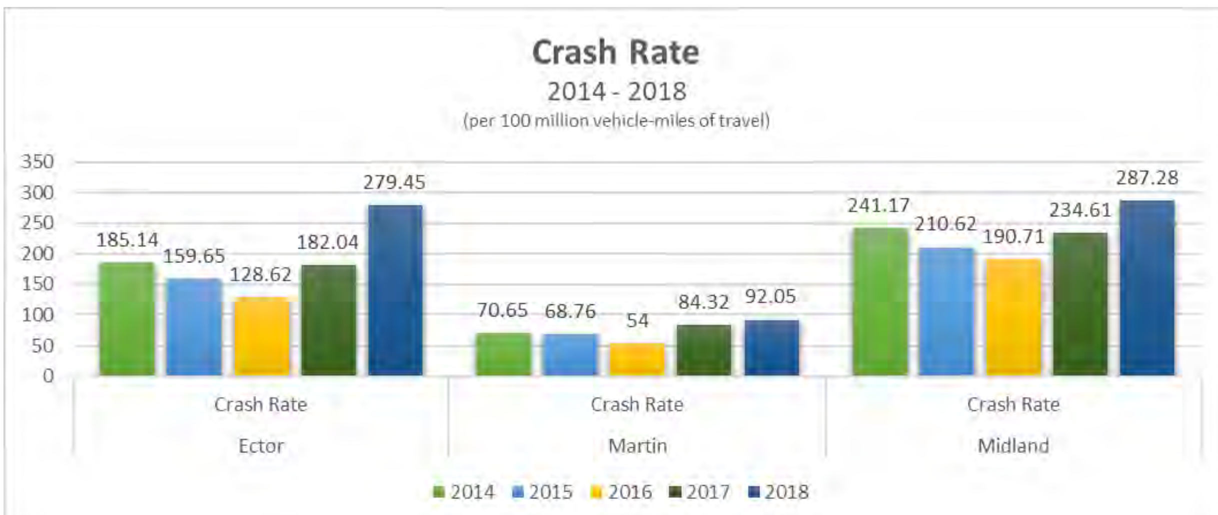
**vehicle miles travelled*

Source: TxDOT CRIS

Table 4.4 2014 - 2018 County Total Crashes

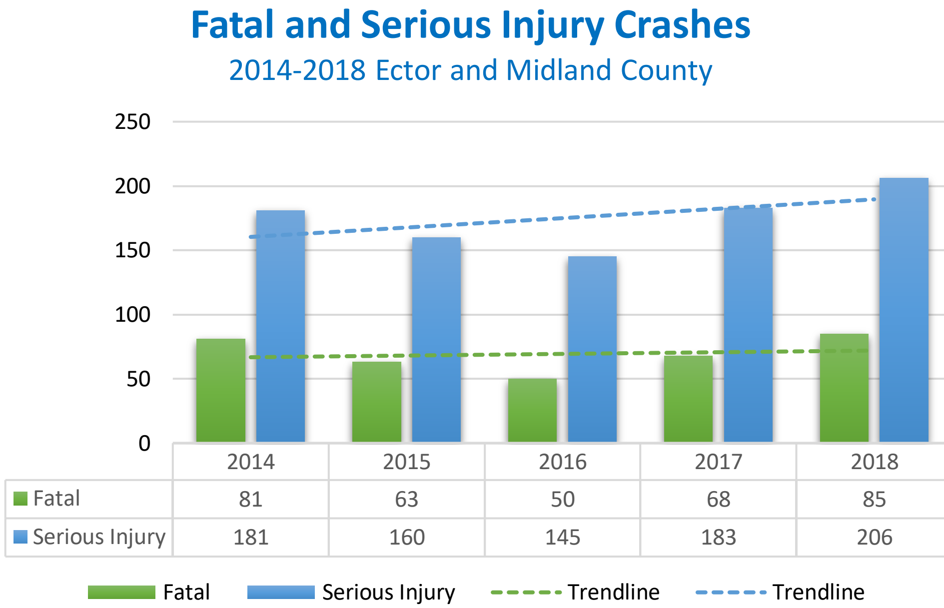
Source: TxDOT CRIS

Table 4.5 2014 - 2018 County Crash Rate



Source: TxDOT CRIS

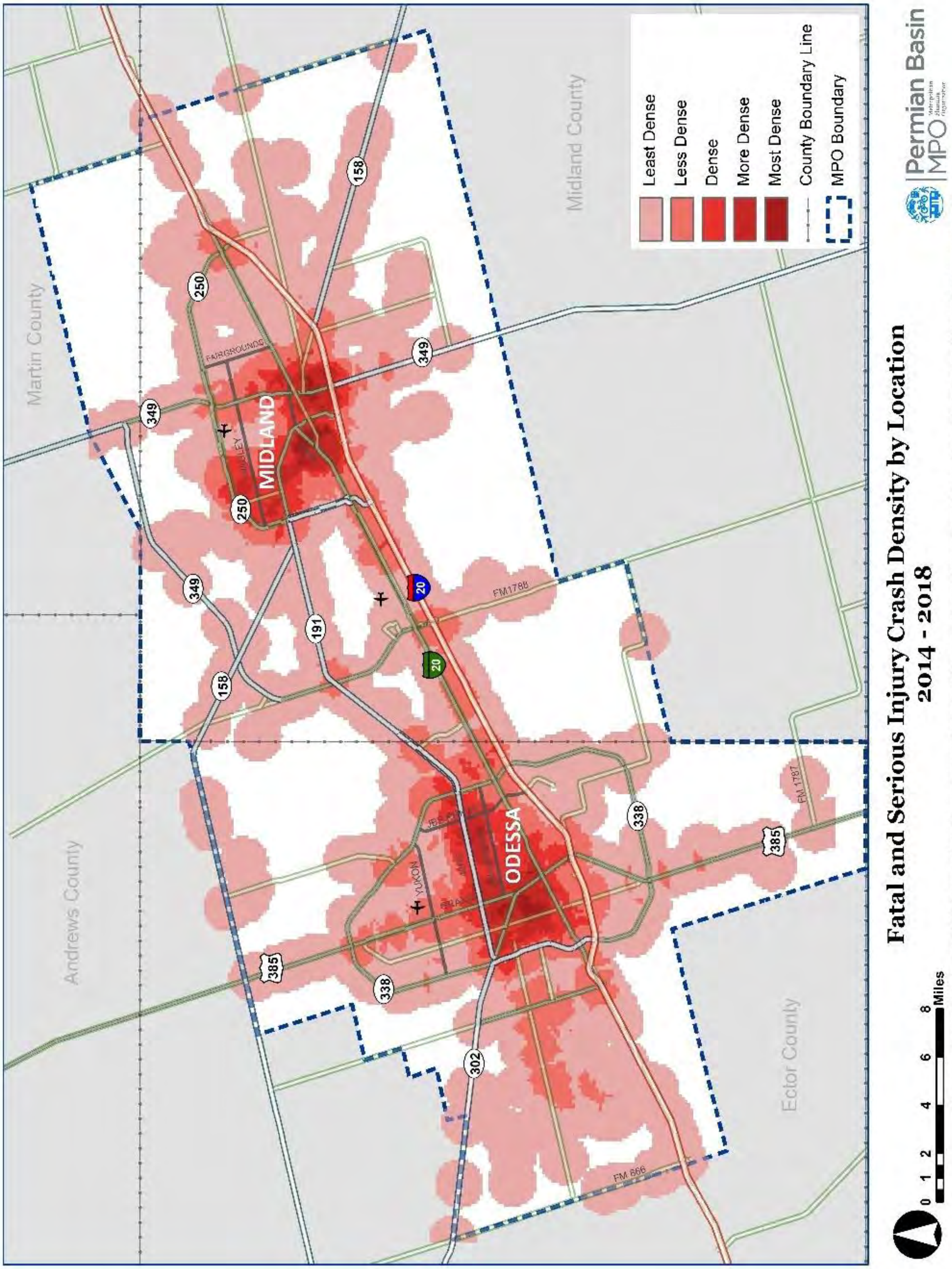
Table 4.6 2014 - 2018 Fatal & Serious Injury Crash



	2014	2015	2016	2017	2018
Fatal	81	63	50	68	85
Serious Injury	181	160	145	183	206

Source: TxDOT CRIS

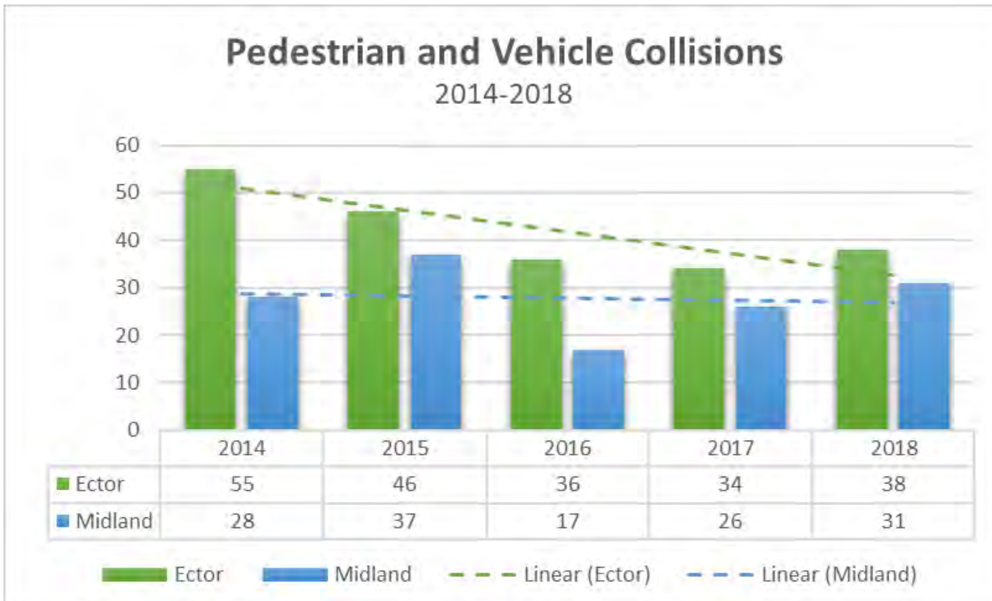
Map 4.3 2014 - 2018 Fatal & Serious Injury Crash Density



4.2.2 Bicycle and Pedestrian

It is not uncommon for a pedestrian or bicyclist to be involved in a crash with a vehicle. Crashes and other incidences may occur when a pedestrian or bicyclist does not yield the right-of-way to a vehicle or when driver negligence results in a pedestrian fatality or serious injury. For more information on the non-motorized transportation system in the Permian Basin MPO MAB, please refer to Chapter 3 section 3.2.3 *Bicycle and Pedestrian Network*. Tables 4.6 and 4.7 show a five-year history of pedestrian and vehicle crashes as well as bicycle and vehicle collisions. Maps 4.7 & 4.8 indicate the location of these types of crashes.

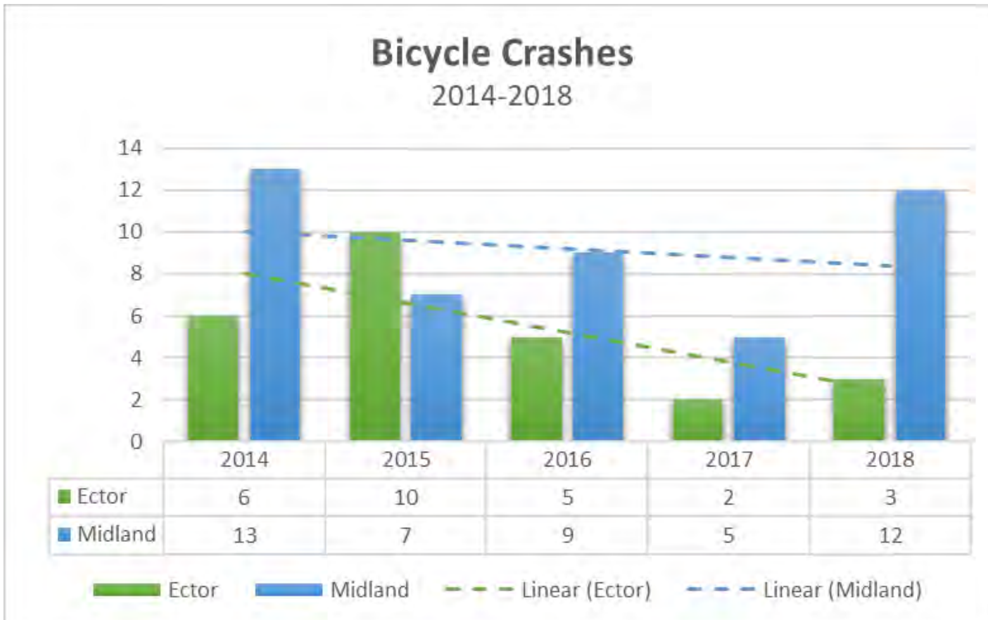
Table 4.7 2014 - 2018 Pedestrian/Vehicle Collisions



	2014	2015	2016	2017	2018
Ector	55	46	36	34	38
Midland	28	37	17	26	31

Source: TxDOT CRIS

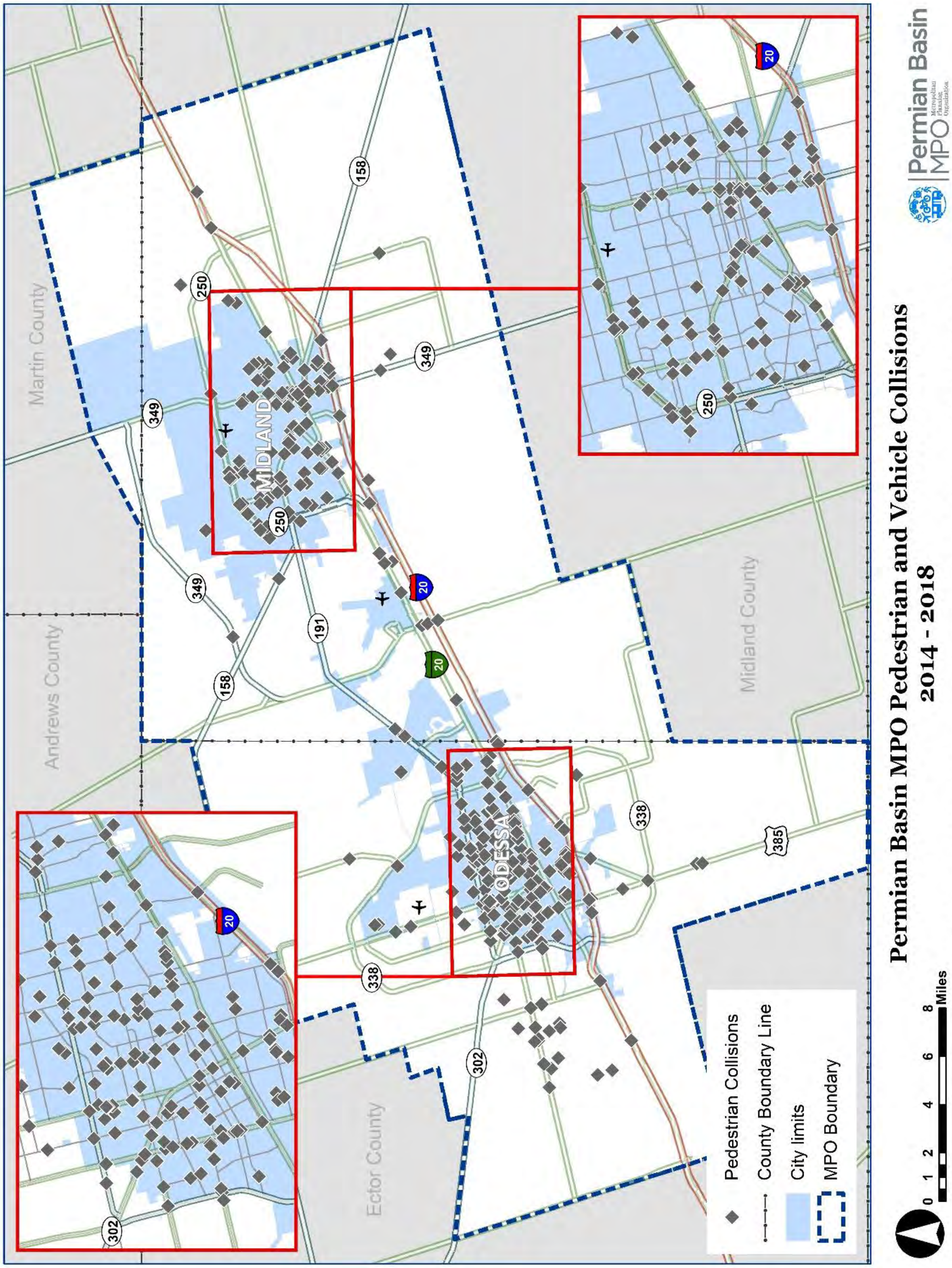
Table 4.8 2014 - 2018 Bicycle/Vehicle Collisions



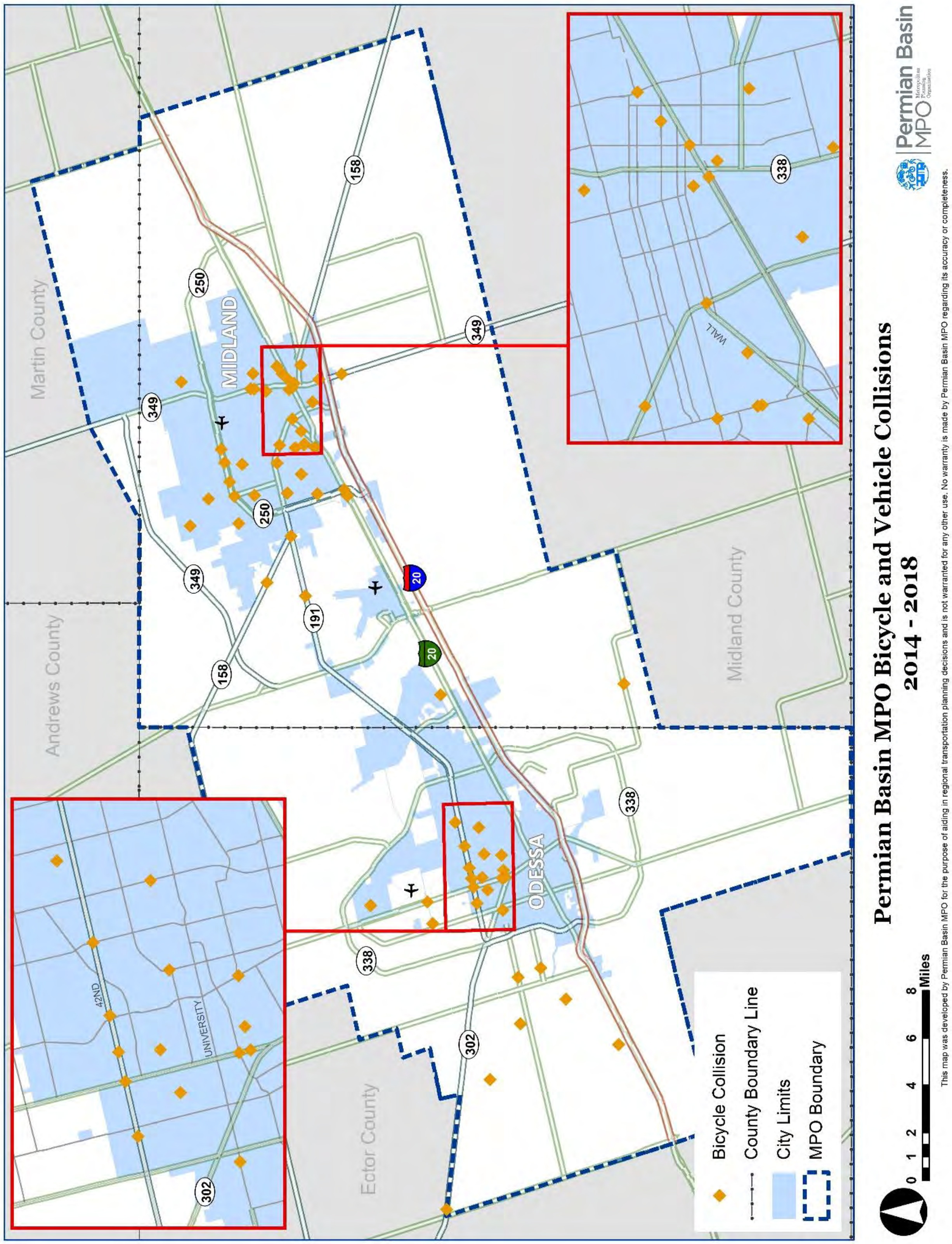
	2014	2015	2016	2017	2018
Ector	6	10	5	2	3
Midland	13	7	9	5	12

Source: TxDOT CRIS

Map 4.4 2014 - 2018 Pedestrian & Vehicle Crash Locations



Map 4.5 2014 - 2018 Bicycle & Vehicle Crash Locations



4.2.3 Transit

Transit Provider – EZ-Rider

Since launching services in 2003, EZ-Rider has maintained a high standard of safety with the well-being of its passengers as top priority. EZ-Rider believes in reducing congestion and increasing safety as part of its strategy *"To provide safe, reliable, affordable, and efficient public transportation with quality customer service solutions for the communities of Midland and Odessa".*

At the beginning of 2018, an average of 1,049 passengers used public transportation per day in Midland and Odessa. Assuming each passenger would otherwise use a single occupancy vehicle, their decision to use EZ-Rider removed approximately 1,049 vehicles from the congested network roads. Removing single occupancy vehicles from the road system helps support a comprehensive effort to address safety issues and improve system reliability.

Because more people are using the bus system during peak times (7-9am/11-1pm/4-6pm), less vehicles are on the road networks that experience the same pattern of usage.

EZ-Rider's fleet of 19 transit buses, 21 cutaway buses, and 3 support vehicles all contain security cameras and are maintained regularly by trained mechanics. These automotive technicians must have the ability to perform the necessary repairs and tasks required on large diesel type engines and transit equipment as well as smaller vehicles and gasoline type engines. Knowledge is required in the areas of diesel engine troubleshooting and repair, air brake systems, transmission service, suspension and steering systems, and basic electrical systems troubleshooting and repair. Previous experience in the areas of bus air conditioning, multiplex electronics, security and video systems, electronic revenue collection system service and repair, and electronic sign and voice equipment service and repair is preferred.

Bus operators must possess a CDL with Passenger and Air Brake endorsements. EZ-Rider provides all training for customer service, passenger care, safety and security, care for passengers with disabilities, system routes, and all other areas that are incidental of the position of bus operator. This training includes everything from air brake systems to winter driving to drug and alcohol use. Trainees also drive with an experienced operator who evaluates them on both the morning and afternoon runs. Both mechanics and bus operators must pass a DOT physical, drug screen, and police background investigation and are subject to random drug and alcohol testing.

On July 19, 2018, the Federal Transit Administration (FTA) published the Public Transportation Agency Safety Plan (PTASP), which requires certain operators of public transportation systems that receive federal funding under FTA's Urbanized Area Formula Grants to develop safety plans that include the processes and procedures to implement the Safety Management System (SMS). The plan must include safety performance targets. Transit operators also must certify the have a safety plan in place meeting the requirements of the rule by July 20, 2020. The plan must then be updated and certified by the transit agency annually.

Table 4.9 EZ-Rider Crashes

2017-2018	PREVENTABLE ACCIDENTS	NON- PREVENTABLE ACCIDENTS
OCTOBER	1-FIXED	0
NOVEMBER	1-FIXED	1-MAINT
DECEMBER	0	2-FIXED/1-PARA
JANUARY	0	1-FIXED/1-PARA
FEBUARY	0	2-FIXED
MARCH	1-FIXED	2-FIXED
APRIL	1-FIXED	1-FIXED/1-PARA
MAY	1-PARA	1-FIXED
JUNE	1-FIXED	0
JULY	1-FIXED	0
AUGUST	1-FIXED	2-FIXED/1-PARA
SEPTEMBER	1-FIXED	0

2018-2019	PREVENTABLE ACCIDENTS	NON- PREVENTABLE ACCIDENTS
OCTOBER	1-FIXED/1-PARA	1-FIXED
NOVEMBER	2-FIXED	1-FIXED
DECEMBER	1-FIXED	0
JANUARY	1-FIXED	1-FIXED
FEBUARY	0	1-FIXED
MARCH	1-PARA/1-FIXED	1-CONN
APRIL	1-PARA	0
MAY	1-PARA/1-OFFICE	0
JUNE	0	0
JULY	0	2-FIXED
AUGUST	3-PARA/2-MAINT	1-FIXED
SEPTEMBER	0	2-FIXED

**"FIXED" indicates the accident involved a bus on our fixed route system; "PARA" is for our ADA paratransit service. "OFFICE" means the accident involved administrative staff (eg. not driving a route).*

4.2.4 Aviation

The Federal Aviation Administration office of Aviation Safety is responsible for the certification, production approval, and continued airworthiness of aircraft; and certification of pilots, mechanics, and others in safety-related positions.

Aviation Safety is also responsible for:

- Certification of all operational and maintenance enterprises in domestic civil aviation
- Certification and safety oversight of approximately 7,300 U.S. commercial airlines and air operators
- Civil flight operations
- Developing regulations

Source: https://www.faa.gov/about/office_org/headquarters_offices/avs/

4.2.5 Rail

Union Pacific

The Federal Railroad Administration (FRA) establishes minimum standards for all areas of railroad safety that Union Pacific (UP) must meet. The FRA has 28 compliance manuals that address a broad array of safety issues including rail safety, emergency management, railroad workplace safety, etc. These manuals can be found on the FRA website, www.fra.dot.gov

UP has provided rail service in Midland and Odessa for over 100 years and like most communities, the cities grew around the railroad. As regulated by the FRA, UP abides by the following procedures:

- Under the Train Horn Rule (49 CFR Part 222), the proceeding principles are applied:
    - Locomotive engineers must begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings.
    - If a train is traveling faster than 60 mph, engineers will not sound the horn until it is within ¼ mile of the crossing, even if the advance warning is less than 15 seconds.
    - There is a "good faith" exception for locations where engineers can't precisely estimate their arrival at a crossing and begin to sound the horn no more than 25 seconds before arriving at the crossing.

- Train horns must be sounded in a standardized pattern of two long, one short and one long blast. The pattern must be repeated or prolonged until the lead locomotive or lead cab car occupies the grade crossing. The rule does not stipulate the durations of long and short blasts.
- The maximum volume level for the train horn is 110 decibels which is a new requirement. The minimum sound level remains 96 decibels.
- The signal lights along the tracks are block signals like highway traffic signals. They indicate to crews if preceding track "blocks" are clear of train traffic.
- Maximum authorized track speed through Midland and Odessa Is 70 mph.

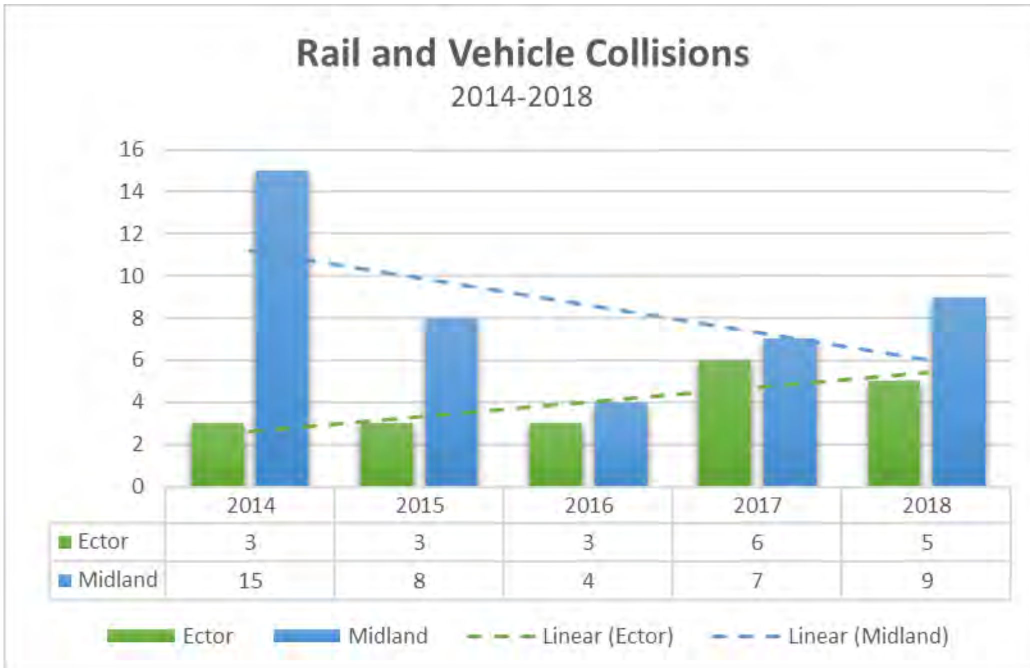
"*The faster we can move trains through a city the less impact we have on vehicle traffic.*" - Union Pacific, Manager of Public Safety.

"We are always trying to improve our safety by inspecting our tracks, locomotives and cars carrying hazardous products, including crude oil. In addition, Union Pacific has extensive safety training and preparedness programs that involve our employees and first responders," the UP spokeswoman said in a statement. (www.oaoa.com)

Any community can request grade crossing safety training, hazardous material response training and emergency response training free of charge.

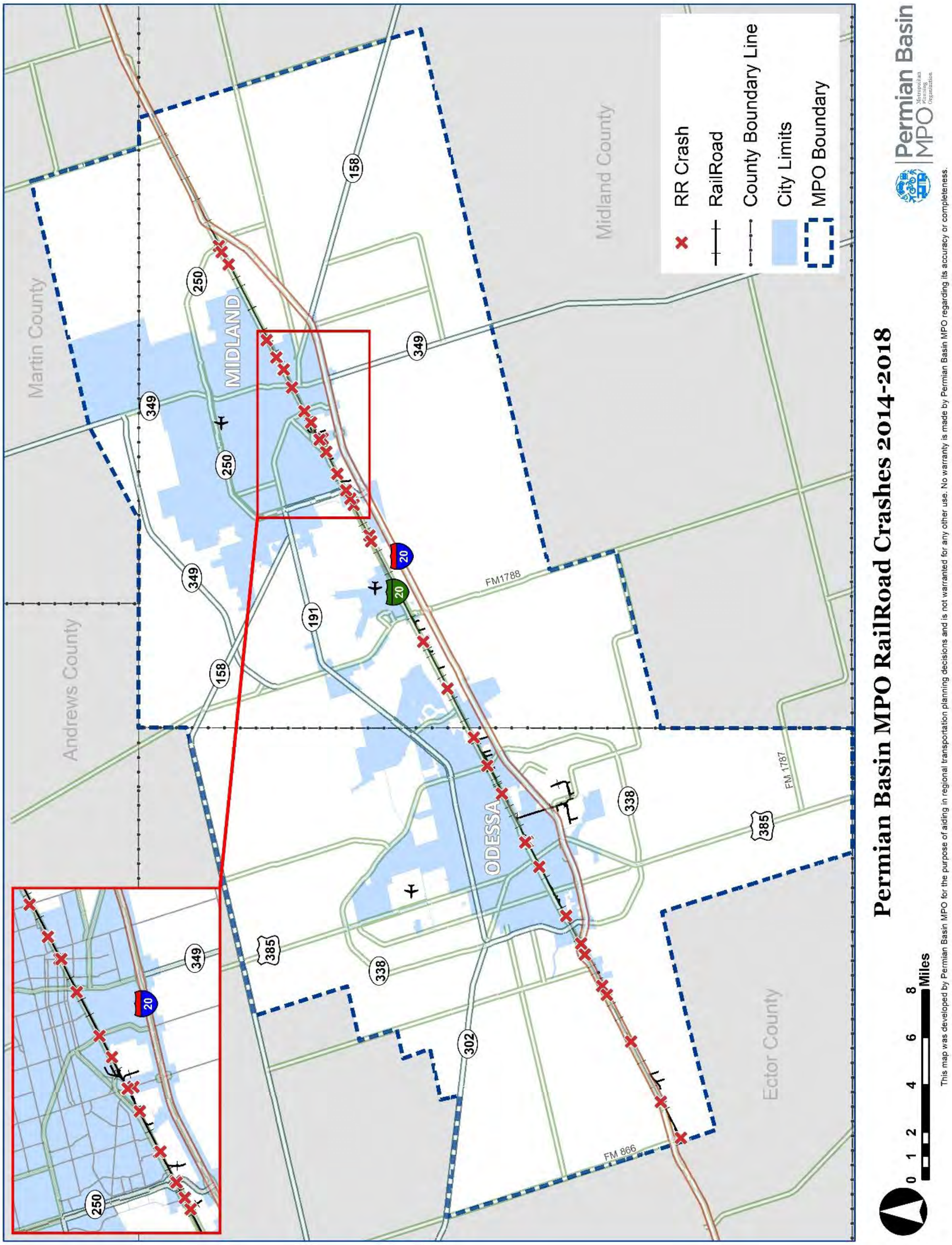
Rail collisions, as defined by TxDOT, are if a crash involves or is related to a train, railcar, or railroad crossing. These collisions also include when signal poles/posts or crossing gates are struck. The top four contributing factors for rail collisions, per TxDOT, are failure to stop for train, driving under the influence of alcohol, disregard for stop signage or light, and driver inattention. These factors generate 20% of all rail and vehicle crashes between 2014 and 2018 within the MPO boundary. Table 4.9 and Map 4.9 Indicate the number and location of rail and vehicle collisions for the period 2014 through 2018.

Table 4.10 Railroad Crashes in Midland and Ector Counties 2014-2018



Source: TxDOT CRIS

Map 4.6 Railroad Crashes in Midland and Ector Counties 2014-2018



4.3 Local Safety Initiatives

It is important to outline the steps local entities are taking to increase safety on the roads in the Midland Odessa region. Stakeholders involved in the transportation planning process view safety as a top priority and continuously strive toward improving the conditions of the transportation system. There are many agencies and individuals participating in long-range planning development and this section describes how these advocates are working to reduce crash rates and improve safety.

Permian Basin MPO

The MPO gathers and analyzes crash data from the TxDOT-Odessa District, city and county offices, and the TxDOT CRIS. Evaluating this information gives Permian Basin MPO the opportunity to discover traffic trends and root causes of crashes; therefore, making its member agencies and interested citizens aware of probable actions which may be taken to develop safety measures to implement into transportation planning. Additionally, Permian Basin MPO established PM1 (FAST Act performance measure) safety targets in conjunction with TxDOT to address regional safety issues. Figures 4.2 and 4.3 exhibit those safety measures. Other FAST Act performance measures are described in Chapter 7, Performance Based Planning.

Figure 4.2 TxDOT and MPO FY 2018 Safety Performance Targets

2018 Safety Performance Targets	Number of Fatalities (FARS/CRIS/ARF DATA)	Rate of Fatalities per 100M VMT (FARS/CRIS/ARF DATA)	Number of Serious Injuries (FARS/CRIS DATA)	Serious Injury Rate per 100M VMT (CRIS DATA)	Total Number of Non-Motorized Fatalities and Serious Injuries (FARS/CRIS DATA)
2014	3,536	1.45	17,133	7.05	1,893
2015	3,516	1.36	17,096	6.62	2,203
2016	3,775	1.44	17,578	6.71	2,304
2017	3,801	1.45	17,890	6.68	2,224
2018 Target	3,891	1.46	18,130	6.64	2,309
2018 Target as a 5-year Average:	3,704	1.43	17,565	6.74	2,151

FARS: Fatality Analysis Reporting System
CRIS: Crash Records Information System
ARF: Annual Report File

Figure 4.3 TxDOT and MPO FY 2019 Safety Performance Targets

2019 Safety Performance Targets	Number of Fatalities (FARS/CRIS/ARF DATA)	Rate of Fatalities per 100M VMT (FARS/CRIS/ARF DATA)	Number of Serious Injuries (FARS/CRIS DATA)	Serious Injury Rate per100 M VMT (CRIS DATA)	Total Number of Non-Motorized Fatalities and Serious Injuries (FARS/CRIS DATA)
2015	3,582	1.39	17,110	6.63	2,036
2016	3,776	1.39	17,602	6.49	2 301
2017	3,726	1.36	17,546	6.39	2,148
2018	3,891	1.46	18,130	6.64	2,309
2019 Target	3,980	1.47	18,367	6.60	2,394
2019 Target as a 5-year Average	3,791	1.414	17,751	6.55	2,237

FARS: Fatality Analysis Reporting System
CRIS: Crash Records Information System
ARF: Annual Report File

The MPO continues to coordinate with member agencies to provide Public Service Announcements (PSAs) through media outlets to inform the public of crash statistics and root causes of fatal and serious injury crashes. It is anticipated that providing this service will alter driver behavior and increase awareness on the region's public road system. Permian Basin MPO holds a variety of events to involve the public and to receive feedback about safety including open houses, workshops, and networking meetings.

TxDOT

TxDOT's mission is to work with others to provide safe and reliable transportation solutions for Texas. Along with that, one of its goals is to maintain a safe system. Through several resources, TxDOT is working to decrease fatalities and injuries sustained in crashes. All efforts to improve safety throughout the state are directly affecting conditions in Midland and Odessa. In addition to emphasizing safety in road design, TxDOT actively seeks to identify and respond to other safety needs.

TxDOT frequently releases public awareness campaigns designed to improve safety for drivers on Texas highways. The agency increases public awareness through campaigns dedicated to changing driver behavior and encouraging more awareness of surroundings. The table below describes the most recent PSAs and campaigns published and aired by TxDOT throughout the state.

Table 4.11 TxDOT Safety Campaigns

	Effective Septerber 1, 2013, drivers must move over or slow down when approaching TxDOT workers and vehicles that are stopped with overhead flashing blue or amber lights. This was an expansion from the original law that required drivers to yield to police, fire, and emergency vehicles.
Drive FRIENDLY. Drive SAFE.	TxDOT has launched a public awareness campaign using outdoor and newspaper ads, radio PSAs and information cards to urge drivers to be aware of their surroundings and to remind everyone that when you drive friendly and drive safe, you save lives. TxDOT wants all motorists to remember these four important rules of the road:
	Watch for pedestrians and don't block crosswalks with your vehicle
	Slow down in work zones and watch for construction detours
	Keep an eye out for cyclists and never drive in a bike lane
	Adjust your speed to road conditions.
BE SAFE. DRIVE SMART.	The recent boom in oil and gas production across Texas has created thousands of jobs and many new opportunities for energy-producing areas. Unfortunately, with an influx in traffic in these areas, there also has been an increase in crashes. TxDOT has launched Be Safe. Drive Smart., a public education campaign to remind motorists to use extra caution when driving through energy work zones. TxDOT is partnering with oil and gas companies, the Texas Department of Public Safety and communities across the Permian Basin and Eagle Ford Shale energy sectors to promote roadway safety. The campaign includes safety messages on TV, radio, billboards, and gas pumps.
TALK TEXT CRASH	April is National Distracted Driving Awareness Month and TxDOT is continuing our Talk. Text. Crash. campaign to raise awareness of the dangers associated with distracted driving and to encourage Texans to put down their cell phones while driving. Distracted driving, which includes distraction, driver inattention or cell-phone use, is becoming increasingly common and dangerous, causing traffic crashes and fatalities. In fact, nearly one in four crashes in Texas involves driver distraction. Although cell phone use is the most easily recognized distractions, all in-vehicle distractions are unsafe and can cause crashes or fatalities. TxDOT calls on all Texans to focus on the road and wait until arriving at their destinations to conduct non-driving activities.
	Safety belts save lives. That's why Texas is drawing the line for drivers and passengers: Buckle up or face a fine! Law enforcement officials statewide are participating in the "Click It or Ticket" campaign to increase safety belt use. All drivers and all passengers in the vehicle must be properly restrained or run the rusk of a fine up to $250. The National Highway Traffic Safety estimates that since its inception, the "Click It or Ticket" campaign in Texas has resulted in 3,962 fewer traffic fatalities whil preventing 66,823 serious injuries and saving more than $15 billion in related economic costs.
	Texas is a big energy-producing state with a lot of big trucks. Semis, trailers and tankers mix with rural farmers and ranchers to produce heavy truck traffic in the state's energy sectors. The Energy Sector Safety Campaign is under the umbrella of Be Safe. Drive Smart. and focuses on reminding drivers to be extra cautious when driving through Texas energy sectors. https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html
	Not all anniversaries are happy and Nov. 7 is one of the saddest of all. Since Nov. 7, 2000, at least one person has died on Texas roadways every single day. In an effort to end this deadly 18-year milestone, the Texas Department of Transportation, through its #EndTheStreakTX campaign, reminds drivers it's a shared responsibility among roadway users and engineers to keep our roads safe. https://www.txdot.gov/inside-txdot/media-center/psas/end-streak.ht

TxDOT's statewide "Share the Road: Look Twice for Motorcycles"

Motorcycle safety and public awareness campaign urges motorists to look twice for motorcycles, especially at intersections, where motorcycle collisions most commonly occur.

TxDOT – Odessa District

TxDOT-Odessa District is an important partner in the Permian Basin MPO transportation planning process. As members of the Technical Advisory Committee (TAC) and the Policy Board, TxDOT staff offer recommendations and votes on transportation policy including safety. Below is a list of some of the recent major safety projects completed in either the MPOs MAB or in adjacent counties. Each of these projects includes professional and financial assistance from the cities and counties.

- A three-strand cable barrier fence has been built in the median of Interstate Highway 20 (IH 20). This safety measure is used to mitigate head-on collisions. Currently the fence covers 41 miles from West Odessa, through Midland and ending at Stanton, a town just outside the Permian Basin MPO MAB. Plans are to extend the fence westward about 11 miles to Penwell. The cable barrier immediately proved its worth by preventing several vehicles from crossing the center median of IH 20.

- Loop 338 improvements are in the complete of being made on the northeast side of Odessa between Yukon Road and US Highway 385 (US 385). Instead of a two-lane road, the corridor will be a divided, four-lane section of roadway. In addition, signals will be added at the intersections of FM 554 and US 385. Permian Basin MPO helped fund this project which cost around $8.8 million.

- SH 158 improvements are underway on the west side of Midland between SH 191 and Midkiff Rd. Improvements consist of widening lanes and rehabilitation.

- Improvements at the intersection of 52nd and 56th in Odessa. The improvements include reconstruction of the intersection and installation of traffic signals and illumination elements.

- Bridge repair of I-20 at SH 302 southbound and Loop 338 southbound.

- Roadway rehabilitation projects in the region include Yukon Road to SH 191 and 8th; SL 250 from I-20 West to Fairgrounds Road, SL 250 at CR 140, BS 349 in north Midland from SL 250 to the Martin County line; and US 385 in the vicinity of RM 1492 to name a few.

Union Pacific

Union Pacific also promotes public safety through UP CARES and offer UP CARES grants to provide financial support for community-owned railroad safety initiatives. Table 4.11 displays a few of the many safety campaigns UP has released.

In addition to the billboard campaigns, UP CARES initiative promotes pedestrian and driver safety through a variety of outreach channels:

- **Grade crossing education and enforcement** - during which motorists violating rail crossing signage and laws are educated about the dangers of such actions. Related "positive enforcement" initiatives reward drivers who operate safely at grade crossings.
- **Safety trains** - hosting local law enforcement, media and public officials and providing them the opportunity to ride in the locomotive cab and see traffic violations from a locomotive engineer's point of view. This also allows Union Pacific to connect with community leaders and help them better understand the railroad's safety focus.
- **Communication blitzes** - which educate the public via community events, media outreach and paid advertising. Media outreach coincides with safety trains in UP communities.

Table 4.12 UP Safety Campaigns

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<td>Union Pacific Railroad is launching a multi-media, bilingual public safety campaign aimed at encouraging Midland and Odessa, Texas, drivers to safely use railroad crossings. The advertising campaign utilizes radio spots and billboards to remind residents of key railroad safety tips.</td>
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<td>Union Pacific's 2013 public safety advertising campaign utilized billboards and public safety outreach to promote rail safety in 12 Union Pacific communities. These billboards reached more than 2 million people and the associated proactive media efforts reached more than 3 million people. Each billboard included the reminder "Always Expect a Train," along with an eye-catching visual and attention-grabbing headline.</td>
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City of Midland

The City of Midland has developed plans for directly improving transportation safety within the city limits. City staff also works collaboratively with Midland County officials to meet safety standards throughout the area. Since 2015, the City of Midland has undertaken several traffic safety related projects. Highlights of some key projects are as follows:

- Beginning in early 2015, the City of Midland began a widespread effort to install flashing yellow arrow (FYA) left-turn displays at traffic signals, a measure which has been nationally recognized as providing for a safer operation for left-turning drivers, as well as allowing for more efficient signal operation. As of Fall 2019, there are FYA displays on more than 100 approaches at nearly 40 intersections across the City.

- Starting in 2018, the City, with funding support from the Midland Development Corporation, began installation of a new citywide radio system and central software platform to monitor and manage traffic signals from anywhere with access to the City's computer network. This system allows staff to remotely troubleshoot issues and address concerns more quickly and accurately than was possible when technicians had to physically travel to the intersection.

- In 2018 and 2019, the City also installed a new, GPS-based emergency vehicle pre-emption system at many traffic signals, allowing fire trucks and ambulances to receive green indications during emergency runs to reduce response times and conflicts with cross-traffic at intersections.

- Over a two-year period, the City upgraded nearly 650 city-maintained streetlights with LED fixtures, improving energy efficiency and reducing outages and maintenance time.

- In the past several years, the City has partnered with TxDOT on three Highway Safety Improvement Projects (HSIP), including the complete reconstruction of the intersection of Wadley Avenue at A Street, as well as two other projects to improve safety at signalized intersections on Loop 250 and on Big Spring Street / Rankin Highway.

- The City has also continued its past program to install battery back-up units on traffic signals citywide. As of Fall 2019, a total of 97 of 115 city-maintained traffic signals had been equipped, reducing outages during short-duration power failures.

- High-intensity crosswalk warning systems have been installed at mid-block locations where significant numbers of pedestrians cross the city streets on A Street at Midland High School, Illinois Avenue at Midland Memorial Hospital, Illinois Avenue at Concho Resources' campus, and Deauville Boulevard at Griffith Drive. A similar pedestrian crossing for students is also planned to go to construction in early 2020 on Wadley Avenue at Abell Junior High School.

- As part of several planned maintenance projects, the City has also taken the opportunity provided by roadway reconstruction work to improve pedestrian accessibility with significant sidewalk and ramp upgrades and has reduced vehicle speeds in neighborhoods by narrowing intersections and tightening some curb radii on local streets.

City of Odessa

The City of Odessa has increased safety by installing radar speed signs throughout the City. These signs make drivers aware of the speed they are going and expectantly encourages motorists to slow down if they are detected driving a speed above the posted limit.

The Odessa Police Department (OPD) began a more aggressive approach as a result of increased crashes. Officers no longer issue warnings or citations to reckless drivers; they arrest them. "The main thing that we want to address is to remind the public that if somebody is driving recklessly [includes street racing], they will be arrested" an OPD corporal said in a statement to the Odessa American.

The City of Odessa is working towards implementing ITS solutions for its traffic signals soon. The city is taking an important first step in that effort by allocating funds in its Capital Improvement Program to invest in traffic signal software upgrades. This includes a new multi-year phase-in for a new emergency vehicle preemption system. This equipment allows better fire truck and ambulance tracking for quicker traffic signal; response to help get these vehicles to their destination in a timelier manner.

Midland County

When initiating safety projects, Midland County considers the safety concerns of all residents and businesses. The county has been emphasizing the restriping of roadways and signage. Additionally, the county is advocating a heavier presence of law enforcement to counteract unlicensed CDL drivers and unpermitted overweight vehicle movement within the county.

Ector County

In order to help protect county road travelers, Ector County's Public Works department provides routine maintenance on all county roads. In addition, upgrades and restriping of county roads are performed when deemed necessary. All county signs are currently being replaced with signs having larger fonts and higher reflectivity. Culverts allowing water to flow under the road were replaced in numerous locations in Ector County.

4.4 Safety and Mobility Studies

As part of its FY 2020 Unified Planning Work Program the Permian Basin MPO identified five studies underway or under development within the MTP Planning window.

I-20 Corridor Access and Mobility Management (TxDOT)

TxDOT is continuing work with the MPO, and the TxDOT Odessa District to address mobility management along a 40-mile corridor within the Metropolitan Area Boundary to modernize the portion of I-20 inside the MPO boundary. This work commenced in the summer of 2015. Numerous committee and stakeholder meetings have been held and work will continue in FY 2020.

Multi-Use Corridor Study, Phase II

This work involves the continuation of a multi-agency coordination and oversight of an implementation study for a multi-use corridor connecting the cities of Odessa and Midland. This phase of the study would narrow the range of alternative corridors and determine the organization and oversight of corridor management and maintenance.

Northeast Midland Corridor Study, Phase II

This work would involve a follow up of the work completed in 2016 through a partnership between the City of Midland and the MPO. Several large area landowners have expressed interest to the MPO about a continuing effort to examine the need and potential for extending north-south as well as east-west corridors in the northeast part of the City of Midland and in Midland and Martin Counties. A second phase of the initial work would provide a clearer identification of corridors and potential land uses now that the City of Midland has committed to install a new water tower and utility lines in that part of the city.

42nd Street/Yukon Road Corridor Analysis

SH 191 becomes 42nd Street in the City of Odessa. It is one of the heaviest travelled roads in the region. The crash rate at certain locations along the corridor are alarming. This study would be a parallel component to a smaller area study funded by Ector County in 2016 to review the potential for Yukon Road to become a reliever route for 42nd Street. These two roads are parallel to each other for several miles and a study of existing conditions and potential operational improvements will be beneficial to the MPO and may result in future projects to be included in the MTP, where applicable. An analysis of the potential for an east-west corridor connecting the cities north of SH 191 may also be commenced.

SL 338 Odessa Feasibility Study

This work is currently underway. It is a study to analyze SL 338 around Odessa to determine the feasibility of converting non-freeway to freeway specifications and identify interchange improvements. The work is funded by TxDOT.

US 385 Corridor Safety Study

This project is focused on two road sections of US 385: Northern Section (Extending from Yukon Road to N County Road/100th St., about 3 miles) and Southern Section (Extending from I-20 to Crane County Line, about 12.6 miles). The design of Highway 385 is outdated due to the substantial development in recent years like heavy industrial, commercial and residential development. Projections show continued growth in the subject area. The purpose of the study is to recommend safety counter measures for these issues.

SL 250 Safety Study

Researchers used crash data from the seven most recent years available (2010-2016) to determine the cause of increased crash rate along the corridor and if driver behaviors along the corridor are problematic. The primary cause of the study was to identify potential engineering solutions to assist TxDOT engineers in lowering the number of crashes along the corridor. The secondary reason for the study was to provide TxDOT engineers with a basis for providing guidance to City officials regarding access management. Nine interchanges along the corridor were studied including N. Big Spring St., Garfield St., Midkiff Rd., Midland Dr., Wadley Ave., Andrews. Hwy., Thomason Dr., W. Wall St./BI-20, and I-20.

5.1 Freight Trends and Initiatives

5.1.1 Freight and Freight Movement

The movement of freight is critical for any economy. On a microscale, the basics of freight movement revolve around local delivery of goods necessary to maintain daily living for individuals – everything from daily needs to long lasting products such as appliances and cars. Economic development on a macro level depends on the reliable movement of people and goods. This chapter focuses on freight in the Permian Basin MPO region. Since the completion of the *Vision 2040* MTP in 2014, there have been numerous large-scale investments made in the region by both the public and private sector to improve freight delivery. Some important investment decisions directly affecting freight movement are shown below; the list is not exhaustive:

- Union Pacific Railroad: Capacity, Commercial Facilities and Engineering, 2009 to 2018 for the Toyah Sub was greater than $260M. This included Monahans and Pecos Expansions, Odessa Yard and Track Expansion and various siding extensions on the Toyah Sub. UP views this area as an important corridor since a significant amount of their freight is energy sector related.

- New interchanges on Loop 250 at Fairgrounds Road and CR 1150 (Elkins Road), programmed interchanges along I-20 at Midkiff Road and CR 1250, Loop 338 E. at Yukon Road, US 385 at North and South Loop 338. Major improvements are planned on a 31-mile segment of I-20 including a new interchange at Faudree Road as well as U-turns, ramp reconfigurations, conversion to one-way frontage roads from FM 1936 to CR 307. These projects are already programmed in the MPO's TIP and in the TxDOT UTP.

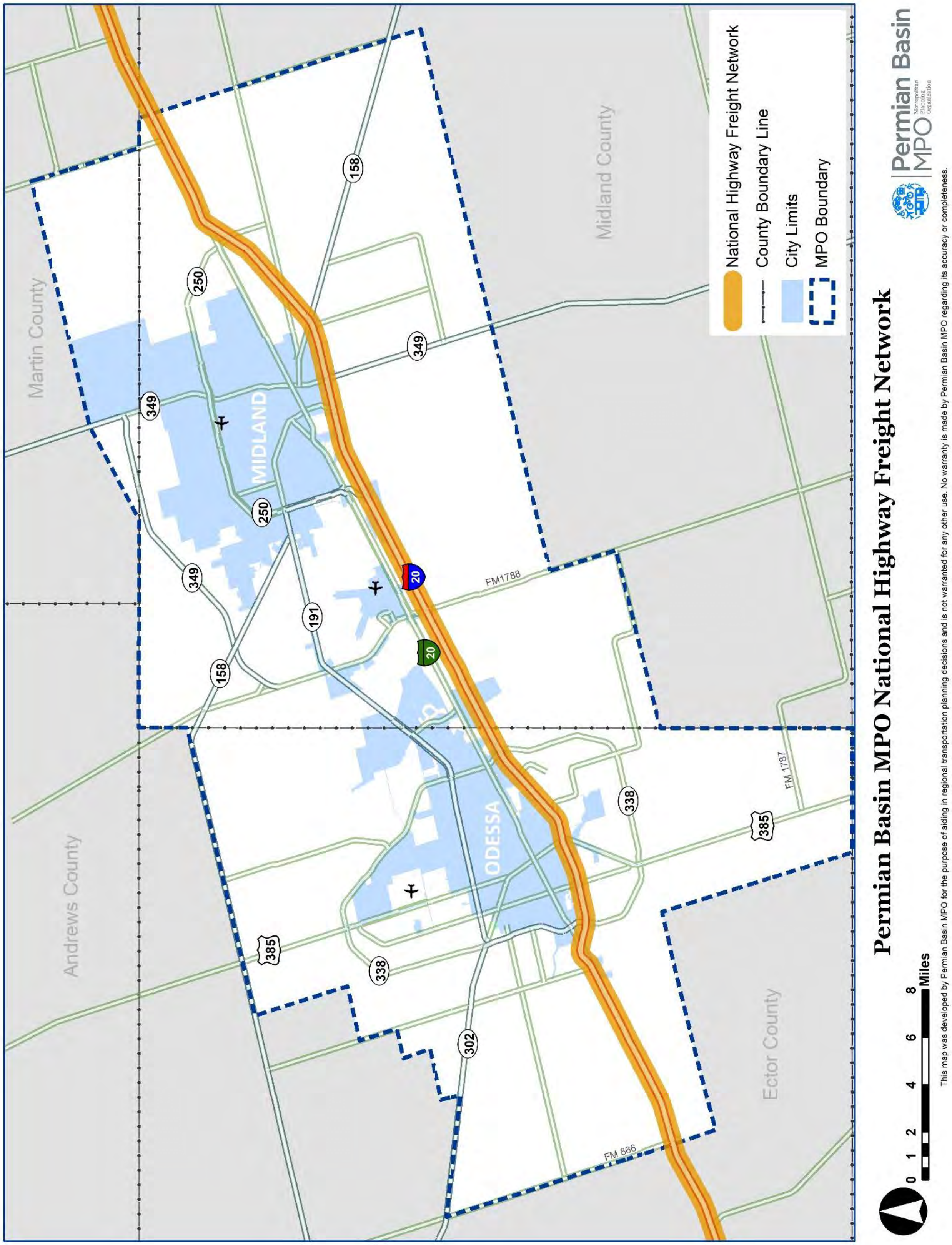
- TxDOT application for FY 2019 FHWA BUILD grant funds for Cotton Flat Road at I-20 and a successful 2018 application that resulted in two interchanges that are outside the MPO boundary but improve freight delivery in the greater region. These are SH 158 at SH 137 in Glasscock County to the southeast and SH 302 over SH 115 in Winkler County to the northwest of the MPO.

For the purpose of this planning document, the highway system is and will remain the principal freight mode in the region: a vast majority of freight tonnage in the region moves by truck, Projects are needed to ensure that the roadway network keeps up with the expected increase expected of inbound and outbound shipments. The Texas Transportation Commission has committed significant funds in a short time period to improve the reliability of I-20 in the region. It is the only highway in the MPO region that is on both the Federal Primary Highway Freight System and the Texas Highway Freight Network. Map 5.1 is shown below for reference. Map 5.2 shows the adopted TxDOT freight network. The TxDOT system includes Loop 338 and Loop 250, Business 20, US Highway 385, State Highways 158, 191, 349, 302 which are all important highways for freight movement.

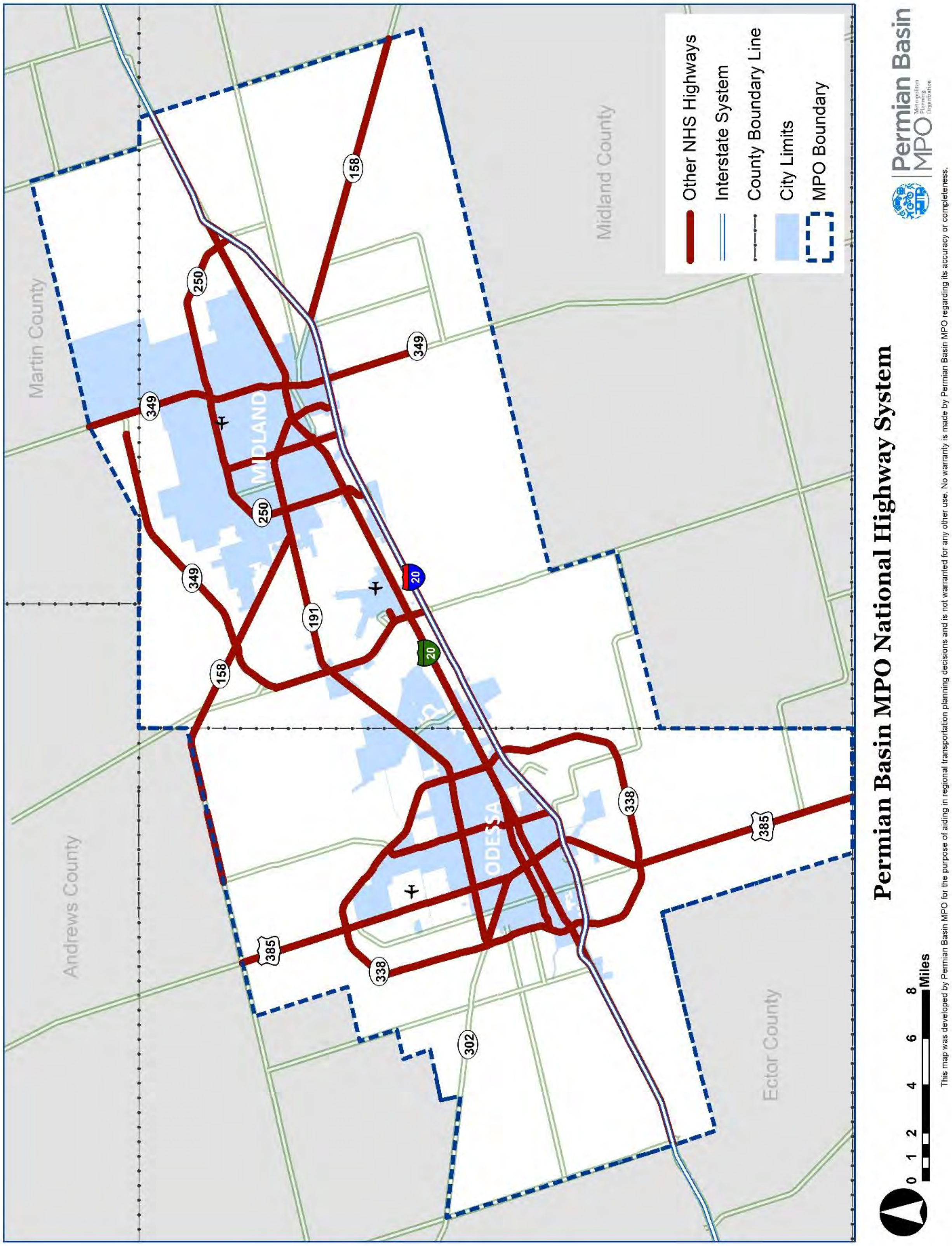
Figure 5.1 National Highway Freight Network - Texas

People wishing to travel long distances quickly and efficiently may do so by air and are served by one international airport that provides service for personal travel, freight movement, and two general aviation airports. All area airports have seen steady growth in passenger activity over the last five years due to the strength of the economy and the fact that air travel is dependable and convenient, especially over long distances. Rail passenger service, however, is no longer an option in the region. The existing Union Pacific east-west rail line connects Midland and Odessa to the state and national rail network. Rail service has increased due to the demand for raw and finished materials used in the oil and gas well fracking process. The highway network is described in Chapter 3. It is the backbone of the freight delivery network. It should be noted that in urban areas across the country, freight supply chains designed for home deliveries continue to grow in importance with the explosion in e-commerce.

Map 5.1 National Highway Freight Network - MPO



Map 5.2 Texas Highway Freight Network



5.2 Freight Corridors

5.2.1 National

Ports-To-Plains Corridor

The Ports-To-Plains-Corridor is an existing highway corridor between the United States Mexico border at Laredo, Texas and Denver, Colorado. The corridor was designated as a High Priority Corridor in 1998 to extend to Colorado but ultimately lead on into Canada and the Pacific Northwest as the Ports-To-Plains Alliance has extended the corridor up through Wyoming and Montana and into Alberta, Canada. The reason for proposed improvements to this corridor is to expedite the transportation of goods and services from Mexico and Canada in the United States and vice versa. Part of the Corridor traverses the MAB from north to south and is designated locally as SH 349, where it turns southeastward along SH 158 to US 87.

The corridor will accomplish the following:

- Reduce congestion at ports of entry along the Texas-Mexico border.
- Provide alternatives to other congested corridors that run through major metropolitan areas.
- Help to increase trade between the U.S., Mexico and Canada.

In 2019, the 86th Texas Legislature passed HB 1079 which requires TxDOT to complete a Ports to Plains Corridor Feasibility Study including an analysis of the I-27 corridor. The initial kick off meeting with a regional advisory committee was held October 1, 2019 in Lubbock, Texas. Corridor subcommittee meetings have been scheduled for December 2019 and in early 2020.

La Entrada al Pacifico

In 1997 the La Entrada al Pacifico became a state and Congressionally designated trade corridor from Texas via Chihuahua City in Mexico to the Pacific port of Topolobampo. This trade corridor includes both roadways and railways to ensure future trade can occur through the Permian Basin Region with Mexico and ultimately the Far East. This was all due to the efforts of the Midland Odessa Transportation Alliance (MOTRAN). The organization was created in the early 1990s to lobby for state and federal dollars and recognition of trade corridors in the Permian Basin Region. Members include the cities, counties, chambers of commerce, and economic development corporations of each city as well as area businesses. MOTRAN continues to lobby for the advancement of La Entrada through improvements at the Port of Presidio, funding for the rehabilitation of the South Orient Rail Line, development of a north south rail line and additional funding for roadway improvements along the route.

The Midland Odessa Transportation Alliance

MOTRAN is an important privately funded planning partner in the urban and rural area of the Permian Basin. MOTRAN is an alliance between members of the Odessa, Midland, and regional communities; it has been instrumental in raising awareness of the need for freight delivery related projects and for improving the infrastructure condition in the Permian Basin. MOTRAN has played an important role by educating decision makers in the region and in Austin and Washington, DC about the need for additional investment in the transportation infrastructure in the Permian Basin, especially in the last few years of major energy sector expansion. MOTRAN has successfully lobbied for numerous projects and studies including the La Entrada al Pacifico corridor receiving federal designation as a National High Priority Corridor in 2005, the widening of SH 349 from the MPO area to Lamesa, the expansion of SH 158 to 4-lanes from Midland to San Angelo in 2012, additional energy sector funding from the Transportation Commission in 2013 and 2014, and a kick off meeting to bring I-14 to the Midland Odessa area. MOTRAN hosts numerous meetings annually to inform local and regional decision makers about what is occurring at the state and federal level regarding the transportation picture.

TxDOT Rail Plan

TxDOT is updating the Texas Rail Plan to reflect the latest rail project priorities and fulfill eligibility requirements for federal funding of rail projects. Activities include the development of policy concepts, programs and agency-specific strategies to improve the efficiency of freight movement and maintain on-time passenger service. The rail system is a vital component of the state’s thriving economy, safely connecting industries, ports and people without congesting highways. TxDOT can maximize the value of rail through collaboration with private and local stakeholders, and identification and facilitation of important projects, especially where rail freight movement is delayed by road crossings.

Union Pacific Railroad

Class I Rail freight service within the region is led by Class I carrier Union Pacific. The rail giant's corridor parallels I-20 through the Permian Basin MPO region. The service connects the region to the major rail ports in the Dallas area and in El Paso to the west. Projects proposed through the corridor will address at-grade crossing in the MPO boundary. There are 34 at-grade rail crossings in the MPO boundary, all of which are roadway crossings. Of these crossings, almost 75 percent are on public roadways. Maps 5.4 and 5.5 show the locations of these crossings throughout the region. From 2014 to 2018 thirty-two reported rail crashes have occurred within the MPO boundary. Twenty-five of the crashes occurred in Midland County, while seven crashes occurred in Ector County. Chapter 4, Safety includes a table showing the five-year record of rail crashes over the specified time period. Most of these crashes occurred either when a motorist did not stop at a crossing or the vehicle was stuck on the track. Each at grade crossing where a crash occurred had either advanced warnings, cross bucks, or gates.

The type of freight carried through the region is for distribution to other parts of the country as well as for on and off loading of locally generated raw and finisher goods, mostly stemming from the energy sector. Typical freight carloads include chemicals, sand, pipe, large equipment designated for use in the region's oil and gas fields.

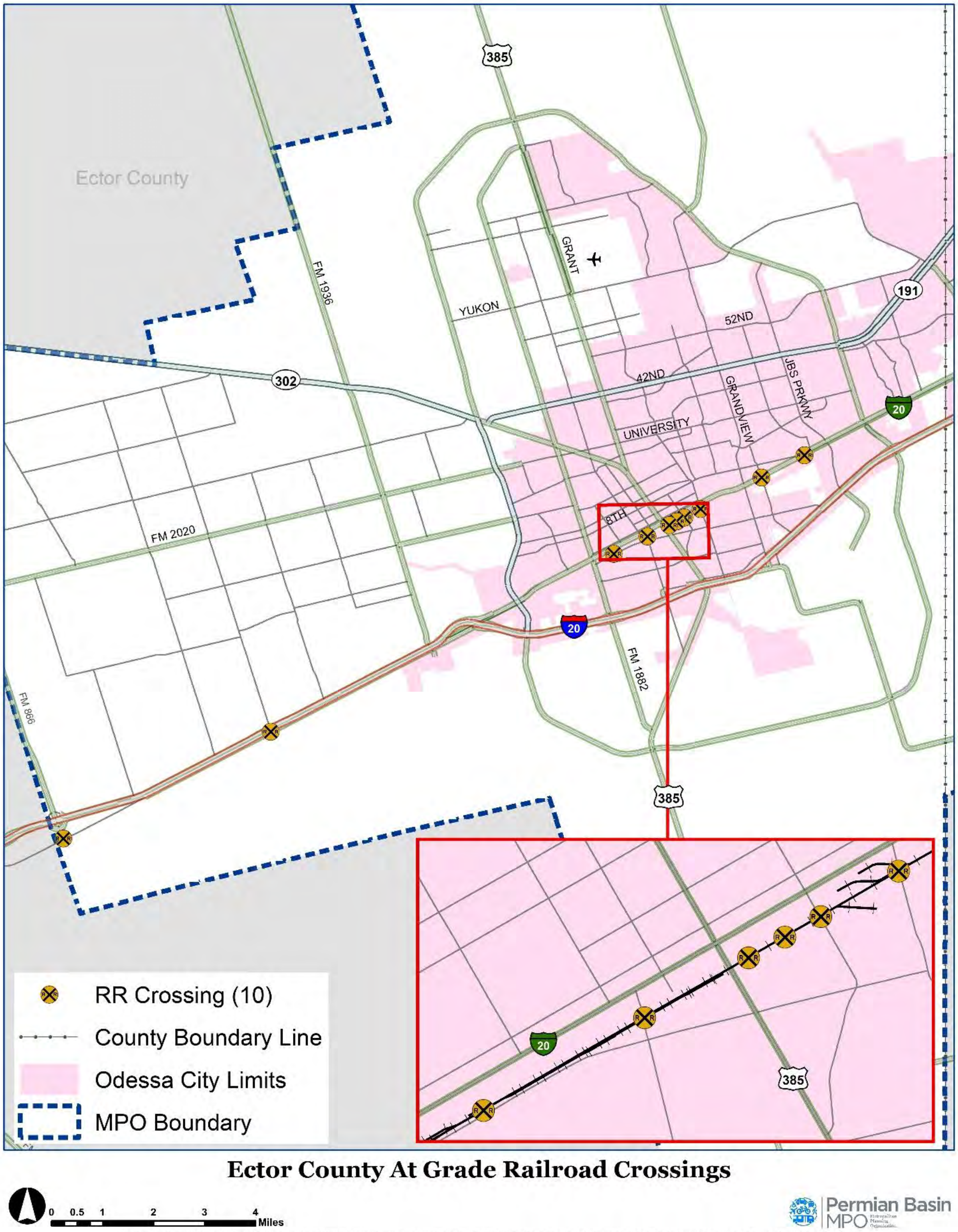
Figure 5.2 Union Pacific Railroad System

Map 5.3 Select At Grade Railroad Crossings within MAB

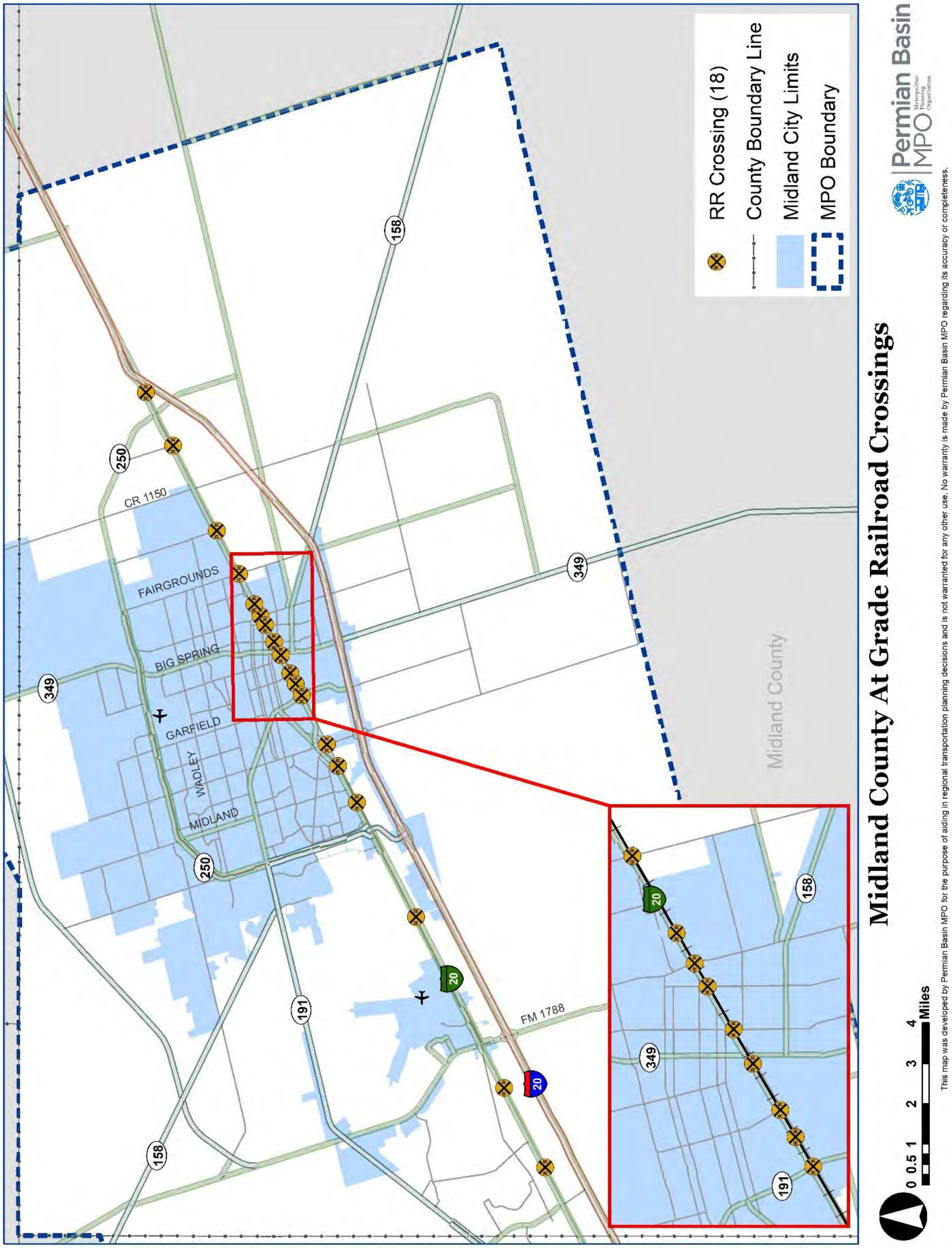

S Kelly Ave
W Murphy St
0 0.004 0.008 0.016 0.024 0.032
Miles
UPRR Crossing at Kelly Avenue
Odessa, Texas
Permian Basin MPO


E 1st St
S Texas Ave
0 0.005 0.01 0.02 0.03 0.04
Miles
UPRR Crossing at Texas Avenue
Odessa, Texas
Permian Basin MPO

Map 5.4 Ector County At-Grade Railroad Crossings



Map 5.5 Midland County At-Grade Railroad Crossings



Union Pacific Railport

Union Pacific Distribution Services' Odessa Railport combines expert pipe and bulk transloading operations with direct Union Pacific Railroad service, delivering efficient freight transportation solutions in the Permian Basin. With the expansion of this facility since 2014, UP can provide customers with the benefits of direct rail access in the Permian Basin as a competitive alternative to long-haul truck shipments.

Located near Interstate 20 and Texas Highway 338, the Odessa Railport also provides:

- Inventory system for management of short-term storage needs
- Forward staging of inventory to meet just-in-time supply chain needs
- Laydown and rail space for short-term pipe storage
- Dedicated rail tracks for pipe and sand unloading
- Customer-constructed storage space availability
- On-property certified truck scale

Figure 5.3 UP Transload Facility in Midland County Freight Handling Characteristics

Facility Characteristics

Commodities Handled	Car Type	Services Offered	Storage	Other Info
Aggregate	Boxcar	Car mover/Track mobile	Tracks: 370 Car Spots	Track Number:781
Dry Bulk	Covered Hopper	Truck Scale	Warehouse :0 Square Feet	Region:
Hazmat-Liquid	Tank Car	Web-access inventory	Open Air: 2 Acres	Food Grade(Y/N): N
Liquid Bulk			Covered: 0 Square Feet	Circ7:
			Dry Bulk: Silo-No	Service Unit:
			Dry Bulk: Bins: No	Hazardous Material Certified(Y/N): N
			Dry Bulk: Ground Acres:2	Hours of Operation: 24/7
			Liquid Tank: No	

Figure. 5.4 UP Transload Facility in Ector County (Railport) Freight Handling Characteristics

Facility Characteristics

Commodities Handled	Car Type	Services Offered	Storage	Other Info
Aggregate	Center beam Flat	Car mover/Track mobile	Tracks: 38 Car Spots	Track Number:01-748
Dry Bulk	Covered Hopper	On-site locomotive	Warehouse :0 Square Feet	Region: Southern
Ferrous Metals	Flat Car	Truck Scale	Open Air: 1 Acres	Food Grade(Y/N): N
Lumber	Flat car >89		Covered: 0 Square Feet	Circ7:TP570
Over Dimensional	Tank Car		Dry Bulk: Silo-No	Service Unit: Fort Worth
			Dry Bulk: Bins: No	Hazardous Material Certified(Y/N): N
			Dry Bulk: Ground Acres:1	Hours of Operation: 24-7
			Liquid Tank: No	

Commodities Handled	Car Type	Services Offered	Storage	Other Info
Ferrous Metals	Flat Car	Proprietary Trucking	Tracks: 28 Car Spots	Track Number:01-751,752
	Flat car >89	Truck Scale	Warehouse :0 Square Feet	Region: Southern
	Open Gondola	Web-access inventory	Open Air: 12 Acres	Food Grade(Y/N): N
			Covered: 0 Square Feet	Circ7:TP570
			Dry Bulk: Silo-No	Service Unit: Fort Worth
			Dry Bulk: Bins: No	Hazardous Material Certified(Y/N): N
			Dry Bulk: Ground Acres:12	Hours of Operation: 0700-1600, M-SAT
			Liquid Tank: No	

Facility Characteristics

Commodities Handled	Car Type	Services Offered	Storage	Other Info
Aggregate	Center beam Flat	Car mover/Track mobile	Tracks: 38 Car Spots	Track Number:01-748
Dry Bulk	Covered Hopper	On-site locomotive	Warehouse :0 Square Feet	Region: Southern
Ferrous Metals	Flat Car	Truck Scale	Open Air: 1 Acres	Food Grade(Y/N): N
Lumber	Flat car >89		Covered: 0 Square Feet	Circ7:TP570
Over Dimensional	Tank Car		Dry Bulk: Silo-No	Service Unit: Fort Worth
			Dry Bulk: Bins: No	Hazardous Material Certified(Y/N): N
			Dry Bulk: Ground Acres:1	Hours of Operation: 24-7
			Liquid Tank: No	

Map 5.6 Midland UP Transload Facility

Map 5.7 Odessa Transload UP Facility (Railport)

Railports are transload facilities where UP has contracted with a transload operator and invested in the facility and equipment, including rail infrastructure, to serve strategic growth markets.

Railports:

- Are directly served by Union Pacific Railroad
- Can handle a wide array of commodities
- Are run by operators who have extensive experience transferring products from trucks to trains

When products are transloaded, they're moved from trucks to rail cars, or vice versa. Often, shippers want to combine the economic advantages of shipping by rail with the flexibility of over-the-road trucking, using affordable rail shipping for the long haul and trucks for final delivery. Transloading allows this to be possible for any business model application to improve delivery efficiencies and reliability.

Trucking Industry

The trucking industry is the lifeblood of the U.S. economy. Nearly 71% of all the freight tonnage moved in the U.S. goes on trucks. Without the industry and our truck drivers, the economy would come to a standstill. To move 10.5 billion tons of freight annually requires over 3.6 million heavy-duty Class 8 trucks and over 3.5 million truck drivers. It also takes almost 39 billion gallons of diesel fuel to move the freight. Simply put- without trucks, American freight movement stops.

In July 2019, the American Trucking Association released its examination of driver shortage, finding that the industry needs 60,800 more drivers to meet the national demands for freight services. "Over the past 15 years, we've watched the shortage rise and fall with economic trends, but it ballooned last year (2018) to the highest level we've seen to date," said ATA Chief Economist Bob Costello. "The combination of a surging freight economy and carriers' need for qualified drivers could severely disrupt the supply chain. The increase in the driver shortage should be a warning to carriers, shippers and policymakers because if conditions don't change substantively, our industry could be short just over 100,000 drivers in five years and 160,000 drivers in 2028."

In August 2019, the American Trucking Association released its latest ATA Freight Transportation Forecast: 2019 to 2030, an annual projection of the state of the freight economy, showing continued growth in the industry. "America's trucking industry, and the overall freight transportation industry, are poised to experience strong growth over the next decade as the country's economy and population grow," said ATA Chief Economist Bob Costello. "Our annual Freight Forecast is a valuable look at where we are headed so leaders in business and government can make important decisions about investments and policy."

Among the findings in the agency's forecast:

- Overall freight tonnage will grow to 20.6 billion tons in 2030, up 25.6% from 2019's projection of 16.4 billion tons.
- Freight industry revenues will increase 53.8% to $1.601 trillion over the next decade.
- Trucking's share of total freight tonnage will dip to 68.8% in 2030 from 71.1% this year, even as tonnage grows to 14.2 billion tons in 2030 from 11.7 billion tons.
- Trucking and total rail transportation will lose relative market share, even as revenues and tonnage grows, while intermodal rail, air and domestic waterborne transportation will show modest growth and pipeline transportation will experience explosive growth – surging 17.1% in tonnage and 8.6% in revenue over the next decade.

"Freight Forecast clearly lays out why meeting challenges like infrastructure and workforce development are so critical to our industry's success," said ATA President and CEO Chris Spear.

5.2.2 State

Goods movement is the foundation of the Texas economy. Texas' ability to maintain its position as a leader in the global economy depends on the strength of its multimodal freight transportation system. In 2016, more than 2.2 billion tons of freight – 20 tons per household and 12,700 tons per business – moved within Texas, due to a robust economy, population growth, increased trade, and continued energy production. The efficient and cost-effective movement of goods plays a critical role in the state's economy. Texas has the second largest economy in the U.S. and relies on its multimodal transportation system to ensure continued economic prosperity. If Texas were a nation, it would rank as the 10th largest economy in the world. The economic impact of freight handling businesses in Texas is significant, supporting 1 in every 16 jobs in the state. Texas is No. 1 in the nation for exports for 14 consecutive years.

As stated previously, freight movement is accommodated on many state and local corridors. With I-20 performing as a major carrier, other important state roads also serve as freight corridors. These include US 385 through Odessa and to points north and south serving the energy sector; SH 158 serving the energy sector and other freight in a southeast and northwest plane toward San Angelo and Andrews. SH 302 is a main road for energy freight headed toward the oil fields in the Delaware Basin, Kermit, and other rural locations. SH 349 and SH 349 Reliever Route provide for freight movement in a general north-south direction from Midland. Map 5.2 displays those important freight corridors.

5.2.3 Permian Basin MPO

Like the nation and Texas, the freight industry in the Permian Basin MPO has a critical role in the regional economy. Included in a study of the Midland MSA funded by the Midland Development Corporation and completed by The Perryman Group in 2019 is a projection of annual growth rates by industry sector for employment. Transportation & Warehousing is near the top for the period 2019-2030 when analyzing all scenarios of baseline, low oil prices and high oil prices. This reflects how important freight is to the region as well as the anticipated need for more drivers and freight transportation providers. In any case, the highway system is the backbone of freight movement in the region with no real change expected in terms of preferred shipping choice. Midland International Air and Space Port handles incoming and outbound freight on a daily basis although the facility is not one of the country's top 140 freight airport locations. Union Pacific is a Class I railroad operating through the region in an east-west direction generally paralleling I-20 and Business I-20. Other freight movement includes pipelines as shown in Map 5.8 below. Several new and expanded lines have been constructed recently or are being planned.

***Figure.* 5.5** Perryman Report Projected Growth

Projected Midland MSA Output Growth

Results by industry under varying oil price assumptions

Annual growth rates

Industry Sector	Baseline		Low Oil Prices		High Oil Prices	
	2019-25	2019-30	2019-25	2019-30	2019-25	2019-30
Agriculture	+2.89%	+3.57%	+1.72%	+2.94%	+4.53%	+4.22%
Mining	+2.68%	+3.62%	+1.13%	+2.85%	+4.79%	+4.45%
Utilities	+2.94%	+3.91%	+1.46%	+3.22%	+4.96%	+4.65%
Construction	+3.92%	+4.81%	+3.58%	+4.59%	+4.43%	+5.06%
Manufacturing	+8.74%	+10.39%	+7.27%	+9.64%	+10.78%	+11.21%
Wholesale & Retail Trade	+4.78%	+4.50%	+3.88%	+4.10%	+6.05%	+4.95%
Transportation & Warehousing	+3.37%	+5.14%	+1.80%	+4.37%	+5.50%	+5.99%
Information	+4.57%	+5.11%	+3.11%	+4.51%	+6.58%	+5.76%
Finance, Insurance, Real Estate	+3.08%	+3.90%	+2.42%	+3.58%	+4.02%	+4.26%
Other Services	+4.05%	+4.33%	+3.05%	+3.92%	+5.44%	+4.78%
Government	+2.71%	+2.28%	+2.09%	+1.94%	+3.60%	+2.76%
Total, All Industries	**+3.26%**	**+4.19%**	**+1.86%**	**+3.51%**	**+5.19%**	**+4.95%**

Source: US Multi-Regional Econometric Model, The Perryman Group

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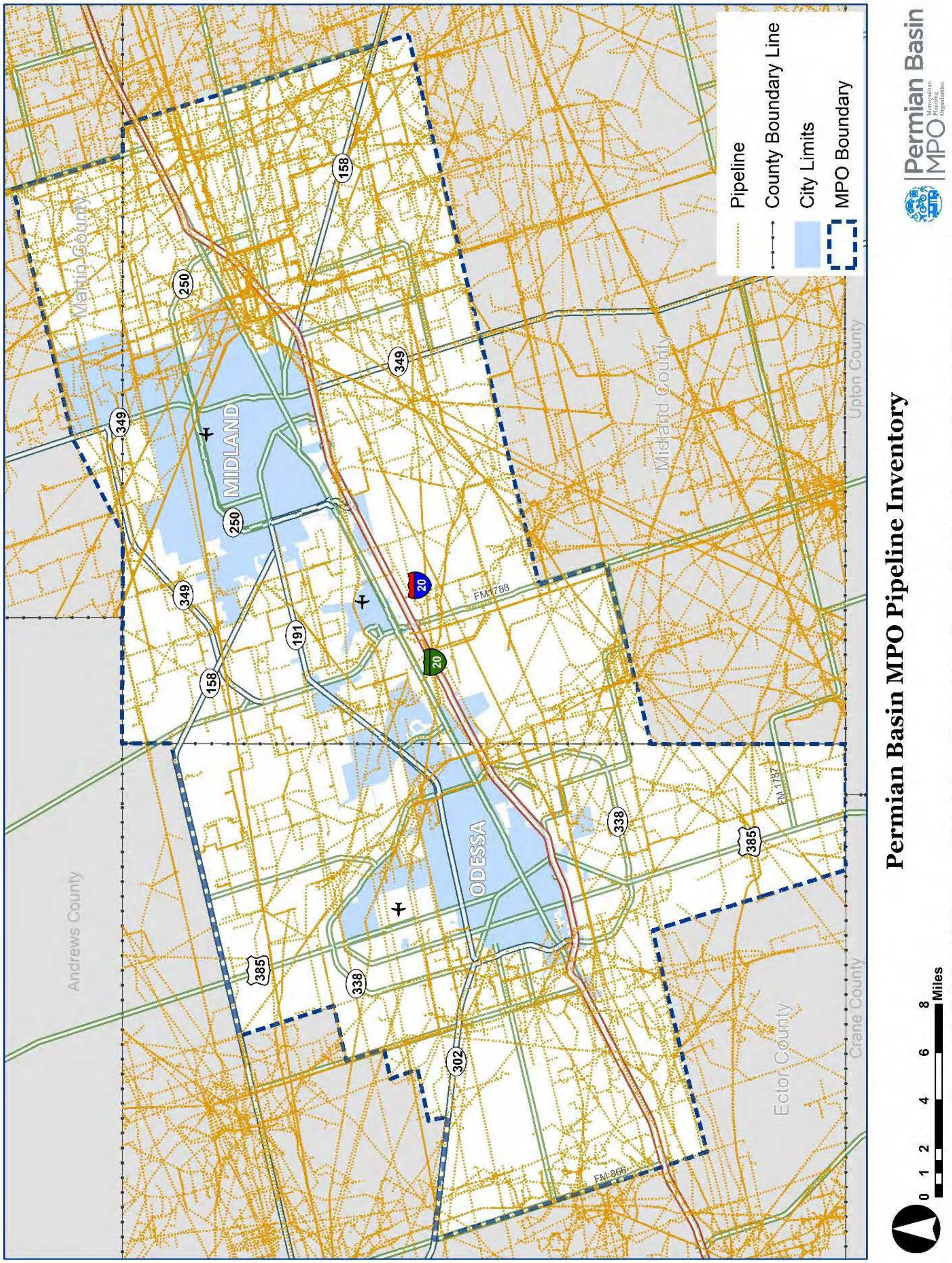
OVERVIEW IMPACTS FORECASTS FOCUS AREAS CONCLUSION The Perryman Group

Map 5.8 Ector, Midland, and Martin County Pipelines



Map 5.9 MAB Significant Freight Generators

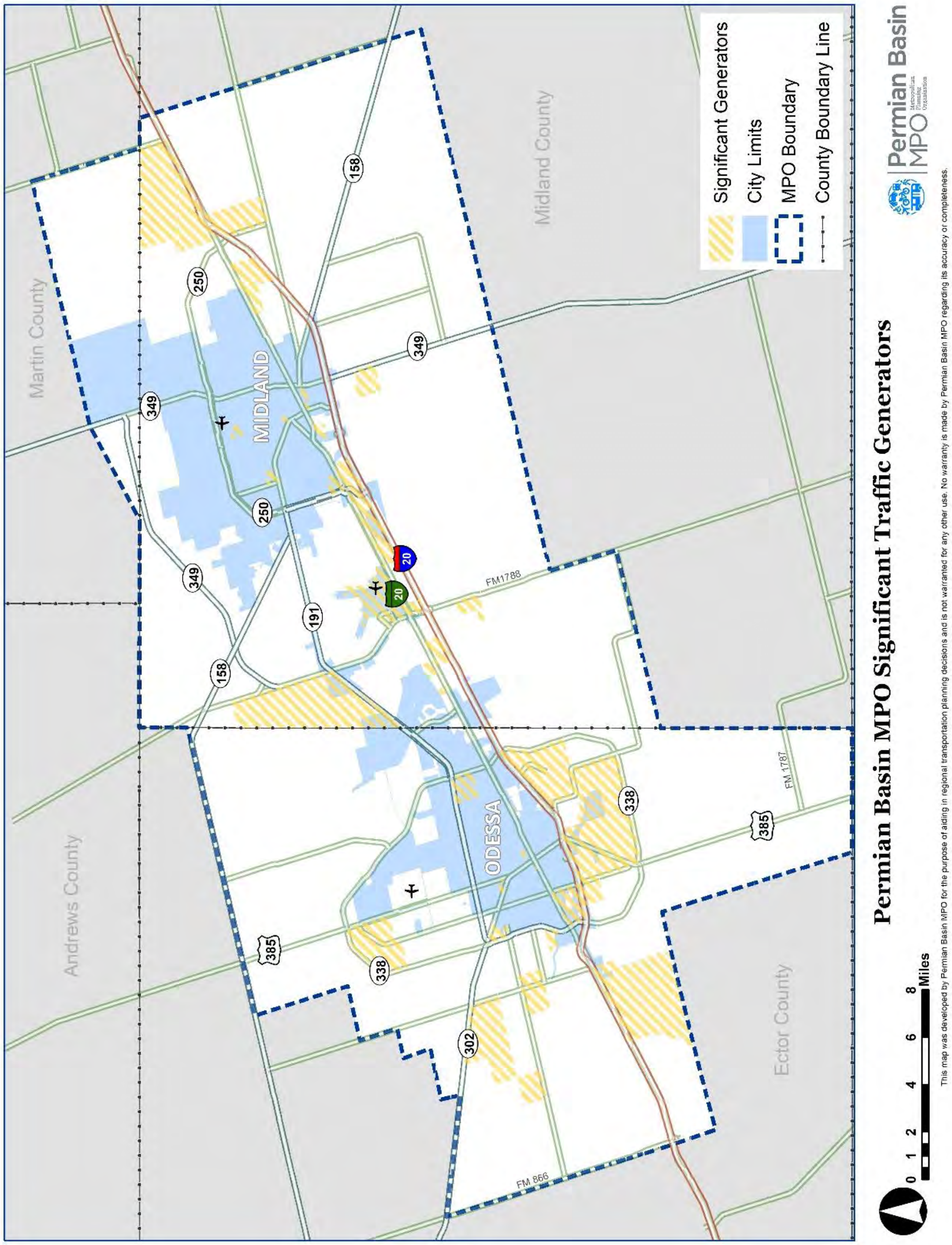
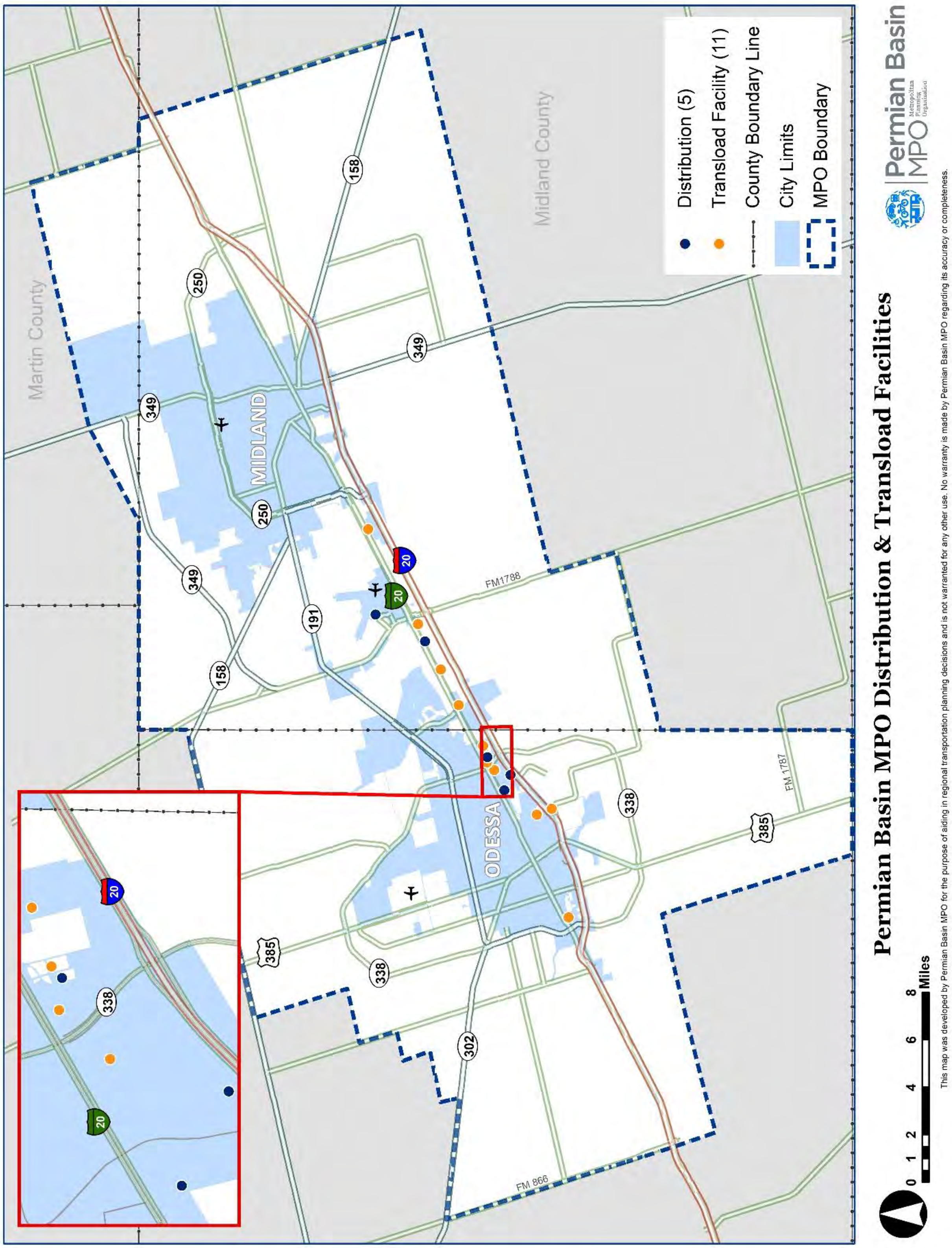


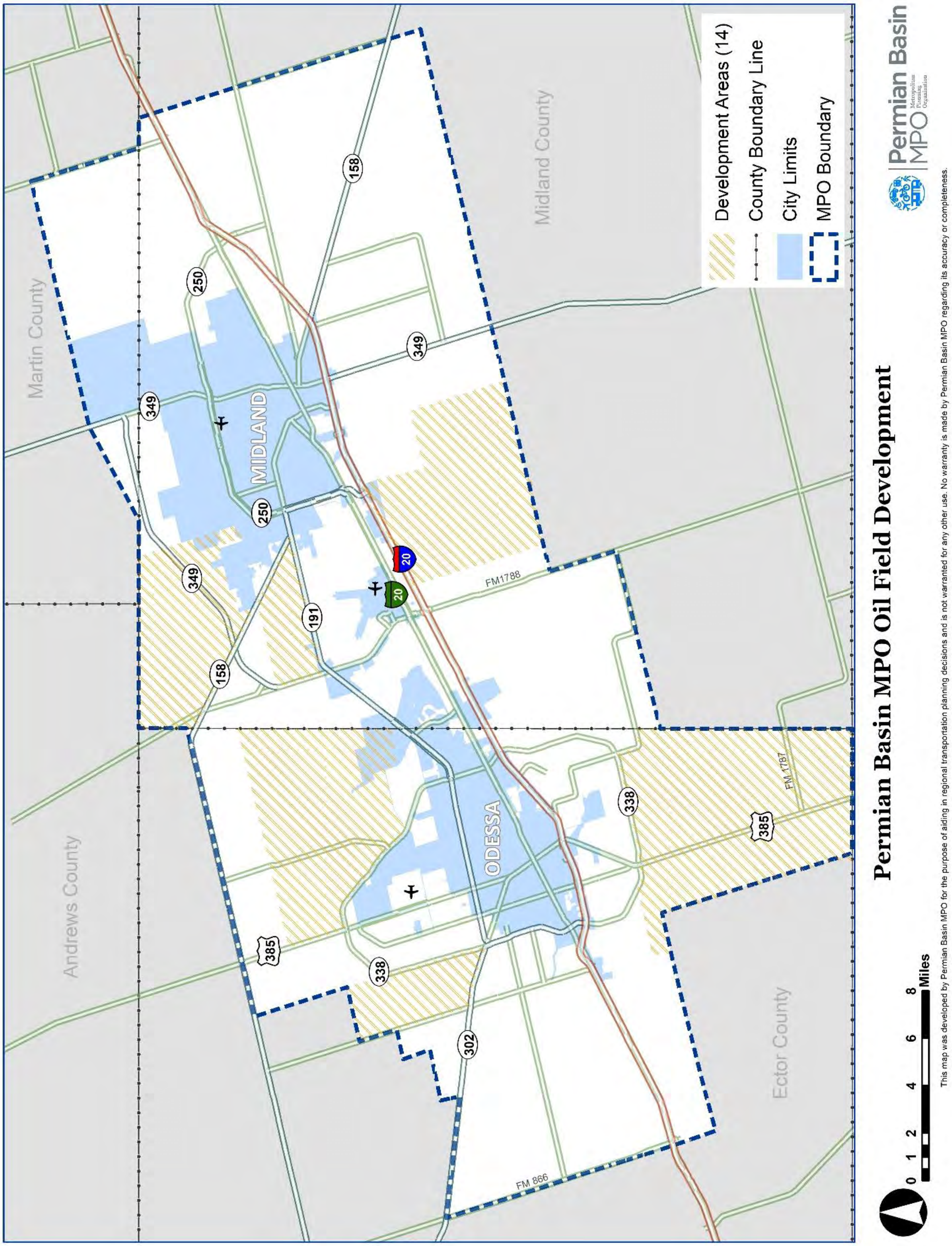
Table 5.1 MAB Significant Freight Generators by Type with Count

Type	Pipe Yard	Hospital	Higher Education	Aviation	Oil Field Equipment	Oil/Gas Establishment	Oil Tank Farm	Pipeline Supplier
Count	12	5	3	1	6	10	1	4

Map 5.10 MAB Freight Distribution and Transload Facilities



Map 5.11 Oilfield Development Areas



Major investments have been completed or are planned along all the major freight corridors. Since 2017, the Texas Transportation Commission has invested funds from its Strategic Priority funding category (Category 12) to program improvements along the corridors mentioned above; this commitment is in addition to the Category 2 funds provided by the MPO and the Category 3 funds provided by local, non-traditional sources. The movement of freight in this region is critical. In the past several years bridge strikes along I-20 have caused TxDOT to reroute traffic, close lanes and overpasses for extended periods. The crashes affecting bridges are the result of negligence on the part of the driver and poor loading and load checking practices. A spike in the need for CDL drivers has resulted from the growth in the energy sector. Many of these drivers lack experience and are delivering oversize and overweight loads to unfamiliar locations. Freight has continued to move through and within the region but the cost to the system has been high when examining road wear, crash rate, incident management, and roadway closure time.

The *Forward 45* MTP contains specific projects related to freight movement. In addition, several freight supporting projects are listed in the MPO's Transportation Improvement Program for the period 2019-2022. These projects include a grade separation at US 385 North and Loop 338 in Odessa, Midkiff Road at I-20, CR 1250 at I-20, Faudree Road at I-20, CR 1150 at Loop 250 in Midland. Projects shown in the 2045 MTP as priorities include I-20 where interchanges, ramp locations, U-turns, and frontage road conversions to one-way are being planned for modernization to accommodate freight and passenger traffic. Other project-specific recommendations in the Permian Basin MPO planning area are included in the project list shown in Chapter 9, such as improving several bridges on key corridors. The MPO will also continue to work collaboratively with federal, state, and local agencies to examine roadway conditions, safety, and freight mobility throughout the region using available date sources and the Congestion Management Process to fund projects that enhance freight mobility.

5.3 Freight Characteristics

5.3.1 Freight Volume

Freight volume has increased in the Permian Basin region and in the urbanized area of the MPO. Truck transport is still the largest method of freight movement; truck percentages on major state facilities have increased in the recent five-year period along with total traffic volumes of all types.

5.3.2 Oversize Overweight Vehicles (OS/OW)

As stated previously, bridge strikes and crashes have been problematic to the movement of freight in the Permian Basin MPO. A high percentage of commercial trucks service the energy sector must utilize the Texas Department of Motor Vehicles (DMV) permitting process to register their trucks to ship oversize and overweight loads. Delivery of oil field rig equipment, storage tanks, cranes, pipe, and other equipment destined to the drilling operation areas is commonplace in the

Permian Basin. Table 5.1 indicates a history of OS/OW permits issued by the DMV in the Midland/Odessa office from 2014 through 2019. Registered trucks over one ton are showed in Table 5.2.

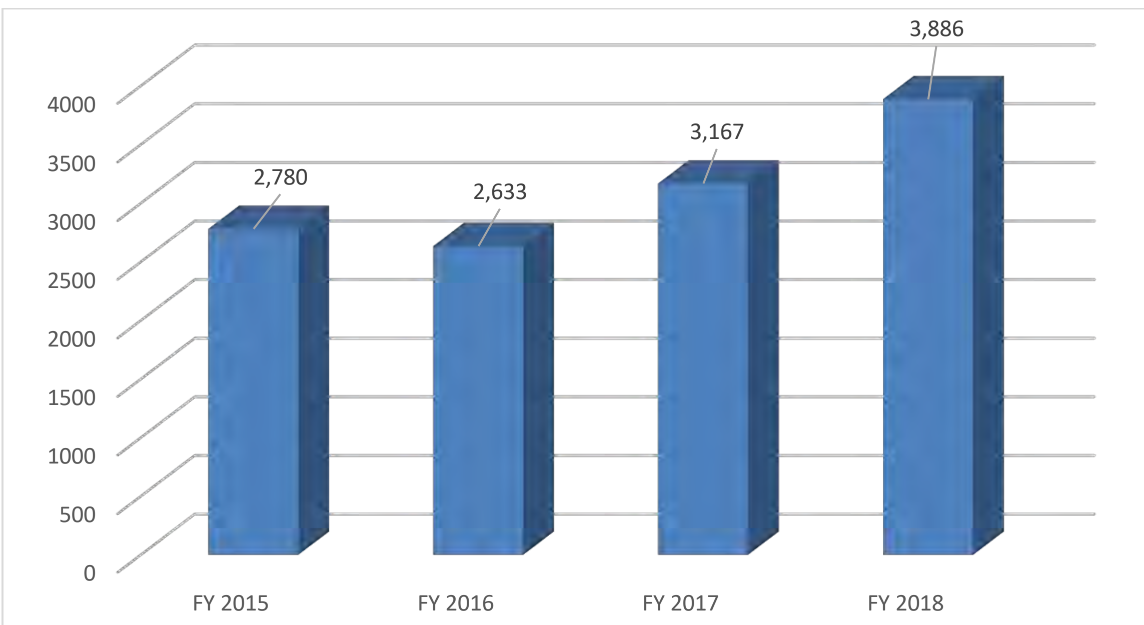
Table 5.1 Oversize/Overweight Permits issued by Texas Department of Motor Vehicles

Midland	
Year	*Permit Counts*
2014	40,557
2015	38,401
2016	36,638
2017	52,197
2018	63,624
2019*	35,818

Odessa	
Year	*Permit Counts*
2014	39,212
2015	37,955
2016	34,846
2017	48,599
2018	55,542
2019*	32,761

* through June 2019

Table 5.2 Registered trucks more than 1 Ton FY 2015-2018 (Midland)



Source: Texas Department of Motor Vehicles

Truck and Hazardous Material Routes

The mission of the Federal Motor Carrier Safety Administration (FMSCA) is to reduce crashes, injuries and fatalities involving large truck and buses. This includes incidents that involve hazardous materials. Hazardous material routes are designated by the FMSCA to mitigate the negative impacts that the transportation of hazardous materials might have on other motorists or area residents while still providing safe and efficient routes for the trucking industry. Table 5.3 shows the designated Hazardous Material Routes while Figures 5.6 and 5.7 show the hazardous material routes along with designated truck routes.

Table 5.3 FMSCA Designated Hazardous Materials Routes

Conector	Description	CITY	COUNTY
Interstate 20	Southwest City Limits to Southeast City Limits	Odessa	Ector
Loop 338	South City Limits to North City Limits	Odessa	Ector
Cotton Flat Rd.	Interstate 20 to Bus. I 20/ YS 80 [Local Traffic Only]	Midland	Midland
Fairgrounds Rd.	South City Limits to Loop 250	Midland	Midland
Farm to Market Rd. 868	Bus. SR 158 to Loop 250 [Local Traffic Only]	Midland	Midland
Garfield St.	Bus. SH 158 to Florida Ave. [Local Traffic Only]	Midland	Midland
Golf Course Rd.	Scharbauer Dr. to State 158 [Local Traffic Only]	Midland	Midland
Interstate 20	East City Limits to West City Limits	Midland	Midland
Loop 250	Interstate 20 to Fairgrounds Rd.	Midland	Midland
Midkiff Rd.	Interstate 20 to Loop 250 [Local Traffic Only]	Midland	Midland
Scharbauer Rd.	State 349 to Golf Course Rd. [Local Traffic Only]	Midland	Midland
State 349	Interstate 20 to Loop 250 [Local Traffic Only]	Midland	Midland
State 349	Interstate 20 to South City Limits [Local Traffic Only]	Midland	Midland
State 349	Loop 250 to North City Limits [Local Traffic Only]	Midland	Midland

Source: FMSCA

Figure 5.6 Midland Hazmat and Trucking Routes

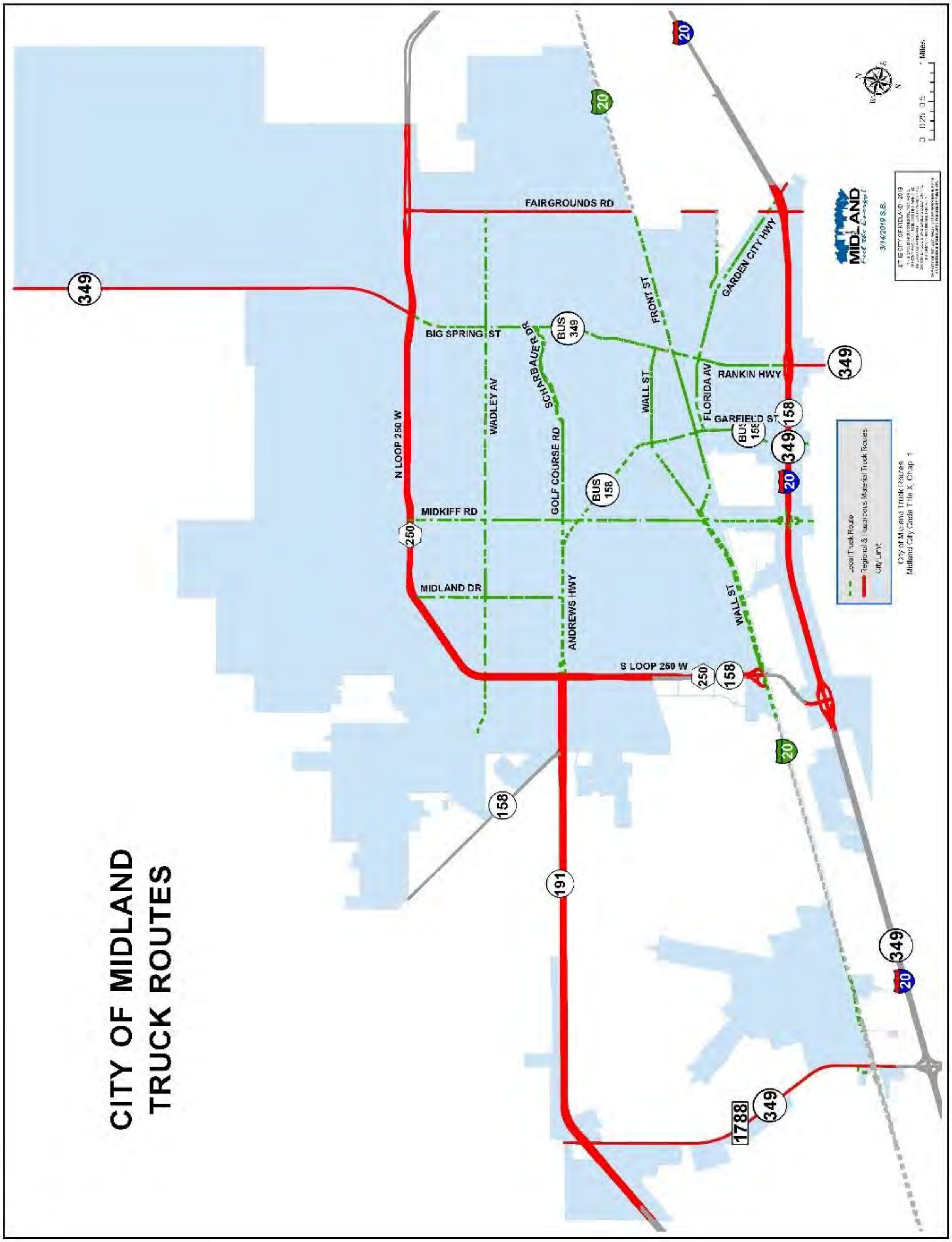
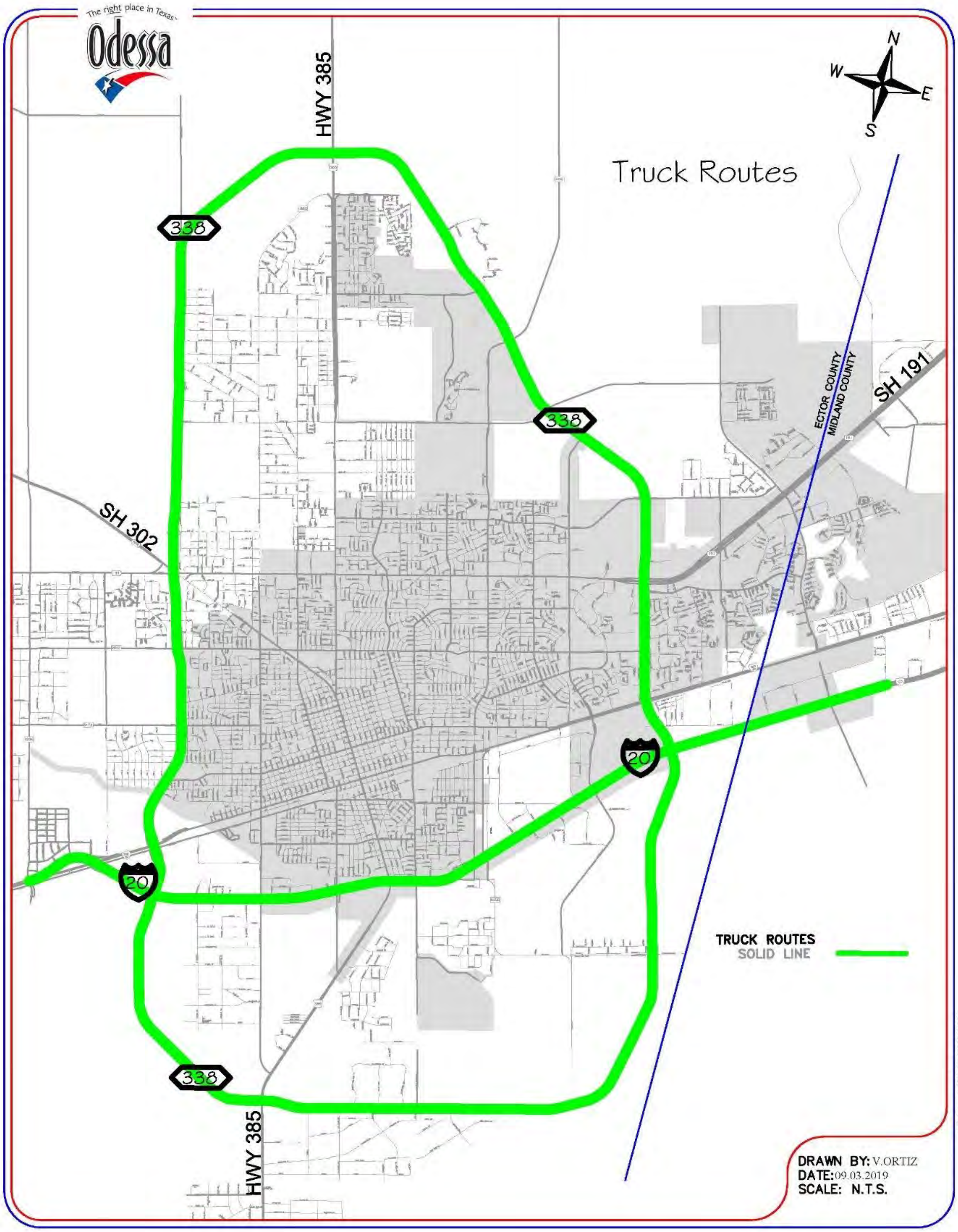


Figure 5.7 Odessa Hazmat and Trucking Routes



5.3.3 Geometrics

TxDOT has been coordinating with the MPO since 2016 to prepare schematics and locate funding for the modernization of the I-20 corridor. Roadway geometrics are the biggest consideration for this project. Currently, I-20 has two-way service roads which are dangerous and difficult to navigate, especially when completing turns at intersection locations. Another example of geometric design is at the intersection of SH 158 at Loop 250 West in Midland. A recent improvement at that location requires southbound traffic on Loop 250 in the westernmost lane to turn onto SH 158 rather than proceeding straight through the intersection. This relatively low-cost improvement tied directly to the Fixing America's Surface Transportation Act (FAST Act) Performance Measures 1, Safety and 3, System Reliability have early indications of relieving congestion and improving safety. In 2017, TxDOT worked with the City of Odessa to reverse ramps along the SH 191 corridor to improve roadway geometrics and safety. Other examples of MPO agencies addressing roadway geometrics include the addition of free flow right turn lanes in the cities at key intersections, installation of bicycle lanes, and center left turn lanes.

5.3.4 Pavement Impacts

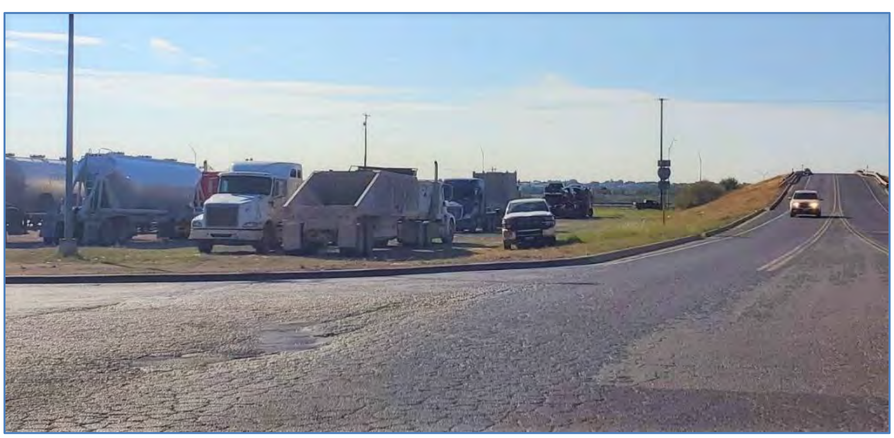
With the upsurge of oversize and overweight loads in the region, pavement condition had deteriorated rapidly throughout the Permian Basin MPO. This is noticeable along pavement edges and at intersections where load distribution is changing due to vehicle braking and turning movement. The problem is not limited to state owned and managed roadways; county and city streets are also heavily impacted by the energy sector freight movement. One project completed by the MPO in 2016 was the fortification of pavement and base materials along a five-mile portion of FM 1788 from SH 191 to north of SH 349. This project was completed with the awareness of the increase in energy sector traffic and particularly of OS/OW vehicles. The project cost was inflated but the roadway has experienced less deterioration. Consideration of fortified pavement may become necessary at other project locations. Pavement deterioration is dangerous to vehicle braking and requires roadway maintenance to be scheduled earlier than anticipated. Pavements conditions are further discussed in Chapter 7, Performance Based Planning.

5.3.5 Truck Parking

FHWA has described truck parking shortages as a national safety concern. Commercial truck drivers need access to safe, secure, and accessible truck parking. With the projected growth of truck traffic, the demand for truck parking will continue to outpace the supply of public and private parking facilities and will only exacerbate the truck parking problems experienced in many regions. This scenario may be witnessed in the MPO area at many locations, such as Business 20 on the north side between the two cities and near Loop 338 E. at I-20. In 2018 both cities passed ordinances (laws) to disallow truck parking in commercial parking lots. These laws are in addition to regulations passed to keep trucks out of the downtown corridor in Odessa and Midland. The Texas A&M Transportation Institute (TTI) is working with TxDOT on a regional truck parking study; meetings have been ongoing since August 2018. It is a companion study to the Permian Basin Regional Freight Plan work discussed in Section 5.3.7.

An inadequate supply of truck parking spaces can result in negative consequences. With the passage of a federal rule in 2017, known as the E-log mandate, trucking companies and truck owners and all interstate truck drivers are required to install an electronic logging device, or ELD that logs their driving hours. The electronic logging device (ELD) rule was congressionally mandated as a part of MAP-21 is intended to help create a safer work environment for drivers, and make it easier and faster to accurately track, manage, and share records of duty status (RODS) data. An ELD synchronizes with a vehicle engine to automatically record driving time, for easier, more accurate hours of service (HOS) recording "It makes it a little easier, you don't have to worry about all the paperwork, it does actually make it easier to work with," said Scott Chappell, truck driver. It electronically enforces a federal law requiring truckers to drive no more than eleven hours a day. "The electronic logs makes them do their job legally, if they fail to do it, we'll know it here, we get messages on our computers telling us that this driver is illegal," * said Mike Jurczyk, Senior Vice President of Wenger Truck Line. Jurczyk also stated that it keeps his drivers legal and safe and he can track where his drivers are, how many miles they have gone and how many they have left. Tired truck drivers cannot continue to drive even though they have difficulty finding a place to park for rest. Truck drivers may choose to park at unsafe locations, such as on the shoulder of the road, exit ramps, or vacant lots, if they are unable to locate official, available parking. This problem will continue to exist until solutions are found for additional truck parking in either public or private locations.

Based on preliminary review there are approximately 850 designated truck parking spaces within Permian Basin MPO's boundary. These are located at various fueling stations with availability ranging from 15 designated parking spaces to over 100 at larger truck stops such as Flying J and Pilot. The region has benefitted from development of new truck parking facilities located at travel centers and fueling stations, see Map 5.12. In addition, some larger hotel properties permit on site truck parking such as the MCM Grande Fun Dome on Business 20 in Odessa. On average a driver could anticipate fewer than 40 assigned parking spots at any given diesel station which further exacerbates the area parking issues.



TEXAS FREIGHT MOBILITY PLAN IMPLEMENTATION

TEXAS STATEWIDE TRUCK PARKING STUDY

Texas Department of Transportation

Why Conduct a Truck Parking Study?

The safe and efficient movement of freight depends on adequate and strategically located safe truck parking. A lack of truck parking capacity and/or information leads to unauthorized parking which can cause:

- Increased safety concerns for the trucker and the motoring public
- Lost productivity and revenue for truckers
- Increased congestion and delay around trucks parked in unauthorized locations
- Increased costs to businesses, consumers, and infrastructure owners

PURPOSE, GOALS AND OBJECTIVES

Purpose

- **Assess and address truck parking needs with practical, innovative and cost-effective strategies**

Goals

- Improve safety, reduce congestion and enhance economic competitiveness of the Texas Multimodal Freight Network
- Develop actionable strategies to meet truck parking needs across the state by partnering with the private sector

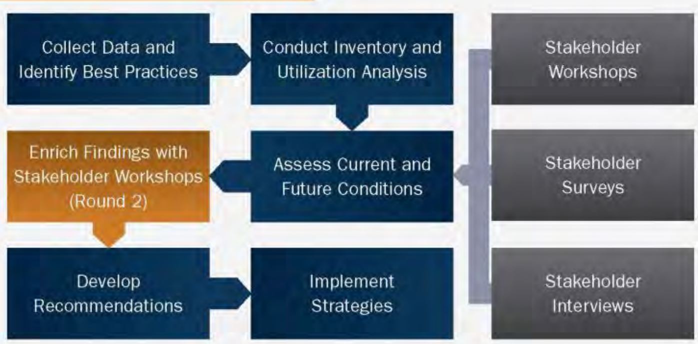
Objectives

- Improve safety on the roadways and mitigate community impacts associated with truck parking
- Identify specific needs for truck parking in Texas
- Identify strategies to address truck parking needs
- Develop an action plan for truck parking recommendations

What Will the Truck Parking Study Include?

Conducting the truck parking study will require a combination of analytical and technical analysis and stakeholder outreach. Key analytical steps include:

- Data collection and best practice review
- Truck parking inventory and utilization survey
- Needs assessment for current and future parking demand and conditions analysis
- Recommendations, solutions and implementation development



TEXAS STATEWIDE TRUCK PARKING STUDY

Texas Statewide Truck Parking Study

Who Will be Involved?

The viewpoints of public and private sector stakeholders impacted by truck parking are important. The stakeholder outreach process targets varied groups in multiple locations to capture a comprehensive perspective and ensure robust results.

Stakeholder Outreach Components:

- Texas Freight Advisory Committee
- TxDOT Internal Working Group
- Stakeholder Interviews and Surveys
- Workshops and Focus Groups

For venue, time, sign-up, and other info, visit **www.MoveTexasFreight.com**

Round 1 Stakeholder Meeting Schedule

Location	Date	Location	Date
San Antonio	11/27/18	Rio Grande Valley	12/19/18
Laredo	11/29/18	Lubbock	01/09/19
El Paso	12/04/18	Amarillo	01/10/19
Houston	12/06/18	Beaumont	01/22/19
Ft. Worth	12/11/18	Lufkin	01/23/19
Dallas	12/12/18	Tyler	01/24/19
Texarkana	12/13/18	Midland	02/07/19
Corpus Christi	12/18/18	Central TX – I-35	02/14/19

Round 2 Summer 2019.

When Will the Truck Parking Study be Completed?

Milestones	Month
Project startup and Stakeholder Outreach Plan	August 2018
Coordinate with the Texas Freight Advisory Committee	Ongoing
Data collection and inventory	August-December 2018
Stakeholder workshops and focus groups	November 2018-January 2019
Stakeholder survey and interviews	December 2018
Needs assessment	January 2019
Current and forecasted conditions	Summer 2019
Stakeholder workshops and focus groups	Late 2019
Develop recommendations and action plan	Spring 2020
Final recommendations and action plan	Spring 2020

FOR MORE INFORMATION, VISIT WWW.MOVETEXASFREIGHT.COM OR EMAIL TXDOT_FREIGHT@TXDOT.GOV

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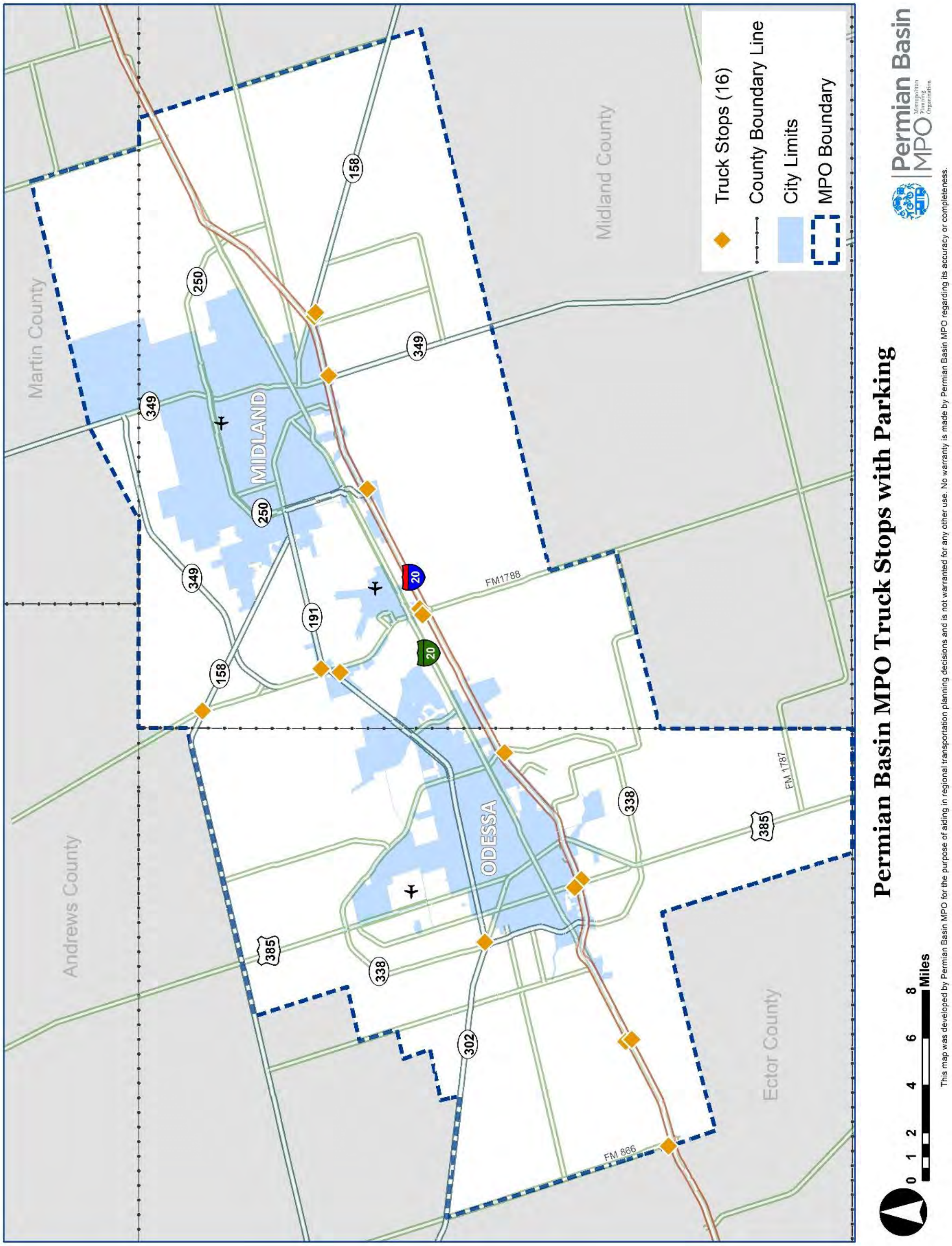
Texas Department of Transportation

Map 5.12 MAB Truck Stops with Parking



MAP-21 Subtitle D—Highway Safety SEC. 1401, also known as "Jason's Law," was established to provide a "national priority on addressing the shortage of long-term parking for commercial motor vehicles on the National Highway System to improve the safety of motorized and non-motorized users and for commercial motor vehicle operators." Specifically, Jason's Law requires the USDOT to conduct a survey and comparative assessment in consultation with relevant State motor carrier representatives to:

- Evaluate the capability of the State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
- Assess the volume of commercial motor vehicle traffic in the State; and
- Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in the State.

National Coalition on Truck Parking

The National Coalition for Truck Parking brings together stakeholders from transportation organizations, the freight industry, and other groups to advance safe truck parking, including:

- Collaborate nationally and among regions to identify opportunities and solutions for truck parking needs;
- Share information on data and new analyses developed by stakeholders to understand needs and trends in truck parking;
- Encourage partnerships among stakeholders to implement solutions, and;
- Identify opportunities to use existing and new programs to support truck parking implementation.

5.3.6 Intermodal Connectors

The Union Pacific Railroad has developed its Odessa Railport on the west side of Loop 338, just south of Business 20. This rail freight hub serves as an intermodal freight facility handling bulk products, raw and finished such as wind turbines, sand, and pipe. This is not the only intermodal facility in the region; a second rail-oriented location is west of Loop 250 in Midland and south of Business 20. This is mainly used for the transloading of sand onto trucks for delivery to drill sites. Another intermodal connection is at the Midland International Air and Space Port where the EZ Rider transit provider provides connections to air travel and to Greyhound Bus services to serve their national customer base. The Midland International Air and Space Port has experienced an increase in freight volume from 10 million pounds in 2018 to 11 million through May 2019[1]; this is a 9.26% in volume over a five-month period.

[1] www.transtats.bts.gov/airports

5.3.7 FHWA and TxDOT Permian Basin Freight Study

Since October 2018 the Permian Basin MPO has been directly involved with TxDOT an important study to analyze freight in a 24-county area of the Permian Basin where oil and gas production is prevalent. The study involves two states with the majority of the counties lying in Texas; two are located in southeast New Mexico. It is funded by FHWA and TxDOT using State Planning and Research funds. The purpose of this task, known as the Permian Basin Regional Freight Plan, is to identify freight activities, opportunities, challenges, and strategies to improve freight delivery related to the energy sector in the nation's largest and most prolific production area. A major component of this work being led by TxDOT is to identify and assess the regional freight network including significant energy sector corridors and last mile connections in both the rural and urban parts of the region. The completed work will also supplement state freight data with local data collection specific to the energy sector and will include a list of recommended improvements to meet the goal of improving freight mobility.

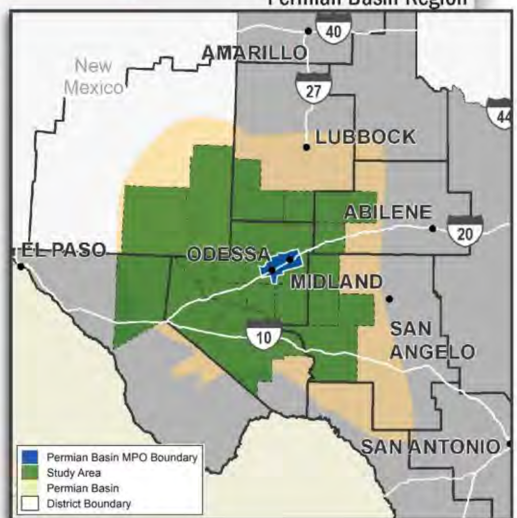
PERMIAN BASIN REGIONAL FREIGHT PLAN

Texas Department of Transportation

Why Develop a Regional Freight Plan for the Permian Basin Region?

The Permian Basin, located in west Texas and southeastern New Mexico, covers approximately 75,000 square miles with more than 7,000 oil/gas fields and is the 2nd largest oil and gas producer in the world.[1] The energy boom is leading to increased demand for transportation infrastructure needs and economic opportunities.

Permian Basin Region



Economic Importance of the Permian Basin

- Produced an average of over 4 million barrels of oil a day (May 2019).[4]
- Produced 50% of all natural gas in Texas and 11% in the U.S. and 60% of all Texas alternative energy.[2]
- Generated over $4.9 billion in State revenues in 2017, accounting for nearly 10% of all state-generated general revenue.[2]
- Expanded employment by 6.1% in the second quarter of 2018 compared to 2.0% statewide.[1]
- Two of the 10 fastest growing metro areas in 2018 are Midland (1st), with 4.3% and Odessa (5th) with 3.2% population growth.[5]

Freight Challenges in the Permian Basin

- Generates about 1,200 loaded trucks per new well and about 350 loaded trucks for each existing well, annually.[3]
- During the stretch of 2010 to 2018, there was a 47% increase in the number of roadway crashes and a 64% increase in roadway fatalities. The region represents 13% of Texas roadway fatalities.[3]
- Limitation of state-level data sources to capture the rapidly growing freight activity arising from the energy sector.

During the development of the 2018 Texas Freight Mobility Plan (TFMP), numerous transportation issues related to the energy sector were documented, leading to the recommendation of a Permian Basin Regional Freight Plan covering 22 Texas counties (Andrews, Borden, Crane, Crockett, Culberson, Dawson, Ector, Gaines, Glasscock, Howard, Irion, Loving, Martin, Midland, Pecos, Reagan, Reeves, Scurry, Upton, Ward, Winkler, Yoakum) and two New Mexico counties (Lea and Eddy).

Purpose, Goals and Objectives

Purpose

- **Develop a Permian Basin Regional Freight Plan that identifies freight activities, opportunities, challenges and strategies in the region.**

Goals

- Integrate multimodal regional and statewide energy sector transportation considerations into the local and regional transportation planning, programming, and implementation processes.
- Identify the region's energy sector-related transportation needs and opportunities impacting the Texas Multimodal Freight Network and statewide economic competitiveness.

Objectives

- Identify and assess the regional freight network, including **locally significant energy sector corridors and first/last mile connections**.
- Examine the link between **local land use** and energy sector-related transportation demand and operations.
- Enhance the regional energy sector movement forecasting to account for the **increased production and economic growth**.
- Develop recommendations to enhance **energy sector mobility and safety on the region's transportation network**.
- Document the **importance of regional energy sector freight movements** to the local, regional, statewide, and national economies.
- Supplement state freight data with **local data collection** specific to energy sector and construction activity.
- Support identification of **energy sector transportation projects** for inclusion in the Districts', MPOs', and local transportation improvement programs.

PERMIAN BASIN REGIONAL FREIGHT PLAN

Permian Basin Regional Freight Plan

What will the Regional Freight Plan Include?

Developing the Permian Basin Regional Freight Plan will require a combination of localized data collection, modeling and analysis, as well as local, regional, and statewide stakeholder outreach. Key steps include:

- Identification of needs, issues, and challenges
- Local and regional data collection and review of existing plans and studies
- Local and regional transportation network inventory and assessment
- Needs assessment for current and future energy sector transportation demand and conditions
- Recommendations and implementation strategies

Stakeholder Engagement

- Public and private sector stakeholder input will be a critical component of the Regional Freight Plan, starting with data collection and continuing through the development of recommendations and strategies to improve freight mobility. The stakeholder engagement process will include:

Public and private sector stakeholders

Stakeholder meetings and 2 rounds of regional listening sessions

Individual and group stakeholder interviews

Focus Groups

Milestones and Timeline

Milestones	Timeline
Stakeholder outreach plan; review of freight data and studies	February – June 2019
Stakeholder interviews, data collection	March – August 2019
Regional freight profile, needs assessment, and performance measures	March – November 2019
Regional freight recommendations, strategies, and implementation plan	September 2019 – March 2020
Regional Freight Plan and Executive Summary	March – May 2020

FOR MORE INFORMATION, VISIT WWW.MOVETEXASFREIGHT.COM

1 Federal Reserve Bank of Dallas
2 Midland Odessa Transportation Alliance
3 Texas Department of Transportation
4 U.S. Energy Information Administration
5 U.S. Census Bureau

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Texas Department of Transportation

Part of this important study includes the establishment of a working committee that consists of stakeholders, elected officials, representatives of the energy sector, freight shippers, economic development professionals and others to ensure that representation and involvement are key components of the study. Regional attention to freight movement has been matched at the state and federal levels as evidenced by the ongoing study as well as the nationally documented growth of the Permian Basin energy sector. The most recent federal transportation legislation, the FAST Act, the TxDOT record of transportation investments in the UTP and Statewide Transportation Improvement Program (STIP) place increased emphasis on freight planning and investment. The MPO looks for opportunities to leverage its Category 2 funds with state and federal dollars to enhance freight movement.

The regional freight plan will help inform industrial land use planning and supply chain logistics along strategic freight corridors and in freight industry clusters in the entire 24-county area. Logistics and supply chain performance expectations change rapidly as industry challenges continue to unfold. A recent development of multiple sand mines in the Permian Basin supplying materials for fracking is such an example of industry challenge and logistical impact. On the road system, freight bottlenecks with significant truck volumes are a key priority of the MPO and the TxDOT Odessa District.

In addition to this Permian Basin regional effort, TxDOT approved a statewide Freight Mobility Plan in 2018. It is the third approved plan (2016 and 2017) addressing safety, economic competitiveness, asset preservation, system reliability, multimodal connectivity, environmental stewardship, customer service and long-term funding as these goals relate to freight throughout the state.

As stated earlier, the ongoing regional study will result in a plan to address freight corridors including specific locations for recommended improvements. The work underway is not scheduled to be complete in time for this initial *Forward 45* MTP; however, the MPO will make appropriate revisions to the MTP once it becomes available to incorporate.

5.3.8 National Highway Freight Network

The FAST Act repealed both the Primary Freight Network and National Freight Network from the MAP-21 legislation and directed the FHWA Administrator to establish a National Highway Freight Network (NHFN) to strategically direct Federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system. As depicted in Map 5.1 (National Freight Highway Network) the only primary corridor passing through the Permian Basin MPO is I-20.

The NHFN includes the following subsystems of roadways:

- **Primary Highway Freight System (PHFS):** This is a network of highways identified as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The network consists of 41,518 centerlines miles, including 37,436 centerline miles of Interstate and 4,082 centerline miles of non-Interstate roads.

- **Other Interstate portions not on the PHFS:** These highways consist of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities. These portions amount to an estimated 9,511 centerline miles of Interstate, nationwide, and will fluctuate with additions and deletions to the Interstate Highway System.
- **Critical Rural Freight Corridors (CRFCs):** These are public roads not in an urbanized area which provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities.

Texas was allocated 372 miles to designate as Critical Urban Freight Corridors (CUFC). CUFCs are required to meet one or more of the following criteria:

- Connects an intermodal facility to: – The Primary Highway Freight System (PHFS) – The Interstate System – An intermodal freight facility;
- Located within a corridor of a route on the PHFS and provides an alternative highway option important to goods movement;
- Serves a major freight generator, logistic center, or manufacturing and warehouse industrial land; or
- Important to the movement of freight within the region, as determined by the MPO or the state.

The FAST Act required that MPOs with population of greater than 500,000 take the lead in designating CUFCs in their urbanized area. Six MPOs in Texas meet the criterion. TxDOT initiated the process by allocating the number of miles each MPO could designate based on their total population. In total, 299 miles, which represents just over 80 percent of the state's allowance, were allocated to the large MPOs for designation based on population. TxDOT was responsible for designating the remaining 73 miles of CUFCs, in consultation with MPOs in urban areas of less than 500,000. The following criteria were used in the designation:

- Highest scoring corridors from designation process.
- Stakeholder input from Texas Freight Advisory Committee, MPOs and stakeholder workshops.
- Qualifying project in UTP in the next 5 years.

At this time, there are no roads designated as Critical Urban Freight Corridors in the Permian Basin MPO boundary.

I-20 Corridor Study

I-20 Permian Basin Corridor Study

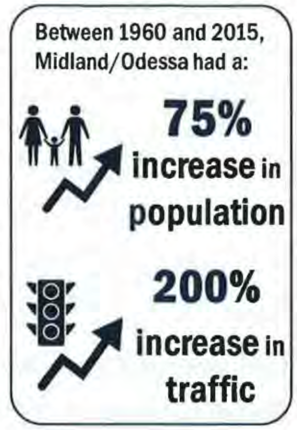
Permian Basin Metropolitan Planning Organization (PBMPO)

Permian Basin MPO

I-20 in Midland/Odessa

Since the construction of I-20 as a rural interstate in the 1960s, Midland and Odessa have grown in population by about 75% while the traffic has increased by 200% between 1960 and 2015. I-20 mainlanes, frontage roads, and cross streets now have significantly more traffic than their original rural interstate bypass designs intended. This excess traffic has led to congestion and adverse safety conditions for travelers.

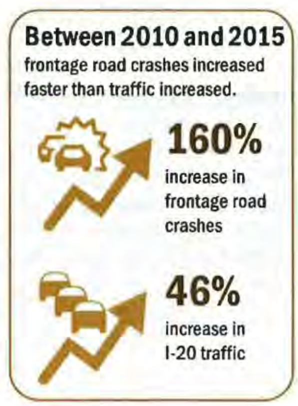
Between 2010 and 2015, frontage road crashes have increased at a much higher rate than the increase in traffic. While traffic along I-20 increased by 46% from 2010 (28,000 vehicles) to 2015 (41,000 vehicles), crashes along frontage roads increased by over 160% between 2010 (70 crashes) and 2015 (187 crashes).



PREVIOUS STUDIES

Previous FHWA and TxDOT sponsored research documents[4] a threshold of traffic volumes resulting from additional roadside development for consideration of frontage road conversion from two-way to one-way operation. The three traffic volume criteria identified in the warrant analysis are:

- Rural Area (0 to 30% roadside development)– 7,500 vehicles per day (total of both frontage roads)
- Intermediate Area (30 to 60% roadside development)- 6,000 vehicles per day (total of both frontage roads)
- Urban Area (60 to 100% roadside development)– 5,000 vehicles per day (total of both frontage roads)



Different portions of I-20 could conceivably be described as either an Urban or Intermediate Areas based upon the level of roadside development. However, one can anticipate that the entire corridor could be considered Urban in the future due to residential, commercial, and industrial growth in the region. Based upon this warrant analysis review of both current and future volumes per day, all segments of I-20 could be considered for conversion to one-way operation.[5]

CONSIDERATION DURING IMPLEMENTATION OF FRONTAGE ROAD CONVERSIONS:

- Include turn-arounds, collector-distributor roads, and cross-overs as needed to provide adequate circulation;
- Phase conversion of frontage roads to meet the demands of 2040 traffic;
- Develop plans in coordination with local municipality to incorporate backage road access when available;
- Engage the public and stakeholders during specific project development; and
- Develop traffic control plans to minimize impacts to travelers and adjacent businesses while expediting construction.

[4] Woods, Donald L., 1984. Freeway Frontage Road Operations and Safety Study. Texas A&M Transportation Institute (TTI) at Texas A&M University. Sponsored by FHWA.

[5] As documented in the 2014 TxDOT sponsored analysis: Frontage Road Conversion Analysis for Existing Frontage Roads I-20 from Loop 338 West to FM 307. Prepared by LJA Engineering for TxDOT. February 2014.

I-20 Permian Basin Corridor Study

Permian Basin Metropolitan Planning Organization (PBMPO)

Permian Basin MPO

TWO-WAY TO ONE-WAY FRONTAGE ROAD CONVERSION

The primary function of frontage roads is to provide access between a freeway/access controlled facility and adjacent land uses. Two-way frontage road designs are more commonly found in rural areas with less intensely developed land and where distances between entrance/exits are greater than in urban settings.

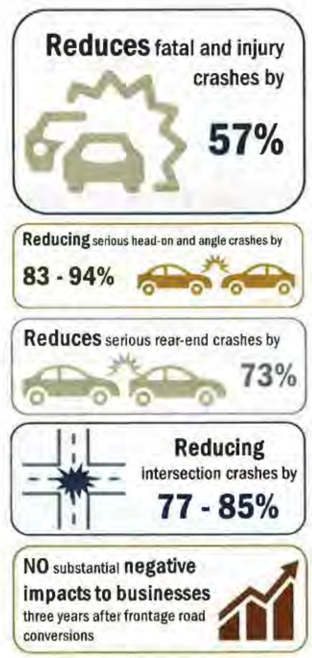
As rural areas become more urban in nature, adjacent land uses develop, and frontage road traffic volumes increase, conversion of two-way frontage roads to one-way frontage roads should be considered. The benefits and impacts need to be effectively communicated to stakeholders, drivers, and local residents. Historically, the objective of frontage road conversions has been to improve safety and traffic operations.

This fact sheet utilizes findings from previous TxDOT [1] and Texas A&M Transportation Institute (TTI) technical reports[2] to present the facts related to frontage road conversions in Texas.

FAST FACTS: FRONTAGE ROAD CONVERSION

SAFETY IMPACTS: Converting frontage roads from two-way to one-way operation has been shown to reduce:

1) serious head-on and angle crashes by 83 - 94%;
2) rear-end crashes by 73%;
3) intersection crashes by 77 - 85%; and
4) fatal and injury crashes by 57%.



BUSINESS IMPACTS: Analysis of business sales, appraisal, and employment data found that frontage road conversion projects had no substantial attributable impact to businesses three years after frontage road conversion. Furthermore, no apparent negative effects on appraisal values along conversion sites were observed in the long-term.

TxDOT APPROACH AT OTHER LOCATIONS: A review of recent frontage road conversion projects on state-maintained roadways reveals a consistent message of improving traffic operation and safety conditions. The following represent recent experiences of frontage road conversions from two-way to one-way operations:

- I-45 near Madisonville (2015): "This project is to improve safety and increase capacity from vehicles stacking up on I-45."
- I-35 near Kyle/San Marcos (2014): "By switching these high-volume frontage roads to one-way, we hope to improve traffic movements in the area and ensure our system is as safe as possible."
- I-20 near Abilene (2012-2014): Safety: 1) One-way frontage roads reduce conflict points for traffic entering and exiting the freeway; 2) They provide smoother traffic flow on the frontage road; 3) They are consistent with what drivers expect in urban areas; 4) Improve intersection safety. Efficiency: 1) Improve intersection efficiency
- I-30 in Texarkana (2006): "Ever since the completion of the I-30 project, Texarkana has grown and experienced an increase in both sales tax and hotel & motel occupancy tax." – Jerry Sparks, Economic Development Director[3]

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[1] Frontage Road Conversion Analysis for Existing Frontage Roads I-20 from Loop 338 West to FM 307. Prepared by LJA Engineering for TxDOT. February 2014.

[2] Eisele, William, Christine Yager, Marcus Brewer, William Frawley, Eun Sug Park, Dominique Lord, James Robertson, and Pei-fen Kuo, 2011. Safety and Economic Impacts of Converting Two-way Frontage Roads to One-way: Methodology and Findings. Texas A&M Transportation Institute (TTI) at Texas A&M University. Sponsored by FHWA. http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-5856-1.pdf

[3] Conversion of Two-way Frontage Roads to One-way – I-30 in Texarkana, Presented at TxDOT Short Course, October 12, 2016 http://static.tti.tamu.edu/conferences/tsc16/presentations/traffic-ops-2/simmons-dupree%20.pdf

Dec 12, 2016

5.3.9 National Highway System

What is the National Highway System?

The NHS is a network of strategic highways within the United States, including the Interstate Highway System and other roads serving major airports, ports, rail or truck terminals, railway stations, pipeline terminals and other strategic transport facilities. Altogether, it constitutes the largest highway system in the world.

Individual states are encouraged to focus federal funds on improving the efficiency and safety of this network. The roads within the system were identified by the United States Department of Transportation in cooperation with the states, local officials, and metropolitan planning organizations and approved by the United States Congress in 1995. As described in Chapter 9, Project Selection/Projects, the MPO is programming funds for major improvements on several of the corridors on the NHS.

Figure 5.8 NHS Map

The National Highway System consists of roadways important to the nation's economy, defense, and mobility. The National Highway System (NHS) includes the following subsystems of roadways (note that a specific highway route may be on more than one subsystem):

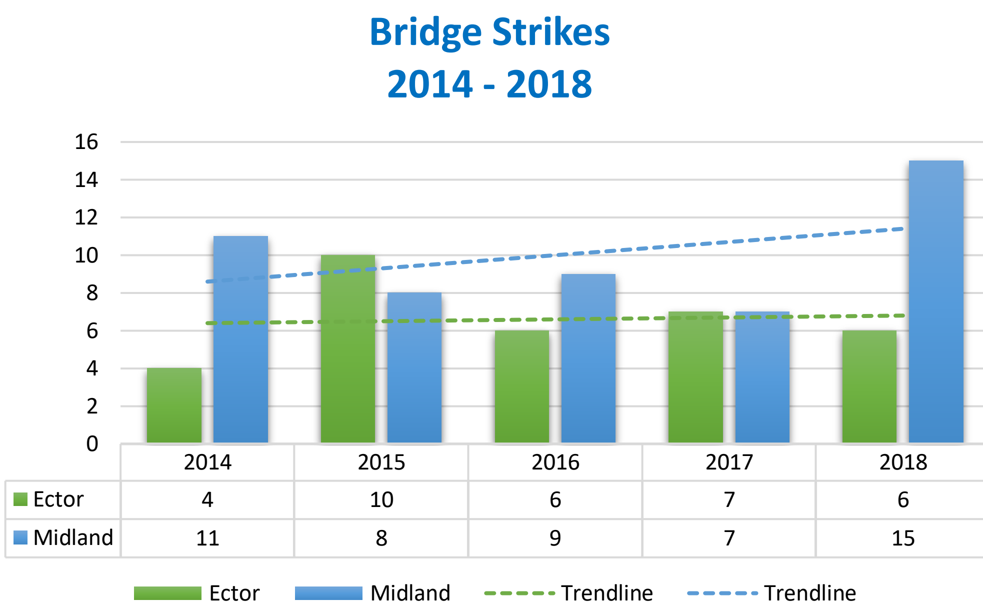
- **Interstate:** The Eisenhower Interstate System of highways retains its separate identity within the NHS.
- **Other Principal Arterials:** These are highways in rural and urban areas which provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
- **Strategic Highway Network (STRAHNET):** This is a network of highways which are important to the United States' strategic defense policy and which provide defense access, continuity and emergency capabilities for defense purposes.
- **Major Strategic Highway Network Connectors:** These are highways which provide access between major military installations and highways which are part of the Strategic Highway Network.
- **Intermodal Connectors:** These highways provide access between major intermodal facilities and the other four subsystems making up the National Highway System.

In early 2019 the MPO met with TxDOT staff to review the corridors that are currently designated as part of the National Highway System and located in the MPO boundary, dating back to 1995. TxDOT prepared recommendations for review and comment by the MPO; this task was completed in May 2019. TxDOT anticipates completing its review of the system by the fall of 2019, following which, changes to the NHS corridors in the MPO boundary will be implemented.

Bridge Strikes – I-20

Several times in the past five years bridges have been struck by over height loads that were not checked or secured properly by the vehicle drivers. This problem has been a major source of disruption in the movement of freight in both counties and outside of the MPO boundary because of the negative impact on truck travel time reliability. In some places, the same bridge was hit multiple times in a short time period. The 86th Texas Legislature passed HB 799 which holds the owner of the vehicle liable for any damage to a bridge or overpass caused by the height of the vehicle. The driver of the over-height vehicle could also be charged with a misdemeanor crime. The Table below depicts the number of bridge strikes on the Interstate 20 corridor from 2014 through 2018. Table 5.4

Table 5.5 Bridge Strikes 2014-2018



	2014	2015	2016	2017	2018
Ector	4	10	6	7	6
Midland	11	8	9	7	15

Map 5.13 Bridge Strikes 2014-2018

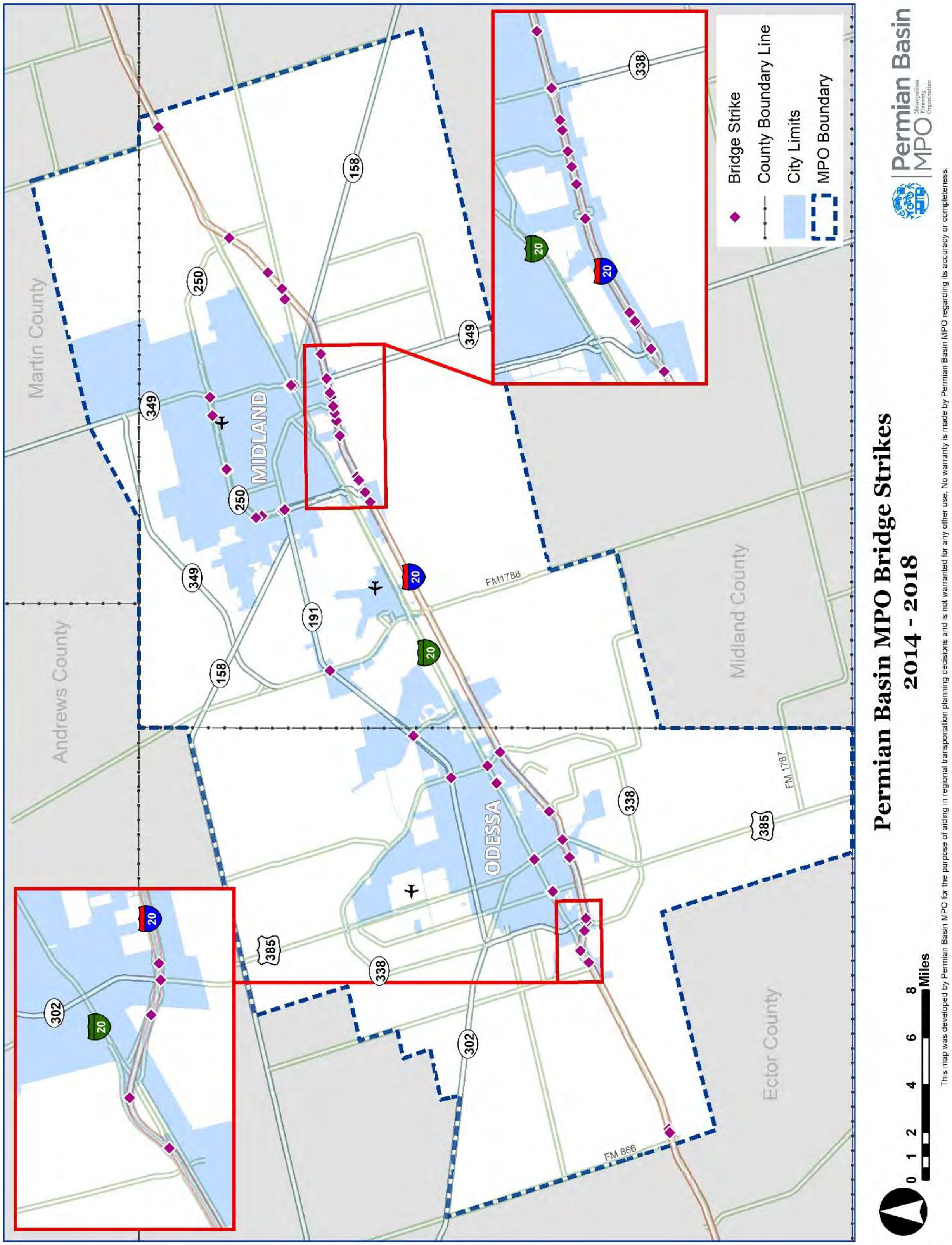


Figure 5.10 Bridge Strike Photograph

NEWS RELEASE

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REPAIRS TO CLOSE FM 866 OVERPASS AT I-20 FOR 6 WEEKS
I-20 westbound lanes will also be closed for 24 hours

September 5, 2019

WEST ODESSA – Westbound Interstate 20 main lanes will be closed for 24 hours in the area of FM 866starting at 7 p.m. Friday, Sept. 6, 2019, as part of a bridge repair project. The closure is necessary to replace a beam that was damaged by an oversized load.

The FM 866 overpass that goes over I-20 will also be closed at 7 p.m. Friday. This closure is expected to last about six weeks and is necessary to replace the damaged beam.

Motorists needing to go westbound during the 24-hour closure period will have to use the north service road. Motorists who need to cross over I-20 will have to use underpasses at either FM 1601 in Penwell or at Moss Road.

It is strongly advised that motorists find alternate routes for the entire duration of the project. Delays should be expected, especially during the initial closure of I-20.

A second I-20 closure will be needed when a new beam is put in place as part of the repairs. That exact date is not yet determined.

In the interest of safety, TxDOT asks that motorists display extreme patience for the duration of the project. State law requires motorists to obey any flaggers, warning signs, or pilot cars encountered in work zones.

SCR Civil Construction of Richmond will be performing the work through the Odessa District Bridge Repair Call Out Contract. Repair estimates are approximately $340,000. The work is being done to repair damage caused by an oversized load.

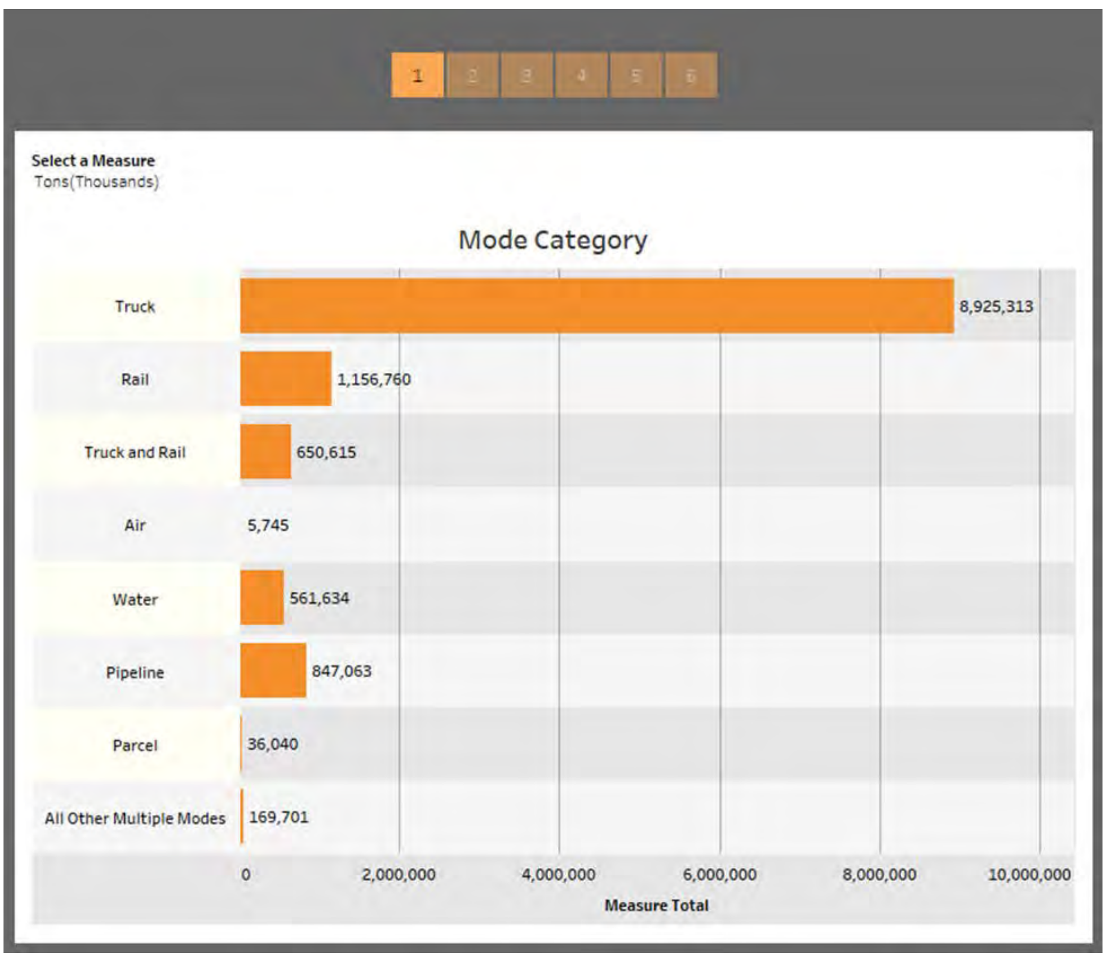
###

USDOT Commodity Flow Survey Overview[1]

The Commodity Flow Survey (CFS), a component of the Economic Census, is conducted every five years by the U.S. Census Bureau in partnership with the U.S. DOT's Bureau of Transportation Statistics. The 2017 CFS is the sixth survey in the program that began in 1993. The CFS is a shipper survey of approximately 100,000 establishments from the industries of mining, manufacturing, wholesale trade, auxiliaries (i.e. warehouses and distribution centers), and select retail and service trade industries that ship commodities. Data requested by the CFS includes the type of commodities shipped, their origin and destination, their value and weight, and mode(s) of transport. The CFS provides a comprehensive multimodal picture of national freight flows and represents the only publicly available source of data for the highway mode. Results from the CFS are used to analyze trends in the movement of goods, mapping spatial patterns of commodity and vehicle flows, forecasting demands for the movement of goods, and for guiding management and investment decisions on transportation infrastructure.

[1]The figures are preliminary from 2017, a final report is scheduled for release in July 2020.

Figure 5.9 Commodity Flow Survey 2017 CFS Preliminary Data Graphs (Tons – Thousands)



Source: U.S. Census Bureau, Economic Census

Additional Interest Report

A recent report by the WorldACD, the largest air cargo market database indicates that the *"first half of 2019 ended with a month of June showing a worldwide decrease of almost 9% in air cargo transported, causing a further widening of the gap with 2018. Combined with a YoY yield decrease of 6.3% in USD, the airlines suffered a YoY revenue decrease of almost 15% in June. Only High Tech (+3.7%), Pharmaceuticals (+5.3%), Flowers (+4.6%) and Fish/Seafood (+4.5%) remained unaffected.*

The further we get into 2019, the poorer the results: the second quarter contributed most to the sharp reversal of air cargo's fortunes this year compared with 2018. Last month, we made the comparison with the first part of 2017, since that could give a more 'realistic' view, given the extraordinary growth in 2018, and also – to be honest – to report some good news as well. This time around, that will no longer work, as the comparison between H1-2019 and H1-2017 now shows a slight decrease as well (-0.6% worldwide, with North America the exception among the larger regions, with an outbound weight growth of 2%).

So, what can we say about H1-2019 vs H1-2018? The total weight reported fell by 4.8%. The three largest areas fared worst: Asia Pacific -5.6%, North America -5.5%, Europe -5.3%.

Did the trade war between China and the USA have an effect on air cargo between the two countries in H1-2019 compared to H1-2018? Our figures would suggest that was not the case, business between the two 'supermarkets' is not worse off than the air cargo business elsewhere. Both volume and revenue development from China to the USA were completely in line with the drop in China's total exports by air. From the US to China the picture was the same for overall cargo sales, but with one important difference: the volume drop to China was twice as big as the general volume drop from the USA. In both directions, most carriers based in North America did markedly better than most of their Northeast Asian and Chinese counterparts."

The previous article is included in this document to indicate a short-range report on air freight worldwide. An analysis of top freight airports did not list the Midland International Air and Space Port in the top in the top 140 air cargo landing locations by weight. The source of this data is the Federal Aviation Administration's Air Carrier Activity Information System.

The reader should be aware that the above Figure 5.2 is a national trend which may not be entirely indicative of what is occurring in the Permian Basin MPO area. However, truck travel and freight movement have increased exponentially with the growth of the oil and gas industry.

5.3.10 Recommendations for Freight Movement

Key recommendations related to freight movement within the MAB include:

- Continue to work with planning partners to make corridor-wide system decisions.
- Educate the public on the importance of freight to the region, including elected officials, stakeholders, and the general public.

- Establish a protocol for a functioning regional Freight Advisory Committee.
- Prioritize projects designed to improve freight mobility and eliminate freight bottlenecks using current data and the MPO's project scoring criteria.
- Identify areas for future truck parking and rest areas
- Work with TxDOT to expand the use of Intelligent Transportation Systems (ITS), technology, and innovation to improve the flow of freight.
- Facilitate the sharing of information, best practices, and training among local emergency response agencies to improve Traffic Incident Management.
- Work with governments and the private sector to mitigate issues with at-grade crossings.

Freight Funding Strategies

The FAST Act provides updated federal guidance for transportation funding, including freight planning and investment. The FAST Act requires the development of a National Freight Strategic Plan, which includes monitoring the conditions and performance of the national freight system. The following are examples of Federal Grant and Loan Programs which are included in the FAST Act:

- BUILD Discretionary Grants
- Transportation Infrastructure Finance and Innovation Act (TIFIA)
- Airport Improvement Program (AIP)

6.1 Congestion and Congestion Related Issues

From the FHWA Office of Operations definitions "Congestion is relatively easy to recognize—roads filled with cars, trucks, and buses; sidewalks filled with pedestrians. The definitions of the term *congestion* mention such words as "clog," "impede," and "excessive fullness." For anyone who has ever sat in congested traffic, those words should sound familiar. In the transportation realm, congestion usually relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or "free flow" speeds. Congestion often means stopped or stop-and-go traffic. The rest of this chapter is devoted to describing congestion and how the MPO and others measure it, as well as its causes and consequences."

There are many variables that come into play when considering how congestion occurs, furthermore congestion can be mild to extreme depending on the duration and the location. As an example, traffic counts on Loop 635 in Dallas or I-10 in San Antonio are vastly greater than the largest of counts completed in 2018 in the Permian Basin MPO. Thus, an event occurring that causes congestion in the two other locations would affect many more people and would likely take longer to clear. That is not to say that congestion doesn't occur in the Permian Basin MPO region. It does, its typically less intense but still economically unproductive and perhaps costly. FHWA lists the following sources of congestion and places each into three categories as follows:

Category 1 — Traffic-Influencing Events

1. **Traffic Incidents –** These events disrupt the normal flow of traffic, usually by physical impedance in the travel lanes. Events such as vehicular crashes, breakdowns, and debris in travel lanes are the most common form of incidents. In addition to blocking travel lanes physically, events that occur on the shoulder or roadside can also influence traffic flow by distracting drivers, leading to changes in driver behavior and ultimately degrading the quality of traffic flow. Even incidents off the roadway (a fire in a building next to a highway) can be considered traffic incidents if they affect travel in the travel lanes.

2. **Work Zones –** Construction activities on the roadway that result in physical changes to the highway environment. These changes may include a reduction in the number or width of travel lanes, lane "shifts," lane diversions, reduction, or elimination of shoulders, and even temporary roadway closures. Delays caused by work zones have been cited by travelers as one of the most frustrating conditions they encounter on trips.

3. **Weather –** Environmental conditions can lead to changes in driver behavior that affect traffic flow. Due to reduced visibility, drivers will usually lower their speeds and increase their headways when precipitation, bright sunlight on the horizon, fog, or smoke are present. Wet, snowy, or icy roadway surface conditions will also lead to the same effect even after precipitation has ended.

Category 2 — Traffic Demand

1. **Fluctuations in Normal Traffic –** Day-to-day variability in demand leads to some days with higher traffic volumes than others. Varying demand volumes superimposed on a system with fixed capacity also results in variable (i.e., unreliable) travel times, even without any Category 1 events occurring.

2. **Special Events –** Special case of demand fluctuations where traffic flow in the vicinity of the event will be radically different from "typical" patterns. Special events occasionally cause "surges" in traffic demand that overwhelm the system.

Category 3 — Physical Highway Features

1. **Traffic Control Devices –** Intermittent disruption of traffic flow by control devices such as railroad grade crossings and poorly timed signals also contribute to congestion and travel time variability.

2. **Physical Bottlenecks ("Capacity") –** Transportation engineers have long studied and addressed the physical ***capacity*** of roadways—this term applies to the maximum amount of traffic capable of being handled by a given highway section. Capacity is determined by a number of factors: the number and width of lanes and shoulders; merge areas at interchanges; and roadway alignment (grades and curves). Toll booths may also be thought of as a special case of bottlenecks because they restrict the physical flow of traffic. There is also a wild card in the mix of what determines capacity—driver behavior. Research has shown that drivers familiar with routinely congested roadways space themselves closer together than drivers on less congested roadways. This leads to an increase in the amount of traffic that can be handled.

6.1.1 Implementation and Monitoring

In order to carry out the requirements set forth by the federal transportation regulations, the Permian Basin MPO collaborates with its regional stakeholders to implement projects and evaluate and monitor several aspects of the transportation system. Two significant processes that contribute to the successful development and implementation of projects, as well as evaluating and monitoring the resulting outcomes of those investments, are the Congestion Management Process (CMP) and Performance Based Planning. Both processes are data driven and require substantial coordination efforts. An overview of each process is provided in the MTP. This Chapter contains a summary of the CMP and Chapter 7 discusses Performance Based Planning.

In FY 2017, TxDOT completed a transportation project to reverse the ramps along the south side of the SH 191 corridor at the existing Billy Hext Road, Faudree Road and Yukon Road (future) interchanges. The MPO requested before and after traffic counts from the City of Odessa. These counts were conducted in March 2016 and again in August 2018. The main reason for the ramp reversals was to add stacking distance along the frontage road, to provide better access to business locations and to reduce the amount of traffic congestion at the intersections thereby improving system reliability in these locations.

The data for the SH 191 at Faudree Road intersection in 2016 indicates 2,561 total vehicles in the P.M. peak period. The performance of the SH 191 corridor was the main factor reviewed by the MPO staff in consultation with the City of Odessa. The majority of the traffic from the west (59.6%) made turning movements to the south using the right turn lanes. Thru traffic and left turns accounted for just over 28% of the traffic flow through the intersection. The thru and left turning movements have a greater impact on travel time delay than the right turns. The 2018 traffic counts at the same location and time of day were lower with a total of 2,419 vehicles in the PM peak period. Traffic counts in Odessa were generally higher in 2018 than in 2016 even though this intersection recorded less volume. The MPO attributes the reduction in traffic through this intersection from two perspectives; the ramp reversal permitted drivers to remain on the main lanes without having to travel through the intersection and, the presence of a backage road to the south handled some of the local traffic. Morning traffic counts were conducted for the AM peak period. More than 58% of the eastbound traffic turned to the south in this time period as well although the counts were marginally higher in 2018 (2,228 in 2016 and 2,268 in 2018).

The Billy Hext Road intersection reflects similar traffic movements but with overall lower traffic counts for both years. However, it should be noted that there was a 21% traffic decrease through this intersection in 2018. The point behind the comparison of traffic count was to verify within reason that the funds invested in these locations would result in improved traffic movement through these intersections. These locations may be analyzed again in the future, but it does appear that this project and the funds programmed were a good investment for the transportation network. Appendix A contains the City of Odessa documented traffic counts as described herein.

Map 6.1 2016 Interchanges on SH 191 at Faudree Rd. and at Billy Hext Rd. - *Pre ramp conversion*

Map 6.1 2017 Interchanges on SH 191 at Faudree Rd. and at Billy Hext Rd. - *Post ramp conversion*

A project was completed in the summer of 2019 by the TxDOT Odessa District involving the intersection of SH 158 at Loop 250 W in Midland. This project included the widening of an interior lane to allow for two through lanes in the southbound direction and a single right-turn-only lane to provide better access from Loop 250 onto SH 158 in the westbound direction. The District installed right turn only signage for the western lane of traffic. This improvement will be monitored as part of the CMP. Also, the Fairgrounds Road overpass was completed and opened for traffic in early 2019. This grade separation will also be monitored to analyze safety and congestion. As other projects from the approved TIP are constructed, the MPO will maintain data to evaluate the investments being made to the system.

6.2 Congestion Management Process

CMP is a systematic approach for managing congestion that provides accurate, up to date information on transportation system performance with recommended alternative strategies to mitigate congestion to meet state and local needs. Since the Permian Basin MPO is a Transportation Management Area under the authority of the Secretary of Transportation (2012), the MPO must establish and maintain a CMP as part of its operations. The Permian Basin MPO is responsible for adopting a CMP and addressing how persons and freight will move in and around the metropolitan area and to document this activity since it ties directly to system investment decisions listed in the MTP and approved by the Policy Board. The CMP uses a data-driven, performance-based approach to planning for congestion management. Using congestion management objectives established by the Policy Board as well as performance measures, the CMP provides a mechanism for ensuring that investment decisions are made with a clear focus on desired outcomes. This approach involves screening strategies using objective criteria such as travel time delay, level of service, truck travel time reliability, and travel time reliability for non-Interstate corridors. Reliance on system performance data, pre-investment decision analysis, and post investment evaluation.

The FHWA's Urban Congestion Report is produced on a quarterly basis and provides the congestion and reliability status in 52 of the largest metropolitan areas in the U.S. Three specific data sets are used to convey this information: Congested Hours, Travel Time Index, and Planning Time Index.

They are defined as follows:

- **Congested Hours -** Average number of hours during specified time periods in which road sections are congested (speeds less than 90 percent of free-flow speed).
- **Travel Time Index (TTI) -** Ratio of peak-period travel time to the free-flow travel time. This is computed for the AM peak period (6:00 AM to 9:00 AM) and PM peak period (4:00 PM to 7:00 PM) on weekdays.
- **Planning Time Index (PTI) -** Ratio of the 95th percentile travel time to the free-flow travel time. A PTI of 1.60 indicates a 20-minute free-flow trip takes more than 32 minutes (20 × 1.60) one day per month. (computed during the AM and PM peak periods)

The CMP is a planning tool used by the Permian Basin MPO to analyze the transportation system, as well as plan and implement travel time reduction and operational management strategies to reduce or minimize congestion. The purpose of the CMP is to:

- Manage or reduce the existing congestion
- Efficiently utilize existing transportation facilities and funding
- Maximize the mobility of persons and goods
- Keep future congestion problems from occurring

The CMP goals are supported in the *Forward 45* MTP, which emphasizes on-system facilities managed by TxDOT to improve people and freight movement in and through the region. Other emphasis areas include a multi-modal transportation system with increased bus service, as well as bicycling and walking facilities. Among the priorities shown in Chapter 9, Project Selection/Projects of the *Forward 45* Plan are to reduce crashes and to minimize traffic congestion. Crashes are the first listed traffic influencing event. In April 2019, a senior representative of TxDOT testified in front of the Texas House Committees on Transportation and Energy Resources that the Permian Basin as a region contains approximately 2% of Texas' population but experiences 10% of the State's traffic fatalities. This testimony may be heard at www.house.state.tx.us/video-audio/committee-broadcasts/. The Permian Basin Region includes over 22 counties; however, they are all rural and the majority of the population and the crashes are occurring in the Midland Odessa area.

The Permian Basin MPO adopted an initial CMP in 2013, the document was subsequently amended in 2014 stemming from a revision to the corridors to be considered part of the CMP monitoring network. The Policy Board adopted the following two goals as part of the process: 1) To reduce traffic delays on network freeways and arterial streets identified as having the most serious travel delays; and 2) To reduce transit travel delays on routes having serious schedule delays.

The eight steps of the CMP are:

1. **Develop CMP Goals and Objectives-** It is important to understand and state within Permian Basin MPO documents, "What is the desired outcome?" *and* "What does the MPO want to achieve with its CMP efforts?" It may not be feasible or desirable to eliminate all congestion, and therefore it is important to define objectives for congestion management that achieve the desired outcome.

2. **Define the Congestion Monitoring Network-** This process involves answering the question, "Which roadways will be monitored for current and future congestion? and involves defining both the metropolitan area boundary and system elements (e.g. freeways, major arterials, transit routes) that will be analyzed in the CMP.

3. **Develop Performance Measures-** The CMP will address, ''How does Permian Basin MPO define and measure congestion?" This process involves developing performance measures that will be used to measure congestion on both a regional and local scale. These performance measures should relate to, and support, regional objectives.

4. **Determine Data Types/Sources and Collect Data/Establish Baseline Database-** The CMP will consider numerous types of data as well as data sources including crash data (frequency and duration), travel time data, intersection and corridor congestion data, Bluetooth data, total vehicle and vehicle classification data. After performance measures are defined, data should be collected and analyzed to determine, "How does the transportation system perform?" Data collection may be on-going and involve a wide range of data sources and partners.

5. **Identify Congestion Problems and Needs-** Using data analysis techniques, results from public workshops, and staff and Technical Advisory Committee (TAC) input, the CMP should address the question, "What congestion problems are present or anticipated in the region?"

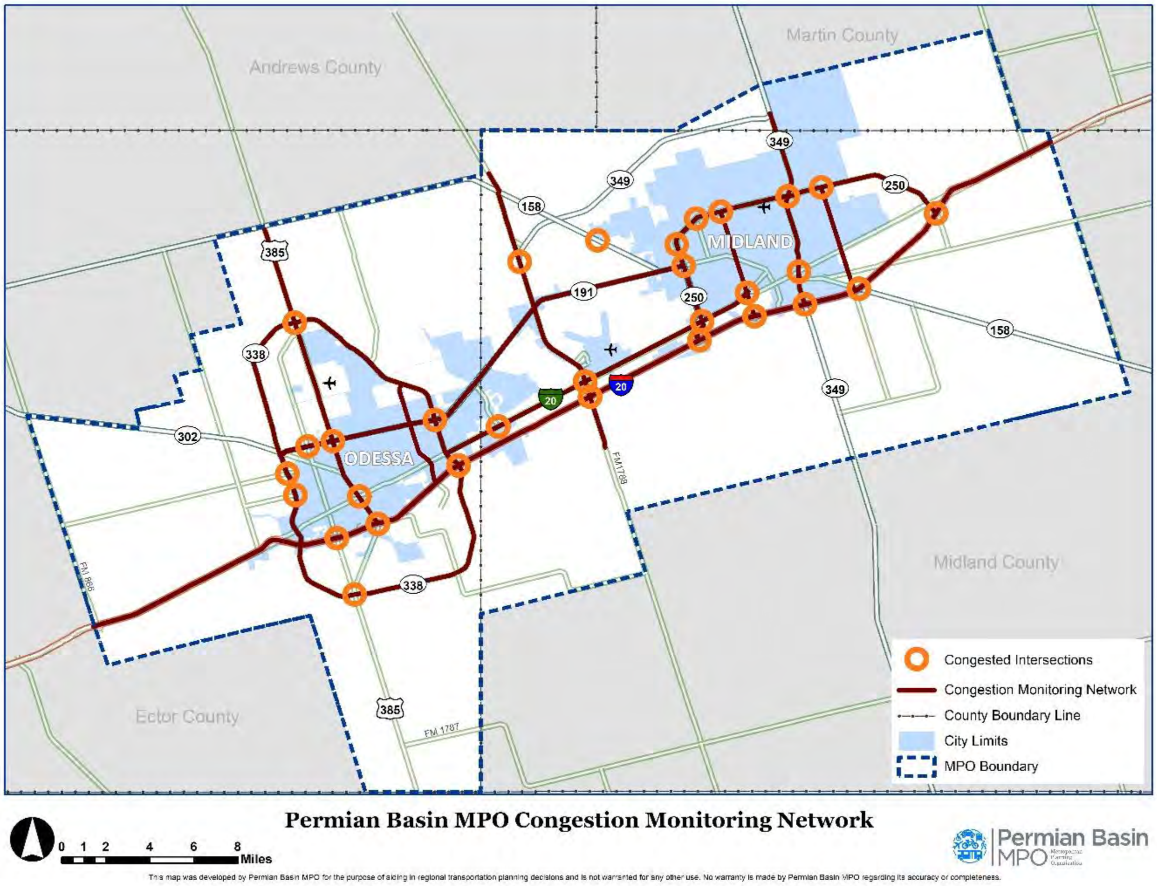
6. **Identify and Assess Strategies-** Working together with its partners, the CMP should address the question, "What strategies or best practices may be incorporated to mitigate congestion?" This action involves identifying and assessing potential strategies, including project selection.

7. **Program and Implementation Strategies-** This process involves answering the question, "How and when will solutions be implemented?" It typically includes strategies and project selection in the MTP, determining funding sources, prioritizing strategies, allocating funding in the TIP, and ultimately, implementing the adopted strategies.

8. **Evaluate Strategy Effectiveness –** Finally, efforts should be undertaken to assess, "What have we learned about implemented strategies?" This action may be tied closely to monitoring system performance under Action 4 and is designed to inform future decision making about the effectiveness of transportation strategies.

The Permian Basin MPO followed the eight steps when developing its CMP. One result of Step 2 is the CMP monitoring network, which is shown in Map 6.3. The CMP monitoring network is comprised of on-system road segments that are either currently documented as being congested or may become congested in the future. As within the entire CMP, the monitoring network is reviewed periodically and updated as appropriate.

Map 6.3 CMP Monitoring Network



Data and Data Management

As part of the FAST Act, the MPO was required to address System Performance and System Reliability, these are otherwise known as PM3. On June 21, 2018, TxDOT officially adopted three targets for System Performance Measures as shown below:

System Performance Measures (PM3):

1. Percentage of person-miles traveled on the Interstate System rated “reliable”
2. Percentage of person-miles traveled on the Non-Interstate National Highway System rated “reliable”
3. Percentage of truck travel time on the Interstate System rated as “reliable”

The FAST Act required each MPO to adopt the PM3 System Performance targets established by TxDOT or adopt their own regional targets within 180 days of TxDOT adoption. The MPO staff and Technical Advisory Committee reviewed the TxDOT targets for system reliability on the Interstate Highway System and the Non-Interstate National Highway System facilities and recommended that the Permian Basin MPO adopt the TxDOT targets in its planning and programming decisions. The Policy Board approved a Resolution supporting the PM3 measures in November 2018.

These are the measures that the MPO applied when scoring projects proposed in the MTP's Priority Projects over the life of the plan. The Permian Basin MPO works with data from numerous sources to analyze congestion. The data sets utilized to determine reliability included the National Performance Management Research Data Set (NPMRDS), and the Texas A&M Transportation Institute's Congestion Management Process Assessment Tool (COMPAT). These data sets permit MPOs and states to identify performance measure issues, especially locations where delay and reduced system reliability are occurring. The data comes from vehicles and vehicle travel as captured through blue tooth technology; the data is acquired by the FHWA. It is measured using longitude and latitude with road identification and direction of travel. Trips measured are passenger vehicles and freight vehicles (trucks). Once the data is collected, a travel time reliability index can be prepared using a formula. Examining the data for Interstate 20 in the Permian Basin MPO boundary indicated that typically, the travel time reliability of the corridor is 100% when compared to the State of Texas which indicated an Interstate Highway reliability index of 79.6%. This means that the I-20 corridor in the MPO area performs better than other Interstate Highway corridors throughout the state. This is not unusual since the population base and number of vehicles on the road is much larger in the Dallas-Fort Worth, San Antonio, Houston, Austin, and other large MPOs. What makes the system unreliable for short periods of time are the crashes and bridge strikes and construction that have occurred in the region in the past few years. This is a different discussion and is further elaborated on in Chapter 4, Safety.

Why is Congestion Important?

From FHWA: "The nation's local, regional, and national transportation systems play a vital role in creating access to goods and services which sustain and grow our nation's economy. Planners and economic development experts recognize that congestion is an economic development issue because it thwarts business attraction and expansion, and it reduces the quality of life for residents. Transportation system users have developed strategies to deal with increased congestion and reduced reliability. In the short term, we might change our mode or time of travel. Over the longer run, congestion might influence our decisions about where we live and work. The same holds true for businesses. These types of adjustments might reduce the impacts of congestion to us, but they still do not entirely eliminate the economic consequences for a region.

Trucking Impacts

Congestion means longer travel times and less reliable pick-up and delivery times for truck operators. To compensate, motor carriers typically add vehicles and drivers and extend their hours of operation, eventually passing the extra costs along to shippers and consumers. Research on the trucking industry has shown that shippers and carriers value transit time in the range of $25 to $200 per hour, depending on the product being carried. The cost of unexpected delay can add another 20 percent to 250 percent.[1]

[1]Federal Highway Administration, *Freight Transportation: Improvements and the Economy*; http://ops.fhwa.dot.gov/freight/freight_analysis/improve_econ/

Impacts on Businesses

Congestion increases the costs of delivering goods and services, because of the increased travel times and operating costs incurred on the transportation system. Less obviously, there may be other costs, such as:

- The costs of remaining open for longer hours to process late deliveries;
- Penalties or lost business revenue associated with missed schedules;
- Costs of spoilage for time-sensitive, perishable deliveries;
- Costs of maintaining greater inventory to cover the undependability of deliveries;
- Costs of reverting to less efficient production scheduling processes; and
- The additional costs incurred because of access to reduced markets for labor, customer, and delivery areas.

The business value of time delay and market access act together to affect the profitability and revenue potential associated with doing business in a state or region. When one area is affected by congestion more than others, the relative competitiveness of these areas also shifts. The result, then, is that businesses tend to stagnate or move out of areas with high operating costs and limited markets, while they locate and expand in areas with lower operating costs and broader market connections. The magnitude of these changes varies by industry, based on how strongly the industry's total operating cost is affected by transportation factors.

Household Impacts

Households have both financial budgets and what is termed "time budgets" that are both impacted by congestion. Households plan their activities around the available time budget as well as around their financial budgets. As vehicle operating and maintenance costs increase with rising congestion, the budget for some types of activities or expenditures decreases. The perceived "quality of life" of a neighborhood is diminished as well, when the safety, reliability and the convenience of the transportation system decreases.

Regional Impacts

Regional economies are affected by these household and business-specific impacts. Diminished cost competitiveness and market growth opportunities are tantamount to a reduced ability to retain, grow, and attract businesses. Additionally, the redistribution of business and household activity to outlying areas and the direct delay for trips that are not diverted or otherwise changed both lead to decreases in air quality, increases in public infrastructure investment requirements, and potential impacts on health and quality of life factors.[2]

[2] Weisbord, Glen, Vary, Don, and Treyz, George, *Economic Implications of Congestion*, NCHRP Report 463, Transportation research Board, 2001

Level of Travel Time Reliability (LOTTR)

From the previous passage which summarizes the consequences of congestion and ultimately of delivery of goods and services it becomes apparent that the MPO should pay particular attention to a factor emphasized in federal regulations, that is, the Level of Travel Time Reliability (LOTTR). LOTTR is a measure or metric utilized to analyze transportation system reliability as measured by travel time. The data is evaluated across four time periods using 15-minute data for the year. The hours of 8:00 pm to 6:00 a.m. are considered nighttime and travel time reliability is typically not as critical.

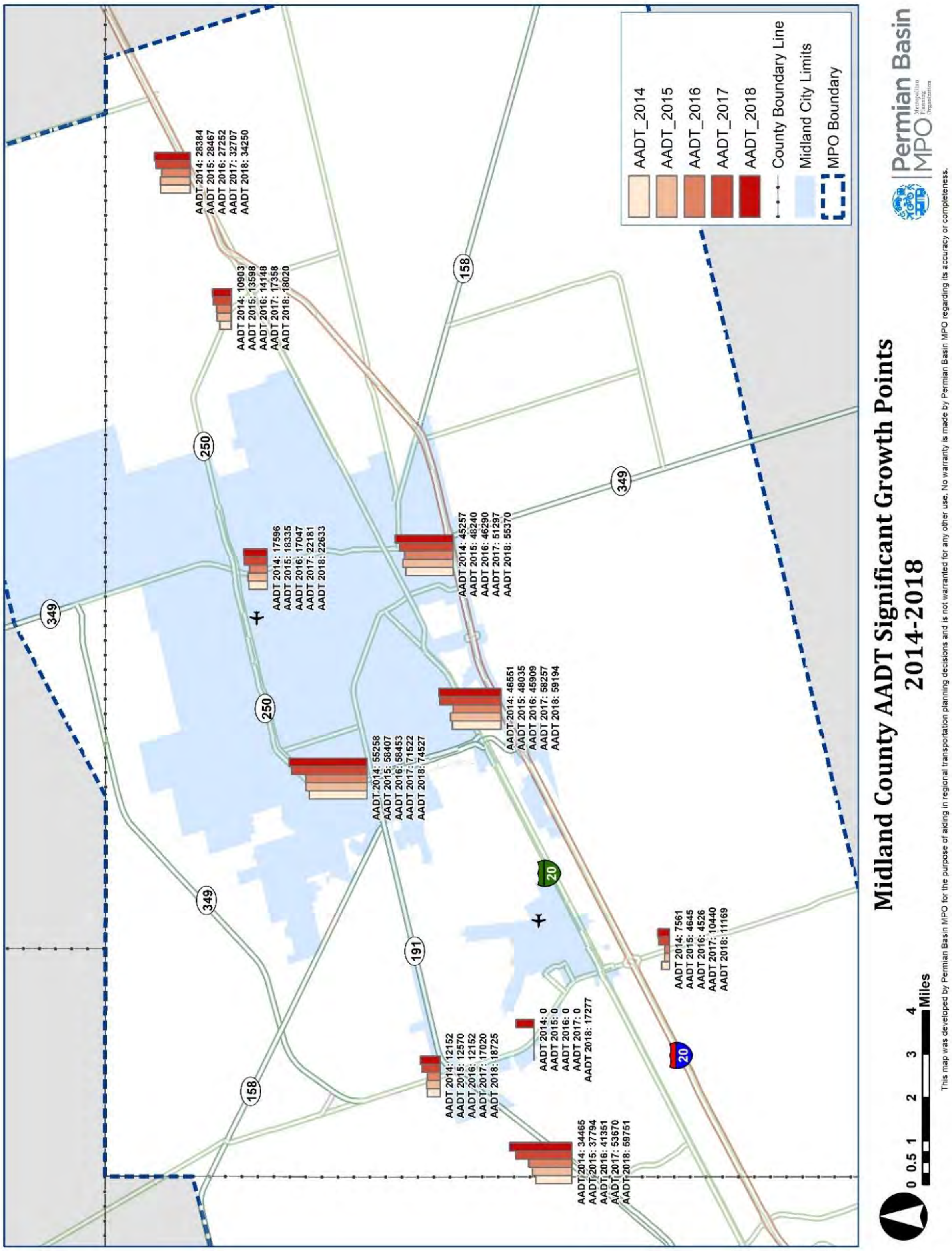
- 6am to 10am Monday-Friday (AM Peak)
- 10am to 4pm Monday-Friday (Mid-Day)
- 4pm to 8pm Monday-Friday (PM Peak)
- 6am to 8pm Saturday and Sunday (Weekend)

Source: Texas A&M Transportation Institute

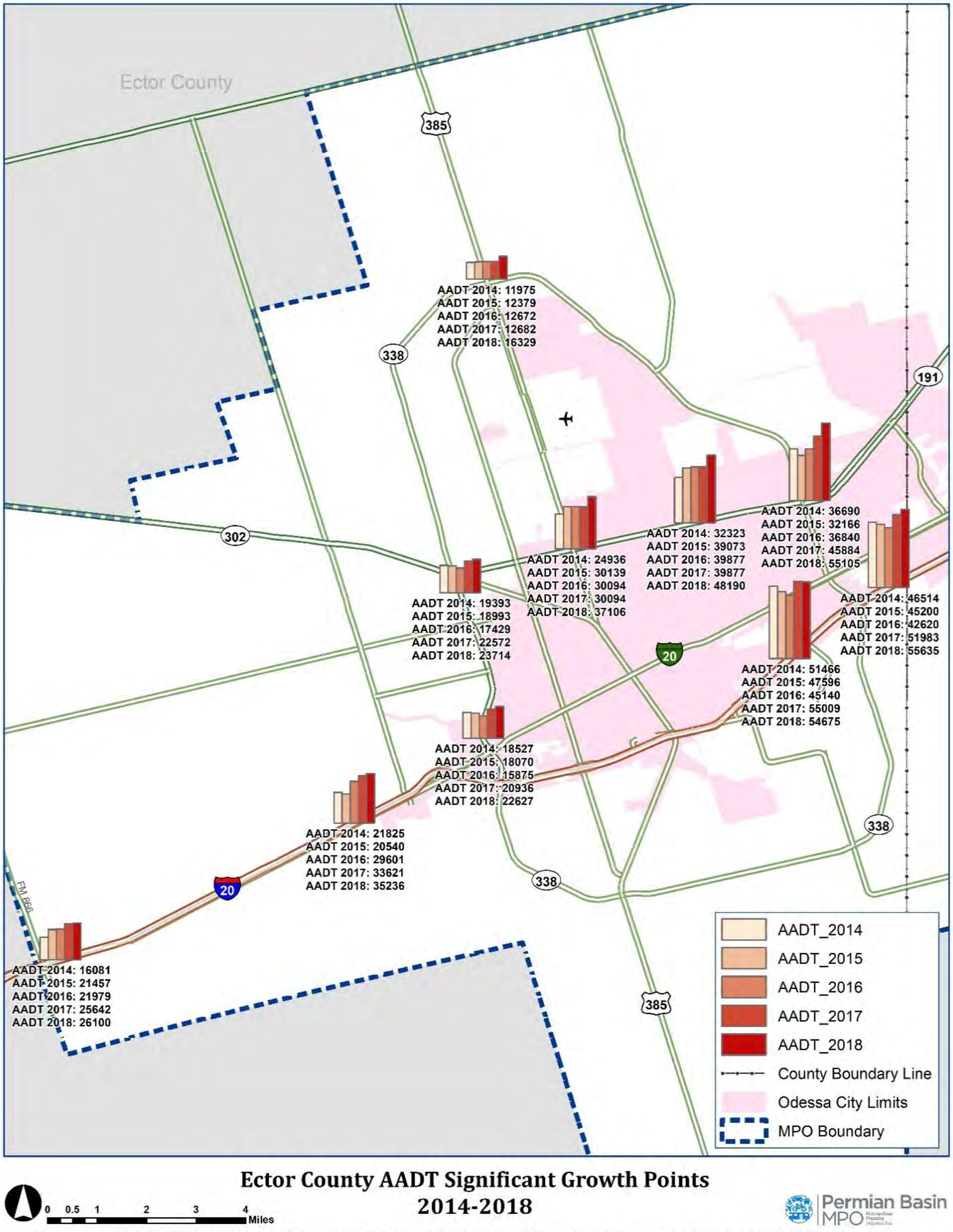
6.2.1 Data Monitoring

In order to carry out the requirements set forth by the federal transportation regulations tied to congestion and system reliability (PM3), the Permian Basin MPO collaborates with its regional stakeholders to evaluate and monitor aspects of the transportation system that affect reliability. Similarly, monitoring the resulting outcomes of a project's impact on the transportation system following completion will tell the story to decision makers and stakeholders about the value stemming from MPO capital investments and system reliability. These procedures are precisely what the CMP and Performance Base Planning are all about. Both processes are data driven and require substantial coordination efforts. An overview of each is provided in the *Forward 45* MTP in Chapter 1, Planning Framework, and in Chapter 7, Performance Based Planning respectively.

Map 6.2 Midland County AADT 5 Year



Map 6.3 Ector County AADT 5 Year



6.2.3 Project Selection and Monitoring

The CMP monitoring network and data monitoring combine to play vital roles in the overall project selection process. As data for road segments on the monitoring network identify where congestion occurs, and additional efforts are made to discover the root cause of the congestion, projects are developed (completely or in part) to solve the congestion problems. Following are two examples of projects developed to address specific congestion issues.

SH 191 Frontage Road in Odessa

Traffic counts, traffic patterns, and turning movements indicated that unnecessarily high volumes of traffic ere moving through the intersections of the SH 191 frontage roads at Billy Hext Road and Faudree Road. These data were obtained through count data and video data collection. After considering various strategies, in FY 2017, TxDOT completed a transportation project to reverse the ramps along the south side of the SH 191 corridor at the existing Billy Hext Road, Faudree Road and Yukon Road (future) interchanges. The MPO requested before and after traffic counts from the City of Odessa. These counts were conducted in March 2016 and again in August 2018. The main reasons for the ramp reversals were to add stacking distance along the frontage road between ramps and intersections, to provide better access to business locations and to reduce the amount of traffic congestion at the intersections. The intended overall benefit was improved system reliability in these locations.

The data for the SH 191 at Faudree Road intersection in 2016 indicates 2,561 total vehicles in the P.M. peak period. The performance of the SH 191 corridor was the main factor reviewed by the MPO staff in consultation with the City of Odessa. The majority of the traffic from the west (59.6%) made turning movements to the south using the right turn lanes. Thru traffic and left turns accounted for just over 28% of the traffic flow through the intersection. The thru and left turning movements have a greater impact on travel time delay than the right turns. The 2018 traffic counts at the same location and time of day were lower with a total of 2,419 vehicles in the PM peak period. Traffic counts in Odessa were generally higher in 2018 than in 2016 even though this intersection recorded less volume. The MPO attributes the reduction in traffic through this intersection from two perspectives; the ramp reversal permitted drivers to remain on the main lanes without having to travel through the intersection and, the presence of a backage road to the south handled some of the local traffic. Morning traffic counts were conducted for the AM peak period. More than 58% of the eastbound traffic turned to the south in this time period as well although the counts were marginally higher in 2018 (2,228 in 2016 and 2,268 in 2018).

The Billy Hext intersection reflects similar traffic movements but with overall lower traffic counts for both years. However, it should be noted that there was a 21% traffic decrease through this intersection in 2018. The point behind the comparison of traffic count was to verify within reason that the funds invested in these locations would result in improved traffic movement through these intersections. These locations will be analyzed again in the future, but it does appear that this project was a good investment for the transportation network by achieving the anticipated benefits.

SH 158 at SL 250 in Midland

A project was completed in the summer of 2019 by the TxDOT Odessa District involving the intersection of SH 158 at Loop 250 Win Midland. This project included the widening of an interior lane to allow for two through lanes in the southbound direction and a single right-turn-only lane to provide better access from Loop 250 onto SH 158 in the westbound direction. The District installed right turn only signage for the western lane of traffic. This improvement will be monitored as part of the CMP. Also, the Fairgrounds Road overpass was completed and opened for traffic in early 2019. This grade separation will also be monitored to analyze safety and congestion. As other projects from the approved TIP are constructed, the MPO will maintain data to evaluate the return of investments being made to the system.

In addition to the previously described historical projects, the CMP has led to many other projects being programmed that are intended to solve congestion problems and improve mobility. Examples of these projects include:

- Improvements in the vicinity of SH 158 and SL 250 in Midland
    - Anticipated benefits include better travel time reliability (PM3) from one facility to the other dues to lane reconfigurations, particularly in morning and afternoon weekday peak periods
- Interchanges on SL 338 at Yukon Road and SH 191 at Yukon Road in Odessa
    - Anticipated benefits include developing Yukon Road into a viable alternate route to 42nd Street (SH 191), reducing traffic volumes and congestion on 42nd Street and SL 338 in north and northeast Odessa

6.3 Recommendations for Mobility Movement

As part of the CMP, federal regulations require the periodic assessment of the effectiveness of congestion management strategies over time. Therefore, as part of this 2045 MTP, it is recommended that the MPO's CMP continue to include the following steps to continue monitoring the process: Maintain and update available congestion data for accuracy, perform updates of the CMP, seek recommendations from the TAC regarding congestion management including a subcommittee if deemed necessary.

The Permian Basin MPO continues maintain consistent data and to incorporate new and evolving data sources into the CMP. As previously mentioned, one example of data evolution and implementation is the COMPAT tool and related data sources provided by TxDOT, in cooperation with the Texas A&M Transportation Institute. While still being refined, the Permian Basin MPO has begun using COMPAT to identify and determine root causes of congestion on road segments in the metropolitan area.

7.1 FAST Act Performance Measures

A national performance-based planning requirement for federal, state, and regional agencies was established in 2012 with the Moving Ahead for Progress in the 21st Century (MAP-21) legislation, in order to tie capital investments to transportation system performance. The Fixing America's Surface Transportation (FAST) Act was enacted in 2015 and continued the performance-based planning momentum, and more specifically, performance-based transportation outcomes originally outlined in MAP-21. The US Department of Transportation (USDOT) is responsible for administering the surface transportation performance-based planning program, with rule-making oversight by the FHWA and FTA. The performance management framework is based upon seven national goals established in MAP-21 and reinforced in the FAST Act, which include:

1. Safety: To achieve a significant reduction in traffic fatalities and serious injuries on all public roads Infrastructure
2. Infrastructure Condition: To maintain the highway infrastructure asset system in a state of good repair
3. Congestion Reduction: To achieve a significant reduction in congestion on the National Highway System
4. System Reliability: To improve the efficiency of the surface transportation system
5. 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
6. Environmental Sustainability: To enhance the performance of the transportation system while protecting and enhancing the natural environment
7. 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

What are the benefits of performance management?

Two of the benefits associated with performance management include: the MPO using system information (data) to make informed decisions about system investment; the MPO achieving performance goals as written in the CMP, the MTP and other documents that address how performance may be improved.

Federal Performance Measures

Federal performance measures for both the highway and transit system have been established as part of the federal performance management initiative. For each performance measure, the Permian Basin MPO assessed the effective (starting) date of the measure, the recommended data sources, and network applicability (Interstate system, National Highway System, all public roads, etc.). The highway system performance measures are listed in Table 7.1 and apply to all MPOs and State DOTs; however, the Permian Basin MPO is in attainment for air quality therefore the environmental sustainability goal area is not applicable. The highway performance measures align with the seven national goals.

Table 7.1 FAST Act Performance Measure Summary

NATIONAL GOAL AREA	RULEMAKING CATEGORY	PERFORMANCE MEASURE
Safety	Safety	Number of Fatalities
		Rate of Fatalities
		Number of Serious Injuries
		Rate of Serious Injuries
		Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries
Infrastructure Condition	Infrastructure	Percentage of Pavements in Good Condition (Interstate)
		Percentage of Pavements in Poor Condition (Interstate)
		Percentage of Pavements in Good Condition (Non-Interstate NHS)
		Percentage of Pavements in Poor Condition (Non-Interstate NHS)
		Percentage of Bridges in Good Condition (NHS)
		Percentage of Bridges in Poor Condition (NHS)
System Reliability	System Performance	Percent of Reliable Person-Miles Traveled (Interstate)
		Percent of Reliable Person-Miles Traveled (Non-Interstate NHS)
Freight Movement & Economic Vitality	System Performance	Truck Travel Time Reliability (TTTR) for the Interstate System
Environmental Sustainability	System Performance	Total Emissions Reduction
Congestion Reduction	System Performance	Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita on the National Highway System (NHS)
		Percent of Non-Single Occupancy Vehicle (SOV) Travel

Source: Federal Highway Administration

Federal Performance Targets

Although federal performance measures are defined at the federal level, one of the key tasks for MPOs, State DOTs, and transit agencies is to establish performance targets based on the federally defined measures. Guidance is provided by USDOT regarding the development of performance targets, but it is the responsibility of each respective agency to coordinate efforts in order to establish and monitor targets over time.

Highway Targets

Highway safety targets were required for State DOTs first, MPOs were given 180 days after the State's targets were established to define their own targets. MPOs had the option to establish targets in one of two ways: 1) Agree to contribute toward the accomplishment of the State DOT target, or 2) Develop a quantifiable target for the MPO planning area. At the time this *Forward 45* MTP was developed, Safety (PM1), Infrastructure Condition including Transit Asset Management (PM2), and System Reliability (PM3) were all in place as adopted by the MPO Policy Board. The PM2 and PM3 requirements are discussed below. TxDOT established its safety targets in August 2017, highlighted by the following:

- Targets for each performance measure are based on 5-year rolling averages
- Targets are for calendar years
- Targets will be established annually, or otherwise as may be required
- States and MPOs will coordinate to establish targets

PM1 - Safety

Table 7.2 TxDOT PM1 Safety Targets – FY 2019

CATEGORY	MEASURE	TXDOT TARGET
Safety	Number of Fatalities	1,207.3 (5.10% reduction)
	Rate of Fatalities	1.114 (4.75% reduction)
	Number of Serious Injuries	2,161.2 (5,10% reduction)
	Rate of Serious Injuries	1.988 (4.75% reduction)
	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	393.5 (5.30% reduction)

Source: TxDOT

The Permian Basin MPO adopted its safety measures and targets through an approved Policy Board resolution on January 16, 2018 and subsequently on January 14, 2019 following TxDOT's release of its updated targets. It is anticipated that the MPO will continue to support TxDOT's goals to improve traffic safety in the MPO region; the Policy Board will be presented with updated TxDOT targets as they are released.

PM2 – Pavement and Bridge Condition

Table 7.3 TxDOT and MPO Road and Bridge Condition - Adoption Timeline

RULEMAKING CATEGORY	PERFORMANCE MEASURE	TXDOT TARGET DUE DATE	PBMPO TARGET DUE DATE
Infrastructure	Percentage of Pavements in Good Condition (Interstate)	May 20, 2018	November 16, 2018
	Percentage of Pavements in Poor Condition (Interstate)		
	Percentage of Pavements in Good Condition (Non-Interstate)		
	Percentage of Pavements in Poor Condition (Non-Interstate)		
	Percentage of Bridges in Good Condition (NHS)		
	Percentage of Bridges in Poor Condition (NHS)		
	Percent of Reliable Person-Miles Traveled (Interstate)		

Source: TxDOT

The PM2 road and bridge condition targets and transit asset management targets adopted by the Policy Board are shown in Table 7.4. Pavement condition for roads on the Interstate system and the Non-Interstate system on roads in the Permian Basin MPO boundary are in better condition than the state, except that Non-Interstate roads are only marginally better. It should be noted that several maintenance projects completed by the TxDOT Odessa District in FY 2018 and FY 2019 will result in higher "good condition" ratings when a future analysis of pavement condition is completed.

The Permian Basin MPO coordinated with TxDOT Odessa District, the TAC, and Policy Board and decided to support the road and bridge condition (PM2) targets established by TxDOT (the transit authority adopted standards related to PM2 for its transit fleet independently). The PM3 or system performance targets were established by the MPO based on an analysis of travel time delay using National Performance Management Research Data Set. At the time of adoption of the PM3 targets, there was relatively minimal travel time delay on the road network in the MAB. Accordingly, the MPO adopted a target of 1.50 as a truck travel time reliability index on I-20 and a travel time reliability of 90% as a target for the year 2020. Table 7.8 shows the system reliability measures and targets adopted by TxDOT and the MPO. The travel time indexes will be further reviewed by the TAC with possible amendments to the performance targets being proposed in 2020.

Table 7.4 TxDOT and MPO PM2 Targets – FY 2020 and FY 2022

TxDOT's Targets 2020

Facility Type	Good	Poor
Pavement on Interstate	n/a	n/a
PBMPO 2017	95.1%	0.0%
Pavement on Non-Interstate	52.0%	14.3%
PBMPO 2017	53.8%	16.7%

TxDOT's Targets 2022

Facility Type	Good	Poor
Pavement on Interstate	66.4%	0.3%
PBMPO 2017	95.1%	0.0%
Pavement on Non-Interstate	52.3%	14.3%
PBMPO 2017	53.8%	16.7%

TxDOT Bridge Targets 2020

Facility Type	Good	Poor
Bridge	50.58%	0.80%
PBMPO 2018	39.40%	0.00%

TxDOT Bridge Targets 2022

Facility Type	Good	Poor
Bridge	50.42%	0.80%
PBMPO 2018	39.40%	0.00%

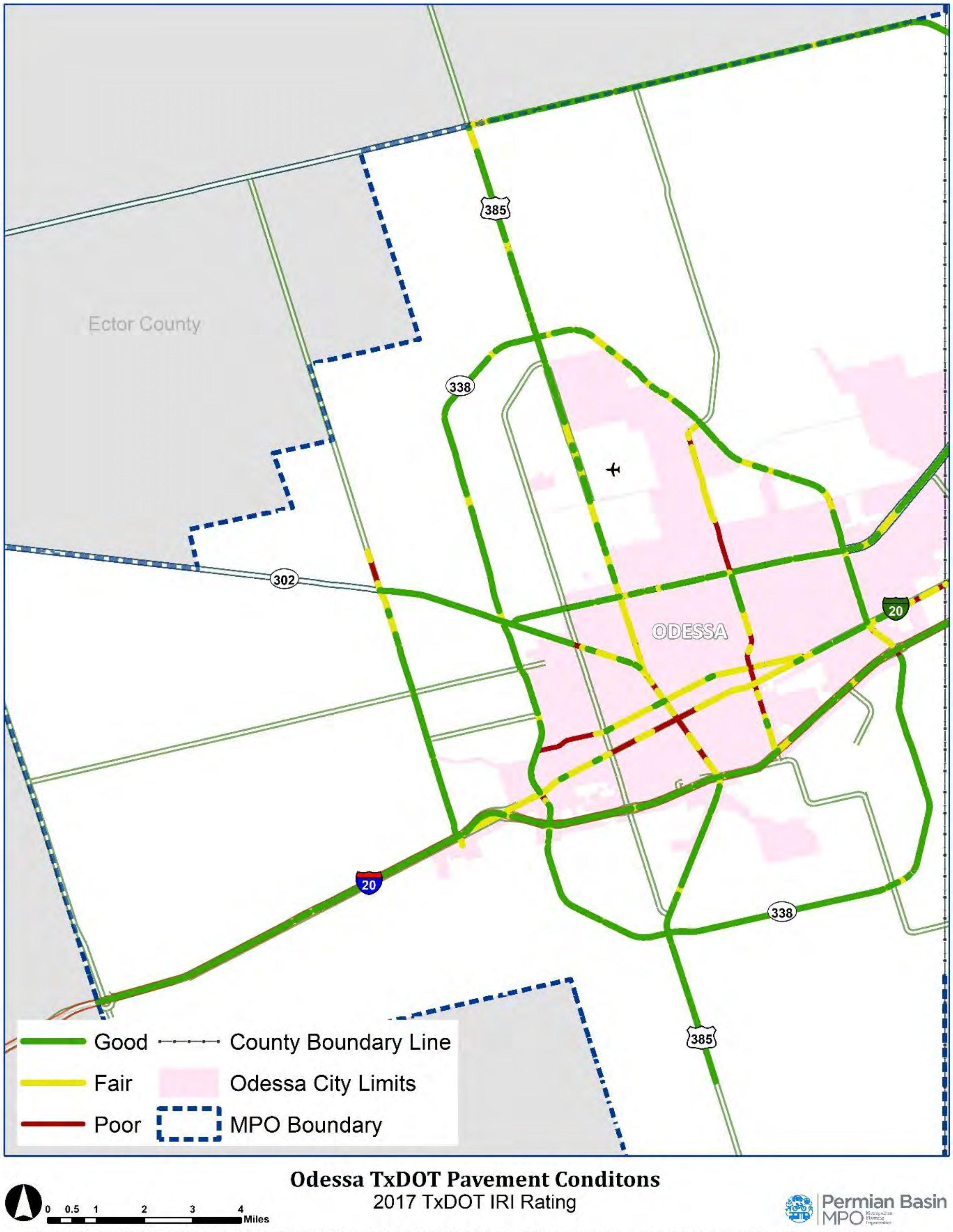
Transit Asset Management Targets

1. Reduce Overall Maintenance Costs by 20%
2. Increase Fleet Spare Ratio to at least 20%
3. Reduce Road Calls by 50%
4. Improve Safety and Security of bus stops and address ADA Compliance

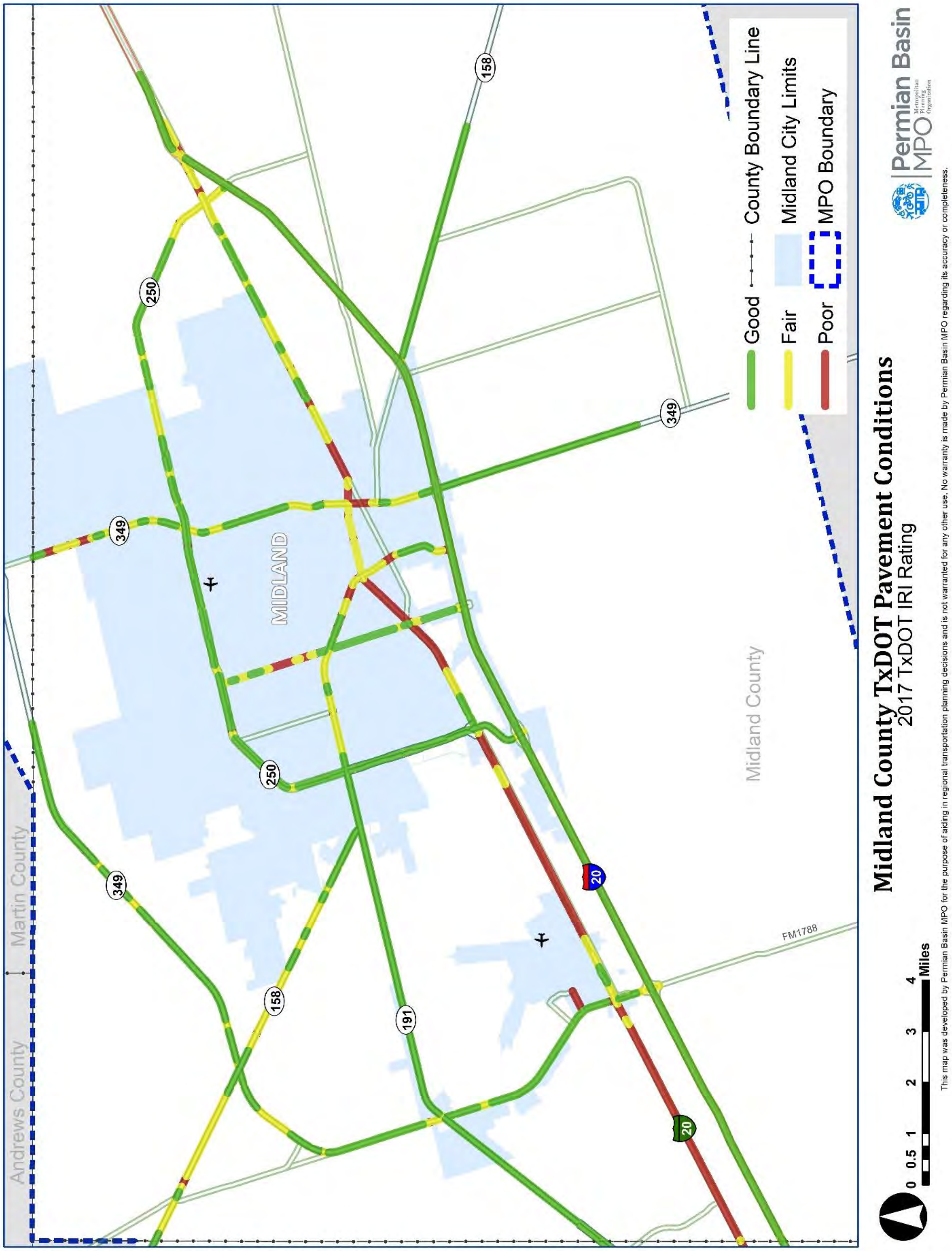
Pavement Condition

The International Roughness Index (IRI) is the indicator used to measure how smooth or rough a pavement surface feels. The lower the calculated IRI, the smoother the pavement will ride. The higher the IRI, the rougher the pavement will ride. Maps 7.1 and 7.2 below show the 2017 IRI MAB pavement conditions.

Map 7.1 Ector County Pavement Condition



Map 7.2 Midland County Pavement Condition



Bridge Condition

The volume of vehicles, especially freight carriers, on the roads in the Midland Odessa region has also increased wear to the region's bridges. Maps 7.3 and 7.4 below depict the current federal condition ratings of each bridge within the MPO's boundary. Table 7.5 describes the federal bridge condition ratings by category.

Nearly half of the region's bridges (107 out of 246) were built before 1970, and when many of the bridges approach the end of their useful life, they will require rehabilitation or reconstruction. Bridges by decade built are shown in Maps 7.5 and 7.6. In the bridge inventory system, all major structural deficiencies are considered to evaluate bridges and ratings are provided to represent the overall structural condition. This appraisal rating is based on the condition rating of superstructure, substructure, and inventory rating. In the Permian Basin MPO region, among the 246 bridges, 225 bridges (91.5%) scored above a 70% sufficiency rating. Table 7.7 shows the bridge structural condition by county.

Table 7.5 FHWA Bridge Condition Rating Categories

FHWA Condition Ratings (Deck, Superstructure, Substructure)		
Code	**Condition**	**Description**
9	Good Condition	
8	Good Condition	No problems noted
7	Good Condition	Some minor problems
6	Fair Condition	structural elements show some minor deterioration
5	Fair Condition	Structural elements are sound but may have minor section loss, cracking, spalling or scour.
4	Poor Condition	advanced section loss, deterioration, spalling or scour.
3	Poor Condition	loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.

Source: FHWA

Table 7.6 Permian Basin MPO Bridge Condition Ratings

	Good	Fair	Poor	Total Number of Bridges
	Number of Bridges	**Number of Bridges**	**Number of Bridges**	
2018	104	137	3	244
2016	117	124		241
2014	139	98		237

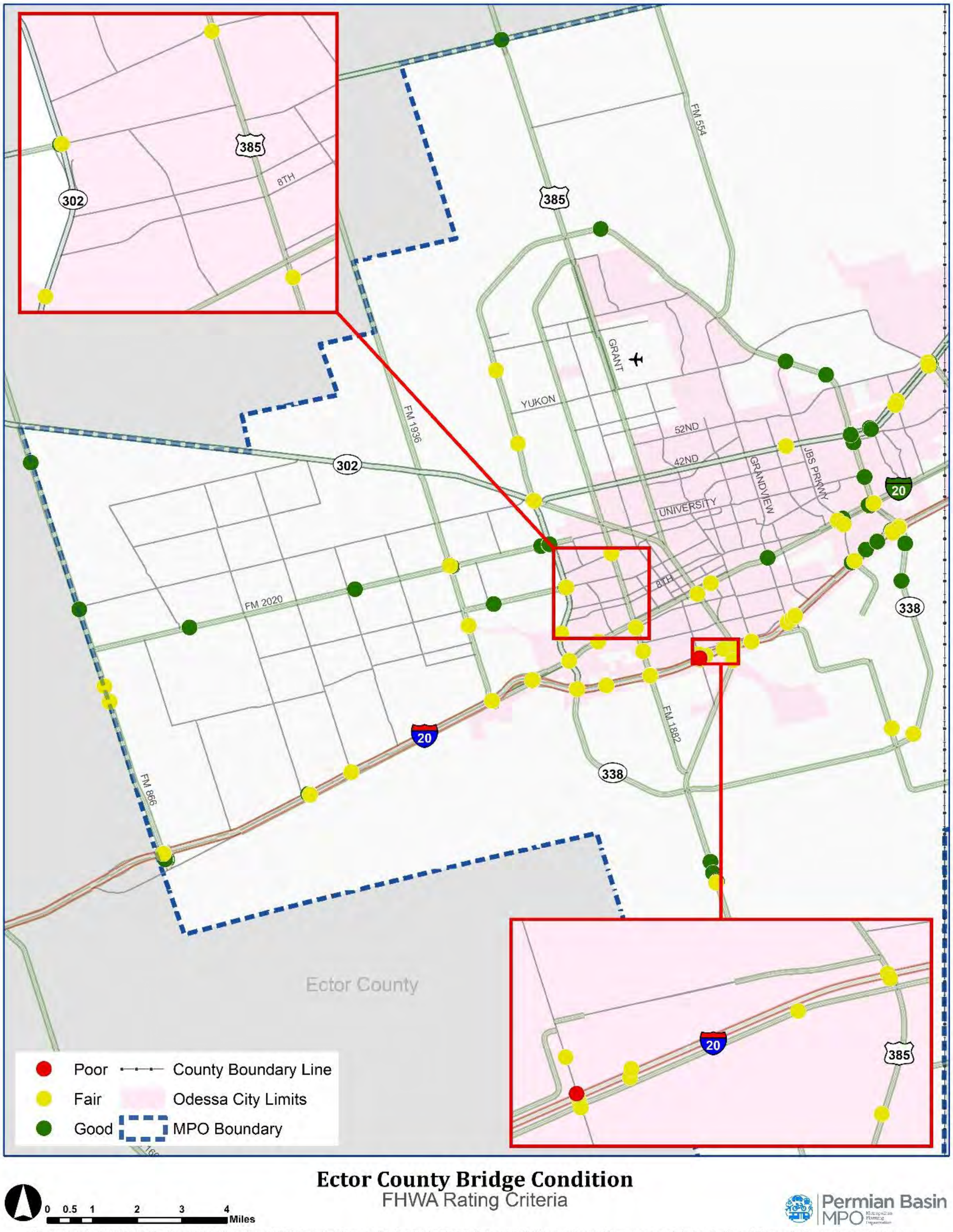
Source: Texas Department of Transportation

Table 7.7 Permian Basin MPO Bridge Condition by County

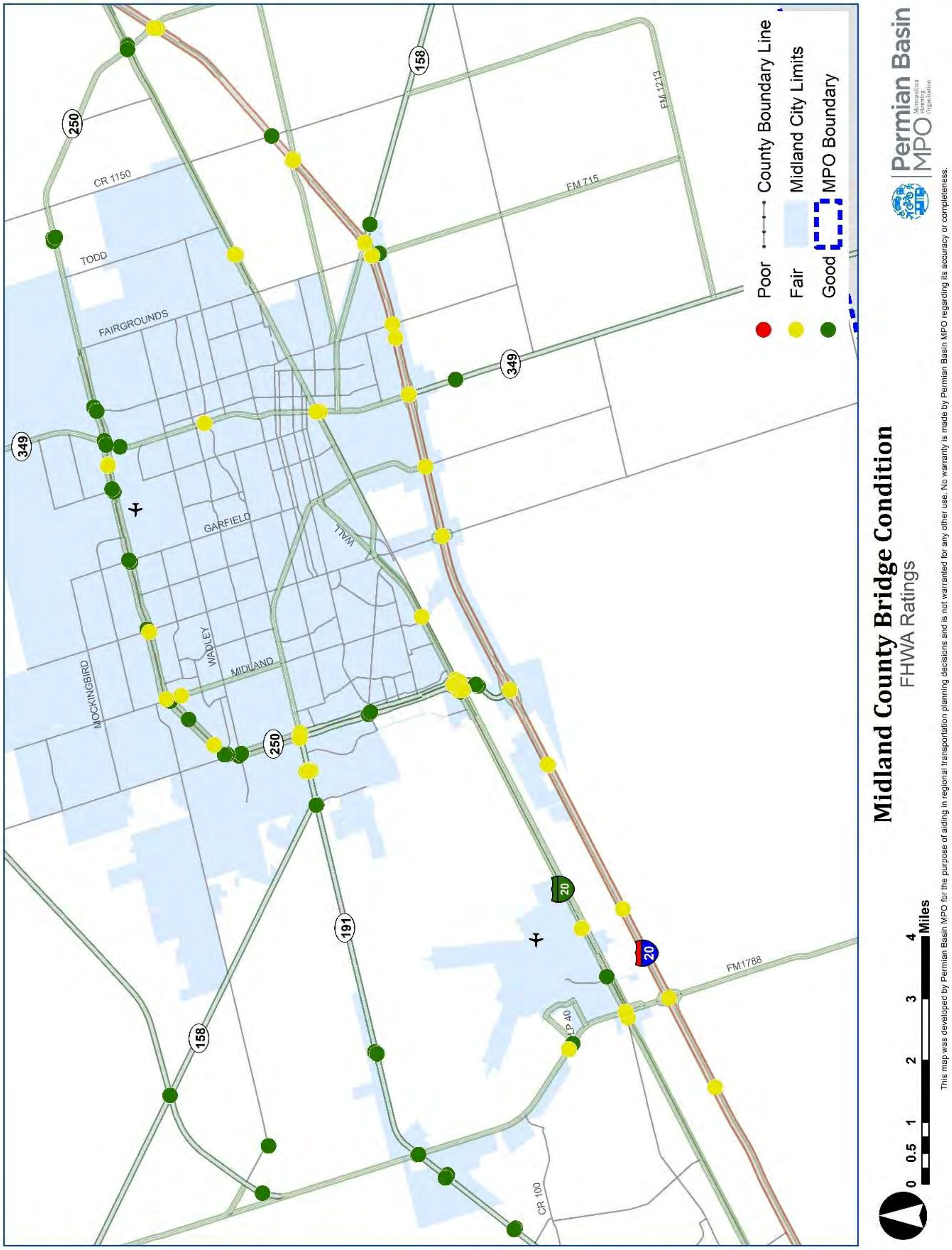
	Total Bridges	Sufficient Bridges >70%
Ector County	127	116
Martin County	0	0
Midland County	119	109
Total	246	225

Source: Texas Department of Transportation

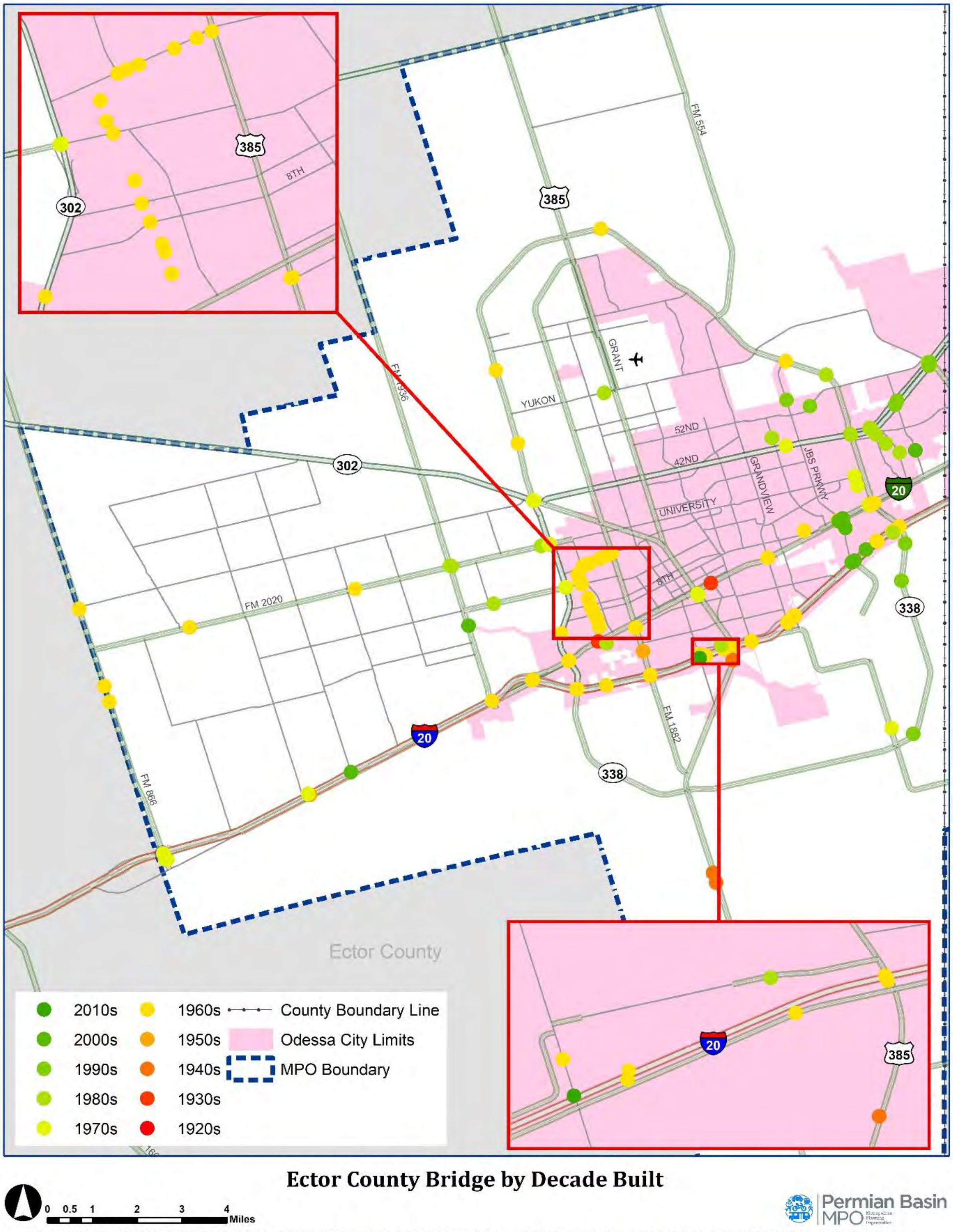
Map 7.3 Ector County Bridge Conditions



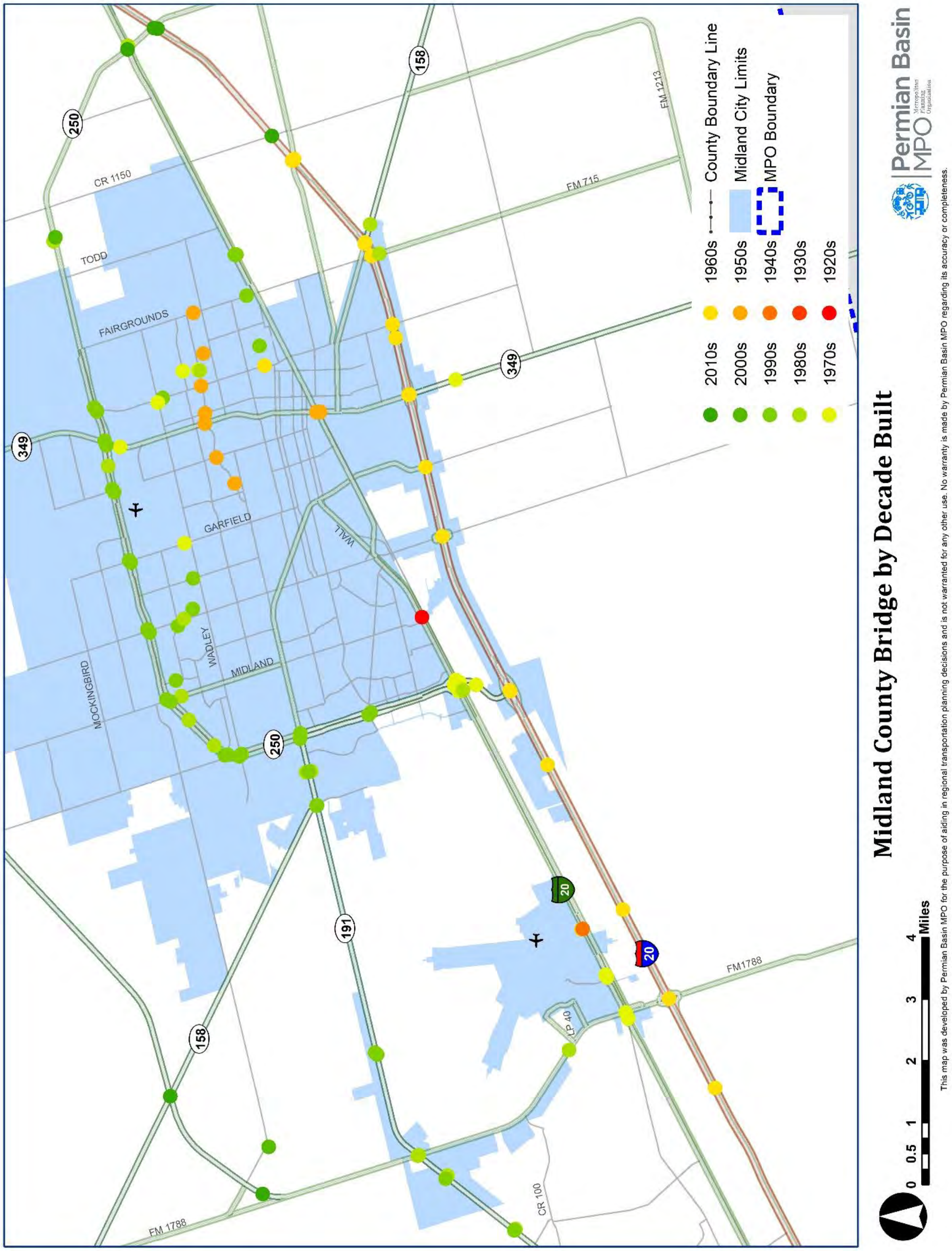
Map 7.4 Midland County Bridge Conditions



Map 7.5 Ector County Bridges Decade Built



Map 7.6 Midland County Bridges Decade Built



PM3 2 – System Performance

Table 7.8 TxDOT and MPO System Performance Measures - Adoption Timeline

System Performance (PM 3)	**Percent of Reliable Person-Miles Traveled (Interstate)**	**May 20, 2018**	**November 19, 2018**
	Percent of Reliable Person-Miles Traveled (Non-Interstate NHS)		
	Truck Travel Time Reliability (TTTR) for the Interstate System		
	Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita on the National Highway System (NHS)	May 20, 2018	November 19, 2018
	Percent of Non-Single Occupancy Vehicle (SOV) Travel		

The MPO's target for Interstate Highway travel time reliability was set at 90%, while the TxDOT target is 61.2%. For non-Interstate traffic, the travel time reliability factor set by the MPO was 90% in the year 2022; TxDOT's statewide target for the same time frame is 55.4%. These numbers are shown in Table 7.9. The MPO established a target of 1.50 for overall travel time delay in 2020. The TxDOT target for overall delay is a factor of 1.7. Travel time delay means that a trip that should take 20 minutes under free flow condition when a delay factor of 1.5 takes 30 minutes instead. In addition to the above targets, the Permian Basin MPO already indicated a baseline Truck Travel Time Index of 1.37 along I-20 in 2017 and a target of 1.5 in the year 2020. The MPO's goal is to maintain a reasonable degree of Truck Travel time delay and person travel time delay even though major growth is occurring in the region with traffic volumes expected to increase and especially truck volumes emanating from the growth of the energy sector. Further reporting on the PM3 requirement is expected in 2020 and 2022. The MPO has the authority to readopt its performance-based planning resolutions to reflect changes in performance targets as the Policy Board determines. It is anticipated that the MPO will consider reducing its established target of 1.5 in order to ensure that congestion is included in the scoring of more projects.

Table 7.9 TxDOT and MPO PM3 Travel Time Reliability Targets

Performance Measure	2017 Baseline	2020 Target	2022 Target
NHS Travel Time Reliability			
TxDOT IH Level of Travel Time Reliability	79.6%	61.2%	56.60%
PBMPO IH Level of Travel Time Reliability	100.0%	90.0%	95.00%
TxDOT Non-IH Level of Travel Time Reliability			55.4%
PBMPO Non-IH Level of Travel Time Reliability	96.9%		90.0%
TxDOT Truck Travel Time	1.50	1.70	1.79
PBMPO Truck Travel Time	1.37	1.50	1.79

Transit Asset Management (TAM) Plan

Under Federal Transit Administration requirements, Tier II transit providers are required to develop a TAM Plan that includes an implementation strategy, key activities, and list of resources, along with an outline of how the provider will monitor, update, and evaluate its TAM plan. The Permian Basin MPO coordinated with the EZ-Rider Transit provider to develop a TAM with performance measures as shown below. This task was completed in October 2018.

Table 7.10 Transit Asset Management Plan Reporting Measures

TRANSIT CATEGORY	PERFORMANCE MEASURE
Transit Asset Management (TAM) and National Transit Database (NTD) Reporting	Equipment – Percent of equipment valued > $50,000 (support, non-revenue service vehicles) that have met their Useful Life Benchmark (ULB)
	Rolling Stock – Percent of revenue vehicles surpassing their ULB by Asset Class
	Facilities – Percent of facilities with condition rating below 3.0 on FTA Transit Economic Requirements Model (TERM) Scale
	Infrastructure – Percent of guideway directional route miles with performance restrictions by class

Source: Federal Highway Administration/Federal Transit Administration

Public Transportation Agency Safety Plan

A safety plan is also required by agencies that provide public transportation services. The plan is intended to include methods for identifying and evaluating safety risks, strategies to minimize exposure to hazards and unsafe conditions, as well as a process for conducting an annual review and update of the plan. The EZ-Rider transit service anticipates completing and adopting an agency safety plan in 2020.

7.2 Intelligent Transportation Systems

A regional intelligent transportation systems (ITS) architecture is defined as "A specific, tailored framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects in a particular region. It functionally defines what pieces of the system are linked to others and what information is exchanged between them."[1]

Transportation systems management and operations strategies, including ITS, play a major role in managing congestion in the Permian Basin MPO area due to the region's unique position as a national and international supplier of crude oil and natural gas. Much of the region's congestion is non-recurring and is a result of crashes, work zones, weather conditions, and special events. ITS can be particularly effective in dealing with this type of congestion by notifying the traveling public in advance of construction zones or another road congestion thereby allowing a driver to take an alternative route.

ITS involves the application of advanced sensor, computer, electronic, and communications technologies and management strategies in an integrated manner. Aside from congestion management, ITS strategies also have the ability to provide many other benefits, including improved traveler safety, emergency management, improved transit speed and reliability, parking management, and data management. Additional uses of ITS in the Permian Basin MPO include notification of special events.

[1] U.S. Department of Transportation, FHWA, Regional ITS Architecture Guidance Document, FHWA-HOP-06-112, 2006. Available at: https://ops.fhwa.dot.gov/publications/regitsarchguide/index.htm,

7.3 Environmental Mitigation

The environment in the region includes the natural features such as the playas and draws as well as the man-made features like roads, bridges and buildings. This document does not require specific federal approvals or actions that are likely to cause a significant environmental impact and as such does not require a NEPA Environmental Impact Statement. In order to adhere to MAP-21 and FAST Act requirements, the Plan discusses potential environmental mitigation activities to be developed in consultation with Federal, State, Tribal land management, wildlife, and regulatory agencies in advance of project construction. Those activities include those aspects of 23 CFR 450, which states, in part that environmental consideration shall;

- Serve to avoid, minimize, or compensate for impacts associated with implementation of the transportation plan;

- Consider neighborhoods, homes, businesses, cultural resources, parks, recreation areas, wetlands, water sources, forests, agriculture, etc.;

- Regional scope may not necessarily address individual projects.

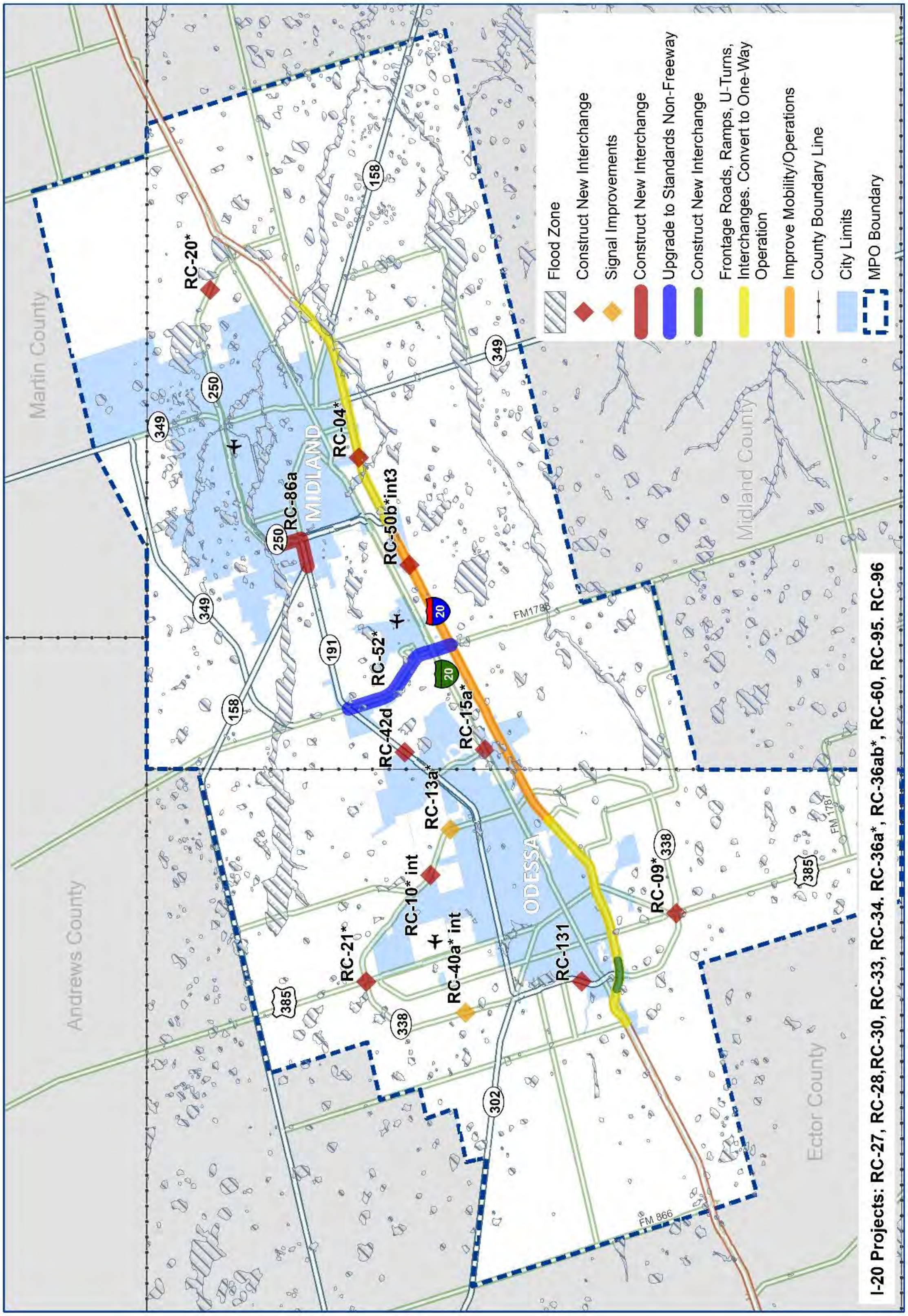
Along with local GIS resources, the Permian Basin MPO uses the U.S Environmental Protection Agency (EPA) environmental screening tool, NEPAssist, to analyze environmental factors which might impact transportation projects. Local data layers overlaid on the fiscally constrained projects for the period 2020 through 2029 were used during the selection process to discuss areas of concern. Maps 7.7 through 7.10. show flood zones, parks and school locations, and draws and lakes. Further detailed information on the NEPAssist reports for each project are included in Appendix B and a summary of that information is included below in Table 7.11.

Permian Basin MPO will seek opportunities to invite federal, state, tribal, and local resource agencies to discuss the potential impacts of transportation projects outlined in this document and throughout the planning process. This important consultation process plays a critical role in establishing a dialogue with environmental agencies and creating a foundation for continuous consultation and knowledge sharing regarding the potential impacts of transportation planning on a regional, system-wide basis. The importance of achieving balance between economic development and mobility with the desire for a high quality of life includes clean air and water, environmental preservation, and recreational opportunities. Although there are no tribal communities in the MPO boundary, projects that extend beyond the boundary may affect tribal lands. The MPO will reach out as necessary to any tribal communities for comment.

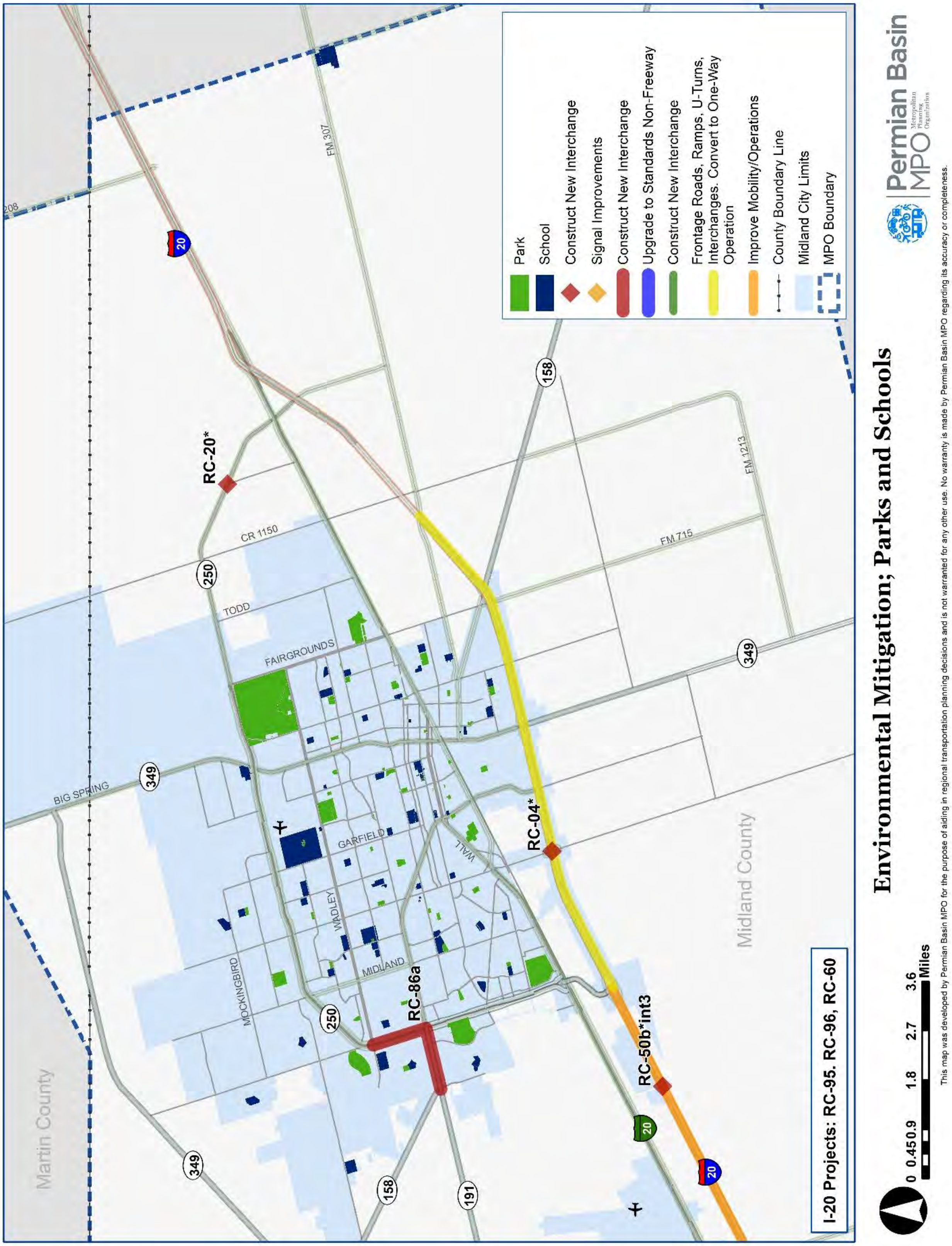
Table 7.11 NEPAssist Summary for 2020 -2029 Fiscally Constrained Projects

Project ID	RC-04	RC-10* int	RC-20	RC-21	RC-50b* int 3	RC-86 a	RC-86a	RC-36a	RC-36ab	RC-42d	RC-95	RC-40a int a	RC-33	RC-34	RC-15a	RC-09*	RC-131	RC-27	RC-28	RC-30	RC-52* a	RC-52* b	RC-60	RC-96
Ozone 8 - hr Non-Attainment Area 1997 Standard																								
Ozone 8 - hr Non-Attainment Area 2008 Standard																								
Leade 8 - hr Non-Attainment Area 2008 Standard																								
SO2 1-hr Non-Attainment Area 2010 Standard																								
PM2.5 24 hr Non-Attainment Area 2006 Standard																								
PM2.5 Annual Non-Attainment Area 2012 Standard																								
PM2.5 Annual Non-Attainment Area 2012 Standard																								
PM 10 Non-Attainment Area 1987 Standard																								
Federal Land																								
Impaired Strea,																								
Impaired Waterbody																								
Waterbody													✓			✓					✓			
Stream								✓		✓	✓		✓	✓		✓	✓		✓		✓			
Brownfields Site																								
Superfund Site									✓														✓	
Toxic Release Inventory (TRI) Site	✓							✓	✓	✓	✓		✓						✓		✓	✓	✓	✓
Water Discharger (NPDES)	✓						✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
Hazardous waste (RCRA) Facility	✓				✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
Air Emission Facility								✓	✓		✓		✓	✓					✓			✓	✓	
School						✓	✓						✓	✓									✓	✓
Airport																								
Hospital						✓	✓		✓		✓											✓		
Designated Sole Source Aquifer																								
National Register of Historic Places																								
Toxic Substances Conrol Act (TSCA) Site																								
RADInfo Site																								
Land Cession Boundary	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tribal area (lower 48 states)																								

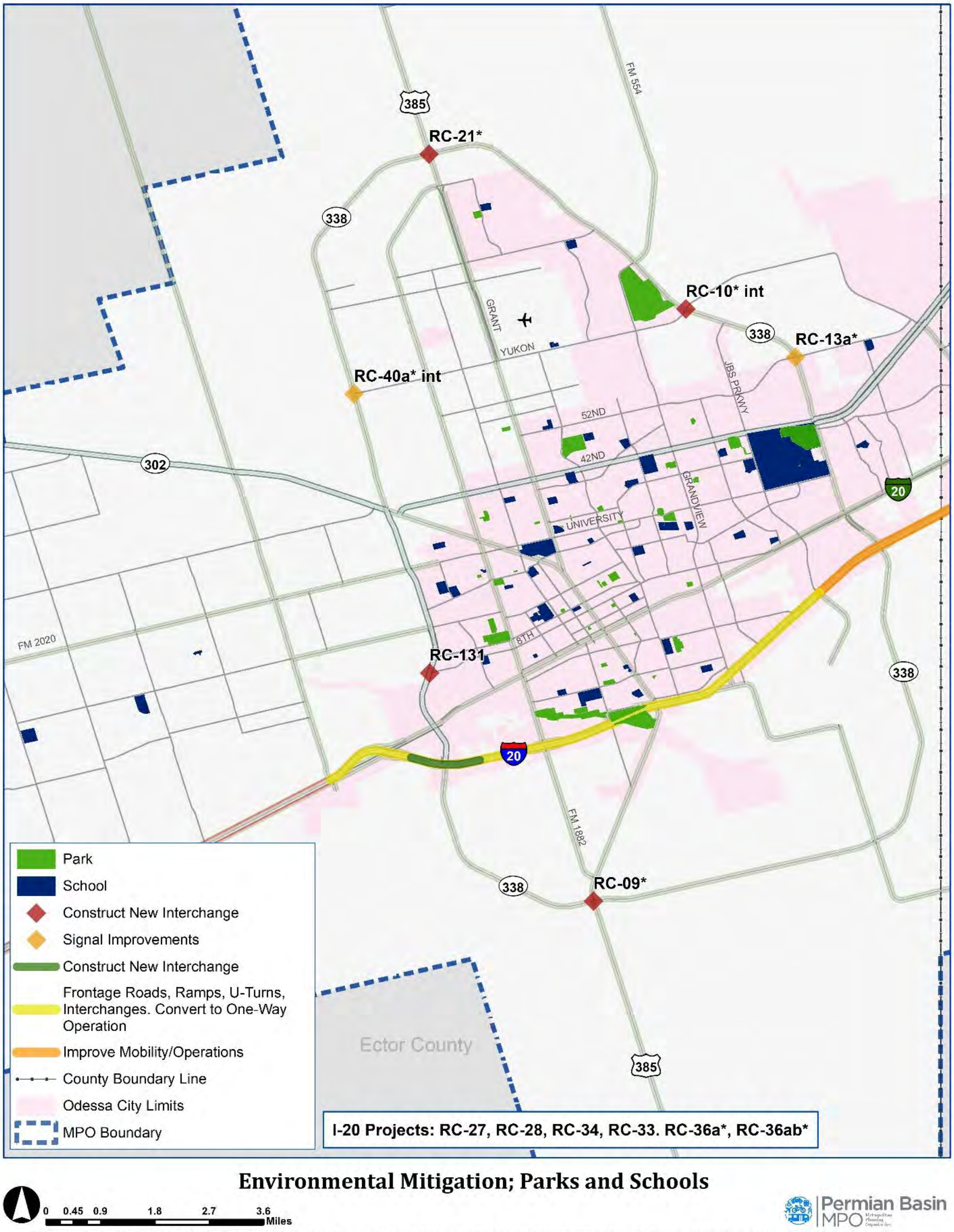
Map 7.7 Environmental Mitigation: Flood Zone



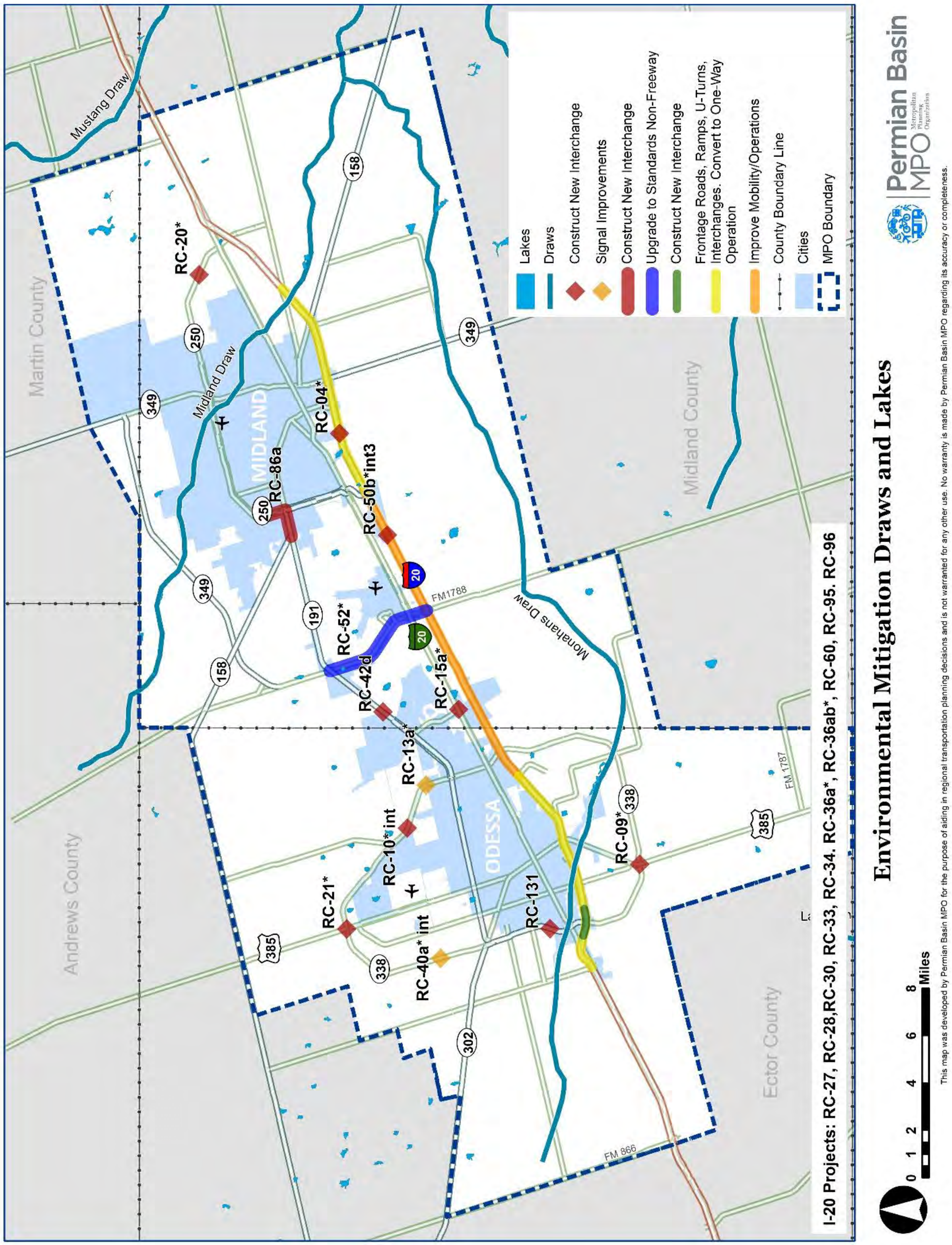
Map 7.8 Environmental Mitigation: Parks & Schools



Map 7.9 Environmental Mitigation: Parks & Schools



Map 7.10 Environmental Mitigation: Draws and Lakes



7.4 Resiliency, Stormwater, and Vulnerability

What is the definition of Resiliency?

Resiliency is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

It is FHWA's policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies and programs in order to promote preparedness and resilience; safeguard

Federal investments; and ensure the safety, reliability, and sustainability of the Nation's transportation systems. In the directive contained in Executive Order 5520, the following definitions are used:

- **Climate Change.** Climate change refers to any significant change in the measures of climate lasting for an extended period. Climate change includes major variations in temperature, precipitation, or wind patterns, among other environmental conditions, that occur over several decades or longer. Changes in climate may manifest as a rise in sea level, as well as increase the frequency and magnitude of extreme weather events now and in the future.

- **Extreme Weather Events.** Extreme weather events can include significant anomalies in temperature, precipitation and winds and can manifest as heavy precipitation and flooding, heatwaves, drought, wildfires and windstorms (including tornadoes and tropical storms). Consequences of extreme weather events can include safety concerns, damage, destruction, and/or economic loss. Climate change can also cause or influence extreme weather events. Table 2.2 indicates significant weather events in the MPO region from January 2014 – December 2018.

- **Extreme Events.** For the purposes of this directive, the term "extreme events" refers to risks

  posed by climate change and extreme weather events. The definition does not apply to other uses of the term nor include consideration of risks to the transportation system from other natural hazards, accidents, or other human induced disruptions.[1]

[1] Provisions in 23 U.S.C. §§ 119(d)(2)(B) and (C), 133(b)(2), and 503(b)(3)(B)(viii) address extreme events separately from measures to address seismic and security concerns.

- **Preparedness.** Preparedness means actions taken to plan, organize, equip, train, and exercise to build, apply, and sustain the capabilities necessary to prevent, protect against, ameliorate the effects of, respond to, and recover from climate change related damages to life, health, property, livelihoods, ecosystems, and national security.

- **Resilience.** Resilience or resiliency is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

- **Adaptation.** Adjustment in natural or human systems in anticipation of or response to a changing environment in a way that effectively uses beneficial opportunities or reduces negative effects.

FHWA is responsible for a number of matters as further outlined in the Executive Order, of particular importance to the Permian Basin MPO is that FHWA encourages MPOs to develop, prioritize, implement and evaluate risk-based and cost-effective strategies to minimize climate and extreme weather risks and protect critical infrastructure using the best available science, technology and information. Equally important to the MPO is the provision of technical assistance, research, and outreach, to encourage the development and use of transportation-specific vulnerability assessment and adaptation tools. A vulnerability assessment will be undertaken by the MPO as part of this *Forward 45* MTP and will be conducted in the first three years following plan implementation. Although resiliency in the transportation system was considered during project scoring and selection, the criteria was one of the most difficult topics to break down and score on an individual project basis. In its future planning efforts, the MPO will identify and evaluate strategies to mitigate the effects of extreme weather events in order to improve system resiliency. The MPO will conduct a goal setting exercise and performance measure as necessary to advance the Policy Board and TAC awareness of resiliency.

A more resilient transportation system can be achieved by addressing:

- **Existing Infrastructure Resilience:** As environmental risks change, the probability of unexpected failures may increase; therefore, as existing infrastructure approaches the end of its service life, decisions about replacement or abandonment should consider changing future risks.
- **New Infrastructure Resilience:** Newly constructed infrastructure should be designed and built in recognition of the best current understanding of future environmental risks.
- **System Resilience:** This is best viewed across transportation modes as some key components of system resilience are obvious (i.e. pavement and bridge condition) while others are not as readily identified, such as freight movement becoming a higher priority in local decisions and off system improvements.

7.5 Tourism

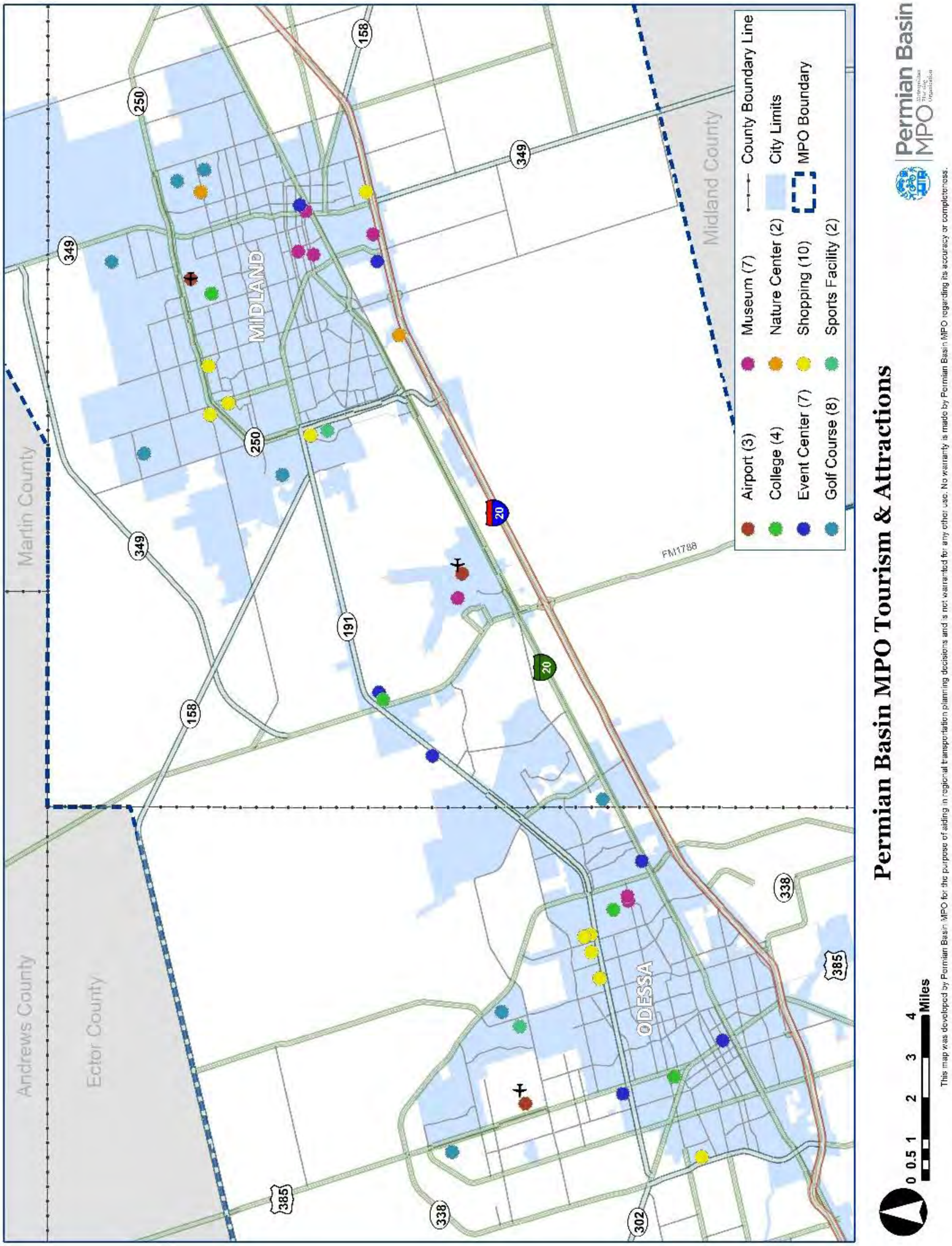
Enhance Travel and Tourism

An efficient transportation system is an integral part of the regional tourism industry. Tourism is an important regional industry, and visitors need to know they can travel through and around the region quickly and easily to reach major destinations. Tourism spending in the region totaled more than $1.075 billion in 2017 according to Dean Runyan, Associates, an economic consulting firm in Portland, Oregon. with visitors coming for professional and international sporting events, business conventions, museums, shopping, outdoor recreation, and more. A transportation system is a crucial component of facilitating travel and tourism throughout the MPO area. The MPO is committed to promoting connections between the region's major destinations and improving travel choices to support tourism through a variety of projects and programs, including but not limited to improving connections to the Midland International Air and Space Port (MAF), a busy regional and international flight facility. The MAF provides a modern landmark to welcome visitors, with an improved passenger experience and linkages to nearby attractions. The MPO has partnered with its member agencies to identify and program funds for I-20 and numerous overpasses, ramp reconfigurations and other projects to improve mobility for residents and tourists. I-20 is a heavily utilized route through Martin, Midland, and Ector counties, especially during the summer months as it serves as a primary route to access Big Bend State Park, Balmorhea State Park, tourist destinations in the two cities and other points along the corridor. This expressway is included in the TIP and the Permian Basin MPO's with work already underway in east Midland and overpasses beginning in FY 2020 and FY 2022.

For further information on community events please visit the Chambers' event calendars:

- https://www.midlandtxchamber.com/events/calendar/
- http://cca.odessachamber.com/webforms/EvtListingMainSearch.aspx?dbid2=txod&class=B

Map 7.11 Tourism & Travel Attractions



7.6 Performance Based Planning Implementation

The Permian Basin MPO implements performance measures and targets by integrating them into the regional planning framework and data monitoring. Coordination with TxDOT and stakeholders is a critical focus for the MPO. The Permian Basin MPO achieves this by gathering data, analyzing it, including it in the project selection process, and monitoring project impacts on targets. MPO staff begins the implementation by gathering the data from various sources for all of the performance targets. The technical advisory committee uses the data and information to score projects, using a project prioritization process that the MPO policy board approved. The importance of considering performance targets and potential benefits is a vital part of the project prioritization process. The technical advisory committee forwards a project list, ranked in order by points awarded through the prioritization process, to the policy board. The policy board then makes final project selection decisions, based on project scores, anticipated impacts on targets, project readiness, and available funding.

Inclusion of the performance based planning process in project analysis, prioritization, and selection provides accountability and transparency at all levels of the project selection process. It also helps provide decision makers with the best available information, with which they can select beneficial and financially feasible projects.

Examples of projects with anticipated benefits to targets include:

- Yukon Road at SL 338 interchange – safety – reduce fatalities and serious injuries
- 52nd/56th Street at SL 338 traffic signal installation – safety – reduce fatalities and serious injuries
- CR 1250 at IH 20 interchange – mobility – improve access to industrial area, freight delivery, and relieve traffic on parallel facilities (including SL 250)
- Loop 250 at CR 1150 interchange – safety-mobility
- Various road resurfacing projects – pavement – improve IRI statistics
- Safe Routes to School and Transportation Alternatives Set Aside Programs – pedestrian safety

As this is the first MTP in which implementation of performance based planning is required to be reported, it is likely that amendments to the plan may become necessary in order to include updates on the establishment of additional targets, and to report on progress made towards achieving those targets. After this process becomes more integrated into the overall transportation planning efforts of the MPO and TxDOT, it is anticipated that performance-based planning will have an even greater influence on how transportation investments are made and play a greater role in determining which projects are included in future MTPs. The MPO will continue to work with EZ-Rider to stay abreast of the condition of the transit fleet and other assets as well as the continuous “state of good repair” reporting requirement.

8.1 Transportation System Security

What is Security?

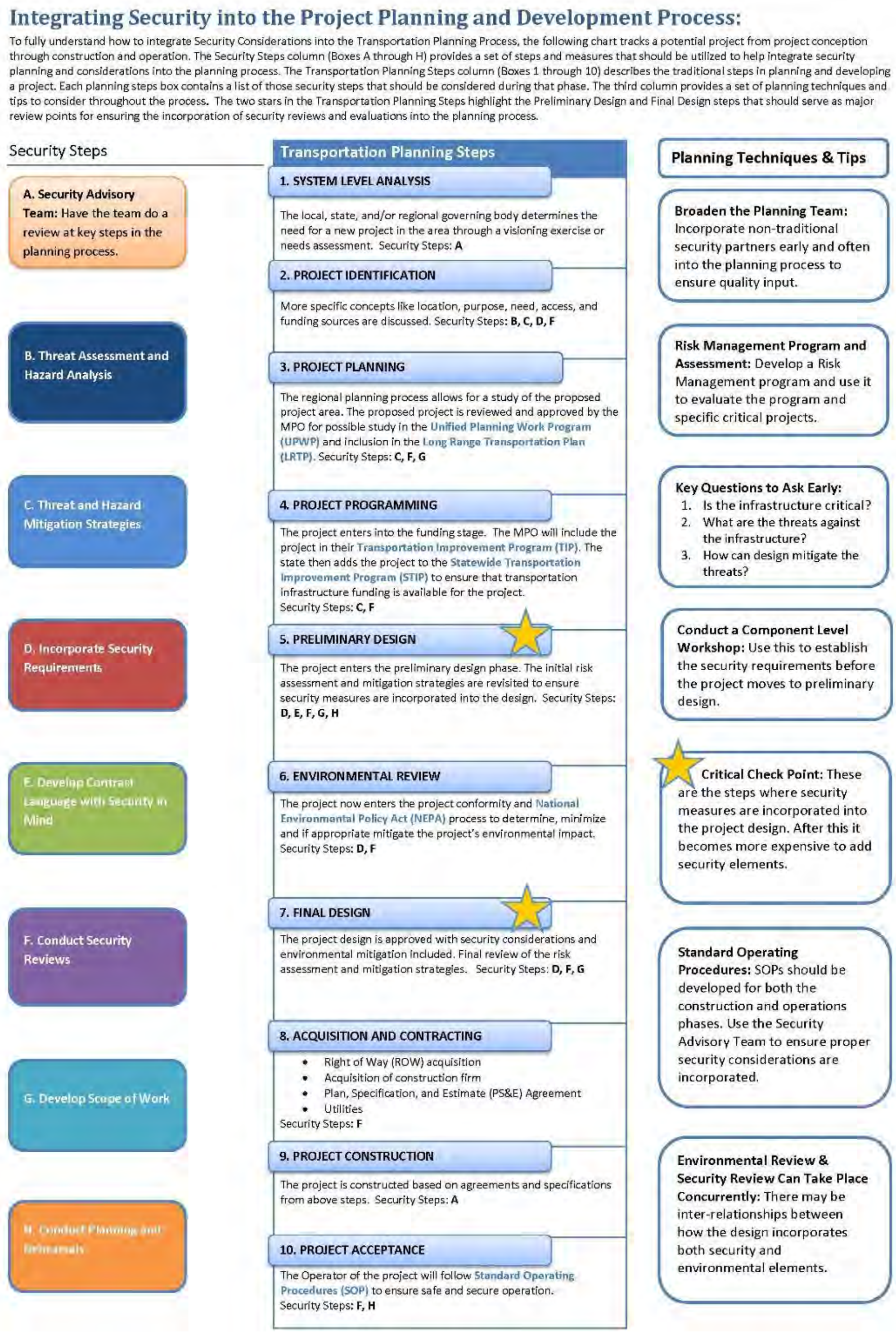
A suitable definition of security for the purpose of the MTP is: "the state of being free from danger or threat. It is the intent in this chapter to interpreted this to mean a threat of physical harm as a result of either a criminal or terroristic act.

8.1.1 Increase Security – National Perspective

From the National Infrastructure Protection Plan (NIPP) published in 2009. The overarching goal for transportation system security is to "Build a safer, more secure, and more resilient America by preventing, deterring, neutralizing, or mitigating the effects of deliberate efforts by terrorists to destroy, incapacitate, or exploit elements of our Nation's CIKR [sic: critical infrastructure and key resources] and to strengthen national preparedness, timely response, and rapid recovery of CIKR in the event of an attack, natural disaster, or other emergency." Although the term "safety" is discussed in another chapter of the *Forward 45* MTP, the terms are quite different with safety mainly involving crashes and crash rates for the multi modal system with a long-term goal of reducing such incident. Security revolves around planning, construction and other cooperative efforts to minimize damage to assets including the road system. A discussion with the Midland County Emergency Management staff included the term "soft targets", as it was explained these are water supply locations, oil tanks, and pipelines. Other targets that need security considerations are buildings, places of congregation, especially airports, rail ports and civic centers as well as 9-1-1 communication systems. An extensive network of below and above ground emergency communication structures exists in the Permian Basin and in the MPO boundary. These are often the first line of communication when people think of security issues and the challenges to the resiliency of the region's infrastructure.

Security planning is essential in the Permian Basin MPO planning area, due to its distinction as a major energy sector generator providing a large percentage of oil and gas resources for national and international use. The region is also a large urban area with important infrastructure such as roads and water storage facilities, public facilities, population and employment centers. Securing and managing incidents at these sites is addressed by a range of organizations throughout the region, including the MPO. A summary of the process and the types of agencies that become involved in incident planning and support following incidents is shown below. Figure 8.1 shows the steps involved with integrating security into the transportation planning and project development process.

Figure 8.1 FHWA Security Integration Development Process



U.S. Department of Homeland Security

The U.S. Department of Homeland Security (DHS) was established in 2002 to provide "*a safer, more secure America, which is resilient against terrorism and other potential threats*". It was created through the integration of all or part of 22 different federal departments and agencies into a unified, integrated department. Today, DHS strives to fulfill its mission of integrating multiple agencies and leveraging resources from federal, state, and local layers of government in order to protect the homeland of the United States. The national strategy is to develop a comprehensive and complementary system that does not duplicate efforts, and to coordinate the homeland security responsibilities of more than 87,000 different governmental jurisdictions at the federal, state, and local levels. www.dhs.gov/mission

When assessing risks associated with the security of the country's infrastructure, the DHS uses the formula:

***Risk* = (*Threat* X *Vulnerability* X *Consequence*)**

This formula aids in the prioritization of protecting from specific physical, cyber, or human attacks.

The DHS is primarily concerned with issues such as border security, critical infrastructure protection, emergency preparedness and response, domestic intelligence activities, biodefense, researching and implementing security technologies, the detection of nuclear and radiological materials, and the provision of transportation security. Although there are numerous entities within DHS, the agencies discussed below have a direct role in overseeing the secure movement of people, goods, aviation activities, as well as the overall safety and security of the region. The regional office of the DHS is located in the Permian Basin Regional Planning Commission office at 2910 La Force Blvd, Midland, TX 79706.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is focused on supporting citizens and first responders to ensure that the nation is coordinated at all levels to prepare for, protect against, respond to, recover from, and mitigate all hazards, including natural and manmade disasters. FEMA leads and supports the country in a risk-based, comprehensive emergency management system, and strives to reduce the loss of life and property associated with all types of catastrophes. As a sub-part of FEMA, the National Preparedness Directorate (NPD) manages the National Response Framework and the National Incident Management System (NIMS), which provide the national-level policy and template for the management of incidents. In order to receive federal preparedness assistance through grants, contracts, and other activities, states, tribes, and local organizations must adopt the principles of NIMS for emergency or incident management. www.fema.gov

Transportation Security Administration

After the tragedies of September 11, the Transportation Security Administration (TSA) was established to "*strengthen the security of the nation's transportation systems and ensure the freedom of movement for people and commerce*". Coordinating with state, regional, and local organizations, TSA oversees security efforts of highways, railroads, transit systems, ports, and airports. The largest groups of employees, and the one most visible to the public, are the Transportation Security Officers at airport checkpoints. In addition to screening passengers and their belongings, TSA officers must also screen all commercial luggage and packages for explosive and other threats before they can be placed aboard airplanes. Other layers of security screening include intelligence gathering and analysis, checking passenger manifests against watch lists, random canine team searches at airports, federal air marshals, federal flight deck officers, and additional security measures that are both visible and invisible to the public. www.tsa.gov/about-tsa

U.S. Customs and Border Protection

The U.S Customs and Border Protection (CBP) is responsible for securing the country's border at and between the official ports of entry. They facilitate the legal flow of trade and travel across the country's borders by preventing the illegal entry of people and goods, including terrorists and terrorist weapons, and simultaneously enforcing numerous US laws. The CBP also institutes a number of programs and initiatives to protect international traveling, trade, and our nation's borders. In the Midland-Odessa region, the CBP personnel play important roles in security at the Midland International Air & Space Port and the foreign trade zones to ensure the secure flow of people and goods. www.cbp.gov

8.2 Increase Security – State Perspective

Texas811 Service

Texas811 was created to help prevent unintended consequences from digging into an underground utility such as injury, damage to property and service outages. Communication starts with the person wishing to dig, Texas811 prepares a ticket that alerts the nearby utility companies to go to your worksite and mark where their underground utilities are located prior to planned excavation. Texas811 is the link between plans to dig and local area utility companies. Founded in 1984, the non-profit Texas811 is the largest one-call contact notification center in the country with more than 1,700 members. Approximately 80% of all requests to locate underground utilities in the state of Texas originate with Texas811.

Texas811 members are utility companies and municipalities who choose Texas811 to provide them notifications of planned excavations near their underground lines. To educate excavators, emergency responders and the public, Texas811 hosts damage prevention educational events; an annual Summit, mock line strikes, locate rodeos and training sessions. Texas811 manages the largest Facebook page of any state one-call organization in the country, which helps educate the general public about underground safety. Texas811 has more than 40 bilingual agents, around the clock availability via the Internet or phone, and it serves all of Texas' 254 counties. This service is important since it will minimize underground utility damage which could occur in or near the transportation network.

AMBER Alerts

In 2002, Governor Rick Perry created the state's AMBER Alert network per Executive Order RP-16, later codified through legislation in 2003. The Texas Department of Public Safety (DPS) was given legislative authority to coordinate the state's AMBER Alert network, which served as the role model for the subsequent Silver, Blue, and Endangered Missing Persons alert programs. AMBER Alerts inform the public of serious child abductions, to promote tips and leads to law enforcement. In memory of the tragic death of Amber Hagerman, the letters of her name can be seen within the title of the program, America's Missing: Broadcast Emergency Response (AMBER). These alerts are broadcast widely through media, cell phones, billboards and other initiatives.

AMBER alerts are disseminated through the State Operation Center through the State Network which includes TxDOT, National Weather Service, Law Enforcement, Media, Texas Lottery Commission, Independent Bankers Association of Texas, National Center for Missing and Exploited Children, and the Texas Department of Public Safety.
The goal of the State Network is to rapidly notify the public of specific person cases, promoting tips and leads to law enforcement. Advisories can be issued to any Texas geographical area, including statewide.

8.3 Local Security Initiatives

Union Pacific

Efforts to ensure railroad security are extremely important to Union Pacific. The company's robust security program operates 24/7 on what amounts to a 32,000-mile outdoor factory. In conjunction with highly trained, commissioned police force, Union Pacific coordinates security efforts with a number of agencies, including U.S. Customs and Border Protection, U. S. Coast Guard, Federal Bureau of Investigation, Central Intelligence Agency, Department of Homeland Security and Transportation Security Administration.

Union Pacific was the first US railroad to be named a partner in the Customs-Trade Partnership Against Terrorism, a CBP program designed to develop, enhance and maintain effective security processes throughout the global supply chain. As part of the efforts to keep trains secure and communities safe, Union Pacific employs state-of-the-art security technology that focuses on detecting unauthorized access.

Union Pacific's security efforts also include:

- A police force consisting of more than 200 UP police officers nationwide.
- Officers and K-9 units dedicated to border protection.
- Response Management Communication Center and Department of Defense-certified operation center.
- A surveillance network that can report the location and movement of hazardous cargo within seconds.
- Employee and contractor background checks and training.
- Smart cameras, impact recorders and other sensors that are being piloted near bridges, rail yards, tank farms, tunnels and sidings.
- $72.5 million invested over the last decade on support for drug interdiction programs at the US-Mexico border.
- A virtual-fencing pilot program around our facilities that triggers an alarm to our Response Management Communication Center.

UP operates a dynamic enterprise risk management process with continuous monitoring to identify and address potential concerns, including those arising in the ever-changing economic, political and legal environments in which Union Pacific operates. Management identifies and prioritizes enterprise risks and regularly presents them to the UP Board of Directors for review and consideration. Our chief compliance officer reports to the board on risk mitigation strategies, supported by senior executives responsible for implementing risk mitigation. Union Pacific employs security-focused technology to help keep watch over key installations and railroad infrastructure condition.

www.uprr.com/newsinfo/media_kit/safety/overview.shtml

Permian Basin Regional Planning Commission

As the local agency with homeland security responsibilities, the Permian Basin Regional Planning Commission (PBRPC) *"was founded for purposes of solving area-wide problems through promoting intergovernmental cooperation and coordination, conducting comprehensive regional planning, and providing a forum for the study and resolution of area-wide problems. Through PBRPC, individual governments may combine their resources and talents to meet challenges beyond their individual capabilities. By fostering intergovernmental cooperation and coordination and by carrying on regional planning, PBRPC both compliments and supplements government without infringing on local home rule."*
www.pbrpc.org

The PBRPC releases its implementation plan in support of the Texas Homeland Security Strategic Plan every five years. The plan, *Permian Basin Regional Homeland Security Strategic Implementation Plan for 2014*, is a roadmap for homeland security preparedness and identifies the resources required to implement the plan. While there are many different aspects of this plan, the capability targets regarding transportation when dealing with threats/hazards are as follows:

- Within the first six hours of a request for resources by communities, establish physical access through appropriate transportation corridors and deliver required live saving and life sustaining resources.
- Within 30 minutes of an incident, implement a traffic plan.
- During the first 24 hours of an incident, develop and implement a plan for meeting critical transportation needs.
- Develop contingency plans and secure access to transportation resources for long term deliveries of water to communities impacted by the threat/hazard.
- Secure critical transportation nodes and utility infrastructure to protect against potential natural disasters and to develop resiliency in the area's transportation networks and critical infrastructure.

EZ-Rider Transit Service

EZ-Rider has security monitoring cameras installed on the inside and outside of its administration and maintenance facilities. The bus yard and maintenance building are secured inside of a controlled access gate. The Greyhound ticketing area is open to the public, but access to the administration and operations areas of the building are secured by controlled access doors that require a key card or code for entry. All buses are equipped with a multi-camera system that records to an onboard hard drive; if there is an incident on or involving the bus, authorized EZ-Rider personnel are able to pull the video from the camera system for review. EZ-Rider has a Safety and Training Coordinator who is responsible for training personnel to uphold the system safety policies and administering the System Safety Program Plan. EZ-Rider is also currently involved with the development of a Safety Management System program.

8.4 Disaster Preparedness

American Red Cross (www.redcross.org)

The American Red Cross mission is to prevent and alleviate human suffering in the face of emergencies. A network of generous donors, volunteers and employees share this mission, here at home and around the world, through five key service areas:

- Disaster Relief
- Supporting America's Military Families
- Lifesaving Blood

- Health and Safety Services
- International Services

Should there be a major disaster, the American Red Cross is engaged by local or state emergency management personnel within any of the counties it serves. However, Red Cross assistance is available in emergencies ranging from a home fire, natural disaster, and man-made disasters. Red Cross staff and volunteers are trained on standard policies and procedures to follow in a crisis situation. When deployed, the Red Cross uses the emergency response plan for the affected city or county.

The American Red Cross serving the Permian Basin Area of the services 23 counties in west and southwest Texas. Some transportation issues that may or have required support of the Red Cross include:

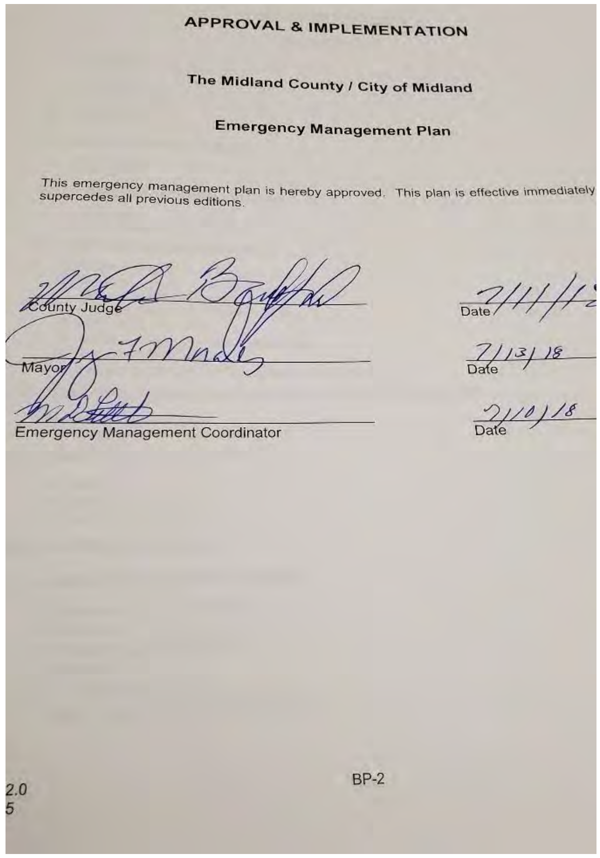
- Providing water/snacks to emergency crews at the scene of a large accident
- Recruiting transit providers to assist in transporting evacuees
- Preparing an emergency shelter for travelers when highways are closed for various reasons (inclement weather, grass fires, major accidents, etc.)

The Permian Basin Area Chapter has 3.5 staff positions, 59 local volunteers, and provides their services at no cost to the public.

Midland County Emergency Management

The Midland County/City of Midland Emergency Management office located on east Business 20 in Midland coordinates a collaborative effort by Midland County, City of Midland, City of Midland Police Department, Midland County Sheriff's Office, City of Midland Fire Department and many other public and private organizations to *Prevent, Prepare for, Respond to, and Recover from* when disaster strikes, whether natural or man-made. Depending on the emergency, federal agencies, like the U.S. Forest Service or the Texas Forest Service personnel, may be of assistance as well. Recently, the most common types of emergencies other than the normal everyday emergencies have been grass fires due to the area's drought conditions or oil field related due to the growth in energy production. However, the office of Emergency Management is prepared to act on an array of possible catastrophic incidents utilizing its approved *Local Emergency Management Plan*. In Annex S of the county's Plan, arrangements for transportation of people, supplies, and materials during emergency situations is explained. Facilitation of transportation is the responsibility of the Transportation Officer with assistance from the County Judge, Mayor, Emergency Management Coordinator, and/or the Deputy Emergency Management Coordinator. The Emergency Management Office assists in the coordination of Federal Aviation Administration requirements for scheduled training exercises involving airport incidents and catastrophes. These are coordinated with the Midland International Air and Space Port staff and public/private partnerships and including dozens of volunteers. A cooperative agreement has been in place between Midland County and surrounding area counties to provide mutual aid when necessary.

Figure 8.1 Signed Agreement between the City of Midland and Midland County



APPROVAL & IMPLEMENTATION

The Midland County / City of Midland

Emergency Management Plan

This emergency management plan is hereby approved. This plan is effective immediately supercedes all previous editions.

County Judge	Date 7/11/1
Mayor	Date 7/13/18
Emergency Management Coordinator	Date 7/10/18

2.0
5

BP-2

Midland County Emergency Management staff are involved when pipeline leaks and hazardous material spills occur.

Ector County Environmental Enforcement

The objective of the Ector County Environmental Enforcement Unit is to improve the quality of life for the citizens of Ector County by aggressively enforcing federal, state, and local environmental laws in Ector County through a collaborative effort of law enforcement, regulatory, and community agencies. The agency also operates using its *Multi-Jurisdictional Hazard Mitigation Plan* as guidance when a hazardous situation occurs. This Plan addresses natural hazards including extreme heat, high winds, hailstorms, etc. and manmade threats including hazardous material release and pipeline failure. The transportation system can be negatively affected by these types of weather and manmade occurrences. Figure 8.2 identifies the county's hazard mitigation planning process. In 2017 the Ector County Environmental Enforcement Unit coordinated an event in downtown Odessa to train staff and participants in procedures that could be involved with an active shooter. The office also participated in tabletop discussions about airport incidents; these discussions are required by Federal Aviation Administration every two year with an incident management training exercise required every five years.

Figure 8.2 Hazard Mitigation Planning Process – Ector County

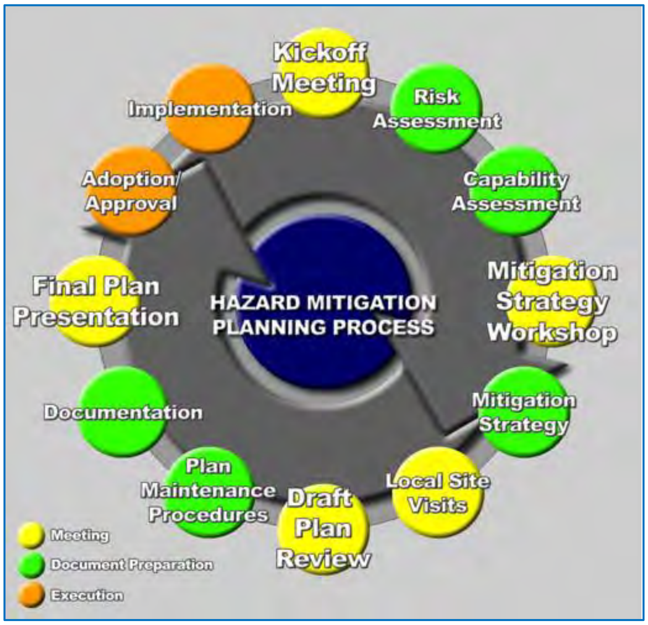


Table 8.3 Ector County Multi-Jurisdictional Hazard Mitigation Plan

Hazard	Priority	Est. Cost	Funding	Agency Responsible	Action
Terrorism	Moderate	$200,000	Local, State, & Federal	EC Bldg. Maintenance & Public Works	Increase security for Ector County government computer system to prevent cyber-terrorism resulting in loss of critical data and operational capabilities.
Tornado/High Winds	Moderate	$50,000	Local, State, & Federal	EC Public Works/Sign Shop	Secure traffic lighs and traffic controls from high wind damage. Preventative to ensure public safety in transportation areas.
Winter Storms/Wildfires	Low/High	TBD	Local	EC Public Works	Evaluate access and road conditions for response vehicles and formulate options to improve access
Winter Storm	Low/High	Minimal	Local	EC Public Works	Develop plan to coordinate with TxDOT to install warning signs on roadways in the even of a severe winter storm.
Hazardous Materials Release	Moderate	$100,000	Local, State, & Federal	Odessa Fire Dept.	Implement a leak detection system for the rail switch yard to detect a hazardous material release.
Hazardous Materials Release	Moderate	$25,000	Local & Federal	TxDOT	Establish a hazardous cargo route.

National Weather Service

The National Weather Service in Midland serves the Permian Basin by providing "weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy." www.weather.gov When severe weather is imminent, the National Weather Service in Midland puts out a warning through local media. This is beneficial so travelers are able to avoid areas of inclement weather. This information also assists local emergency management personnel in planning for weather-related emergencies.

8.5 Pipeline Damage; Texas Railroad Commission; TCEQ

Title 16 of the Texas Administrative Code, Part 1 Railroad Commission, Chapter 8 Pipeline Safety Regulations applies to all persons engaged in or preparing to engage in the movement of earth in the vicinity of an underground pipeline containing flammable, toxic, or corrosive gas, a hazardous liquid, or carbon dioxide. The Texas Utilities Code, Title 5, Chapter 251 is titled UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY. Provisions in these two laws requires notification to Texas 811 when a pipeline, or other underground storage facilities may be disturbed. Pipelines are not new to the Permian Basin MPO. Considering the cost of moving crude oil and gas out of the region to the market centers, pipelines are the cheapest method. Major investments in new pipelines have been made in the region.

The Railroad Commission of Texas is the state agency with primary regulatory jurisdiction over the oil and natural gas industry, pipeline transporters, natural gas and hazardous liquid pipeline industry, natural gas utilities, the LP-gas industry, and coal and uranium surface mining operations. The Commission

exists under provisions of the Texas Constitution and exercises its statutory responsibilities under state and federal laws for regulation and enforcement of the state's energy industries. The Commission also has regulatory and enforcement responsibilities under federal law including the Surface Coal Mining Control and Reclamation Act, Safe Drinking Water Act, Pipeline Safety Acts, Resource Conservation Recovery Act, and Clean Water Act. The Commission does not have authority over the following:

Dust: Dust from public roads should be addressed by local law enforcement;

Noise: The Railroad Commission of Texas has no statutory authority over noise or nuisance related issues. Noise and nuisance related issues are governed by local ordinances.

The Texas Commission on Environmental Quality regulates air quality, trash, and domestic sewage while the Railroad Commission handles liquid and land related issues stemming from the development of oil and gas fields. One important factor that both the Midland and Ector County Emergency Management Offices must deal with is the importance of a quick identification of the materials involved in a leak or a spill. A quick determination will permit the coordinators to establish a plan to protect the public from negative consequences. In some cases, evacuation may be necessary; each office has a plan to manage this type of event but in most cases this would not be necessary.

8.6 Regional Siren System

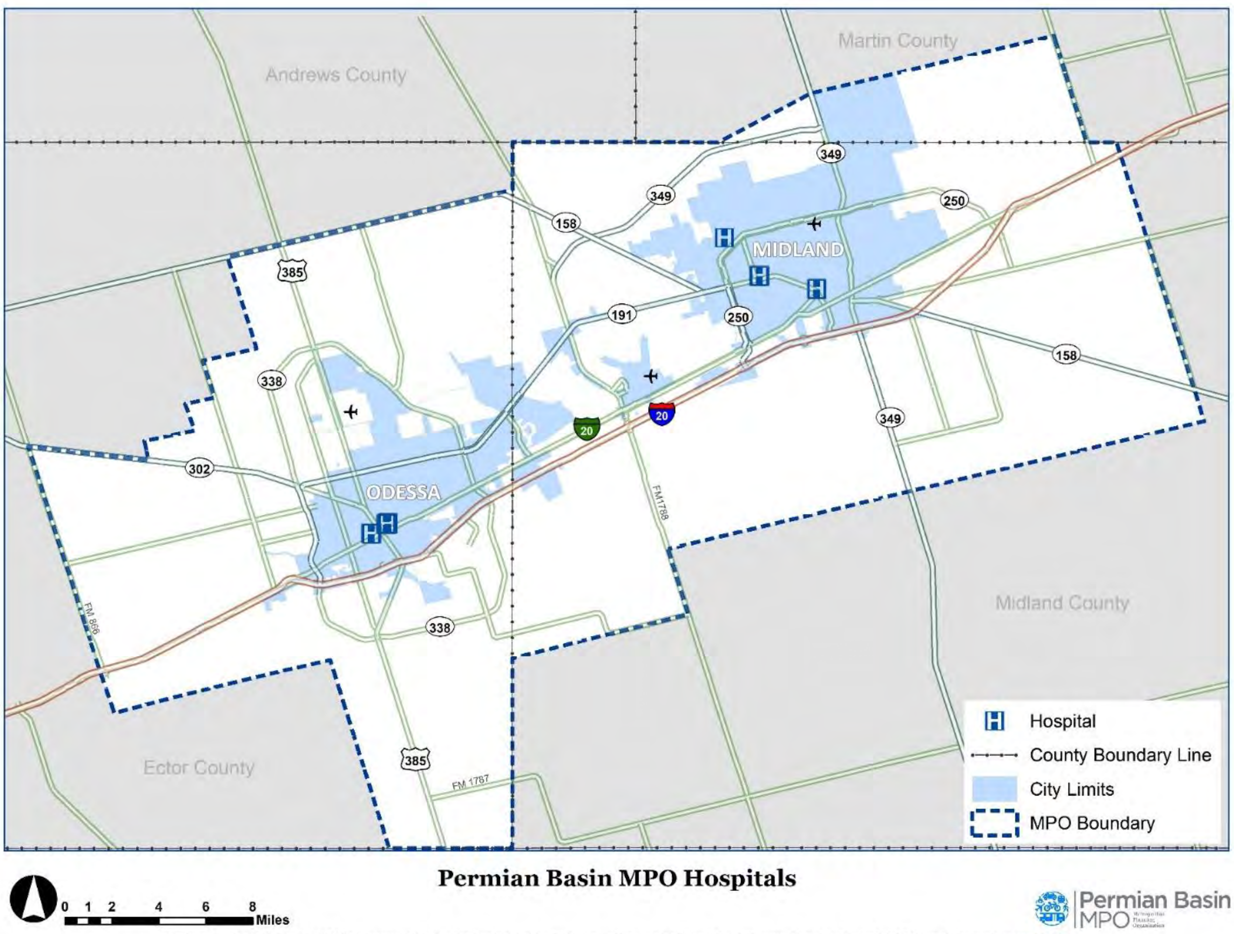
The City of Midland installed and maintains a siren system for outdoor warnings. An outdoor warning siren is a device like an automobile horn that is used to warn people of impending danger. Siren 'horns' are located high in the air on poles or buildings. When activated, each siren blasts out a steady, loud warning signal while the horn itself rotates around the support pole, so the signal is transmitted in all directions. The warning signal lasts for approximately 3 minutes.

The purpose of the siren is to alert people of present or approaching danger. In the Midland area, the outdoor warning sirens are activated when a tornado warning has been issued by the National Weather Service; when a tornado has been sighted by trained spotters or public safety officials, or when a dangerous chemical release has occurred that could potentially cause immediate harm to the public.

8.7 Hospitals

As shown in Chapter 2, Permian Basin and its People, Midland's primary hospital, Midland Memorial Hospital, has two locations, a main campus located on Rosalind Redfern Grover Parkway and a west campus located on Andrews highway. Odessa has two primary hospitals, Medical Center Hospital located on West 4th Street and Odessa Regional Medical Center located on East 6th Street. Martin County also has a hospital located off I-20, which was strategically designed to accommodate the frequent crashes that occur on and around the highway.

Map 8.1 MAB Hospitals



8.8 Recommendations

Safety and security are at the top of the priority list for all entities from the federal and state levels to counties, cities, and citizens. It is imperative to distinguish the most important areas of safety and security so decisions can be made regarding enhancements to the transportation network. This chapter should be used as a tool in determining factors affecting safety and security standards and what can be done to protect each individual living, working, or traveling in the region. One of the more critical responsibilities shared among emergency responders and management teams is the ability to identify and quickly clear incidents occurring from vehicle crashes, hazardous materials, pipeline leaks, fires, and others.

9.1 Project Prioritization

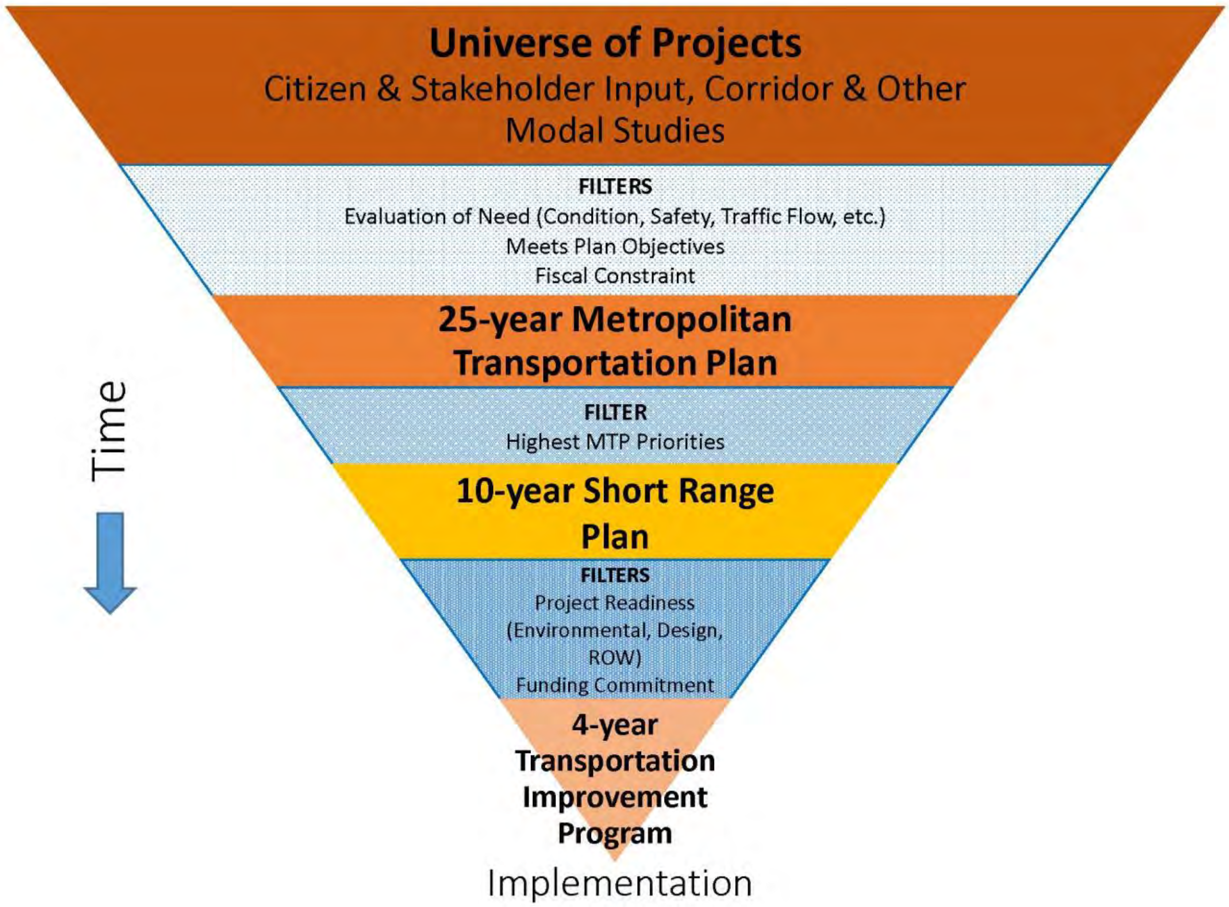
Project prioritization is a critical component of the metropolitan planning process and the preparation of the *Forward 45* MTP. First, in order to spend federal dollars on local transportation projects and programs, a metropolitan area must have an adopted Metropolitan Transportation Plan (MTP) and a Transportation Improvement Program (TIP). Federal regulations require both documents to be performance-based and fiscally constrained. Fiscal constraint has been a key component of transportation planning and program development since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and reinforced with every subsequent transportation bill. Fiscal constraint means that the cost of those projects selected for inclusion in the MTP's planning horizon reasonably match the expected funding levels for that time period. The TIP, on the other hand, must not indicate that the cost of projects exceeds projected available funding during the four-year period. Second, because of the limited resources available, a process was followed to score and rank projects for consideration and inclusion in the MTP. The scoring criteria used is based on the ten Federal Planning Factors from the FAST Act, the requirements outlined in House Bill 20, and the Permian Basin MPO's mission statement, goals and objectives. It is important to note that the MTP and TIP must reflect the same scope and projected cost prior to approval to commence project letting.

9.1.1 Project Prioritization Process

The MPO's initial step in the project prioritization process was to publish a call for projects. Stakeholders and the community at large were invited to submit projects for consideration across all modes. The next step to generate a list of projects for screening and evaluation. Projects received through the 30-day call period were deemed to automatically include those that were already identified in the 2019 Unified Transportation Program (UTP) and those being carried over from the 2040 MTP. A scoring sheet and general definition of scoring criteria is shown in Fig. 9.2 below. It was drafted on multiple occasions by the Permian Basin MPO staff with assistance from the TAC during special called meetings to gain a complete understanding of how the scoring process would work in the project selection process. As it was an extensive list, the TAC collaboratively ranked each of the listed projects separating them by immediate and long-term need. The immediate need projects were scored by the TAC and the Permian Basin MPO staff. The scoring criteria and weighting balance reflects federal and state goals as well as local needs.

Once the top priority projects were identified according to the procedures described above, they were placed into the financially constrained component of the MTP based on the projected funding levels for the MTP planning horizon, project score, and project implementation timeline. Once fiscal constraint for the MTP planning horizon was reached, projects were placed into the unfunded priority section of the MTP. Projects in the fiscally constrained list are now eligible to be moved to the TIP once it is determined by TxDOT that funding is available. This step is completed during the TIP preparation process and may be amended as additional funding becomes available.

Figure 9.1 Project Selection Timeline



Source: Waco MPO

The process of moving a project forward into the TIP is a cooperative process between Permian Basin MPO and the TxDOT Odessa District. During TIP updates and amendments, projects will be moved from the financially constrained component of the MTP to the TIP. As the MTP planning horizon is revised or when new information or new funds become available, a reevaluation of MTP project list may be required.

Currently funded projects in the *Vision 2040 Plan* are identified along with their funding source. Regionally significant projects potentially funded through outside sources are included in the project listings as well.

Figure 9.2 MPO Project Evaluation Scoring Criteria

Permian Basin MPO Project Evaluation Criteria & Scorecard

The following Project Evaluation Criteria will be used to score the projects during the development of a prioritized list of transportation investments in the 2020-2045 Metropolitan Transportation Plan.

100 Points Max

I. *Operational Efficiency and Preservation*

1. ***Traffic Operations:*** Does this project include elements that specifically improve the operational efficiency of the transportation system with emphasis on higher capacity corridors? (AADT)

   a. 50,000 and up .... 5 points
   b. 40,000 – 49,999 .... 4 points
   c. 30,000 – 39,000 .... 3 points
   d. 20,000 – 29,000 .... 2 points
   e. 19,000 or less .... 1 point

2. ***Congestion*****: Does the project emphasize a reduction in congestion as related to the MPO's Congestion Management Program (CMP) and approved PM3 Performance Targets?
   a. Travel time reliability index (TTI) 2.25 and above .... 5 points
   b. TTI 2.00 to 2.25 .... 4 points
   c. TTI 1.75 to 2.00 .... 3 points
   d. TTI 1.50-1.75 .... 2 points
   e. TTI < 1.50.......... 1 point
   f. No .... 0 points

3. ***Thoroughfare Plan:*** Does the project improve a corridor shown on the three-county thoroughfare plan?
   a. Yes .... 1 Point

   b. What type of facility is it?
      Other Expressways or Better.......... 4 points
      Major Arterial.......... 3 points
      Minor Arterial.......... 2 points
      Collector .... 1 point

4. ***System Preservation***: Does this improvement emphasize system preservation and support the MPO's PM2 Road and Bridge Condition and Transit Asset Management Plan Targets?
   a. On National Highway System (NHS) .... 3 points
   b. Not on NHS .... 2 points

5. ***On Bus Route***
   a. Yes .... 2 points
   b. No .... 0 points

Maximum 20 points

I. Safety & Security

4. ***Safety***: Does this project promote the MPO's PM1 adopted safety resolution in support of TxDOT's Performance Management Targets using the TxDOT published CRIS Data? Measure uses a standard of crashes per 100 million vehicle miles.
   a. 121 and up .... 20 points
   b. 61 – 120 .... 15 points
   c. 31 – 60 .... 10 points
   d. 0 – 30 .... 5 points

5. ***Resiliency & Security:*** Does this project promote system resiliency?
   a. Yes .... 5 points
   b. No .... 0 points

Maximum 25 points

II. Integration with Other Modes

6. ***Other Modes***: Does this project provide connection to one or more alternative modes of transportation (bicycling, walking, transit, air travel) according to city/county plans?
   a. Yes.. 2 points
   b. No..0 points

7. Does project include an alternative mode of transportation?
   a. Yes .... 3 points
   b. No .... 0 points

Maximum 5 points

IV. Freight Movement (Data Available** NPMRDS)

10. ***Freight Movement*****: Will the project improve freight mobility related to truck volumes? (24-hour truck count)
   a. 8,001 and up .... 15 points
   b. 2,501 – 8,000 .... 10 points
   c. 0 – 2,500 .... 5 points

Maximum 15 points

V. Community Support

11. ***Economic Development:*** The project supports documented economic development initiatives.
   a. High benefit .... 15 points
   b. Medium benefit .... 10 points
   c. Low benefit .... 5 points
   d. No benefit .... 0 points

12. ***Alternative Funding:*** Does this project include additional financial support including an identified community priority list, comprehensive plan CIP and/or documentation of financial commitment?
   a. Yes .... 5 points
   b. No .... 0 points

Maximum 20 points

VI. Community Development

13. ***Travel and Tourism:*** Does the project enhance travel and tourism? (Data based on MPO assumptions)
   a. Yes .... 5 points
   b. No.. 0 points

14. ***Socioeconomic Effect:*** Will socioeconomic conditions be improved? (Environmental Justice, Title VI Populations, Limited English Proficiency Populations, etc.)
    a. Yes .... 5 points
    b. No .... 0 points

Maximum 10 points

VII. Environmental Factors

15. ***NEPAssist***: Has the NEPAssist Tool been utilized in the consideration of the project's environmental effects? (Data from: Federal/State sources)
    a. Yes .... 2 points
    b. No .... 0 points

16. Does the project fall within the MS4 boundary?
    a. Yes .... 3 points
    b. No .... 0 points

Maximum 5 points

Total Score: _______________

MTP Project Selection Process - Companion Criteria Definitions

Section I *Operational Efficiency and Preservation*

Operational Efficiency: A qualitative assessment of a road's operating conditions. For planning purposes, it is an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. This term is tied directly to the MPO adopted PM3 System Reliability targets. Annual average daily traffic (AADT) is the total volume of vehicle traffic on a highway or road for a year divided by 365 days.

Preservation: The activity or process of keeping something valued alive, intact, or free from damage or decay.

Section II *Safety, Security and Resiliency*

Safety: A systematic process that has the goal of reducing the number and severity of transportation related accidents by ensuring that all opportunities to improve safety are identified, considered and implemented as appropriate.

Security: the state of being free from danger or threat interpreted to mean a threat of physical harm as a result of either a criminal or terroristic act.

Resiliency: The capacity to recover quickly from difficulties, disaster; toughness.

Section III *Integration with other Modes*

Integration: Does this project provide a connection or is it within ¼ mile of an existing or planned alternative mode?

Section IV *Freight Movement*
Data is available from the National Performance Measures Research Data Set (NPMRDS).

Section V *Community Support*
Economic Development: This measure looks at how each specific project benefits the economic development for the area and the region. Such benefits may include support for job growth, access to jobs, freight movements, and regional land use goals. This measure is subjective because it does not specifically relate to a quantitative measure. However, a few rules of thumb to keep in mind during the scoring of projects include:

- High Benefit: New construction projects that are proposed in areas with potential commercial or economic benefit get scored higher – 15 points
- Medium Benefit: New construction projects that are proposed in residential areas are scored moderately because they do improve the tax base, but not at the same level as commercial activity -10 points
- Projects that require additional right -of-way or are in areas with little or no potential of development or redevelopment are scored the lowest – 5 points
- Projects that will not likely generate economic development activity are scored with 0 points

Alternative Funding: The project includes documented additional financial support.

Section VI *Community Development*
Environmental Justice: Environmental justice assures that services and benefits allow for meaningful participation and are fairly distributed to avoid discrimination.

Section VII *Environmental Factors*
Environmentally Sensitive Area: An area of environmental importance having natural resources which if degraded may lead to significant adverse, social, economic or ecological consequences. These could be areas in or adjacent to aquatic ecosystems, drinking water sources, unique or declining species habitat, and other similar sites. (49CFR194)
Environmental Impact Statement: Report developed as part of the National Environmental Policy Act requirements, which details any adverse economic, social, and environmental effects of a proposed transportation project for which Federal funding is being sought. Adverse effects could include air, water, or noise pollution; destruction or disruption of natural resources .

9.2 Highway Committed Projects FY 2020 - 2045

As stated earlier, through public comment and multiple workshops as well as in-depth discussions with the Permian Basin MPO Policy Board and TAC, a list of top priority projects was derived for the 25-year plan. As the initial drafting of the 2045 MTP was being finalized, the 2020 UTP was approved by the Texas Transportation Commission at its regular monthly meeting in August of 2019. The following list of projects through FY 2029 include projects approved and committed for funding in the FY 2020 UTP.

Projected Fiscally Constrained Priority Projects

The fiscally constrained project list contains projects eligible for federal funding that may be further planned and eventually moved into the State Unified Transportation Plan (UTP) which has a ten-year horizon. The UTP lists all projects in the state that have development authority to commence design specifications, address right-of-way needs and environmental issues. Once placed in the ten-year UTP, a project is eligible to be placed in the State's Transportation Improvement Program (STIP) where authority is given for construction. The STIP contains each individual MPO Transportation Improvement Program (TIP) from across the state. The above project development scenario does not preclude a project from being moved into the UTP and placed into the Permian Basin MPO TIP in a faster manner; all project scheduling and construction timing are dependent on funding availability. When considering the list of projects contained in the plan the Permian Basin MPO Technical Advisory Committee and the Policy Board considered the MAP-21 planning factors and national performance goals listed in Chapter 1.

9.2.1 Fiscally Constrained Projects 2020 – 2029

I-20 Improvements

The importance of I-20 as an east-west travel and trade corridor stretches well beyond West Texas. The significance of the interstate to the urbanized area and to the greater Permian Basin region necessitated a reevaluation of existing projects geared toward modernizing the stretch of interstate. The aging interstate system, population growth, and increased economic activity also contributed to the decision to undertake a comprehensive study of the interstate in the fall of 2015. At that time TxDOT Odessa District, TxDOT's Transportation Planning & Programming Division, and the Permian Basin MPO began a study of I-20 within the MPO boundary.

From the beginning of the study, MPO staff, consultants and TxDOT met with stakeholders and the community to develop scope for the project and to assess safety and transportation concerns with the modernization of the corridor. Consultants then took the stakeholder engagement and public input comments and evaluated them alongside different types of roadway configurations, a detailed needs assessment, and an analysis of existing and future traffic data. At the May 2016 MPO Policy Board meeting TxDOT consultants presented their initial finding and recommendations, aimed at selecting

segments for detailed design schematics. After discussion between the Policy Board, TxDOT Odessa District and TxDOT it was determined that TxDOT would dedicate the funds necessary to develop design schematics for the entire 42 mile stretch of the study corridor instead of the 12-mile portion originally considered.

Since then a coordinated effort between the TxDOT Odessa District and the Permian Basin MPO to identify funding and to leverage resources to begin implementing Phase I of the Permian Basin I-20 Corridor Study was completed. Table 9.1 shows the fiscally constrained I-20 projects in the initial ten-year window of the MTP.

Non I-20 Improvements

The remainder of the projects on the ten-year list include State highway and loop projects within both communities. They are geared toward intersection improvements and interchanges to address connectivity, congestion, as well as safety.

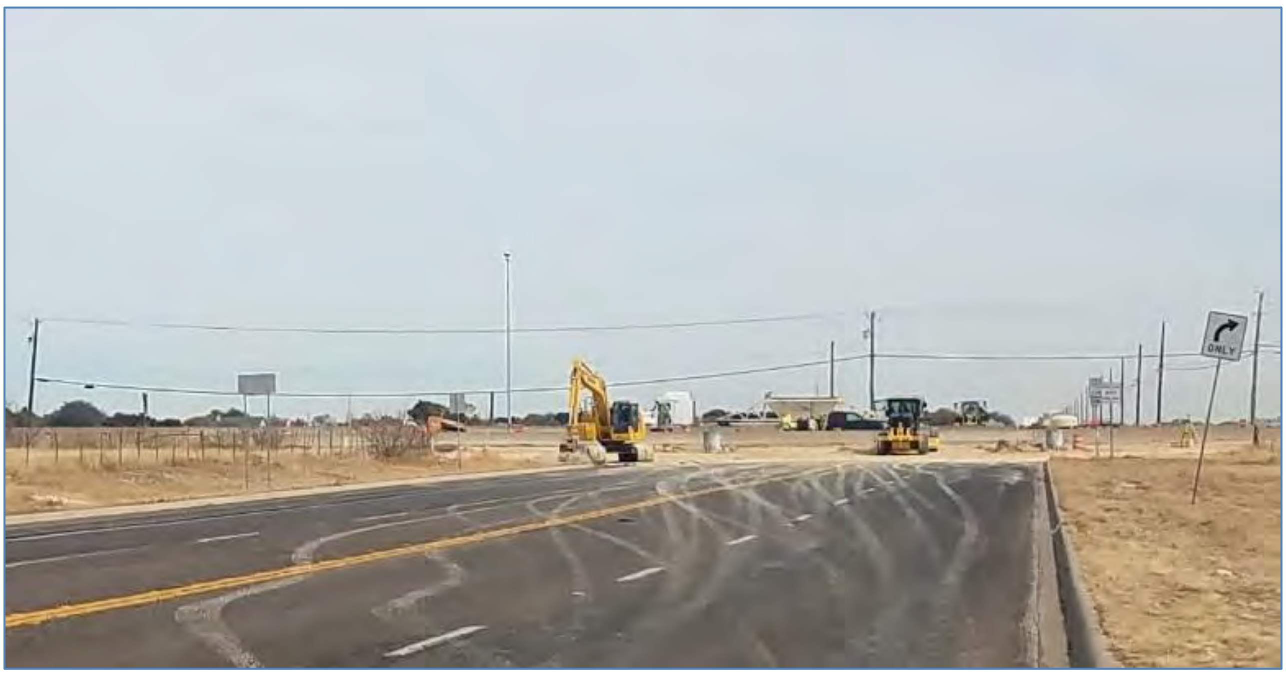


Table 9.1 Fiscally Constrained Priority Projects 2020 – 2029

Fiscally Constrained Projects FY 2021-2030 Amendment No. 1

Est. Let Year	Project	Highway	Limits	Description	Length	Sponsor	MPO ID	CSJ	UTP Allocation Category 2U	UTP Allocation Category 3	UTP Allocation Category 4	UTP Allocation Category 12	UTP Allocation Category 11	Total Authorized
2021	IH 20 - Phase I - Midland	IH 20	SL 250 to 0.5 miles east of Midkiff Rd	Replace existing underpass with a 4-lane wide overpass structure, urban median, Y-ramps configuration	1.5	TxDOT	RC-04*	0005-14-067	$14,160,000	$2,000,000	$12,000,000		$8,640,000.00	$36,800,000
2021	IH 20 - Phase I - Midland	IH 20	At CR 1250	Construct new interchange	1	TxDOT	RC-50b* int3	0005-14-084			$29,550,000		$20,450,000.00	$50,000,000
2021	SH 158 -Freeway Ramp Improvements	SH 158	Avalon Drive to LP 250	Ramp reconfiguration	1	City of Midland	RC-86a	0463-02-075	$11,630,000	$1,000,000				$12,630,000
2021	SL 250 - Freeway Ramp Improvements	SL 250	BS 158-B to Wadley Ave	Ramp reconfiguration	1	City of Midland	RC-86a	1188-02-100	$11,630,000	$1,000,000				$12,630,000
2022	SH 191 - Yukon Road Interchange	SH 191	At Yukon Rd	Construct new interchange	1	City of Odessa	RC-42d	2296-02-026	$6,560,000		$12,000,000			$18,560,000
2023	SL 338 - Traffic Control Devices	SL 338	At W Yukon Rd	Signal Improvements	1	City of Odessa	RC-40a int a	2224-01-111	$2,480,000					$2,480,000
2024	US 385/SL 338 Interchange	US 385	At S SL 338	Construct overpass	1	City of Odessa	RC-09*	0229-01-042	$21,000,000	$2,000,000				$23,000,000
2024	IH 20 - Phase I - Midland	IH 20	SL 250 W to 0.3 miles east of SH 349	Widen mainlanes for added capacity	5.6	TxDOT	RC-96	0005-14-092	$6,250,000			$69,550,000		$75,800,000
Year 1-4 Totals									**$73,710,000**	**$6,000,000**	**$53,550,000**	**$69,550,000**	**$29,090,000**	**$231,900,000**

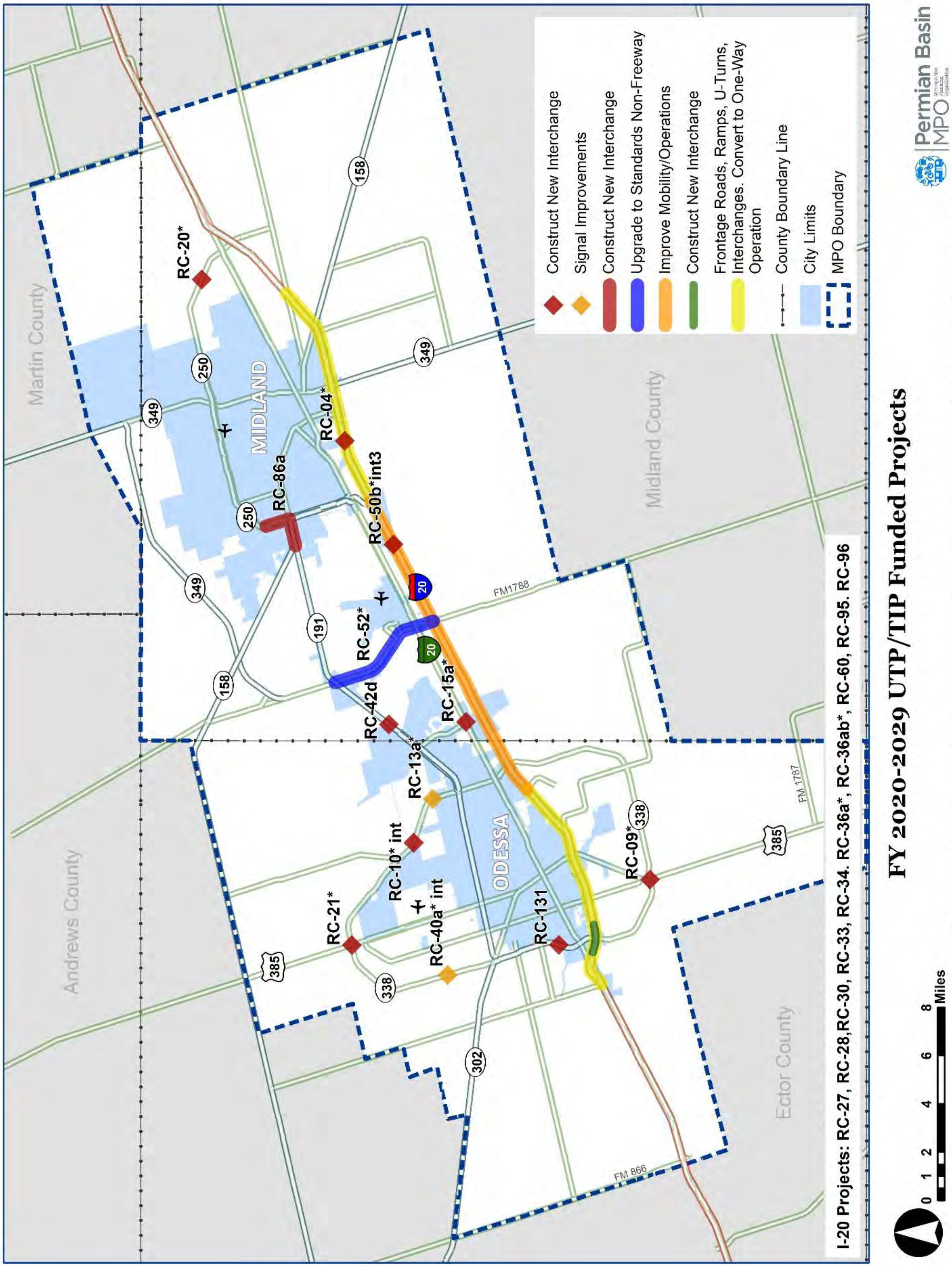
Table 9.1 Fiscally Constrained Priority Projects 2020 - 2029 (cont.)

Beyond FY 2025

FY	Project	Highway	Limits	Description	Length	Sponsor	MPO ID	CSJ	UTP Allocation Category 2U	UTP Allocation Category 3	UTP Allocation Category 4	UTP Allocation Category 12	Remaining Funding (TBD)	Total Authorized
2025	BI 20-E - Faudree Road Interchange	BI 20-E	At Faudree Rd	Construct new interchange	1	City of Odessa	RC-15a*	0005-02-119	$8,370,000	$2,000,000	$10,750,000			$21,120,000
2026	SH 302 - W 8th Street Interchange.	SH 302	At W 8th St	Construct new interchange	1	City of Odessa	RC-131	2224-01-110	$19,760,000	$2,000,000				$21,760,000
2027	FM 1788 from SH 191 to BI 20	SH 349	SH 191 to BI 20-E	Upgrade to standards non-freeway	4	TxDOT	RC-52*a	1718-07-043	$6,966,960					$6,966,960
2027	SH 349 - Upgrade Non-Freeway	SH 349	BI 20-E to IH 20	Upgrade to standards non-freeway	4	TxDOT	RC-52*b	1718-01-035	$1,433,040					$1,433,040
2027	IH 20 - Phase I - Odessa	IH 20	East of JBS Parkway to Midland County Line	Widen mainlanes for added capacity	1.5	TxDOT	RC-36a	0005-13-064	$1,000,000			$27,600,000		$28,600,000
2027	IH 20 - Phase I - Odessa	IH 20	Ector County Line to East of CR 1300	Widen mainlanes for added capacity	5.5	TxDOT	RC-36ab	0005-14-093	$5,500,000	$2,000,000		$142,000,000		$149,500,000
2028	IH 20 - Phase I - Midland	IH 20	East of CR 1300 to East of CR 1250	Widen mainlanes for added capacity	5	TxDOT	RC-95	0005-14-094	$6,500,000			$79,800,000		$86,300,000
2025-2030	IH 20 - Odessa	I-20	West of FM 1936 to Monahans Draw	Widen mainlanes for added capacity	-	TxDOT	-	0004-07-135	$9,750,000			$71,050,000	$41,200,000.00	$122,000,000
2025-2030	IH 20 - Odessa	I-20	Monahans Draw to East of JBS Pkwy	Widen mainlanes for added capacity	-	TxDOT	-	0005-13-063	$9,750,000			$44,200,000	$39,000,000	$92,950,000
2025-2030	Interchange at 52nd/56th - Odessa	SL 338	At 52nd/56th Street	Construct new interchange	-	TxDOT	-	2224-01-116	$2,500,000				$25,500,000	$28,000,000
2025-2030	Upgrade to Freeway - Odessa	SL 338	Yukon Rd E to US 385 N	Convert non-freeway to freeway	-	TxDOT	-	2224-01-117	$2,500,000				$17,100,000	$19,600,000
2025-2030	IH 20 - Midland	I-20	East of SH 349 to East of FM 1208	Widen mainlanes for added capacity	-	TxDOT	-	0005-15-093	$9,750,000			$58,250,000	$148,800,000	$216,800,000
2025-2030	Interchange at Todd Rd - Midland	SL 250	At Todd Rd	Construct new interchange	-	TxDOT	-	1188-02-111	$2,500,000				$25,500,000	$28,000,000
2024-2029	Regional Synchronization Program**	-	MPO Boundary	ITS project to synchronize signals across MAB	-	TxDOT	RE-20	-					$3,000,000.00	$0
2024-2029	Six Union Pacific Railroad Intersections**	-	Various	Improve intersections at railroad crossings	-	TxDOT	RR-001	-					$3,000,000.00	$0
				Years 5-10 Totals					**$86,280,000**	**$6,000,000**	**$10,750,000**	**$422,900,000**	**$303,100,000**	**$823,030,000**
				Years 1-4 Totals					**$73,710,000**	**$6,000,000**	**$53,550,000**	**$69,550,000**	**$29,090,000**	**$231,900,000**
				FY 2021 UTP					**$159,990,000**	**$12,000,000**	**$64,300,000**	**$492,450,000**	**$332,190,000**	**$1,060,930,000**

****Not listed in 2021 UTP**

Map 9.1 Fiscally Constrained Priority Projects 2020 – 2029



9.2.2 Fiscally Constrained Projects 2030 – 2045

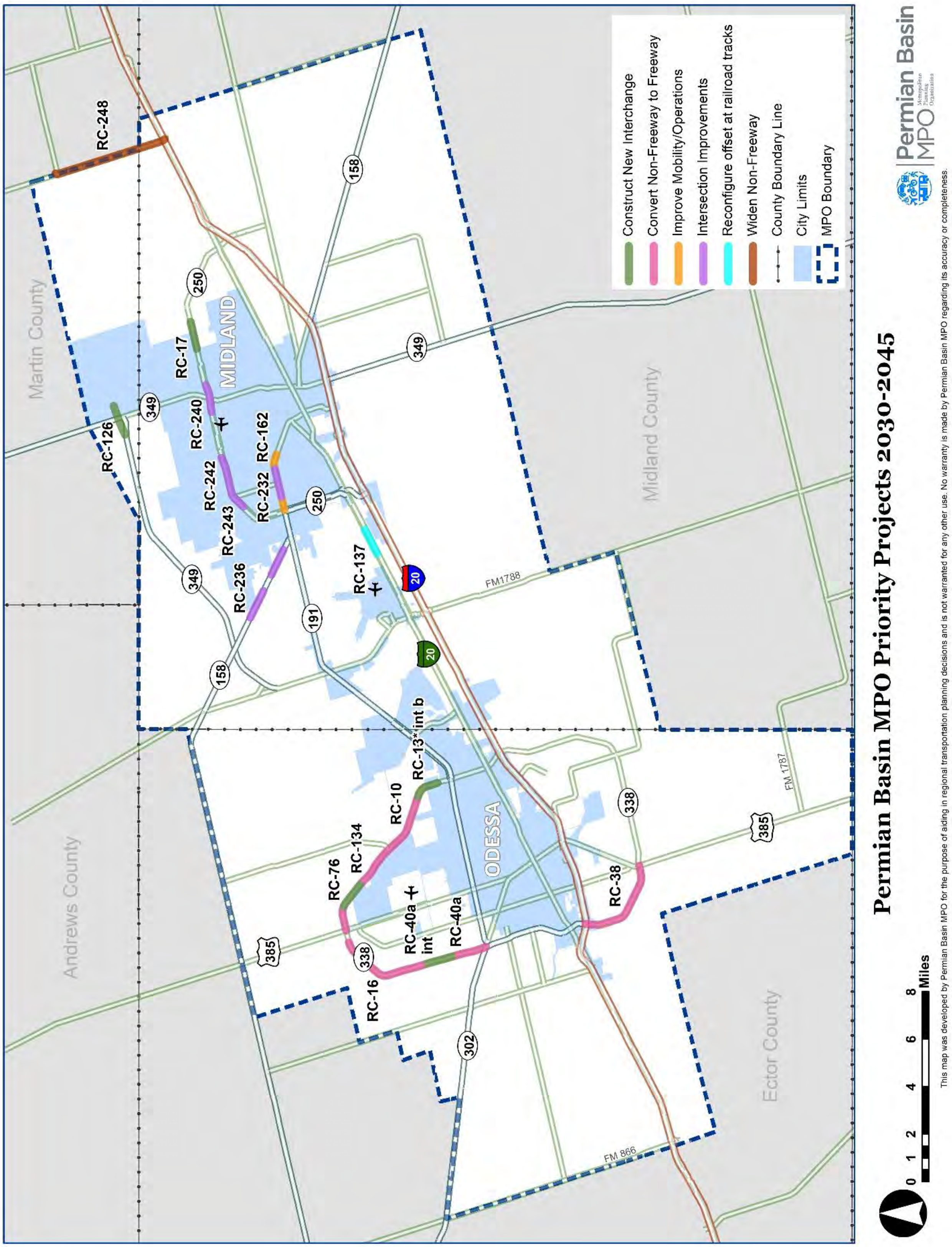
The projects shown in Table 9.2 list the MPO's priorities for the remaining 16 years of the MTP. Unlike the previous list of fiscally constrained projects, these projects do not have designated funding. Chapter 10 provides a reasonable estimate of funding based on a set of projected criteria.

Table 9.2 Fiscally Constrained Priority Projects 2030 – 2045

Est. Let Year	Project	Highway	Limits	Description	Length	Sponsor	MPO ID	Estimated Category 2U	Estimated Category 3	Estimated Category 4	Estimated Category 11	YOE Cost*
2030	SL 338 - 52nd/56th Interchange	SL 338 N	At 52nd/56th	Construct new interchange	1	Ector	RC-13* int b	$24,740,000		$3,260,000		**$28,000,000**
2030	SL 250 - Todd Rd. Interchange	SL 250	At Todd Rd.	Construct new interchange	1	Midland	RC-17	$13,020,000		$14,980,000		**$28,000,000**
2030	SL 338 NE Freeway Conversion	SL 338 NE	Yukon Rd E Int to US 385 N	Convert non-freeway to freeway	5.6	Ector	RC-134	$19,600,000				**$19,600,000**
2031	BS 158 (Andrews Hwy) - FM 868 Intersection Improvements	BS 158 (Andrews Hwy)	At FM 868 (Midland Dr)	Intersection Improvements; Operational Improvements	1	Midland	RC-232			$3,600,000		**$3,600,000**
2031	SL 250 - BS 349 Intersection Improvements	SL 250	At BS 349 (Big Spring St)	Intersection Improvements, Traffic Signal Upgrades	1	Midland	RC-240	$7,200,000				**$7,200,000**
2031	BS 158 (Andrews Hwy) - Mobility Improvements	BS 158	SL 250 W to Midkiff Rd	Improve mobility and add capacity	2.5	Midland	RC-162			$9,000,000		**$9,000,000**
2031	BI 20 - CR 1250 Reconfigure Offset	BI 20	At CR 1250	Reconfigure offset at railroad tracks	1	Midland	RC-137	$2,710,000				**$2,710,000**
2031	SH 158 - Wadley Ave Signalization	SH 158	At Wadley Ave. Ext.	New Signalized Intersection	1	Midland	RC-234	$3,600,000				**$3,600,000**
2032	SL 250 - Midland Dr Intersection Improvements	SL 250	At Midland Dr	Intersection Improvements, Traffic Signal Upgrades	1	Midland	RC-243			$7,400,000		**$7,400,000**
2032	SL 250 - Midkiff Rd Intersection Improvements	SL 250	At Midkiff Rd.	Intersection Improvements, Traffic Signal Upgrades	1	Midland	RC-242	$7,400,000				**$7,400,000**
2032	SH 158 - Briarwood Ave Intersection Improvements	SH 158	At Briarwood Ave	Intersection Improvements, New Signalized Intersection	1	Midland	RC-236	$3,700,000				**$3,700,000**
2034	SL 338 W - Freeway Conversion	SL 338 W	Yukon Rd to 0.5 mi. W. of US 385	Convert non-freeway to freeway	5.2	Ector	RC-16	$21,840,000				**$21,840,000**
2035	SL 338 W- Freeway Conversion	SL 338 W	Yukon Rd to SH 302	Convert non-freeway to freeway	2.3	Ector	RC-40a			$9,200,000		**$9,200,000**
2036	SL 338 W- Freeway Conversion	SL 338 W	IH 20 western jct. to US 385	Convert non-freeway to freeway	4.3	Ector	RC-38	$11,070,000		$6,560,000		**$17,630,000**
2036	SL 338 E - Freeway Conversion	SL 338 E	Yukon to 52nd St.	Convert non-freeway to freeway	2	Ector	RC-10	$8,200,000				**$8,200,000**
2038	SL 338 - 100th St. Interchange	SL 338 NE	At 100th St.	Construct new Interchange	1	Ector	RC-76	$34,400,000				**$34,400,000**
2039	FM 1208 - Freeway Widening	FM 1208	IH 20 to FM 1212	Widen non-freeway	5.7	Martin/Midland	RC-248	$14,270,000		$22,500,000		**$36,770,000**
2041	SL 338 W - W Yukon Road Interchange	SL 338 W	At. W Yukon Rd	Construct new interchange	1	Ector	RC-40a int	$36,000,000				**$36,000,000**
2042	SH 349 - BS 349 Interchange	SH 349	At BS 349	Construct new interchange	1	Martin	RC-126	$19,260,000		$17,540,000		**$36,800,000**
2044	IH 20 - FM 1208 Interchange	IH 20	At FM 1208	Construct new interchange	1	Midland	RC-138	$35,200,000		$3,200,000		**$38,400,000**
				Years 11-26 Totals				**$262,210,000**	**$0**	**$97,240,000**	**$0**	**$359,450,000**
				16 Year Estimate				**$274,560,000**	**$16,000,000**	**$120,000,000**	**$16,000,000**	**$426,560,000**
				Estimated Remainder				**$12,350,000**	**$16,000,000**	**$22,760,000**	**$16,000,000**	**$67,110,000**

* Total Year Of Expenditure (YOE) Cost reflects 4% annual inflation

Map 9.2 Fiscally Constrained Priority Projects 2030 – 2045



9.3 Unfunded Projects

Projects that are listed as unfunded are not required to be fiscally constrained. Any unfunded project may be added to the fiscally constrained priority project list subject to available funding and Policy Board approval. The unfunded priority list was generated by the TAC, MPO staff, and stakeholders as the process of prioritization was being finalized.

Table 9.3 Unfunded Projects

Line #	Project ID	County	Road Name	Limit	Description	Estimated Cost
1	RC-08	Midland	SH 349	AT FM 1788/CR 60	Construct new interchange	$20,000,000
2	RC-13	Ector	SL 338	52nd St. to SH 191	Convert non-freeway to freeway	$2,750,000
3	RC-14*	Midland	SL 250	At BI 20	Reconstruct Interchange	$13,750,000
4	RC-18*	Ector	SL 338	SH 191 eastern jct. to IH 20 eastern jct.	Convert non-freeway to freeway	$5,000,000
5	RC-29	Ector	IH 20	FM 1936 to Monahans Draw	Widen mainlanes for added capacity	$44,700,000
6	RC-37	Ector	IH 20	Monahans Draw to Midland County Line	Widen mainlanes for added capacity	$62,500,000
7	RC-39a	Ector	SL 338 W	IH 20 to SH 302	Convert non-freeway to freeway	$13,000,000
8	RC-49 int	Midland	SH 158	At CR 1250	Construct new interchange	$20,000,000
9	RC-49a int	Midland	SH 349	At CR 1250	Construct new interchange	$20,000,000
10	RC-50a int1	Midland	SH 191	At CR 1250	Construct new interchange	$20,000,000
11	RC-69	Midland	SH 349 (FM 1788)	SH 191 to 1 mi north of SH 158	Convert non-freeway to freeway	$13,750,000
12	RC-70	Ector	SH 158	FM 1788 to Grandview	Widen non-freeway	$16,875,000
13	RC-71	Ector	SH 158	Grandview to US 385	Widen non-freeway	$9,375,000
14	RC-72	Ector	SL 338 S	US 385 to FM 3503	Widen non-freeway	$18,000,000
15	RC-73	Ector	SL 338 S	At FM 3503	Construct new interchange	$20,000,000
16	RC-77	Ector	SL 338 NE	At 87th St.	Construct New Interchange	$20,000,000
17	RC-78	Ector	SL 338 NE	At FM 554/Grandview	Construct New Interchange	$20,000,000
18	RC-79	Martin/Midland	BS 349	Mockingbird to SH 349	Widen non-freeway	$9,375,000
19	RC-81	Martin	SH 349	At Fairgrounds Rd	Construct new interchange	$20,000,000
20	RC-87	Midland	IH 20	Ector County Line to SL 250	Widen mainlanes for added capacity	$102,800,000
21	RC-93	Midland	SH 158	SH 191 to SH 349	Widen non-freeway	$18,750,000
22	RC-94	Midland	SH 158	SH 349 to FM 1788	Widen non-freeway	$11,250,000
23	RC-99	Midland	SH 349/FM 1788	At SL 40/Yukon Rd. Ext.	Intersection improvements	$600,000
24	RC-100	Midland	SH 349/FM 1788	At SH 191	Construct new interchange	$20,000,000
25	RC-102	Midland	SH 349	FM 1788/CR 60 to SH 158	Convert non-freeway to freeway	$5,500,000
26	RC-103	Midland	SH 349	SH 158 to Holiday Hill Rd	Convert non-freeway to freeway	$11,250,000
27	RC-104	Midland	SH 349	Holiday Hill Rd to Garfield Rd	Convert non-freeway to freeway	$7,300,000

Table 9.3 Unfunded Projects (cont.)

Line #	Project ID	County	Road Name	Limit	Description	Estimated Cost
28	RC-105	Martin	SH 349	Garfield Rd to BS 349	Convert non-freeway to freeway	$5,000,000
29	RC-106	Midland	SH 349	At SH 158	Construct new interchange	$20,000,000
30	RC-107	Midland	SH 349	At Holiday Hill	Construct new interchange	$20,000,000
31	RC-108	Martin	SH 349	At Garfield Rd	Construct new interchange	$20,000,000
32	RC-116a	Midland	IH 20	SL 250 W to 0.3 MI East of SH 349	Widen mainlanes for added capacity	$34,700,000
33	RC-116b	Midland	IH 20	0.3 MI East of SH 349 to FM 1208	Widen mainlanes for added capacity	$152,300,000
34	RC-117	Ector	SL 338 N	At Wireline Rd. (CR 1157)	Construct new interchange	$20,000,000
35	RC-118	Midland	SH 191	At Unnamed Rd West of FM 1788	Construct new interchange	$20,000,000
36	RC-120	Martin	SH 349	BS 349 to Fairgrounds Road ext	Construct new location non-freeway	$1,250,000
37	RC-120b	Martin	SH 349	Fairground Rd ext. to CR 1150/Elkins Rd	Construct new location non-freeway	$1,500,000
38	RC-120c	Martin	SH 349	CR 1150/Elkins Rd to FM 1208	Construct new location non-freeway	$8,800,000
39	RC-128	Ector	SL 338	At JBS Parkway	Construct new interchange	$20,000,000
40	RC-129	Ector	US 385 (Grant Ave.)	2nd St. to 10th St.	Rebuild as a Pedestrian Friendly Corridor	$8,000,000
41	RC-130	Ector	US 385 (Grant Ave.)	2nd St. to IH 20	Streetscape and Pedestrian Improvements	$6,250,000
42	RC-132	Ector	SL 338 W	At SH 302/42nd St	Reconstruct Interchange	$13,750,000
43	RC-135	Ector	SL 338 E	At SH 191	Replace exisiting underpass with overpass	$13,750,000
44	RC-137	Midland	BI 20	At CR 1250	Reconfigure offset at railroad tracks	$1,800,000
45	RC-139	Ector	US 385 (Andrews Hwy)	at 100th St.	Construct Lighted Intersection - Close Frontage Roads to 87th and add Frontage Rd. Access 1/2 Block N. and S.	$600,000
46	RC-140	Ector	US 385 (Andrews Hwy)	at 91st St.	Construct Lighted Intersection - Close Frontage Roads to 87th and add Frontage Rd. Access 1/2 Block N. and S.	$600,000
47	RC-141	Ector	SL 338 SE	FM 3503 to IH 20 Eastern Jct.	Convert non-freeway to freeway	$12,500,000
48	RC-157	Midland	BI 20	At Hwy 158 (Garfield St.)	Construct new interchange	$25,000,000
49	RC-159	Midland	BS 158 (Andrews Hwy)	At FM SL 268 (Wall St), including Ohio Ave to Indiana Ave	Intersection Improvements, Corridor Capacity Improvements, Access Management Improvements	$5,500,000
50	RC-201	Ector	IH 20	At SL 338 W	EB to SB direct connect	$25,000,000
51	RC-202	Ector	IH 20	At SL 338 W	NB to WB direct connect	$25,000,000
52	RC-203	Ector	IH 20	At SL 338 W	EB to NB direct connect	$25,000,000
53	RC-204	Ector	IH 20	At SL 338 W	SB to WB direct connect	$25,000,000
54	RC-205	Ector	IH 20	At SL 338 E	WB to SB direct connect	$25,000,000
55	RC-206	Ector	IH 20	At SL 338 E	NB to EB direct connect	$25,000,000
56	RC-207	Ector	IH 20	At SL 338 E	SB to EB direct connect	$25,000,000
57	RC-208	Ector	IH 20	At SL 338 E	WB to NB direct connect	$25,000,000
58	RC-209	Ector	IH 20	At SL 338 W	NB to EB direct connect	$25,000,000
59	RC-210	Ector	IH 20	At SL 338 W	SB to EB direct connect	$25,000,000

Table 9.3 Unfunded Projects (cont.)

Line #	Project ID	County	Road Name	Limit	Description	Estimated Cost
60	RC-211	Ector	IH 20	At SL 338 W	WB to SB direct connect	$25,000,000
61	RC-212	Ector	IH 20	At SL 338 W	WB to NB direct connect	$25,000,000
62	RC-213	Ector	IH 20	At SL 338 E	EB to NB direct connect	$25,000,000
63	RC-214	Ector	IH 20	At SL 338 W	EB to SB direct connect	$25,000,000
64	RC-215	Ector	IH 20	At SL 338 E	NB to WB direct connect	$25,000,000
65	RC-216	Ector	IH 20	At SL 338 E	EB to SB direct connect	$25,000,000
66	RC-217	Ector	US 385 N	At SL 338 N	EB to NB direct connect	$25,000,000
67	RC-218	Ector	US 385 N	At SL 338 N	SB to WB direct connect	$25,000,000
68	RC-219	Ector	SL 338 W	At SH 302	EB to SB direct connect	$25,000,000
69	RC-220	Ector	SL 338 W	At SH 303	NB to WB direct connect	$25,000,000
70	RC-221	Ector	SL 338 W	At SH 304	EB to NB direct connect	$25,000,000
71	RC-222	Ector	SL 338 W	At SH 305	SB to WB direct connect	$25,000,000
72	RC-223	Ector	US 385 S	At SL 338 S	NB to WB direct connect	$25,000,000
73	RC-224	Ector	US 385 S	At SL 338 S	EB to SB direct connect	$25,000,000
74	RC-235	Midland	BI-20 (Wall St)	At Avalon Dr	Intersection Improvements, New Signalized Intersection	$3,000,000
75	RC-238	Midland	BI-20 (Front St)	At Fairgrounds Rd	Grade Separation, Intersection Improvements	$25,000,000
76	RC-239	Midland	BS 349 (Big Spring St)	At Scharbauer Dr	Intersection Improvements, Widen Structure	$4,000,000
77	RC-241	Midland	SL 250	At A St	Intersection Improvements, Traffic Signal Upgrades	$5,000,000
78	RC-244	Midland	SL 250	Wadley Ave/Holiday Hill Rd/Tremont Ave	Intersection Improvements, Traffic Signal Upgrades	$5,000,000
79	RC-245	Midland	SH 191	EB Ramp at FM 1788	Extend on ramp with acceleration merge lane	$1,000,000
80	RC-246	Midland	IH 20	At CR 1110	Construct new interchange	$20,000,000
81	RC-249	Ector	SL 338 SE	At Bates Field Rd.	Construct New Interchange	$20,000,000
82	RE-02	Ector	FM 1882	US 385 northern jct. to Yukon Rd	Widen non-freeway	$13,152,000
83	RE-03a	Ector	BI 20	8th St. to FM 1788	Improve mobility and add capacity	$42,788,000
84	RE-03b	Ector	BI 20	IH 20 to 8th St.	Improve mobility and add capacity	$40,536,000
85	RE-04a	Midland	BI 20	FM 1788 to Wall/Front St.	Improve mobility and add capacity	$38,284,000
86	RE-04b	Midland	BI 20	Front St. to IH 20	Improve mobility and add capacity	$67,560,000
87	RE-10a	Midland	FM 307	Fairgrounds Rd to CR 1150	Widen non-freeway	$7,000,000

9.4 Transit Prioritized Projects Through 2045

EZ Rider services are funded through FTA's Section 5307, Urbanized Area Formula Grant Program. The transit funds are used for operations, planning and maintenance activities. EZ Rider's planning funds will be applied to the monitoring of the overall transit system along with individual route performances, while maintenance funds will be used to keep the fleet in a state of good repair to meet EZ-Rider's Transit Asset Management goals.

The provision of Elderly and Disabled Transit Services is funded through Section 5310, Elderly and Persons with Disabilities Program. Recent funding allocations for Section 5310 were used as a baseline, along with modest increases.

Table 9.4 Elderly and Disabled Transit Service Cost

	2020-2025	2026-2035	2036-2045	2020-2045
Category	Projected Amount	Projected Amount	Projected Amount	Projected Amount
Section 5310	$ 1,319,776	$ 2,244,000	$ 2,288,000	$ 5,851,776

* *Description: Provide transportation service for elderly and disabled persons*

Table 9.5 E-Z Rider Project List

MOUTD Projects List	2020-2025	2026-2035	2036-2045
Add Two Hours of Revenue Service	$4,451,856	$4,451,856	$4,451,856
Bus Replacement Program	$11,587,703	$12,800,000	$12,800,000
Comprehensive Operations Analysis	$250,000		
Inter-urban Express Route		$4,500,000	$4,500,000
Midland Downtown Transfer Center	$3,125,000		
Multi/Intermodal Transit Center		$4,700,000	
Two New Fixed Routes		$8,030,000	$8,080,000
Odessa Downtown Transfer Center		$3,125,000	
Total	**$19,414,559**	**$37,606,856**	**$29,831,856**

9.5 Bicycle & Pedestrian Projects

In the summer of 2017, the City of Midland applied to TxDOT for Transportation Set-Aside Program funding. The project includes pedestrian and bicycle enhancements in their downtown to encourage the use of alternative transportation options for both workers and downtown visitors. Enhancements included adding north and southbound bike lanes on N. Lorraine St. and N. Main St. The project was approved for funding and included in the Permian Basin MPO 2019-2022 TIP.

The City of Odessa and the City of Midland have both submitted applications in FY 2019 for funding to address pedestrian and cyclist concerns in their communities. If their applications are successful, the Permian Basin MPO will make formal amendments to the adopted 2019-2022 TIP to reflect these funds and project approvals.

Table 9.6 Bicycle & Pedestrian

Project	Description	Highway	Limit	Est. Let Year	Total Project Cost	Sponsor	MPO ID
Midland-Downtown Bike/Ped Infrastructure	Construct bicycle lanes, curb extensions, and median and improve ADA compliance	N/A	On N Loraine and N Main St from W Louisiana St. to E Wall St	2019	$627,038	City of Midland	BP-06

9.6 Unfunded Bicycle and Pedestrian Projects

In September of 2017 the Permian Basin Metropolitan Organization was awarded $17,258 in supplemental funding under the Texas Department of Transportation's (TxDOT) State Planning and Research program to commence the evaluation and feasibility of an intercity trail facility. The Permian Basin MPO Policy Board approved additional funding in the amount of $24,742 for the study allowing the organization to proceed. Accepted in May of 2019 the Multi Use Trail Study outlined preliminary routes for further study and consideration by the Permian Basin MPO and planning partners interested in seeing the corridor come to fruition. Other efforts to address cyclist and pedestrian needs are the applications to the TxDOT Transportation Alternative Set Aside and Safe Routes to School Programs.

Table 9.7 Illustrative List Bicycle and Pedestrian

Project	Description	Highway	Limit	Total Project Cost	Sponsor	MPO ID
Multi-Use Trail Corridor	Construct a multi-use trail connecting the communities of Midland and Odessa	TBD	TBD	TBD	Multiple	BP-07

9.7 Grouped CSJs

Some of the necessary and important transportation work in the region may be completed by state and local MPO partner agencies under State authority, wherein work may be commenced without a specific description of the project in the MTP. Table 9.8 is the approved grouped project category descriptions. At this time projects funded with Transportation Alternatives Set Aside Program (TASA), Transportation Enhancement (TE), and Congestion Mitigation and Air Quality Program (CMAQ) funding require an individual Federal eligibility determination prior to authorization of Federal funding, and therefore are not approved to be grouped.

Table 9.8 Grouped Project Control Job Numbers (CSJ) by Category (revised August 4, 2015)

PROPOSED CSJ	GROUPED PROJECT CATEGORY	DEFINITION
5000-00-950	PE-Preliminary Engineering	Preliminary Engineering for any project except added capacity projects in a nonattainment area. Includes activities which do not involve or lead directly to construction, such as planning and research activities; grants for training; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed.
5000-00-951	Right of Way Acquistion	Right of Way acquisition for any project except added capacity projects in a nonattainment area. Includes relocation assistance, hardship acquisition and protective buying.
5000-00-952 5000-00-957 5000-00-958	Preventive Maintenance and Rehabilitation	Projects to include pavement repair to preserve existing pavement so that it may achieve its designed loading. Includes seal coats, overlays, resurfacing, restoration and rehabilitation done with existing ROW. Also includes modernization of a highway by reconstruction, adding shoulders or adding auxiliary lanes (e.g., parking, weaving, turning, climbing, non-added capacity) or drainage improvements associated with rehabilitation.
5000-00-953	Bridge Replacement and Rehabilitation	Projects to replace and/or rehabilitate functionally obsolete or structurally deficient bridges.
5000-00-954	Railroad Grade Separations	Projects to construct or replace existing highway-railroad grade crossings and to rehabilitate and/or replace deficient railroad underpasses, resulting in no added capacity
5800-00-950	Safety	Projects to include the construction or replacement/rehabilitation of guard rails, median barriers, crash cushions, pavement markings, skid treatments, medians, lighting improvements, highway signs, curb ramps, railroad/highway crossing warning devices, fencing, intersection improvements (e.g., turn lanes), signalization projects and interchange modifications. Also includes projects funded via the Federal Hazard Elimination Program, Federal Railroad Signal Safety Program, or Access Managements projects, except those that result in added capacity.
5000-00-956	Landscaping	Project consisting of typical right-of-way landscape development, establishment and aesthetic improvements to include any associated erosion control and environmental mitigation activities.
5800-00-915	Intelligent Transportation System Deployment	Highway traffic operation improvement projects including the installation of ramp metering control devices, variable message signs, traffic monitoring equipment and projects in the Federal ITS/IVHS programs.
5000-00-916	Bicycle and Pedestrian	Construction or rehabilitation of bicycle and pedestrian lanes, paths and facilities.
5000-00-917	Safety Rest Areas and Truck Weigh Stations	Construction and improvement of rest areas, and truck weigh stations.
5000-00-918	Transit Improvements and Programs	Projects include the construction and improvement of small passenger shelters and information kiosks. Also includes the construction and improvement of rail storage/maintenance facilities bus transfer facilities where minor amounts of additional land are required and there is not a substantial increase in the number of users. Also includes transit operating assistance, acquisition of third-party transit services, and transit marketing, and mobility management/coordination.

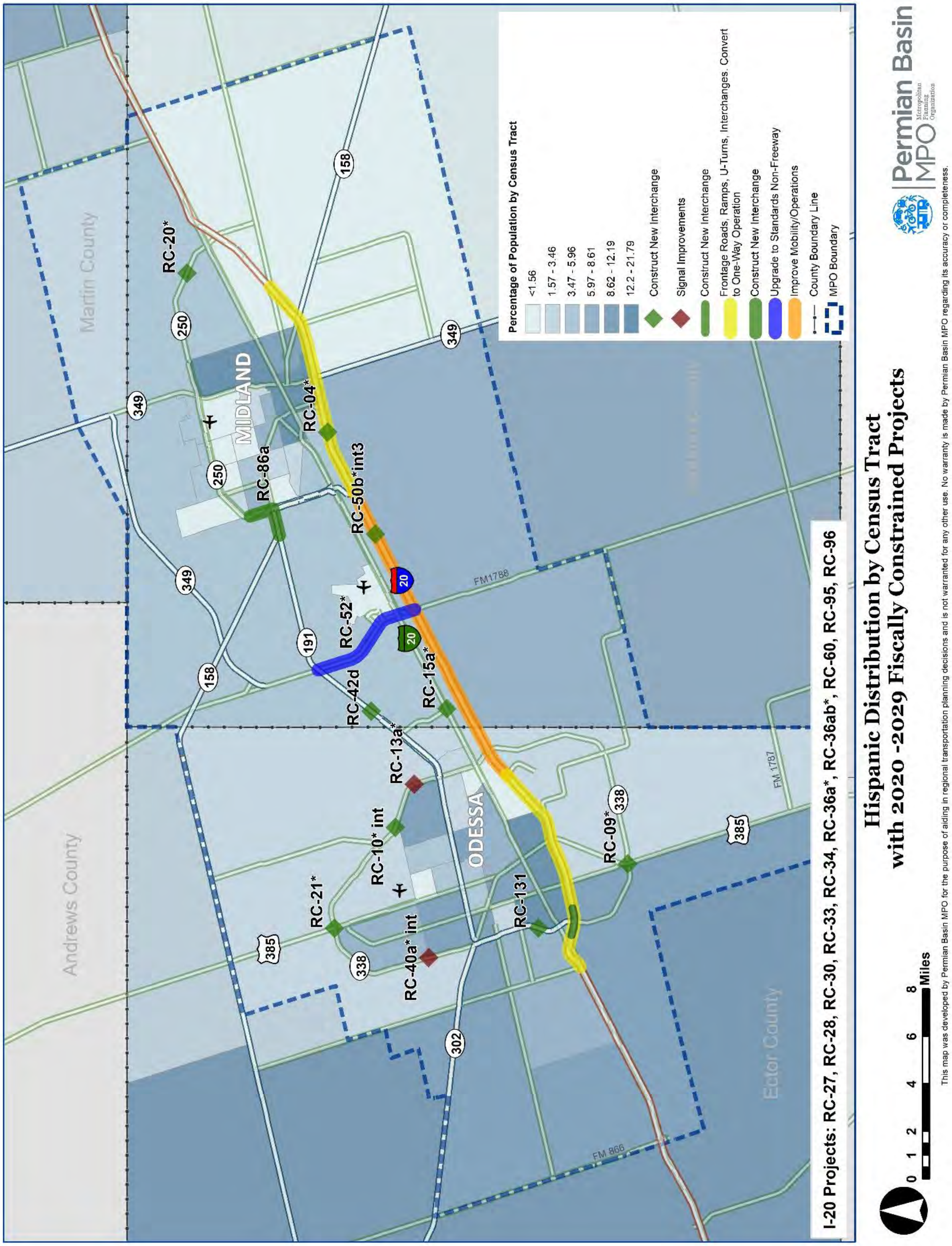
Note 1: Projects funded with Transportation Alternatives Program (TAP), Transportation Enhancement, and Congestion Mitigation Air Quality funding require a Federal eligibility determination, and are not approved to be grouped.

Note 2: Projects funded as part of the Recreational Trails Program (RTP) consistent with the revised grouped project category definitions may be grouped. RTP projects that are not consistent with the revised grouped project category definitions must be individually noted in the Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP).

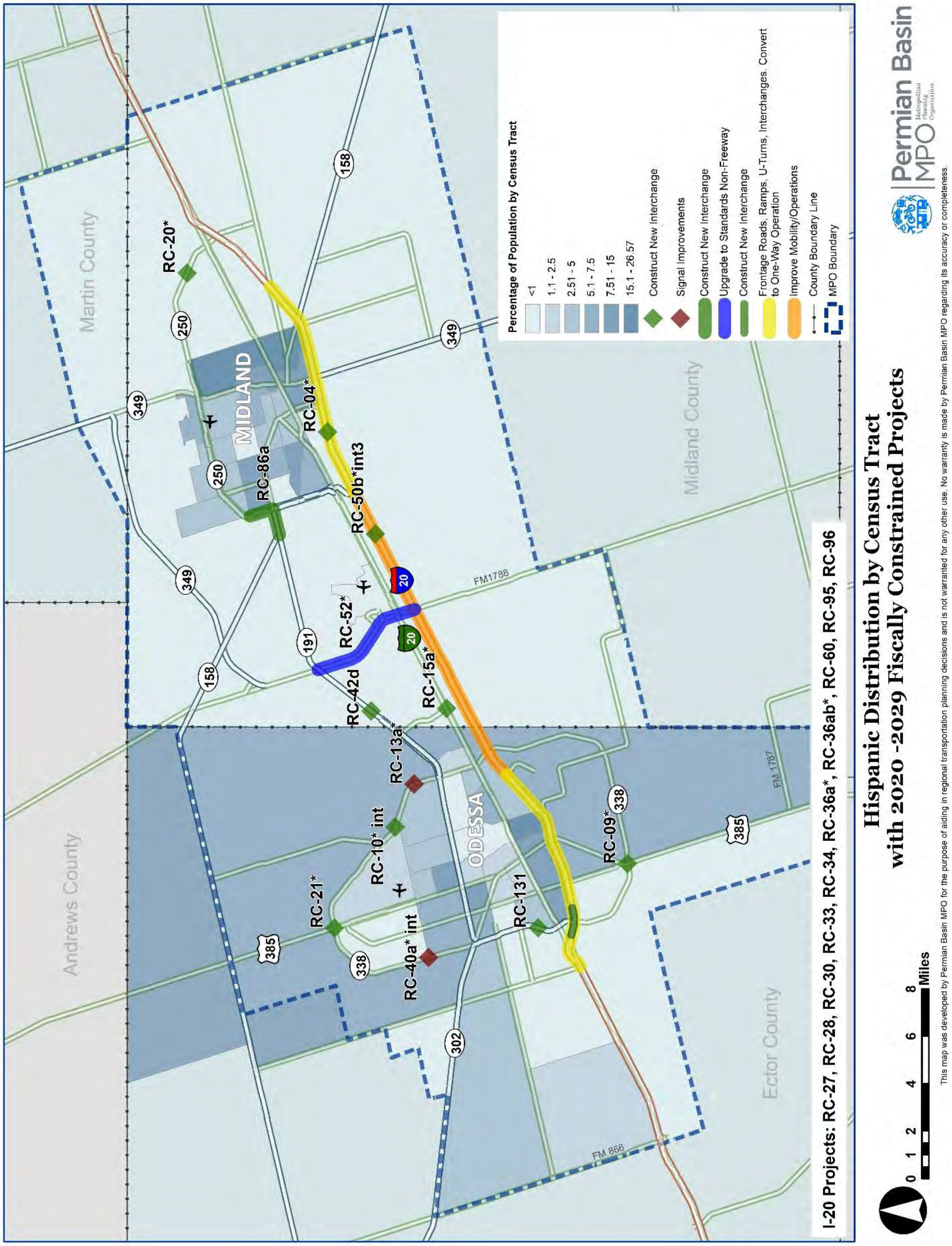
9.8 Title VI /EJ Analysis

The purpose of an environmental justice (EJ) review is to ascertain that federally funded transportation projects do not adversely impact minority, low-income and limited English proficient populations. Federal Highway Administration states that “disproportionately high and adverse effects, not size, are the bases for EJ. A very small protected population in the project, study, or planning area does not eliminate the possibility of a disproportionately high and adverse effect on these populations. The MPO is responsible for ensuring and documenting that these populations are not adversely affected.

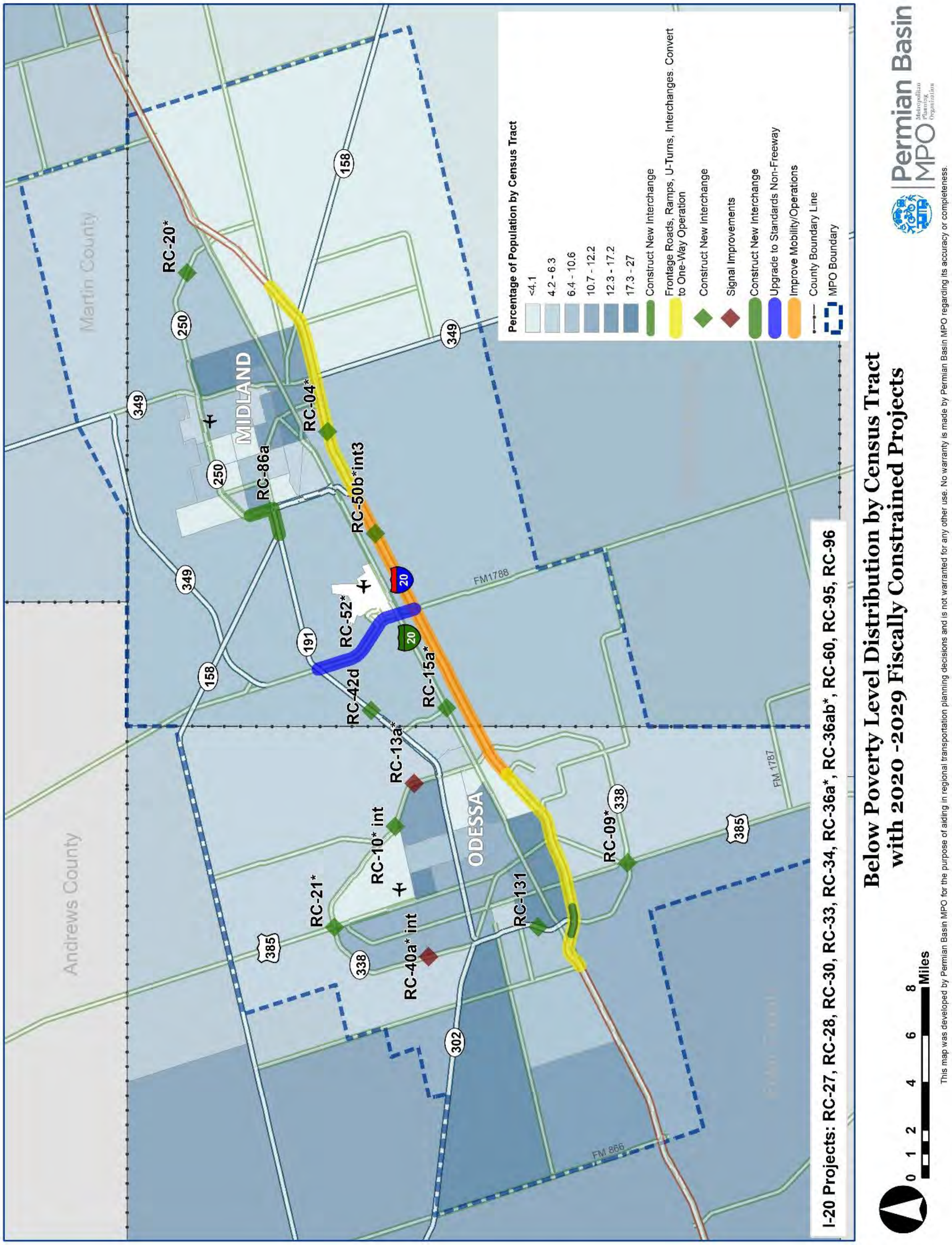
Map 9.3 Hispanic Population Distribution by Census Tract



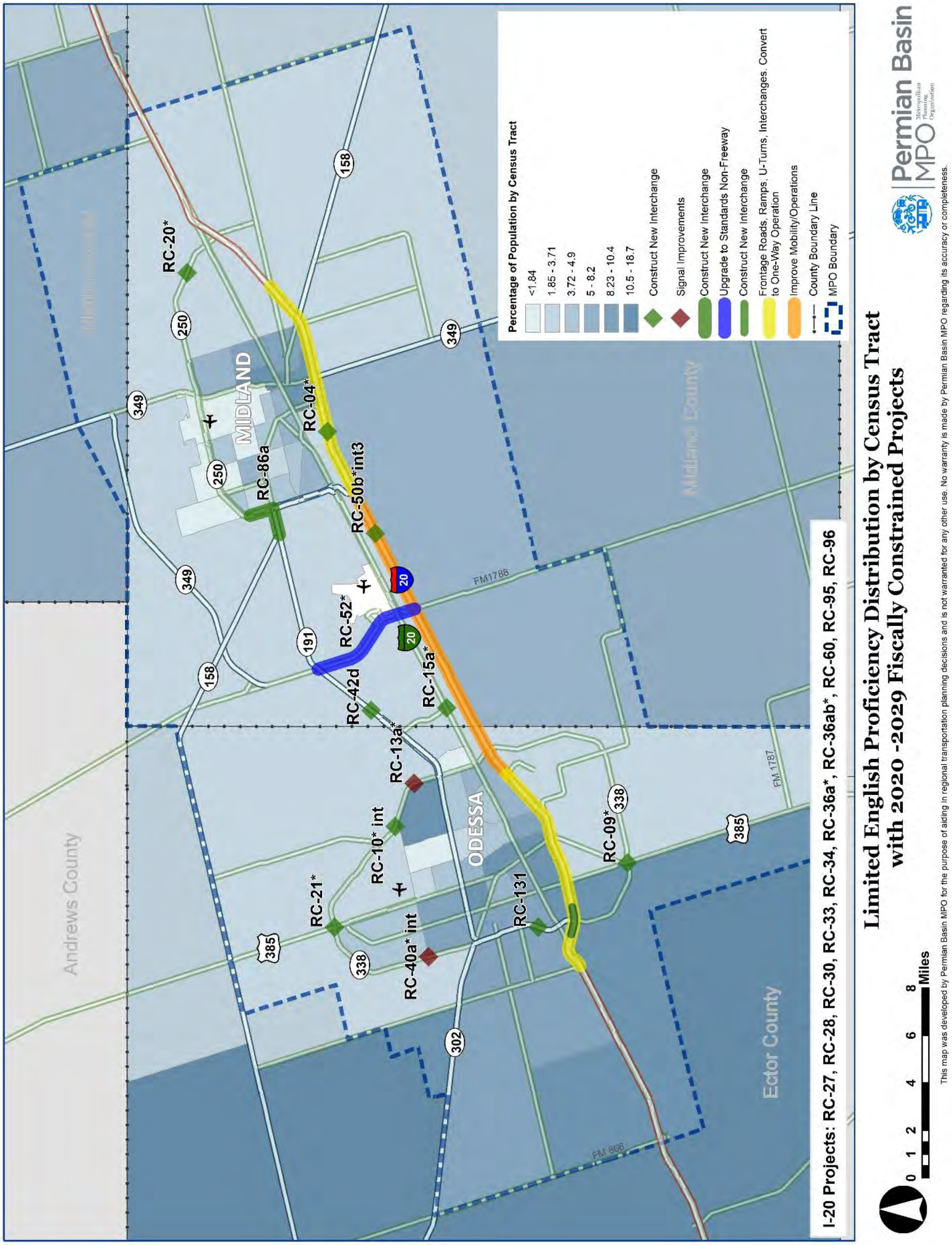
Map 9.4 African American Population Distribution by Census Tract



Map 9.5 Below Poverty Population Distribution by Census Tract



Map 9.6 Limited English Proficient Population Distribution by Census Tract



10.1 Overview of the MPO's Financial Picture

Federal regulations under USDOT require a financial plan as an element of the Permian Basin's 2045 MTP. The purpose of the financial plan is to demonstrate that proposed investments are reasonable in the context of anticipated future revenues over the life of the plan. Meeting this requirement in the financial planning realm is called "fiscal constraint." The *Forward 45* MTP is fiscally constrained based on an in-depth analysis of anticipated revenues and escalated project costs due to inflation; furthermore, the transportation investments proposed in this plan are consistent with revenue forecasts. Anticipated revenues include funding from federal, state, and local sources. This Chapter provides detailed assumptions regarding revenue, capital costs, maintenance costs, and future revenue needs used to develop the MTP financial plan. Funding for transportation improvements in Texas is driven by the Unified Transportation Program (UTP), which is a ten-year, mid-range planning document, used by TxDOT to guide the state's project development. Transportation investment legislation was enacted in 2015 when House Bill 20 was passed by the Texas Legislature. The bill requires that TxDOT and all MPOs maintain a ten-year planning and programming cycle that includes the same time frame as the TxDOT UTP, i.e. a ten-year rolling period. HB 20 also requires the UTP to contain funding streams that provide a high degree of confidence to pay for projects in the ten-year window. This chapter includes a discussion of roadway and transit funding assumptions, based on the anticipated revenues available. The fiscally constrained list of projects in Chapter 9 contains transportation improvements as identified by Permian Basin MPO Policy Board, the TAC, staff, stakeholders and the public who attended hearings and workshops during the development of the MTP. As stated in previous chapters, numerous opportunities for public and stakeholder input were offered during the preparation of the plan. The transportation improvements contained in this Chapter are intended to meet the anticipated needs within the ten-year and 26-year time frames; subject to amendment(s) by the MPO Policy Board.

10.2 Cost Estimates

During the preparation of the previous *Vision 2040* MTP, the TAC and a working committee met frequently to establish a reasonable cost estimate for the types of projects being considered for inclusion into the MTP. These included projects such as overpasses, road widenings, added capacity projects and conversions from typical two-lane roadways to a non-freeway corridors. Part of the staff and TAC responsibilities associated with the preparation of this *Forward 45* MTP was to generate a new projection of cost for the long list of projects that was originally submitted following a "Call for Projects" in September 2018. Again, the TAC met to discuss the revision to the previously used document containing project cost estimates. It was stated by TAC members that a significant increase in cost has been experienced by all agencies and that the new project cost estimates should be increased by a factor of 25 percent. This was the methodology utilized for cost estimating of projects listed in Chapter 9. Figure 10.1 below shows typical cost projections applied to the projects contained in the MTP.

Figure 10.1 Cost Estimating Worksheet

Tier Level	County	Source/Name	Unique Identifier	Highway/Co. Rd. Number	From/To	Length	Description	Construction Cost	Construction Estimate
								$ Million	
			RC-120	SH 349	BS 349 to Fairground Rd. ext.	1	Construct new location non-freeway	1.25	$1.25 million per mile
A	Ector	MTP	RC-72	SL 338 S	US 385 to FM 3503	4.1	Widen non-freeway	15.38	$3.75 million per mile state road
A	Midland/Martin	Martin	RC-248	FM 1208	IH 20 to FM 1212	4.5	Widen non-freeway	21.38	$3.75 million per mile state road
A	Ector	TxDOT	RC-30	IH 20	At SL 338 W	1	Reconstruct interchange	26.3	From Updated I-20 Study
A	Ector	MTP	RC-135	SL 338 E	At SH 191	1	Replace exisiting underpass with overpass	40.0	$40 million
A	Midland	TxDOT	RC-14	SL 250 W	At BI 20	1.0	Reconstruct interchange	13.75	$13.75 million
A	Midland	TxDOT	RC-246	IH 20	At CR 1110	1	Constuct new interchange	20	$20 million
A	Ector	MTP	RC-77	SL 338 N	At 52nd/56th	1	Construct new interchange	20	$20 million
A	Midland	MTP	RE-04b	BI 20	Front St. to IH 20	12	Improve mobility and add capacity	67.5	$5.63 million per mile
A	Ector	MTP	RC-10	Loop 338	Yukon to 52nd St.	2	Convert non-freeway to freeway	5	$2.5 million per mile
A	Midland	MTP	RC-03	SL 250	Fairgrounds Rd to Todd Rd	1	Convert non-freeway to freeway	2.5	$2.5 million per mile
A	Ector	TxDOT	RC-27	IH 19	FM 1936 to SL 338 western jct.	1.8	Frontage Roads, Ramps, U-Turns, Interchanges. Convert to One-Way Operation	7.3	From Updated I-20 Study
A	Midland	TxDOT	RC-87	IH 20	Ector County Line to SL 250 West	10.0	Widen Mainlanes for Added Capacity	102.8	From Updated I-20 Study
A	Midland	Public Comment	RC-245	SH 191	EB Ramp at FM 1788	1	Extend on ramp with acceleration merge lane	1	$1 million
A	Ector	MTP	RC-216	IH 20	At SL 338 E	1	EB to SB direct connect	25	$25 million

Description	$ Million		Your Comments
widen non-freeway -state road	3.6	per mile	
construct new interchange	19	unit	
reconstruct interchange	13	unit	
Interchange work involves a linear distance	8.4	per mile	
Convert frontage rds from 2-way to 1-way	From Updated I-20 Study		
Widen Mainlanes for Added Capacity	From Updated I-20 Study		

10.3 Preventive Maintenance and Operations

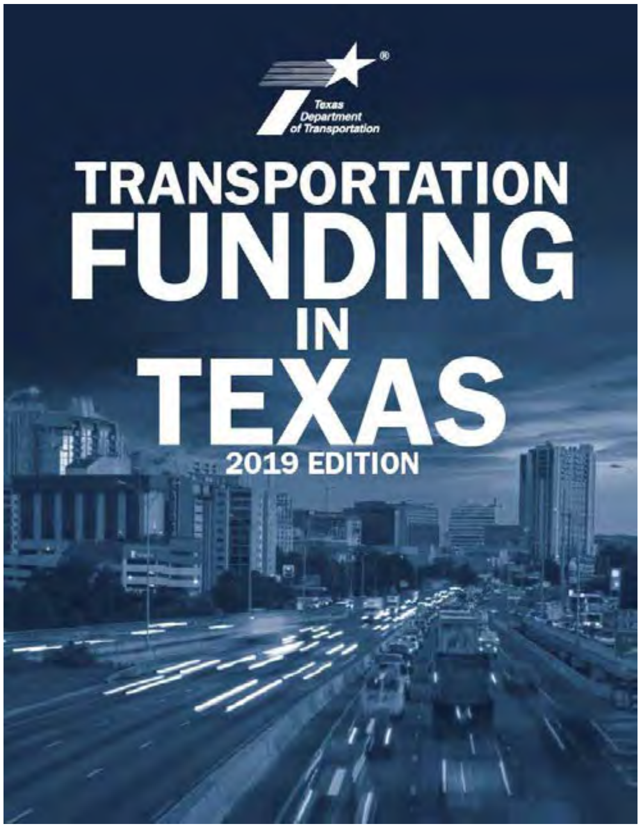
This Chapter primarily describes financial revenues over the life of the MTP. A critical component of the overall planning effort is to ensure that investments of public funds are maintained over time and that operational improvements assist in the movement of people and goods and serve to increase longevity of the completed projects. The TxDOT Odessa District invested $15,436,624 in FY 2018 and $11,652,667 in FY 2019 in the MPO boundary. These funds are from the District's allocated Category 1, Preventive Maintenance and Rehabilitation funds. Discussions with the TxDOT Odessa District staff indicate that these two years of maintenance funding are typical and that the MPO should continue to benefit from a range of $12 million to $16 million annually. These funds are managed entirely by the TxDOT Odessa District. Sample projects funded by the TxDOT Odessa District Category 1 funds include:

- BI 20 Roadway Rehabilitation from Loop 250 to Fairgrounds Rd.; Estimated LET Date, February 2020
- US 385 Roadway Rehabilitation from Yukon Road to SH 191 and 8th St. to I-20; Estimated LET Date, February 2020
- FM 1787 Roadway Restoration from US 385 to .3 Mi. East of FM 1492; LET Date, November 2018
- Loop 250 Widening and Rehabilitation from SH 158 to Midkiff Rd.; LET Date, October 2018
- BS-349 C Roadway Rehabilitation from Martin County Line to Loop 250; LET Date, May 2018
- BI-20 Roadway Rehabilitation from East Loop 338 to SH 158; Let Date, March 2018

In addition to the TxDOT financial commitment to maintenance and operations, both cities and all three counties also provide annual funding to maintain off system roads and neighborhood streets which improve safety and system reliability as well as continued economic value.

10.4 Constrained Funding Scenario

To provide the reader with additional information covering the TxDOT UTP process, the Texas Transportation Commission and TxDOT use the UTP as a ten-year plan to guide transportation project development. The UTP is developed annually in accordance with the Texas Administrative Code (TAC §16.105) and is approved by the Texas Transportation Commission prior to August 31. The UTP authorizes projects for construction, development and planning activities and includes projects involving highways, aviation, public transportation, freight rail, ports, and state and coastal waterways.



The UTP is part of a comprehensive planning and programming process flowing from TxDOT's agency mission to project-level implementation. That is, the UTP is an intermediate programming document linking the planning activities of the Statewide Long-Range Transportation Plan (SLRTP), the Metropolitan Transportation Plans, and Rural Transportation Plan to the detailed programming activities under the Statewide Transportation Improvement Program (STIP), MPO Transportation Improvement Programs (TIP), and TxDOT's 24-month (2-year) construction letting schedule.

Specifically, the UTP is a listing of projects and programs that are planned to be constructed and/or developed within the first ten years of the State's 24-year SLRTP. Project development includes activities such as preliminary engineering work, environmental analysis, right-of-way acquisition and design. Despite its importance to TxDOT as a planning and programming tool, the UTP is neither a budget nor a guarantee that projects will or can be built. However, it is a critical tool in guiding transportation project development within the long-term planning context. In addition, it serves as a communication tool for stakeholders and the public in understanding the project development commitments TxDOT and its partners are making.

The Permian Basin MPO benefits directly from the inclusion of projects into the State's UTP. As stated, once a project is listed in the UTP, the listed activities can begin. Typically, by the time a project gets included in the UTP the idea behind it has been discussed and analyzed on a needs basis among the MPO's member agencies, interested parties, and the Policy Board. As part of this exercise in prioritizing projects and indicating fiscal constraint within the MTP, the TAC and Policy Board has prepared a list of projects for consideration into the MPO's priority project list. It is from this list that projects are chosen for inclusion into the UTP except that the Transportation Commission has the authority to provide funding for projects that may not be listed in the MPO’s project list using funding categories it has available.

The UTP development process includes the steps listed below,

- Establish strategic goals, performance measures, and approved targets
- Develop the planning cash forecast
- Determine the UTP funding distribution strategy
- Release the UTP planning targets
- Prioritize and select transportation projects locally
- Identify funding for the transportation projects
- Prioritize and select transportation projects at the state level
- Produce the UTP document and project listings
- Conduct UTP public meeting and public hearing
- Present to Texas Transportation Commission for adoption

Federal Funds

Revenues collected from federal motor fuels taxes are deposited in the federal Highway Trust Fund. These funds are appropriated by Congress through the Federal-Aid Highway Programs and distributed to each state. Most TxDOT projects are funded with both federal and state funds, with the most common share being 80% federal, 20% state. The Federal Highway Administration (FHWA) reimburses TxDOT for qualified project expenditures as they are paid out.

Federal Funds

Over one-third of TxDOT's budget is comprised of federal funds, which are deposited in the State Highway Fund. The state General Appropriations Act (GAA) includes federal funds in TxDOT's bill pattern as estimated reimbursements for payments on projects that meet certain federal requirements.

At the federal level, revenue collected from the federal tax on gasoline and diesel is deposited in the Highway Trust Fund. Highway Trust Fund dollars are distributed to states primarily through highway and transit formulas, in addition to discretionary allocations. For decades, federal aid for highways was supported solely by tax and fee revenue deposited in the Highway Trust Fund. Since 1993, the federal motor fuels tax rate has remained at 18.4 cents per gallon of gasoline and 24.4 cents per gallon of diesel fuel. These collections have not kept up with the rising demands on the nation's transportation system. Since 2008, the Highway Trust Fund has been supplemented with federal general revenue to compensate for the diminishing value of the federal gas tax.

In FY 2019, Texas will be the largest donor state receiving a smaller percentage from the federal Highway Trust Fund than the percentage contributed to the fund. Eleven percent of Highway Trust Fund revenues are generated in Texas, yet the state will only receive 8.95 percent of funds apportioned to states from the fund this fiscal year. This disproportion equals approximately $939 million in highway funding attributed to fuel taxes paid in Texas but will be directed to other states' transportation programs in federal FY 2019.

State Funds

The State Highway Fund is TxDOT's principal fund. Most of the taxes and fees deposited in the State Highway Fund are dedicated by the Texas Constitution to support state highways. The primary sources of State Highway Fund revenues are the state motor fuels tax, vehicle registration fees, sales taxes (Proposition 7), and the oil and gas production tax, also known as severance tax (Proposition 1). Revenues from Propositions 1 and 7 are held in special subaccounts of the State Highway Fund. These funds are realized at the MPO level when the distribution of Category 2 funds is made by the Transportation Commission. For the Permian Basin MPO, the main source of revenue is Category 2, Metro and Urban Area Corridor Projects. Larger MPOs benefit from additional funding from the remaining TxDOT categories shown below. The Category 2 funds are distributed based on a number of factors that affect the region. This is true for all MPOs, but not the case for Transportation Management Areas (TMAs). The Texas Administrative Code (Title 43, Part 1, Rule 16.154) contains a formula for the distribution of funds based on population, truck vehicle miles traveled, congestion, number of lane miles that are on-system, and safety using fatal and serious injury crashes as reported through the TxDOT Crash Record Information System. It is based on these factors that the Permian Basin MPO is allocated Category 2 funds for each year of the UTP. As stated earlier, the UTP is a ten-year planning document and reasonably forecasts funding over the ten-year time period so that the MPO has the understanding of available funding to plan for mid-term transportation projects where the 25-year MTP is a long-range document and the TIP covers a short, 4-year period. Table 10.1 below show the UTP funding made available through the UTP to the Permian Basin MPO in FY 2015 and FY 2020. In that six-year period, the total funding made available to all MPOs and rural highways in the TxDOT Districts has more than doubled.

The State Highway Fund

The State Highway Fund, also referred to as Fund 6, is TxDOT's primary funding source. This fund receives state revenues in the form of taxes and fees. Some of these taxes and fees are dedicated by the state constitution to fund the acquisition of right of way, construction and maintenance of public roadways and are indicated below. In other words, constitutionally dedicated funds for the purpose of supporting public roadways may not be spent on other modes of transportation.

The State Highway Fund also contains subaccounts for Proposition 1 and 7 funding, the State Infrastructure Bank (SIB) funds, and regional subaccounts with toll revenue and revenues from Comprehensive Development Agreements (CDAs) that can only be used on projects within the region of the project generating the funds.

The State Highway Fund main account receives the following revenues:

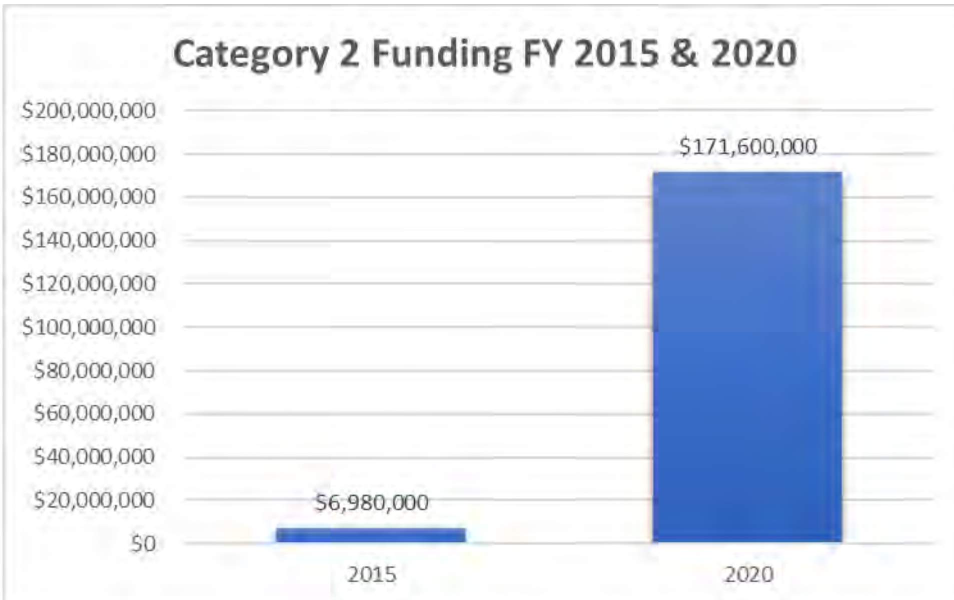
- State Motor Vehicle Fuels Tax*
- Vehicle Registration Fees*
- Other, smaller revenues such as lubricant sales taxes*, permit fees for special vehicles, fees and interest* on certain funds
- Local project participation funds
- Federal highway* and other agency reimbursements

State Highway Fund subaccounts hold the following:

- Proposition 1 funds*
- Proposition 7 funds*
- SIB loan repayments and interest
- Regional toll revenue and revenue from CDAs

* Indicates revenues that are dedicated by the Texas Constitution to fund public roadway projects.

Table 10.1 Available Funding for the MPO FY 2015 & 2020 Comparison



The TxDOT Category 2 funds authorized for programming of the MPO's projects are utilized to address mobility and added capacity projects on urban corridors 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 as further described in Chapter 9, Project Selection and Projects. Common project types include roadway widening (both freeway and non-freeway), interchange improvements, and roadway operational improvements.

Although Category 2 funds are the most consistent revenue source for the Permian Basin MPO, in recent years the TxDOT Odessa District has coordinated with the MPO to program funding from Category 4-Statewide Urban Connectivity, to pay for on-system projects in the MPO boundary. Furthermore, the Texas Transportation Commission (TTC) has programmed significant amounts of Category 12-Strategic Priority funding to major projects including I-20, US 385, SL 250, and SL 338. The Category 12 funds provided to the MPO serve to expedite project implementation. The TTC made these funds available due to the MPO leveraging its Category 2 funds as well as funds provided by both the Midland and Odessa Economic Development Corporations. Additionally, the TxDOT Odessa District typically spends one-third of its annual Category 11 allocation in the MPO boundary as well, these are District Discretionary funds. For historical reference, the TxDOT UTP approved for FY 2015 showed a total of $6,980,000 of Category 2 funding whereas the FY 2020 UTP shows $171,600,000, representing an increase of 245 times the 2015 amount, as shown in Table 10.1.

Non-Traditional Funding

The cities in the Permian Basin MPO region have a history of contributing local funds to assist with the construction of prioritized projects as determined by the Policy Board. In 2005, the Odessa Development Corporation (ODC) contributed $5 million for the construction of an overpass at John Ben Shepperd Parkway to link the major north-south corridor with an emerging industrial park located south of the Union Pacific Railroad tracks and accessing I-20. At that time, the TxDOT Odessa District was preparing to delay construction until funding became available. The Development Corporation realized that in order to construct the project, it would be necessary to find additional funds from local, non-state sources. In 2018 both the ODC and the Midland Development Corporation (MDC) donated $15 million of locally generated funds to contribute toward important projects including Loop 250 at CR 1150 in Midland, US 385 at N. Loop 338 in Odessa, Loop 250 at CR 1140 in Midland, and Loop 250 at SH 158 in Midland. Local funds from the City of Odessa and Ector County were also provided for a traffic signal and grade improvement project at 52nd/56th Streets at Loop 338 in Odessa. It is anticipated that this trend will continue and that this funding source can be reasonably programmed at a rate of $1 million per year from both entities combined. This type of funding is listed in the TxDOT UTP as Category 3, Non-Traditional sources.

Anticipated funding for the MTP planning period comes primarily from four sources: Categories 2, 3, 4, and 11, as shown in Table 10.3. The TTC has provided additional Category 12 funding for some major improvements on I-20 and at other interchange locations on the Loop roads in both cities; however, there is no assumption made for an average annual allocation in future years. These reasonably expected funding levels from the sources shown in Table 10.3 meet the fiscal constraint requirement under federal legislation.

Table 10.2 Anticipated Annual Revenue FY 2030-2045

Category	Revenue
Category 2 – Urban Mobility	$17.16 million/year
Category 3 – Non-Traditional	$1 million/year
Category 4 – Urban Connectivity	$7.5 million/year
Category 11 – District Discretionary	$1 million/year
Total	*$26.6 million/year*

While the funding levels listed in Table 10.2 are anticipated to remain constant for future years, the MPO applied an inflation factor of 4% per year to the project selections included in the *Forward 45* MTP. Thus, at the anticipated rate of funding allocation of $26.7 million per year, the MPO would benefit from $427.2 million for highway programming for the planning period beyond 2030. The projects contained in the ten-year fiscally constrained list from the TxDOT UTP have already been calculated to include inflation cost. As stated earlier, this does not include Category 12 funds that may be allocated to fund MPO projects over the life of this MTP. Transit funding and funding sources are described below and in Table 10.4.

The FY 2020 UTP contains a list of TTC approved investments, cost estimates, funding sources, and a general timing of projects over a ten-year period ending in FY 2029. The ten-year project list includes $164,455,000 of programmed funding from Category 2; $17,364,110 of Category 3 funds; $94,150,000 of Category 4 funds; and $350,450,000 of Category 12 as shown in Table 10.3. Note that this table is also shown in Chapter 9, Project Selection and Projects.

Table 10.3 Fiscally Constrained Priority Projects 2020 - 2029

Fiscally Constrained Projects FY 2021-2030 Amendment No. 1

Est. Let Year	Project	Highway	Limits	Description	Length	Sponsor	MPO ID	CSJ	UTP Allocation Category 2U	UTP Allocation Category 3	UTP Allocation Category 4	UTP Allocation Category 12	UTP Allocation Category 11	Total Authorized
2021	IH 20 - Phase I - Midland	IH 20	SL 250 to 0.5 miles east of Midkiff Rd	Replace existing underpass with a 4-lane wide overpass structure, urban median, Y-ramps configuration	1.5	TxDOT	RC-04*	0005-14-067	$14,160,000	$2,000,000	$12,000,000		$8,640,000.00	$36,800,000
2021	IH 20 - Phase I - Midland	IH 20	At CR 1250	Construct new interchange	1	TxDOT	RC-50b* int3	0005-14-084			$29,550,000		$20,450,000.00	$50,000,000
2021	SH 158 -Freeway Ramp Improvements	SH 158	Avalon Drive to LP 250	Ramp reconfiguration	1	City of Midland	RC-86a	0463-02-075	$11,630,000	$1,000,000				$12,630,000
2021	SL 250 - Freeway Ramp Improvements	SL 250	BS 158-B to Wadley Ave	Ramp reconfiguration	1	City of Midland	RC-86a	1188-02-100	$11,630,000	$1,000,000				$12,630,000
2022	SH 191 - Yukon Road Interchange	SH 191	At Yukon Rd	Construct new interchange	1	City of Odessa	RC-42d	2296-02-026	$6,560,000		$12,000,000			$18,560,000
2023	SL 338 - Traffic Control Devices	SL 338	At W Yukon Rd	Signal Improvements	1	City of Odessa	RC-40a int a	2224-01-111	$2,480,000					$2,480,000
2024	US 385/SL 338 Interchange	US 385	At S SL 338	Construct overpass	1	City of Odessa	RC-09*	0229-01-042	$21,000,000	$2,000,000				$23,000,000
2024	IH 20 - Phase I - Midland	IH 20	SL 250 W to 0.3 miles east of SH 349	Widen mainlanes for added capacity	5.6	TxDOT	RC-96	0005-14-092	$6,250,000			$69,550,000		$75,800,000
Year 1-4 Totals									**$73,710,000**	**$6,000,000**	**$53,550,000**	**$69,550,000**	**$29,090,000**	**$231,900,000**

Table 10.3 Fiscally Constrained Priority Projects 2020 - 2029 (cont.)

Beyond FY 2025

FY	Project	Highway	Limits	Description	Length	Sponsor	MPO ID	CSJ	UTP Allocation Category 2U	UTP Allocation Category 3	UTP Allocation Category 4	UTP Allocation Category 12	Remaining Funding (TBD)	Total Authorized
2025	BI 20-E - Faudree Road Interchange	BI 20-E	At Faudree Rd	Construct new interchange	1	City of Odessa	RC-15a*	0005-02-119	$8,370,000	$2,000,000	$10,750,000			$21,120,000
2026	SH 302 - W 8th Street Interchange.	SH 302	At W 8th St	Construct new interchange	1	City of Odessa	RC-131	2224-01-110	$19,760,000	$2,000,000				$21,760,000
2027	FM 1788 from SH 191 to BI 20	SH 349	SH 191 to BI 20-E	Upgrade to standards non-freeway	4	TxDOT	RC-52*a	1718-07-043	$6,966,960					$6,966,960
2027	SH 349 - Upgrade Non-Freeway	SH 349	BI 20-E to IH 20	Upgrade to standards non-freeway	4	TxDOT	RC-52*b	1718-01-035	$1,433,040					$1,433,040
2027	IH 20 - Phase I - Odessa	IH 20	East of JBS Parkway to Midland County Line	Widen mainlanes for added capacity	1.5	TxDOT	RC-36a	0005-13-064	$1,000,000			$27,600,000		$28,600,000
2027	IH 20 - Phase I - Odessa	IH 20	Ector County Line to East of CR 1300	Widen mainlanes for added capacity	5.5	TxDOT	RC-36ab	0005-14-093	$5,500,000	$2,000,000		$142,000,000		$149,500,000
2028	IH 20 - Phase I - Midland	IH 20	East of CR 1300 to East of CR 1250	Widen mainlanes for added capacity	5	TxDOT	RC-95	0005-14-094	$6,500,000			$79,800,000		$86,300,000
2025-2030	IH 20 - Odessa	I-20	West of FM 1936 to Monahans Draw	Widen mainlanes for added capacity	-	TxDOT	-	0004-07-135	$9,750,000			$71,050,000	$41,200,000.00	$122,000,000
2025-2030	IH 20 - Odessa	I-20	Monahans Draw to East of JBS Pkwy	Widen mainlanes for added capacity	-	TxDOT	-	0005-13-063	$9,750,000			$44,200,000	$39,000,000	$92,950,000
2025-2030	Interchange at 52nd/56th - Odessa	SL 338	At 52nd/56th Street	Construct new interchange	-	TxDOT	-	2224-01-116	$2,500,000				$25,500,000	$28,000,000
2025-2030	Upgrade to Freeway - Odessa	SL 338	Yukon Rd E to US 385 N	Convert non-freeway to freeway	-	TxDOT	-	2224-01-117	$2,500,000				$17,100,000	$19,600,000
2025-2030	IH 20 - Midland	I-20	East of SH 349 to East of FM 1208	Widen mainlanes for added capacity	-	TxDOT	-	0005-15-093	$9,750,000			$58,250,000	$148,800,000	$216,800,000
2025-2030	Interchange at Todd Rd - Midland	SL 250	At Todd Rd	Construct new interchange	-	TxDOT	-	1188-02-111	$2,500,000				$25,500,000	$28,000,000
2024-2029	Regional Synchronization Program**	-	MPO Boundary	ITS project to synchronize signals across MAB	-	TxDOT	RE-20	-					$3,000,000.00	$0
2024-2029	Six Union Pacific Railroad Intersections**	-	Various	Improve intersections at railroad crossings	-	TxDOT	RR-001	-					$3,000,000.00	$0
Years 5-10 Totals									**$86,280,000**	**$6,000,000**	**$10,750,000**	**$422,900,000**	**$303,100,000**	**$823,030,000**
Years 1-4 Totals									**$73,710,000**	**$6,000,000**	**$53,550,000**	**$69,550,000**	**$29,090,000**	**$231,900,000**
FY 2021 UTP									**$159,990,000**	**$12,000,000**	**$64,300,000**	**$492,450,000**	**$332,190,000**	**$1,060,930,000**

****Not listed in 2021 UTP**

10.3.1 Forecasted Transit Revenues

Forecasted Revenues to Midland Odessa Urban Transit District (MOUTD)

The MOUTD is the umbrella agency through which EZ-Rider provides urban transit services in the Midland and Odessa urbanized areas. Revenue received by EZ-Rider is through Federal Transit Administration's (FTA) Urbanized Area Formula Grants (Section 5307). The funds are used for transit capital, operating assistance and for transportation related planning. Also, discretionary grants such as Bus and Bus Facilities (Section 5339) are awarded to EZ-Rider as a form of funding commonly used for additional buses, vehicle replacement and facilities.

Given that Section 5339 grants are discretionary and in order to remain conservative in estimating future transit revenues, only Section 5307 funding was projected for the Permian Basin MPO region. Transit revenues are shown below.

Available funding for EZ Rider operating and capital expenses, from 2019 to 2045 are shown in Table 10.4. Operating funding for EZ Rider is drawn from Section 5307 sources:

- FTA Section 5307 (Urbanized Area Formula Program)
- State Funds
- Local Funds
- Operating Revenue

Table 10.4 EZ-Rider Base Allocations 2020-2045

EZ-Rider Base Activities	2020-2025	2026-2035	2036-2045	2020-2045
Category	Projected Amount	Projected Amount	Projected Amount	Projected Amount
Section 5307: Operations	$ 18,000,000	$ 35,100,000	$ 42,900,000	$ 96,000,000
Section 5307: Maintenance	$ 17,200,000	$ 33,700,000	$ 41,100,000	$ 92,000,000
Section 5307: Planning	$ 4,900,000	$ 9,500,000	$ 11,800,000	$ 26,200,000
TOTAL	***$ 40,100,000***	***$ 78,300,000***	***$ 95,800,000***	***$ 214,200,000***

11.1 Risk Management

Companies and organizations often allocate time and resources to determine where their strengths and weaknesses lie within their respective markets, even if they represent private or public sector interests. These efforts are often referred to as SWOT analysis, meaning Strengths, Weaknesses, Opportunities and Threats. The MPO has conducted a brief analysis using the same basic concept.

11.1.1 Opportunities and Threats to the Permian Basin MPO

The Permian Basin MPO has been in existence since 1965 albeit under different names. The main purposes of the MPO have been to coordinate the planning activities that are associated with improving the transportation system within the defined boundary as indicated in Chapter 1. That responsibility has been continuous and cooperative for the entire time period. At the time of plan preparation for the *Forward 45* MTP, the MPO maintained a staff of four professional positions. Turnover among the staff is an issue in the Permian Basin because of the economic challenges related to living in the area. Recent reports and forecasts suggest that the cost of living in the area will continue to grow. The staff and the MPO administrative expenditures are necessarily tied to the region's inflation and price index factors. Attracting qualified staff to the region has not been an easy task; this problem is compounded by the presence of typically high paying jobs that are available in the energy sector employment pool. The Midland Reporter Telegram published an article on March 11, 2019 documenting that the price of apartment rentals in the Midland and Odessa markets have climbed to become some of the highest rates in the country.

"An online apartment guide shows Odessa topped Midland for rent averages during the month of March. ApartmentList.com showed that rents for one-bedroom apartments in Odessa averaged $1,267 a month, $31 ahead of the average in Midland. Also, a two-bedroom apartment in Odessa averaged $1,565 a month, $12 more than the average in Midland. ApartmentList.com also showed a Metroplex city of Frisco topped both Midland and Odessa in March as it showed averages of $1,272 and $1,581 a month, respectively, for one- and two-bedroom apartments.

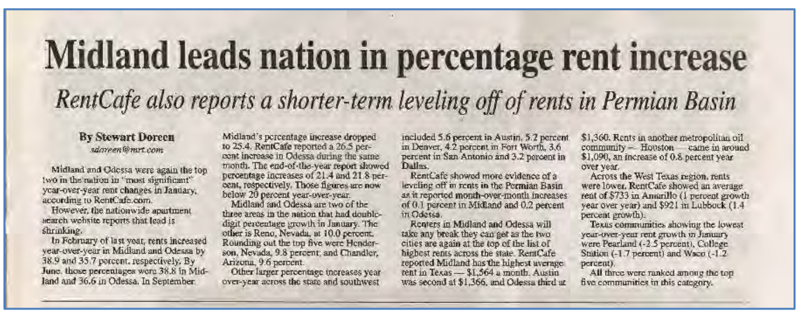
The website posted one-bedroom rental rates in Midland and Odessa that were nearly twice the rates in other West Texas communities, such as Amarillo, Abilene and Lubbock. The website shows Midland as having the fastest-growing rents year over year "of medium-sized cities" across the nation. Midland's 11.3 percent rate was higher than Odessa's 10.7 percent increase. Both communities were ahead of the next closest city across the nation – Thornton, Colorado, which showed a year-over-year increase of 6.8 percent. ApartmentList reports on its website that rent report data is drawn monthly from the millions of listings on its site. ApartmentList's rent reports also cover rental pricing data in major cities, their suburbs and their neighborhoods"

Single family home prices have also risen sharply in the region over the past decade. The Midland Reporter Telegram published the following on June 21, 2019:

"The Midland market is breaking records, and the Permian Basin Board of Realtors doesn't see it slowing down any time soon. The PBBOR reported last week that a new record for average price was established in May. The $363,806 paid for a residential property inside Midland County beat the previous high mark set in March -- $356,806. The Board of Realtors also reported the median price for a home sold -- $313,800 – was record for 2019 and third best overall. "We don't really see the market slowing down with the sales numbers that we are currently showing, and residential properties continuing to be in high demand for the area," wrote Carroll Nall, MLS Executive Director and VP of Operations for the Permian Basin Board of Realtors.

These issues related to apartments and home purchases have a direct impact on the living standard for people in the area as well as MPO employees and potential job candidates.

A 2017 Odessa Wage Study on the topic of Labor Availability included a statement that "The ability to attract the right skills is critical to the success of any project. Skilled workers are essential for high-end manufacturing and service-oriented projects. As a result of the most recent Wage Study, labor availability in the Odessa market is currently rated "*very good*". On the topic of Labor Quality, the same report revealed that in addition to the importance of labor availability, finding quality workers is vital to any business. Expanding and locating companies generally seek communities with above average to good quality workers. Odessa labor quality is also rated "*good*."


Midland leads nation in percentage rent increase

RentCafe also reports a shorter-term leveling off of rents in Permian Basin

By Stewart Doreen
sdoreen@mrt.com

Midland and Odessa were again the top two in the nation in "most significant" year-over-year rent changes in January, according to RentCafe.com.

However, the nationwide apartment search website reports that lead is shrinking.

In February of last year, rents increased year-over-year in Midland and Odessa by 38.9 and 35.7 percent, respectively. By June, those percentages were 38.8 in Midland and 36.6 in Odessa. In September, Midland's percentage increase dropped to 25.4. RentCafe reported a 26.5 percent increase in Odessa during the same month. The end-of-the-year report showed percentage increases of 21.4 and 21.8 percent, respectively. Those figures are now below 20 percent year-over-year.

Midland and Odessa are two of the three areas in the nation that had double-digit percentage growth in January. The other is Reno, Nevada, at 10.0 percent. Rounding out the top five were Henderson, Nevada, 9.8 percent; and Chandler, Arizona, 9.6 percent.

Other larger percentage increases year over-year across the state and southwest included 5.6 percent in Austin, 5.2 percent in Denver, 4.2 percent in Fort Worth, 3.6 percent in San Antonio and 3.2 percent in Dallas.

RentCafe showed more evidence of a leveling off in rents in the Permian Basin as it reported month-over-month increases of 0.1 percent in Midland and 0.2 percent in Odessa.

Renters in Midland and Odessa will take any break they can get as the two cities are again at the top of the list of highest rents across the state. RentCafe reported Midland has the highest average rent in Texas — $1,564 a month. Austin was second at $1,366, and Odessa third at $1,360. Rents in another metropolitan oil community — Houston — came in around $1,090, an increase of 0.8 percent year over year.

Across the West Texas region, rents were lower. RentCafe showed an average rent of $733 in Amarillo (1 percent growth year over year) and $921 in Lubbock (1.4 percent growth).

Texas communities showing the lowest year-over-year rent growth in January were Pearland (-2.5 percent), College Station (-1.7 percent) and Waco (-1.2 percent).

All three were ranked among the top five communities in this category.

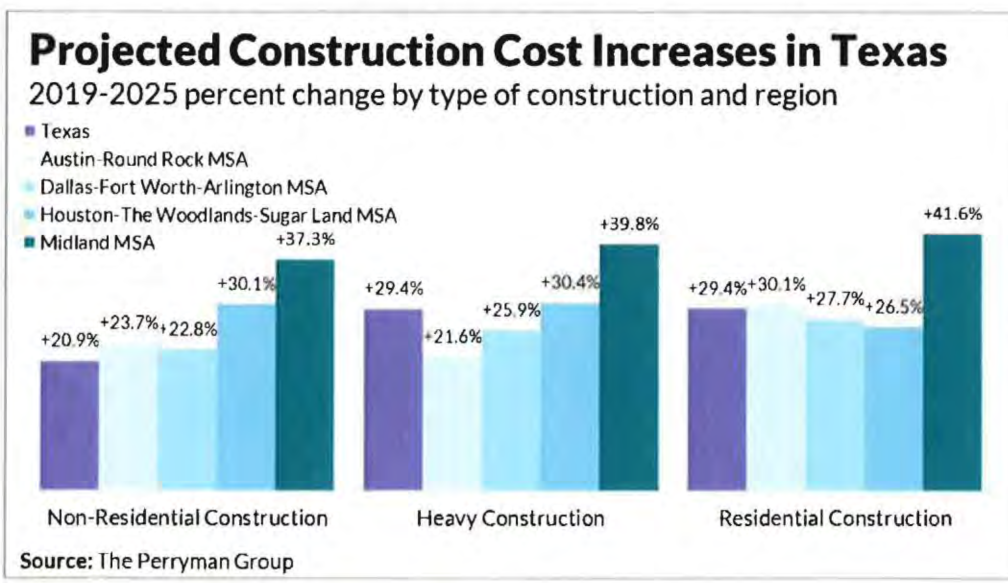
Source: Midland Reporter Telegram

As documented in this *Forward 45* MTP, the region's employment pool has increased, and the percent of unemployed workers has dropped to below national and state levels. Both Ector and Midland County unemployment levels periodically lead the nation in overall percentage. This can be attributed to the strength of the energy sector, although health care, and transportation and utilities employment has also risen in recent years.

Midland Development Corporation Reports

The Midland Development Corporation commissioned an economic study using the nationally and internationally recognized consulting firm known as the Perryman Group. In its published work, the Perryman Group pointed out that the expansion of the oil and gas industry has put a major strain on roadways and traffic, especially with intensified commercial traffic. Hydraulic fracing of wells in the region can utilize up to 1200 loaded trucks per new well and 350 trucks each year per existing well. The majority of the truck trips in the region will likely begin daily trips to the oil field from the Midland Odessa area even though other communities in the region are also impacted by the sector growth and traffic impact. According to the study title *"Economic Impacts of the Petroleum Sector on Business Activity in the Permian Basin"*, "Traffic counts on many of the roads in the Permian Basin increased by 65% to 150% between 2016 and 2017." This statement reflects the impacts described by Dr. Ray Perryman, President. The net effect of this also shows up in the data sets shown in Chapter 4 of this MTP which document crash rate and fatal and serious injury crashes overall. Also documented by the Perryman Group in a separate report titled "*Current and Projected Construction Costs in Midland Compared to Other Area of Texas"* is an analysis of current and projected construction cost tied to an index and covering the period 2019-2025. The type of construction shown is "Heavy", "Non-Residential", and "Residential". As shown on the bar chart in Figure 11.1, Midland is currently well above the established 100-point index for all three construction categories with a projection from the Perryman Group that costs will continue to escalate. These trends will not help with the existing housing shortage that has been well publicized in both Midland and Odessa; additionally, the cost of heavy construction projects may rise to a point that negatively impacts the MPO's fiscally constrained project list.

Figure 11.1 Comparison of Construction Costs by Type



TxDOT UTP History

As pointed out in Chapter 10, since the initial approval of the *Vision 2040* MTP the TxDOT UTP has more than doubled from an approximate $34 Billion to the FY 2020 amount exceeding $77 Billion. As a result of the increase in funding projections, the Permian Basin MPO has been able to program many more projects that was anticipated under previous lower level funding years. A case in point is that the 2040 MTP list of projects is almost completely programmed. A few off-system projects were initially placed on the priority list; these have now been determined to be ineligible for state funding. The *Forward 45* MTP does not contain any off-system projects. With the level of funding anticipated in the future, the MPO will continue to program important projects as determined through the project scoring process. Furthermore, the Texas Transportation Commission has dedicated funds to the MPO from their Strategic Priority category to pay for important projects that directly affect freight, safety and system reliability. The most recent example was a commitment from the Commission of $243,050,000 to match an MPO commitment of $25,000,000 for critically important projects along I-20. The ratio of Commission to MPO funds is almost 10:1. The Permian Basin is the national and international center for oil and gas production and has garnered a lot of financial and political attention in the past decade. With technological advancements in the energy sector, Dr. Perryman and others have pointed out that the stability of the Basin and its importance will continue to exist for the foreseeable future.

Transportation Technology and Autonomous Vehicles

Transportation technology and Intelligent Transportation Systems (ITS) Technology has long been an important part of the transportation system, from safety features on private vehicles to traffic information and traffic control signals and devices in public investments. This section of the plan addresses both vehicle technologies and public facility and service investments. Technological advancement is anticipated to significantly affect mobility over the span of this plan. Much of this advancement is expected to be vehicle-oriented, with the advent of autonomous vehicles and connected vehicles. Levels of vehicle automation lie along a spectrum: Although autonomous vehicle technology is expected to make in-roads in the near-term and mid-term, its market penetration may not result in substantial changes in public infrastructure investment decisions until the longer-term period of this plan. Estimates of market penetration vary widely, but it is more likely that autonomous vehicles will become a large enough share of the market to affect infrastructure design in the long-term phase of this plan than in the mid-term phase. Nonetheless, it is appropriate for developers, cities, and the MPO to explicitly consider the possible impacts of faster or slower market penetration when making decisions about fixed, costly and long-lived investments, such as parking garages or freeway widenings, especially if the investments would be difficult or costly to repurpose for a society with extensive automated and connected vehicles. Significant market penetration may occur soonest for fleet vehicles such as trucks, buses and other vehicles where vehicle operators are a significant part of the cost of a service and where operator rest time (and thus vehicle down time) is important for safe operation. The MPOs and its regional partners will continue to track and report on information and sources on autonomous and connected vehicles.

In this *Forward 45* MTP, public investments in technology are grouped under the term "Intelligent Transportation Systems (ITS)," a set of diverse technologies designed to make existing transportation infrastructure, facilities and services more efficient and safer. ITS architectural improvements are further discussed in Chapter 4, Safety and Chapter 6, Mobility Management. The details of the solutions and technologies will continue to change as conditions change and transportation technologies advance. ITS projects are planned through the TxDOT Odessa District with discussion held at the TAC level; typically, the funding source for ITS investments has not come through the MPO.

Technological changes involving vehicles and electronic and other notification methods to the driving public should result in added safety in the region; however, increased technology that increases vehicle fuel efficiency may have a net effect of lowering projected revenue sources to be distributed by TxDOT to the MPO.

Possibility of Interstate Highway Connections: I-27 and I-14

The 86th Texas Legislature passed HB 1079, known as the Ports-to-Plains Corridor Feasibility Study which requires TxDOT to complete a comprehensive evaluation of the costs and logistics associated with improvements to the corridor that would create a continuous flow, four-lane divided highway that meets interstate standards to the extent possible. This may include an approximate 992 corridor miles, 26 counties and six TxDOT Districts. A portion of the corridor is shown extending through the MPO boundary. The study is required to be complete by January 1, 2021

On April 11, 2019, U.S. Rep. Babin introduced I-14 'Forts-to-Ports' bill, which could extend I-14 to Odessa, to the United States House of Representatives. The proposed bill would add an I-14 designation to Highway 87, traveling up from Eden through San Angelo, and then to Highway 158, where it would run concurrently with I-20 before merging with it west of Odessa. Planning for these corridors would involve significant coordination with all stakeholders.

Local Commitments

Both Midland and Odessa are making significant investments into the downtown core of each respective city. In the fall of 2019 these downtown core areas will benefit from new hotels, convention centers, parks, retail, and lodging. A part of the MPO's guiding objectives is to have a positive impact on quality of life in the region. MPO funds were not utilized toward enhancing the downtown area; however, the FAST Act does permit spending on projects (and studies) that will improve tourism. Thus, the MPO has helped support these downtown revitalization efforts by improving the safety, connectivity and reliability of the road and transit systems that serve as connections to the renewal areas.

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Appendices

Appendix A – City of Odessa documented traffic counts

Appendix B – NEPAssist reports

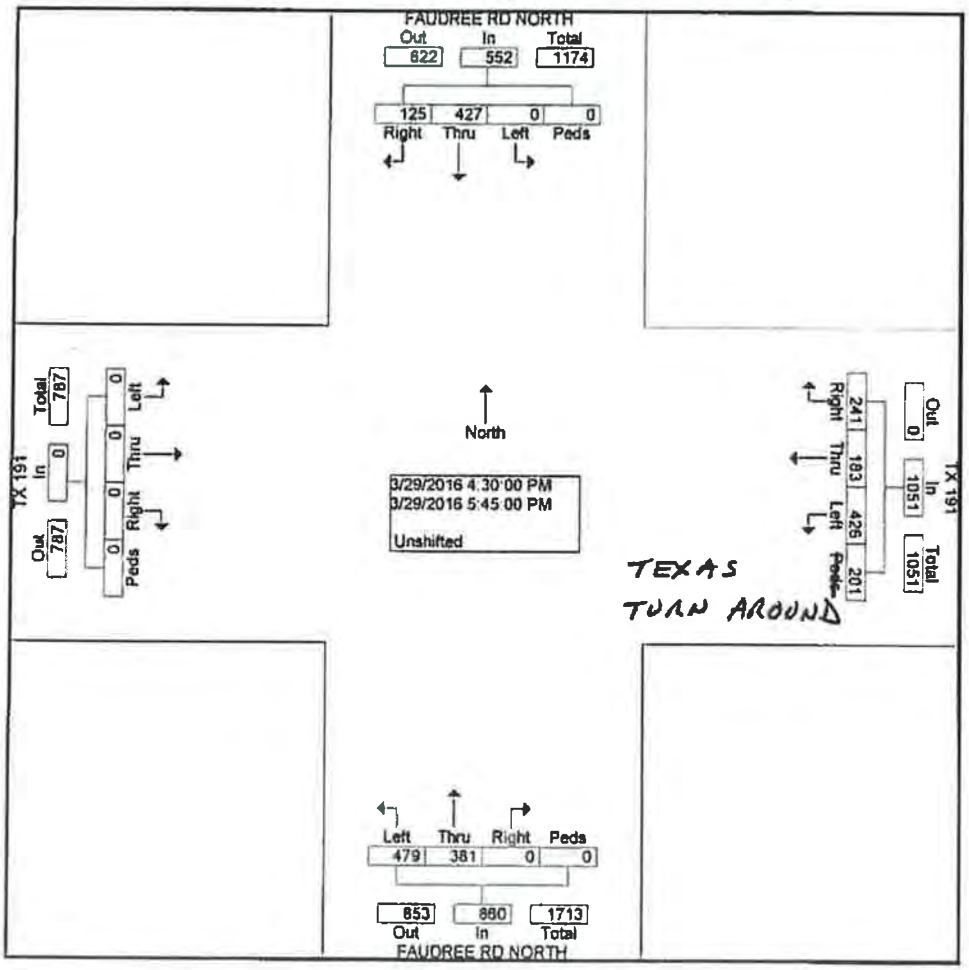
Appendix A

City of Odessa
Traffic Engineering

File Name : Faudree & North 191 Service Rd PM
Site Code : 00000000
Start Date : 3/29/2016
Page No : 1

Groups Printed- Unshifted

	FAUDREE RD NORTH From North				TX 191 From East				FAUDREE RD NORTH From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:30 PM	20	64	0	0	29	27	61	30	0	77	71	0	0	0	0	0	379
04:45 PM	14	74	0	0	31	24	63	29	0	64	60	0	0	0	0	0	359
Total	34	138	0	0	60	51	124	59	0	141	131	0	0	0	0	0	738
05:00 PM	20	76	0	0	44	52	83	37	0	70	88	0	0	0	0	0	470
05:15 PM	23	74	0	0	54	27	65	33	0	80	106	0	0	0	0	0	462
05:30 PM	31	75	0	0	46	29	72	56	0	47	70	0	0	0	0	0	426
05:45 PM	17	64	0	0	37	24	82	16	0	43	84	0	0	0	0	0	367
Total	91	289	0	0	181	132	302	142	0	240	348	0	0	0	0	0	1725
Grand Total	125	427	0	0	241	183	426	201	0	381	479	0	0	0	0	0	2463
Apprch %	22.6	77.4	0.0	0.0	22.9	17.4	40.5	19.1	0.0	44.3	55.7	0.0	0.0	0.0	0.0	0.0	
Total %	5.1	17.3	0.0	0.0	9.8	7.4	17.3	8.2	0.0	15.5	19.4	0.0	0.0	0.0	0.0	0.0	

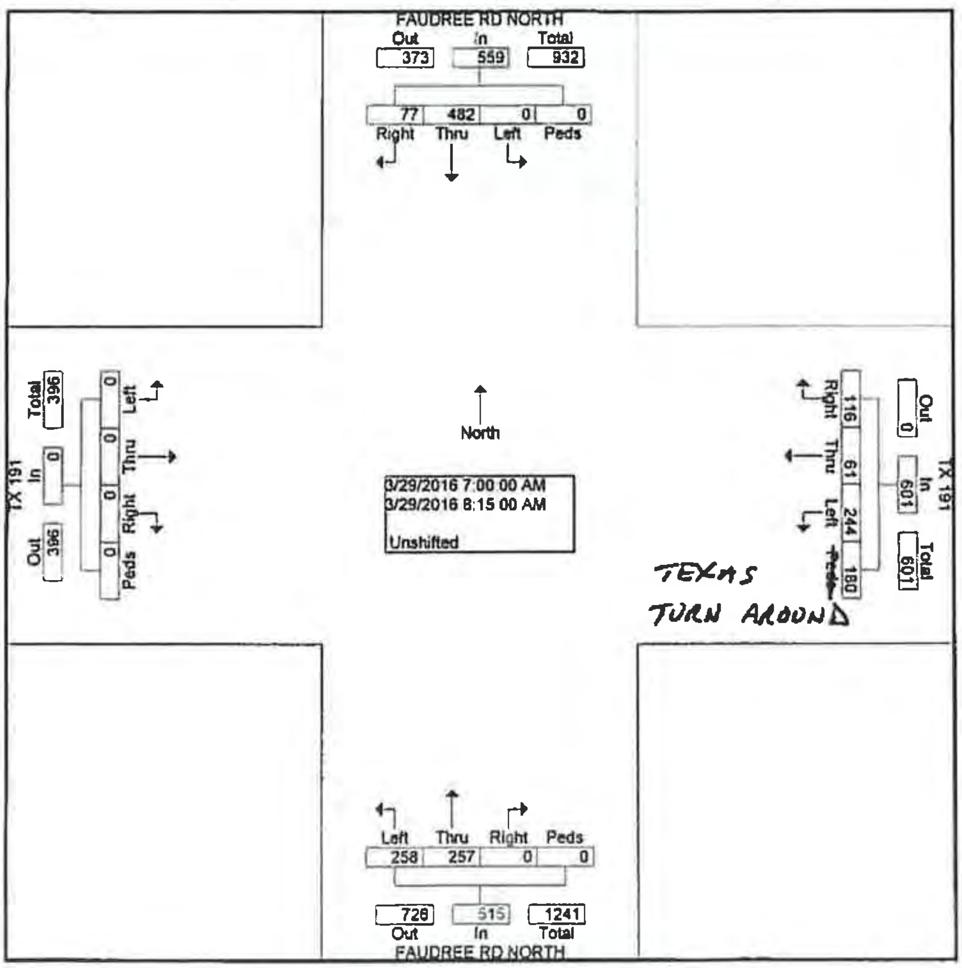


City of Odessa
Traffic Engineering

File Name : Faudree & North 191 Service Rd AM
Site Code : 00000000
Start Date : 3/29/2016
Page No : 1

Groups Printed- Unshifted

	FAUDREE RD NORTH From North				TX 191 From East				FAUDREE RD NORTH From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	16	78	0	0	12	12	26	26	0	36	45	0	0	0	0	0	251
07:15 AM	17	89	0	0	13	9	37	26	0	41	41	0	0	0	0	0	273
07:30 AM	13	92	0	0	30	4	38	30	0	40	44	0	0	0	0	0	291
07:45 AM	9	94	0	0	21	8	56	45	0	44	55	0	0	0	0	0	332
Total	55	353	0	0	76	33	157	127	0	161	185	0	0	0	0	0	1147
08:00 AM	13	65	0	0	16	6	42	26	0	48	45	0	0	0	0	0	261
08:15 AM	9	64	0	0	24	22	45	27	0	48	28	0	0	0	0	0	267
Grand Total	77	482	0	0	116	61	244	180	0	257	258	0	0	0	0	0	1675
Apprch %	13.8	86.2	0.0	0.0	19.3	10.1	40.6	30.0	0.0	49.9	50.1	0.0	0.0	0.0	0.0	0.0	
Total %	4.6	28.8	0.0	0.0	6.9	3.6	14.6	10.7	0.0	15.3	15.4	0.0	0.0	0.0	0.0	0.0	

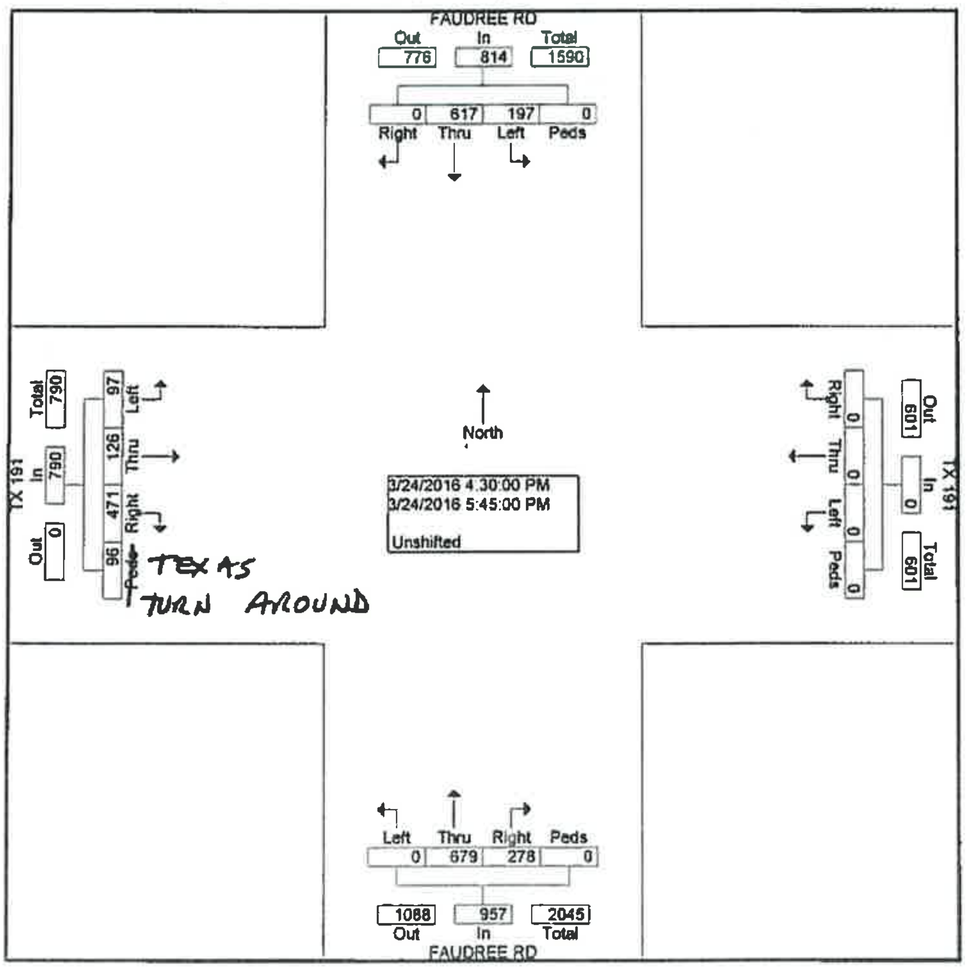


City of Odessa
Traffic Engineering

File Name : Faudree & South 191 Service Rd PM (2)
Site Code : 00000000
Start Date : 3/24/2016
Page No : 1

Groups Printed- Unshifted

	FAUDREE RD From North				TX 191 From East				FAUDREE RD From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:30 PM	0	89	30	0	0	0	0	0	40	96	0	0	83	32	21	13	404
04:45 PM	0	112	22	0	0	0	0	0	50	116	0	0	78	15	11	18	422
Total	0	201	52	0	0	0	0	0	90	212	0	0	161	47	32	31	826
05:00 PM	0	94	42	0	0	0	0	0	60	149	0	0	92	19	24	14	494
05:15 PM	0	121	38	0	0	0	0	0	61	116	0	0	89	16	10	10	461
05:30 PM	0	99	37	0	0	0	0	0	36	115	0	0	68	26	17	21	419
05:45 PM	0	102	28	0	0	0	0	0	31	87	0	0	61	18	14	20	361
Total	0	416	145	0	0	0	0	0	188	467	0	0	310	79	65	65	1735
Grand Total	0	617	197	0	0	0	0	0	278	679	0	0	471	126	97	96	2561
Apprch %	0.0	75.8	24.2	0.0	0.0	0.0	0.0	0.0	29.0	71.0	0.0	0.0	59.6	15.9	12.3	12.2	
Total %	0.0	24.1	7.7	0.0	0.0	0.0	0.0	0.0	10.9	26.5	0.0	0.0	18.4	4.9	3.8	3.7	

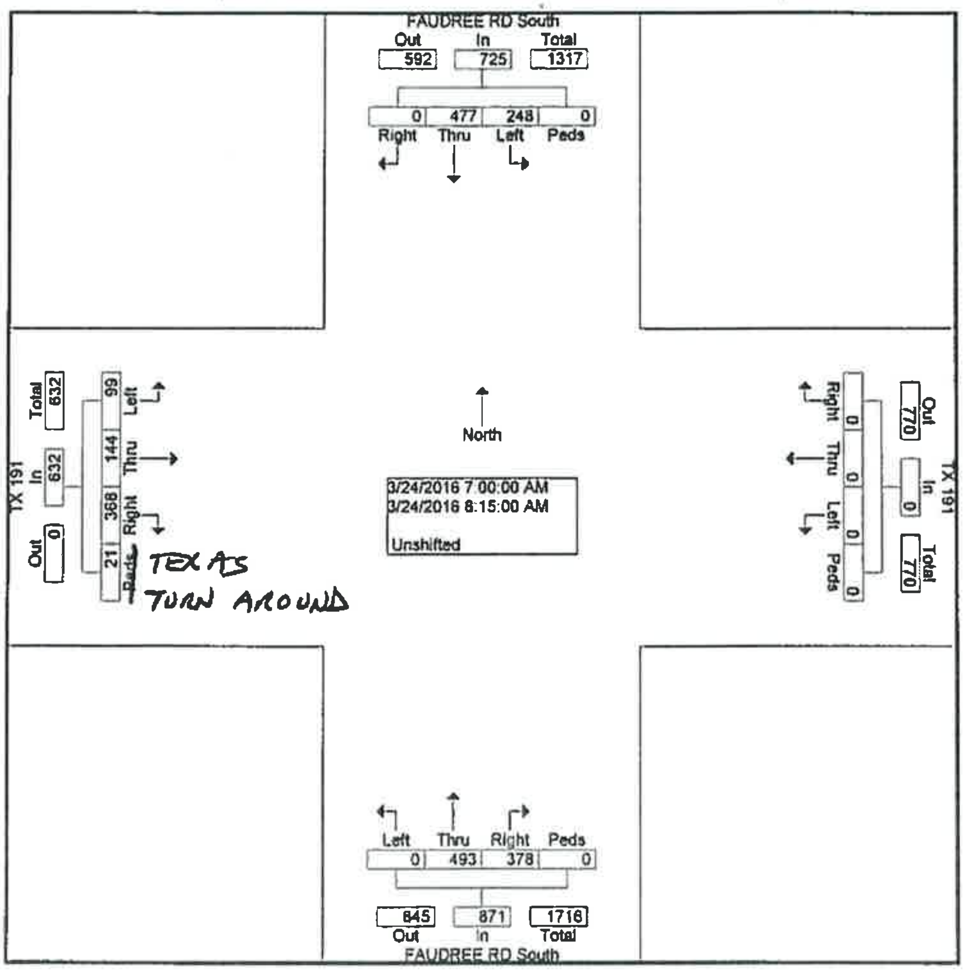


City of Odessa
Traffic Engineering

File Name : Faudree & South 191 Service Rd AM (2)
Site Code : 00000000
Start Date : 3/24/2016
Page No : 1

Groups Printed- Unshifted

	FAUDREE RD South From North				TX 191 From East				FAUDREE RD South From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	54	33	0	0	0	0	0	48	77	0	0	33	15	9	2	271
07:15 AM	0	69	49	0	0	0	0	0	76	79	0	0	66	20	11	4	374
07:30 AM	0	93	51	0	0	0	0	0	71	77	0	0	75	33	13	2	415
07:45 AM	0	105	44	0	0	0	0	0	86	96	0	0	72	29	22	3	457
Total	0	321	177	0	0	0	0	0	281	329	0	0	246	97	55	11	1517
08:00 AM	0	87	39	0	0	0	0	0	57	89	0	0	60	29	24	5	390
08:15 AM	0	69	32	0	0	0	0	0	40	75	0	0	62	18	20	5	321
Grand Total	0	477	248	0	0	0	0	0	378	493	0	0	368	144	99	21	2228
Apprch %	0.0	65.8	34.2	0.0	0.0	0.0	0.0	0.0	43.4	56.6	0.0	0.0	58.2	22.8	15.7	3.3	
Total %	0.0	21.4	11.1	0.0	0.0	0.0	0.0	0.0	17.0	22.1	0.0	0.0	16.5	6.5	4.4	0.9	

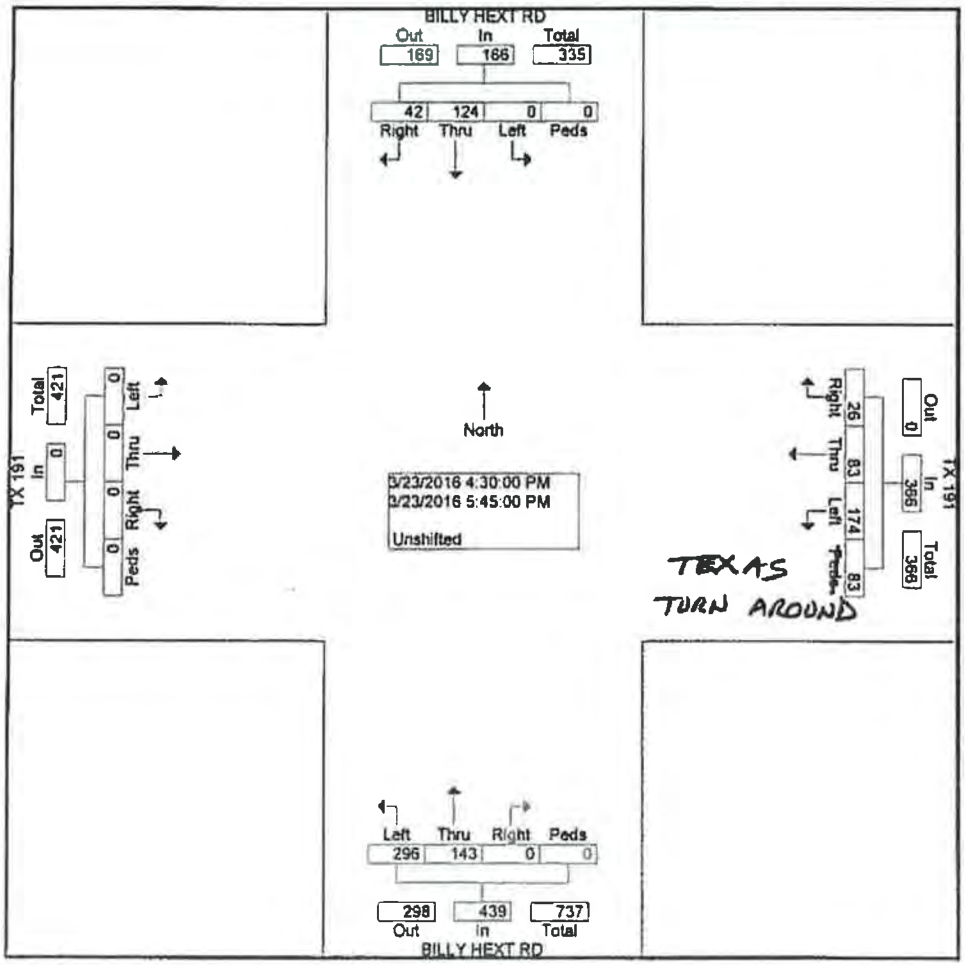


City of Odessa
Traffic Engineering

File Name : Billy Hext & North 191 Service Rd PM (2)
Site Code : 00000000
Start Date : 3/23/2016
Page No : 1

Groups Printed- Unshifted

	BILLY HEXT RD From North				TX 191 From East				BILLY HEXT RD From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:30 PM	7	17	0	0	2	10	19	9	0	16	53	0	0	0	0	0	133
04:45 PM	6	22	0	0	3	9	28	16	0	23	37	0	0	0	0	0	144
Total	13	39	0	0	5	19	47	25	0	39	90	0	0	0	0	0	277
05:00 PM	5	18	0	0	7	24	25	10	0	18	68	0	0	0	0	0	175
05:15 PM	11	21	0	0	5	15	42	15	0	26	40	0	0	0	0	0	175
05:30 PM	7	21	0	0	3	10	32	12	0	34	50	0	0	0	0	0	169
05:45 PM	6	25	0	0	6	15	28	21	0	26	48	0	0	0	0	0	175
Total	29	85	0	0	21	64	127	58	0	104	206	0	0	0	0	0	694
Grand Total	42	124	0	0	26	83	174	83	0	143	296	0	0	0	0	0	971
Apprch %	25.3	74.7	0.0	0.0	7.1	22.7	47.5	22.7	0.0	32.6	67.4	0.0	0.0	0.0	0.0	0.0	
Total %	4.3	12.8	0.0	0.0	2.7	8.5	17.9	8.5	0.0	14.7	30.5	0.0	0.0	0.0	0.0	0.0	



City of Odessa
Traffic Engineering
File Name : Billy Hext & North 191 Service Rd AM (2)
Site Code : 00000000
Start Date : 3/23/2016
Page No : 1

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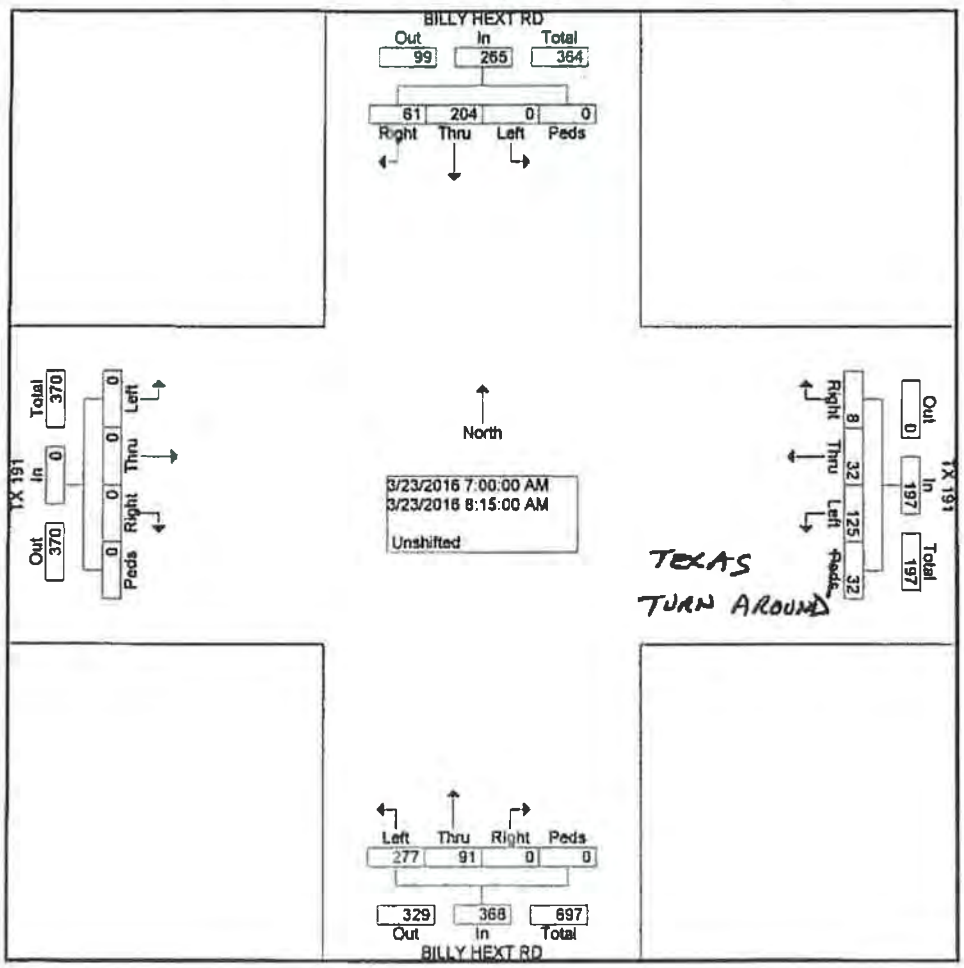
	BILLY HEXT RD From North				TX 191 From East				BILLY HEXT RD From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	7	21	0	0	1	1	13	6	0	8	37	0	0	0	0	0	94
07:15 AM	10	38	0	0	0	6	18	3	0	6	46	0	0	0	0	0	127
07:30 AM	20	57	0	0	0	4	24	8	0	12	49	0	0	0	0	0	174
07:45 AM	8	42	0	0	1	6	29	4	0	17	48	0	0	0	0	0	155
Total	45	158	0	0	2	17	84	21	0	43	180	0	0	0	0	0	550
08:00 AM	13	23	0	0	2	4	24	4	0	23	57	0	0	0	0	0	150
08:15 AM	3	23	0	0	4	11	17	7	0	25	40	0	0	0	0	0	130
Grand Total	61	204	0	0	8	32	125	32	0	91	277	0	0	0	0	0	830
Apprch %	23.0	77.0	0.0	0.0	4.1	16.2	63.5	16.2	0.0	24.7	75.3	0.0	0.0	0.0	0.0	0.0	
Total %	7.3	24.6	0.0	0.0	1.0	3.9	15.1	3.9	0.0	11.0	33.4	0.0	0.0	0.0	0.0	0.0	

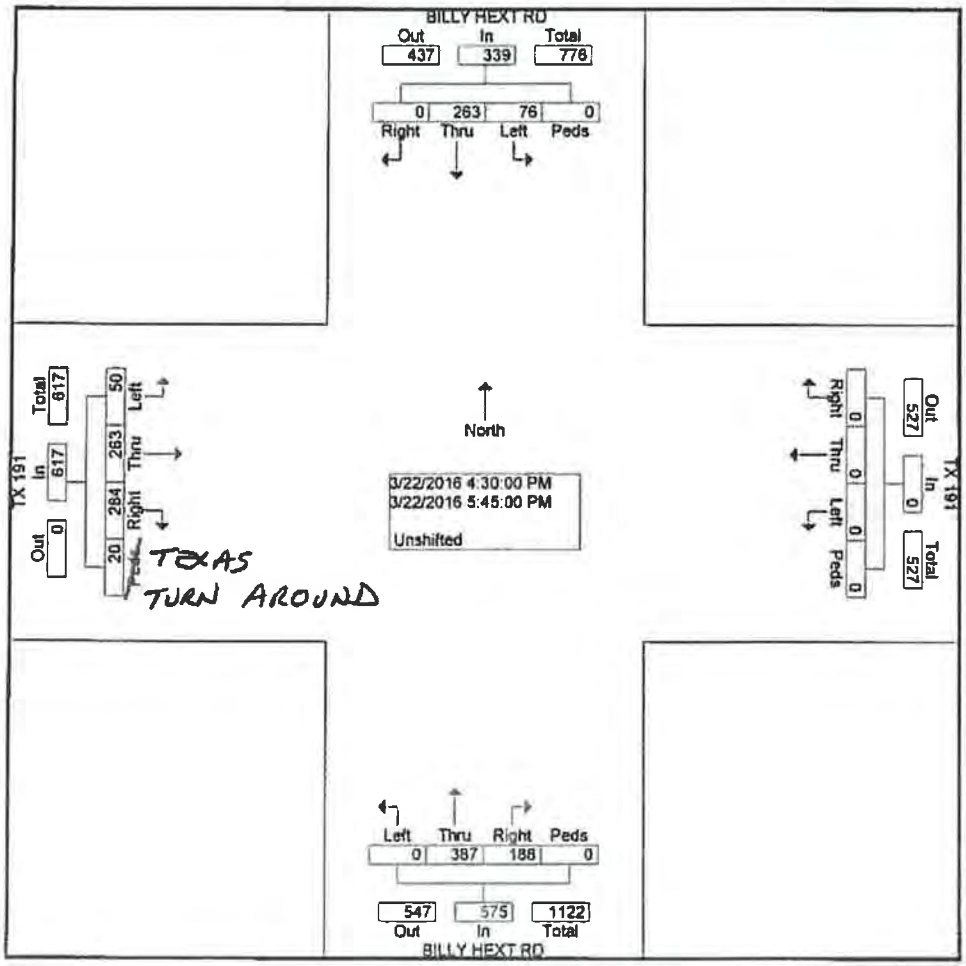


City of Odessa
Traffic Engineering

File Name : Billy Hext & South 191 Service Rd PM (2)
Site Code : 00000000
Start Date : 3/22/2016
Page No : 1

Groups Printed- Unshifted

	BILLY HEXT RD From North				TX 191 From East				BILLY HEXT RD From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:30 PM	0	44	10	0	0	0	0	0	18	58	0	0	54	38	6	3	231
04:45 PM	0	34	6	0	0	0	0	0	26	69	0	0	42	40	7	3	227
Total	0	78	16	0	0	0	0	0	44	127	0	0	96	78	13	6	458
05:00 PM	0	55	19	0	0	0	0	0	39	64	0	0	45	36	6	3	267
05:15 PM	0	46	21	0	0	0	0	0	33	82	0	0	42	44	8	5	281
05:30 PM	0	43	4	0	0	0	0	0	30	66	0	0	50	54	10	3	260
05:45 PM	0	41	16	0	0	0	0	0	42	48	0	0	51	51	13	3	265
Total	0	185	60	0	0	0	0	0	144	260	0	0	188	185	37	14	1073
Grand Total	0	263	76	0	0	0	0	0	188	387	0	0	284	263	50	20	1531
Apprch %	0.0	77.6	22.4	0.0	0.0	0.0	0.0	0.0	32.7	67.3	0.0	0.0	46.0	42.6	8.1	3.2	
Total %	0.0	17.2	5.0	0.0	0.0	0.0	0.0	0.0	12.3	25.3	0.0	0.0	18.5	17.2	3.3	1.3	

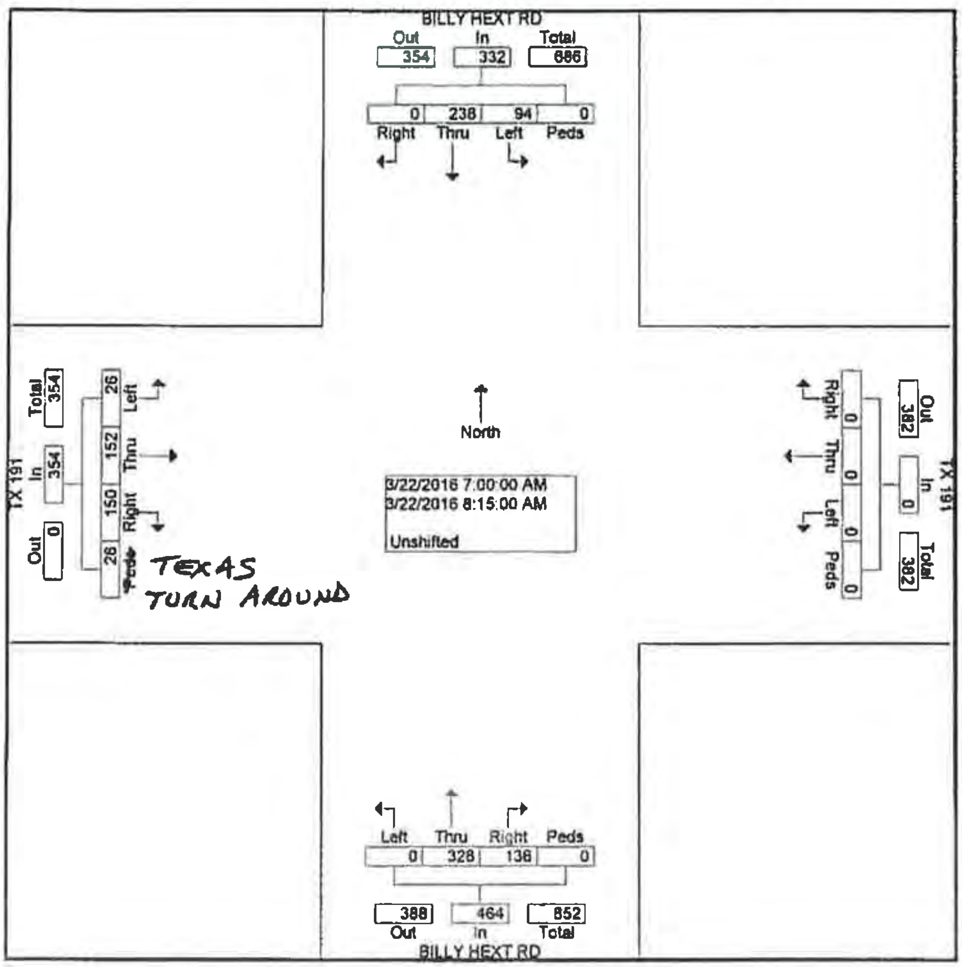


City of Odessa
Traffic Engineering

File Name : Billy Hext & South 191 Service Rd AM (2)
Site Code : 00000000
Start Date : 3/22/2016
Page No : 1

Groups Printed- Unshifted

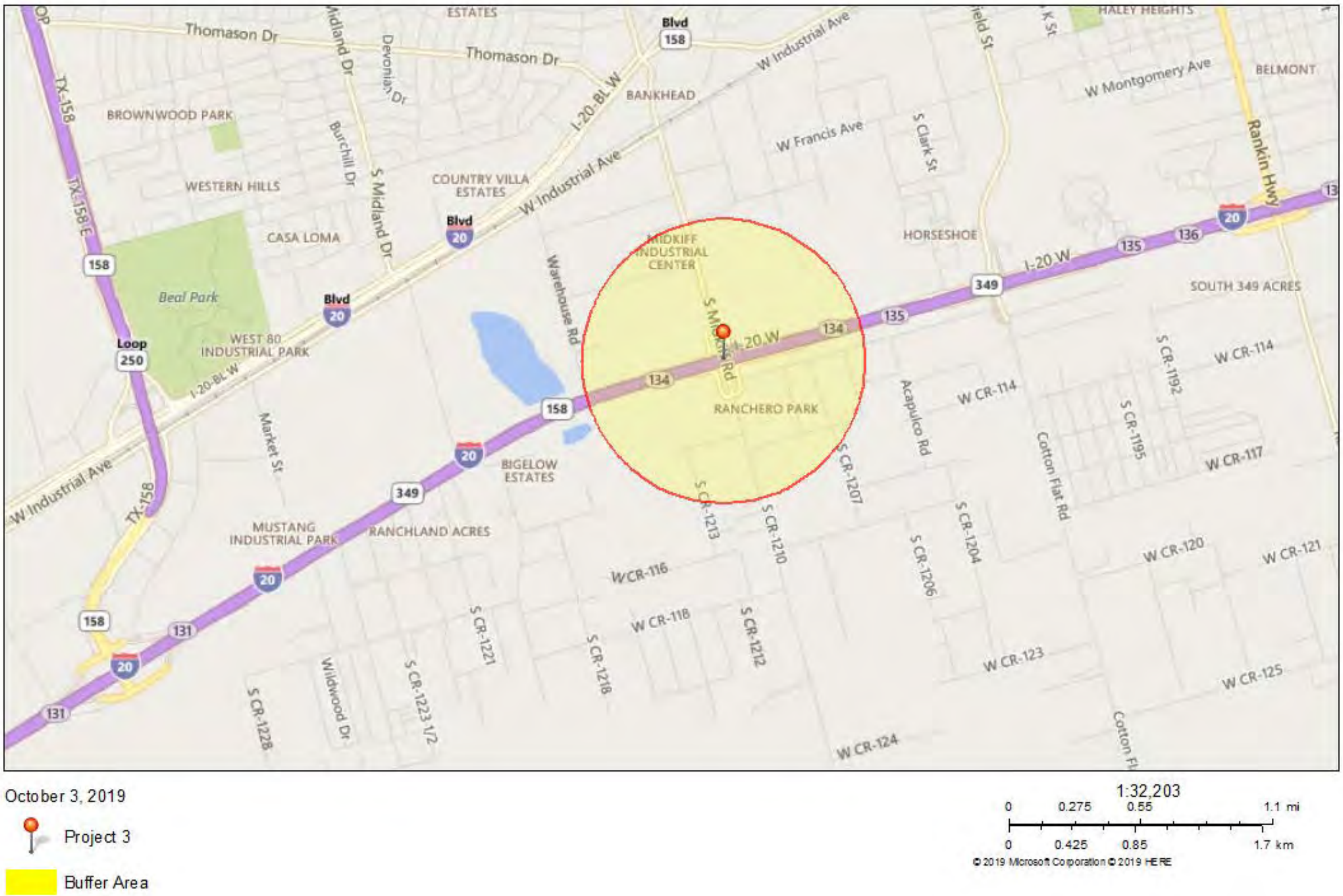
	BILLY HEXT RD From North				TX 191 From East				BILLY HEXT RD From South				TX 191 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	30	18	0	0	0	0	0	19	58	0	0	8	21	0	3	157
07:15 AM	0	37	20	0	0	0	0	0	22	48	0	0	10	25	2	4	168
07:30 AM	0	48	23	0	0	0	0	0	31	45	0	0	40	34	2	4	227
07:45 AM	0	61	16	0	0	0	0	0	22	72	0	0	40	30	6	8	255
Total	0	176	77	0	0	0	0	0	94	223	0	0	98	110	10	19	807
08:00 AM	0	34	10	0	0	0	0	0	22	61	0	0	27	21	9	5	189
08:15 AM	0	28	7	0	0	0	0	0	20	44	0	0	25	21	7	2	154
Grand Total	0	238	94	0	0	0	0	0	136	328	0	0	150	152	26	26	1150
Apprch %	0.0	71.7	28.3	0.0	0.0	0.0	0.0	0.0	29.3	70.7	0.0	0.0	42.4	42.9	7.3	7.3	
Total %	0.0	20.7	8.2	0.0	0.0	0.0	0.0	0.0	11.8	28.5	0.0	0.0	13.0	13.2	2.3	2.3	



Appendix B

NEPAssist Report

RC-04



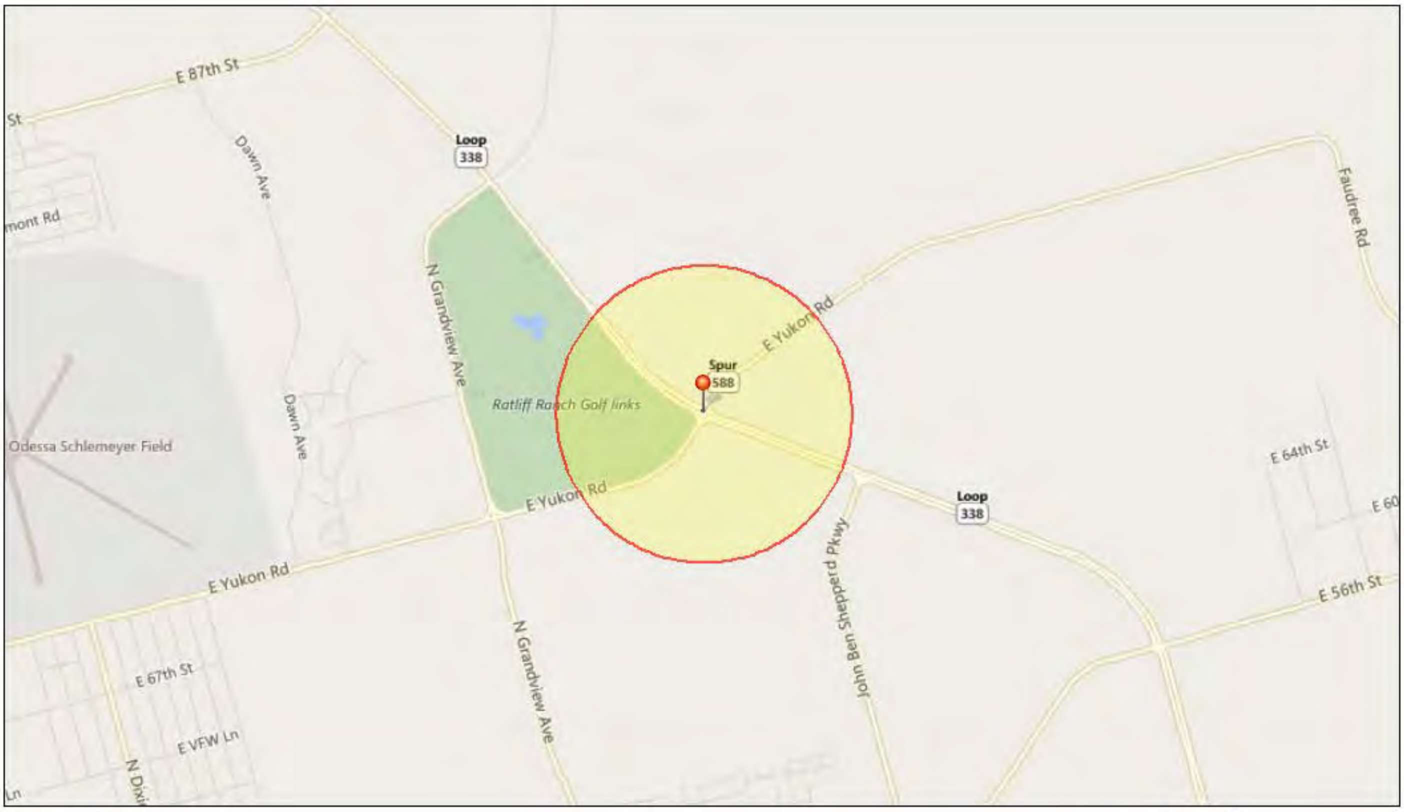
Project Location	31.964612,-102.107165
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 8:40:10 PM

NEPAssist Report

RC-10* int



October 3, 2019

Project 2

Buffer Area

1:32,203

0 0.275 0.55 1.1 mi

0 0.425 0.85 1.7 km

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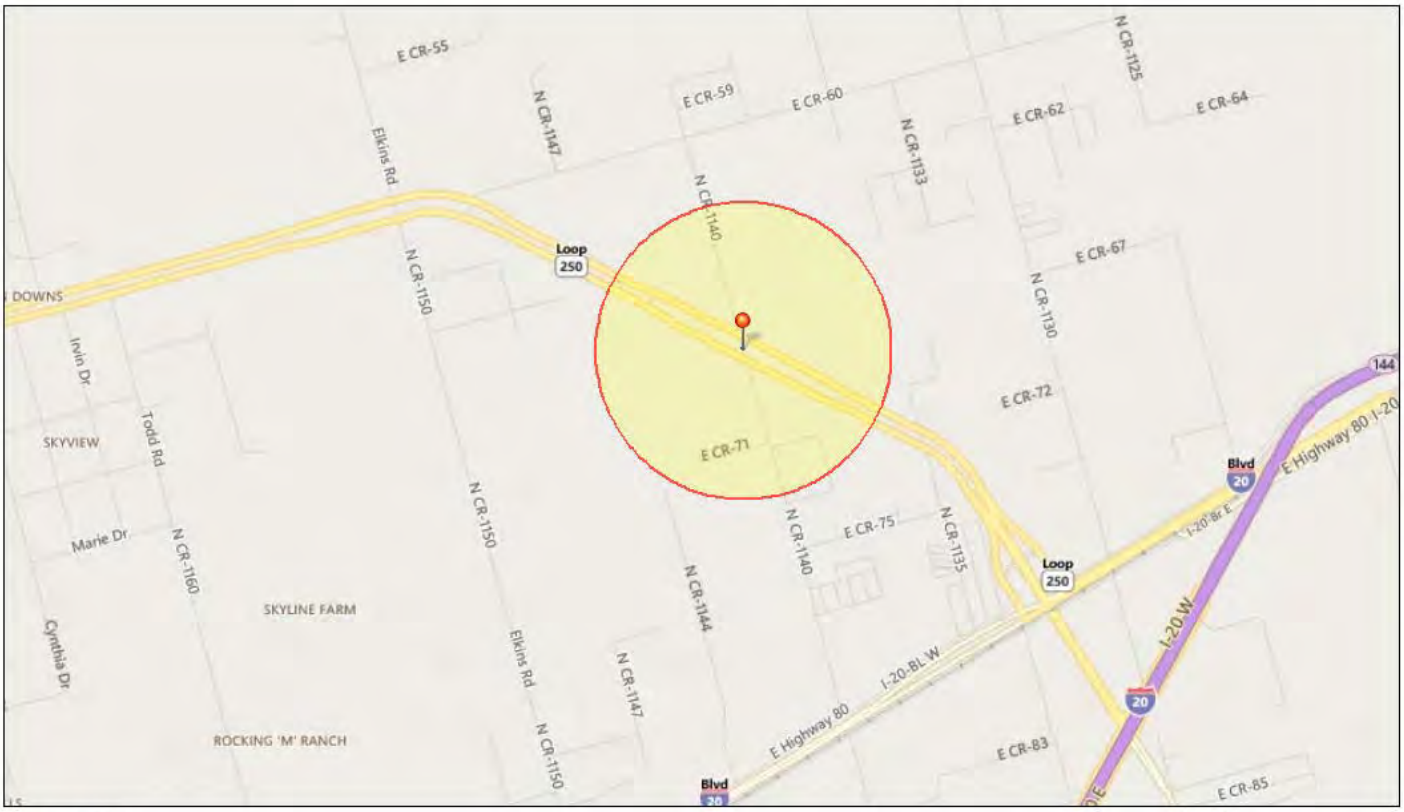
Project Location	31.923046,-102.348401
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 8:35:53 PM

NEPAssist Report

RC-20



October 3, 2019

Project 4

Buffer Area

1:32,203

0 0.275 0.55 1.1 mi

0 0.425 0.85 1.7 km

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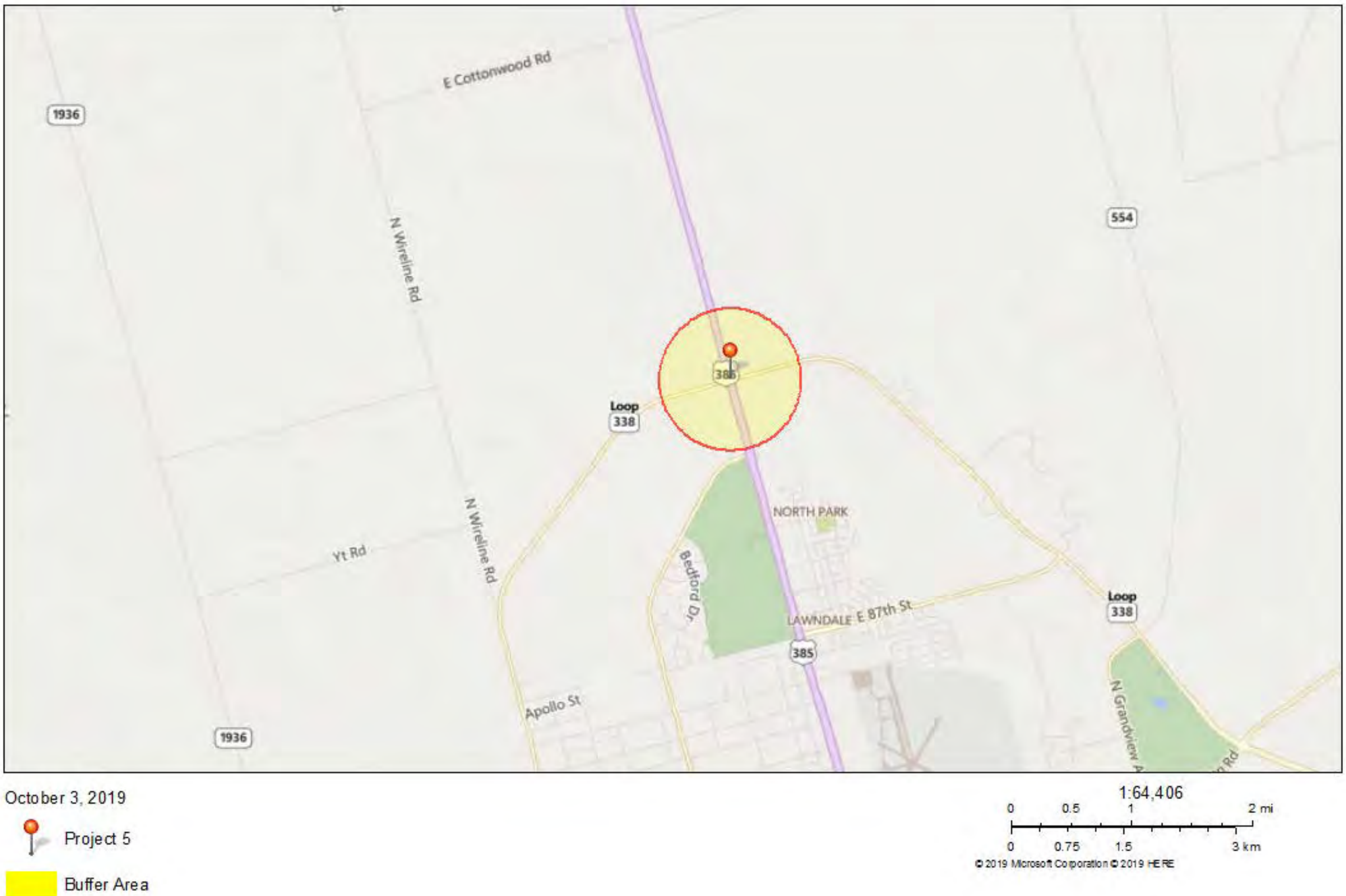
Project Location	32.050357,-102.010137
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 8:43:25 PM

NEPAssist Report

RC-21



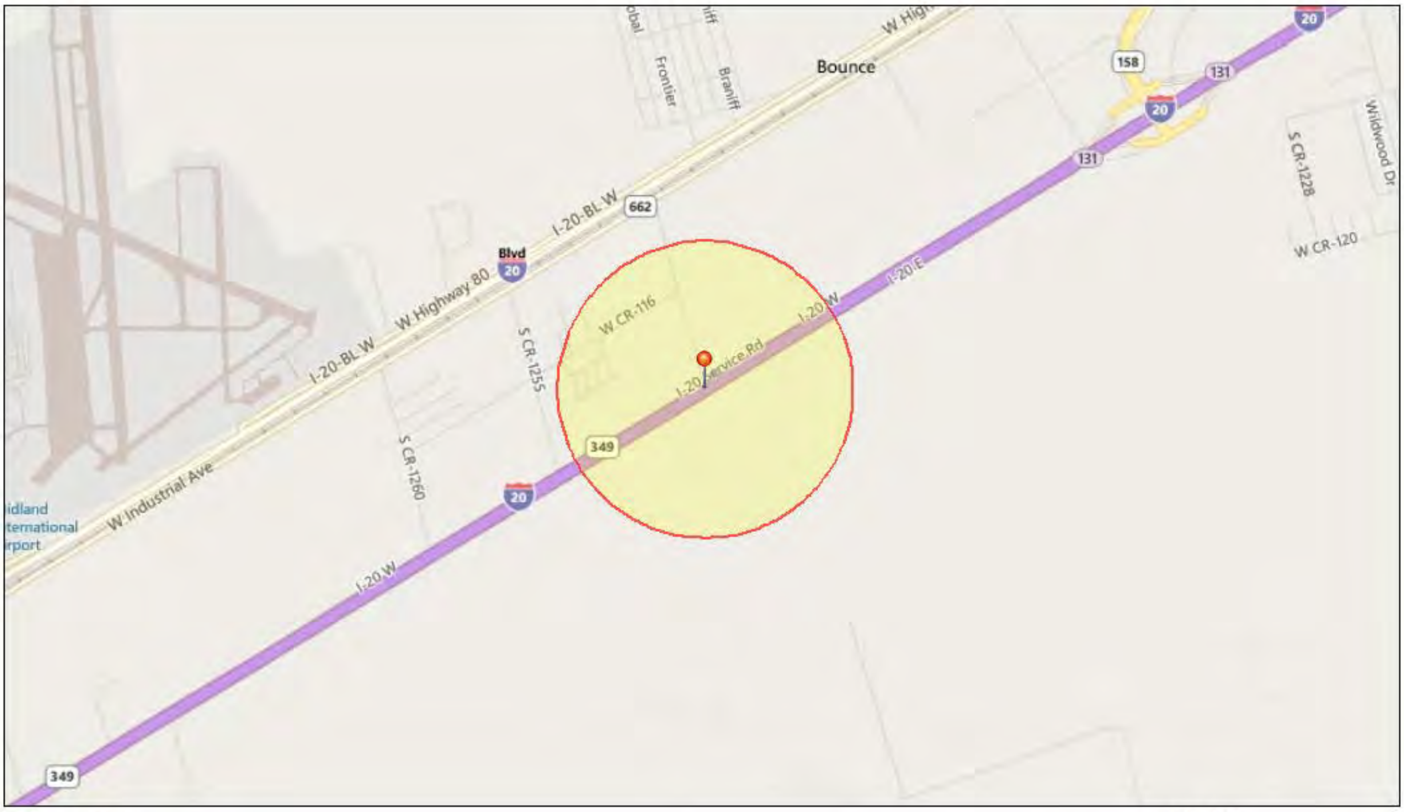
Project Location	31.960462,-102.409902
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 8:50:15 PM

NEPAssist Report

RC-50b* int 3



October 3, 2019

Project 6

Buffer Area

1:32,203

0 0.275 0.55 1.1 mi

0 0.425 0.85 1.7 km

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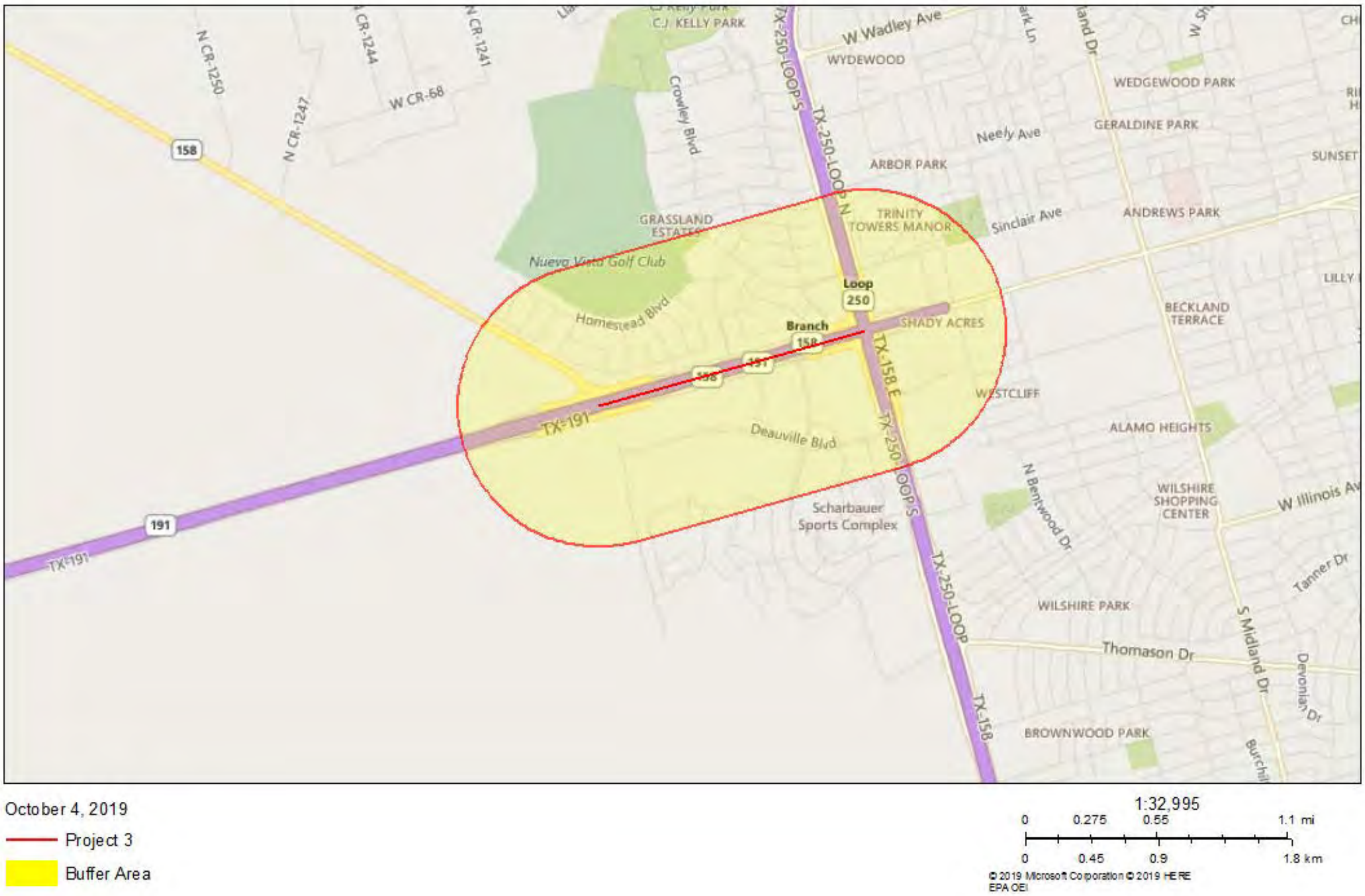
Project Location	31.935336,-102.16934
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 8:56:09 PM

NEPAssist Report

RC-86a



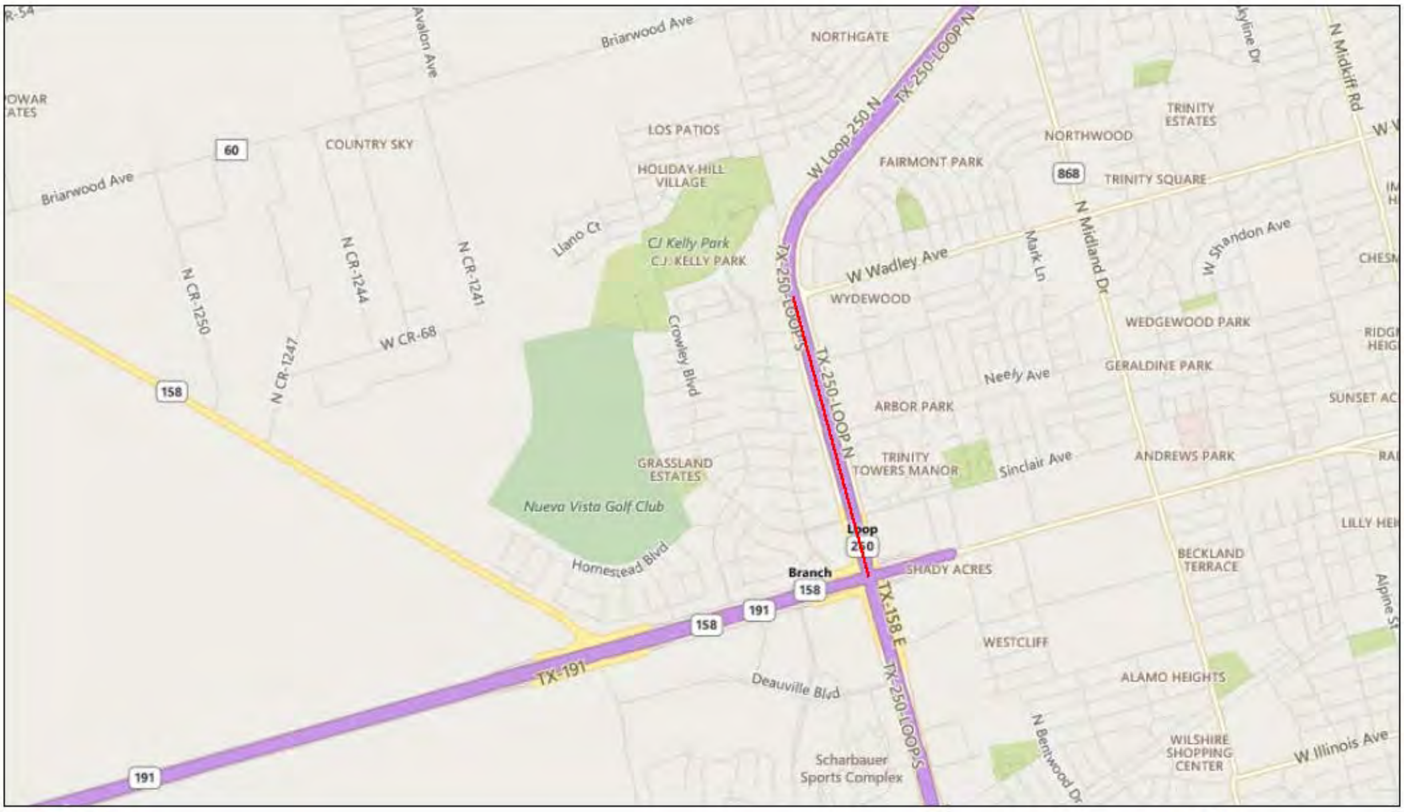
Input Coordinates: 31.994013,-102.170103,31.997889,-102.153891	
Length of digitized line	0.99 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	no
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:21:58 AM

NEPAssist Report

RC-86 a



October 4, 2019

Project 4

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

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EPA OEI

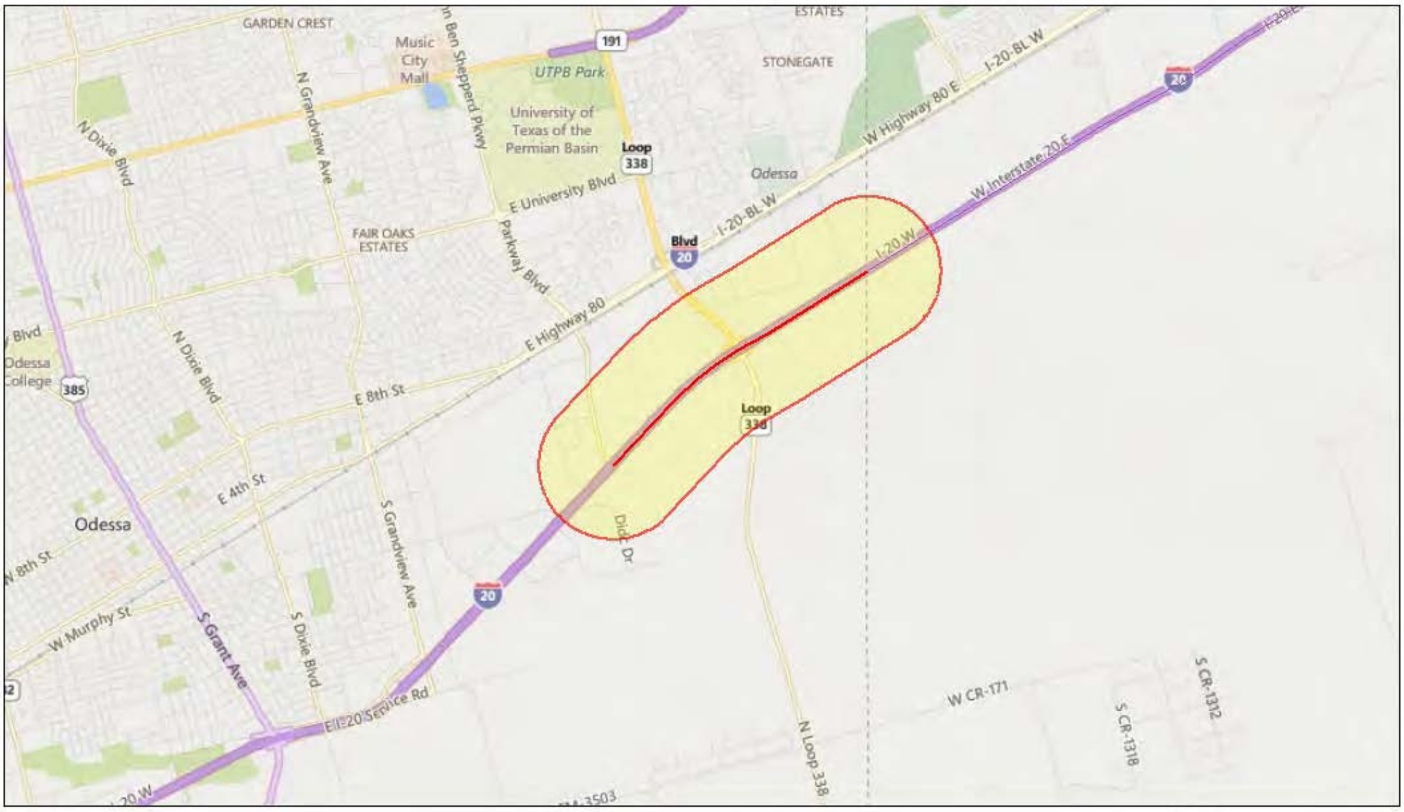
Input Coordinates: 31.997907,-102.153967,32.011955,-102.158430	
Length of digitized line	1.00 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	no
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:24:21 AM

NEPAssist Report

RC-36a



October 3, 2019

- Project 7
- FY_2022_funded_I_20
- Buffer Area

1:64,406

0 0.5 1 2 mi

0 0.75 1.5 3 km

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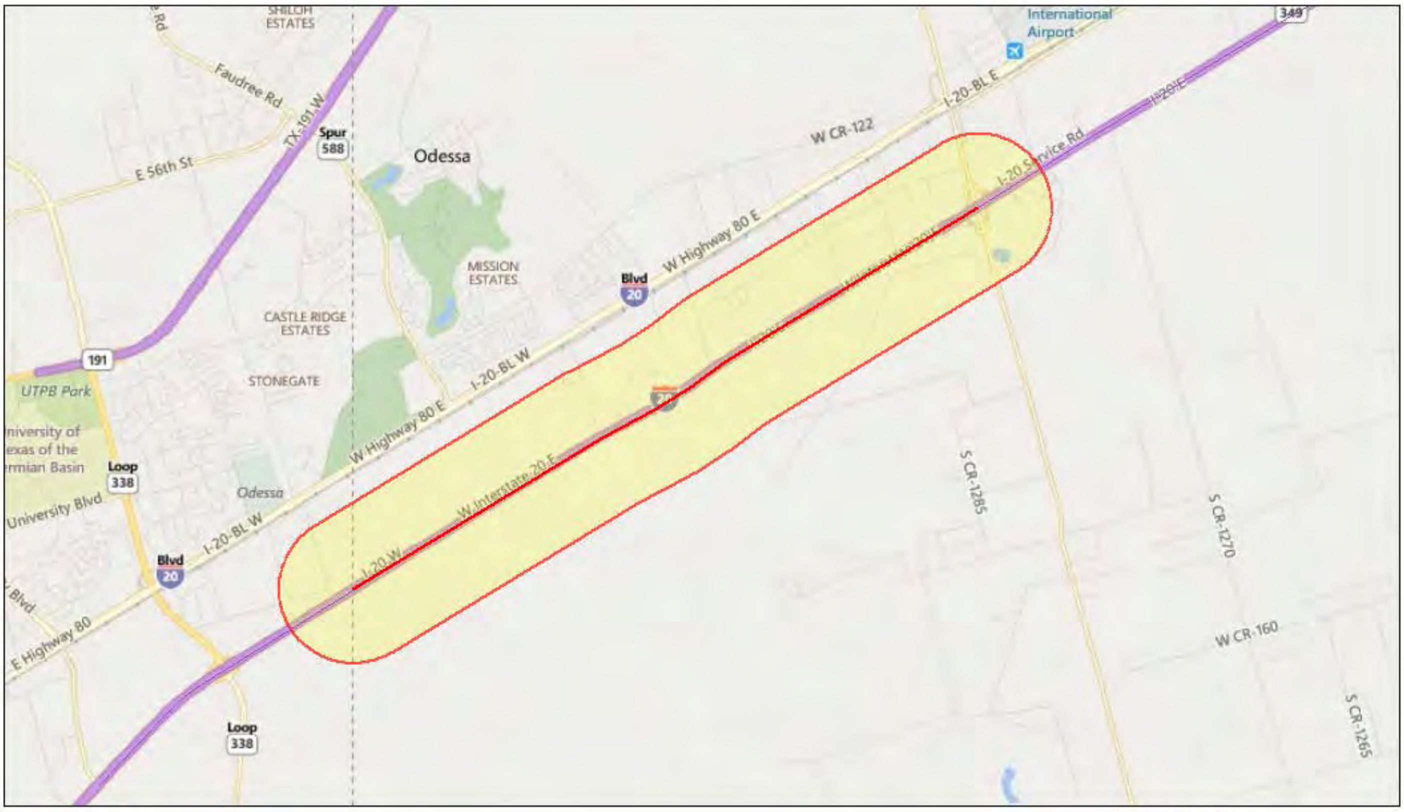
Input Coordinates: 31.855111,-102.316505,31.861526,-102.309424,31.863531,-102.306892,31.865244,-102.304232,31.866374,-102.302043,31.868014,-102.298781,31.874137,-102.287237	
Length of digitized line	2.18 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	yes
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 9:11:55 PM

NEPAssist Report

RC-36ab



October 3, 2019

Project 11

FY_2022_funded_I_20

Buffer Area

1:64,406

0 0.5 1 2 mi

0 0.75 1.5 3 km

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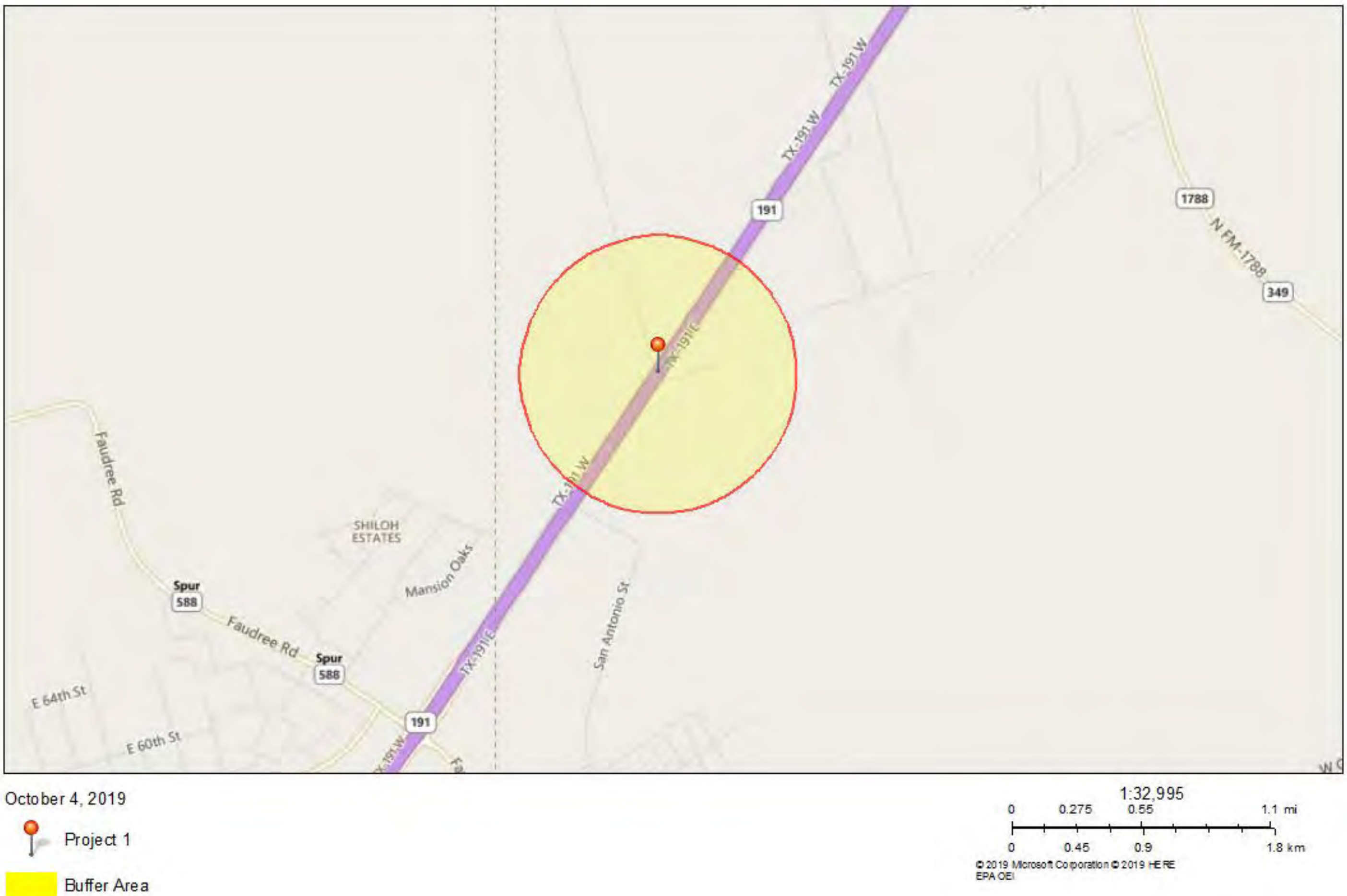
Input Coordinates: 31.874209,-102.287280,31.889005,-102.258613,31.891701,-102.252519,31.893814,-102.248570,31.896438,-102.244451,31.911448,-102.215354	
Length of digitized line	4.95 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	yes
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/3/2019 9:15:22 PM

NEPAssist Report

RC-42d



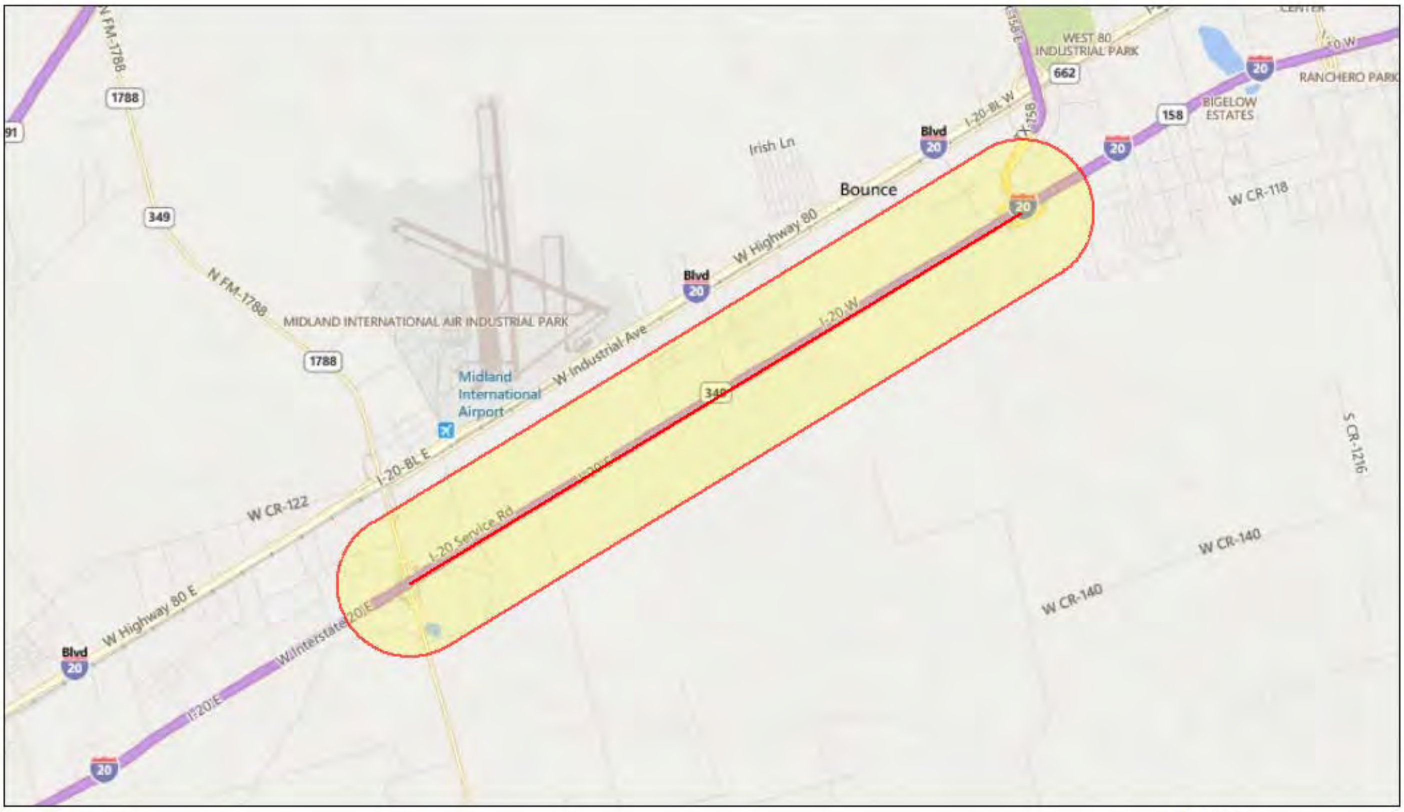
Project Location	31.938081,-102.277327
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:10:11 AM

NEPAssist Report

RC-95



October 4, 2019

Project 2

Buffer Area

1:65,989

0 0.5 1 2 mi

0 0.75 1.5 3 km

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EPA OEI

Input Coordinates: 31.911383,-102.215443,31.948606,-102.143259	
Length of digitized line	4.96 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:15:16 AM

NEPAssist Report

RC-40a int a

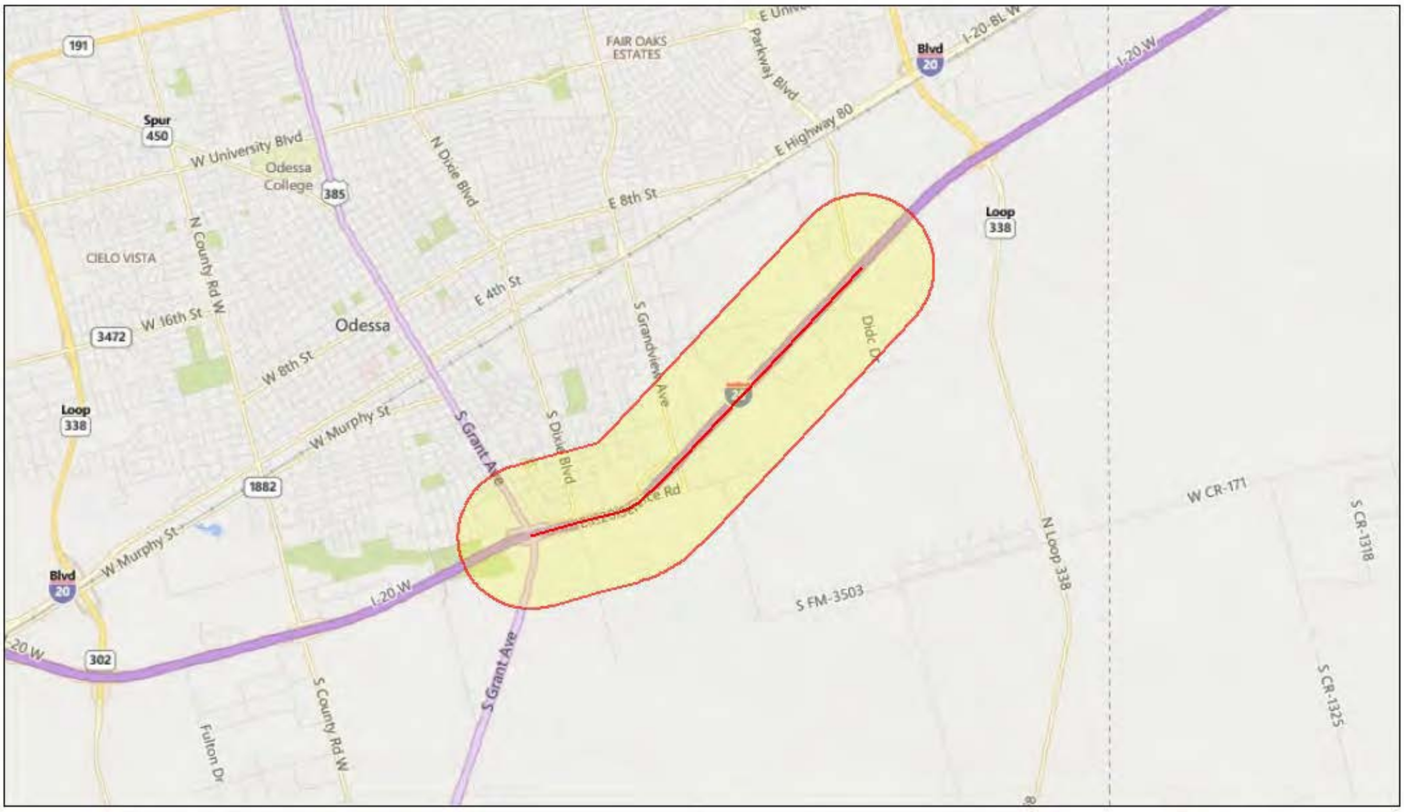
Project Location	31.902774,-102.427895
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:34:12 AM

NEPAssist Report

RC-33



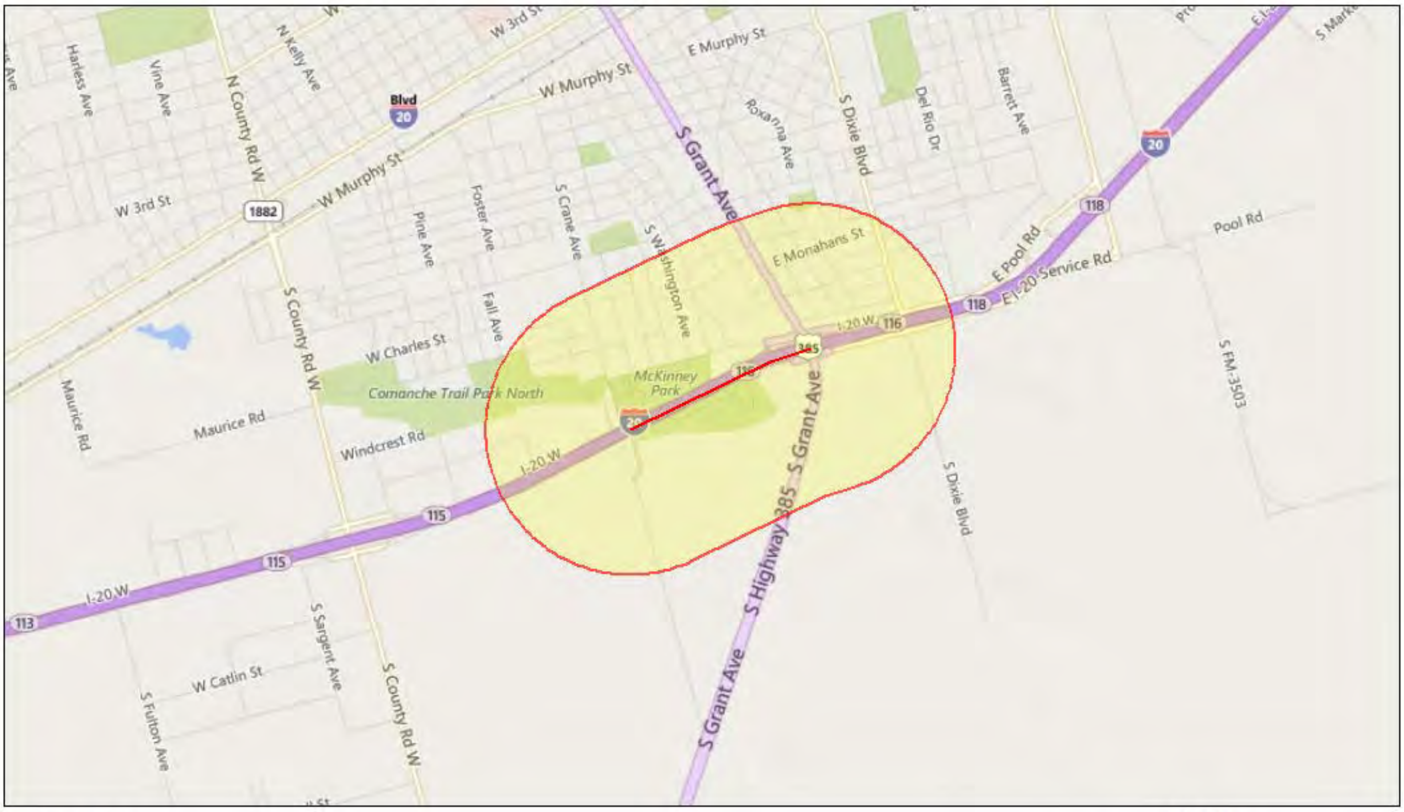
Input Coordinates: 31.828147,-102.355454,31.829496,-102.349918,31.830627,-102.344940,31.831028,-102.343738,31.831502,-102.342708,31.833653,-102.340048,31.855162,-102.316315	
Length of digitized line	3.04 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	yes
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:37:25 AM

NEPAssist Report

RC-34



October 4, 2019

Project 9

Buffer Area

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

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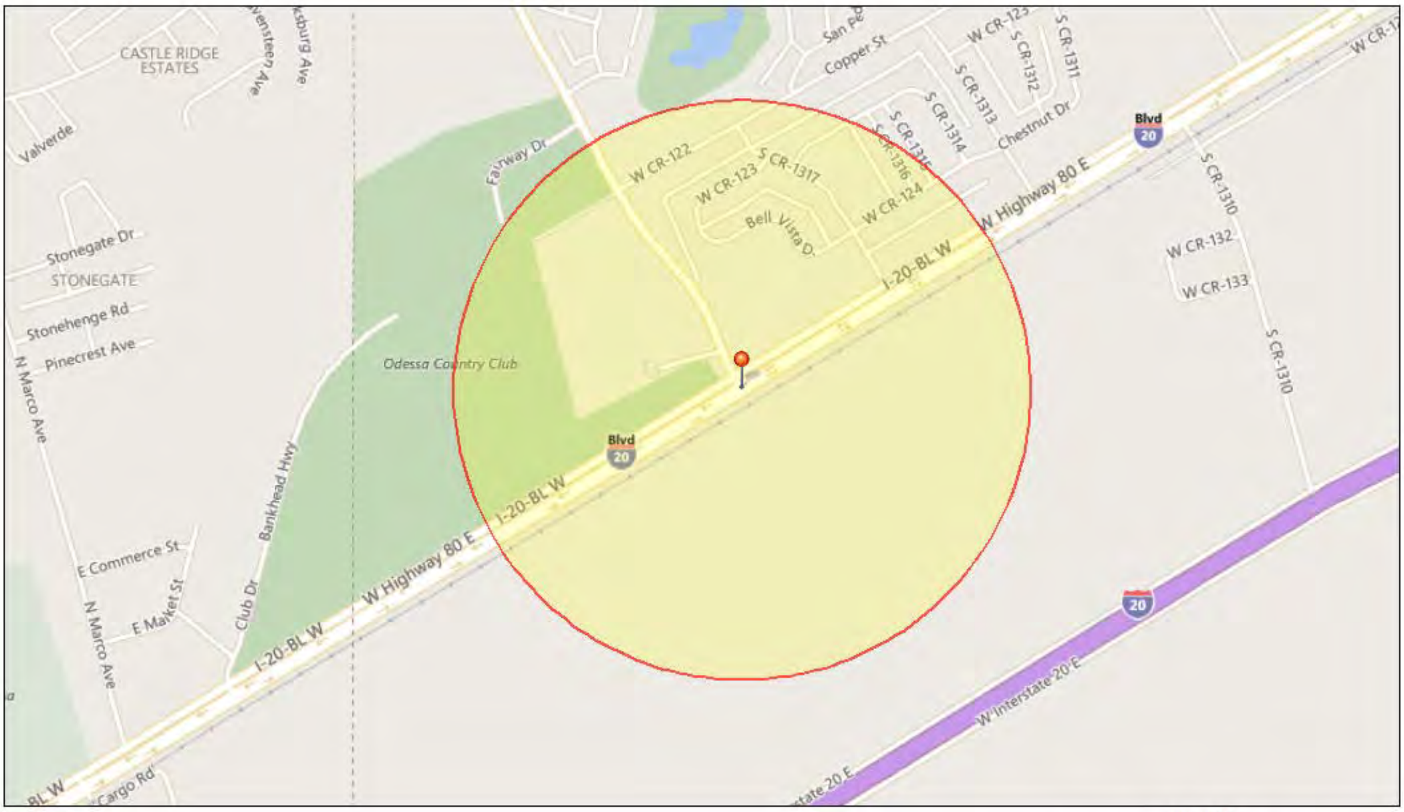
Input Coordinates: 31.824082,-102.365904,31.827509,-102.357621,31.828166,-102.355218	
Length of digitized line	0.69 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:42:47 AM

NEPAssist Report

RC-15a



October 4, 2019

Project 10

Buffer Area

1:16,497

0 0.125 0.25 0.5 mi

0 0.225 0.45 0.9 km

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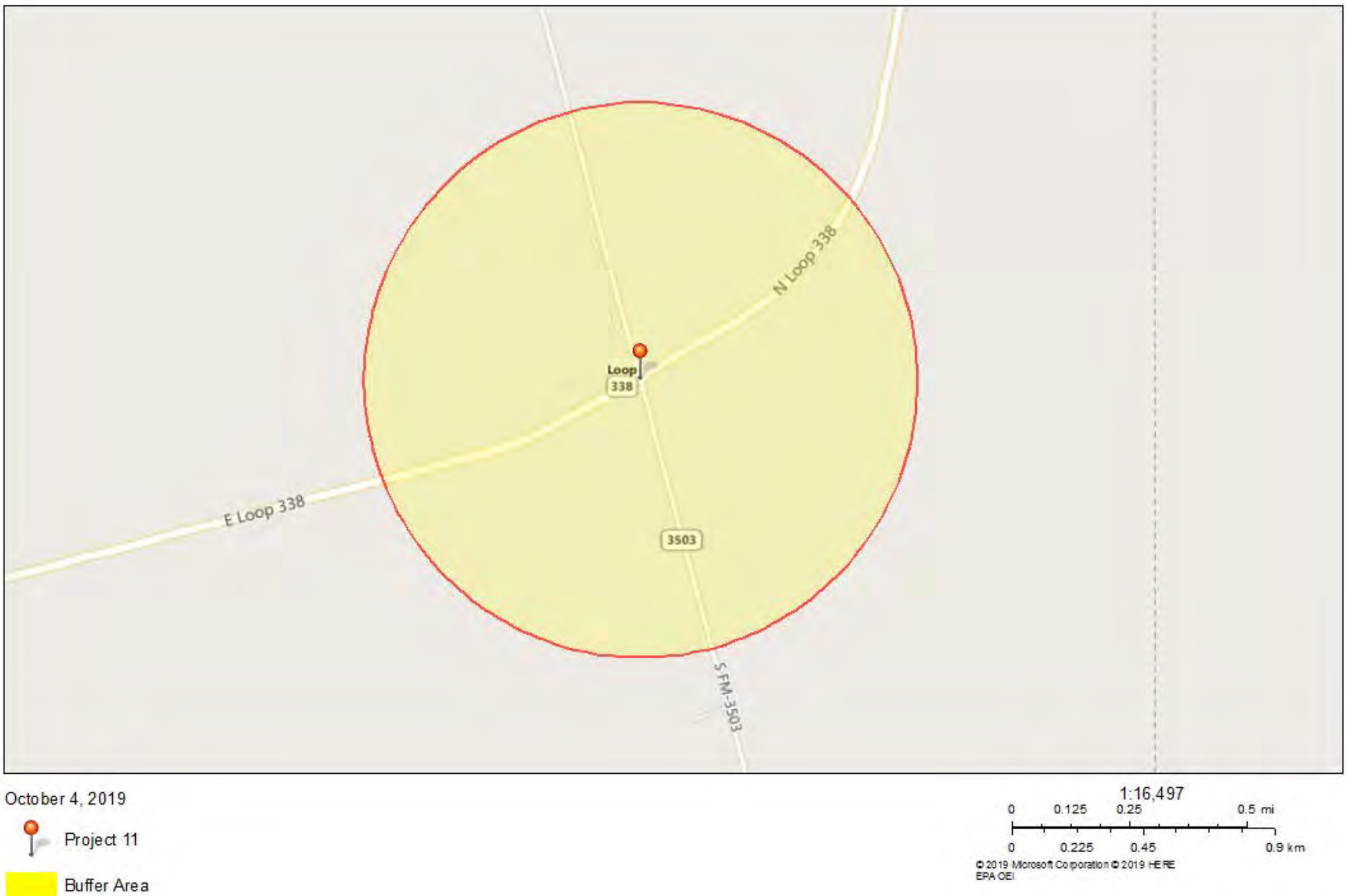
Project Location	31.891862,-102.275825
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:45:28 AM

NEPAssist Report

RC-09*



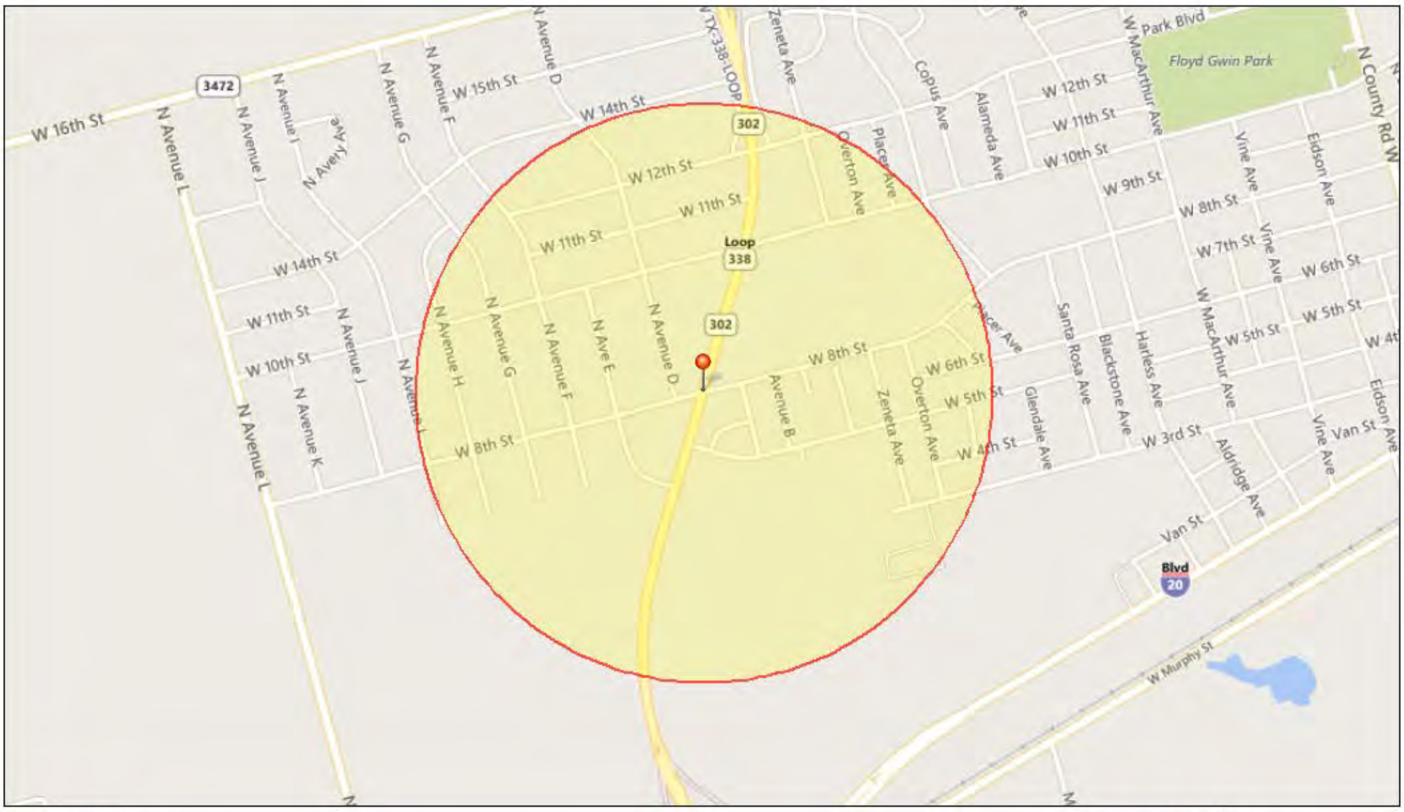
Project Location	31.795781,-102.302926
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	yes
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:54:43 AM

NEPAssist Report

RC-131



October 4, 2019

Project 12

Buffer Area

1:16,497

0 0.125 0.25 0.5 mi

0 0.225 0.45 0.9 km

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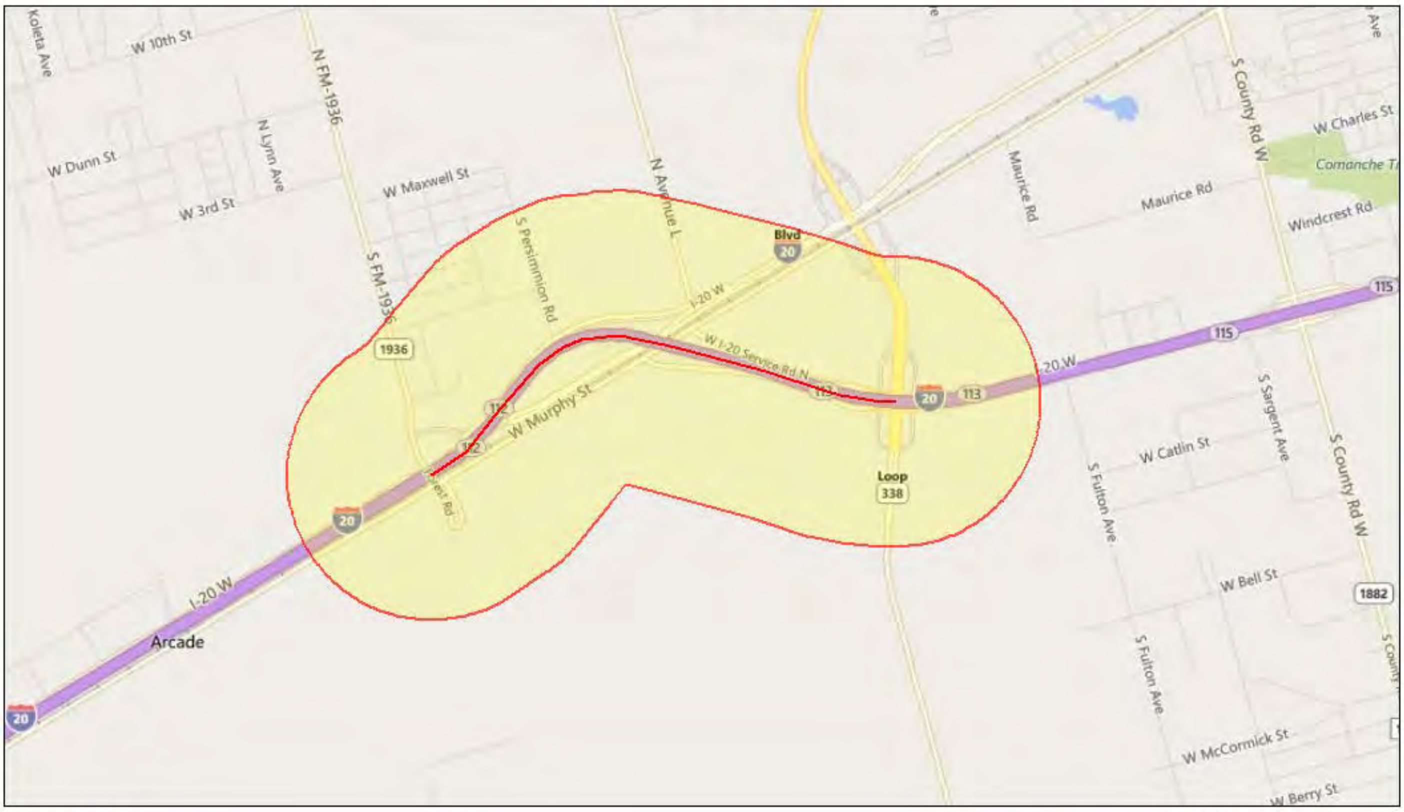
Project Location	31.835941,-102.409822
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 10:57:16 AM

NEPAssist Report

RC-27



October 4, 2019

Project 14

Buffer Area

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

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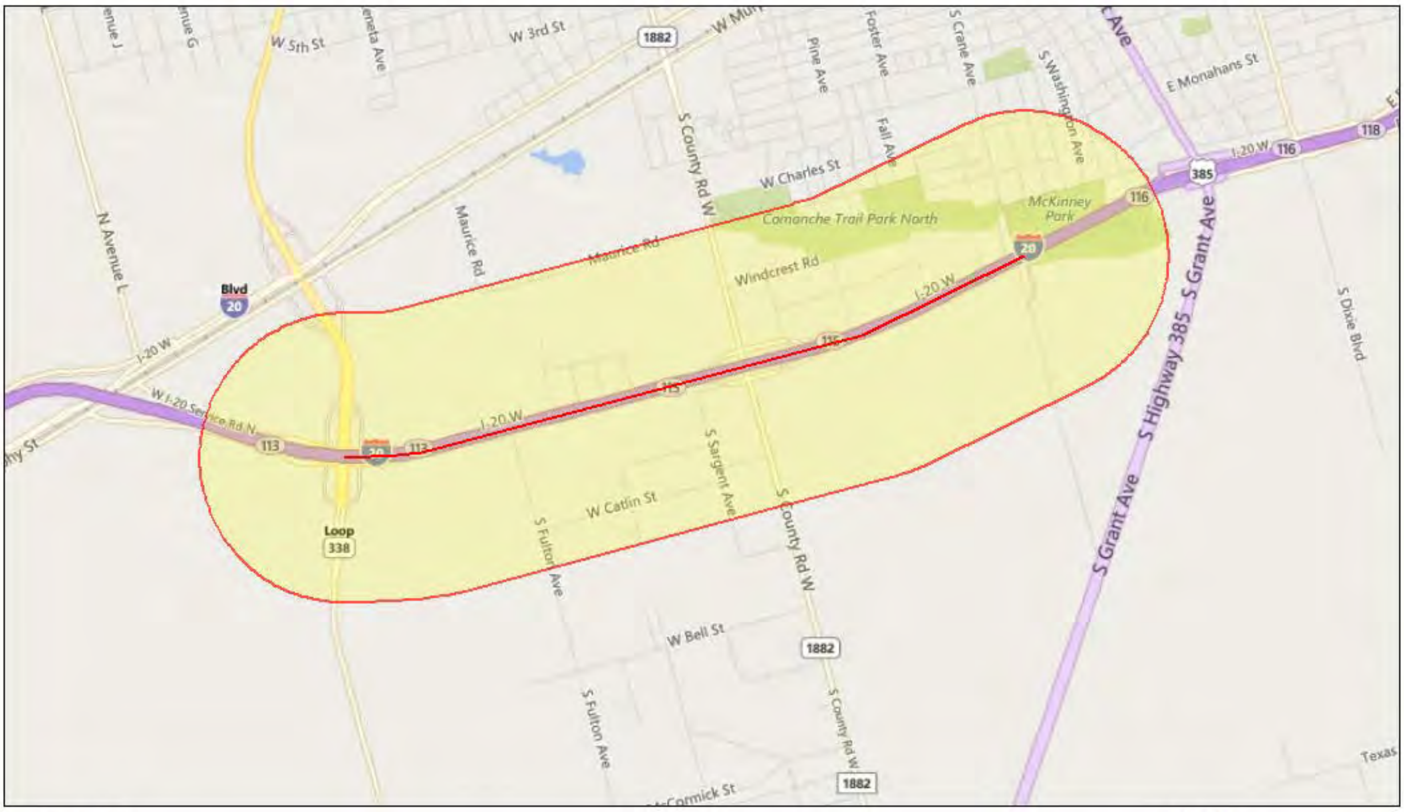
Input Coordinates: 31.810326,-102.433469,31.811493,-102.431409,31.813645,-102.429392,31.815906,-102.427160,31.816708,-102.425701,31.817146,-102.424628,31.817292,-102.423169,31.817328,-102.422311,31.817219,-102.421624,31.816781,-102.419350,31.815614,-102.414071,31.815104,-102.412097,31.814484,-102.409908,31.814338,-102.409350,31.814046,-102.407376,31.814010,-102.406046	
Length of digitized line	1.83 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no

Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 11:00:22 AM

NEPAssist Report

RC-28



October 4, 2019

Project 15

Buffer Area

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

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Input Coordinates: 31.813937,-102.406003,31.814046,-102.402827,31.814192,-102.401454,31.818532,-102.382314,31.819699,-102.377250,31.820100,-102.375490,31.824074,-102.365877	
Length of digitized line	2.48 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 11:02:31 AM

NEPAssist Report

RC-30

October 4, 2019

Project 16

Buffer Area

1:16,497

0 0.125 0.25 0.5 mi

0 0.225 0.45 0.9 km

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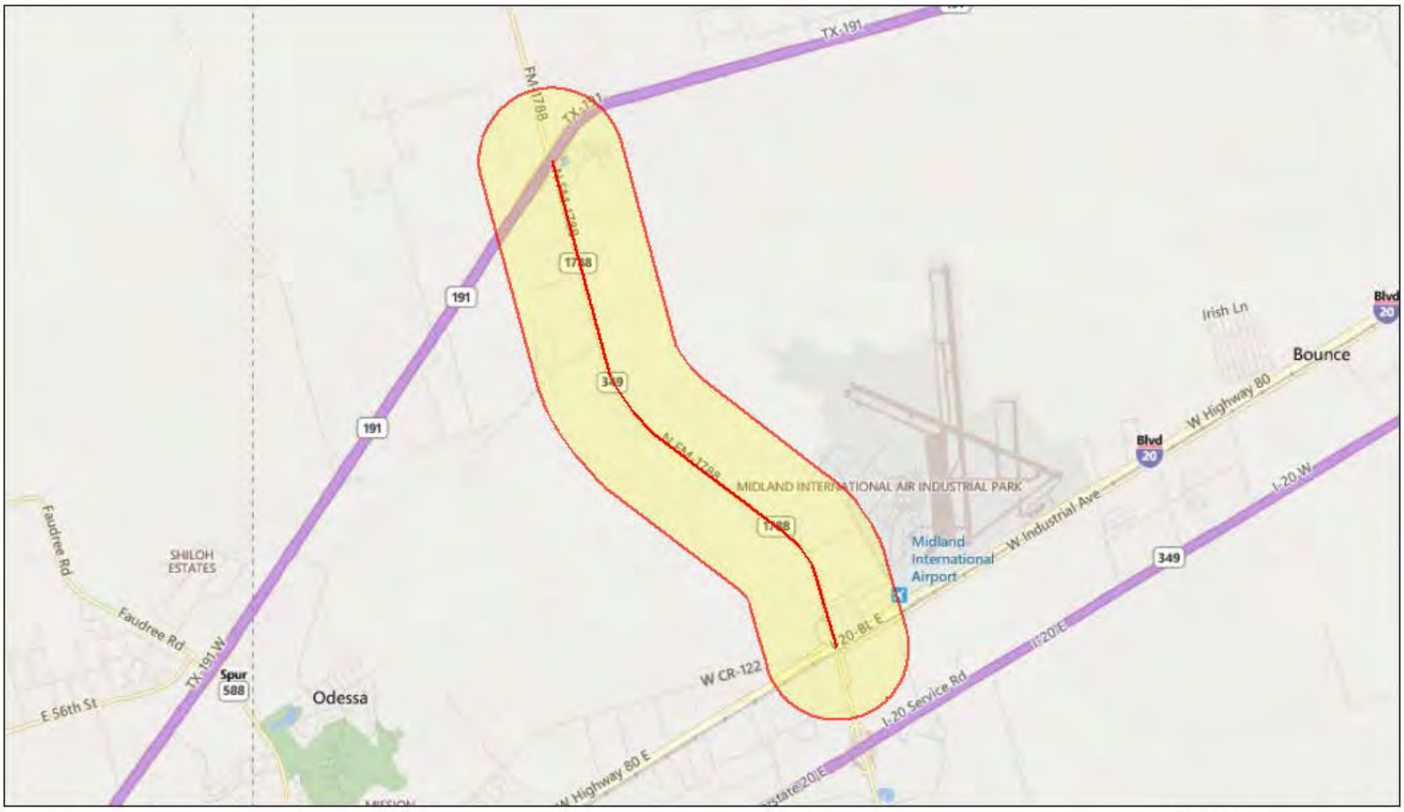
Project Location	31.813991,-102.406024
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	no
Within 0.5 miles of a hazardous waste (RCRA) facility?	no
Within 0.5 miles of an air emission facility?	no

Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 11:05:11 AM

NEPAssist Report

RC-52* a



October 4, 2019

Project 17

Buffer Area

1:65,989

0 0.5 1 2 mi

0 0.75 1.5 3 km

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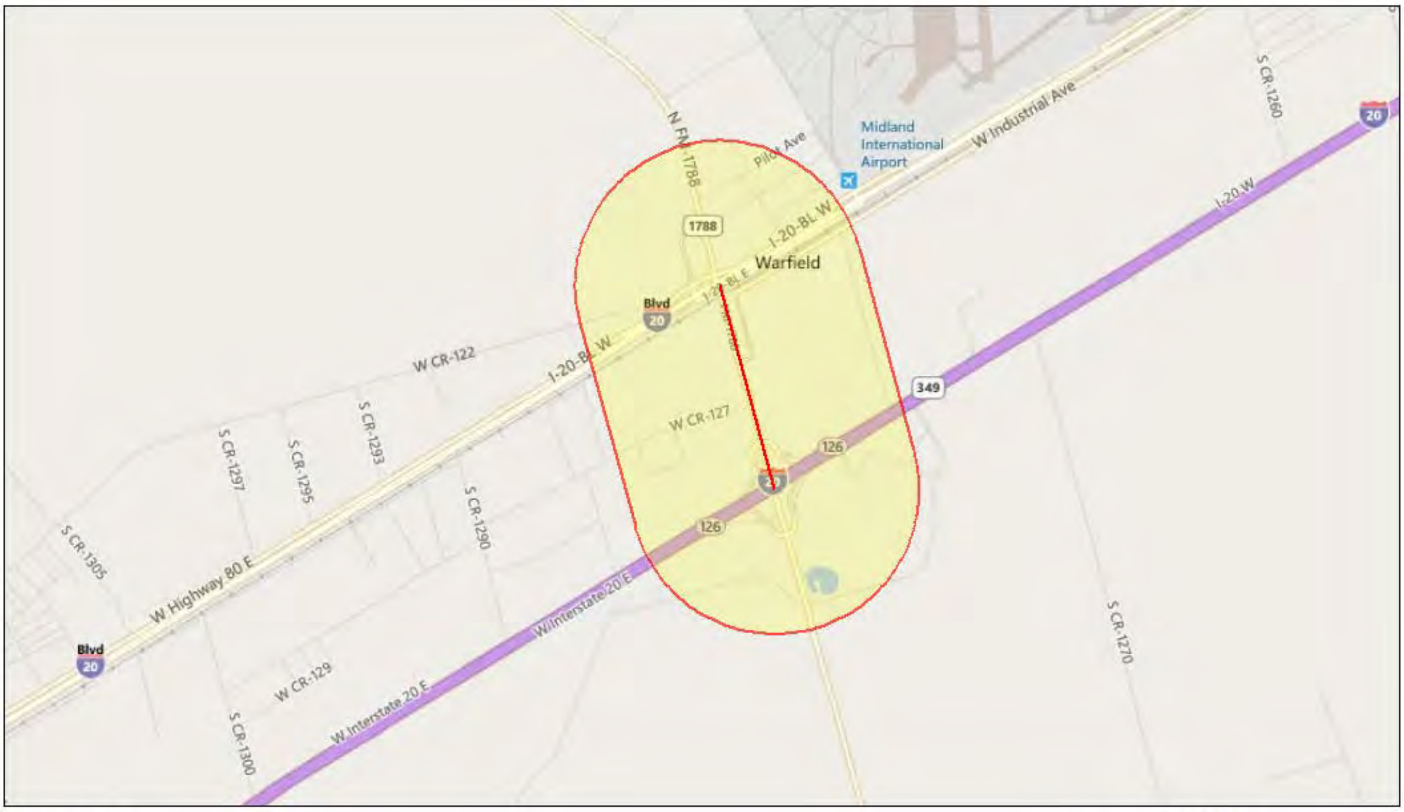
Input Coordinates: 31.970270,-102.252130,31.949516,-102.245521,31.948569,-102.245092,31.947258,-102.244234,31.945073,-102.242431,31.942961,-102.240114,31.933055,-102.224836,31.931671,-102.222862,31.929923,-102.221489,31.928393,-102.220802,31.925552,-102.219858,31.921546,-102.218484	
Length of digitized line	4.07 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	yes
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes

Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	no
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

Created on: 10/4/2019 11:07:40 AM

NEPAssist Report

RC-52* b



October 4, 2019

Project 18

Buffer Area

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

Input Coordinates: 31.921546,-102.218656,31.911346,-102.215395	
Length of digitized line	0.73 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	no
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

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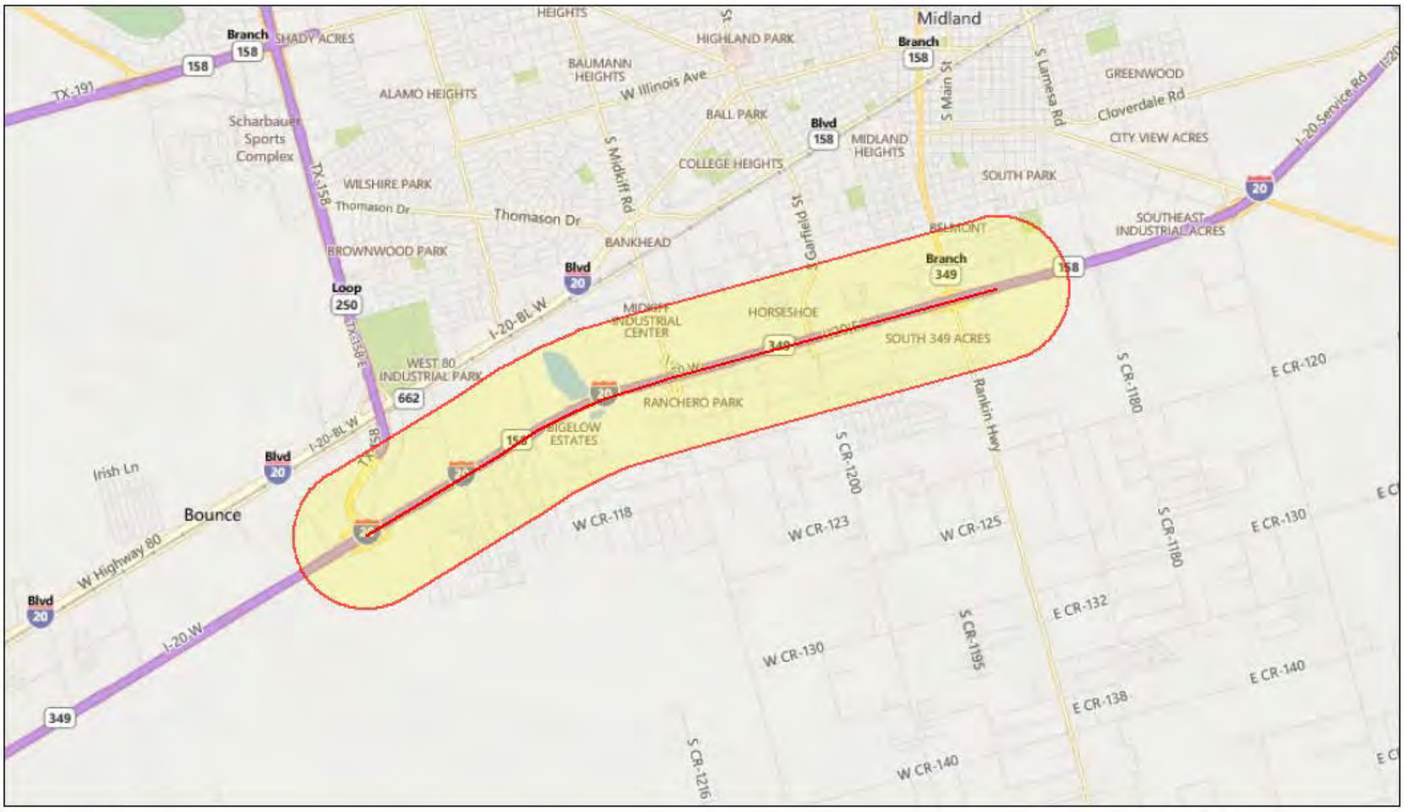
NEPAssist Report

RC-60



October 4, 2019

Project 22

Buffer Area

1:65,989

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Input Coordinates: 31.948715,-102.143254,31.956653,-102.127890,31.959420,-102.122869,31.961204,-102.118792,31.962551,-102.115187,31.964554,-102.107119,31.973510,-102.068796	
Length of digitized line	4.73 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	yes
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

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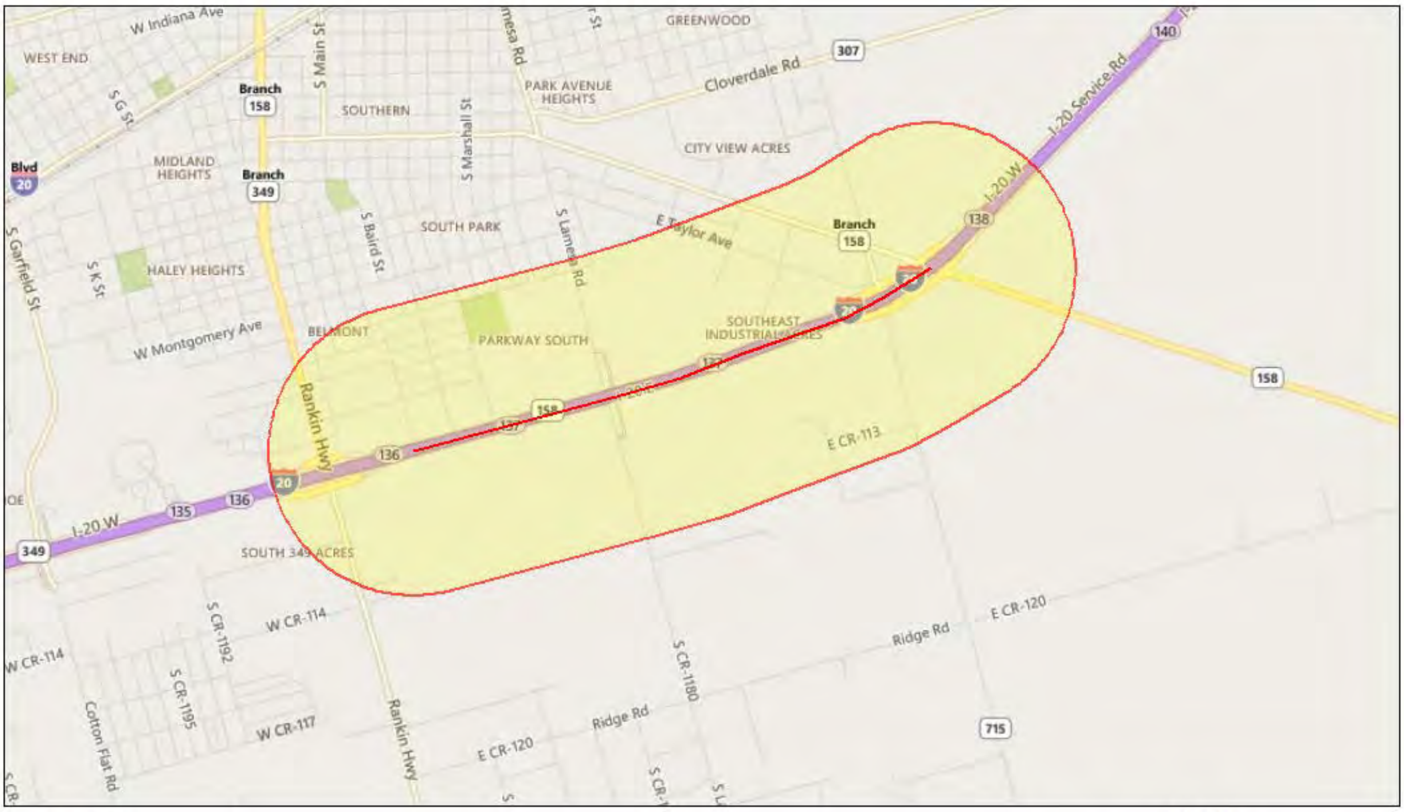
NEPAssist Report

RC-96



October 4, 2019

Project 20

Buffer Area

1:32,995

0 0.275 0.55 1.1 mi

0 0.45 0.9 1.8 km

Input Coordinates: 31.973546,-102.068967,31.976131,-102.057552,31.977114,-102.053389,31.978424,-102.049398,31.980208,-102.043519,31.981191,-102.041330,31.982683,-102.038412	
Length of digitized line	1.91 mi
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	no
Within 0.5 miles of an impaired stream?	no
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	no
Within 0.5 miles of a stream?	no
Within 0.5 miles of an NWI wetland?	Available Online
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	yes
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes

Within 0.5 miles of an air emission facility?	no
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	no
Within 0.5 miles of a designated sole source aquifer?	no
Within 0.5 miles of a historic property on the National Register of Historic Places?	no
Within 0.5 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 0.5 miles of a RADInfo site?	no
Within 0.5 miles of a Land Cession Boundary?	yes
Within 0.5 miles of a tribal area (lower 48 states)?	no

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