2040

METROPOLITAN TRANSPORTATION PLAN

December 4, 2014

Prepared for

Tyler Area TAMPO

2040 METROPOLITAN TRANSPORTATION PLAN

Adopted November 20, 2014
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Prepared for the Tyler Area MPO

Prepared by Alliance Transportation Group, Inc.

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I. INTRODUCTION

Regional transportation planning efforts have been conducted for the Tyler Urbanized Area since the early 1960's, when the first comprehensive transportation plan was completed.

2040 METROPOLITAN TRANSPORTATION PLAN

The Metropolitan Transportation Plan (MTP) provides a framework for analyzing the current and future travel demand and creating a blueprint for addressing the future transportation needs of the Tyler Urbanized Area. With a focus on the creation of a safe, accessible, equitable, and multi-modal transportation network, the MTP recommendations will help improve congestion, support economic development, and enhance the quality of life for those living in or near Tyler, Texas. As an update to the Tyler Area Metropolitan Transportation Plan 2035, this plan will guide transportation decision-making through the year 2040.

The MTP is a long-range planning document, which is reviewed and updated every five years. Each iteration provides a chance to reassess conditions and ensure that the plan remains consistent with the desires and needs of the region as it changes over time.

Development of the MTP requires the collaboration of regional stakeholders, including local, state and federal agencies and governing bodies, public and private transportation providers, the business community, as well as extensive public input. All of these stakeholders must work together so that the community's visions and goals coalesce into defined principles that will guide transportation policy and investment decisions within the Tyler Urbanized Area. The resulting recommendations and proposed improvements will impact all aspects of transportation, including:

> Metropolitan transportation planning is the process of examining travel and transportation issues and needs. In urbanized areas with a population of 50,000 or more, the responsibility for transportation planning lies with the designated Metropolitan Planning Organization.

- Transportation Efficiency;
- Safety;
- Network Continuity;
- Improved East-West Connections;
- Improved Access;
- Security;
- Environmental Stewardship;
- Public Transportation;
- Cycling;
- Walking;
- Rail Preservation;
- Airport Access; and
- Land Use Goals.

LEGISLATIVE AUTHORITY

MAP-21

The 2040 Metropolitan Transportation Plan was developed in compliance with the federal surface transportation law - Moving Ahead for Progress in the 21st Century (MAP-21), which was signed into law in July 2012 and became effective on October 1, 2012. MAP-21 authorizes funds for highway, transit, bike, and pedestrian, as well as transportation-related safety programs. The law replaced the previous bill - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Many of the highway, transit, bike, and pedestrian policies established by preceding transportation laws, and continued under SAFETEA-LU, were expanded and refined in MAP-21. The eight planning factors that guided the creation of this MTP were specifically continued from the previous legislation.

Planning Factors

The transportation planning process for metropolitan areas must provide for the consideration of projects and strategies that –

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility of people and for freight;
- 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;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation; and
- Emphasize the preservation of the existing transportation system.

TYLER AREA METROPOLITAN PLANNING ORGANIZATION

Federal law mandates that each metropolitan area with a population over 50,000 must have a designated Metropolitan Planning Organization (MPO). The MPO is responsible for the continuous, cooperative, and comprehensive planning process that considers all modes of transportation. In 1974, the City of Tyler was designated as an MPO and empowered to work in partnership with the Texas Department of Transportation (TxDOT), as well as other State and local stakeholders, to carry out the transportation planning process in compliance with federal regulations.

The Tyler Area MPO has many functions, but there are five core elements that distinctly define its role in transportation planning –

- Establish a fair and unbiased regional planning process;
- Provide inclusive and ample opportunities for the public and other key stakeholders to provide feedback. This function is carried out through the Public Participation Plan;
- Analyze various regional transportation development scenarios and implement the most viable options. The related work effort is detailed in the annual Unified Planning Work Program (UPWP);
- Develop and update the long-range transportation plan, also called the Metropolitan Transportation Plan, with a minimum 20-year planning horizon; and
- Develop a short-term plan with a four-year horizon, known as the Transportation Improvement Program (TIP), which serves as a strategic plan for implementing improvements identified in the MTP.

Study Area

The Tyler Area MPO study area is shown in Figure I-1. The boundary was expanded in late 2013 to encompass the 2010 federally-designated, urbanized area, which includes Tyler, Bullard, Flint, Gresham, Lindale, Hideaway, New Chapel Hill, Noonday, Troup, Winona and Whitehouse. The MPO boundary also accounts for additional areas outside of the currently designated urbanized area, where sufficient urbanization is likely to occur within the next 25 years.

Policy Committee

The Tyler Area MPO is governed by the Policy Committee, which consists of eleven elected or appointed officials familiar with the transportation issues and needs in the Tyler Urbanized Area. The purpose of the Policy Committee is to serve as the decision-making body, to determine transportation priorities, and to adopt policies, which guide the transportation investments in the region.

Technical Advisory Committee

The Tyler Area MPO also has a Technical Advisory Committee, which is comprised of a 23-person panel of individuals with knowledge and expertise in transportation planning and operations. The Technical Advisory Committee advises the Policy Committee, offering operational and technical information to assist in the decision-making process.

MPO Staff

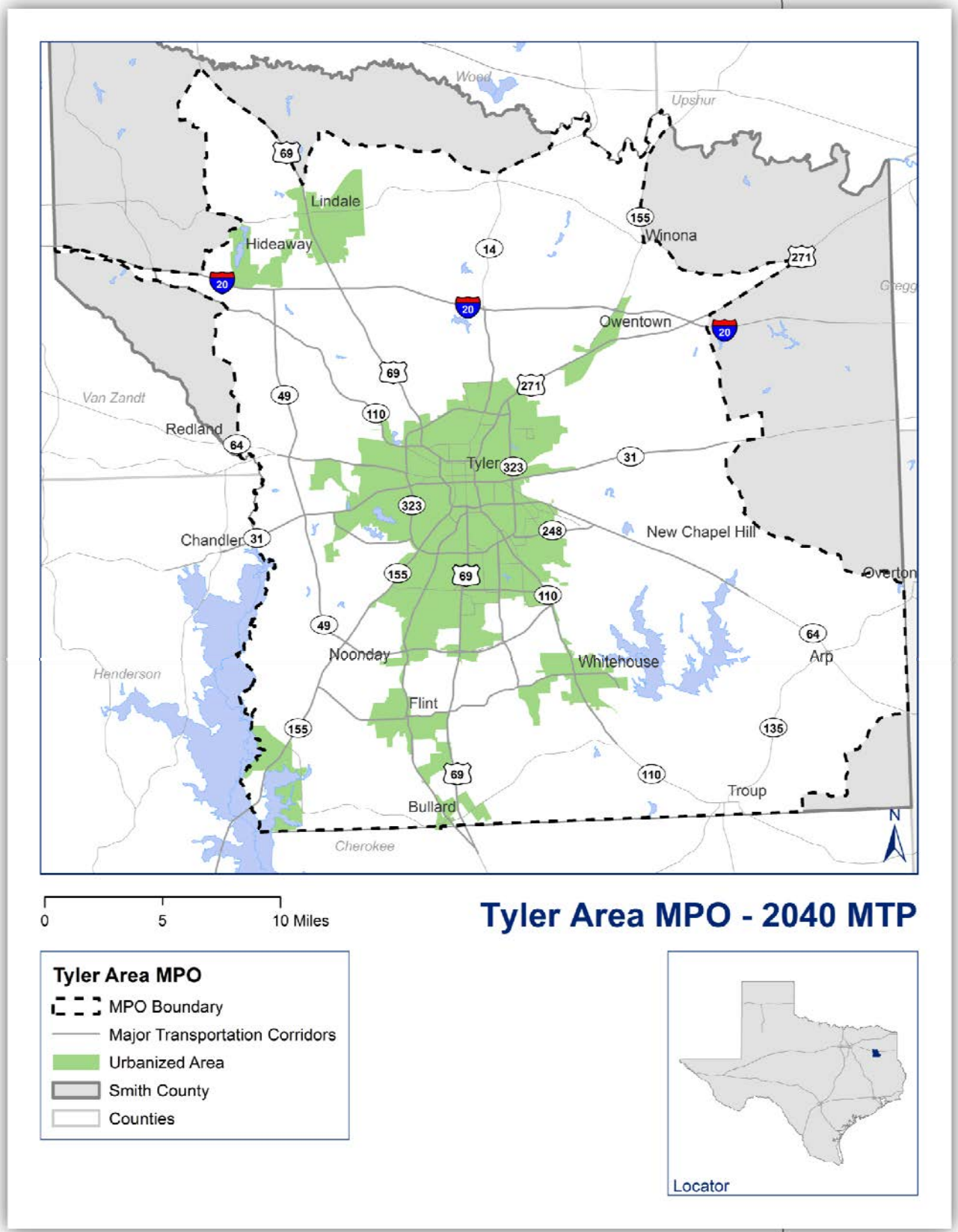
The Tyler Area MPO staff provides administrative support to both the Policy and Technical Advisory Committees by coordinating activities, disseminating information, making recommendations, as well as developing and maintaining required transportation planning documents.

METROPOLITAN TRANSPORTATION PLAN OUTLINE

As a long-range planning document, the purpose of the MTP is to assess the future transportation needs of the community, establish priorities for funding needed improvements, and chart a course for meeting the community's vision. The plan is designed to allow the Tyler Urbanized Area to also enhance the economic viability of the community, while preserving its quality of life. The planning process, related activities, and transportation system analysis that led to the development of the 2040 Metropolitan Transportation Plan are detailed in the following chapters:

- Planning Process;
- Public Outreach;
- Demographics;
- Roads and Highways;
- Public Transportation;
- Bicycles and Pedestrians;
- Intermodal and Interregional Transportation;
- Safety and Security;
- Identification of Transportation Needs;
- No-Build Strategies;
- Environmental Analysis;
- Financial Plan;
- Project Prioritization; and
- Recommendations.

Figure I-1: Tyler Area MPO Boundary



II. METROPOLITAN TRANSPORTATION PLANNING PROCESS

The planning process used for the creation of the Metropolitan Transportation Plan (MTP) is prescribed by State and federal regulations, but the vision that drives the process is developed locally. In order to create the MTP for the Tyler Urbanized Area, the following planning process was used by the study team, which was comprised of Tyler MPO staff, the Technical Advisory Committee, and TxDOT, and was supported by professional planning consultants. The planning process was conducted under the authority of the Tyler Area MPO.

The metropolitan transportation planning process includes:

- Visioning and public participation
- Needs assessment and analysis of transportation conditions
- Development of effective and feasible transportation projects
- Review and adoption of the Metropolitan Transportation Plan

VISIONING

The planning process was kicked off by a series of meetings with professional planners and engineers from the MPO and its member agencies, as well as State and local agencies, and other community stakeholders. These meetings were designed to gather all existing plans, reports, data, and professional knowledge of ongoing projects, development patterns, and community concerns to create an initial framework, including an overview of challenges and opportunities to guide the planning process.

After the data, information, professional opinion, and public input were collected, the study team crafted a recommended vision, a set of goals, and a list of evaluation criteria that were reviewed and subsequently adopted by the MPO Policy Committee.

Metropolitan Transportation Plan Vision and Goals

Resulting from the collaborative effort of the Policy Committee, Technical Advisory Committee, and the public, the following statement reflects the community vision that will guide transportation planning and improvements for the Tyler Urbanized Area.

> *"To develop a safe, efficient and economically feasible multi-modal transportation system that will accommodate the mobility needs of all people and goods traveling within and through the Tyler Area over the next 25 years."*

The following goals for the MTP provide the framework for implementing this vision:

- Transportation Efficiency --- Promote the efficient use and preservation of the multi-modal transportation systems and infrastructure;
- Safety --- Improve safety on the transportation system by developing projects that reduce hazards and improve travel conditions for all transportation users;
- Network Continuity --- Develop transportation facilities that ensure network continuity throughout the region, providing multi-modal choices and a proper balance of freeways, expressways, major and minor arterials, collectors, and local streets in coordination with the county-wide 2012 Master Street Plan and other local plans;

- Improved East-West Connections --- Develop adequate thoroughfares for improved east-west movements through the Tyler Area and preserve existing neighborhoods by discouraging through traffic on local and collector streets;
- Public Transportation --- Provide for improved transit services, including local bus service, commuter bus service, and passenger rail transportation;
- Cycling --- Develop a network of bicycle facilities that is safe and accessible, and provides connections between residential areas and activity centers;
- Walking --- Develop improved pedestrian facilities, such as sidewalks and trails, that connect residential areas to activity centers, schools, and transit services;
- Improved Access --- Accommodate future land development to provide access for all transportation users based on Complete Streets principles and with acceptable levels-of-service;
- Rail Preservation --- Promote the development and preservation of the area's rail system to support commercial businesses and maintain existing rail right-of-way;
- Airport Access --- Develop Tyler Pounds Field into a regional hub for air transportation and improve mass transit access to the airport;
- Land Use Goals --- Maintain consistency with adopted land use plans and ordinances;
- Environmental Stewardship --- Support transportation projects and activities that will protect the environment and promote energy conservation;
- Security --- Encourage transportation investments and policies that result in a higher level of security for motorists, transit users, pedestrians, and bicyclists.

Metropolitan Transportation Planning Goals at a glance:

- Transportation Efficiency
- Safety
- Network Continuity
- Improved East-West Connections
- Public Transportation
- Cycling
- Walking
- Improved Access
- Rail Preservation
- Airport Access
- Land Use Goals
- Environmental Stewardship
- Security

Public Participation

Moving Ahead for Progress in the 21st Century (MAP-21) is the current surface transportation law. It was adopted in 2012 and contains specific requirements for public participation in the metropolitan transportation planning process. The law builds upon efforts emphasized under previous transportation laws, including: the Intermodal Surface Transportation Efficiency Act (ISTEA – adopted in 1991); the Transportation Equity Act for the 21st Century (TEA-21 – adopted in 1998); and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU – adopted in 2005).

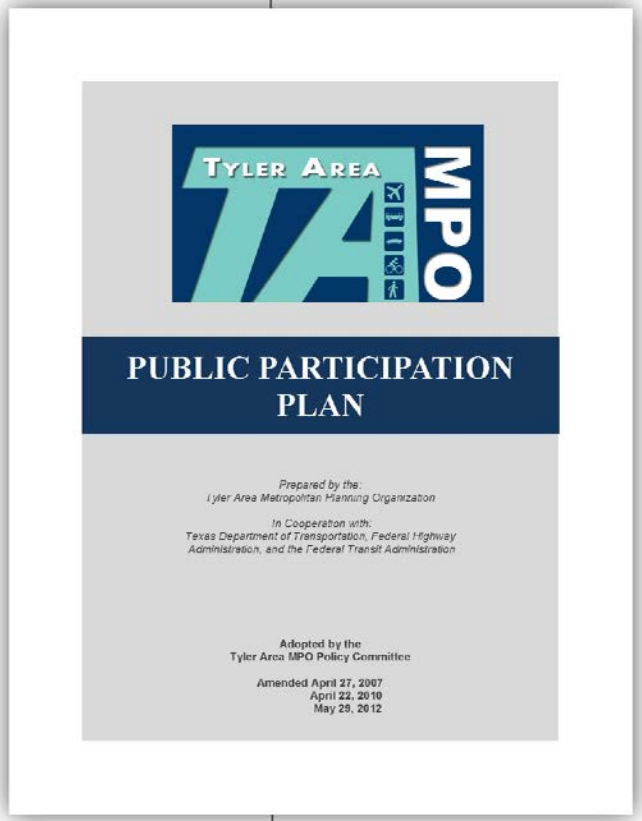
Above and beyond simply complying with MAP-21, the Tyler Area MPO recognizes the importance of involving the public and all interested parties in creating a well-developed transportation system that meets the needs of individuals in the Tyler Urbanized Area. The 2040 Metropolitan Transportation Plan planning process therefore included strategies that[1]:

[1] *Tyler Area Public Participation Plan (2012)*

- Provide timely information about transportation issues and processes to citizens, affected public agencies, representatives of transportation agency employees, private providers of transportation, and other interested parties and segments of the community affected by transportation plans, programs and projects;
- Provide reasonable public access to technical and policy information used in the development of plans and the Transportation Improvement Program (TIP) and conduct open public meetings where matters related to the Federal-aid highway and transit programs are being considered;
- Require adequate public notice of public participation activities and time for public review and comment at key decision points, including, but not limited to, approval of plans and programs;
- Demonstrate explicit consideration and response to public input received during the planning and program development processes; and
- Seek out and consider the needs of those traditionally underserved by existing transportation systems, including but not limited to elderly, disabled, low-income and minority households.

Current Policy

Specific public outreach strategies and requirements are laid out in the Public Participation Plan (PPP) of the Tyler Area MPO. Originally developed in 2007, the PPP was amended in 2010 and 2012. It ensures that transportation-related information is provided in a timely fashion and that the involvement and participation of the public in the transportation decision-making process is complete and continues throughout the entire duration of the MTP development.



The PPP specifically calls for the solicitation of public input at least six months prior to the adoption of an MTP to allow for the consideration of public ideas on needed transportation improvements. The PPP further states that input can be gathered through surveys, questionnaires, focus groups, public meetings, or other manners deemed appropriate. Details regarding specific public participation activities are described in the *Public Involvement - Chapter III*.

Notifications

The Tyler Area MPO publicized notifications of public participation opportunities at least 72 hours prior to any public meetings through the following venues:

- Tyler City Hall;
- Local Public Access Cable Television (Channel 3);
- Tyler Morning Telegraph;
- Community Minority-Focused Papers, including Spanish language papers;
- Other groups or organizations that can be reasonably identified and may increase public participation, including low-income and minority populations; and

- Press releases to all local media, including those focused on minority communities.

The Tyler Area MPO staff also used its website to display information about meetings, minutes, and other adopted documents. (This page may be accessed through the City of Tyler's Website at www.cityoftyler.org or directly at http://www.TylerAreaMPO.org.)

Public Meetings

The Tyler Area MPO conducted MTP-related public meetings in compliance with the following requirements:

- All meetings of the MPO Policy Committee shall be held in compliance with the *Texas Open Meetings Act* as amended;
- Minutes of public meetings shall be retained by the MPO for a period of three years;
- Certification of posting on official bulletin boards and/or a copy of newspaper publication shall be obtained and retained in the MPO files for a period of three years. In absence of a copy of newspaper or newspaper certification, where efforts are made according to the policies of the publisher to place announcements, there shall be determined that the MPO has met requirements for public notification;
- The MPO shall prepare minutes of meetings and shall submit the information to the Texas Department of Transportation after the completion of the public comment period; and
- All attendees at public meetings and hearings will be provided an invitation to be placed on a correspondence roster to receive notice of future hearings and opportunities to comment on proposed documents and programs.

Public Review and Comment Periods

Prior to the adoption of the 2040 Metropolitan Transportation Plan, the public was afforded 30 days in which to review and make comments regarding the plan. The review and comment period complied with the following procedure laid out by the PPP:

- The MPO shall make available at its offices a copy of the documents proposed for adoption. The public may review the documents at the MPO offices during normal working hours. When possible, staff will be available to discuss the document or answer questions. Where possible, copies of the documents also shall be made available at the City of Tyler Library, City of Tyler City Clerk's Office, Texas Department of Transportation Tyler District Office, the Tyler Transit Office, as well as on Tyler Transit buses or at bus stops.
- When significant oral or written comments are received on the draft Metropolitan Transportation Plan during the public review and comment period, a summary, analysis and report on the disposition of comments shall be made part of the final plan.
- Oral and written comments shall be retained in the MPO files for a three-year period.
- Copies of the summary and analysis shall be sent to the Texas Department of Transportation.

- If the final plan or program differs significantly from the one which was made available for public comment by the MPO and raises new material issues which interested parties could not reasonably have foreseen from the public participation efforts, an additional 10-day public review and comment period shall be afforded prior to the adoption of the revised Metropolitan Transportation Plan.
- If no other comments are received from the public, the plan becomes final.
- The MPO Policy Committee shall take an active role in soliciting suggestions from the public. All suggestions shall be reviewed by the MPO and considered for public appearances.

NEEDS ASSESSMENT

In order to develop feasible and beneficial transportation solutions, it is imperative to assess the current state of the transportation system, as well as community growth trends. For the 2040 Metropolitan Transportation Plan, this assessment included an inventory of the transportation system, a demographic analysis to determine existing transportation demand based on current population levels, as well as projections of future population and employment and the associated future travel demand. Furthermore, existing local plans were reviewed for additional guidance and input.

Transportation System Inventory

In order to determine existing and future travel demand on the transportation system, all of the existing transportation modes in the Tyler Urbanized Area were inventoried, including:

- National highway system;
- Urban and rural roadways system by functional class;
- Bridges;
- Rail facilities;
- Airports;
- Intermodal terminals;
- Fixed route transit system;
- Other public transit systems and their service areas;
- Bicycle facilities;
- Pedestrian facilities;
- Passenger rail; and
- Intercity bus.

For an in-depth description, refer to the relevant modal chapters.

The needs assessment includes:

- Inventorying current transportation systems
- Analyzing growth trends
- Assessing transportation needs

Regional Growth Trends

The nature and distribution of the residential population within the region impacts the manner in which the transportation system is used. In order to evaluate existing needs and establish a baseline to which future needs can be compared, the study team gathered existing population and employment data, plans, reports, and institutional knowledge about land use patterns, economic development goals, and demographic trends. Coupled with stakeholder feedback and public input regarding areas of growth, this information was used to develop population and employment projections for the MTP horizon year of 2040. The resulting population and employment projections were used in the travel demand model to analyze various highway projects, and were also used to inform a more subjective analysis of

non-highway transportation projects, including bicycle, pedestrian, and transit projects. For an in-depth description of the analysis and the forecasted growth, refer to the *Demographics - Chapter IV*.

Identified Transportation Needs

Building new facilities will not address all identified transportation needs. Not only is building new roadways expensive and funding limited, but some identified needs are best addressed by strategies that reduce demand and improve the operational efficiency of the existing transportation system. Therefore, the MTP planning process included consideration of the preservation of the existing system through preventative and rehabilitative maintenance; the inclusion of access management strategies; and the incorporation of Travel Demand Management (TDM) and Transportation System Management and Operations (TSMO) strategies. These strategies are often referred to as "no-build" strategies because they do not require the construction of new roadways or the widening of existing roadways.

PROJECT IDENTIFICATION

Once the no-build strategies were considered, potential projects to expand or build new facilities were examined. The results of technical reviews, available planning studies, highway and corridor studies, consultation with local traffic engineers, planners, and other stakeholders, a call for transportation projects, as well as the results of the travel demand model analysis were all combined to develop a list of candidate projects slated for further analysis.

Project Selection Process

Proposed projects were then coded into the travel demand model and tested to determine what impact they might have on addressing identified congestion and transportation system needs. Non-highway projects were also analyzed to determine what impact they would have on addressing deficiencies, using a combination of existing data, forecasts, and professional judgment. The results of the travel demand modeling effort are described in the *Transportation Needs Chapter*.

Identified transportation projects should:

- Reflect and support the community's vision
- Respond to existing and anticipated transportation needs
- Be technically and financially feasible and implementable

Selection Criteria

Traffic volume, volume-to-capacity, and travel delay information provided by the travel demand model were used in conjunction with the weighted qualitative measures developed through the public visioning process to create project scoring criteria.

Technical Advisory Committee Project Ranking

The study team presented the list of proposed projects to the Technical Advisory Committee members, along with the weighted criteria. The Policy Committee had the opportunity to observe the project scoring, as well as either accept or revise the methodology used by the Technical Advisory Committee to score the projects.

System-Level Analysis

System-level analyses were used to look at how the candidate projects would impact community issues that are of system- and region-wide concern. The study team incorporated this planning approach into the development of the MTP, which allowed for prioritization of transportation investment based on broader community issues in accordance with the community's vision.

Environmental Mitigation Analysis

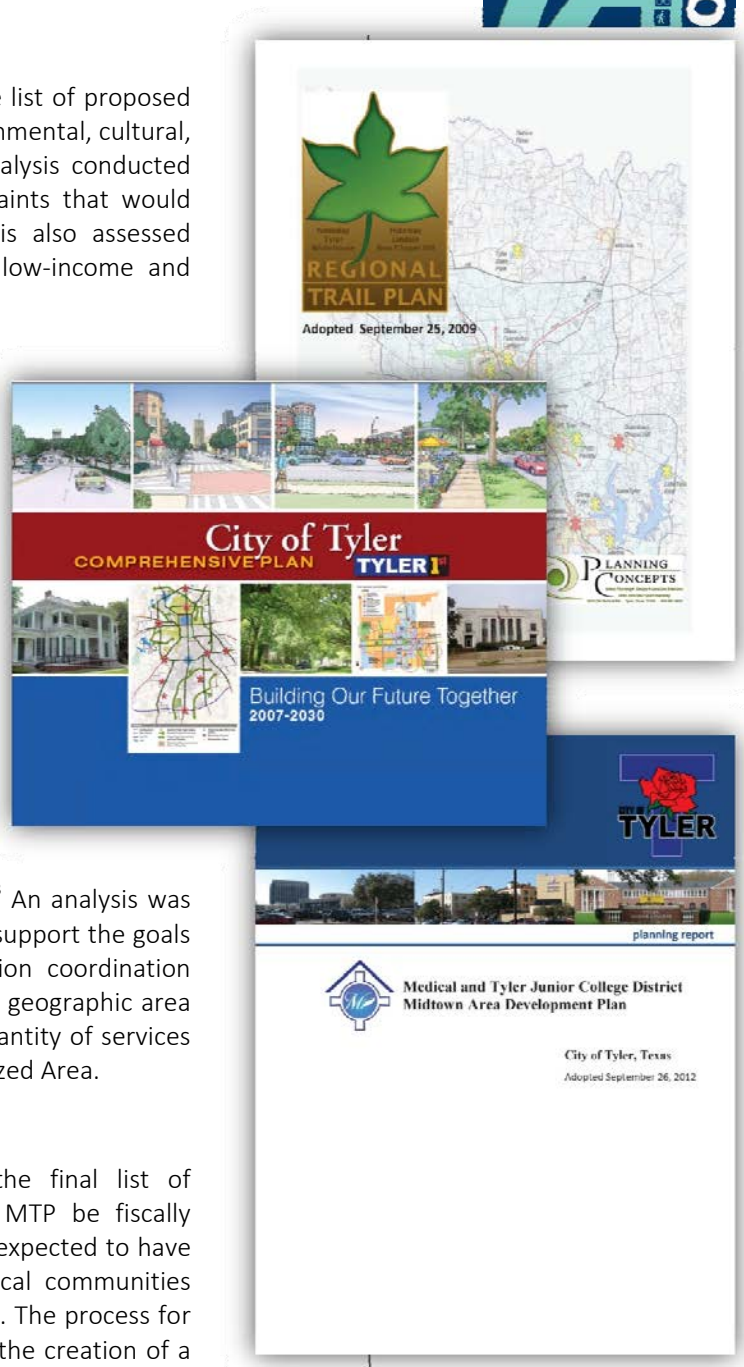
An environmental mitigation analysis was conducted with the list of proposed projects to look for any potentially negative impacts on environmental, cultural, or historical resources. This was a high-level, conceptual analysis conducted with the intent to avoid any obvious environmental constraints that would prevent the project from being implemented.[2] The analysis also assessed potential impacts associated of the proposed projects on low-income and minority populations (environmental justice).

Coordination with Local Programs and Plans

Ensuring that proposed improvements are consistent with local programs, plans, and their goals and objectives, as well as supporting local values and preserving existing community resources is of vital importance to the MTP development. A review of local programs and plans was therefore conducted to ensure consistency between the metropolitan transportation planning effort and local community initiatives.

Human Services Transportation Coordination Analysis

Human services transportation coordination aims to improve transportation services offered by various public, non-profit, or private providers to persons with disabilities, older adults, and individuals with lower incomes.[3] An analysis was conducted to determine whether the MTP would adequately support the goals and objectives of the regional human services transportation coordination plan.[4] Although the coordination plan covers a much broader geographic area than the MTP, it was designed to improve the quality and quantity of services available to disadvantaged populations within the Tyler Urbanized Area.



Financial Analysis

Fiscal feasibility is a significant priority in determining the final list of improvements. Not only does MAP-21 mandate that the MTP be fiscally constrained and only include projects that can reasonably be expected to have adequate funding, but certain projects also require that local communities provide matching local funds in order to receive federal funds. The process for establishing both estimated costs and revenues is critical for the creation of a viable MTP.

Revenue Projections

A revenue projection was developed that identified the anticipated revenue stream for local, State and Federal funds. This revenue stream was factored to account for inflation at the anticipated year-of-receipt.

[2] *Once projects reach the implementation stage, a more detailed environmental evaluation will be done as a part of the pre-construction process.*

[3] *http://www.fta.dot.gov/documents/FTA_Human_Services_Transportation_Coordination_Fact_Sheet_Oct_05.pdf*

[4] *http://www.etcog.org/UserFiles/File/Transportation/RegionalMobilityGuide.pdf*

Project Costs

Cost is defined as the total project cost, which includes: planning elements (e.g. environmental studies and functional studies); engineering costs (e.g. preliminary engineering and design); preconstruction activities (e.g. line and grade studies, right-of-way acquisition and corridor preservation); construction activities, and contingencies. Project costs were calculated based on historical expenditures for similar improvements. The resulting cost estimates also included an inflation factor to account for the anticipated year–of-expenditure.

Fiscally Constrained Plan

A fiscal constraint analysis was performed that compared the anticipated year-of-expenditure costs to the anticipated year-of-receipt revenues to determine if sufficient and timely financial resources were likely to exist to fund the proposed program of projects.

Based on the cost and revenue projections, the package of fiscally constrained projects, anticipated to best accomplish community-defined goals and objectives, was selected by the study team and then submitted to the Policy Committee for approval.

ADOPTION PROCESS

The preliminary transportation recommendations and associated list of proposed projects resulting from the project selection and fiscal constraint analysis, along with the results of the technical analysis and public input, were included in the draft 2040 Metropolitan Transportation Plan.

Public Review of the Draft 2040 Metropolitan Transportation Plan

On October 20, 2014, the draft plan was presented to the public and their feedback was solicited throughout the 30-day public review period. Input was considered by the Policy Committee, and as needed, appropriate modifications to the plan were made as noted in the Appendix.

Approval of the Final 2040 Metropolitan Transportation Plan

The final 2040 Metropolitan Transportation Plan was presented to the Policy Committee for adoption on November 20, 2014. The approved MTP has an effective date of December 4, 2014 and was shared with TxDOT, the Federal Highway Administration, and the Federal Transit Administration.

III. PUBLIC INVOLVEMENT

The surface transportation law - Moving Ahead for Progress in the 21st Century (MAP-21) - identifies public participation as "a hallmark of the metropolitan planning process" (Federal Highway Administration, 2013). The more input delivered by citizens, the better decision-makers understand and can realize the goals of the community. Considering that the Tyler Metropolitan Transportation Plan (MTP) will guide regional transportation improvements in the Tyler Urbanized Area through the year 2040, the Tyler Area Metropolitan Planning Organization (MPO) developed the update with public involvement at the core.

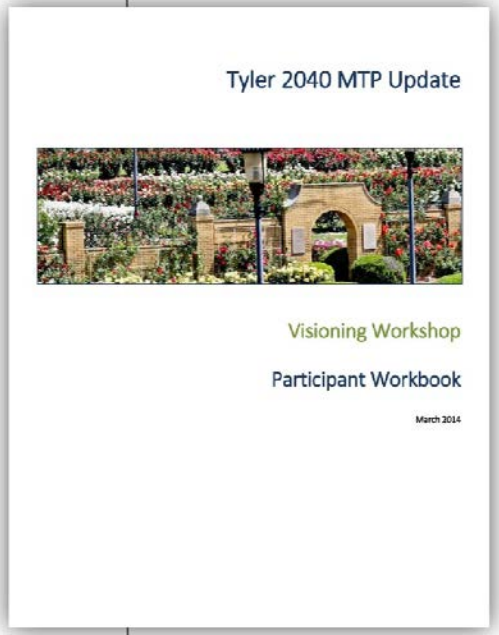
By engaging the entire spectrum of regional stakeholders, from the general public to transit operators, advocacy groups, and the business community, the MTP was developed in accordance with the Tyler Area MPO's Public Participation Plan (PPP) goal to "demonstrate explicit consideration and response to public input received during the planning and program development processes."

In order to better understand the community's goals and objectives for the Tyler area, a variety of outreach methods were used to maximize input from regional stakeholders. These outreach efforts included print media, interviews, and open comment periods, as well as public workshops and stakeholder consultation.

The following sections highlight the Tyler Area MPO's outreach efforts for the 2040 Metropolitan Transportation Plan and summarize the findings.

MTP VISIONING WORKSHOP

The Tyler Area MPO conducted a public visioning workshop, where participants were able to share concerns, visions, and preferences regarding the transportation issues that should be addressed in the MTP update.



The visioning workshop was held on March 27, 2014 at the Tyler Municipal Rose Garden. The public was notified of the meeting through public notices, email blasts, and an advertisement on the Tyler Area MPO website.

On the day of the workshop, participants were welcomed by members of the study team, and elected officials in attendance were acknowledged. The workshop was moderated by J.D. Allen of Alliance Transportation Group.

Participants were informed that the MTP update process was based largely on a public participation program designed to articulate a vision for future growth through open dialogue, collaboration, and the use of scenario-based planning tools. Throughout the workshop, the public was provided with opportunities to inform the MPO of the transportation needs and challenges that should be addressed in the Tyler Urbanized Area and to give input regarding the importance of the criteria used to evaluate future transportation projects.

Participants were told they would be asked to do the following three things:

- Help the MPO understand the critical transportation issues expected to be faced in the future;
- Help the MPO to evaluate the importance of a new list of criteria used to prioritize various scenarios and transportation projects;
- Share with the MPO their personal vision of what the future transportation system in the Tyler Urbanized Area should look like in order to adequately serve the needs of the people.

Stakeholders Present

Workshop facilitators led a discussion on possible groups represented at the meeting. Participants were directed to the list of stakeholder groups shown in their participant workbooks, and were asked to identify which groups they represented. Table III-1 shows the results of that exercise.

Table III-1: MTP Visioning Workshop – Stakeholders Present

Stakeholder Group	Number of Participants
Private Auto/SUV/Pickup User	19
Bicycle User	6
Pedestrian Facility (Sidewalks, Hike & Bike Trails, etc.) User	19
Public Transit User of the Tyler Transit	6
Public Transit User of Paratransit Services provided by Tyler Transit	5
Transit for the Elderly and Disabled User	2
Airport User	17
Intercity Bus or Rail User	5
Responsible for Transportation of Children	7
Business Owner	4
Member of Community Group (such as Neighborhood Association, Civic Club, etc.)	9
Member of Environmental Protection Organization	2
Member of Historic or Cultural Preservation Organization	2
Representative of an Agency that provides Traffic Control	9
Representative of an Agency that supports Ride-Sharing	4
Representative of an Agency that regulates Public Parking	4
Representative of an Agency that is responsible for Transportation Safety	9
Representative of a Law Enforcement Agency	2
Representative of an Agency that is responsible for Land Use Management	6

Stakeholder Group	Number of Participants
Representative of an Agency that is responsible for Natural Resources	6
Representative of an Agency that is responsible for Environmental Protection	6
Representative of an Agency that is responsible for Energy Conservation	3
Representative of an Agency that is responsible for Historic Preservation	4
Transit Operator	2
Airport Operator	1
Private Transportation Provider (e.g. Taxis, Buses, etc.)	-
City or County Elected Official	1
Tribal Official	-
Planning Organization Member Tyler Area MPO	8
Freight Handler or Freight Company Owner	2
Member of a Population that is Traditionally Underserved by the Transportation System	5
Resident of the Tyler Urbanized Area	14

The workshop was attended by an equal number of roadway and pedestrian facility users. Nearly as many individuals indicated they also used an airport. Additionally, several participants noted that they use Tyler Transit's fixed-route or paratransit service.

Notably absent were Native American tribal officials and private transportation providers. Please note: Members of additional constituent groups were represented in the stakeholder consultation interviews conducted by the Tyler Area MPO later in the outreach process.

CURRENT STATE OF THE TRANSPORTATION SYSTEM

For the second workshop exercise, participants were instructed to consider the question shown below.

> *Thinking about future changes to the region and the nation, (hurricanes and/or environmental changes – gas prices – aging baby boomers – economic changes – land use changes – etc.), are there any users of the transportation system that will be poorly served if there are no changes to the system?*

Facilitators led a group discussion, and both the results of the discussion and individual responses were recorded.

Group Discussion

Public Transportation and Intermodal Connections

Participants indicated that the current public transportation system was important and should be expanded to include additional routes and shorter headways. Shorter headways reduce the amount of time between buses at any given stop. It was also suggested that the Tyler Transit service area should be expanded to accommodate recent and anticipated growth. Concerns were raised that the current service did not adequately serve individuals with disabilities, low-income individuals, or an aging population, especially if services were to decrease.

Participants also advocated more education and public awareness for existing services. Furthermore, participants discussed the need for the planned intermodal facility that would serve the airport, Greyhound buses, and intercity rail, and connect Tyler to Dallas, Texas and Shreveport, Louisiana.

Sidewalks

Participants acknowledged significant improvements to the number of sidewalks, particularly along major thoroughfares; however, remaining gaps in the sidewalk network prevent seamless connections for pedestrians. Participants specifically called for sidewalks on Martin Luther King Jr. Boulevard, Old Bullard Road, near schools on New Copeland Road, and on additional roadways inside the loop to provide connections between northern and southern areas of Tyler.

Bicycle and Pedestrian

Workshop participants pointed out a lack of convenient bicycle connections and trails, and advocated an increase in the number of dedicated bicycle lanes. Participants expressed an interest in the development of strategies to improve bicycle facilities within public right-of-ways. Bicycle lanes were specifically requested on Farm to Market Road (FM) 346 and Eastside Road.

Congestion

Participants expressed difficulty traveling east to west in Tyler due to congestion along Broadway Avenue functioning as a major north-south thoroughfare. Particularly, Front Street and Grande Boulevard were considered seriously congested. Workshop attendees stated that the congestion could be reduced by increasing the vehicle capacity of existing roads, constructing new interchanges for Loop 323 and IH 20, and through increased awareness for carpooling and car-sharing activities.

Individual Comments

The following is a summary of individual comments recorded in the participants' workbooks. Participants were encouraged to include thoughts about the preceding question not adequately addressed during the group discussion.

Congestion

Areas near schools and popular shopping destinations were identified as congested by participants. Other areas identified as congested include, FM 9, Spur 248, and Loop 323.

Alternative Transportation

Participants noted that the infrastructure needed to charge electric vehicles was inadequate, and owners of electric or alternative fuel vehicles would continue to be underserved unless a sufficient number of charging and refueling stations were built in Tyler.

Bicycle and Pedestrians

It was suggested that incrementally adding bicycle facilities throughout the region might result in increased acceptance of bicycling as a viable, alternative form of transportation.

RANKING AND SCORING CRITERIA

In anticipation of the likely event that the number of needed improvements is greater than the funding available for their implementation, it is important that the Tyler Area MPO has a mechanism in place to determine the most worthwhile projects with the greatest benefits for the region. For many years, the major evaluation criteria addressed only safety and congestion issues. However, it has become clear over time that communities have many other values that should be considered when selecting and prioritizing transportation projects.

Project Criteria

To provide a starting point for discussion, workshop participants were given a list of criteria that reflected years of public feedback, as well as the metropolitan planning factors prescribed in MAP-21.

Project Emphasis - Criteria

- Improve Safety
- Improve Security
- Protect the Environment
- Reduce Congestion
- Promote Efficiency
- Support Economic Development Goals
- Support Land Use Goals
- Increase Street Connections
- Improve Access
- Connect Modes of Travel
- Conserve Energy
- Improve Quality of Life
- Increase Multi-Modal Options
- Preserve Rights-of-Way

Improve Safety

Safety is defined as protection against unintentional harm and relates to both motorized and non-motorized modes of travel. Examples of improved safety include: a reduction in the number of automobile crashes resulting in personal injury; a reduction in the number of crashes involving bicycles; a reduction in the number of infrastructure failures that cause personal injury; or improved operations of an emergency counter flow plan on select thoroughfares in response to a major weather event.

Improve Security

Security is defined as protection against intentional harm and relates to both motorized and non-motorized modes of travel. Examples of improved security are: a reduction of the risk of individual acts of criminal behavior on a transit line; improvement in the emergency response capacity after an act of terrorism; or a reduction in emergency vehicle response time to incidents in a particular neighborhood due to improved access roads.

Protect the Environment

Environmental protection efforts are as unique as the local environments they serve. Therefore, examples of ways a transportation system can impact the environment are numerous and include, but are not limited to: reduced air pollution from vehicles; or avoidance of animal habitats during roadway expansions.

Reduce Congestion

Congestion is defined as a roadway system operating at speeds below those for which it was designed. Congestion levels can be measured quantitatively, but the tolerance for congestion is defined locally. For example, the level of congestion tolerated by Los Angeles citizens may not be the same level of congestion that individuals in Tyler find acceptable. Therefore, congestion is evaluated both quantitatively and qualitatively based on input from the public. Strategies for reducing congestion include: the addition of turning lanes; improvements to signalization; a reduction in the number of access points; an increase in the number of lanes; or restriction of freight movement during peak travel times.

Promote Efficiency

Efficiency is promoted by improved system management, the preservation of the existing transportation system, and a reduction in costs to provide services or infrastructure. Strategies for making the transportation system more efficient include: establishing a travel demand management program; system management and operations improvements; or establishing a regular repair and/or maintenance or cost-sharing program.

Support Economic Development Goals

The economic development goals of the community are framed by the economic development plans of the local jurisdictions and can be impacted by many factors, one of which is the transportation system. Some of these goals include enabling global competitiveness, productivity, and efficiency. Economic development goals of the community could be met by: providing pedestrian amenities along a business corridor; improving the efficiency of freight movement to and from a port; providing transit access to mixed-use neighborhoods; or connecting tourist destinations by circulator buses.

Support Land Use Goals

The land use goals of the community are defined by the planning ordinances and land use plans of the local jurisdictions, as well as through the public visioning process. Examples of transportation strategies that support community land use goals are: restricting construction of new roads in areas prone to flooding; providing transit to areas designated for transit-oriented development; providing lanes for non-motorized travel; or improving and expanding roads into areas designated for new residential construction.

Increase Street Connections

Street connectivity and circulation is measured through the ease by which people and goods can move to their desired destinations. Connectivity relates not only to the travel within the community, but also to external destinations – regional, national, and international. Connections could be increased by: adding bridges across water barriers; adding access roads to neighborhoods; adding bicycle and pedestrian paths from neighborhoods to schools that do not necessitate crossing major arterials; providing transit service that allows people who live in the city to commute to suburban jobs; or providing highway facilities to ports and rail terminals.

Improve Access

Improving access involves the control and management of the entrance and exit points to a roadway. Increasing accessibility is based on a balance between the number of access points and the efficient movement of traffic on the roadway, rather than merely increasing the number of access points. Enhanced access is often achieved through an access management program that establishes design standards that encourage this balance. Access can also be improved through: a reduction in the number of driveways that enter a major arterial; implementation of shared driveways; an increase in the number of transit stops in the

community; improvement of roads before allowing new development; development of a hierarchical master street plan that designs roads based on use; or a safe means for bicycles and pedestrians to cross interstates.

Connect Modes of Travel

The various travel modes in the community function best when people and goods can easily move from one mode of travel to another. Examples of multi-modalism for the movement of people include bicycle racks on buses and sidewalks from transit stops to nearby destinations. An example of intermodal connectivity for goods is a transfer terminal, where containers are transferred from barges or rail cars to trucks.

Conserve Energy

Energy conservation has become a national priority in recent years and an efficient transportation system can have a dramatic impact on the amount of energy consumed and corresponding costs to the community - both direct dollar costs and indirect environmental costs. Energy conservation could be achieved through: a reduction in the number of miles driven; a reduction in the use of single occupancy vehicles; an increase in the use of non-motorized modes of travel; or a reduction in the idling time of freight trucks.

Improve Quality of Life

Quality of life characteristics must be defined by the community itself. The transportation system can have both positive and negative impacts on the quality of life. Examples of ways that a transportation system can benefit quality of life are: improving mobility for low-income communities; reducing the time that families spend commuting to school and work; reducing crime near transit stops; increasing the walkability of the community; or improving access to recreation areas.

Examples of ways that the transportation system can have a negative impact on the quality of life in the community are: adding access points to a neighborhood that encourages through traffic and endangers children at play; widening roadways to improve port access that also encourages truck traffic carrying hazardous materials through residential neighborhoods; increasing noise or air pollution by adding lanes to a roadway; designing roadways that are not visually pleasing; or allowing heavy trucks to drive through historic neighborhoods, causing vibrations that can be destructive to historic structures.

Increase Multi-Modal Options

Increasing multi-modal options for the movement of people and goods creates choices, thereby allowing people to select the mode of travel best suited for their needs. Concerned with the creation of additional travel choices, multi-modal options could be increased by: expanding a fixed-route transit system into previously unserved areas; expanding the hours of operation of a transit system; increasing the number of streets with sidewalks; increasing the number of intermodal freight transfer facilities; increasing the number of park and ride facilities; or increasing the number of sidewalks that meet ADA accessibility requirements.

Preserve Rights-of-Way

When streets and highways are expanded, either through the addition of miles or the widening of existing roadways, land must be purchased. The more developed the area, the more expensive it is to acquire the land. Preservation of right-of-ways refers to the purchase of land before development occurs and costs rise in anticipation of a future expansion of the transportation system. Examples of right-of-way preservation strategies are: purchasing land to build a four-lane highway even though the current plans only call for the construction of a two-lane facility; purchasing land at points along an interstate where future entrances are

planned, although no development currently exists; or restricting development through land use ordinances along transportation corridors that connect to industrial areas.

Group Scoring of the Criteria

Following the presentation of these criteria by the moderator, each table facilitator answered any remaining questions before the participants scored the transportation criteria as a group. At each table, each participant received 24 dots to place on a chart listing potential areas of focus. Participants were allowed to allocate their dots between the areas of focus as they saw appropriate. Their choices indicate what they felt were the most important emphasis areas for the community. The aggregated results are listed in Table III-2 and the dotted charts are shown below in Figure III-1.

Table III-2: MTP Visioning Workshop – Group Scoring of Criteria

Criteria	Total Votes	Rank
Improve Safety	50	**2**
Improve Security	14	12
Protect Environment	25	8
Reduce Congestion	75	**1**
Promote Efficiency	16	11
Support Economic Goals	35	6
Support Land Use Goals	22	10
Increase Connections	42	**3**
Improve Access	24	9
Connect Modes of Travel	36	5
Conserve Energy	34	7
Improve Quality of Life	38	**4**
Increase Multi-modal Options	35	6
Preserve Right-of-Ways	24	9

Figure III-1: MTP Visioning Workshop - Criteria Ranking

Congestion reduction, safety improvement, increased connections, and quality of life improvements were the top areas for which participants indicated future efforts should be focused. Participants were least concerned about improving security, promoting efficiency, and supporting land use goals.

Individual Scoring of the Criteria

Following the group exercise, participants were asked to individually score each criterion based on a scale from 1 to 5 (1 = Unimportant and 5 = Extremely Important). Table III-3 shows the aggregated results of the individual scores and Table III-4 shows the average criteria scoring and ranking based on the individual responses.

Table III-3: MTP Visioning Workshop – Individual Scoring of Criteria

Criteria	Score				
	Extremely Important (5)	Very Important (4)	Important (3)	Not Very Important (2)	Unimportant (1)
Improve Safety	8	7	3	2	-
Improve Security	2	5	8	5	-
Protect the Environment	3	3	10	4	-
Reduce Congestion	11	8	1	-	-
Promote Efficiency	4	9	7	-	-
Support Economic Development Goals	6	7	5	1	-
Support Land Use Goals	5	4	9	1	1
Increase Connections	6	7	6	1	-
Improve Access	3	10	5	1	-
Connect Modes of Travel	5	11	4	-	-
Conserve Energy	4	3	12	1	-
Improve Quality of Life	7	9	4	-	-
Increase Multi-Modal Options	5	7	5	2	1
Preserve Right-of-Ways	4	6	8	2	-

Table III-4: MTP Visioning Workshop – Individual Criteria Scoring Average

Individual Criteria Scoring	Average Score	Rank
Improve Safety	4.1	**3**
Improve Security	3.2	10
Protect Environment	3.3	9
Reduce Congestion	4.5	**1**
Promote Efficiency	3.9	4
Support Economic Goals	3.9	4
Support Land Use Goals	3.6	7
Increase Connections	3.9	4
Improve Access	3.8	5
Connect Modes of Travel	4.1	**3**
Conserve Energy	3.5	8
Improve Quality of Life	4.2	**2**
Increase Multi-modal Options	3.7	6
Preserve Right-of-Ways	3.6	7

When scored individually, congestion reduction, improved quality of life, modal connectivity, and improved safety were identified as the areas where the majority of focus should be placed. The focus areas ranked as the least important by individuals include improving security, protecting the environment, and conserving energy.

GROWTH TRENDS IN THE TYLER URBANIZED AREA

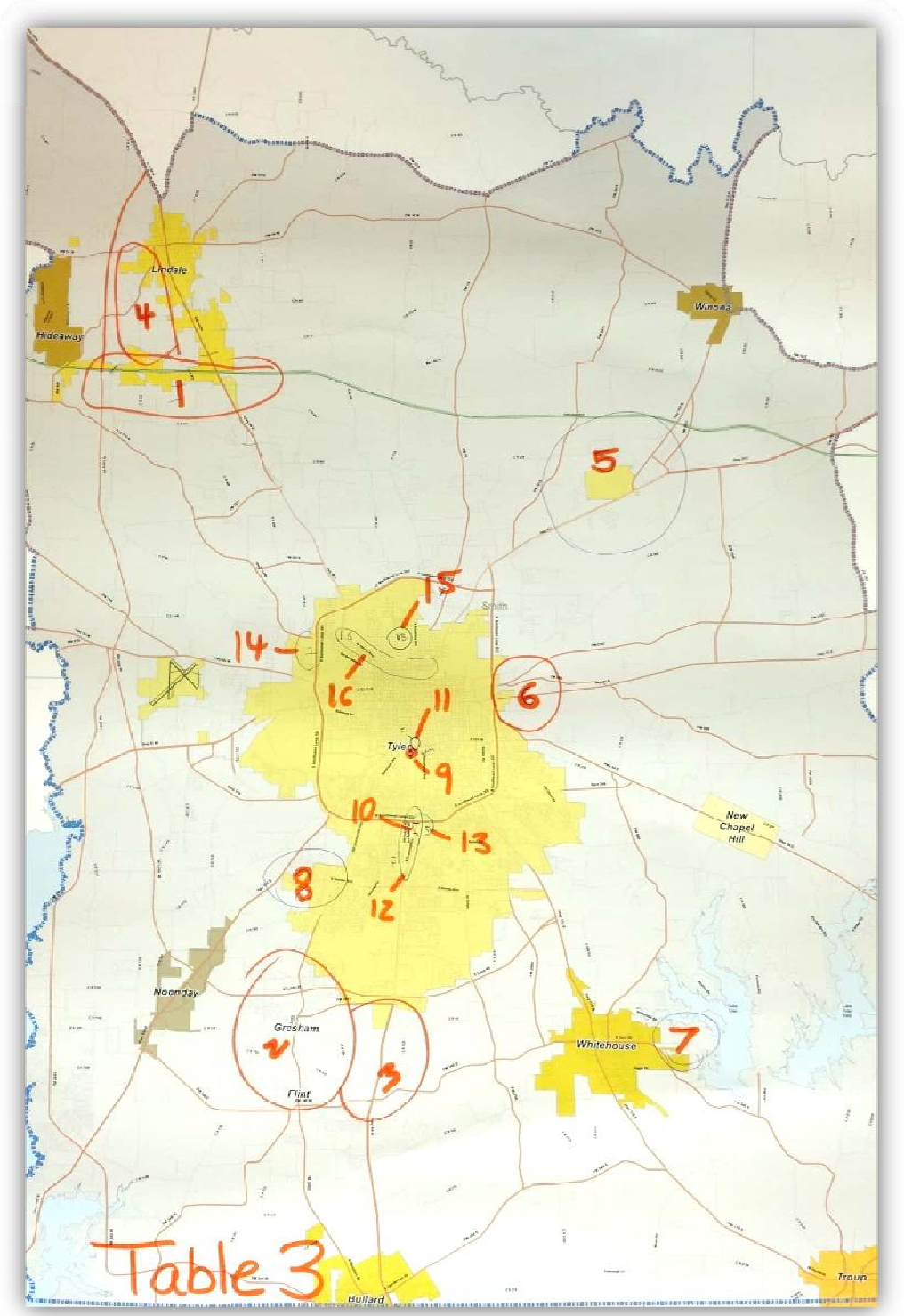
Participants were presented with a series of maps showing recent growth trends in the area. Transit, sidewalks, and trail maps were also provided and participants shared their knowledge and experiences about transportation conditions and the needs of the community.

> *Do you think that these growth trends accurately indicate what will happen in the future? What aspects of the trends do you think are desirable? What aspects of the trends do you think are detrimental to the area?*

Facilitators led a group discussion of the question above, and areas of growth or concern were marked on the map shown on Figure III-2 through Figure III-5.

In addition to anticipated growth trends, future transportation needs were also marked on the maps. Each figure is therefore followed by a description of the comments made.

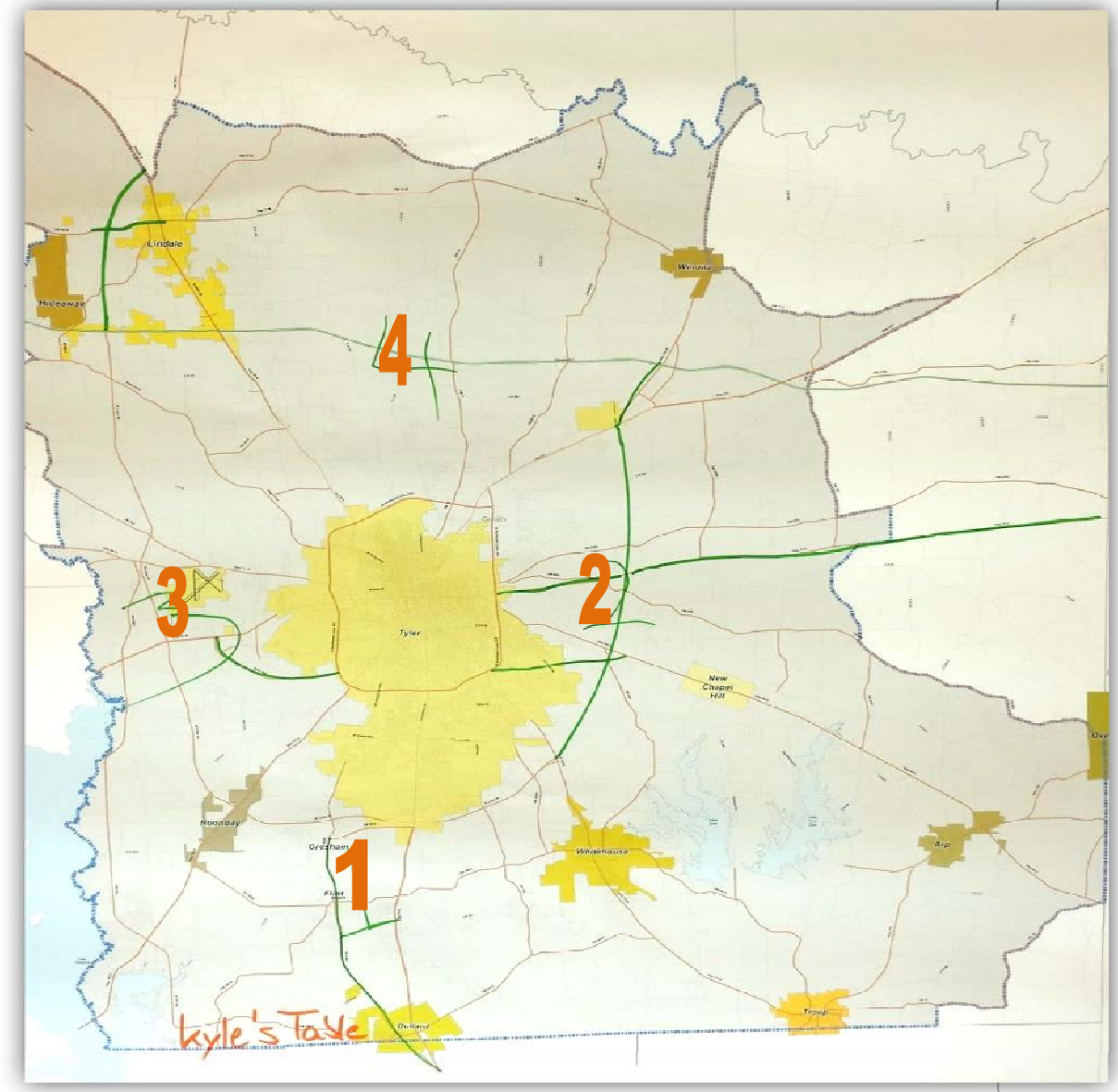
Figure III-2: MTP Visioning Workshop - Transportation Concerns (Map 1)



The numbers marked on the map correspond to the numbers shown below.

1. South Lindale Road: Near IH 20, the anticipated growth, which is mostly residential, will exceed current growth expectations.
2. Loop 49 (Toll 49): Adjacent to FM 2493 and near the cities of Gresham and Flint, residential and commercial development is occurring.
3. Highway 69 South: Commercial development, including a new shopping mall and residential building activity is occurring south of Loop 49.
4. South of Lindale Road: Once the Loop 49 extension is complete, residential and commercial development is anticipated to occur.
5. University of Texas at Tyler Health Science Center: Development is anticipated to occur.
6. Near Northeast Loop 323 and Highway 31 East: A new Wal-Mart is anticipated to stimulate development, which will likely draw traffic from neighboring communities, such as the City of Winona.
7. City of Whitehouse: Residential development is expected to occur near Lake Tyler.
8. Grande Boulevard: A new medical facility near Highway 155 South is anticipated to attract development and growth.
9. Old Jacksonville Highway and Old Bullard Road: These corridors were identified as areas with a high crash potential.
10. Broadway Avenue: The area is unsafe for pedestrians, who attempt to access the shopping mall south of Loop 323.
11. Broadway Avenue and Highway 155: Traffic is congested on both roadways throughout the day.
12. Broadway Avenue: Traffic is significantly congested between Loop 323 and Grande Boulevard.
13. Donnybrook Avenue and Loop 323: Traffic is congested and pedestrian conditions are unsafe when Robert E Lee High School dismisses classes.
14. Loop 323: Traffic is congested south of Highway 110 when John Tyler High School dismisses classes.
15. Martin Luther King Jr. Boulevard: Sidewalks and area redevelopment are needed west of Broadway Avenue.
16. Gentry Parkway: This area is a gateway to the community; however, aesthetic improvements are needed. In its current configuration, Gentry Parkway acts as a pedestrian barrier.

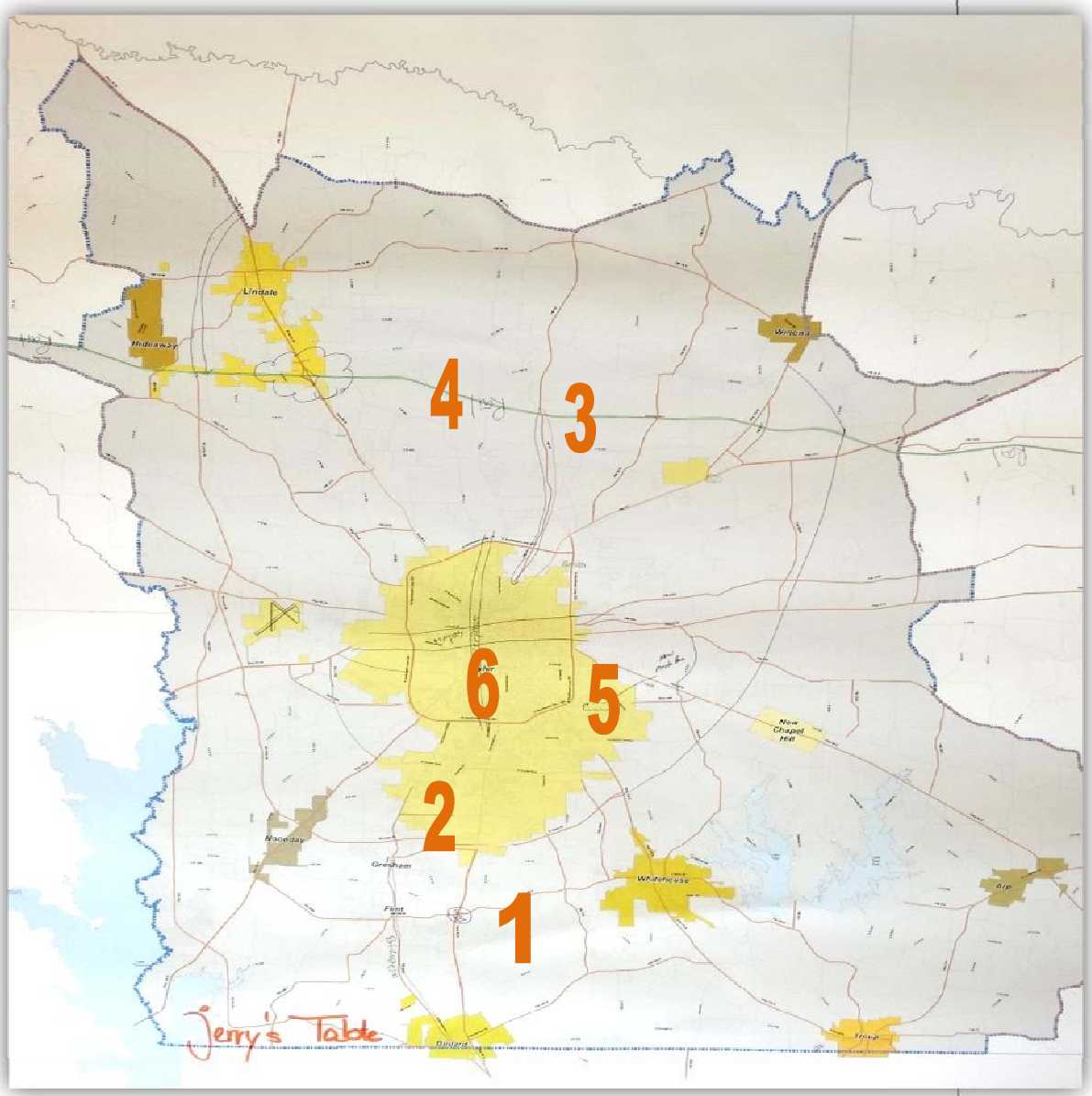
Figure III-3: MTP Visioning Workshop - Transportation Concerns (Map 2)



The numbers marked on the map correspond to the numbers shown below.

1. Old Jacksonville Highway: Growth is occurring between Old Jacksonville Highway and Paluxy Drive; the City of Tyler, TxDOT, and the Northeast Texas Regional Mobility Authority should work together to develop additional east to west connections.
2. Highway 31 East: Traffic is likely to increase on the roadway.
3. Loop 49 (Toll 49): The toll road is anticipated to spur growth and development.
4. North Tyler: Due to smaller capacity roads, growth is not expected to increase in this area and could potentially become a "dead zone" similar to some thoroughfares between Fort Worth and Dallas.

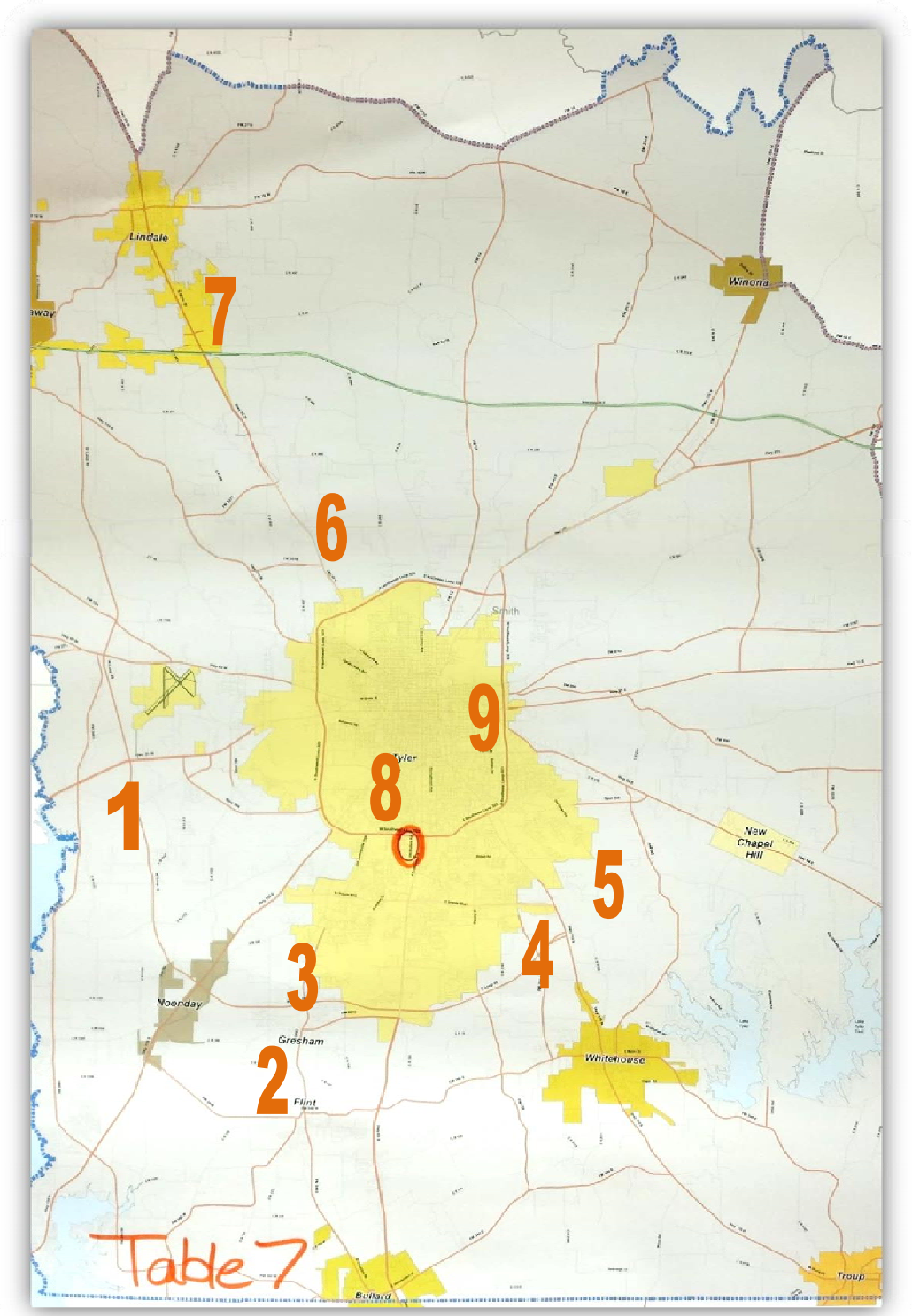
Figure III-4: MTP Visioning Workshop - Transportation Concerns (Map 3)



The numbers marked on the map correspond to the numbers shown below.

1. The cities of Bullard, Flint, and Whitehouse: Growth is expected to occur in these cities.
2. Old Jacksonville Highway and South Broadway Avenue: Growth is anticipated to occur near these areas.
3. IH 20: Additional links to the Interstate are needed to better connect Tyler with the larger region.
4. Commuter Rail: Participants advocated a connection of Tyler to the Dallas - Fort Worth area.
5. University of Texas at Tyler and Grace Community School: The area is severely congested multiple times a day.
6. Amherst Street and Broadway Avenue: Pedestrian crossings are difficult to navigate.

Figure III-5: MTP Visioning Workshop - Transportation Concerns (Map 4)



The numbers marked on the map correspond to the numbers shown below.

1. Loop 49 (Toll 49): Roadway expansion is anticipated to encourage growth.
2. Cities of Flint and Gresham: Growth is expected to occur in these cities in the future.
3. Old Jacksonville Highway: Growth is anticipated to occur along the corridor.
4. Paluxy Drive: Growth is anticipated to occur along the corridor.
5. Loop 49 (Toll 49): Extension of toll road east of Tyler is expected to stimulate growth.
6. Highway 69: Northward growth is expected to occur along the corridor.
7. Lindale Road: New FedEx facility near IH 20 in the Lindale Industrial Park is anticipated to prompt growth.
8. Old Bullard Road: Additional sidewalks and bus stops are needed.
9. Highway 64 and Highway 31: Access management should be considered for both corridors.

Roadway Improvements and Other

Participants identified additional roadway improvements that were not illustrated on the maps. The group stated that the capacity of Old Jacksonville Highway should be increased, along with additional passing lanes on Highway 31 and Loop 49 (Toll 49), between Highway 110 and Highway 64.

Participants expressed a desire for improved traffic signalization, incorporation of new public transportation technologies, such as next bus announcement, and the identification of evacuation routes in the event of a natural disaster in the Tyler Urbanized Area.

WORKSHOP EVALUATION

At the conclusion of the workshop, participants were provided an opportunity to evaluate their workshop experience by completing a short survey. Table III-5 provides an overview of the participant responses.

Table III-5: MTP Visioning Workshop – Evaluation

	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
Meeting Room was easy for me to get to	15	1	-	-	1
Meeting Room was comfortable	14	2	-	-	1
Available parking was adequate	13	3	-	-	1
Time of the meeting was convenient for me	5	8	3	-	1
Day of the week of the meeting was convenient for me	5	9	2	-	1
Purpose of the meeting was made clear to me	7	7	1	1	1
Information presented at the meeting was useful to me	8	7	-	1	1
Information was presented in a clear and understandable manner	11	4	-	-	1
I felt my contributions were respected	12	4	-	-	1
Facilitator at my table did a good job	13	3	-	-	1
Materials used in the meeting were clear and understandable	5	10	1	-	1
Meeting met my expectations	8	6	2	-	1

As shown in the preceding table, the workshop was generally well received. Furthermore, participants shared specific feedback and comments related to the workshop content and proceedings.

- Reason for attending:
  - Obtain more information;
  - Represent a transportation agency;
  - Gather information and provide input;
  - Provide input on city planning;
  - Listen to feedback provided by others;
  - Satisfy personal interest.

- Comments specific to the workshop:
  - Provide more input opportunities;
  - The workshop was excellent;
  - Ensure more consistency between Power Point presentation and workshop participant workbook organization.
- Participants received notification of the workshop from:
  - Email;
  - Newspaper;
  - City website;
  - City staff;
  - MPO staff;
  - Friend; and
  - Coworker.

STAKEHOLDER CONSULTATION

In addition to the public visioning workshop, stakeholder consultation interviews were conducted by the Tyler Area MPO. Airport, transit, and private transportation providers were invited, as well as businesses involved in freight logistics and goods movement. In addition, chambers of commerce, real estate, and housing development representatives were also contacted. The stakeholder consultation interviews were conducted March through May 2014. The complete list of participants is shown in Table III-6.

Table III-6: Stakeholder Consultation Participants

Stakeholder Group	Agency Name
Private Transportation Provider	NDMJ, Ltd.
Transit Operator	Tyler Transit
Community Groups	Tyler Economic Development Council Tyler Main Street Department
Freight Carrier	Brookshire Grocery Company
Traffic Control & Traffic Safety	Texas Department of Transportation City of Tyler - Tyler Engineering City of Tyler - Traffic Department Smith County Road and Bridge
Airport Operator	Tyler Pounds Regional Airport
Bicycle Advocacy	Tyler Bicycle Club
Law Enforcement	City of Tyler - Police & Fire Departments
Historic Preservation	City of Tyler - Historic Preservation Department
School District	Tyler Independent School District
Universities	Tyler Junior College

CURRENT STATE OF THE TRANSPORTATION SYSTEM

Stakeholder engagement and feedback was encouraged through individual interviews and stakeholder-specific questions, and the findings were subsequently grouped by topic and are summarized in the following sections.

Roadway Capacity

The following location was mentioned to be in need of a new roadway to accommodate existing and future transportation needs:

- Loop 49 (Toll 49): An extension to IH 20 in east Tyler was suggested in order to relieve traffic on interior arterials.

Stakeholders believed funding to be the biggest issue preventing an expansion of the network, mentioning a particular lack of funding for the expansion of rural roadways. Of major concern was the limited capacity on both rural and urban arterials, which would be exacerbated by future growth, adding to the current demand on the state highway network and further decreasing network capacity.

Stakeholders suggested that the City of Tyler should consider constructing overpasses and bridges to alleviate traffic issues in select locations.

Congestion

Roadway congestion was cited as a major transportation concern, and particular attention should be focused on the following roadways:

- South of Loop 323, along Highway 69 and Old Jacksonville Highway: Freight traffic attempting to make deliveries to Brookshire's causes traffic to back up in these areas.
- Old Jacksonville Highway, FM 2493, and South Broadway Avenue: Congestion causes access difficulties for emergency response vehicles.
- Loop 49 (Toll 49): The absence of passing lanes results in increased congestion.
- 5th Street: Bus turnouts were suggested to allow traffic to continue, while passengers board and alight the bus.
- Troup Highway: Stakeholders identified the roadway as severely congested.

In addition to the specific roadways cited, stakeholders mentioned that Tyler's historic areas were highly congested. Roadways also experienced severe congestion during school dismissal, particularly near high schools, as the pick-up and drop-off activities caused traffic to back up onto the adjacent roadways.

To remedy congestion in the Tyler area, stakeholders suggested improved, adaptive traffic signal timing and access management.

Safety

The following roadways were cited for particular safety concerns:

- Broadway Avenue: Continuous left turn lanes increase conflict potential.
- Old Jacksonville Highway: In addition to continuous left turn lanes, limited lines-of-sight for northbound travelers also increase conflict potential.
- Gentry Parkway and Troup Highway: The crossing of these roadways is unsafe for pedestrians.
- Paluxy Drive and Loop 323: Safety concerns were raised with regard to this intersection.

Furthermore, stakeholders suggested the introduction of additional traffic signage, including 'U-turn yield' signs and directional 'no entry' signs as a way to minimize dangerous traffic situations.

Mobility

Stakeholders were concerned about the unmet mobility needs of citizens in the Tyler Urbanized Area, particularly those of older adults and individuals with disabilities. The elimination of certain transportation funding programs was said to have caused a decrease in the level of service provided to those populations.

To better serve the mobility needs of all citizens, stakeholders suggested that Tyler officials should add as many transportation options as possible. Additionally, a "one call – one click" system should be implemented in the Tyler Urbanized Area that would provide improved coordination, eliminate duplication, and enhance delivery of transportation services across the entire region without the need of patrons having to contact multiple service providers.

Public Transportation

Stakeholders acknowledged that Tyler Transit provides service to a large portion of the community; however, certain areas of north Tyler and industrial areas within the community are not currently accessible via public transportation. The transit agency was interested in reevaluating routes based on current demand and anticipated growth in order to alleviate gaps in coverage and boost levels of service.

The following suggestions to improve transit in Tyler were provided by stakeholders:

- Introduce additional routes, including service to the airport;
- Operate smaller vehicles commensurate with ridership;
- Complete a transit study of Tyler Transit routes;
- Provide service to new developments near the toll road;
- Build additional bus stops near downtown amenities;
- Improve bus stop shelters and facilities;
- Increase agency emphasis on benchmarking and performance measures; and
- Increase public education effort to inform of existing bus services.

Tyler Transit was also concerned about the financial burden associated with vehicle maintenance costs required to comply with federal 'state of good repair' requirements, which call for public transportation assets to be safe, reliable, and capable of providing satisfactory services to transit customers. 'State of good repair' implementation requires a constant assessment of an assets residual life and balancing that against the cost of maintaining it.

Bicycle and Pedestrian

Stakeholders indicated that existing sidewalks and bicycle facilities in the Tyler Urbanized Area are inadequate and their numbers insufficient. Sidewalks to shopping areas along Cumberland Road were requested, along with bicycle lanes for the midtown area. Furthermore, stakeholders pointed out that the lack of sidewalks directly connecting to schools forced students to walk in the street, impacting their safety. Furthermore, bicyclists feel unsafe using roadways for their commute.

Stakeholders requested that the City of Tyler modify city ordinances to allow bicycles to use sidewalks. Stakeholders also suggested that bicycle lanes be added to improve access to the Tyler Junior College and The University of Texas at Tyler; also mentioned was the desire to introduce a campus-wide bicycle sharing programs.

Growth

Stakeholders identified the south and west of Tyler as areas of growth. Development is also anticipated in connection to a new school and a career technology center. Concerns were raised about the ability to keep up with population growth and the associated increase in traffic, based on the limited availability of transportation funds.

Economic Development and Historic Preservation

Access to Tyler's historic areas was cited as problematic. Stakeholders pointed to the lack of public transportation, and were simultaneously concerned about the large number of daily vehicles, causing the brick roads in the area to deteriorate.

Stakeholders suggested that bus turnouts be constructed, which could also provide room for tour shuttles, allowing for more visitors to the area without significantly increasing traffic volumes on already congested street.

Freight and Intermodal

Stakeholders anticipated freight shipments to double within the next 20 years. They were concerned that congestion along freight corridors would worsen and result in slower goods movement and higher costs. To alleviate freight congestion, stakeholders suggested that the development of an intermodal facility be pursued to provide connectivity to the rail system as well as the regional airport.

Airline traffic was approaching capacity at the Tyler Pounds Regional Airport, resulting in scheduling conflicts and delays. Stakeholders also cited a lack of direct flights to more destinations, and suggested that better taxi and shuttle services to the airport be provided, and rental cars made available at the facility. The airport itself would also require upgrades; runways are currently affected by weight restrictions, and freight terminals were deemed inadequate. Exacerbating these restraints is the fact that the county roads behind the airport are in poor condition and unprepared to handle a potential increase in traffic volumes. Furthermore, stakeholders were concerned about the availability of funding for the needed repairs and upgrades.

USING THE PUBLIC INVOLVEMENT RESULTS

Establishing the vision and goals for the MTP planning process is meaningless unless a method is put in place to evaluate whether the chosen transportation improvements meet the community's goals.

MTP Project Scoring Criteria

A final criteria ranking was chosen for the evaluation of the transportation system, which complies not only with federal and state mandates, but also includes local values based on the public outreach and stakeholder consultation. Table III-7 shows this final ranking of the criteria, which combined the group and individual scores.

Table III-7: Criteria Listed in Order of Importance to the Community

Criteria	Rank
Reduce Congestion	1
Improve Safety	2
Improve Quality of Life	3
Increase Connections	4
Connect Modes of Travel	5
Support Economic Goals	6
Increase Multi-modal Options	7
Conserve Energy	8
Improve Access	9
Preserve Right-of-Ways	10
Support Land Use Goals	11
Promote Efficiency	12
Protect Environment	13
Improve Security	14

Based on these criteria, the study team created a set of weighted performance measures that were used to assess how well the community's vision and goals are being met by the proposed transportation improvements.

MTP OPEN HOUSE

A second public workshop was held on August 28, 2014 at the Tyler Senior Center. As was the case with the initial workshop, the public was notified of the meeting through public notices, email blasts, and an advertisement on the Tyler Area MPO website. The initial MTP public visioning workshop was conducted to gather input from the public on their concerns, visions and preferences regarding transportation issues that should be included in the Tyler MTP update. The information gathered during the initial visioning workshop was valuable for the planning process and set a foundation for the second workshop conducted by the Tyler Area MPO.

While the first public workshop was specifically designed to gather feedback from the public regarding community goals, and current and future transportation issues, the purpose of the second meeting was to present to the public the results of that workshop, and demonstrate how the public's feedback was used in the development of the draft MTP. The second meeting began with an introduction from Heather Nick, City of Tyler Planning Director. Participants were informed of just how important their input is to the MTP update process. Michael Howell, Tyler Area MPO Coordinator, led the presentation describing the MTP development effort to date.

In addition to the presentation, participants were invited to explore a series of exhibits displaying key information about the MTP update process and provide feedback on the proposed street and highway projects. These exhibits provided the public with background information on the revised growth trends in the Tyler Urbanized Area based on feedback from the first public workshop and the stakeholder consultations, quality of life and environmental conditions identified during the first public workshop and the stakeholder consultations, and a map of the current transportation network and anticipated future deficiencies in the Tyler Urbanized Area. The exhibits also placed the Tyler MTP update process within the larger context of MAP-21 legislation and metropolitan transportation planning requirements. The project scoring criteria, which were prioritized by the public at the first public visioning workshop, were presented at the open house.

PUBLIC COMMENT PERIOD

The citizens of the Tyler Urbanized Area had a final opportunity to provide feedback on the draft 2040 Metropolitan Transportation Plan prior to consideration for adoption by the MPO Policy Committee on November 20, 2014. The 30-day public review and comment period began on Monday, October 20, 2014 and ended on Wednesday, November 19, 2014. In accordance with the Tyler Area MPO's PPP, the public comment period was kicked off with a public meeting on October 20, 2014, during which members of the public were able to make comments regarding the draft plan.

All comments were reviewed by the MPO and considered for incorporation into the final 2040 Metropolitan Transportation Plan. Significant comments received on the draft MTP during the public review and comment period, are summarized, analyzed, and reported in the Appendix and were made part of the final plan.

IV. BASE AND HORIZON YEAR DEMOGRAPHIC AND EMPLOYMENT DATA

INTRODUCTION

The Tyler Urbanized Area has steadily grown over the last decades. Smith County population has increased by 15.5 percent from a population of 151,309 in 1990 to a population of 174,706 in 2000, and has again grown by 20.0 percent to 209,714 in 2010 according to latest decennial census data. The City of Tyler and Smith County are expected to experience continued growth, both in size and in economic vitality.

Planning for a future transportation system that addresses the needs of the community over the next 25 years requires an understanding of how regional growth patterns will impact use of the transportation system in the future. Factors like where people live and work, their income levels, and household sizes, among other factors, all influence the frequency with which people use the transportation system (i.e. the number trips a person makes a day), as well as the patterns of travel across the transportation system (i.e. the locations of origins and destinations and the routes people choose to get from Point A to Point B). The travel demand model requires inputs for a variety of demographic and land use variables. In turn, the model uses this information to forecast travel patterns and the use of the transportation system in the future. The following chapter will discuss the process used in the forecasting of demographics for the 2040 planning horizon year for use in the travel demand model.

BASE YEAR DATA

Prior to forecasting demographics to the year 2040, a base year for which existing demographic and land use data is available is first selected. For the 2040 Metropolitan Transportation Plan (MTP), the year 2012 was selected as the base year. The purpose of selecting this base year is to provide a starting point from which to project population and employment growth.

Base Year Population

The base year population and related demographic traits were derived from the 2010 decennial census, as well as an extensive demographic study, which was previously commissioned by the Tyler Area MPO.

Census Data

The decennial census is conducted once every ten years and represents the only complete enumeration of the population. Data is available at a variety of geographic levels. The smallest geographic level for which data is available is the census block. In urbanized areas, a census block may cover only a few city blocks, while in rural areas where there are significantly fewer households, a census block may cover many square miles. Census block-level data provides demographic information at a level of detail appropriate for use in a travel demand model.

As the decennial census only counts population numbers, other information, such as the number of households, household size, median income, as well as employment, is derived from the 5-year (2008-2012) averages based on the data of the American Community Survey (ACS), which is also conducted by the U.S. Census Bureau and uses the same census geography.

Demographic Study

The demographic study provided population, number of household, household size, median income, as well as employment and employment by type data for small geographic units, uniquely tailored to work with the travel demand model. The demographic data was gathered through extensive research, including a community-driven Delphi process,[1] and was used in combination with the data obtained from the U.S. Census to arrive at a comprehensive data set for the base year of 2012.

> *For the year 2012, Smith County was estimated to have a total population of approximately 211,049, of which 200,511 resided within the Tyler Area MPO boundary.*

Base Year Employment

The base year total employment and employment by type information was derived from data provided by the Texas Workforce Commission (TWC), 5-year (2008-2012) ACS data, as well as the employment information contained in the previous demographic study.

Texas Workforce Commission

TWC data identifies employees by place of employment and employment type (basic, retail, service, education). To ensure consistency, the resulting information was compared with the other sources of employment data.

> *For the year 2012, Smith County was estimated to have a total of approximately 99,276 employees, of which 97,776 worked within the Tyler Area MPO boundary.*

HORIZON YEAR DATA

The process for forecasting horizon year demographics draws on a variety of sources including historical trends, local knowledge of growth patterns, knowledge of current and future land use, information on planned developments, and other sources of demographic forecasts. The first step involves establishing county-level control totals, or the total number of people and jobs expected at the county level. The county-level control totals are then distributed across the study area based on where future growth is expected to occur.

A review of existing plans and studies for the region, information on planned developments, and conversations with elected officials, stakeholders, and the public regarding growth trends and development patterns informed the allocation of the county-level control totals to Traffic Analysis Zones, or TAZs. TAZs are geographic units created for use in the travel demand model to distribute trips across the transportation network according to the demographic inputs.

[1] *The Delphi technique as applied to socioeconomic characteristic allocation uses a consensus-building approach to identify high and low growth potential areas. Qualified community leaders were selected to participate on a panel to identify high and low growth potential districts.*

County Control Totals

Population

County control totals were obtained from the Texas State Data Center (TxSDC). Each U.S. state has a State Data Center (SDC), which serves as the official representative of the U. S. Census Bureau. TxSDC is located at the University of Texas at San Antonio. The TxSDC currently has Census 2010-based population projections through the year 2050 for each county in Texas. The TxSDC produces three estimates of future population based on the following migration scenarios:

The Zero Migration (0.0) Scenario:

The zero migration scenario assumes that in-migration and out-migration are equal (i.e., net migration is zero) resulting in growth only through natural increase (the excess or deficit of births relative to deaths). This scenario is commonly used as a base in population projections and is useful in indicating what an area's indigenous growth (growth due only to natural increase) will be over time. In general, this scenario produces the lowest population projection for counties with historical patterns of population growth through net in-migration and the highest population projection for counties with historical patterns of population decline through net out-migration.

The One-Half 2000-2010 Migration (0.5) Scenario:

This scenario has been prepared as an approximate average of the zero (0.0) and 2000-2010 (1.0) scenarios. It assumes rates of net migration one-half of those of the post-2000 decade. The reason for including this scenario is that many counties in the State are unlikely to continue to experience the overall levels of relative extensive growth of the 2000 to 2010 decade. This scenario projects rates of population growth that are slower than 2000-2010 changes, but with steady growth. According to the TxSDC, the 0.5 migration scenario is the most appropriate scenario for the majority of counties, particularly for use in long-term planning.

The 2000-2010 Migration (1.0) Scenario:

The 2000-2010 scenario assumes that the trends in the age, sex and race/ethnicity net migration rates of the post-2000 decade will characterize those occurring in the future of Texas. The 2000 to 2010 period was characterized by rapid growth in many areas of the state. It is seen here as the high growth alternative because it's overall total decade pattern is one of substantial growth (i.e., 20.6 percent for the 2000-2010 decade for the State). Because growth was so extensive during the 2000-2010 decade it is likely to be unsustainable over time, and thus this scenario is presented here as a high growth alternative. For counties that experienced net out-migration during the 2000 to 2010 period, this scenario produces continued decline.

For the Tyler Area 2040 Metropolitan Transportation Plan, population projections for Smith County for the year 2040 based on the 0.5 migration scenario were utilized, as recommended by TxSDC. The resulting 2040 population control total was therefore set at 280,634.

Employment

As an official source of employment projections was unavailable, the 2040 employment control total for Smith County was based on the ratio of population to employment for the base year, as well as for the previous 2035 MTP. Preliminary employment projections were compared to proprietary data sets (Woods & Poole 2014 Complete Economic and Demographic Data Source) to confirm their validity. This approach resulted in a ratio of 441 employees per 1,000 residents for the year 2040, with a higher ratio of employees to overall population within current and anticipated commercial developments, particularly within the City of Tyler.

> *A 2040 horizon year employment control total of 123,670 employees was established for Smith County.*

Outreach and Public Involvement

Engaging regional stakeholders and the general public complemented the analysis of historical growth trends and the review of planned community improvements, and afforded a better understanding of the anticipated community growth in the Tyler Urbanized Area.

Stakeholder Consultations

The goal of the stakeholder consultation interviews was to gather input from a sample of the regional stakeholders on the current and future needs of the multi-modal transportation system and anticipated community growth trends in the Tyler Urbanized Area, as well as to identify areas in need of additional coordination.

Public Involvement

Community residents were engaged early on and were asked to share their knowledge of recent growth trends and up-and-coming developments during the March 2014 Visioning Workshop.

Existing Plans and Studies

Allocation of the county control totals was based, in part, on a review of existing plans for the Tyler Urbanized Area that have implications for transportation or land use. The following existing plans and studies were reviewed to better understand how various projects and policies planned for the region might impact growth and development, and in turn the future transportation network or the travel patterns of the area's residents:

- Master Street Plan;
- Regional Trail Plan;
- Pedestrian Access Study;
- Tyler 1st Comprehensive Plan;
- Parks, Recreation & Open Space Master Plan;
- Medical And Tyler Junior College District Midtown Area Development Plan;
- Texas College Area Development Plan; and
- University of Texas at Tyler Area Development Plan.

Key findings and their relevance to the 2040 Metropolitan Transportation Plan are summarized in the subsequent sections.

Master Street Plan

Completed in 2012, the Master Street Plan serves as the City of Tyler's adopted thoroughfare plan. Similar to an MTP, the thoroughfare plan is the long-range vision for the transportation system. Spanning all of Smith County, the Master Street Plan is an important right-of-way preservation and development tool. It identifies the location and type of roadway facilities, including the planned extension of major highways, necessary to facilitate projected population and employment growth within the area. Development of the Master Street Plan took into consideration past studies, adjacent community thoroughfare plans, adopted policies and public input. Consideration of the recommendations in the Master Street Plan was vital to the development of the MTP, in order to ensure that the mobility and access needs of the public are adequately addressed. (Tyler Area MPO, 2012)

Regional Trail Plan

Completed in 2009, the Tyler Area MPO Regional Trail Plan identifies proposed trail head facilities and trail locations, as well as associated desired trail cross sections for the Tyler Urbanized Area and Smith County. The plan organizes the comprehensive system of trail corridors into segments, and identifies implementation priorities. As part of the 2040 Metropolitan Transportation Plan, trail construction to date, as well as potential changes to location or project prioritization were reviewed and incorporated. (Tyler Area MPO, 2009)

2010 Pedestrian Access Study

Completed in 2010, the Pedestrian Access Study includes an extensive inventory of existing pedestrian facilities along with a description of their respective condition and current issues. With the goal of providing "continuous bicycle and pedestrian routes and trails" to connect key destinations, the Pedestrian Access Study identifies a region-wide network of pedestrian linkages, a sidewalk prioritization matrix, and potential funding sources for implementation. Sidewalk construction to date was reviewed and evaluated during the development of the 2040 Metropolitan Transportation Plan. It is important to consider the planned sidewalk improvements in order to build on the Complete Streets concept that calls for roads to be designed for all users, not just the private automobile, and should therefore focus less on simply improving traffic conditions and more on the livability, bringing a wide range of benefits such as improved safety, equity and access, economic development, air quality, health, and livability. (Tyler Area MPO, 2010)

Tyler 1st Comprehensive Plan

Recently completed, the Comprehensive Plan - Tyler 1st provides a 20-year framework to guide the growth and development of the City of Tyler. The collaborative effort included City Council, City staff, and multiple Tyler residents. The plan addresses several major items of interest to the community, including:

- Downtown;
- North End Revitalization;
- Historic Preservation;
- Parks, Open Space, Recreation, and Lakes;
- Housing, Neighborhoods, and Community Identity;
- Business and Economy;
- Transportation and Circulation;
- Public Facilities and Services;
- Future Land Use and Annexation Guide; and
- Education.

As part of the 2040 Metropolitan Transportation Plan, transportation system-related recommendations, such as trail expansions, policies concerning shared bicycle lanes, proposed traffic operations management, and significant changes in land use that impact travel patterns were taken into account. (City of Tyler, 2014)

Parks, Recreation, and Open Space Master Plan

Developed in 2010, the Parks, Recreation, and Open Space Master Plan provides a detailed inventory of current parks and open spaces, along with their respective amenities. Following an assessment of current needs and based on the feedback received from citizens, a prioritized list of recreation facilities was compiled to guide future decisions related to parks, recreation, and open space. The plan provides detailed recommendations through the year 2020 and general recommendations through 2040. (City of Tyler, 2009)

Medical and Tyler Junior College District Midtown Area Development Plan

Completed in 2012, the Medical and Tyler Junior College District Midtown Area Development Plan focuses on the linkages between the East Texas Medical Center, the Trinity Mother Frances Hospital, and the Tyler Junior College, as well as the surrounding residential and commercial areas. The plan was designed to complement the goals of the two medical facilities and the college, as well as assist in the preservation and enhancement of the surrounding neighborhoods and businesses. Several land use changes, additional development, and transportation improvements are recommended, and their anticipated impacts were considered as part of the 2040 Metropolitan Transportation Plan. (City of Tyler, 2012)

Texas College Area Development Plan

Completed in 2010, the Texas College Area Development Plan is designed to complement the goals of the college, as well as preserve, enhance, and expand surrounding residential and commercial areas. As part of the 2040 Metropolitan Transportation Plan, identified land use changes, proposed developments, and suggested transportation recommendations were taken into consideration. (City of Tyler, 2010)

University of Texas at Tyler Area Development Plan

Also completed in 2010, the University of Texas at Tyler (UT Tyler) Area Development Plan analyzes the linkages and relationships between the university, the City of Tyler, and the surrounding residential and commercial areas. The plan is designed to complement the goals of the UT Tyler campus, as well as assist in the preservation, enhancement, and expansion of the surrounding neighborhoods and businesses. (City of Tyler, 2010)

Major Employment Sites

Understanding where current employment is concentrated is equally helpful to the demographic estimation process. The breakdown of the largest area employers for the Tyler Metropolitan Statistical Area (MSA), shown in the table below, indicates that healthcare, retail, and government are the largest employment drivers in the Tyler Urbanized Area.

Table IV-1: Major Employers in Tyler MSA

Company Name	Product/Service	Employees†
Trinity Mother Frances*	Medical Care	3,775
East Texas Medical Center*	Medical Care	3,153
Brookshire Grocery Company*	Grocery Distribution	2,599
Tyler Independent School District	Education	2,468
Trane Co.*	Air Conditioning Units	1,500
Suddenlink*	Cable, Internet, & Phone	1,500
Wal-Mart	Retail	1,311
The University of Texas at Tyler	Education	1,121
UT Health Center at Tyler	Medical Care/Research	925
Tyler Junior College	Education	862
Smith County	Government	773
City of Tyler	Government	765
Target Distribution Center	Retail Distribution	650
Southside Bank*	Banking Services	614
John Soules Foods	USDA Meat Processing	485
Tyler Pipe	Cast Iron Pipe, Iron Fittings	373
Carrier Corporation	Air Conditioning Units	363
CB&I	Engineering Contracting	250

Source: Tyler Economic Development Council, 2010
*† Full-time equivalent; * Company has headquarters in Tyler, TX*

HORIZON YEAR PROJECTIONS

Several additional variables were taken into account during the allocation of the county control total to the TAZs.

- An in-depth review of historical and current aerial imagery was conducted.
  - Development patterns were observed and incorporated into the growth expectations.
- Historical growth rates for both population and employment data were analyzed on a TAZ-level basis.
  - 2000 and 2010 Census data and associated compound annual growth rates were calculated, as well as extrapolated for the 2040 horizon year to estimate the growth potential.

- Existing population and employment densities were calculated.
  - Existing densities, coupled with a review of the remaining area available for development was also used to assess expected growth.
- Potential densities for both population and employment were assessed, based on the knowledge of historical growth rates, anticipated growth areas, and planned developments, as well as information on current and future land use.
  - In combining the individual assessments, growth patterns became apparent within the population and employment data.

Subsequently, both estimated population and employment growth were allocated to each TAZ based on its proportionate share of the overall growth.

Horizon Year Population

Based on the analysis of existing population densities and current aerial imagery, several TAZs within the study area were considered built out. Most of them were located within Loop 323. Consequently, these TAZs received little to no additional population growth by the year 2040.

> *Between 2012 and 2040, the Tyler Area MPO is expected to gain 62,235 new residents, resulting in 262,746 people living within the study area – a 31 percent increase.*

The following figures show the growth that is expected to occur between 2012 and the horizon year of 2040, as well as the 2012 population density and the resulting 2040 population density by TAZ.

Anticipated Population Growth Pattern

Strong population growth is expected in the area south of SE Loop 323 and north of Toll 49, between US 69 and SH 110. Significant growth is also expected in the area bordered by SS 248 and SH 64. Additional growth is anticipated to occur along major transportation corridors, such as Toll 49, US 69 between the City of Tyler and Lindale, along SH 155 (Frankston Highway) towards The Villages, between Old Jacksonville Highway and US 69 towards and near Bullard, as well as north and south of Whitehouse along SH 110. One of two particularly fast growing areas is located just south of NW Loop 323 and east of Broadway, where multiple new residential units have been built recently. The other area is located near Bellwood and Greenbriar Lakes and is also anticipated to grow substantially.

Figure IV-1: 2012-2040 Population Growth

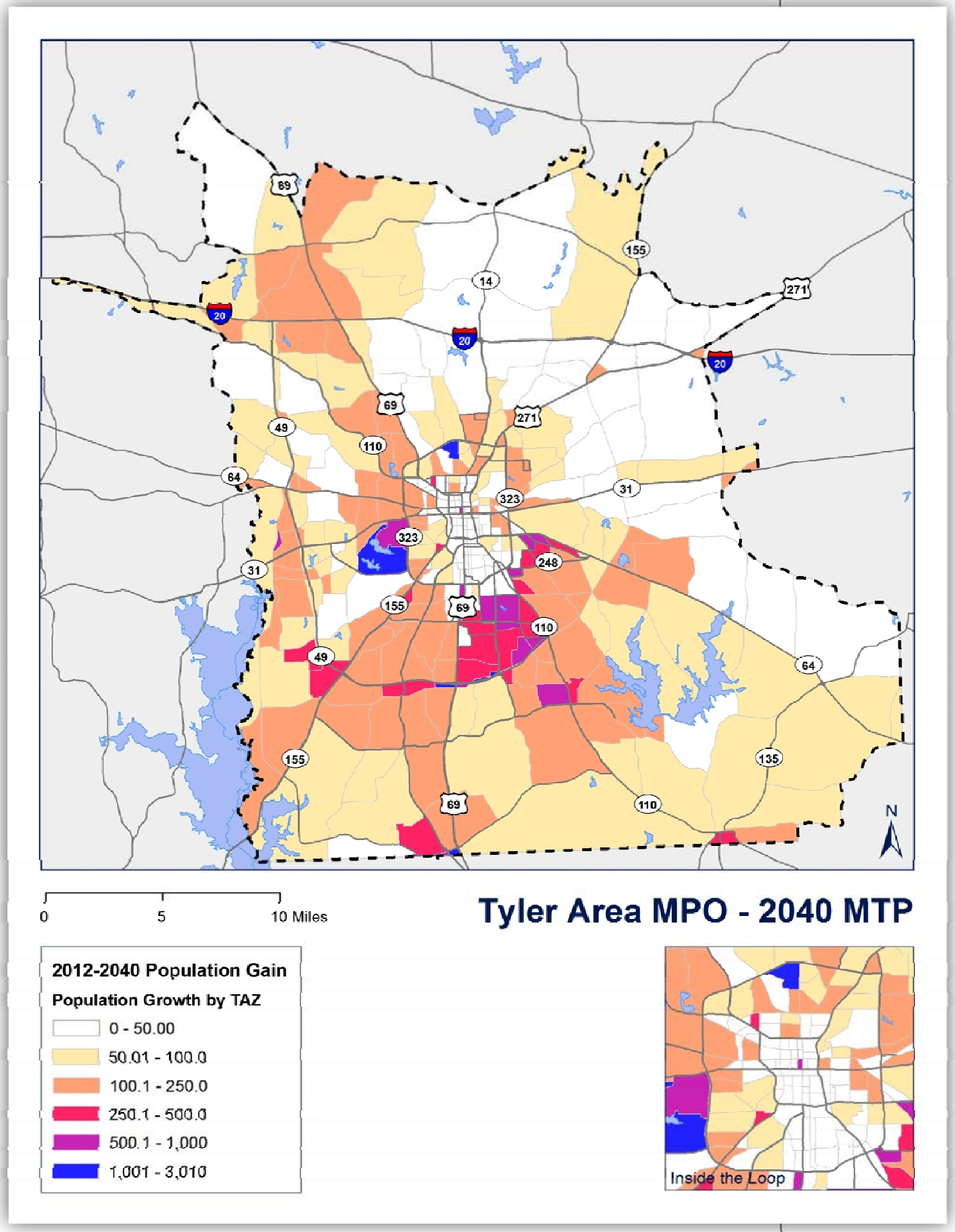


Figure IV-2: 2012 Population Density

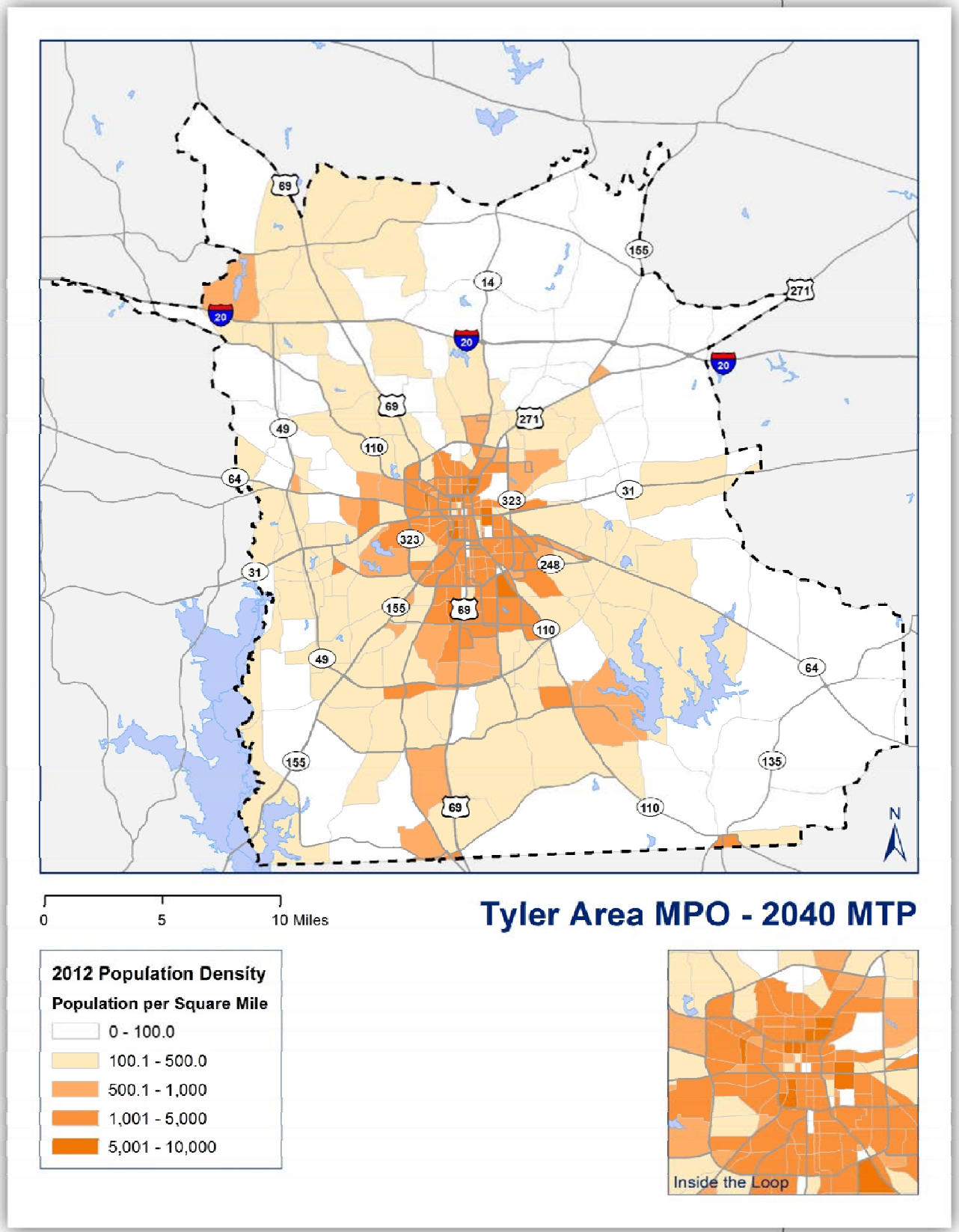
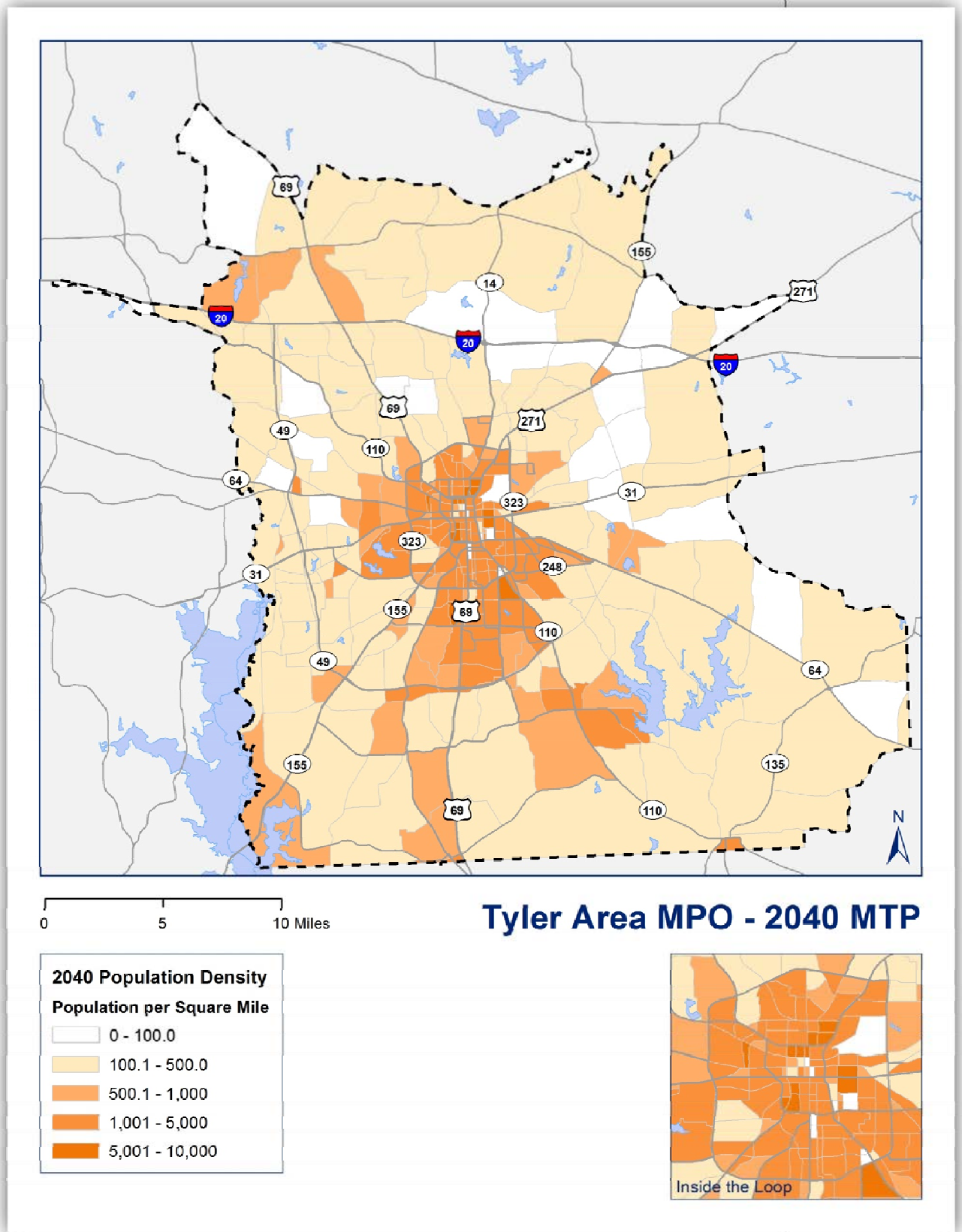


Figure IV-3: 2040 Population Density



Horizon year Employment

> *Between 2012 and 2040, the Tyler Area MPO is expected to gain 21,074 additional employees, resulting in 118,850 employees the study area – a 22 percent increase.*

The figures on the following pages show the employment growth that is expected to occur, as well as the 2012 employment density and the resulting 2040 employment density by TAZ.

Anticipated Employment Growth Pattern

Anticipated employment growth is generally concentrated near town centers and along major thoroughfares. Particularly strong growth is forecasted for the areas just inside of Loop 323 and along the southern portion of the recently completed Toll 49 segments south of Tyler. Employment growth is also anticipated along the planned Toll 49 Segments 4 and 6, located southwest of Lindale and southeast of the City of Tyler, respectively.

Figure IV-4: 2012-2040 Employment Growth

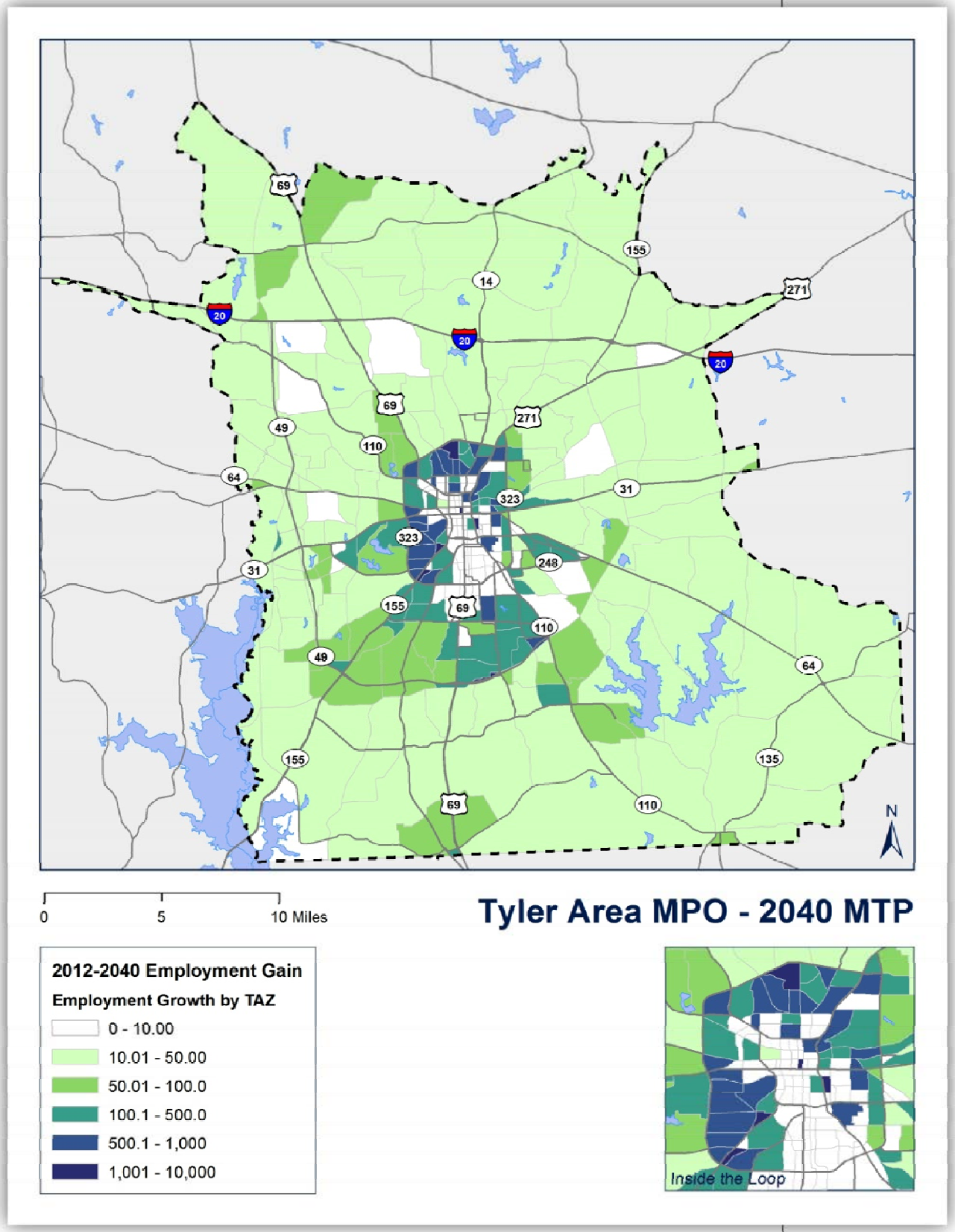


Figure IV-5: 2012 Employment Density

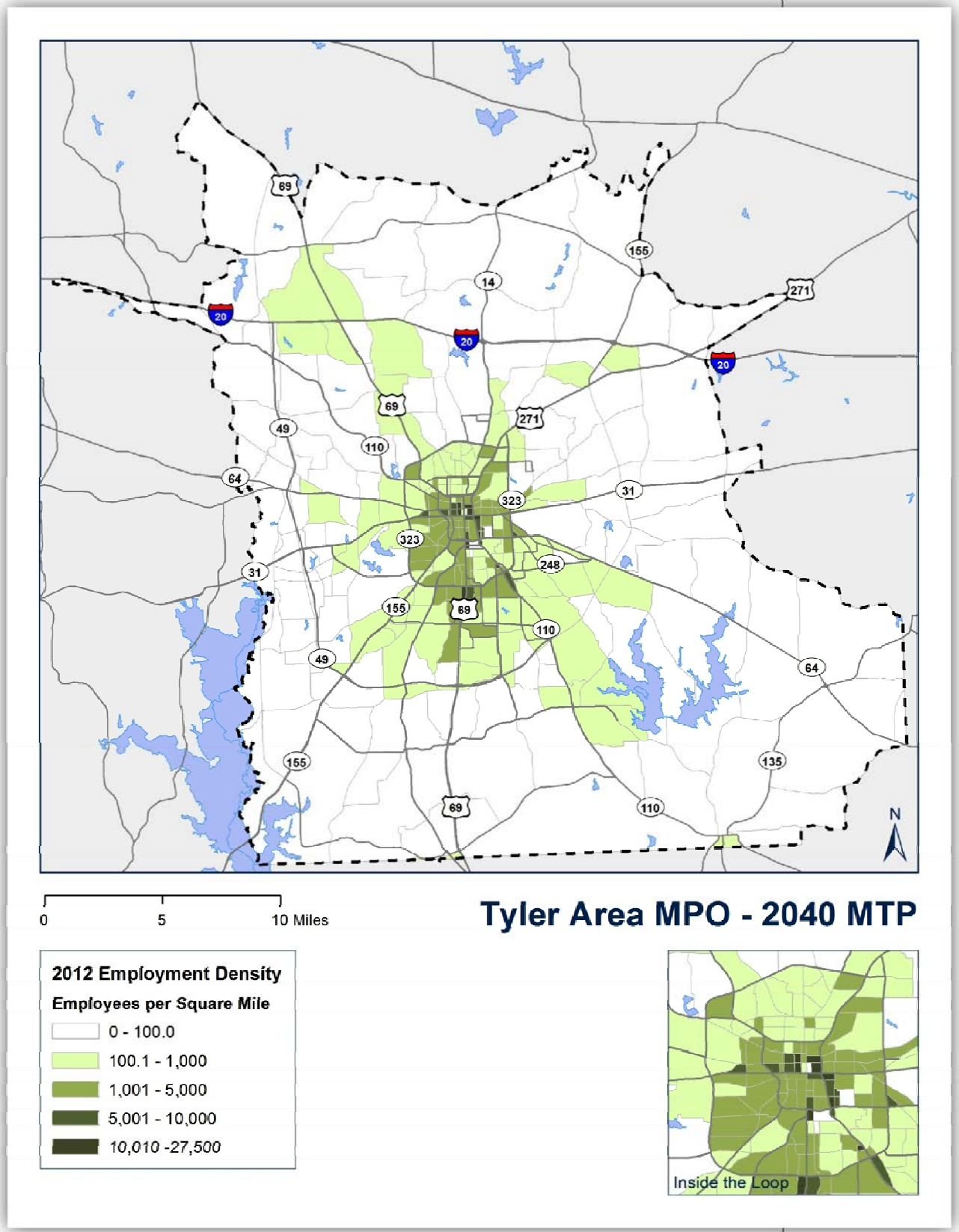
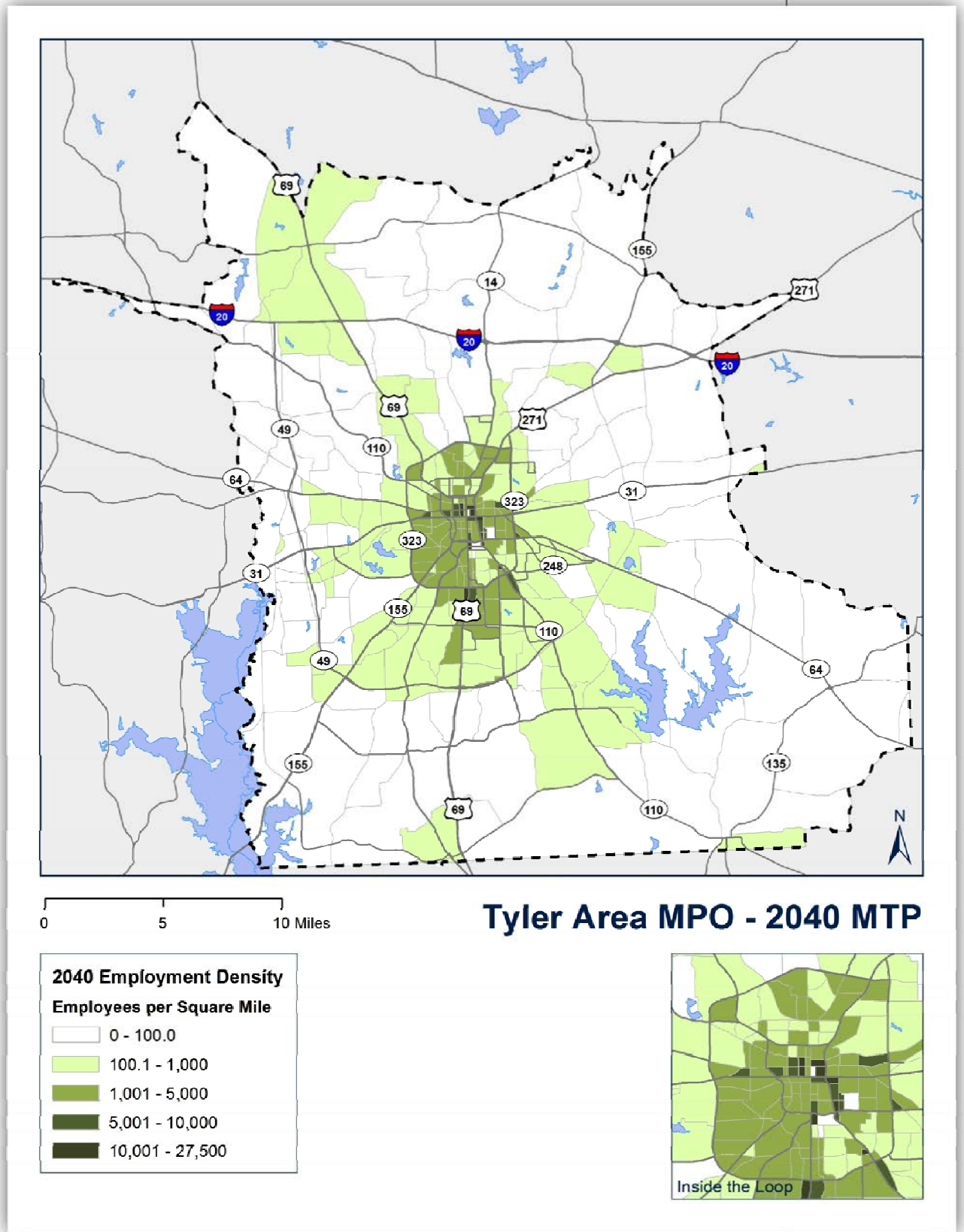


Figure IV-6: 2040 Employment Density

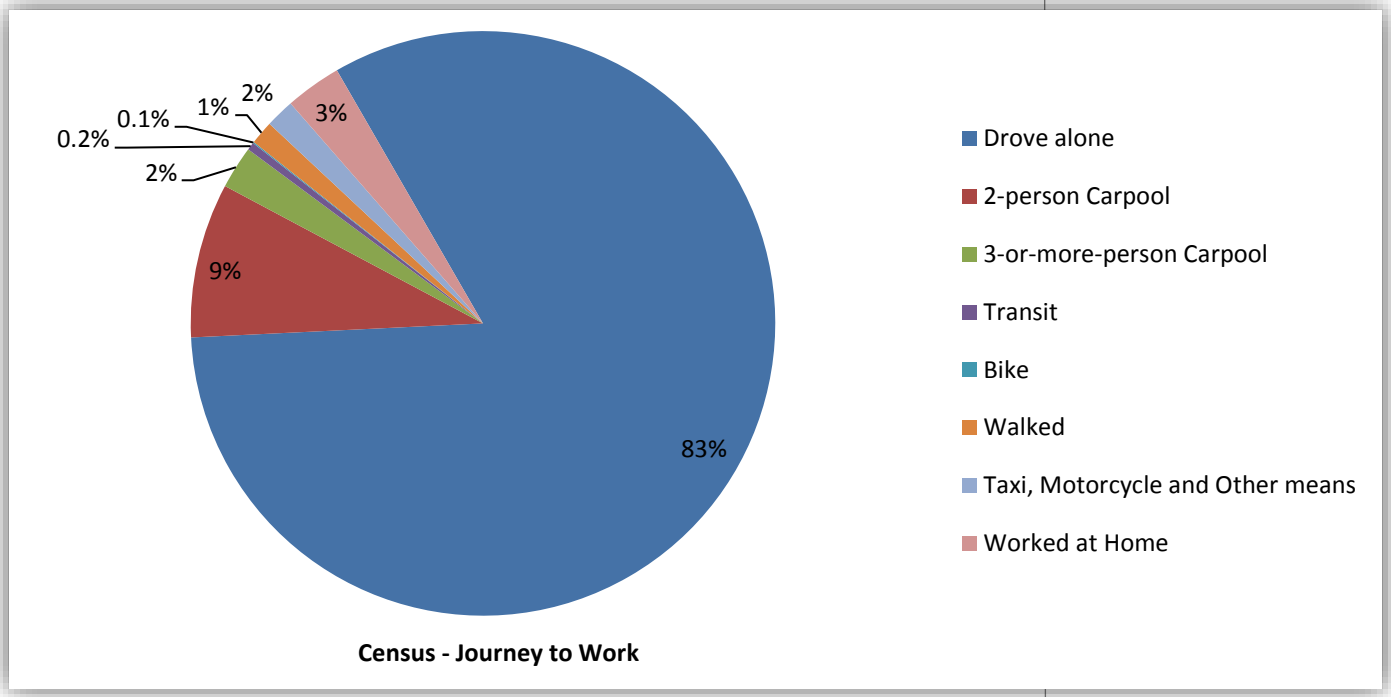


V. ROADWAYS

INTRODUCTION

The predominant mode of transportation for people living in the study area is accomplished by single-occupancy vehicle (SOV). Figure V-1 shows the primary mode of transportation for all commuters within Smith County. A large majority of commuters traveled alone in their automobile, while 11 percent carpooled. The remaining 6 percent of workers walked, biked, rode transit, or used other means of transportation, or simply worked from home.

Figure V-1: Smith County Commuter Modes of Travel



Source: 2010-2012 American Community Survey - At Place of Work

In addition to providing for the movement of automobiles, regional roadways also offer right of way and infrastructure for bus, bicycle, and pedestrian travel, making the roadway network an integral part of the community. Despite the existence of a multi-modal transportation system, roadways remain the primary component in addressing the region's transportation needs.

Planning for future transportation system improvements starts with evaluating the existing transportation system and its needs. This chapter analyzes the existing conditions of the streets and highways and describes system issues, with a particular focus on congestion and crashes.

EXISTING CONDITIONS

The Tyler Area is served by Interstate Highway 20 (IH 20) and several U.S. and State highways that provide the basic framework of higher capacity transportation facilities in the area. The

Texas Department of Transportation (TxDOT) maintains the Interstates, U.S., and State highways located in the study area, the North East Texas Regional Mobility Authority (NET RMA) maintains Toll 49, while the respective incorporated cities and Smith County maintain roadways not part of the TxDOT system.

Existing Roadway Facilities

The existing roadways consist of Interstate highways, U.S. and State highways, a toll road, as well as farm-to-market roads, and local streets. The following section discusses existing roadways.

Interstate Highways

IH 20 is the only interstate facility serving the area. It is a controlled access facility, which extends east and west, traversing the northern part of Smith County. IH 20 connects the study area westward to Dallas and eastward to Shreveport, Louisiana. Access to and from IH 20 is provided by grade-separated interchanges and intermittent frontage roads on both sides of the freeway. IH 20 is a four-lane divided highway with a posted speed limit of 70 mph. The frontage roads are one-way with 2 to 3 lanes in each direction.

U.S. Highways

US 69 (also known as Broadway Avenue within the City of Tyler) and US 271 are the two U.S. highway facilities serving the study area. US 69 traverses Smith County north-south and US 271 originates within the City and extends northeast. Within the City of Tyler, both roadways are surrounded by commercial development.

US 69 is a major arterial that ranges from four lanes in the northern part of the study area to six lanes with a continuous center turn lane (CTL). The posted speed limit along US 69 ranges from 55 mph (outer study area) to 30 mph in the City center.

Within the City of Tyler, US 271 is a divided four-lane principal arterial that extends northeast from Gentry Parkway. Outside of the City limits, US 271 is a two-lane roadway.

State Highways

There are many State highways (SH) located within the study area – SH 323 (Loop 323),SH SH 64, SH 31, SH 155, SH 110, SH 124, SH 164, SH 147, SH 235, SH 57, Spur 364, and Spur 248. TxDOT maintains these roadways, and each is discussed below.

Texas 323 – Loop 323 serves as the study area's inner loop. It is surrounded by retail and commercial development along its southern, eastern, and western portions. Areas neighboring the northern segment of Loop 323 are less built-out, but have seen recent development. The speed limit along Loop 323 varies from 45 mph to 55 mph. The roadway varies from a four to six lanes with either a median or a continuous center turn lane.

Texas 64 – SH 64 traverses the study area from the northwest to southeast. SH 64 changes names to 5th Street and Glenwood as it passes through the City of Tyler. The roadway varies from a two-lane to a four-lane roadway with speed limits ranging from 35 mph to 45 mph. Within the City of Tyler, the roadway is surrounded by a mixture of commercial, retail, and residential properties.

Texas 31 – SH 31 traverses the study area from the west to east. This highway is also called Chandler Highway west of the SH 235 exchange and Front Street within Tyler city limits. To the west of Loop 323, this roadway varies from four to six lanes with a continuous center turn lane along urban sections. However, to the east this roadway is an undivided two-lane roadway. Development along this corridor consists of a mixture of residential and commercial uses.

Texas 155 – Also known as Frankston Highway, SH 155 extends southwest from the City of Tyler toward Palestine. The roadway varies from four to six-lanes and is surrounded by a mixture of retail and residential land uses. The speed limit varies from 35 mph to 55 mph.

Texas 110 – Also known as Troup Highway, SH 110 is the southeastern extension of US 271. This roadway segment is a six-lane road with a continuous center turn lane within the City of Tyler, but changes to a four- and then two-lane roadway moving southeast from the City center. The speed limit varies from 45 to 50 mph, and the adjacent properties consist of a mixture of commercial and residential land uses.

Texas 124 – SH 124, also called Old Henderson Highway, extends from E Erwin Street southeast to SH 64. The roadway is a two-lane roadway that is surrounded by a mixture of commercial establishments and residences. The speed limit on this segment of roadway is 40 mph.

Spur 164 – SS 164 connects SS 364 in the south with SH 31 in the north, but beyond these limits the roadway becomes FM 1125, also known as Greenbriar Road. SS 164 is a 2-lane road with speed limits set at 45 mph. It is lined with open space and low density residential developments.

Texas 147 – SH 147, better known as the Gentry Parkway, is a six lane urban arterial with a continuous center turn lane. It is the extension of SH 110 in the west, and continues to US 271 in the east. It has a speed limit of 45 mph and is surrounded by urban residential and commercial properties.

Spur 235 – SS 235 is a short road segment connecting SH 64 (Erwin Street) to SH 31 on the west side of the City of Tyler. It is a two-lane roadway with a posted speed limit of 40 mph.

Texas 57 – SH 57, also known as Grande Boulevard, is a four-lane roadway with a continuous center turn lane. It extends from SH 155 southwest of the City of Tyler to SH 110 to the southeast.

Spur 364 – SS 364 serves as the primary access route to Lindsay Park. SS 364 is a four-lane road at Loop 323, transitioning to a three-lane road with one westbound lane and two eastbound lanes. As the roadway extends westward, the pavement transitions again to a two-lane road. A continuous center turn lane is provided in front of Lindsay Park. The speed limit is 60 mph.

Spur 248 – SS 248, also known as University Boulevard, is one of the primary access routes to the University of Texas at Tyler. The road varies from a four-lane roadway to a two-lane road further east, both with a continuous center turn lane, and the speed limit ranges from 45 mph to 60 mph.

Toll Road

Toll 49 (Loop 49) serves as the study area's new outer loop, which, when completed, will form a 32-mile loop around the west, south, and east sides of the City of Tyler. Toll 49 currently connects to IH 20 northwest of the City of Tyler to SH 110 southeast of central Tyler. A future segment (Segment 6) will extend from SH 110 to IH 20, completing the eastern portion of the Outer Loop. The north extension of Toll 49 (Segment 4) will extend the current west terminus from IH-20 to U.S. 69, just north of Lindale; Segment 4 is currently in the environmental review stage.

Farm-to-Market Roadways

There are several Farm-to-Market (FM) roads serving the study area. The facilities primarily provide connections between major highway facilities, residential and commercial centers, and access to recreational areas. TxDOT maintains the Farm-to-Market thoroughfares, including FM

2493 (Old Jacksonville Highway) and FM 14 (State Park Highway). These Farm-to-Market roadways are generally two-to four-lane facilities.

FM 2493 provides a link into the study area for many people living in the unincorporated part of southwestern Smith County, whereas FM 14 provides access to the nearby Tyler State Park

County Roads and Local Streets

County Roads (CR) and the local street network[1] consist of residential and neighborhood streets. These streets are primarily two-lane facilities and typically have a speed limit of 30 mph within municipal city limits and 40-55 mph within the unincorporated areas of Smith County, where a few also have four-lane cross sections.

Roadway Classification

Functional classification is the process by which streets and highways are grouped into categories according to the characteristics of the vehicular traffic they are intended to serve. All streets and highways are grouped into one of these classes, depending on traffic character (i.e., local or long-distance trips) and the degree of land access allowed. These classifications may change over time as roadway functions change to serve new land uses, increased or decreased traffic volumes, or roadway network modifications.

The functional classification system is a hierarchical organization of streets and highways that facilitates the safe and efficient operation of vehicles along different types of roadways and expressways. The study area's functional classification system is based on the City's Master Street Plan (MSP), which was originally developed in 1985, and updated in 1999, 2005, and 2012. The current functional classification system[2] divides the roadway network into the following four general categories:

Freeways/Expressways

These facilities include Interstate highways, freeways, tollways, expressways, parkways and loops. They provide for the rapid and efficient movement of large volumes of traffic between and within regions. Design characteristics support the function of traffic movement by providing multiple travel lanes, a high degree of access control, and limited at-grade intersections. Direct access to properties is limited in the Tyler Study area. TxDOT develops and maintains these facilities, with the exception of Toll 49, which is maintained by NET RMA.

Arterial Streets

Arterials offer efficient, higher speed traffic movements, but also provide direct access to abutting properties. Major arterials typically serve as connections between large traffic generators and other community activity centers and facilitate large volumes of through traffic. Minor arterials typically serve as connectors between local and collector streets and major arterials, and facilitate the movement of smaller traffic volumes over short distances within the community.

Collector Streets

Collector streets provide for a balance of traffic movement and property access functions. Traffic movement is often internal to local areas and connects residential neighborhoods,

[1] The local streets are mentioned for completeness. However, they fall under the jurisdiction of the respective local entity and are generally not eligible to receive Federal transportation funding.

[2] The City of Tyler's functional classification differs slightly from the Federal Functional Classification, which determines a roadway's eligibility for Federal funding. All projects, which are proposed to receive Federal funding, have been determined to be federally functionally classified and are therefore eligible.

parks, churches, etc., with the arterial street system. Compared to arterial streets, collector streets accommodate smaller traffic volumes over shorter distances.

Local Streets

Local streets function to provide direct access to abutting properties and to collect and distribute traffic between parcels of land and collector streets.

Traffic Control

Facilitation of traffic flow on the roadway network is provided through the application of traffic control devices such as traffic signals, traffic signs, and pavement markings. Of these, traffic signals have the greatest impact on the traffic flow and roadway capacity. There are over one hundred fifty signalized intersections within the study area. The majority of these signals are located at major intersections along arterial and collector streets within Loop 323. There are 31 signals along Loop 323, 19 signals along South Broadway Avenue (south of Front Street), and 19 signals in Tyler's central area (North of Front Street, South of Locust, between Palace Avenue and Fannin Avenue).

Since 2009, the City of Tyler Traffic Engineering Department has completed the following traffic control projects:

- Installation of adaptive traffic control systems at several intersections on Loop 323;
- Completion of traffic signal installation and control system upgrades at key locations;
- Completion of the downtown signal upgrade project; and
- Upgrade of school flasher timing systems.

PLANS AND STUDIES

2012 Master Street Plan

The updated City of Tyler Master Street Plan was adopted in September 2012. The main function of the document is to provide guidelines for ensuring access to and mobility on the region's transportation network, based on the following objectives:

- Pursuing the preservation of existing roadway alignments and adequate right-of-way (ROW) for future long-range transportation improvements;
- Minimizing the amount of land required for street and highway purposes;
- Identifying the functional role that each street should be designed to serve, in order to promote and maintain the stability of traffic and land use patterns;
- Ensuring continuity of the thoroughfare system and connectivity for all east-west and north-south traffic patterns;
- Maximizing mobility while minimizing the negative impacts of street widening and construction on nearby neighborhoods and the overall community as a whole by recognizing where future improvements may be needed; and
- Making efficient use of available resources by designating and recognizing the corridors that will likely require improvements.

Functional Classification and Complete Streets

As mentioned earlier, the streets within the study area are functionally classified based on traffic characteristics and functionality. The functional roadway system, however, is neither static, nor exclusive to vehicle and truck traffic.

Because of this, the 2012 update to the Master Street Plan introduced Complete Streets design concepts. Complete Streets consider flexible design elements to provide for multiple modes of transportation, including: transit, bicycles, pedestrians, and automobiles. Complete Streets utilize different designs based on land use and density context, as described below:

- **Urban Core** – Typically the densest area of a city, and offers opportunities for walkable mixed-use developments and multi-modal transportation options;
- **General Urban** – Less dense than the Urban Core, but includes a mix of housing types and commercial properties;
- **Suburban** – Largely consists of single-family housing with primarily automobile traffic as well as recreational pedestrian and bicycle use; and
- **Rural** – The least dense areas, with large-lot single-family housing and open space.

Bicycle and Pedestrian Facilities

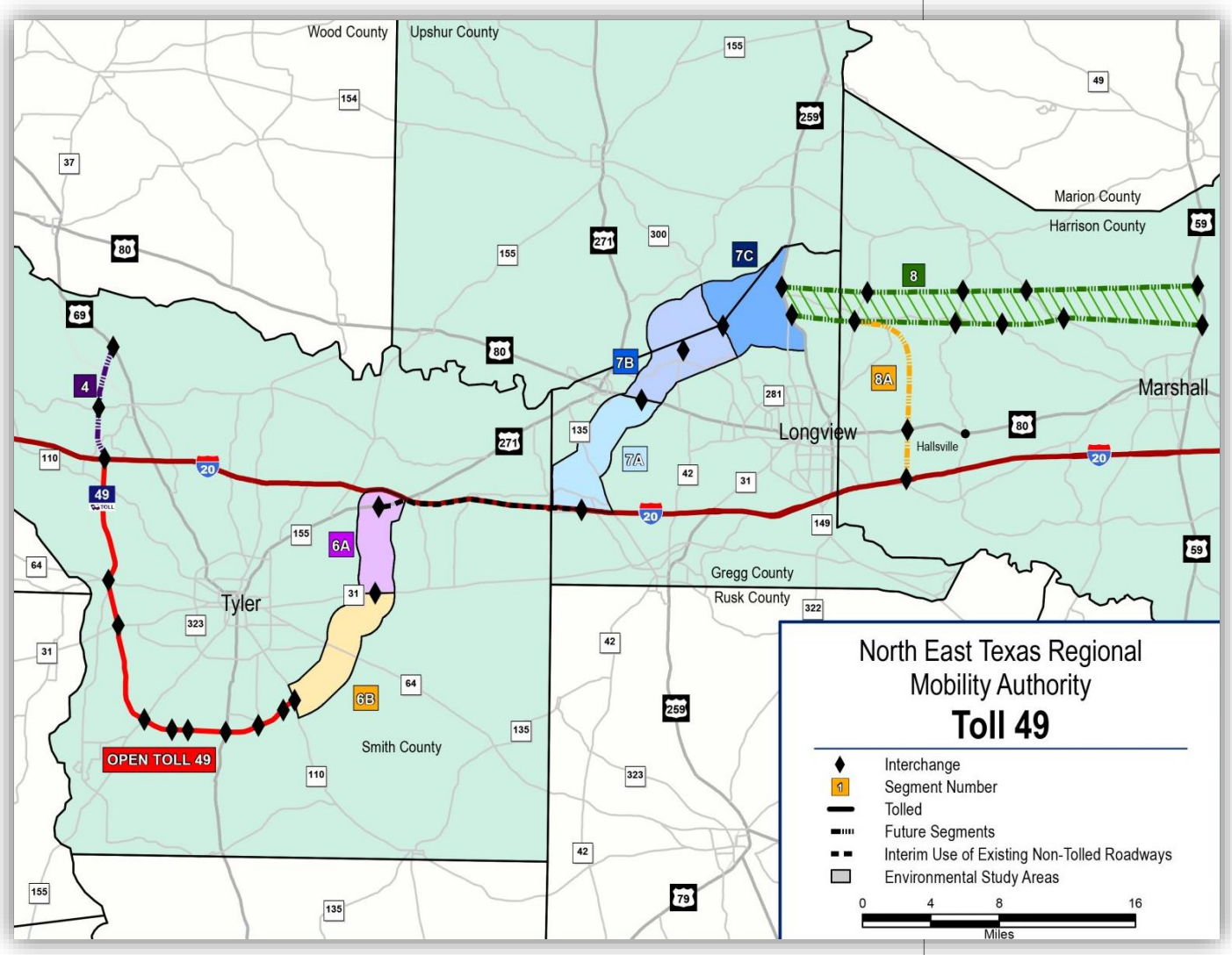
The Master Street Plan also proves recommendations for better connections between minor and arterial roads and on-street or off-street bike facilities. Furthermore, bike plan recommendations were made in accordance with facilities proposed in the Tyler Regional Trail Plan, which is discussed in greater detail in the *Bicycle and Pedestrian – Chapter VII*.

PROGRAMMED IMPROVEMENTS

The 2012 Master Street Plan does not contain a program of projects. However, it offers recommendations and design protocols to be considered for those roadways identified for improvement.

The North East Texas Regional Mobility Authority (NET RMA) is an independent government entity created to facilitate the development of transportation projects in northeast Texas. NET RMA undertakes various projects, including the planning and implementation of Toll 49, shown in the map below. Currently planned improvements, include the extension of Toll 49 past IH 20 to US 69 just north of Lindale (Segment 4), as well as a future Toll 49 extension (Segment 6 – A and B) from SH 110 to IH 20 on the east side of the City of Tyler, as shown in Figure V-2.

Figure V-2: North East Texas Regional Mobility Study - Toll 49



Source: NET RMA, 2014

NEEDS AND ISSUES

Under the guidance of the Moving Ahead for Progress in the 21st Century (MAP-21) Act, outlined in the introduction of the 2040 Metropolitan Transportation Plan, Metropolitan Planning Organizations (MPO) are required to develop long-range transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning, using data to identify, evaluate, and prioritize strategies to achieve desired outcomes.

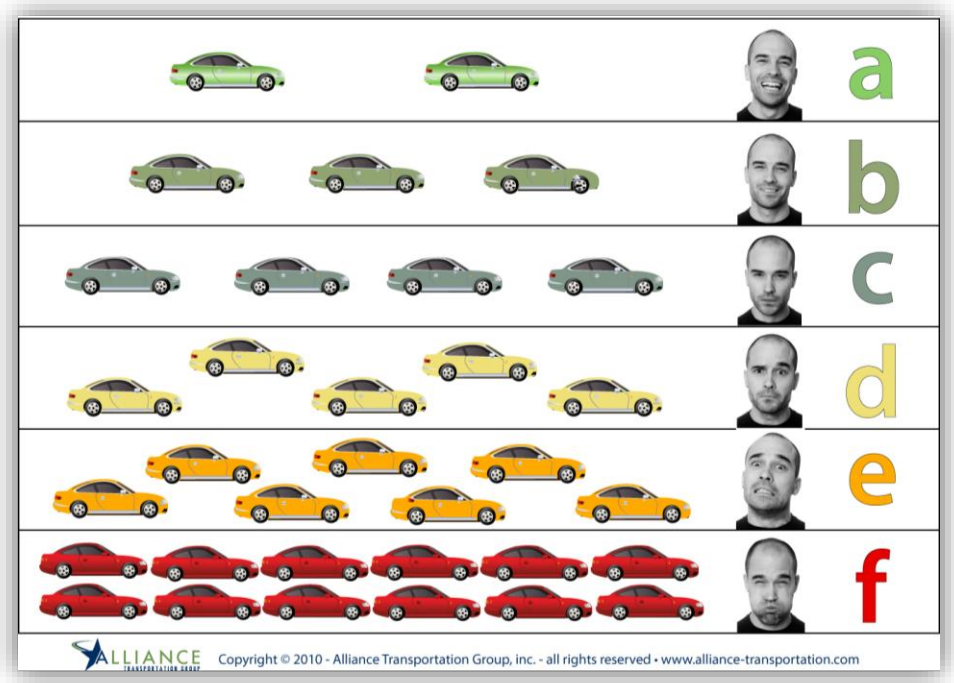
In establishing a baseline for overall system and subsequent performance evaluation, certain performance measures are particularly helpful in identifying the needs and issues on roadways within the study area. Congestion affects businesses and residents alike, creates inefficiencies and wastes time, while crashes threaten the safety of all roadway users within the study area. Traffic congestion and crash data is therefore reviewed in greater detail in the following sections.

Congestion

During the public involvement activities, congestion was identified as one of the most important transportation issues among residents and stakeholders alike. A common measurement of operational traffic performance and congestion on a roadway corridor is Level of Service (LOS). In its simplest form, LOS can be compared to a grading scale from "A" to "F", where "A" represents excellent performance and "F" indicates failure. LOS can be explained in terms of vehicular traffic flow, maneuverability, delays, driver comfort, average speed, and the ratio of traffic volume to a roadway's maximum traffic capacity. It is generally reported for the peak period of a typical weekday. Figure V-3 provides an illustration of the various levels of service as experienced by a driver.

Communities aim to maintain a LOS of D or better on roadway systems, although it is acceptable for some locations - such as a busy downtown area - to operate at a lower level of service, often resulting in reduced speeds. Many communities use LOS standards to develop and prioritize projects to improve transportation facilities and services, as well as to regulate growth and development.

Figure V-3: Level of Service Illustration



Level of service is often approximated with volume to capacity ratios such as the travel demand model analysis results described in the *Modeling and Roadway Deficiency Analysis - Chapter X*, which speaks more to roadway design capacity than actual driver experience.

Therefore, roadway performance data was obtained from Texas A&M's Transportation Institute's (TTI) - Most Congested Roadways in Texas website (TTI, 2014). This data is updated yearly and offers insight into congestion on urban roadways. TTI obtains hundreds of data points on almost all major road segments in U.S. urbanized areas.

The Texas Transportation Institute uses several metrics to analyze roadway segment performance, two of which were selected to analyze congestion within the study area:

- Texas Congestion Index (TCI) – the ratio of the peak period average travel time to the free-flow travel time; and
- Annual Delay per Mile (DelayAPH) – the annual hours of delay divided by the segment length.

These measures seek to provide a better understanding of roadway performance as experienced by the roadway user. Therefore, an analysis of the current state of thoroughfare congestion was completed using TCI and DelayAPH data. The roadway segments with the top ten congestion index values are listed in the table below.

Table V-1: Most Congested Corridors

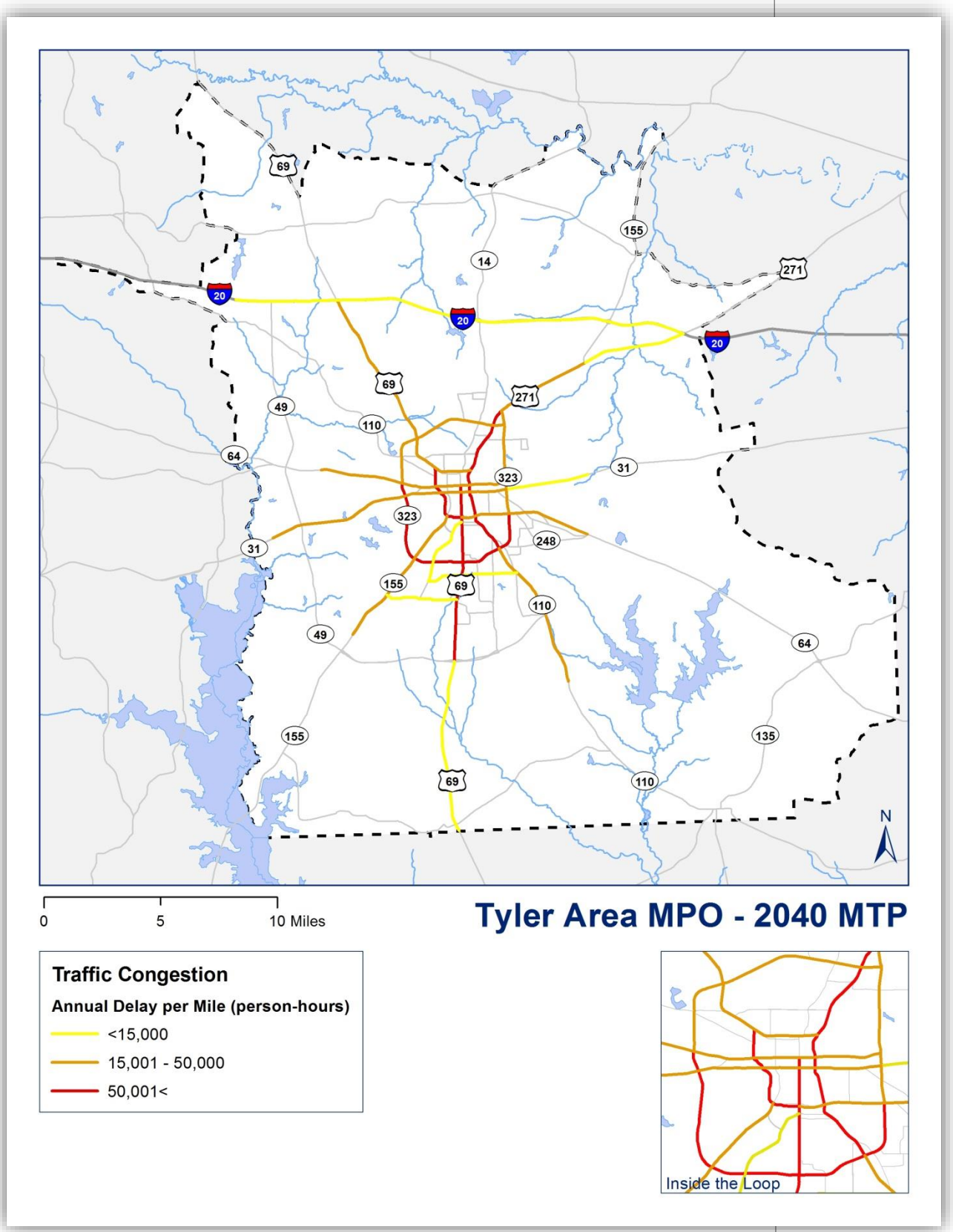
Road Name	Extent	Texas Congestion Index
Rice Road / Shiloh Road	FM 2493 to SH 110	1.38
S Broadway Avenue (US 69)	Loop 323 W to Toll 49	1.34
Loop 323 S	SH 64 to S Broadway Avenue	1.33
S Broadway Avenue (US 69)	Ervin Street to Loop 323 W	1.31
Old Jacksonville Highway	S Broadway Avenue to Rice Road	1.30
Glenwood Boulevard	W Gentry Parkway to S Broadway Avenue	1.28
Erwin Street	Chandler Highway to Loop 323 S	1.27
S Beckham Avenue (SH 155)	SH 31 to Loop 323 E	1.27
W Grande Boulevard (SH 57)	SH 155 to S Broadway Avenue	1.26
Gentry Parkway	SH 110 to US 271	1.25

Source: 2014 Texas A&M Transportation Institute - Most Congested Roadways in Texas (TTI)

The maps on the following pages show the annual delay per mile for the most congested roads for both vehicle and truck traffic in the Tyler study area.

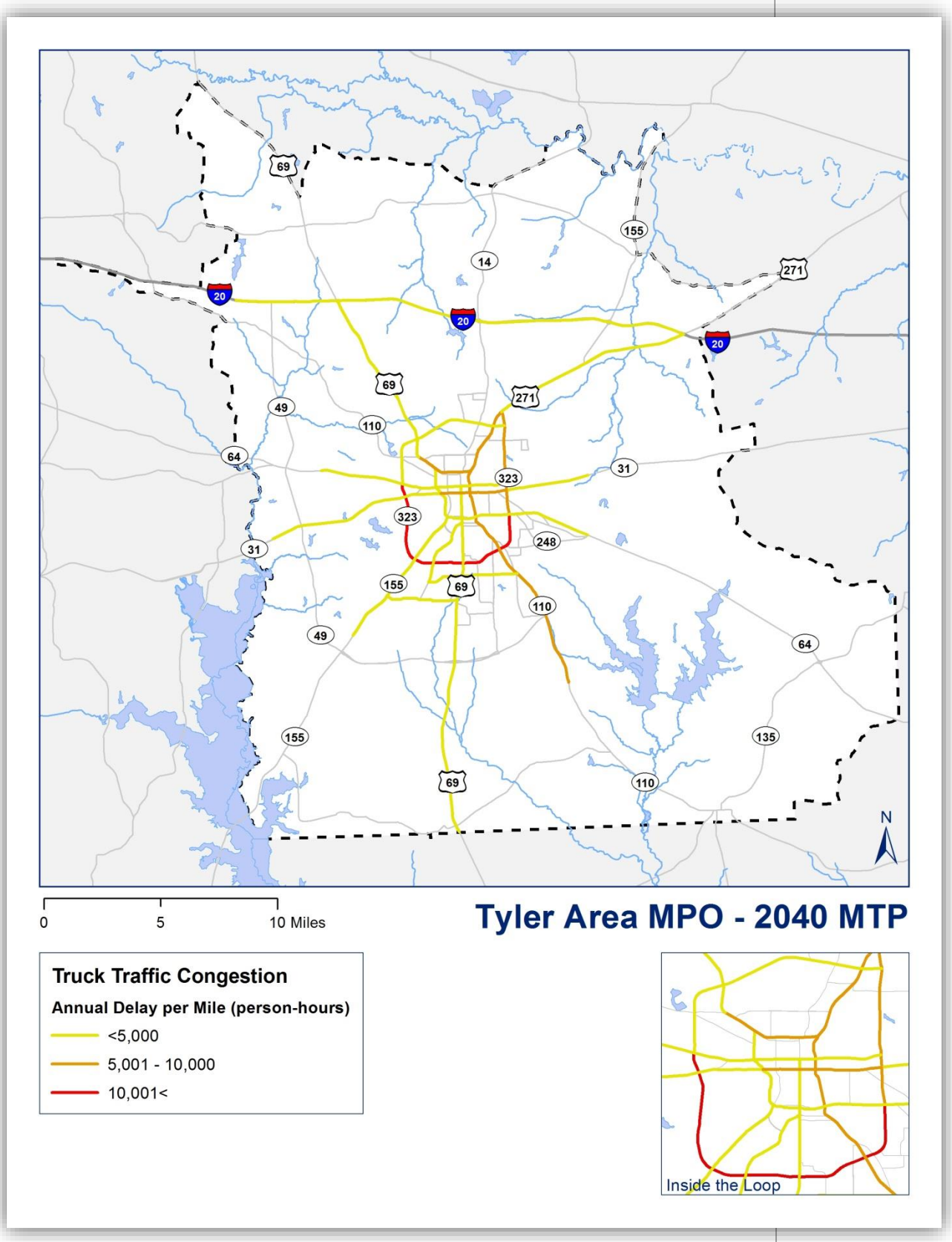
Vehicle congestion, based on annual hours of delay per mile, was worst along S Broadway Avenue, south of Front Street, and north of Toll 49. South of SH 64, Loop 323 SW and Loop 323 SE also experienced heavy vehicle congestion, as well as the highest truck congestion. Vehicle and truck congestion was relatively light on IH 20, Rice Road, W Grande Boulevard, and Old Jacksonville Highway.

Figure V-4: Annual Traffic Congestion



Source: 2014 Texas A&M Transportation Institute - Most Congested Roadways in Texas (TTI)

Figure V-5: Annual Truck Congestion



Source: 2014 Texas A&M Transportation Institute - Most Congested Roadways in Texas (TTI)

The analysis of average delay per mile shows that congestion is particularly significant along the following corridors:

- S Broadway Avenue (US 69) - from Loop 323 to Toll 49
- Loop 323 E - from E 5th Street (SH 64) to S Broadway Avenue (US 69)
- S Beckham Avenue (SH 155) - from E Front Street (SH 31) to Loop 323 E
- Loop 323 W - from W Ervin Street (SH 64) to S Broadway Avenue (US 69)
- S Broadway Avenue - from Ervin Street to Loop 323 W

Truck congestion was worst along the following corridors:

- Loop 323 E - from E 5th Street (SH 64) to S Broadway Avenue(US 69)
- Loop 323 S - from W Ervin Street (SH 64) to S Broadway Avenue (US 69)
- S Beckham Avenue (SH 155) - from E Front Street (SH 31) to Loop 323 E
- US 271 (SH 155) - from Loop 323 E to E Front Street (SH 31)
- Front Street (SH 31) - from S Glenwood Boulevard to Loop 323 E

Congestion Reduction Strategies

Roadway capacity expansion is only one way to address existing congestion. The promotion of alternative modes of transportation can help reduce overall travel demand. Traffic control improvements, signal interconnects along major corridors, and the implementation of access management strategies can significantly reduce congestion delays.

Associated Travel Demand Management, Transportation System Management and Operations, and Complete Streets principles and strategies are described in greater detail in the *No-Build Strategies - Chapter XI*. Based on a review of the most congested corridors within the study area, the following measures and strategies could be considered for implementation in the Tyler Urbanized Area:

- Signal timing changes;
- Channelization modifications;
- Corridor-wide, interconnected signalization; and
- Application of access management measures along major thoroughfares.

Roadway Safety

Safety was identified as the second most significant transportation concern by study area residents and stakeholders. As mentioned, MAP-21 introduced national performance goals[3] to assist with the transportation planning process, including a provision for the assessment and the monitoring of transportation safety. The objective of the safety goal is to "significantly reduce the number of traffic fatalities and serious injuries on public roads.[4]"

Examining where traffic accidents have occurred in the Tyler Urbanized Area, helps to guide needed safety improvements. The 2010-2012 crash data for the Tyler Area shows "failure to control speed" as the primary contributing factor for vehicle collisions within the study area. "Failure to yield the right of way" - while turning left, at a private drive, or at a stop sign - were also prevalent contributors, along with driver inattention and unsafe lane changes.

[3] The Federal Highway Administration has proposed to use a five-year rolling average for fatality and serious injuries, and fatality and serious injury by 100 million VMT (vehicle miles traveled). However, the performance measure has not yet been formally promulgated, and therefore, performance targets have not yet been adopted by the Texas Department of Transportation or the Tyler Area MPO.

[4] MAP-21 §§1106, 1112-1113, 1201-1203; 23 USC 119, 134-135, 148-150

Furthermore, 52.5% of all crashes in 2012 occurred at an intersection. Figure V-6 shows which intersections have had the most accidents in the study area from 2010-2012.

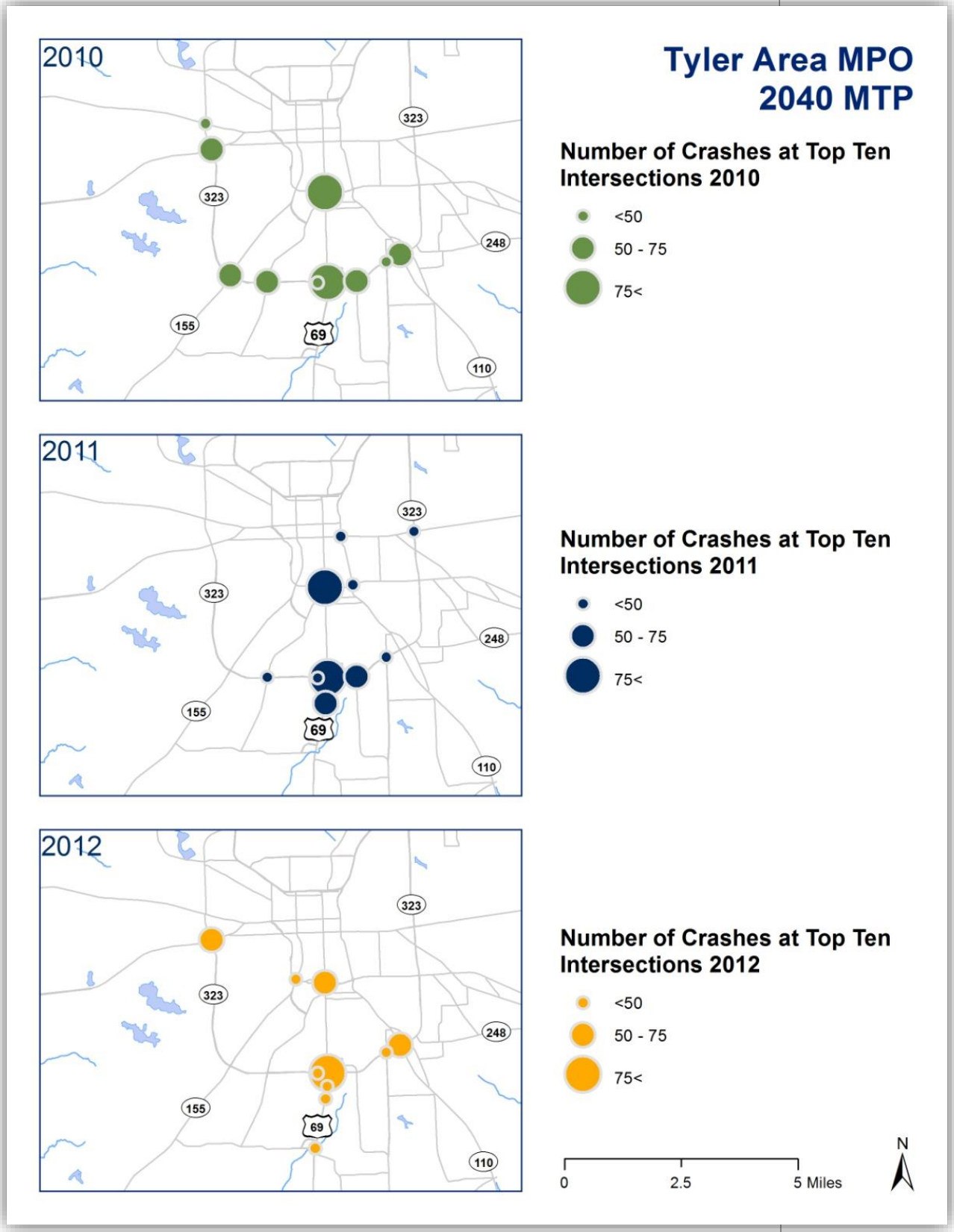
The table below lists which locations had the highest number of accidents from 2010 to 2012. During this period, the intersection of Broadway and Loop 323 experienced the highest number of accidents overall, as well as the highest single year total (93) which occurred in 2010.

Table V-2: Number of Crashes
at Hotspot Locations - 2010-2012

Location5	Crashes
Broadway / Loop 323	252
Broadway / Fifth Street	234
Loop 323 / Old Bullard	128
Loop 323 / Paluxy	121
Loop 323 / Troup Highway.	119
W Front / Loop 323 S SW	117
Broadway / Shiloh / Rice	107
Loop 323 / Copeland Road	102
Loop 323 / Old Jacksonville	98
Loop 323 / Frankston Highway	51
S Beckham / E Front	49
Loop 323 / W Erwin	45
Beckham / Fifth Street	44
Glenwood / Vine	40
Loop 323 / E Front	38
Broadway / New Grande	36
Broadway / Independence	35

[5] *Total only includes Intersections with the top ten highest number of accidents in each analysis year. If a location was not in the top ten for a given year, accidents at that location were not counted in the total.*

Figure V-6: Number of Crashes at Hotspot Locations - 2010-2012



Crash Reduction Strategies

The following measures and strategies help reduce collisions at intersections and decrease the potential for crashes associated with unsafe travel speeds or driver behavior. Based on the review of the 2010-2012 accident data, these could be considered for implementation in the Tyler Urbanized Area:

- Speed Control
  - Work with local law enforcement to increase and sustain high visibility enforcement of speed-related laws;
  - Provide community training on speed related issues; and
  - Increase public information and education concerning speed-related issues.
- Driver Education and Behavior
  - Implement and evaluate measures to reduce the incidence of distracted driving;
  - Develop and implement public information and education efforts on traffic safety issues and distracted driving; and
  - Work with local law enforcement to improve the recording of distracted driving as a contributing factor on crash reports
- Intersection-related
  - Reduce the number and types of conflict points created by an intersection
  - Eliminate driveways within the functional area of an intersection
  - Limit left-turn movements at intersections
  - Reduce intersection density along roads with high traffic volumes

RECOMMENDATIONS

Congestion and safety are often closely related, as highly congested corridors can significantly increase the potential for crashes, while crashes are often a major source of non-recurring congestion. The following recommendations aim to address both transportation issues:

- Work with state and local transportation partners to identify and monitor the performance of highly congested corridors and bottlenecks within the study area;
- Work with state and local transportation partners and law enforcement to identify the cause of crashes at hotspot locations within the study area;
- Prepare a local congestion mitigation and crash avoidance strategies, and identify and monitor related performance measures;
- Assist transportation partners with the implementation of operational improvements and, if necessary, capital improvements, and monitor effectiveness of implemented strategies and progress made towards locally defined targets.
- Conduct a feasibility study for US 69 (South Broadway Avenue) between SL 323 and Toll 49 to analyze potential congestion improvement plans.
- Conduct a feasibility study for the intersection of FM 2493 (Old Jacksonville Highway) and US 69 (South Broadway Avenue) to analyze potential intersection improvement plans.

VI. PUBLIC TRANSPORTATION

INTRODUCTION

Public transportation is a very important component of the transportation system that increases mobility, expands accessibility, and provides additional transportation choices for many people. To assess the current level of public transportation services and evaluate the need for improvements, the following chapter includes an inventory of the existing transit system and already programmed improvements, as well as a discussion of issues and needs identified through the public participation effort, and recommendations for expanding and improving transit services in the Tyler Urbanized Area.

EXISTING PUBLIC TRANSPORTATION SYSTEM

The Tyler MPO area is currently served by local fixed-route and paratransit service, as well as regional demand-response public transportation service.

Tyler Transit

Transit Management of Tyler, commonly known as Tyler Transit, is the public transit provider which serves the City of Tyler. Tyler Transit began operations in 1993 and offers fixed-route service, as well as a paratransit service, as required by the Americans with Disabilities Act (ADA). Almost 200,000 rides were provided in 2012. (National Transit Database, 2014)

Fixed-Route Service

Fixed-route bus service is provided based on a fixed schedule, along pre-defined routes, stopping to pick up and drop off passenger to bus stops at specific locations. Headway is the average interval of time between vehicles moving in the same direction on the same route. Five fixed bus routes are available within the City of Tyler. The routes are named after colors – red, green, yellow, blue, and purple – and are briefly described below:

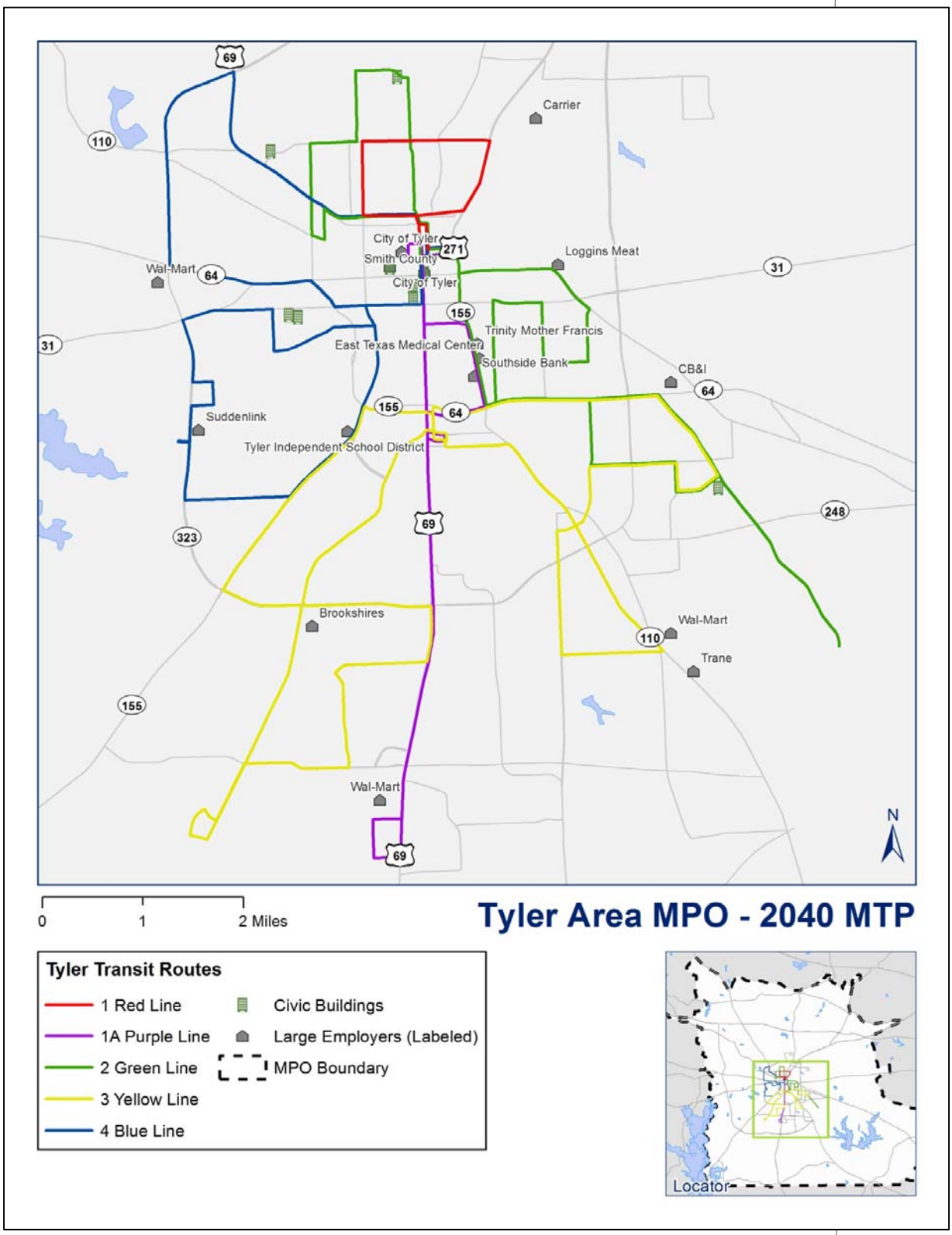
- The Red Line connects downtown with a loop serving neighborhoods along and south of Martin Luther King Jr. Boulevard. The route has an approximate headway of 74 minutes.
- The Green Line serves North and East Tyler and has a 95-minute headway.
- The Yellow Line operates in Southwest and Southeast Tyler, providing access to the University of Texas at Tyler campus. This route also has a 95 minute headway.
- Serving West Tyler, the Blue Line has a headway of 85 minutes.
- The Purple Line runs north-south through the center of Tyler, connecting to commercial areas south of Grande Boulevard. The route has a 74-minute headway.

The routes and associated bus stops, as well as significant activity centers are shown in Figure VI-1. These routes connect users to numerous points of interest including: Downtown Tyler, employers, shopping centers, entertainment and recreation, medical facilities, educational facilities, and community services (City of Tyler, 2014).

The fare to use Tyler Transit for individuals aged 12 and older is $1.00 for each one-way trip. Children under 12, persons with disabilities, senior citizens, and those receiving Medicare pay $0.50 for a one-way fare. 30-day passes and semester passes are also available for purchase. Service is provided weekdays between 6 a.m. and 8:15 p.m. and on Saturdays between 9 a.m. and 6 p.m. There is no Sunday service. Tyler Transit operates fives fixed-route buses. Just over 160,000 fixed-route bus rides were provided in 2012. (Federal Transit Administration, 2012)

As an added benefit to bus riders, Tyler Transit buses are equipped with GPS technology and users can get real time bus information by using the RouteShout smart phone application.

Figure VI-1: Tyler Transit Fixed-Route Bus Network



Source: Tyler Transit, 2014

ADA Paratransit

Tyler Transit also provides paratransit service, comparable to the level of service provided by the fixed-route buses. Paratransit is designed for individuals with disabilities, who are unable to access or use regular fixed-route service. Qualified individuals must live within the Tyler Transit service area and curb-to-curb trips are provided to all origins and destinations within the City of Tyler. The service must be requested at least one day in advance by calling a reservation hotline. Paratransit service operates from 6 a.m. to 8:15 p.m. on weekdays and from 9 a.m. to 6 p.m. on Saturdays. Tyler Transit provides four types of paratransit service:

- Origin-to-destination paratransit service;
- Paratransit feeder service to an accessible fixed route, where such service enables the individual to use the fixed-route bus system for a part of the trip;
- Paratransit feeder service to a neighboring jurisdiction to connect to other transit services, such as the East Texas Council of Governments, which provides public transportation in the area outside of Tyler city limits; and
- Coordinated Paratransit service with a commercial bus line, such as Greyhound.

On average, Tyler Transit paratransit provides about 158 trips per day (Gooch, 2014). Currently, the one-way fare for a paratransit trip is $1.50. Registered users who require a Personal Care Attendant (PCA) may be accompanied by the PCA, who can ride without paying a fare (City of Tyler, 2014).

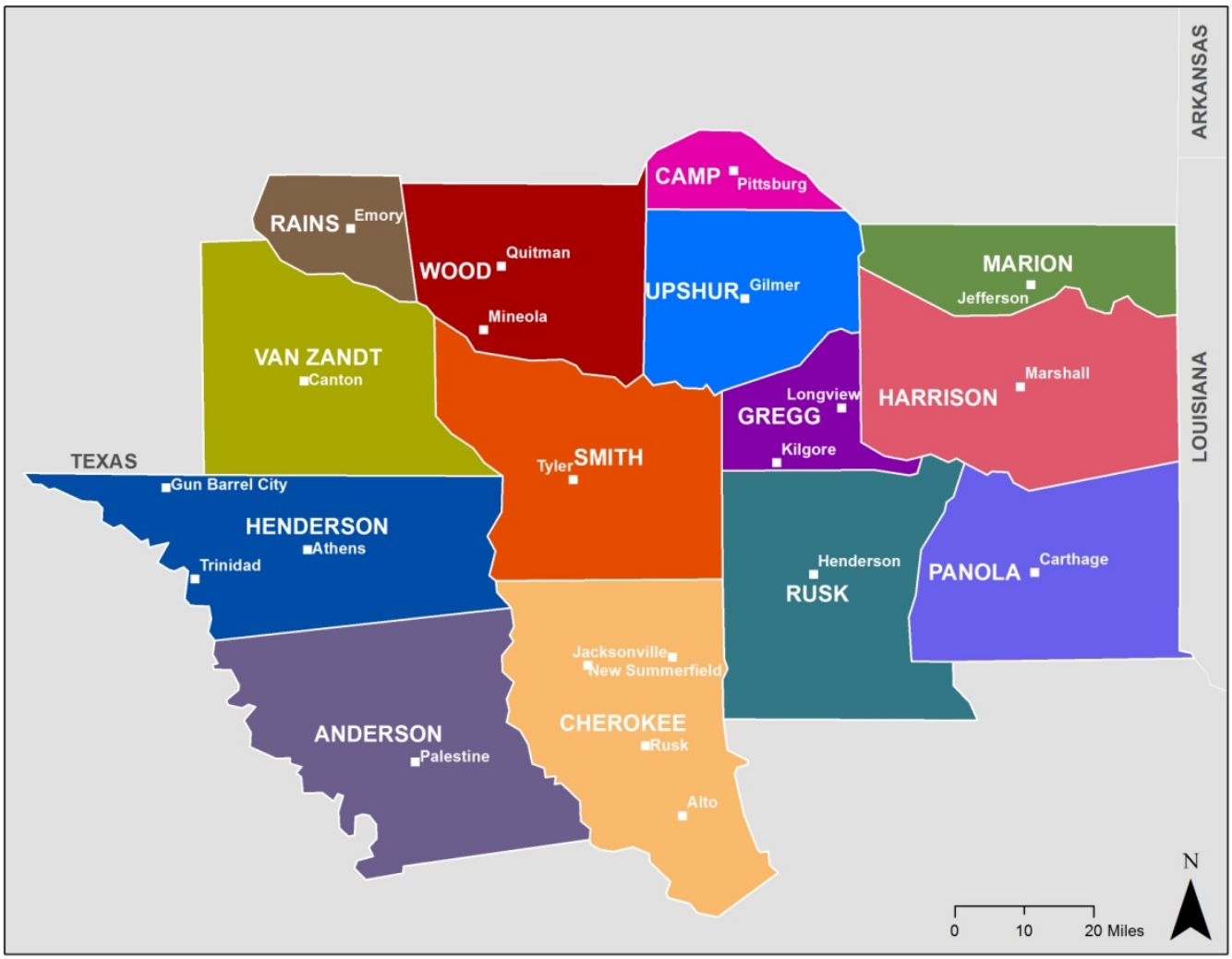
East Texas Council of Governments GoBus

The East Texas Council of Government (ETCOG) is an association of counties, cities, school districts, and special districts within a 14-county region in East Texas, shown below in Figure VI-2. ETCOG operates on a voluntary basis and provides assistance with planning, cooperation, and coordination for local governments in the region.

Among other services, ETCOG provides demand-response rural transportation service throughout the 14 counties under the name of GoBus. GoBus operates within Smith County from 6:30 a.m. to 5:30 p.m. Mondays through Fridays. Service to City of Tyler from areas north of IH 20 is provided on Mondays, Wednesdays, and Fridays, and in areas south of I-20 on Monday through Friday. Service to Lindale from north of IH 20 is available on Tuesdays and Thursdays. GoBus also connects Tyler to neighboring counties and towns, which are listed in Table VI-1. Trips must be scheduled 24 hours in advance.

Effective October 1, 2014, GoBus one-way fares cost $4.00 for travel within one local service area and $8.00 for trips to an adjacent local service area, with a maximum one-way fare of $10.00 and $1.00 for each additional stop (up to two permitted) (ETCOG, 2014). Approximately 500-700 riders are transported per day by GoBus with a fleet of 40 vehicles. (East Texas Council of Governments, 2014)

Figure VI-2: East Texas Council of Governments Region



Data Source: ETCOG

Table VI-1: Counties and Towns Accessible by GoBus

County	Town
Anderson County	Elkhart
	Montalba
	Palestine
Camp County	Leesburg
	Pittsburg
Cherokee County	Jacksonville
	Mt. Selman
	New Summerfield
	Rusk
Gregg County	Kilgore
	Longview

County	Town
Harrison County	Hallsville
	Harleton
	Marshall
Henderson County	Athens
	Brownsboro
	Eustace
	Gun Barrell
	LaRue
	Mabank
	Malakoff
	Murchison
	Seven Points
	Tool
	Trinidad
Marion County	Jefferson
	Smithland
Panola County	Carthage
	De Berry
	Deadwood
Rains County	(By appointment only)
Rusk County	Henderson
	Laneville
	Mt. Enterprise
	New London
Smith County	Arp
	Lindale
	Tyler
Upshur County	Gilmer
	Ore City
	Pritchett
Van Zandt County	Ben Wheeler
	Canton
	Edgewood
	Fruitvale
	Grand Saline
	Van
	Wills Point
Wood County	Mineola
	Quitman
	Winnsboro

Source: ETCOG

Other Transportation Providers

Private transportation providers offer services that supplement the Tyler Transit fixed-route and paratransit services and the ETCOG GoBus service. Within the study area, these private providers include Greyhound Lines, Inc. and NDMJ, Ltd.

Greyhound Lines, Inc.

Greyhound Lines, Inc. provides regional bus service to the Tyler area through its bus station in downtown Tyler. Greyhound provides a direct connection to Dallas, Texas with stops in Terrell, Texas and Mesquite, Texas; and a direct connection to Shreveport, Louisiana with stops in Kilgore, Texas, Longview, Texas, and Marshall, Texas. Users can get to various other regional destinations (Houston or Texarkana, for example) through transfer(s).

NDMJ, Ltd.

NDMJ, Ltd. provides multiple transportation services including traditional taxi services and MediCabs, and shuttle services to area hospitals, secondary education institutions and special events.

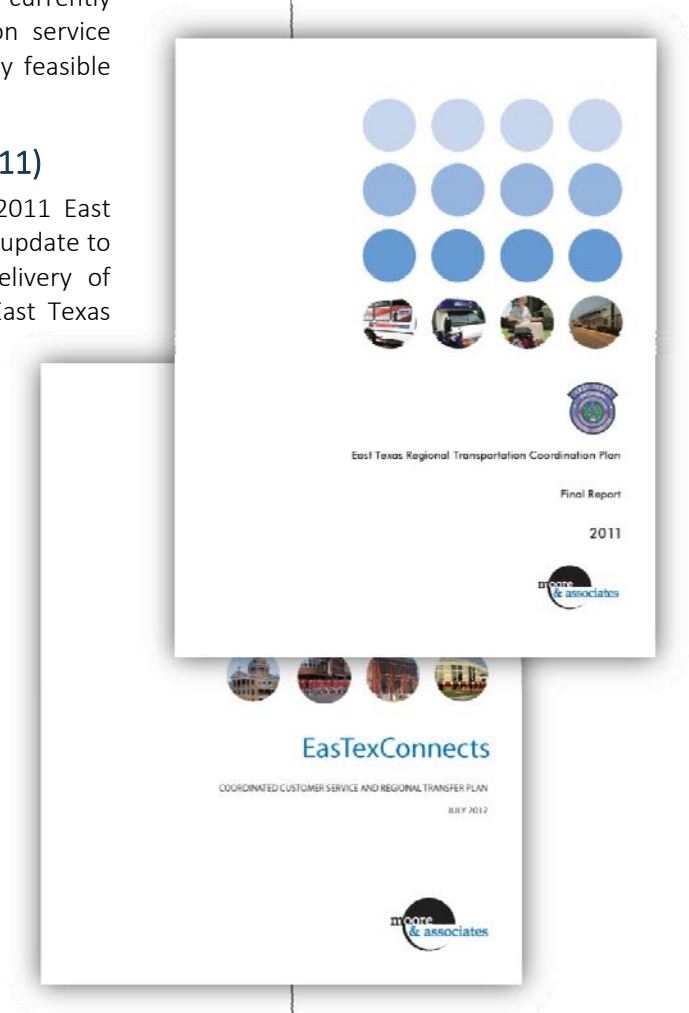
PLANS AND STUDIES

Tyler Transit Strategic Plan

An update of the Strategic Plan for the Tyler Transit System is currently underway. The study's goal is to update the public transportation service improvements and expansion plan, ensuring that remains financially feasible and sustainable through a five-year operating horizon.

East Texas Regional Transportation Coordination Plan (2011)

In coordination with its member entities, ETCOG completed the 2011 East Texas Regional Transportation Coordination Plan, which serves as an update to the 2006 plan. The plan aims to improve the efficiency and delivery of transportation by coordinating programs and services within the East Texas region. Developed with a significant public involvement effort, the plan outlines the analysis of existing transportation services within the region, including an inventory of mobility options, mobility needs and gaps, and presents a marketing plan, coordination strategies, and an implementation plan. (East Texas Council of Governments, 2011)



EasTexConnects Coordinated Customer Service and Regional Transfer Plan (2012)

ETCOG's EasTexConnects Coordinated Customer Service and Regional Transfer Plan offers recommendations for coordinated regional fixed-route and paratransit services to improve service, redirect coverage, and increase fare recovery for individual agencies. Recommendations include: utilizing formal transfer points, developing a transfer fare and policy for transferring between services, standardized fares for local and regional services, and implementing a regional ADA certification process and ADA database, among others. The plan proposes a formal transfer location at the Tyler Greyhound station; it is designated as a Tier 1 transfer location, which should be considered the highest priority

for funding, because is serves multiple public transportation services (East Texas Council of Governments, 2012).

PROGRAMMED IMPROVEMENTS

At the time of this report, Tyler Transit had no specific route expansions programmed. Instead, the transit agency, over time, plans to add additional routes to match the expected growth of the City. Additionally, the agency has expressed interest in applying for Federal Transit Administration (FTA) Section 5304 planning funds by 2016, in order to undertake an in-depth study of the transit routes.

Currently programmed public transportation expenditures relate to ADA compliance, bus maintenance, transit planning, security, operations, and bus purchases.

ISSUES AND FUTURE NEEDS

After implementing recommendations from a 2011 route study, Tyler Transit experienced a 30 percent loss in ridership. High route headways also pose a challenge for retaining current and attracting new public transit users. Less than 14 percent of the MPO area is currently served by Tyler Transit fixed-route bus service. Additionally, stakeholders have identified specific areas within the City of Tyler that are currently not accessible by transit; these areas include parts of northern Tyler and select industrial areas. Stakeholders also expressed a general desire for expanded public transportation, as well as offered specific suggestions for shuttle services, shorter routes, and bus stops along particular corridors (e.g. Old Bullard Road).

Additional concerns involve the unmet mobility needs of elderly and disabled patrons. Stakeholders identified an increasing gap between the needs of these populations and available transportation services. Future improvements are needed to close this gap. Congestion is also an issue for the public transit system, because buses do not operate in dedicated bus lanes. Tyler transit staff identified highly congested locations that are particularly challenging: 323 and Broadway Avenue, Troup Highway and Loop 323, and 5th Street and Troup Highway.


U.S. Department of Transportation
Federal Transit Administration

MAP-21

FACT SHEET:
STATE OF GOOD REPAIR GRANTS
SECTION 5337

Tyler Transit has received “state of good repair” and used the funding for fare boxes. The agency continues to struggle with high maintenance costs associated with the medium-duty buses Tyler Transit operates, but overall, the agency has achieved a substantial decrease in mechanical system failures since 2009.

Tyler Transit conducts regular safety and security training for bus operators. As a result, during fiscal years 2012 and 2013, no safety incidents occurred. Tyler Transit also has an emergency response plan. However, in the future, this plan may need to be improved to address more complex safety and security issues.

The agency will monitor any major changes within the urbanized area; at this time, growth is oriented toward the south. Tyler Transit has already requested bus turn-outs in those high-growth areas. Transit service to developments near Toll 49 will be considered as need arises.

RECOMMENDATIONS

In order to expand and improve the transit system, the following recommendations have been developed based on identified issues and needs. They are presented in no particular order:

- As planned, it is recommended that Tyler Transit pursues grant funding for a route study in the near future. This may provide strategies for the agency to improve routes, headways, and overall performance of the transit system.
- Tyler Transit, the MPO, and local entities should coordinate closely ahead of major commercial or residential developments to plan for potential transit routes, stops, and passenger amenities as an integral part of the transportation network.
- Public and private transportation providers should consider enhanced coordination and collaboration efforts to increase levels of service and expand coverage areas.

Furthermore, several regional short-, mid-, and long-term strategies should be considered, as recommended in ETCOG's Regional Transportation Coordination Plan. These strategies are presented in Table VI-2.

Table VI-2: Regional Coordination Strategies

Implementation Timeline	Strategies
Short-Term Strategies	Increase public transportation education and promotion of services
	Interconnectivity Day
	One-stop regional transportation call center
	Campaign stressing time/monetary value of riding transit
	Seek funding to extend transportation network service hours
	Expand agency participation
	Regional Transportation Marketing Plan
Mid-Term Strategies	Adhere to needs of growing senior population
	Transit-friendly amenities
	Ensure multiple transportation providers serve transfer points and key activity centers
	Online regional transit trip planner
	Regional vehicle maintenance
	Volunteer driver program
	Shared-use vehicles
Long-Term Strategies	Administer a regional vanpool program
	Consolidation of scheduling service into one system
	Collaborate future public transit planning with multi-modal efforts

Source: ETCOG (East Texas Council of Governments, 2011)

IX. SAFETY AND SECURITY

INTRODUCTION

Moving Ahead for Progress in the 21st Century (MAP-21) continues the requirement that the transportation planning process address the eight planning factors, which include 1) increasing the *safety* of the transportation system for motorized and non-motorized users, and 2) increasing the *security* of the transportation system for motorized and non-motorized users. The previous surface transportation bill - the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), designated safety and security as two separate factors, with safety defined as "freedom from unintentional harm," and security defined as "freedom from intentional harm." Strategies to address safety and security will at times differ significantly from one another and require coordination between different agencies. However, many of the efforts will also overlap, and many of the same agencies will be involved in planning for both the safety and security of the transportation system and its users in the Tyler Area. Therefore, it is important that the 2040 Metropolitan Transportation Plan considers safety and security both simultaneously and individually.

The Tyler Area MPO is responsible for addressing safety and security through the programming of transportation improvements. The MPO's role in the implementation of safety and security measures may be more limited, but as the regional transportation planning entity, the MPO plays a key role in coordinating between various federal, state, regional, and local agencies, as well as public transportation providers, all of which have a stake in the implementation of safety and security measures in the Tyler Area. By integrating the safety and security goals and objectives of various agencies in the region into the transportation planning process, the MPO ensures that its plans and studies are consistent with and help support safety and security planning in the region. The following chapter discusses the various agencies involved in safety and security planning in the Tyler Area, and summarizes state, regional, and local programs currently in place.

SAFETY

Safety, defined as "freedom from unintentional harm," typically refers to traffic crashes, transit accidents, and other unintentional events resulting in fatalities, injuries, or loss of property. Safety is also one of the seven National Goals established under MAP-21, as part of the overall approach to comprehensively manage the performance of the transportation system. The Safety Goal is to achieve a significant reduction in fatalities and serious injuries on all public roadways. The U.S. Department of Transportation (USDOT) published a related Notice of Proposed Rulemaking (NPRM) in March 2014,[1] which proposed that safety targets and progress towards their achievement be measured as 5-year rolling averages for fatalities and serious injuries, as well as their respective rates for every 100 million vehicle miles traveled (VMT).

Safety planning, reducing the number of crashes, and decreasing the number of associated fatalities and serious injuries, involves several different projects and programs, which focus

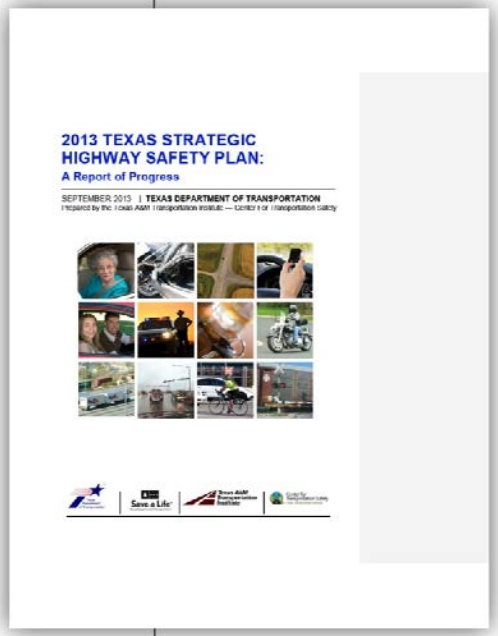
[1] *USDOT anticipates an effective data of the safety performance measures approximately in Spring 2015.*

on improving the operational efficiency of the transportation network as well as influencing driver behavior. While the Texas Department of Transportation (TxDOT) and the Tyler Area MPO play the lead roles in transportation safety planning, it is important to include several non-traditional stakeholders in the transportation safety planning process:

- State agencies responsible for safety data collection and management – Texas Department of Public Safety (DPS) and TxDOT;
- Regional and local transportation agencies;
- First responders, including fire and rescue and emergency medical;
- State and local law enforcement;
- Transit agencies;
- Motor vehicle departments;
- Federal agencies; and
- The highway safety community (i.e. Governors' Highway Safety Representatives, AAA, etc.).

Review of Agencies and Programs

Strategic Highway Safety Plan



Initially mandated under SAFETEA-LU, federal regulations under MAP-21 continue to require that TxDOT develop a Strategic Highway Safety Plan (SHSP) that:

- Includes consultation from a variety of stakeholders;
- Considers the safety needs of all public roads;
- Analyzes and makes effective use of crash data;
- Addresses the 4E's of transportation safety: engineering, enforcement, emergency services, and education;
- Is updated no later than five years from the previously approved SHSP and is consistent with the Statewide Transportation Improvement Program;
- Describes a program of projects or strategies to reduce or eliminate safety hazards; and
- Is implemented and evaluated. (Federal Highway Administration)

TxDOT adopted its first Strategic Highway Safety Plan in 2006. In September 2013, TxDOT published the 2013 Texas Strategic Highway Safety Plan: A Report of Progress.

The mission of the Texas SHSP is to "reduce the human and societal costs of motor vehicle traffic crashes, deaths, and injuries by implementing effective highway safety countermeasures; and be changing the current driving culture in Texas to a Traffic Safety Culture, that emphasizes safety, economy, and civility." (Texas Department of Transportation, 2013)

The plan identifies safety issues, objectives, progress to-date, and countermeasures for specific crash types and locations (i.e. head on collisions, intersections, work zones, railroad grade crossings, etc.), users (i.e. older drivers, teen drivers, motorcyclists, etc.), and driving behaviors (i.e. driving under the influence, speeding, lack of restraint, etc.).

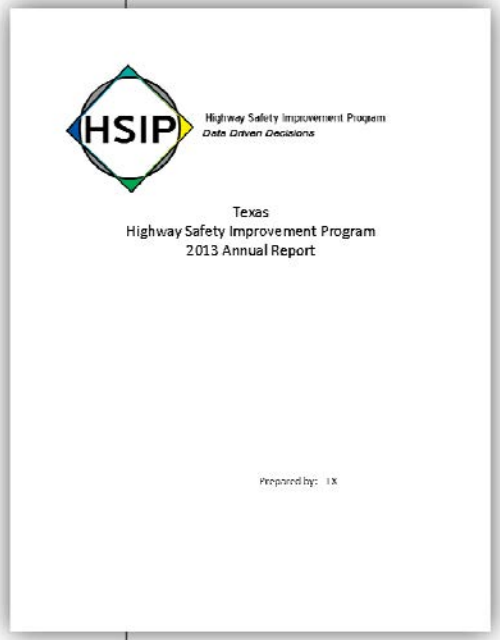
The MPO is encouraged to review the countermeasures in the SHSP for consideration in addressing the crash types and locations, as well as driving behaviors, that are responsible for the greatest number of crashes, particularly fatal and serious injury crashes, in the Tyler

Urbanized Area. A discussion of prevalent crash types, contributing factors, and hotspot locations is contained in the *Streets and Highways - Chapter V*.

Highway Safety Improvement Program

MAP-21 also continues the Highway Safety Improvement Program (HSIP) as a core Federal-aid program.[2] The goal of the program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The program must be consistent with the Texas SHSP, and report annually on the following items:

- HSIP program structure;
- Progress towards implementing HSIP projects;
- Progress made in achieving safety performance targets; and
- Assessment of the effectiveness of implemented improvements.



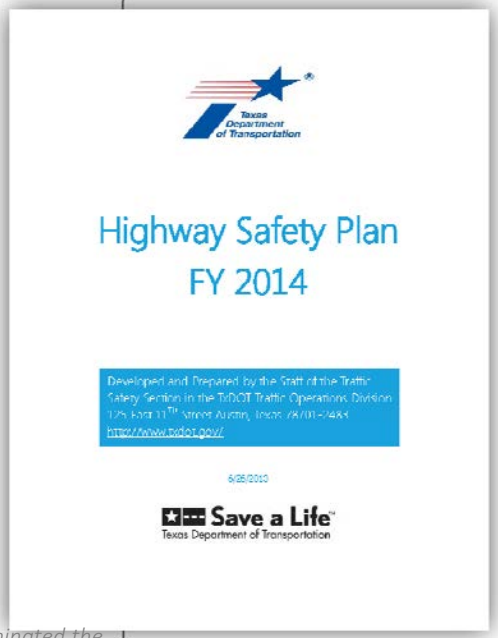
In Texas, HSIP projects are advanced for implementation through a competitive application process that ranks projects based on a benefit-to-cost analysis and available funding. TxDOT currently evaluates the effectiveness of the improvements based on the percent decrease in the number of fatal and serious injury crashes, and injuries in the emphasis areas identified in the SHSP.

Congestion mitigation related safety improvements in the Tyler Area include the following:

- TxDOT has a permanent dynamic message sign (DMS) as well as several portable DMSs that are utilized primarily for displaying travel delay information;
- TxDOT has installed closed-circuit television cameras at an interchange to monitor delay;
- TxDOT is using video detection at several intersections in the region; and
- TxDOT provides highway advisory radio along IH 20, which offers motorists information on construction, lane closures, possible alternate routes and traffic conditions.

Texas Highway Safety Plan

The Texas Highway Safety Plan (HSP) documents the State's high priority transportation safety issues and associated strategies to address them. Produced by the Highway Safety Office (HSO), which is managed by the Traffic Safety Section in the Traffic Operations Division of TxDOT, the Texas HSP is submitted to the National Highway Traffic Safety Administration and the Federal Highway Administration and, upon approval, establishes eligibility to receive funding under the federal Section 402 program. The HSP must be coordinated with the State's SHSP and the HSIP, thereby promoting a unified approach to highway safety.



In the Fiscal Year 2014 HSP, impaired driving, safety belt usage, speeding, and crashes involving motorcycles are identified as particular areas of emphasis. Distracted driving is mentioned as an emerging issue, as crashes caused by distracted driving rose by 9% between 2011 and 2012. The 2014 Texas HSP also includes:

[2] *In comparison to SAFETEA-LU, MAP-21 no longer requires the Transparency Reports and has eliminated the High Risk Rural Roads (HRRR) set-aside, but implemented special performance rules for both high risk rural road safety and older drivers.*

- Current year performance targets;
- Previous year performance outcomes; and
- Detailed list of proposed projects by category.

Projects included in the HSP aim to address the following concerns:[3]

- Improving HSP program planning and administration;
- Reducing the number of 'driving under the influence' (DUI) crashes;
- Improving emergency medical service responses;
- Preventing or minimizing the impact of crashes involving motor vehicles and motorcycles;
- Encouraging the proper use of safety belts;
- Enhancing pedestrian and bicycle safety;
- Improving law enforcement services in crash prevention, traffic supervision, and post-accident procedures;
- Reducing crashes, injuries, and facilities resulting from excessive speeds;
- Improving traffic records, accident investigations, vehicle registration, operation, and inspection, and emergency services;
- Reducing injuries and deaths from school bus accidents;
- Reducing crashes associated with unsafe driving behavior;
- Improving driver performance; and
- Providing school bus safety and traffic control training.

State and local government agencies, educational institution, and non-profit organization are eligible to make a grant application to have their projects included in the HSP.

The Tyler Area MPO can encourage member entities' law enforcement, other emergency response providers, as well area schools to apply for the available Section 402 funding.

Smith County Road and Bridge

The Smith County Road and Bridge Department is responsible for making safety improvements to non-State owned roads and bridges outside the City of Tyler. The primary mission of the County department is "the care and maintenance of the public right of ways allotted under our system of law." (Smith County) This includes, but is not limited to the responsible use, care, and maintenance of County equipment, supplies, and facilities, including roadways, bridges, drainage structures, signs, and traffic control devices.

City of Tyler Traffic Engineering Department

The mission statement of the City of Tyler Traffic Engineering Department is to "provide the safe and efficient movement of people and goods, [and] improve the quality of life for people that travel within the City of Tyler by operating and maintaining existing control devices to the highest standard with available resources." (City of Tyler) The traffic staff is responsible for roadway safety on all municipal streets, which is carried out through the following activities:

- Manufacturing and maintaining City street signs;

[3] *In addition, 402 funds may be spent on teen driver programs, if peer-to-peer education and prevention strategies in schools and communities is also included. Section 402 funds may not be spent on automated traffic enforcement systems. (FHWA, 2014)*

- Installing and maintaining pavement markings on City streets;
- Maintaining traffic signals within the City limits;
- Analyzing and implementing traffic signal timing;
- Planning for current and future traffic control needs;
- Mitigating traffic congestion within the City limits;
- Conducting traffic safety studies;
- Ensuring street lights are installed and maintained;
- Providing oversight of the public school crossing guard program; and
- Maintaining and policing parking meters.

Since 2009, the City of Tyler has completed the following safety related projects:

- Implementation of flashing yellow arrows on traffic signals for left turns which, according to a preliminary study, has reduced the number of crashes at the improved intersections by 8%;
- Installation of adaptive traffic control systems at several intersections on Loop 323;
- Completion of traffic signal installation and control system upgrades at key locations;
- Completion of the downtown signal upgrade project;
- Upgrade of school flasher timing systems; and
- Multiple sidewalk and pedestrian safety improvements.

Tyler Transit

MAP-21 requires, among other things, that the USDOT issue a National Public Transportation Safety Plan, establish safety performance criteria for all modes of public transportation, define a "state of good repair," establish minimum safety performance standards for public transportation vehicles, and establish a safety certification training program.[4] In addition, public transportation agencies are required to establish comprehensive agency safety plans for their rail and bus operations.

As required by the Federal Transit Administration (FTA), Tyler Transit currently has a plan in place that addresses both transit safety and security, and has had no safety incidents in several years. While awaiting the final safety performance criteria and the definition of "state of good repair" from FTA, the transit agency has also undertaken the following:

- Provision of regular safety and security training for its bus operators;
- Reduction of the number of mechanical failures;
- Utilization of "State of Good Repair" grant funding to refurbish transit fare boxes;
- Installation of DriveCam software, encouraging safer driving habits; and
- Communication with emergency response agencies, such as the City's fire department.

Recommendations

Under MAP-21, state and metropolitan planning organizations are required to adopt a performance- and outcome-based approach to transportation planning that relies heavily on existing and projected data to evaluate the effectiveness of strategies in addressing goals and objectives, including those related to safety.

[4] *An Advanced Notice of Public Rule Making (ANPRM) to accomplish the MAP-21 requirements was issued in October 2013.*

The following recommendations, shown in no particular order, are designed to prepare the Tyler Urbanized Area for the final rulemaking in regard to safety performance management:

- Identify measurable safety goals and objectives;
- Transition to a more data-driven, strategic approach to safety planning;
- Collaborate with key safety stakeholders;
- Coordinate closely with the State in the development, evaluation, and reporting of performance targets that support the statewide safety goals and objectives, as well as regional and local safety goals; and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation safety planning.

SECURITY

Security planning, defined as "freedom from intentional harm," typically refers to harm inflicted by people, such as terrorist acts and other criminal activities, as well as harm stemming from natural disasters, such as hurricanes, earthquakes, and other weather events. Security planning is carried out by various agencies at multiple levels of government and involves all four phases of emergency management:

- Preparedness;
- Response;
- Recovery; and
- Mitigation.

As a standardized framework for facilitating operations during emergencies, the state, county and local jurisdictions employ the six components of the National Incident Management System (NIMS), which include:

- Command and management;
- Preparedness;
- Resource management;
- Communications and information management;
- Supporting technologies; and
- Ongoing management and maintenance.

In support of State, regional, and local security goals and objectives, the primary role of the Tyler Area MPO is to facilitate coordination between agencies, including, but not limited to:

- U.S. and State Departments of Homeland Security (DHS);
- Federal, State, and local law enforcement;
- State and local emergency management agencies;
- Regional and local emergency response agencies;
- Regional and local transportation agencies; and
- Transit agencies.

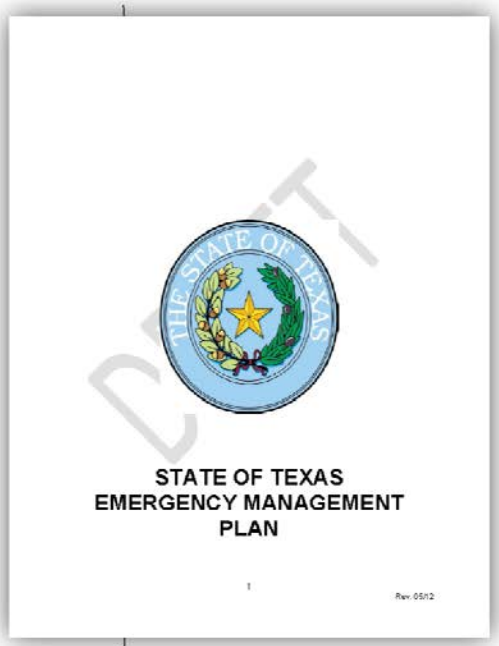
Review of Agencies and Programs

Governor's Division on Emergency Management

The Governor's Division on Emergency Management (GDEM) develops and maintains state-level emergency plans, distributes state standards for local emergency management plans, assists local jurisdictions in developing emergency management plans, and also reviews those plans for conformance with State planning standards.

Last updated in 2012, the State's Emergency Management Plan describes how the State will mitigate against, prepare for, respond to, and recover from the impact of hazards to public health and safety, including natural disasters, technological accidents, homeland security threats, and other emergency situations. (TxDPS, 2012) The plan's transportation related security concerns are primarily focused on:

- Evacuation routes;
- Mode of transportation; and
- Evacuation destinations.

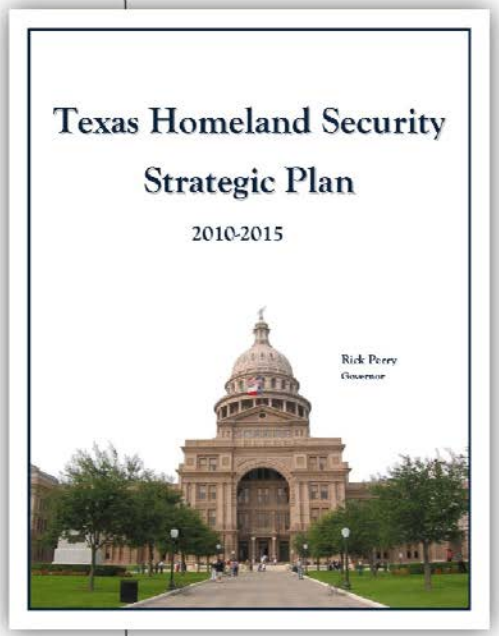


Texas Homeland Security Office

The Texas Homeland Security office was established in 2003 by the governor in order to coordinate the resources and responses necessary to prevent, protect from, prepare for, and respond to all threats of terrorism and disaster. (Texas Homeland Security office)

The purpose of the Texas Homeland Security Strategic Plan - 2010-2015 is to serve as a high-level road map for the state's homeland security efforts for the next five years. The plan builds on previous strategic plans, reflects lessons learned, and is intended to orient state homeland security efforts, and inform regional and local governments as they work to do the same. Three goals are the foundation of the strategic plan:

- Prevent terrorist attacks in Texas and prevent criminal enterprises from operating successfully in Texas;
- Reduce vulnerability to natural disasters, criminal and terrorist attacks and catastrophic events; and
- Prepare to minimize damage through rapid, decisive response, and quickly recover from terrorist attacks and other disasters.



The transportation system is one of the 18 Critical Infrastructure/Key Resource (CI/KR) sectors, as defined by DHS. Most transportation infrastructure elements are soft targets, categorized as having limited or no security measures in place, and are also vulnerable to cyber attacks, which could affect electronic components, such as traffic control systems.

Texas Department of Transportation

The Texas Department of Transportation is a participant on the State Emergency Management Council, the Drought Preparedness Council, and the Homeland Security Council, and is identified as a support agency with several responsibilities which, among others, include evacuation and transportation coordination, in support of the State's Emergency Management Plan.

Additionally, TxDOT maintains designated hazardous materials routes and works with the Texas Department of Public Safety to develop contra-flow plans for major hurricane

evacuation routes. Specifically within the study area, U.S. Highways 69 and 271, IH 20, and Loop 323 are designated as evacuation routes for coastal communities such as Brownsville and Corpus Christi.

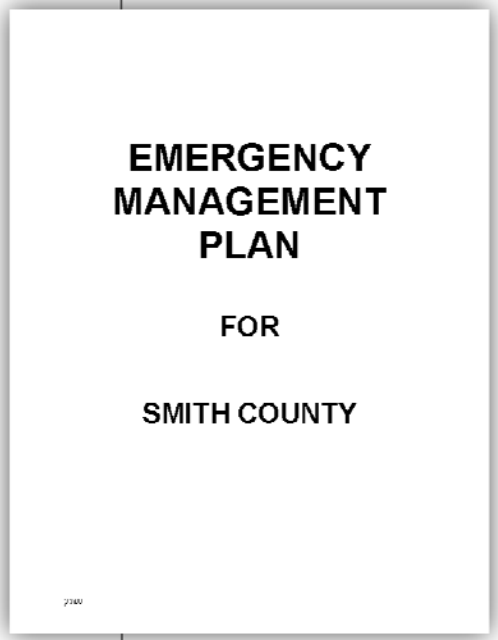
East Texas Council of Governments

The East Texas Council of Governments (ETCOG) is the primary regional agency responsible for security planning in the Tyler Area. ETCOG is responsible for administering the Homeland Security Program for the 14-county region that includes Anderson, Camp, Cherokee, Gregg, Harrison, Henderson, Marion, Panola, Rains, Rusk, Upshur, and Van Zandt counties, as well as Smith County.

ETCOG provides staff support to the Homeland Security Advisory Committee (HSAC), which is comprised of local emergency management professionals and first responders from across the 14-county ETCOG region. HSAC gives guidance to ETCOG staff regarding projects related to homeland security, implements and develops regional strategies, updates the Regional Interoperability Communications Plan (RICP), and makes recommendations as to how the region's annual allocations of homeland security grant funding should be used.

In the event of an incident requiring major emergency response, ETCOG would also facilitate the set up of the East Texas Multi-Agency Coordination Group (MAC-G), whose primary functions are to support incident management policies and priorities, facilitate logistics support and resource tracking, inform resource allocation decisions using incident management priorities, coordinate incident management related information, and coordinate interagency and intergovernmental issues regarding incident management policies, priorities, and strategies, particularly when several emergency operations centers are involved in the emergency response.

Smith County Emergency Management Plan



The Smith County Emergency Management Plan outlines the county's approach to emergency operations, and is applicable to Smith County and the cities under Joint Resolutions. The plan describes the organization of emergency response and assigns responsibilities for various emergency management tasks. The plan evaluates the likelihood of natural, technological, and security hazards and their estimated impact on public health, safety, and property. It outlines a framework for facilitating operations in all four phases of emergency management.

The Smith County Emergency Management Plan applies to all local officials, departments, and agencies, and is intended primarily for the region's elected officials, emergency management staff, department and agency heads and their senior staff members, leaders of local volunteer organizations that support emergency operations, and others who may participate in mitigation, preparedness, response, and recovery efforts. The plan's primary transportation concerns are as follows:

- Identification of local public and private transportation resources and coordination of their use in emergencies;
- Coordinated deployment of transportation equipment to support emergency operations;
- Establishing and maintaining a reserve pool of drivers, maintenance personnel, parts, and tools; and
- Maintenance of records on use of transportation equipment and personnel for the purpose of possible reimbursement.

Smith County Hazard Mitigation Plan

Hazard mitigation represents only one phase of emergency management. Unlike immediate emergency response and recovery activities, hazard mitigation provides sustained action to reduce or eliminate long-term risks to people, property, and infrastructure from natural hazards and their effects, before an emergency arises.

ETCOG's Public Safety Department assists each county in developing a FEMA-approved Hazard Mitigation Plan. Smith County's Hazard Mitigation Action Plan was adopted in July 2006 and incorporated into their Emergency Management Plan. The County is currently working on an update of the Hazard Mitigation Action Plan.

City of Tyler Emergency Management Division

The City of Tyler Emergency Management Division is managed by the City's Fire Department Chief, acting as the Emergency Management Coordinator, and aided by the Emergency Management Coordinator Assistant. The City of Tyler has its own Emergency Management Plan (EMP) which builds upon the Smith County EMP by assigning responsibilities for various emergency tasks to members of the City staff. The EMP comprises a Basic Plan and 22 functional Annexes. The Basic Plan outlines the general approach to emergency operations, while each Annex identifies specific activities and actions taken before, during, and after emergencies. Additionally, the City of Tyler has an Emergency Operations Center (EOC) that acts as a gathering point for city officials and other decision makers in the case of an emergency. From the EOC, City officials are able to monitor local and national TV stations, local and national weather stations, and provide ongoing press releases.

The Emergency Management Division regularly conducts joint, multi-agency training exercises with local emergency response partners and resource agencies.

Tyler Transit

As required by the Federal Transit Administration, Tyler Transit currently has a plan in place that addresses both transit safety and security, and has also completed the following activities:

- Provision of regular safety and security training for its bus operators; and
- Successful completion of joint security response training exercise with the City of Tyler Emergency Management Division.

Recommendations

The following recommendations, shown in no particular order, are designed to strengthen transportation security planning in the Tyler Urbanized Area:

- Create a local definition of security;
- Continue to assess the most significant threats, high-potential targets, and least hardened infrastructure elements within the Tyler Urbanized Area;
- Work with federal, state, regional, and local jurisdictions and transportation providers to develop evacuation plans for the "transportation disadvantaged;"
- Collaborate with security and emergency response professionals and organizations on an ongoing basis;
- Adopt a Continuity of Operations Plan (COOP); and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation security planning.

X. MODELING AND ROADWAY DEFICIENCY ANALYSIS

The metropolitan transportation planning process requires the determination of the community's transportation needs anticipated over the next 25 years. This process does not focus on identifying deficiencies on a street by street basis, but rather tries to identify the difference between the transportation network's designed capacity, current operations, and anticipated future needs.

A travel demand model is an important planning tool, which assists in the assessment of transportation network performance, helps pinpoint system deficiencies, and quantifies the mobility benefits of proposed transportation improvements. While the model provides this valuable information, it is not sensitive to all aspects of the metropolitan transportation planning. When assessing the overall merit of proposed transportation improvements, additional consideration should therefore be given to other criteria, such as public vision and acceptance, environmental impacts, as well as technical and fiscal feasibility.

The regional travel demand model encompassing the Tyler Urbanized Area and Smith County was developed by the Traffic Analysis Section within the Transportation Planning and Programming (TPP) Division of the Texas Department of Transportation (TxDOT). TPP is responsible for the development and calibration of regional travel demand models for all Metropolitan Planning Organizations (MPO) within Texas, with the exception of the North Central Texas Council of Governments and the Houston-Galveston Area Council, both of who develop and maintain their respective travel demand models.

The following sections describe model structure and components, the travel demand modeling process, detail model inputs, describe the various model networks, and provide an overview of the deficiency analyses.

TRAVEL DEMAND MODEL STRUCTURE

The travel demand model forecasts traffic volumes based on the relationship between socioeconomic characteristics, such as population, households, and employment, which represent the demand side of modeling, and the transportation system, which represents the supply. The two basic building blocks of any travel demand model are therefore the transportation system networks and the socioeconomic data by Traffic Analysis Zone (TAZ).

- The networks represent the street and highway system, and accounts for different categories of roads (such as freeways, arterials, collectors, ramps, etc.), along with their information on facility speed and capacity.
- The TAZs are the geographical areas that link socioeconomic data and land uses with the transportation system. The demographic characteristics of the TAZs are tied to the transportation system using zonal centroids and associated centroid connectors.

The network and zonal densities should be consistent in order to produce realistic loading of traffic onto the model network.

Networks

More than 717 miles of functionally classified roadways, located within the Tyler Area MPO boundary, are captured in the travel demand model used for the 2040 Metropolitan Transportation Plan. In order to analyze deficiencies and anticipated future travel needs, the model uses distinct model networks for the following transportation scenarios.

- The 2012 base year network was provided by TPP. The lane configuration was reviewed to ensure an accurate representation of base year conditions.

- An Existing-plus-Committed (E+C) network was coded to allow for the consideration of projects recently completed, currently under construction, about to begin construction, or financially committed to be built. The E+C network was developed to provide a benchmark for comparison with the proposed improvements.
- The Build Scenario network was coded based on the proposed projects to allow them to be tested as to their capacity to respond to network deficiencies and transportation needs within the region.

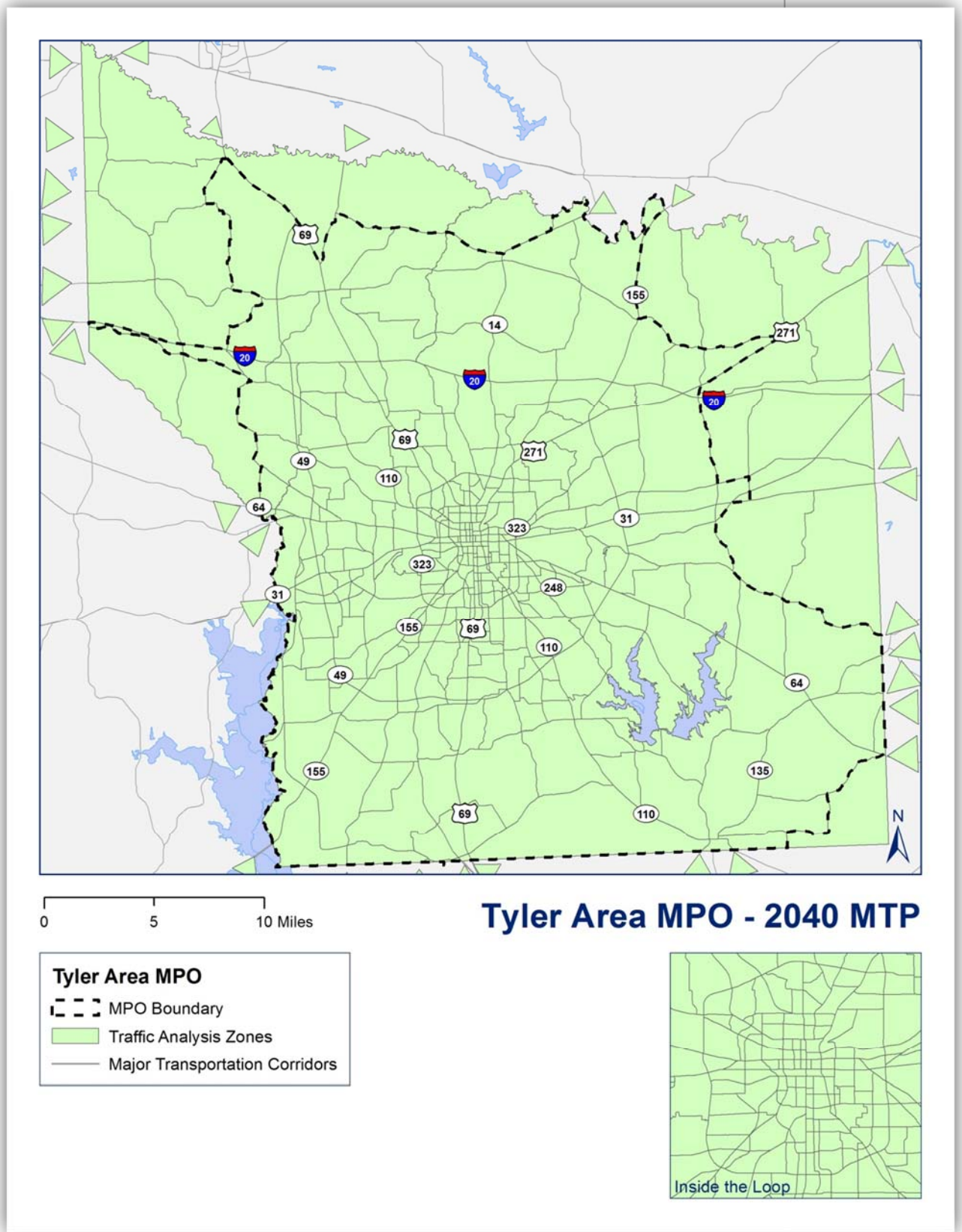
Socioeconomic Data

Apart from the roadway network included in the regional model, another key input to the travel demand modeling process was the socioeconomic data, which for the study area included 2012 base year estimates and 2040 horizon year projections for population, households, and employment data. Employment estimates and projections were further divided into basic, retail, and service categories to better capture trip patterns associated with different employment sites. This socioeconomic information was provided by TAZ, which serves as the primary geographic layer. The Tyler Area MPO model works with a total of 452 TAZs, of which 32 represent external stations, connecting the transportation network in Smith County with neighboring areas. An overview of the Traffic Analysis Zones is provided in Figure X-1. The following table details the base and horizon year socioeconomic data used in the model. For additional information on how the estimates and projections were developed, please refer to the *Base and Horizon Year Demographics and Employment Data - Chapter IV*.

Table X-1: Overview of Socioeconomic Data Inputs

	Year	Tyler Area MPO	Smith County
Population	2012 Estimate	200,511	211,049
	2040 Projection	262,746	280,634
	Annual Growth Rate	1.1%	1.2%
Households	2012 Estimate	78,635	82,229
	2040 Projection	105,914	112,758
	Annual Growth Rate	1.2%	1.3%
Basic Employment	2012 Estimate	25,331	25,798
	2040 Projection	30,002	31,791
	Annual Growth Rate	0.7%	0.8%
Retail Employment	2012 Estimate	21,887	22,160
	2040 Projection	27,142	27,923
	Annual Growth Rate	0.9%	0.9%
Service Employment	2012 Estimate	50,558	51,318
	2040 Projection	61,706	63,956
	Annual Growth Rate	0.8%	0.9%
Total Employment	2012 Estimate	97,776	99,276
	2040 Projection	118,850	123,670
	Annual Growth Rate	0.8%	0.9%

Figure X-1: Regional Traffic Analysis Zones



Special Generators

Special generators are major employers, institutions, or facilities that generate large traffic volumes. Table X-2 presents a list of special generators in the study area, including high schools, higher education facilities, medical facilities, shopping centers, and the Downtown area. Knowledge of these special traffic generators in the study area and how they influence traffic flow and traffic volumes provides a better understanding of associated travel patterns.

Table X-2: Special Generators

Major Employers	Shopping Centers
Carrier Air Conditioning LaGloria Oil and Gas Flowers Baking Co. Kelly Springfield Tire Brookshire Grocery Celebrity Time Square Plaza Trane Air Conditioning Target Distribution Center Tyler Pipe	French Quarter Shopping Center Broadway Square Mall Foley's Plaza Sam's Wholesale Club Old English Village Walmart/Super 1 Foods (multiple locations) Broadway Crossing Center Off Broadway Shopping Center Green Acres Shopping Center Wal-Mart Super Center/Target Store
High Schools and Colleges	**Civic/Governmental**
John Tyler High School Robert E. Lee High School T.K. Gorman Schools Texas College University of Texas at Tyler Tyler Junior College	Tyler Rose Garden and Harvey Hall City Hall Complex Rose Stadium/Mike Carter Field Tyler Public Library Smith County Courthouse TxDOT District Offices I.S.D Administration Building
Training Centers/Medical Facilities	**Recreation**
Regional Training Development Center Trinity-Mother Frances Hospital East Texas Medical Center UT Health Center Health South Rehabilitation Center	Bergfeld Park Willowbrook Country Club Lindsey Park Fun Forest Park Holleytree Country Club Tyler Rose Rudman Park Southside Park Faulkner Park

REGIONAL TRAVEL DEMAND MODEL PROCESS

Generally, four steps are found in most travel demand models developed for urban areas: Trip Generation, Trip Distribution, Mode Share, and Multi-Modal Traffic Assignment. Each of the modeling steps is described in more detail in the following sections. Any deviation, applicable to the travel demand model used for the study area, is described as well.

Trip Generation

By definition, a person trip is a person traveling from one place to another for a defined purpose. Consequently, trip generation is closely related to both the characteristics of a place and a person. Socioeconomic attributes of each TAZ, are utilized by the Trip Generation model to determine the number of trips produced by and attracted to each TAZ. The result of the Trip Generation step is a set of trip productions and trip attractions for each TAZ by trip purpose.

Trip Distribution

Trip Distribution is the second step of the traditional four step model, which identifies the production zone and attraction zone of a trip generated in the Trip Generation Model based on the trip length frequency distribution. Travel time is used as the measurement of separation between zones.

Mode Share

Mode Share is the third step in a traditional travel demand modeling process. Mode Share models are used to separate the various person trips identified in the trip distribution step into different modes based upon fixed proportions derived from available survey data.

As the study area has a relatively low percentage of daily trips made by public transit, the travel demand model does not include a Mode Share component.

Assignment

The Assignment of traffic to the highway network is the final step in the traditional modeling process. It estimates the flow of traffic on a network, which can be expressed in various metrics, including vehicles per day, volume to capacity ratio, travel speed, and travel delay, all of which are subsequently analyzed.

MODEL VALIDATION AND CALIBRATION

In order for a travel demand model forecast to be judged as plausible, the model must be able to produce reasonable traffic volumes. The processes and techniques to ensure that traffic forecasts are realistic are dependent on available base year data to calibrate and then validate travel demand model outputs. In other words, the base year data acts as a "reality check" for the travel demand model before traffic conditions are forecasted for the horizon year.

Although a perfect replication of base year data is not expected, the travel demand model nonetheless has to provide satisfactory performance within certain quality control parameters to be accepted as calibrated and validated.

For the development of the 2040 Metropolitan Transportation Plan, the travel demand model used was calibrated, and validated by TxDOT's TPP Division.

ANALYZING ROADWAY DEFICIENCIES AND FUTURE TRAVEL DEMAND

The determination of roadway deficiencies is an important step in the identification and evaluation of needed improvements. For the purpose of the study, two networks were developed - an Existing-plus-Committed network and a Build Scenario network – both of which are described in detail in the following sections.

Existing-plus-Committed

The E+C network includes recently completed roadway projects and those currently under construction or about to begin construction. The projects that were coded into the E+C network are listed in Table X-3.

Table X-3: Projects included in the E+C Network

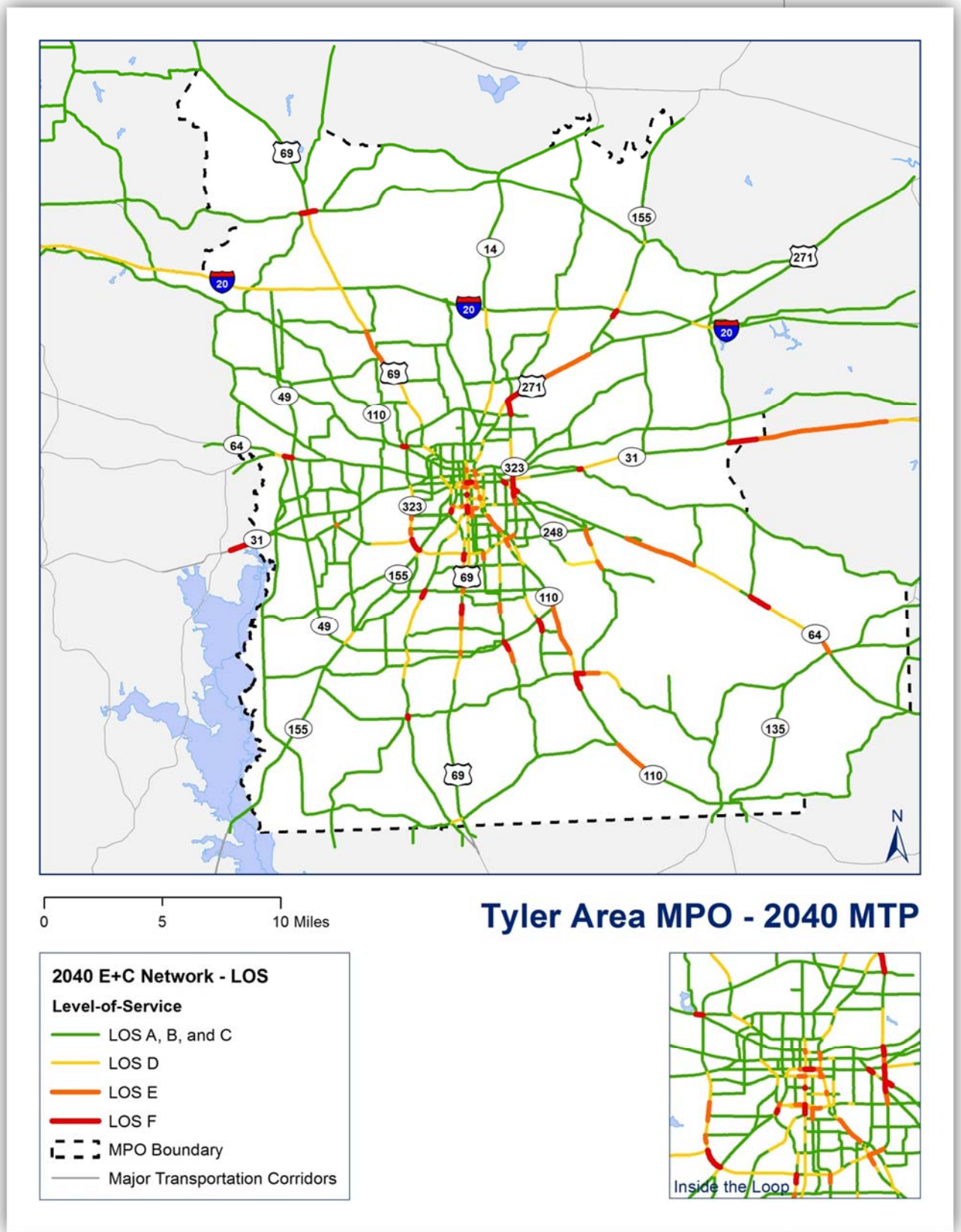
Status	Roadway	From	To	Description
Existing	Sunnybrook Extension/ Earl Campbell Parkway	SH 155	Loop 323	New 4-lane facility (referred to as Earl Campbell Parkway)
Existing	Toll 49 (Segments 2, 3a, 3b, 5) from IH 20 to SH 110	IH 20	SH 110	New 2-lane, controlled access facility (tolled)
Existing	Old Omen Road	University Blvd	Shiloh Road	Widened to 4-lane divided facility
Existing	Grande Blvd	Broadway Ave	SH 110	Widened to 4-lane divided facility
Existing	Copeland Road	Rieck	Grande Blvd	Widened to 4-lane divided facility
Existing	FM 346 Widening in Whitehouse			Widened to 4 lanes with Center Turn Lane (CTL)
Under construction	Cumberland Rd	Broadway Ave	Old Jacksonville Hwy	New 4-lane in new location
Construction scheduled	Loop 323	0.6 Mi S of SH 31 (Shaw St) N	SH 31	Widening to 6 lanes & Replacement of Cotton Belt railroad underpass

This E+C network is representative of a transportation investment scenario that does not include new capacity projects and simply maintains the existing roadway system. Once encumbered with horizon year socioeconomic data, which includes significant population and employment growth since 2012, network deficiencies can be determined based on overall system performance as well as roadway specific Level of Service (LOS) information, which in this case was expressed as volume to capacity to ratio (V/C). The E+C model run results are shown in Figure X-2.

Based on the E+C Scenario, significant congestion is forecast to occur in the following areas:

- US 69, both north of Loop 323 NW and south of Loop 323 SE;
- Along western, southern, and eastern portions of Loop 323;
- US 271, north of Loop 323 towards SH 155;
- SH 64, towards Arp;
- SH 110, towards Whitehouse and north of Troup; and
- SH 31, near the eastern boundary of the MPO area

Figure X-2: E+C Scenario- Level of Service



Build Scenario

The Build Scenario includes all of the projects previously identified for the E+C network. In addition, the Build Scenario encompasses those projects which are currently programmed in the study area's Transportation Improvement Program (TIP). These programmed improvement projects are listed in Table X-4.

Table X-4: Currently Programmed Projects

Source	Project Roadway	From	To	Description
2011-2014 TIP	Toll 49 Segment 4/ US 69	US 69 N of Lindale, S	IH 20 at Toll 49	New 2-lane, controlled access facility (tolled)
2015-2018 TIP	US 69 at FM 346, E of Flint			Construct grade-separated interchange

The list of additional projects to be included in the Build Scenario was developed iteratively:

- Previous 2035 Metropolitan Transportation Plan (MTP) projects were included that had not yet been implemented. These projects had been identified as regionally significant and were part of the fiscally constraint list of the previous MTP.
- As a consequence of the project call issued by the Tyler Area MPO, the North East Texas Regional Mobility Authority submitted the eastern extension of Toll 49 (Segment 6) for consideration.
- Through coordination with Texas Department of Transportation (TxDOT) staff, several additional roadway projects of regional significance were added.

These additional projects are shown in Table X-5, and were coded into the Build Scenario network alongside the previously identified E+C and currently programmed projects to allow a comprehensive review of associated mobility benefits.

Build Scenario specific Level of Service (LOS) information, which was again expressed as volume to capacity to ratio (V/C), is shown in Figure X-3.

Significant congestion reduction occurred in the following areas in response to the projects included in the Build Scenario analysis:

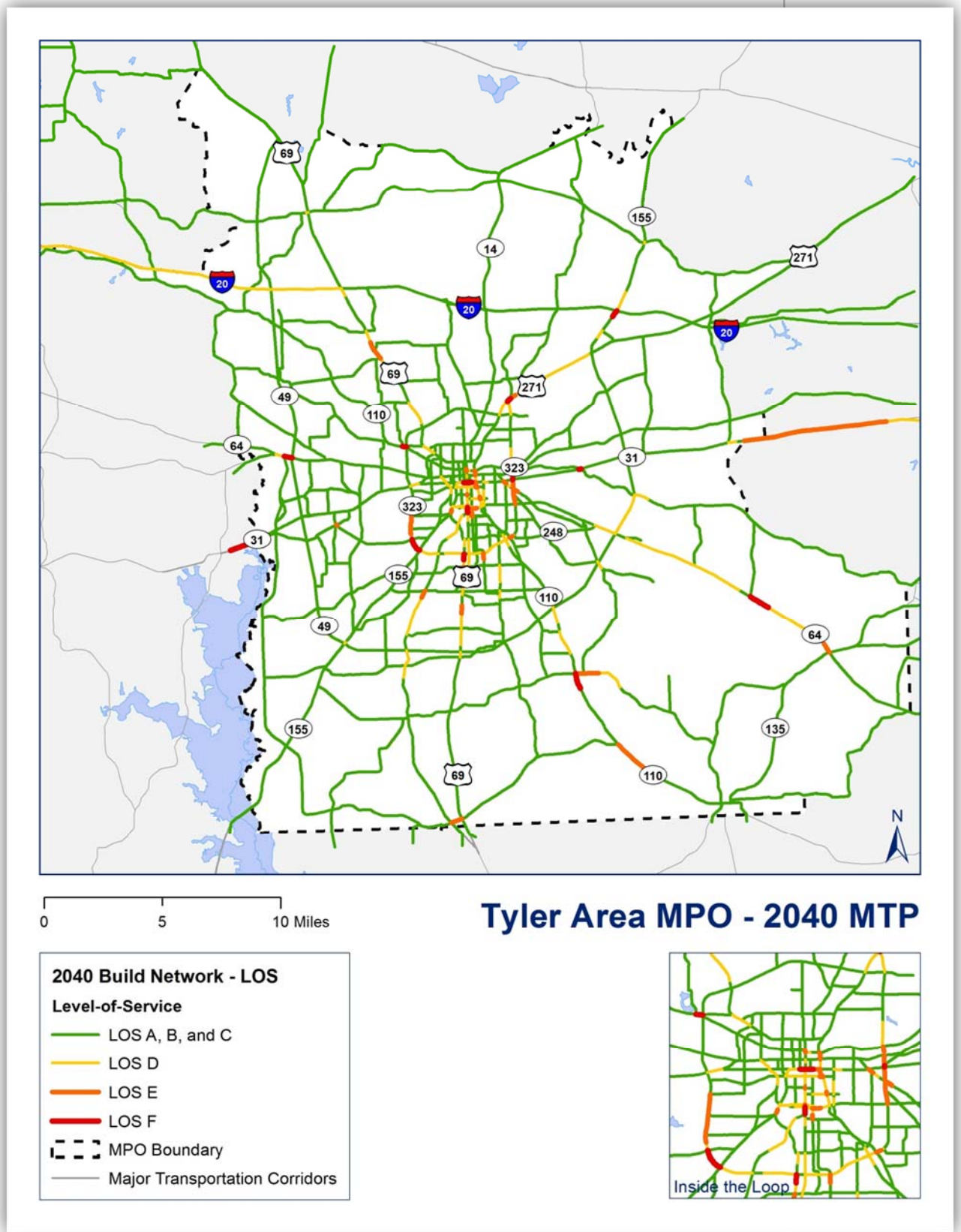
- US 69, both north of Loop 323 NW and south of Loop 323 SE;
- US 271, north of Loop 323 towards SH 155;
- SH 110, towards Whitehouse, north of Troup, as well as within central Tyler;
- FM 16 within Lindale;
- SH 64, some improvement towards Arp;
- Some improvement on western, southern, and eastern portions of Loop 323; and
- Improvement on SH 31 east of Loop 323 E and FM 14 north and south of Loop 323.

Table X-5: Proposed Projects

Description	Project Roadway	From	To	Description
State Short-term	IH 20	At US 69		Ramp improvements at US 69
State Short-term	FM 2493	FM 346 in Flint, S	0.3 Mi South of FM 344 (Cherokee C/L)	Widen from 2 Lanes to 4 Lanes with Flush Median
State Short-term	FM 16	4 mi W of FM 849	US 69 in Lindale	Widen from 2 to 4 lanes
State Short-term	FM 14	IH 20	Loop 323	Widen from 2 to 4 lanes
State Short-term	SS 364	SH 31	Loop 323	Widen from 2 to 4 lanes
State Short-term[1]	FM 2493	FM 2813 In Gresham	FM 346 in Flint	Widen to 4 lanes with flush median
State Short-term	SS 248	1.75 Mi W of FM 848 (Old Omen Rd), E	SH 64 SE of Tyler	Widen to 4-lane divided roadway with flush median
State Long-term	FM 14	Loop 323 East	MLK Jr, Blvd	Widen to 4-lane minor arterial with CLT
State Long-term	FM 756 (Paluxy)	Jeff Davis Drive	FM 346	Widen to a 4-lane principal arterial
State Long-term	SH 31, East	Loop 323, East	FM 850	Widen to a 4-lane divided principal arterial
State Long-term	SH 110	5th Street	Golden Road	Widen from 4 to 6-lane divided principal arterial
State Long-term	FM 16	US 69	2.4 mi E of US 69	Widen from 2 to 4 lanes
NET RMA funded	Toll 49 Segment 6	SH 110 (appr. 1.2 miles north of Whitehouse)	0.35 miles east of US 271/FM 2908 intersection	Construct 2 Lane Controlled Access Toll Road on New Location
Locally funded	Lake Placid Rd	Old Jacksonville Hwy	SH 155	Widen to 4-lane with bike, raised median
Locally funded	Towne Park	Loop 323	SH 155	Construct new location, 4-lane with bike, raised median
Locally funded	Shiloh Rd	Rhones Quarter Rd	Copeland Rd	Widen to a 4-lane minor arterial with CTL
Locally funded	W Erwin Street at Glenwood			Widen intersection to eliminate split phase operations
Locally funded	Roy Road	Paluxy Dr	Rhones Quarter Rd	Widen to 2-lane major collector with CTL
Locally funded	Rice Road	Old Bullard Rd	Old Jacksonville Hwy	Widen to 4-lane minor arterial with CTL

[1] *The following projects - FM 2493 [north of FM 346] and SS 248 - were moved from the list of programmed projects (Table X-4) to the list of proposed projects (Table X-5) based on project readiness.*

Figure X-3: Build Scenario - Level of Service



USE OF THE MODELING DATA

The model outputs were used to quantify the initial deficiency and the subsequent improvement through the analysis of several model output metrics:

- E+C Volume
- Increase in Volume between the scenarios
- E+C Volume to Capacity Ratio
- Decrease in Volume to Capacity Ratio between the scenarios
- Change in Congested Speed between the scenarios
- Change in Vehicle Hours Traveled between the scenarios
- Vehicle Miles Traveled

Point values were assigned based on the respective value or improvement, relative to system-wide values. Described in detail in the *Project Prioritization - Chapter XIII*, the travel demand model results provided the quantitative input into the prioritization of the projects proposed for inclusion in the 2040 Metropolitan Transportation Plan.

XI. NO-BUILD STRATEGIES

Building new roads and adding capacity to existing roadways not only comes with a high price tag, but it also often takes years for a project to go through the planning, design, and construction phases. Given the limited availability of funding for transportation projects, and rising congestion levels, state, regional, and local agencies are increasingly relying on travel demand management (TDM), transportation system management and operations (TSM&O), and "Complete Streets" strategies to increase the capacity and improve the performance of existing roadways. These strategies do not require the construction of new roadways or additional lanes of capacity, and therefore, are often referred to as "no-build" strategies.

The following sections highlight the Tyler Area MPO's TDM, TSM&O, and Complete Streets efforts to date, and provide recommendations for incorporating best practices into the transportation planning process. While the Tyler Area MPO is not directly responsible for implementing transportation projects, the MPO works closely with local municipalities to explore and evaluate the appropriateness of these strategies for reducing congestion and improving the performance of the existing transportation system.

TRAVEL DEMAND MANAGEMENT

Travel Demand Management strategies seek to increase the capacity of existing roadways by reducing the overall number of cars using the roadways, or by redistributing cars away from congested areas and peak periods of travel. Encouraging the use of alternative modes of transportation, such as transit, biking, or walking, and increasing the number of people traveling in each vehicle are the primary ways in which TDM strategies seek to reduce demand on existing roadways. Simply-stated, managing travel demand involves providing travelers with a wide range of choices for connecting to their destination.

With fewer funds available to build a way out of congestion, TDM strategies represent a cost effective means to improve the transportation system and are designed to accomplish the following:

- **Improve mobility and accessibility** by expanding and enhancing the range and quality of available travel choices;
- **Reduce congestion and improve system reliability** by decreasing the number of vehicles using the roadway system and by redistributing demand away from peak periods and existing bottlenecks;
- **Increase safety** by addressing congestion, which is generally related to a higher occurrence of traffic incidents; and
- **Improve air quality** by reducing the number of vehicle miles traveled, thereby saving energy, and by decreasing the number of short trips largely responsible for the proportion of emissions generated from cold starts.

Tyler Area Travel Demand Management Strategies

Over the last five years, the Tyler Area has implemented the following TDM strategies:

- **Adding bicycle racks to Tyler Transit buses**, which encourages travel by bicycle and transit by integrating the two modes, thereby improving mobility and accessibility.
- **Implementing "RouteShout,"** which allows riders to view routes and bus arrival times on their mobile devices, providing them with updated and convenient public transportation information.
- **Creating a mixed-use zoning category**, which allows for the development of residential, commercial, and other land uses in close proximity of one another, thereby increasing the ease with which individuals can walk or bike between destinations.
- **Adding the electronic toll collection system** on Toll 49 (by the North East Texas Regional Mobility Authority), which reduces delay related to the payment of tolls, and allows vehicles to use the toll facility without requiring them to stop.

Best Practices in Travel Demand Management

In addition to the TDM strategies already implemented in the Tyler Area, there are additional best practices that have been successful in managing demand on existing transportation facilities in similar areas. As the regional transportation planning organization for the Tyler Area, the MPO can work to educate its planning partners on available TDM strategies and their benefits in order to encourage stronger consideration of TDM strategies before investing in new construction projects.

Strategies to Increase Vehicle Occupancy

Carpool, vanpool, and school-pool programs encourage travelers with common destinations, particularly employment and school destinations, to share vehicles. These can be based on informal arrangements between individuals, or formally arranged through ride-matching services. Available research indicates that improving awareness, trust, and willingness to ride with strangers, as well as flexibility in scheduling may help to increase carpool use. Incentives are another effective tool for increasing the use of carpools, vanpools, and school-pools.

The following strategies are recommended to increase ride-sharing in the Tyler Area:

- **Provide ride-sharing resources for the public on the MPO website**

  Resources that may help to increase the use of carpooling, vanpooling, and school-pooling include "Frequently Asked Questions (FAQs)" that address the benefits of carpooling, tips for finding other carpoolers, advice on how to organize pick-ups and drop-offs, carpooling etiquette, and safety concerns, among others.

  Additionally, the Tyler Area MPO may wish to provide resources that facilitate the matching of individuals with other carpoolers by either hosting their own free ride-matching service on the MPO website, using programs like AlterNet Rides, or by publicizing ride-matching software available to the public such as Carma Carpooling.

- **Work with Tyler Transit and member jurisdictions to implement ride-sharing programs**

  The MPO can coordinate with Tyler Transit and its member jurisdictions to educate its planning partners on the benefits of carpooling, vanpooling, and school-pooling, and explore the feasibility of developing and implementing locally-operated ride-sharing programs.

- **Encourage employers to incentivize ride-sharing**

  The MPO can play a valuable role in working with Tyler Area employers and schools to develop employer-based incentives to encourage ride-sharing, such as tax incentives and preferential parking. A variety of employer-based incentives for carpooling are discussed in greater detail later in this section.

Strategies to Increase Travel by Transit, Bicycle, or Walking

In order to reduce the number of trips by private automobile, strategies to increase travel by transit, bicycle, or walking generally focus on the following objectives:

- **Expand the service area of the transit system and connect infrastructure**, which can reach more people and connect them to a greater number of destinations within the region;
- **Improve the quality** of the service, which increases the convenience, comfort, ease of access, and affordability of the mode, and makes people more willing to choose this mode of travel; and
- **Educate the public** on the availability of the various non-auto transportation options and services, which provides resources to help travelers navigate the region.

The following sections detail mode-specific strategies that could be considered for implementation in the Tyler Area.

Transit Strategies

While traveling by car offers the ease and convenience of being able to "come and go as you please," traveling by transit, particularly by bus, generally requires longer travel times and less flexibility in reaching one's destination. Improving the quality of transit services involves strategies that shorten overall travel times, increase traveler's comfort both while waiting for the bus and when on-board, and provide added flexibility on travel times and destinations. While certain aspects of travel by bus will always be less convenient than travel by car, there are a number of improvements that can be made to significantly improve the quality of the experience. These strategies include:

- **Emergency and guaranteed ride home programs**, which provide transportation for users of transit or those who carpool, vanpool, or schoolpool, in the event that the person 1) is required to work late unexpectedly, 2) becomes ill and needs to leave work or school early, 3) has to respond to a family member who becomes ill and needs to be picked up early from daycare, school, or work, or 4) has a carpool or vanpool driver that unexpectedly needs to leave work early or stay late. These programs typically provide taxi service reimbursement for registered participants, and may require participants to pay an annual membership fee.
- **Electronic and smartcard collection systems**, which utilize fare cards with magnetic strips or smartcard technology and reduce the time required to collect fares on-board, thereby decreasing the overall travel time for transit users.
- **Off-board fare payment**, which allows for transit riders to purchase their fare using ticket vending machines (TVMs) before boarding, which could also enable convenient, all-door passenger boarding that reduces the overall travel time for transit users.
- **Enhanced rider amenities**, which increase patron comfort and convenience, both while waiting for the bus or while riding it; such improvements can include shelters,

benches and leaners, mobile ticketing, wireless internet access, and on-vehicle information systems.

- **Increased connectivity to pedestrian and bicycle facilities**, which enhances access to the transit stop as well as to the final destination, by providing transportation options for the critical "first and last mile" of the transit trip.

In addition to coordinating on the expansion of transit services to reach more people and a greater number of destinations, the Tyler Area MPO can work with Tyler Transit to explore the feasibility of implementing TDM strategies to improve the quality of the transit experience. This will help to ensure that transit is used not only by the transit dependent, or those without access to a personal vehicle, but also by commuters who make the choice to use transit instead of driving to their destinations.

Providing resources on the MPO website to educate the public on the public transportation services available to them may further increase knowledge and use of transit services. Currently, the MPO website includes service maps and schedules. The MPO may wish to also include a "trip planner" on its website that provides users with route information, bus arrival/ departure times, walking distances, and anticipated travel times based on their starting and ending locations.

Bicycle Strategies

One of the primary concerns for cyclists and those who may be considering biking as a form of basic, every-day transportation is safety. Additional considerations include integration with other modes, the contiguousness of facilities, the availability of bicycle parking or storage, and the availability of other amenities such as on-site showers. It is recommended that the MPO pursue the following strategies to encourage biking as an alternative to travel by car:

- **Provide bicycle parking**

  The MPO can work with member jurisdictions and large employers to provide bicycle parking. The lack of a secure parking space for their bicycle may keep some people from using bicycles for basic transportation.

- **Work with member jurisdictions to implement a bike-share program**

  The MPO can encourage bike-share programs allow users to pick up a bicycle at any self-serve bike station and return it to any other bike station located within the system's service area. Bike share programs are ideal for short distance, point-to-point trips, and are often combined with other transportation modes, such as transit.

- **Improve bike facilities**

  There are a variety of different bicycle facilities, from on-street, shared lanes with automobiles, to exclusively dedicated bicycle lanes separated from automobile traffic, all of which provide varying levels of real and perceived safety. The MPO can continue to work with local jurisdictions and bicycle advocacy groups to understand safety issues and identify strategic improvements to existing bicycle facilities that link popular destinations and address gaps in the network.

- **Increase infrastructure connectivity**

  The MPO can work with the local planning partners to consider the connectivity of bicycle infrastructure when making transportation improvements.

- **Educate bicyclists and drivers**

  The MPO can coordinate with public safety stakeholders and bicycle advocacy groups to produce and publicize information for both bicyclists and drivers regarding "sharing the road." Additionally, the MPO can encourage the development of programs that give new cyclists a "crash course" on traveling by bike on roadways with automobile traffic may improve comfort and encourage greater use of the mode for basic transportation.

- **Enforce safety laws**

  The MPO can work with the local police departments to ensure all safety laws are enforced.

Pedestrian Strategies

Improving the quality of the pedestrian experience involves addressing both real and perceived safety concerns, and upgrading pedestrian facilities to make sure the facilities are contiguous and comfortable. Additionally, promoting development at a more "human scale" encourages pedestrian activity by improving perceptions of safety and creating visual interest at the street level. The MPO will continue to work with local jurisdictions to address safety concerns and ensure pedestrian facilities provide convenient and comfortable access to popular destinations. The following strategies are available to encourage walking as a viable form of basic transportation.

- **Provide barriers between sidewalks and automobile traffic**

  Planting strips and parallel or angled, on-street parking provide buffers between automobile and pedestrian traffic, and improve perceptions of safety.

- **Enhance the visibility of crosswalks**

  Enhancing the visibility of crosswalks, especially at uncontrolled intersections, increases driver awareness of pedestrians and provides added confidence to pedestrians that drivers acknowledge their presence. The visibility of crosswalks can be improved by using markings, varied materials, and signage.

- **Provide midblock pedestrian crossings**

  Additionally, pedestrian hybrid beacons may be appropriate along roadways where significant distances exist between crosswalks. Pedestrian hybrid beacons are a pedestrian-activated warning device located on the roadside or on mast arms over midblock pedestrian crossings that provide a controlled crossing for pedestrians when activated, but otherwise allow traffic to flow freely. It is important to note that according to the National Highway Transportation Safety Administration (NHTSA), over 75 percent of traffic fatalities involving a pedestrian occur at non-intersection locations (NHTSA, 2009).

- **Improve comfort**

  Providing amenities, including street trees or awnings for shade, wide sidewalks, and street furniture, such as trash cans and benches, all significantly improve pedestrian comfort. Not only do these amenities make walking more inviting, the amenities also send a clear message to the public that the corridor is intended for pedestrians as well as vehicular traffic.

- **Enhance pedestrian experience**

  Additionally, certain development typologies help to improve the quality of the pedestrian experience. Higher density development, a mix of uses, reduced building setbacks, parking in the rear of a building, and design treatments such as facade variations, and ground floor transparency all provide visual interest for pedestrians and a safer, more enjoyable pedestrian experience.

Employer-based Tools and Incentives

The commute to and from work is a significant contributor to traffic congestion along area roadways, particularly during peak travel times. TDM strategies that focus on employer-based tools and incentives can be an effective way to reduce travel by single occupancy vehicles by coordinating ride-sharing among employees, encouraging the use of alternative modes for work trips, shifting work trips from peak hours, and reducing work travel times and the number of overall trips. The Tyler Area has several large employment centers that generate significant traffic on the area's roadways. Additionally, over 80 percent of commuters in Smith County drive to work alone. This, coupled with the fact that over 270,000 people enter Tyler each day for work, entertainment, shopping, medical services, government business, or cultural events, makes employer-based tools and incentives an attractive strategy for reducing demand on existing roadways in the Tyler Area.

Employer-based TDM strategies can be divided into four separate categories:

- Encourage employees to travel by **alternative modes**;
- **Shift trips** from peak periods of travel and reduce the total number of work trips;
- **Provide route information** to divert commuters from congested routes; and
- **Use location-specific solutions** to shorten the work commute and reduce the need for midday trips.

As the regional transportation planning organization, the Tyler Area MPO can actively work with area employers to reduce congestion by expanding the transportation options available to their employees. The MPO may wish to provide information via its website, or develop a "speakers series" for educating area employers regarding the options available and their benefits to the employers, employees, and the community at large.

Alternative Modes

Employers can influence employees' mode choice through a variety of supporting services aimed at making the alternative travel options easier and/or cheaper to use.

- **Commuter choice tax benefits**

  The Internal Revenue Code allows employers to offer their employees tax free commute benefits under the Commuter Choice tax benefits provisions, which provides a financial incentive for employees who switch from driving alone to transit or vanpool.

- **Rideshare matching**

  Employers can help facilitate carpooling among their employees by 1) creating a "ride-match" bulletin board at the worksite or online, where employees can post riders- or rides-wanted cards; 2) matching potential riders using their home zip codes; or 3) utilizing ride-matching software, to facilitate the car-pooling of employees with nearby home addresses.

- **On-site transit pass sales**

  An employer can increase the convenience of using transit by selling transit passes on-site to its employees.

- **On-site facilities**

  Employers can provide on-site facilities, which refers to physical improvements to accommodate alternative modes of travel, including bicycle racks or storage facilities, showers and lockers, transit stop improvements adjacent to the worksite, and sidewalks from transit stops to facility entrances.

- **Shuttle services**

  For employment sites that are not within walking distance of a transit stop, shuttle services to and from the transit stop can make transit more convenient. Additionally, shuttle services can be provided between buildings on large campuses or for midday lunch trips.

Shift in Travel Time

By providing flexibility in the work schedule, employers can help shift some trips away from peak periods or even reduce the number of total trips necessary during the work week.

- **Flextime**

  Flextime generally allows employees to choose when they work, within certain time boundaries. Typically, a company will set core work hours, and employees can arrive before and depart after these core hours as long as they work the required number of hours. Flextime allows commuters to avoid peak periods of high congestion and reduces the demand on the roadways during these times.

- **Alternative work schedules**

  Alternative work schedules reduce the number of trips necessary during the work week by allowing employees to work longer, but fewer days, or by staggering shifts.

  - 9/80 Compressed Work Week—Employees work 80 hours over a 9-day period instead of 10. The typical work day is 9 hours.
  - 4/40 Compressed Work Week—Employees work a 40-hour week in 4 days instead of 5. The typical work day is 10 hours.
  - 3/36 Compressed Work Week—Common with health facilities, fire departments, and police, employees work three 12-hour days.
  - Staggered Work Hours—This strategy can help to reduce peak period traffic at the worksite by staggering the times when employees arrive and leave work so they do not all access the site at the same time.

  It should be noted that compressed work weeks can also have an impact on an employee's ability to use public transportation, depending on the transit service's hours of operations.

- **Telecommuting**

  Telecommuting reduces the number of trips on an area's roadways by allowing employees to work remotely from home, either full-time or for a specified number of days each week.

Route Information

Commuters typically travel to work at the same time every day, using the same mode and route to get there. However, delays due to traffic accidents, bad weather, road construction, or increasing traffic congestion may have commuters looking for alternative routes. Employers can facilitate the provision of real-time commute information to employees that will help them select the best route given current traffic conditions.

- **Traffic alerts to employees**

  Employers can provide email or text message alerts to its employees regarding major accidents or weather-related delays and suggest alternative routes.

Location-specific

The location of an employee's residence and workplace can have a significant impact on their mode choice, commute time, and may even impact where an employee chooses to work. Businesses are increasingly aware of the implications of worksite location, and there are several strategies available to shorten the work commute and encourage the use of alternative modes.

- **Live near your work**

  Employers to can develop materials that encourage employees to live near the worksite by providing information to new employees regarding areas with reduced commute times or with good access to transit.

  Another option is called "proximate commuting." This option allows employees to work at branch locations near their homes.

- **Worksite Location and Design**

  Employers can select employment sites that are close to transit or located near services that reduce their employee' need for cars. For example, "transit oriented development" encourages residential and commercial development near transit stops, and provides access to shopping, restaurants, and other services within walking distance.

- **On-site employee services**

  On-site services for employees are intended to reduce the need for midday trips by car. The need to complete these errands may discourage some employees from using alternative modes for their work commute. Examples of on-site services include cafeterias, cafes, postal services, dry cleaning, health care, child care, fitness facilities, and ATMs.

Parking Management and Incentives

Parking management strategies and incentives can be implemented by both local jurisdictions and employers. These strategies typically rely on dis-incentivizing travel by single occupancy vehicle by increasing parking costs and/or limiting the availability of parking.

- **Parking cash out**

  Parking cash out is an employer-based strategy in which employers provide employees with a bonus or pay increase, which they may choose to spend on a parking space at their place of employment, or may otherwise "pocket" the difference by using an alternative mode of transportation.

- **Park-and-ride lots**

  Park-and-ride lots encourage the use of transit, especially in areas with few local transit options, by allowing travelers that are not within walking distance of a transit stop to drive their vehicles to a transit stop, and park there during the day. Park-and-ride lots can also provide a meeting point for carpools and vanpools. The trip to the park-and-ride lot must be a shorter distance than the trip to the final destination, as park-and-ride lots are generally less effective the closer the lot is to the final destination.

- **Parking management**

  Parking management refers to various policies and programs that result in more efficient use of parking resources. Improved management of parking facilities can result in potential savings to communities and reduce parking requirements by 20 to 40 percent compared with conventional planning requirements. (Litman, 2013) Examples of parking management strategies available include:

  - Provide shared parking that serves multiple users or destinations, which is most efficient when the destinations have varied peak periods of activity.
  - Implement parking regulation that controls who, when, and how long vehicles may park at a particular location.
  - Develop more accurate and flexible standards that take into account factors such as residential density, employment density, land use mix, transit accessibility, and income, among other factors, to establish parking requirements for a particular development or area.
  - Reduce residential street width requirements to encourage the development of neighborhoods with narrower streets and less parking to encourage the use of alternative modes.
  - Provide remote parking and shuttle service to encourage the use of off-site parking facilities that are often shared facilities, served by special shuttle buses or free transit service.
  - Limit on-street parking of large vehicles (e.g., vehicles over 22 feet long or trailers) to ease traffic flow and discourage use of public parking for storage of commercial vehicles.
  - Prohibit on-street parking on certain routes at certain times (such as on arterials during rush hour) to increase the number of traffic lanes and peak capacity. (Litman, 2013)

Land Use Considerations

Typical development patterns have generally encouraged a separation of land uses. Additionally, there has been an overall trend toward less dense development, particularly in the planning and design of suburban neighborhoods. These land use factors significantly impact travel, requiring more trips to be made by automobile due to the increased distances between origins and destinations.

- **Promote transit-supportive density levels**

  While the level of density needed to support transit service depends on a variety of factors, including transit technology, destinations, and community goals, general consensus is that 7 housing units per acre will support basic 30 minute bus service. (Reconnecting America)

- **Encourage mixed-use development**

  Encouraging the development of residential, office, retail, civic, and institutional uses within close proximity to one another reduces the need for a private automobile and increases the likelihood that residents and employees will be able to walk or bike to many of their destinations. Furthermore, "transit oriented development" encourages mixed-use development around transit stops, to facilitate not only walking and biking within the development, but also the use of transit for longer trips to and from the development.

Traveler Information Systems

Traveler information systems use technology to detect, analyze, and disseminate traffic and transit conditions to travelers so that users may choose the best method for reaching their destination based on current conditions. Traditional traveler information systems such as radio and TV broadcasts are now being supplemented by websites, real-time roadside and transit displays, and email and text message alerts.

The Tyler Area MPO can work with local jurisdictions to implement traveler information systems for both predictable settings, such as work zones, planned special events, tourism, and parking management, as well as unpredictable settings, such as a major highway incident, adverse weather, and other unforeseen catastrophic events.

Traveler information systems rely on traffic sensors, aerial surveillance, transit location, incident detection, and weather monitoring by both the public and private sector to inform travelers of delays, incidents, weather conditions, next bus arrival times, travel times, emergency alerts, and alternate routes. In response, travelers may change their route, change their mode of travel, alter their departure time, or change their destination. (FHWA)

TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

Transportation System Management and Operations (TSM&O) strategies seek to improve the performance of existing roadways through increased efficiency and throughput of vehicles on roadways. TSM&O strategies not only rely on traffic engineering solutions, such as signal synchronization and access management, to optimize the existing system, but also rely on resource utilization, infrastructure, personnel, and data management strategies to extend the life of the existing transportation system and improve its reliability.

The following section provides a brief outline of the transportation system management and operations strategies implemented in the Tyler Area, and lists additional strategies to improve the performance of the existing transportation system.

Tyler Area Transportation System Management and Operations Strategies

City of Tyler Traffic Engineering Department

Since 2009, the City of Tyler has completed the following safety related projects:

- Implementation of flashing yellow arrows on traffic signals for left turns which, according to a preliminary study, has reduced the number of crashes at the improved intersections by 8%;
- Installation of adaptive traffic control systems at several intersections on Loop 323;
- Completion of traffic signal installation and control system upgrades at key locations;
- Completion of the downtown signal upgrade project;
- Upgrade of school flasher timing systems; and
- Multiple sidewalk and pedestrian safety improvements.

Texas Department of Transportation

The Texas Department of Transportation developed the Intelligent Transportation Systems (ITS) Regional Architecture and Deployment Plan for the Tyler District, which includes the counties of Anderson, Cherokee, Gregg, Henderson, Rusk, Smith, Van Zandt, and Wood. The Regional ITS Architecture provides the framework for designing and implementing intelligent transportation systems that integrate telecommunications and transportation systems, while the Deployment Plan builds on the ITS architecture by prioritizing market packages, outlining specific recommendations and strategies, and identifying implementation timelines for individual projects.

The existing ITS Regional Architecture identifies the following ITS applications that are currently in place within the Tyler Area:

- TxDOT has a permanent dynamic message sign (DMS) as well as several portable DMSs that are utilized primarily for displaying travel delay information;
- TxDOT has installed closed-circuit television (CCTV) cameras at an interchange to monitor delay;
- TxDOT is using video detection at several intersections in the region; and
- TxDOT has instituted Highway advisory radio (HAR) along I-20 provides motorists with information on construction, lane closures, possible alternate routes and traffic conditions.

Best Practices in Transportation System Management and Operations

In addition to the TSM&O strategies implemented by the Tyler Area MPO, there are additional best practices that have been successful in optimizing the performance of existing transportation systems to reduce congestion and improve safety. As the regional transportation planning organization for the Tyler Area, the MPO can work to educate its planning partners on available TSM&O strategies and associated benefits to encourage strong consideration of TSM&O strategies before investing in new construction projects.

Maintenance

Maintenance of the physical infrastructure is a critical aspect of transportation operations and systems management. Most infrastructure management agencies prefer to schedule routine repairs and inspections instead of patching and repairing “bad locations.” Schedule

management for inspection and street repairs will enable city and county personnel to efficiently use limited resources. A calendar for repairs and reviews will also provide valuable information to concerned citizens.

Regularly scheduled roadway resurfacing is necessary to provide uniform improvements to the existing roadways and to expand their lifespan. Older roads, especially those built according to discontinued standards, should be reviewed with an eye towards upgrading deficient sections to modern standards.

Overlays and patches should be carefully constructed to help prevent uneven transitions and excessive wearing, particularly near new or existing grates and inlets. In locations with bicycle lanes (or anticipated bicycle travel), bicycle compatible grates should be installed to avoid mishaps and pinched tires.

Traffic Signal and Intersection Improvements

Commuters encounter traffic control signage and intersection signals on nearly every route they travel. While the primary function of intersection traffic control is to improve safety at intersections, it is also often a significant source of delay. Improper signage and poor signal timing results in unnecessarily long queues and impacts the reliability of the transportation system. Improving signage, signal timing, and equipment is a very cost-effective way to facilitate traffic flow along a specific corridor. The MPO can work with its planning partners to identify corridors which would benefit from traffic signal improvements and interconnect projects.

- **Effective signage and markings**

  Signage and markings are critical to conveying intersection information to drivers. Stop bars, crosswalks, signal heads, and movement prohibitions should be well marked and routinely inspected and retouched. In locations with high volumes of pedestrians, bicyclists, or school age children, special signage should be placed to alert drivers.

  Signage and street markings must be placed according to the guidelines of the national Manual on Uniform Traffic Control Devices (MUTCD). It is advisable to develop a study area-wide comprehensive street marking and striping policy to address areas of concern, such as school zones and pedestrian crosswalks.

- **Electronic infrastructure**

  Managing transportation infrastructure is no longer limited to concrete pavements and asphalt. Recent improvements in operations and data collection methods have led to digital controls and integrated computer networks.

  Similarly, older technologies are being systematically replaced with newer options. In-pavement magnetic loops are being phased out, while video detection and automatic detection devices for pedestrians and bicycles are gaining popularity. Traditional incandescent bulbs for signal heads have been replaced with more efficient light emitting diodes (LEDs). These new technologies offer increased durability and lower overall maintenance costs.

- **Intersection signal timing**

  The timing and phasing of signalized intersections should be reviewed periodically, especially in areas of rapid development or increased commercial activity. Most intersections should be reviewed for appropriate timing and phasing every six months, while more heavily traveled intersections could be reviewed more frequently. Whenever possible, the signal heads and controls should be uniform to

facilitate ease of coordination and servicing of the hardware. In locations of due east or west travel, back plates and directional signal heads may be advantageous. In locations with significant wind and severe weather concerns, mast arm and pole dimensions should be designed appropriately.

- **Signal optimization**

  Properly timed signals will result in decreased congestion, improved flow, and reduction of queue length. As traffic volumes continue to increase, signal coordination can designate high priority traffic "corridors" for major roadways and thereby increase the throughput volume of these critical thoroughfares.

Access Management

Access management is the conscious regulation of the number of access points between a development and the adjacent roadway network. Most discussions of access management involve the placement and number of driveway curb cuts, although the application can also include the location, size, and function of interior service roads.

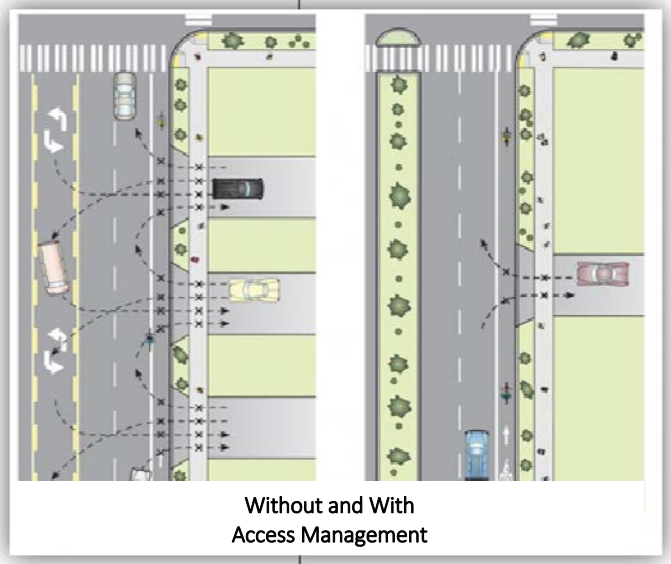
Without Access Management

With Access Management

Effective access management has significant implications for mobility, accessibility, and safety by reducing crashes, increasing capacity, reducing travel time and delay, extending the life of the roadway, and reducing vehicular emissions. The Tyler Area MPO can work with local jurisdictions to identify roadways with congestion and/or safety issues that may be effectively addressed using one of the following access management strategies:

- **Medians**

  Raised medians on collector and arterial roadways decrease the potential for accidents by restricting turning movements. Although land access is thereby limited, raised medians provide a refuge area for pedestrians or turning vehicles, and reduce mid-block accidents. Medians can also be used as part of an overall corridor access management strategy to reduce vehicle conflicts, increase capacity, and reduce accidents at intersections.



Without and With
Access Management

  It is important to provide for left turn maneuvers at downstream intersections or strategically placed median breaks when medians are used for access management. Medians, whose function is to restrict left turn movements, can be relatively narrow and still provide the necessary channelization. Medians at critical intersections can have a specialized dropped, low curb to ensure access for emergency services equipment and personnel.

  Landscaped medians provide an aesthetic separation between travel lanes. Adequate room for tree growth must be provided. The width of landscaped medians is variable, depending on the varieties of trees and shrubs planted. Prior to the construction of

extensively landscaped medians, the maintenance and upkeep of the shrubbery should be determined.

- **Driveway location and design**

  Residential driveways along major roadways can cause critical conflicts between fast-moving traffic and slower traffic entering and exiting the driveways. If the number of residential driveways increases, the roadway will function as a high-speed residential street, with all of the dangers associated with such an arrangement. This situation can be avoided if subdivisions are designed with lots that face a major roadway, but their access is provided from a residential street at the back of the lot, or a reverse frontage road. Another method of managing access in this situation is to design residential driveways so they have shared access to the major roadway.

- **Driveway spacing**

  When too many access points are allowed, especially near an intersection, conflicting vehicle movements result. In the interest of providing safe and reasonable access to a site, planners and engineers should review development plans with respect to the entire impacted corridor and not the single development.

  Wherever possible, cooperation and consultation between adjacent landowners is encouraged to avoid conflicting designs. Limiting the number of access points per parcel and minimum lot frontages encourages proper driveway spacing along busy roads.

- **Corner clearance**

  Corner clearance is defined as the minimum distance required between an intersection and an adjacent driveway along an arterial road or collector street. According to the National Cooperative Highway Research Report 420, inadequate corner clearance results in traffic flow and safety problems, including:

  - Traffic being blocked by vehicles waiting to enter driveways;
  - Right or left turns out of driveways being blocked;
  - Rear-end and broadside collisions caused by inadequate time for motorists to react to vehicles entering and exiting the driveway; and
  - Driver confusion about where it is permissible to enter and exit the driveway.

- **Internal site circulation**

  Oftentimes, access management strategies are limited to the roadway right-of-way line, but the movement of traffic into and out of properties can be dramatically affected by the internal design for on-site circulation. Typical designs for internal circulation are concerned with the orientation of the buildings, the parking areas, and the highway access points. The optimal internal circulation design approach also includes:

  - Providing safe and reasonable access to and from the street to motorists, bicyclists, and pedestrians; and
  - Providing a reasonable transition between the access and the internal circulation, especially by making sure the driveways are wide and long enough. (Center for Transportation Research and Education at Iowa State University)

Targeted Traffic Enforcement

Consistent and reliable enforcement of the traffic laws will help address public concerns about traffic issues. In areas with complaints about speeding and reckless or inconsiderate

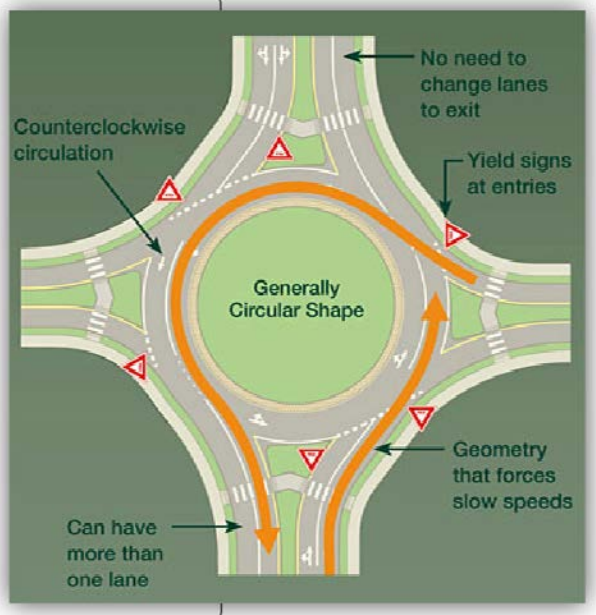
driving, responsive law enforcement staff can do much towards gaining the public's trust and compliance. Focused speed studies (using radar trailers and traffic counters) can be employed to discourage speeding on residential streets. The MPO can work with local law enforcement to identify corridors of concern or hotspots in order to maximize the impact of enforcement activities.

Traffic Calming

There are instances where the number of aggressive drivers is greater than human resources can address. Many cities and counties have implemented various self-enforcing speed and volume control devices. The majority of these measures are referred to as "traffic calming." These self-enforcing physical devices can assist law enforcement in influencing driver behavior.

Traffic calming is often controversial and complicated to discuss. Most traffic calming measures are applied to residential streets, though certain measures can be applied to higher volume roadways as well. Broadly defined, the goals of traffic calming measures are as follows:

- To slow down the average vehicle speeds for a particular roadway;
- To address excessive volumes for a particular roadway; and
- To remind drivers of or reinforce the residential nature of specific roadways.



Traffic calming measures are designed to slow down or impact all traveling vehicles. In practice, this can lead to reduced access and response times for emergency and law enforcement personnel. Careful consideration must be given to any proposed traffic calming device, especially if the roadway under review provides critical access for emergency personnel. It is therefore important to involve representatives of the fire, police and emergency services departments in the review of proposed traffic calming measures. By involving all affected parties, including concerned members of the public, compromises can be developed prior to a final design plan. The MPO can work with its planning partners and emergency response agencies to identify locations suitable for traffic calming implementation. Common traffic calming measures include:

- **Forced turn islands**

  Forced turn islands require that vehicles entering an intersection perform a designated movement.

- **Roundabouts**

  Roundabouts require entering traffic to yield to vehicles already in the intersection and to travel counter-clockwise around the device. Roundabouts have proven very effective in reducing neighborhood speeds and discouraging through traffic without compromising throughput.

- **Centerline medians**

  Centerline medians are designed to reinforce lane assignments, especially along constrained roadways. The

median can serve as a slight speed reduction device, or to discourage speeding on dangerous curves. Medians can be placed near or at intersections to provide assistance for pedestrian access. For wide intersections, the location of a dividing median in combination with a crosswalk can play a large role in reducing the risk associated with pedestrian crossings.

- Speed humps

  Speed humps are designed to cause driver discomfort when traversed at speeds higher than the posted speed limit. The hump approaches can be altered to create more or less severe slopes, resulting in greater reduction in travel speeds.

High Occupancy Vehicle Lanes

High Occupancy Vehicle (HOV) lanes are dedicated for use by vehicles with additional passengers and thereby serve to increase the total number of people moved through a congested corridor. HOV lanes offer two kinds of travel incentives:

- Substantial savings in travel time; and
- Reliable and predictable travel time.

HOV lanes move significantly more people during congested periods, even if the number of vehicles that use the HOV lane is lower than on the adjoining general purpose lanes. In general, carpoolers, vanpoolers, and bus patrons are the primary beneficiaries of HOV lanes by allowing users to move more easily through congestion. In coordination with its planning partners, the MPO can identify corridors that would benefit from the implementation of HOV lanes.

Traffic Incident Management

Traffic Incident Management (TIM) consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM strategies reduce the duration and impacts of traffic incidents and improve the safety of motorists, crash victims, and emergency responders. Traffic incident management involves coordination among a number of public and private sector partners, including:

- Law enforcement;
- Fire and rescue;
- Emergency medical services;
- Transportation;
- Public safety communications;
- Emergency management;
- Towing and recovery;
- Hazardous materials contractors; and
- Traffic information media.

The MPO can facilitate coordination among the various TIM stakeholders.

COMPLETE STREETS

The concept of "Complete Streets" is rooted in the idea that roads should be built with all users in mind, not just the private automobile. While Complete Streets strategies include many TDM and TSM&O strategies, the concept focuses less on improving traffic conditions and more on the livability of places. Complete Streets strategies address the needs of all

users of the transportation system, including the young and the old, the disabled, and users of transit or non-motorized forms of transportation, and bring a wide range of benefits such as improved safety, equity and access, economic development, air quality, health, and livability. While policies adopted by local governments represent the majority of Complete Streets policies adopted nationwide, MPOs can be integral partners in promoting and implementing Complete Streets strategies. The following section discusses some of the common features of Complete Streets, their benefits, state- and local-level policies, and recommendations for how the MPO can encourage local governments to adopt a Complete Streets approach.

Common Features of Complete Streets

Complete Streets incorporate physical improvements that enhance the reliability, safety, and convenience of all modes of transportation, so users can select the best way to reach their destination based on their needs - whether by car, transit, bicycle, or on foot. Physical improvements range from providing specific facilities such as bike lanes, to incorporating features intended to slow the speed of automobile traffic to improve safety. There are a wide range of design elements that planners and engineers should consider when implementing a complete street. The final design, however, will depend both on the needs of the end user and the context of the street.

Pedestrian Features

There are many users of the transportation system who either choose not to drive or cannot drive, including children under the age of 16, many older Americans, and persons with certain disabilities. Additionally, low-income individuals may not have access to a private automobile, and many millennials are choosing to drive less or not to own a car at all. Walking not only offers additional transportation options to these individuals, as well as drivers, but also provides recreational and social opportunities for many.

Sidewalks and Buffers

Many roadways lack sidewalks. Where sidewalks do exist, a significant portion is in need of improvements. Improving pedestrian facilities means not only providing sidewalks, but also making sure sidewalks connect people to homes, jobs, shops, restaurants, and other important activity centers. Buffers between pedestrians and automobile traffic may also encourage sidewalk use by improving both real and perceived safety. Examples of different types of buffers include planting strips of grass or trees, bike lanes, or parking.

High Visibility Crosswalks

High visibility crosswalks improve both real and perceived safety for pedestrians by making crosswalks more noticeable to drivers and by improving the confidence of persons on foot. Pedestrian hybrid beacons, flashing pedestrian lights, pedestrian crossing signs, crosswalk lighting systems, and crosswalks that use different paving materials all provide varying levels of higher visibility for pedestrians.

Bulb-outs, Pedestrian Refuge Islands, and Medians

Bulb-outs, pedestrian refuge islands, and medians all serve similar purposes, namely, to reduce the crossing distance for pedestrians, to provide safe places for pedestrians to wait, and to calm vehicular traffic. Bulb-outs, also known as curb extensions, increase the visibility of pedestrians and shorten their crossing distance by extending the sidewalk into the parking lane. By increasing the visibility of pedestrians, visually narrowing the roadway, and tightening the turning radius, bulb-outs also slow passing and turning vehicles.

Pedestrian refuge islands and medians provide safe places for pedestrians to wait, particularly on wide roadways where pedestrians may not be able to make the entire crossing at once. In fact, the risk associated with crossing an arterial without a median is about 6.5 times higher than the risk for pedestrian crashes on arterials with medians (Theodore A. Petritsch P.E., 2008).

Street Trees and Lighting

Street trees make walking more enjoyable and comfortable by providing shade and creating visual interest. As previously mentioned, street trees are also used to create a buffer between pedestrians and vehicular traffic. Street lights, on the other hand, support mobility at nighttime and create a nighttime visual environment. During the day, street poles and fixtures can also act as defining visual characteristics. Street lights increase the visibility of pedestrians and contribute to a greater sense of security. Some evidence shows that street lights may help to reduce crime. In 2008, the Department of Justice published a report providing guidance on improving street lighting to reduce crime in residential areas.

Americans with Disabilities Act (ADA) Compliant Curb Ramps

Even where sidewalks do exist, many are not accessible to persons with disabilities. Without curb ramps, it is often difficult or impossible for a person using a wheelchair, scooter, walker, or other mobility device to cross a street. A curb ramp is a short ramp cutting through a curb or built up to it that allows persons with disabilities to safely transition from a roadway to a curbed sidewalk and vice versa. In order to comply with ADA regulations, curb ramps must meet specific standards for width, slope, cross slope, placement, and other features. Title II of the Americans with Disabilities Act requires state and local governments to make pedestrian crossings accessible to people with disabilities by providing curb ramps. There are different regulations for pre-ADA streets, newly constructed post-ADA streets, and altered post-ADA streets (United States Department of Justice Civil Rights Division, 2007).

The City of Tyler has already installed multiple ADA compliant curb ramps, but study area-wide improvements will have to continue to achieve full compliance.

Bicycle Features

Biking represents a primary form of transportation for many individuals, and also provides recreational opportunities for others. However, many roadways do not provide facilities for bicycle users or there are significant gaps in service. Additionally, knowledge about how to safely share the road is often lacking among both drivers and bicyclists. While education programs are an important tool for changing driver and biking behaviors, there are also many design improvements that enhance safety by increasing the visibility of bicyclists, or by providing them with separate facilities.

Bike Lanes

There are a variety of different bicycle facilities, from on-street, shared lanes with automobiles, to exclusively dedicated bicycle lanes separated from automobile traffic, all of which provide varying levels of real and perceived safety.

- **Shared Lanes ("Sharrows")**

  Shared lanes, or sharrows, use pavement markings that include a bicycle symbol and two white chevrons to remind motorists that bicyclists are permitted to use the full lane, and promote awareness of cyclists on the road.

- **Exclusive Bike Lanes**

  Exclusive bike lanes are intended for bicycles only. They are typically delineated using a solid white line. Where traffic may need to cross bike lanes, the striping typically changes to a dashed line and may also be painted green to call attention to cyclists.

- **Cycle Tracks**

  Cycle tracks are exclusive bike lanes that are separated from vehicular traffic using some sort of barrier, such as medians or parked cars.

Wide Shoulders

The use of wide shoulders to provide safe transportation for bicyclists is an example of where Complete Streets strategies may differ based on context, particularly in urban versus rural environments. In a rural environment where vehicular traffic is not as high as in urban areas and where opportunities for conflict are fewer, simply providing a wide shoulder for bicycles can be considered an effective Complete Streets strategy.

Transit Features

Complete Streets accommodate not only non-motorized forms of transportation, but also promote public transportation options. However, pedestrian and bicycle features play a significant role in improving the quality of transit services, as most transit trips start as either a walking or biking trip. In many communities, individuals are unable to use transit because there are no safe or convenient connections either from their home or to their destination. Even in areas where sidewalks exist and bike facilities are available, other features such as the design of transit stops, the configuration of the roadway, and traffic signalization can contribute to poor quality of service and discourage people from using public transportation.

Transit Stops

In certain cases, a transit stop is just a sign on the side of the road. There is no protection from the elements or place to rest while waiting. Not only is it unsafe in some areas to have transit riders waiting on the side of the road, particularly where there are no sidewalks, but the lack of amenities may also deter individuals from using public transportation.

The quality of transit stops can be greatly improved by providing amenities such as shelter, lighting, benches, and trash cans. Maps of the bus system and bus schedules increase the ease with which people can use transit. Other features to consider include bike parking, real time bus information, and Wi-Fi services.

Tyler Transit has installed shelters and amenities at multiple stop locations within the service area and continues to make additional improvements.

Dedicated Bus Lanes

In most places, buses have to endure traffic with the rest of the vehicles using the roadway. When buses pull over to pick up passengers, they are required to merge back into traffic. This can oftentimes be difficult and further impacts travel time. Bus Rapid Transit, or BRT, offers a higher quality service by providing buses with a dedicated lane for all or most of their journey. This allows buses to operate at higher speeds even when roadways are congested, and increases the reliability of the service. BRT also utilizes a combination of advanced technologies, infrastructure, and operational investments that provide significantly better service than traditional bus service. Some other features common to BRT service include:

- Off-board fare collection (to reduce on-board fare collection time);
- Traffic signal priority (that gives special treatment to transit vehicles at signalized intersections);
- Low-floor vehicles (to reduce dwell time at stations by eliminating internal steps); and
- More and wider doors (to facilitate the rapid entry and exit of passengers).

Priority Signal System

Traffic signal priority for transit can be implemented, even where dedicated bus lanes are not provided. Signal priority can take the form of either *passive* priority or *active* priority. *Passive* priority strategies seek to favor roads with significant transit use in the area-wide traffic signal timing scheme. Signals along these roads would stay green longer than those on cross streets. Timing coordinated signals at the average bus speed instead of the average vehicle speed can also help to improve the speed and reliability of transit services.

Active signal priority strategies give transit vehicles special treatment and involve their detection. The system can give an early green signal or hold a green signal that is already displaying as a transit vehicle approaches the intersection. Therefore, an active system must be able to detect the presence of a bus and predict its arrival time at the intersection.

Similarly, a queue jump lane is a short stretch of bus lane combined with traffic signal priority. The idea is to enable buses to by-pass waiting queues of traffic and to cut out in front by getting an early green signal. A special bus-only signal may be required. The queue jump lane can be a right-turn only lane, permitting straight-through movements for buses only. A queue jump lane can also be installed between right-turn and straight-through lanes. A similar arrangement can be used to permit a bus to cross traffic lanes to make a left turn immediately after serving a curb-side stop. (Federal Transit Administration)

Traffic Calming Features

In addition to providing more options for people to walk, bike, or ride transit on all roadways, Complete Streets strategies also incorporate features to calm vehicular traffic where appropriate. Traffic calming features are frequently implemented near cross walks or in residential areas where non-motorized traffic might be higher. Traffic calming relies on physical improvements such as traffic circles, or roundabouts, speed humps, raised medians, and bulb-outs to slow the speed of vehicular traffic to protect both drivers and pedestrians alike. In addition to already discussed strategies, a narrowing of lane width could also be considered:

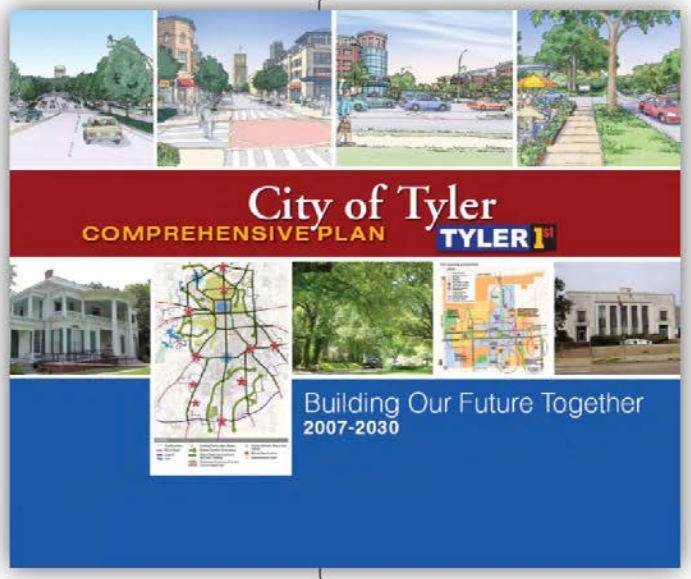
Narrower Street Lanes

Narrower street lane widths may be used to manage or reduce speed and shorten crossing distances for pedestrians.

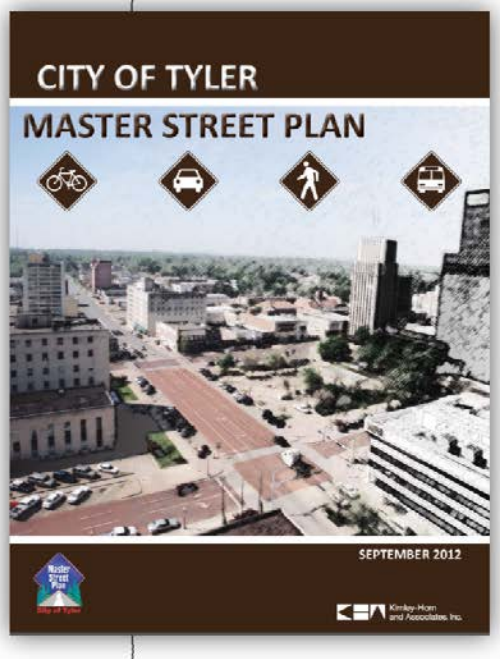
Complete Streets Policies

Complete Streets policies can be adopted by states, regional governing agencies, counties, or local jurisdictions. Policies come in a variety of forms, and may include:

- Resolutions;
- Ordinances passed through City Council;
- Executive orders from a mayor's office;
- Comprehensive plans and transportation plans;
- Internal policies within a department; and/ or
- Design guidelines.



Nearly half of the Complete Streets policies are resolutions and approximately one in five are legally binding ordinances. Policies adopted by local governments represent the majority of Complete Streets policies adopted nationwide (Smart Growth America, 2013). However, MPOs can still be an integral partner in promoting and implementing Complete Streets strategies. The following section discusses state-level Complete Streets policies in Texas and provides recommendations for ways the MPO can encourage implementing agencies to take a Complete Streets approach to planning and designing roadways for all users.



City of Tyler

The City's recently updated Comprehensive Plan – Tyler 1st discussed the need for 'Livable Streets', which are "designed for people and not just to move vehicles." (City of Tyler, 2014) Several recommendations within the Comprehensive Plan focus on improving the travel experience and environment for pedestrians and cyclists, as well as accommodate vehicles. The City's 2012 Master Street Plan also discussed the Complete Streets concept and offered context-sensitive roadway design elements.

State-Level Policies

The Texas Department of Transportation (TxDOT) released a guidance memo in 2011 stressing the importance of building roads that includes space for people to walk and ride bicycles. The memo included the following language:

> *"With this stronger emphasis for multimodal transportation facilities, TxDOT is committed to proactively plan, design and construct facilities to safely accommodate bicyclists and pedestrians. It is critical that bicycle and pedestrian accommodations be considered and discussed as the need and purpose of a project is defined during the National Environmental Policy Act (NEPA) process, taking into consideration existing and anticipated bicycle and pedestrian facility systems and needs."*

In 2011 and 2013, Complete Streets bills were introduced in the Texas legislature. The bills, which were identical, would have required planners to consider all modes of transportation, such as biking and walking, in the planning and design of transportation projects. However, both bills failed to pass.

RECOMMENDATIONS

The following recommendations are listed in no particular order:

- Encourage continued coordination of the metropolitan transportation planning process with the development of local transportation and comprehensive plans to promote the inclusion of facilities and systems related to transit, biking, and walking.
- Encourage transportation planning partners to consider cost-effective, no-build strategies, such as Travel Demand Management, Transportation Systems Management & Operations, and Complete Streets design prior to investing in roadway capacity improvements.
- Work with large area employers to explore and implement employer-based travel demand management tools and Incentives.
- Consider giving funding preference to projects that incorporate Travel Demand Management and Transportation System Management & Operations strategies, reflect Complete Streets design principles, or set regional multi-modal transportation goals and community priorities through a robust public involvement process.

XII. ENVIRONMENTAL ANALYSIS

Metropolitan transportation planning is not solely concerned with the best way to move people and goods. In addition to mobility concerns, the transportation system also has significant impacts on the natural and human environment, from air quality and natural resource consumption, to quality of life and cultural resources. Great care and consideration must be taken at each step of the metropolitan transportation planning process to ensure that the need for increased mobility is not provided at the expense of the natural environment, historical resources, or certain populations, such as minorities or low-income residents.

The following chapter discusses environmental, social, and cultural issues in the Tyler Urbanized Area, evaluates potential impacts of the list of transportation improvements prioritized for implementation in the 2040 MTP, and presents potential mitigation strategies for lessening the impact on these important resources.

AIR QUALITY

Improving regional air quality and maintaining compliance with federal air quality standards is a fundamental consideration in the metropolitan transportation planning process. The construction of new transportation infrastructure increases the capacity for vehicles on regional roadways, which has the potential to increase traffic-related air pollutants in the Tyler Urbanized Area.

In 1963, in response to increasing air pollution, the U.S. Congress passed the Clean Air Act which established a federal program for researching techniques to monitor and control air pollution. The act requires the Environmental Protection Agency (EPA) to develop national ambient air quality standards to limit common and widespread pollutants. These standards, known as the National Ambient Air Quality Standards (NAAQS), define the allowable concentration of pollution in the air for six "criteria" pollutants, including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide.

The Clean Air Act identifies two types of national ambient air quality standards:

- *Primary standards* provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
- *Secondary standards* provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The existing standards for each of the six "criteria" pollutants are listed in the table on the following page. The units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

Table XII-1: Existing Standards for Criteria Pollutants

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide[1]		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead[2]		Primary and Secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide		Primary[3]	1-hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary[4]	Annual	53 ppb	Annual mean
Ozone[5]		Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest maximum daily 8-hour concentration, averaged over 3 years
Particle Pollution[6]	$PM_{2.5}$	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year, averaged over 3 years
Sulfur Dioxide		Primary[7]	1-hour	75 ppb	9th percentile of daily 1-hour maximum, averaged over 3 years
		Secondary[8]	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: Environmental Protection Agency (EPA)

Regions are designated by the EPA as either in attainment or nonattainment for NAAQS. Attainment means the concentration of each pollutant does not exceed NAAQS. Non-attainment means the concentration of at least one pollutant exceeds the maximum defined threshold. If an area is designated as non-attainment, the State must develop and submit a State Implementation Plan (SIP). The SIP addresses each pollutant that exceeds NAAQS and establishes an overall regional plan to reduce air pollution emission levels, designed to return the area to, and maintain, attainment status. Once a nonattainment area meets the standards, EPA will designate the area to attainment as a "maintenance area." Maintenance

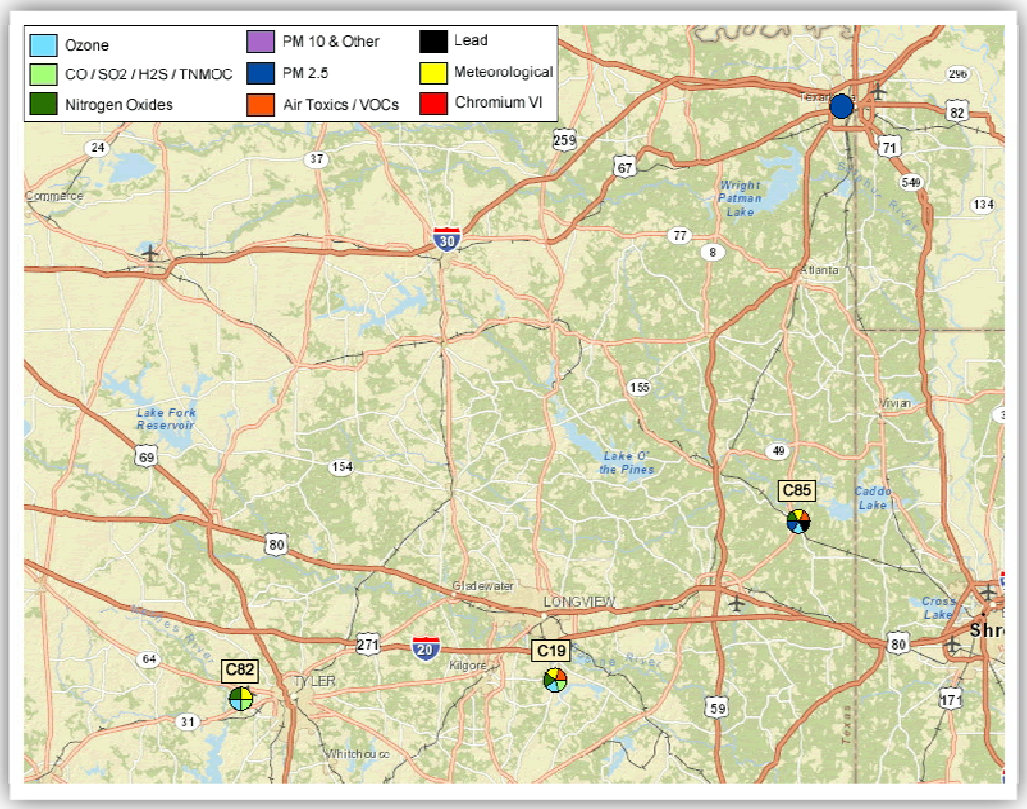
[1] *76 FR 54294, Aug 31, 2011*
[2] *73 FR 66964, Nov 12, 2008*
[3] *75 FR 6474, Feb 9, 2010*
[4] *61 FR 52852, Oct 8, 1996*
[5] *73 FR 16436, Mar 27, 2008*
[6] *Dec 14, 2012*
[7] *75 FR 35520, Jun 22, 2010*
[8] *38 FR 25678, Sept 14, 1973*

areas are required to have a Maintenance Plan in place to ensure continued attainment of the respective air quality standard. The Clean Air Act defines specific timetables to attain air quality standards, and requires non-attainment areas to demonstrate reasonable progress in reducing air pollutants until the area achieves attainment.

Air Quality in the Tyler Urbanized Area

Air quality in the Tyler Urbanized Area is monitored at three Continuous Air Monitoring Stations (CAMS): The Tyler Monitor (CAMS-82) is located at the Tyler Airport. The other two monitors are located in Longview, Texas at the Gregg County Airport (CAMS-19), and in Karnack, Texas (CAMS-85). The locations of the three stations are shown in Figure XII-1.

Figure XII-1: Continuous Air Monitoring (CAM) Station Locations



Source: Texas Commission on Environmental Quality, Daily Summary Report by Site.

In 1995, EPA considered designating the Tyler-Longview-Marshall area, which includes the five counties of Gregg, Harrison, Rusk, Smith, and Upshur, as non-attainment due to periodic high levels of ozone measured in the summer of 1995, which were in exceedance of the 1-hour standard in place at the time. Ozone is a ground-level pollutant formed when volatile organic compounds (VOCs) and nitrogen oxides react in sunlight. Ozone can affect young people, older adults, and individuals with breathing issues, as well as decrease visibility and cause damage to animals, crops, vegetation, and buildings. Prior to 2008, the eight-hour standard for ozone was set at 0.08 ppm. Rather than face environmental sanctions, a voluntary, cooperative association of governments and industries within the five-county area, known as the Northeast Texas Air Care (NETAC) Association, was formed to guide a more comprehensive and regional approach to improving air quality.

Early Action Compact (EAC) Plan

In 1996, NETAC, along with the East Texas Council of Governments, and local government and industry leaders developed a Memorandum of Understanding (MOU) to establish a Flexible Attainment Region (FAR) for the five-county area. The FAR agreement was approved by the EPA and the Texas Commission on Environmental Quality (TCEQ), and provided steps for communities and industries to take to reduce ozone-causing emissions. In 2001, the FAR agreement, however, was not extended by EPA, due to several exceedances of the 1-hour ozone NAAQS. Instead, NETAC worked with TCEQ to develop a SIP for the Northeast Texas region that was adopted on March 13, 2002.

Statewide Improvement Program Revisions

In December 2002, TCEQ, EPA, and the local governments in the five-county NETAC region entered into an Early Action Compact to develop and implement a Clean Air Action Plan (CAAP) that would reduce ground-level ozone concentrations throughout the five-county area. The goal of the CAAP was to comply with the eight-hour ozone standard by December 31, 2007 and maintain the standard beyond that date. On March 31, 2004, the EAC plan was submitted to TCEQ for incorporation into the State Implementation Plan (SIP). It was revised on November 17, 2004. The five-county area showed progress in reducing ozone-levels between 2002 and 2008, as shown in Table XII-2.

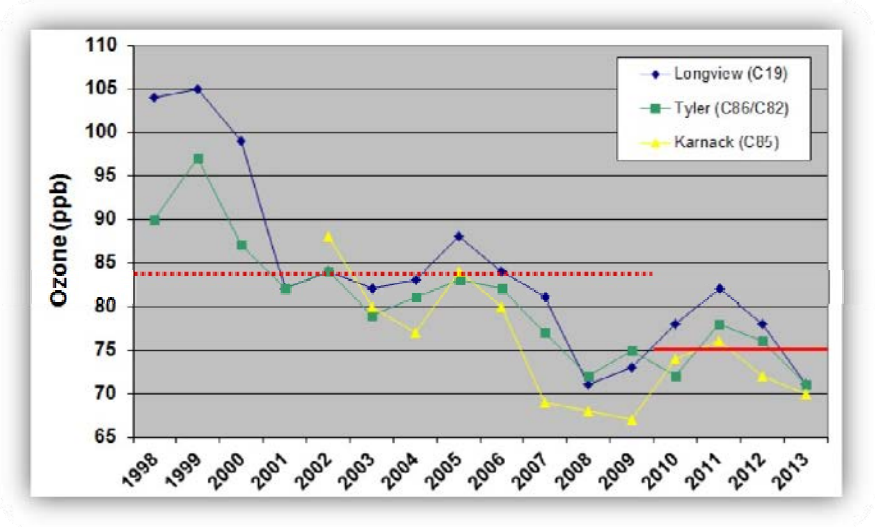
Table XII-2: NETAC Region Ozone Levels - 2002-2008

Year	Longview Ozone (in ppb)	Tyler Ozone (in ppb)	Karmack Ozone (in ppb)
2002	84	84	88
2003	82	79	80
2004	83	81	77
2005	88	83	84
2006	84	82	78
2007	81	77	69
2008	71	72	68

Source: Tyler Area MTP 2035 Metropolitan Transportation Plan

On March 27, 2008, the EPA strengthened the eight-hour ozone standard to 0.075 ppm (or 75 ppb). The previous standard of 0.08 ppm and the 2008 standard are depicted in Figure XII-2, along with the annual 4th highest eight-hour ozone values at each of the Northeast Texas monitoring sites. Gregg, Harrison, Rusk, Smith, and Upshur counties were designated attainment/unclassifiable under the 2008 eight-hour ozone NAAQS, effective July 20, 2012.

Figure XII-2: 4th highest 8-hour Ozone Values at Northeast Texas CAMS



Source: Tyler Area MPO 2015-2018 TIP

While the five-county area is currently in attainment, the EPA has the authority to periodically adjust the NAAQS. The ability for standards to change at any time highlights the importance of local and regional efforts to continually work towards pollution reduction. The next adjustment to the ozone standards is expected in late 2014. If the ozone level adjustment is lowered to the 60-70 parts per billion range, as anticipated, all three monitors would show non-compliance. Failure to comply with the standards would negatively impact public health and could result in environmental sanctions for the region. Therefore, it is important that efforts to reduce the amount of air pollutants in the region continue and expand.

Transportation Planning and Air Quality

Tailpipe emission from automobiles and trucks react with sunlight to produce a significant amount of the ozone present in the air. As the Tyler Urbanized Area continues to grow and develop, an increasing number of automobiles and trucks will travel the area. Any increase in traffic may affect air pollutant levels in the region. Therefore, it is important that the metropolitan transportation planning process encourages programs and policies that ensure environmental impacts are considered and conform to federal and state air quality requirements.

Emissions Reduction

Programs and polices currently utilized to control vehicle emissions and ozone pollution in the Tyler Urbanized Area, include ozone awareness and education efforts facilitated by the East Texas Council of Governments (ETCOG) as well as annual vehicle inspections that measure tailpipe exhaust for pollutant levels.

Additional voluntary ozone reduction measures that could be considered for implementation within the study area are as follows:

- Participation in EPA Clean School Bus USA program;
- Implementation of "no idle" zones and truck stop electrification; and
- Development of commuter-based programs, which promote ride-sharing (carpools, vanpools, and schoolpools) and the use on non-automobile travel options such as transit, biking, and walking.

ENERGY CONSERVATION

Vehicles not only produce emissions that must be controlled for various reasons detailed in the previous section, but cars and trucks also consume significant amounts of energy. For most vehicles, their source of energy is derived from fossil fuels with finite supplies. Therefore, every effort must be made to reduce the depletion of these natural resources. There are several strategies that can be taken to reduce the amount of energy consumed for transportation purposes.

Alternative Fuel Transportation Technologies

One way to reduce energy use is through the utilization of newer transportation technologies. Vehicle technologies include compressed natural gas, electric, or alternative fueled vehicles and newer hybrid fuel systems, higher capacity batteries, lighter vehicle materials, and even improved engines that use conventional fuels more efficiently, requiring less energy.

Alternative Transportation Modes

Additional strategies for conserving energy include public outreach and education regarding the use of alternative modes of transportation that may reduce the number of individual vehicle trips and their associated energy needs. Alternative modes include carpools, vanpools, or other shared-ride transportation, and utilization of the public transit system, and non-motorized modes like walking and biking, for all or a portion of daily trips. For a list of strategies for increasing the use of alternative modes of transportation, please refer to the *No-Build Strategies - Chapter XI.*

QUALITY OF LIFE

Transportation is not just about moving people and goods. As part of the metropolitan transportation planning process, it is important to consider potential social, economic, and community impacts, as transportation helps shape resident's quality of life, the region's economic outlook, and the community's land use and future growth.

Historic Preservation

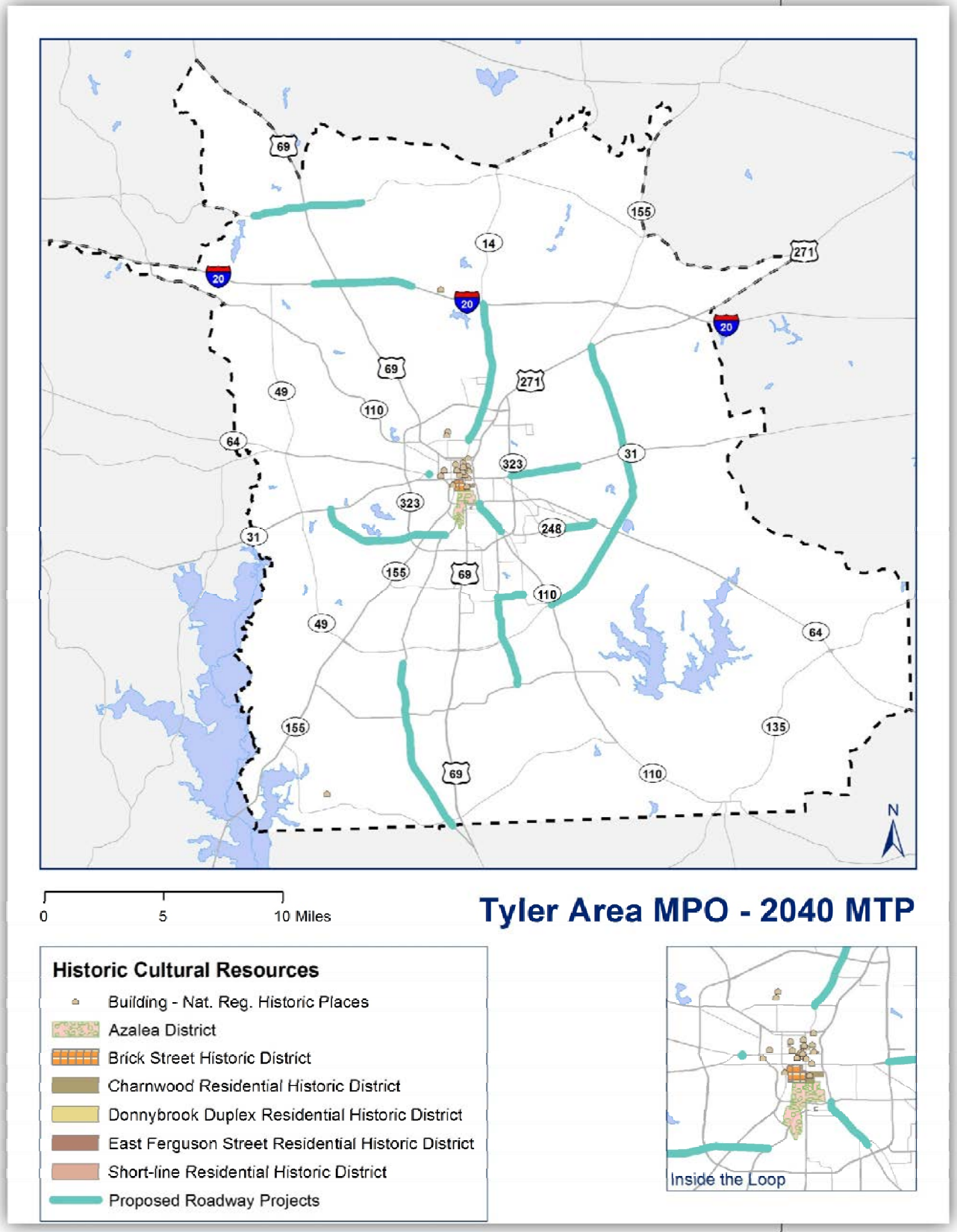
The City of Tyler, through the Tyler Historical Preservation Board, recognizes and preserves the City's historic landmarks through a voluntary owner participation program. The majority of sites are located within Loop 323, with a particular concentration of historic structures within and just south of the Central Business District. There are 68 sites designated as historic landmarks on the Local Register of Historic Places in the City of Tyler. Additionally, there are a number of eligible sites or already designated properties on the National Register of Historic Places and/or the Texas Historic Landmark Register. The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources. Currently, 26 historic sites and six historic districts in Smith County are designated on the National Register of Historic Places. These are listed in Table XII-3 and shown in Figure XII-3.

Table XII-3: National Register of Historic Places in Smith County

MAP ID	Resource Name
Historic Districts	
1	Azalea Residential Historic District
2	Brick Streets Neighborhood Historic District
3	Charnwood Residential Historic District
4	Donnybrook Duplex Residential Historic District
5	East Ferguson Residential Historic District
6	Short-Line Residential Historic District
Historic Buildings/ Sites	
7	Dewberry, Col. John, House
8	Blackstone Building
9	Carnegie Public Library
10	Cotton Belt Building
11	Crescent Laundry
12	Douglas, John B. and Ketura (Kettie), House
13	Elks Club Building
14	Glass, D.R., Library at Texas College
15	Goodman-LeGrand House
16	Jenkins--Harvey Super Service Station and Garage
17	Martin Hall at Texas College
18	Marvin Methodist Episcopal Church, South
19	Moore Grocery Co. Building
20	People's National Bank Building
21	President's House at Texas College
22	Ramey House
23	Smith County Jail, 1881
24	St. James Colored Methodist Episcopal Church
25	St. John's AF & AM Lodge
26	St. Louis Southwestern Railway (Cotton Belt) Passenger Depot
27	Tyler City Hall
28	Tyler Grocery Company
29	Tyler Hydraulic-Fill Dam
30	Tyler US Post Office and Courthouse
31	Whitaker-McClendon House
32	Williams--Anderson House

Source: National Register of Historic Places, 2014

Figure XII-3: National Historic Preservation Sites and Districts



Source: National Register of Historic Places, 2014

ENVIRONMENTAL RESOURCES

The Tyler Urbanized Area is growing and experiencing rising demand on the transportation system. Providing increased mobility for individuals must not come at the expense of the natural and built environment, nor the social environment, which can decrease quality of life in the region.

Parks and Recreation

Many individuals enjoy the parks and recreational facilities available in the Tyler Urbanized Area. As plans are considered and roadway projects are implemented, it is important that new infrastructure does not encroach upon the parks. Figure XII-4 shows the existing parks in the Tyler Urbanized Area.

Roadways bring vehicles, sometimes traveling at high speeds, which, along with presenting safety concerns for people using nearby recreational facilities, can also bring noise and air pollution, as well as trash from littering. Many parks have significant wildlife habitats that may also be adversely affected by increasing nearby traffic. Finally, impervious cover, such as concrete and asphalt, results in run-off from the roadways when it rains. This run-off may include chemicals or substances from the roadway, which can result in the pollution of nearby streams, rivers, lakes, ground water, and swimming holes.

Floodplains and Wetlands

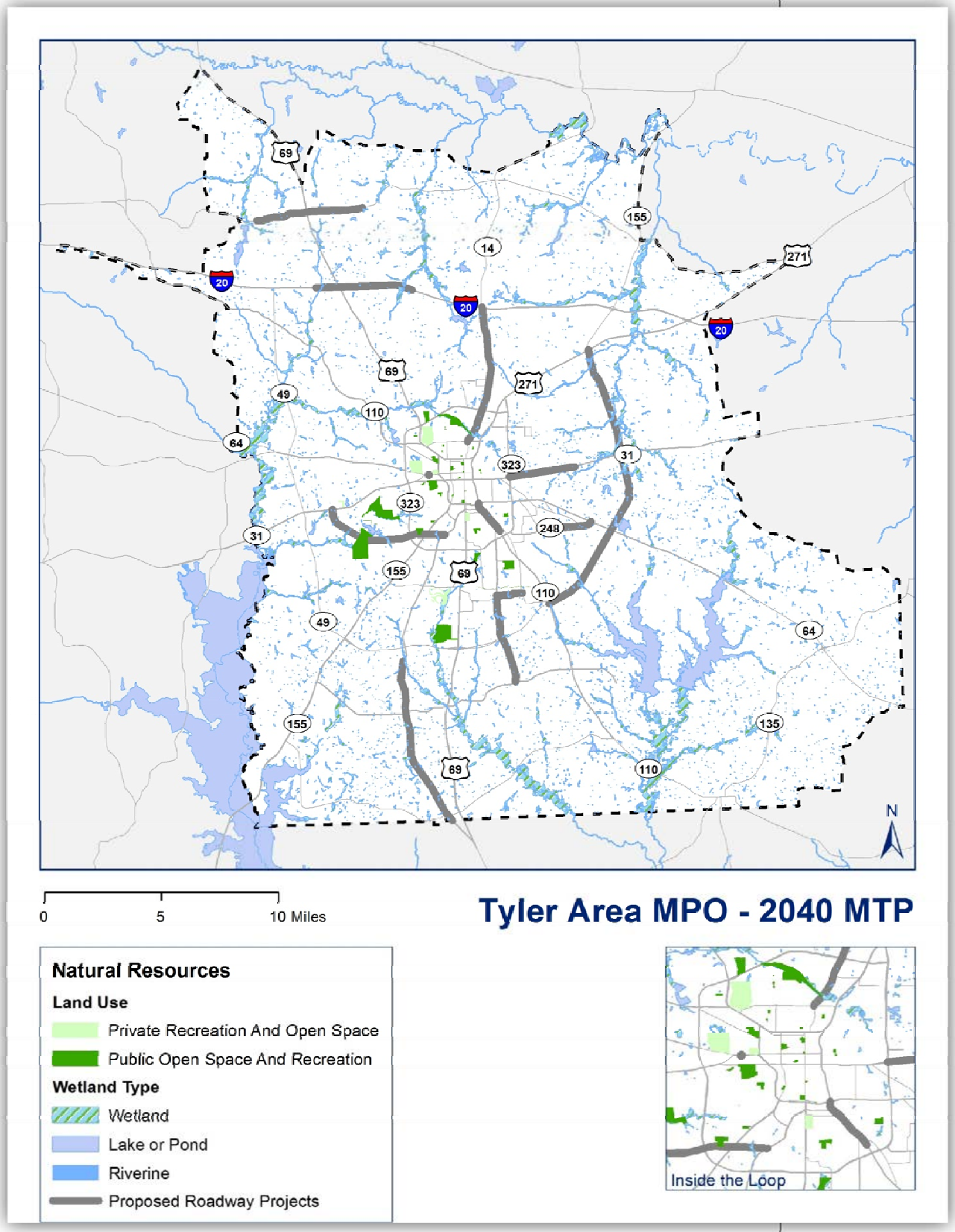
In addition to storm water run-off, the transportation network can also have significant impacts on the natural environment during the construction, operation, and even the maintenance of roadways. These impacts highlight why placing transportation facilities within floodplains, wetlands, or other environmentally-sensitive areas is discouraged.

Floodplains are the low-lands adjacent to a river or other major body of water that experience flooding during periods of high discharge. Wetlands, on the other hand, are areas inundated by surface or ground water frequently enough to support certain types of vegetation or aquatic life that require saturated soil conditions. EPA monitors, restores and provides programs to actively conserve wetlands. Along with the U.S. Army Corp of Engineers (USACE), environmental standards are established to designate wetlands and provide permits, in accordance with Section 404 of the Clean Water Act, for development, including roadways, that affect designated land, wetlands, and bodies of water.

Occasionally, despite efforts to abstain from implementing transportation infrastructure in these areas, it is determined that no other alternative choice is feasible and construction or improvement is necessary. Expansion will only be undertaken if it is demonstrated that the improvement will have no negative impacts upon the environment or that negative impacts will be mitigated.

Several of these environmentally sensitive areas exist in the study area. These areas include lakes and creeks that create environmental constraints that should be considered in the metropolitan transportation planning process. Figure XII-4 shows the parks, open space, wetlands, and other bodies of water in the Tyler Urbanized Area.

Figure XII-4: Natural Resources



Source: City of Tyler and U.S. Geological Survey

ENVIRONMENTAL MITIGATION

MAP-21 requires MPOs to include in their metropolitan transportation plans a discussion of potential environmental mitigation activities, and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. The discussion is to be developed in consultation with federal, state, and tribal wildlife, land management, and regulatory agencies. The environmental mitigation strategies and activities are intended to be regional in scope, and may not necessarily address potential project-level impacts[9].

Environmental Mitigation Strategies

Transportation projects will not impact every environmentally sensitive area equally, therefore the mitigation efforts used for a particular project should be tailored to the affected area. 40 CFR 1508.20 suggest that typical steps for mitigation include the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or
- Compensating for the impact by replacing or providing substitute resources or environments.

Potential environmental mitigation activities may include minimizing site disturbances in sensitive areas by modifying design, alignment or outright abatement of certain project features. Other potential mitigation strategies include, construction staging, introducing off-site areas, and compensation or replacement of impacted environmental resources. Potential mitigation measures with regard to specific resources are shown in Table XII-4.

[9] *Project-level impacts are addressed during preliminary engineering, prior to project implementation.*

Table XII-4: Environmental Mitigation Strategies

Resource	Mitigation Measure
Agricultural areas	Mitigation sequencing requirements involving avoidance, minimization, compensation (could include preservation, creation, restoration, in-lieu fees, riparian buffers)
	Design exceptions and variances
	Environmental compliance monitoring
Ambient air quality	Transportation control measures, transportation emission reduction measures, adoption of local air quality mitigation fee program, development of energy efficient incentive programs
	Adoption of air quality enhancing design guidelines
Cultural resources	Avoidance, minimization
	Landscaping for historic properties
	Preservation in place of excavation for archeological sites
	Memoranda of Agreement with the Department of Historic Resources
	Design exceptions and variances
	Environmental compliance monitoring
Endangered and threatened species	Avoidance, minimization
	Time of year restrictions
	Construction sequencing
	Design exceptions and variances
	Species research
	Species fact sheets
	Memoranda of Agreements for species management
	Environmental compliance monitoring
Forested and other natural areas	Avoidance, minimization
	Replacement property for open space easements to be of equal fair market value and of equivalent usefulness

Resource	Mitigation Measure
	Design exceptions and variances
	Environmental compliance monitoring
Neighborhoods, communities, homes, and businesses	Impact avoidance or minimization
	Context sensitive solutions for communities (appropriate functional and/or aesthetic design features)
Parks and recreation areas	Avoidance, minimization, mitigation
	Design exceptions and variances
	Environmental compliance monitoring
Wetlands or water resources	Avoidance, minimization
	Design exceptions and variances
	Environmental compliance monitoring

Eco-Plan and NEPAssist, which are described in the following sections, offer additional resources to help with the visualization of potential impacts and associated discussion of mitigation measures.

Eco-Plan

Eco-Plan is a website (currently in beta mode) designed to merge data and mapping into a tool that helps transportation planning professionals identify the potential ecological impacts of their transportation plans using an Integrated Ecological Framework (IEF). The IEF is a stepped, peer-reviewed process that identifies conflicts early in the planning process, and assures that any mitigation that occurs will provide measurable and high-quality concerns.

Users can create maps for a particular area displaying several ecological data themes and overlay their specific transportation plans to display any conflicts that would need to be addressed. Unlike previous environmental planning tools, knowledge of Geographic Information Systems software is not required. Data is self-contained within the tool, using information published through several mapping services.

NEPAssist

NEPAssist is a web-based application used to facilitate the environmental review and project planning process with regard to environmental considerations. The tool draws environmental data from EPA Geographic Information System databases and web services, and provides immediate screening of environmental assessment indicators for user-defined areas. The tool contributes to a streamlined review process by, potentially, identifying important environmental issues at the earliest stages of project development.

ENVIRONMENTAL JUSTICE

Environmental justice reviews are conducted to ensure that all people are treated fairly, regardless of race, origin, or income, with regard to the implementation of transportation projects. The U.S. Department of Transportation (USDOT) mandates that non-discrimination principles be incorporated into the metropolitan transportation planning and decision-making processes. This means transportation projects that receive federal funding cannot have disproportionately adverse effects on minority or low-income populations.

The Tyler Area MPO considers the environmental justice principles contained in the following laws and policies:

- Title VI of the Civil Rights Act of 1964;
- The Civil Rights Restoration Act of 1987;
- The 1994 Executive Order on Environmental Justice (Number 12898); and
- The 1997 U.S. DOT Order on Environmental Justice.

The three cornerstones of the various laws, policies, and orders on environmental justice are:

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

Environmental Justice in Transportation Planning

The Tyler Area MPO incorporated environmental justice principles into the development of the 2040 MTP by identifying minority and low-income populations within the region, examining the proximity of the prioritized transportation improvements to concentrations of these populations, and utilizing public outreach efforts to engage underrepresented groups as described in the following sections.

Environmental Justice Populations

The Tyler Area MPO identified the locations of minority and low-income environmental justice population concentrations using appropriate U.S. Census data. Minority populations were identified at the census block group level (based on 2008-2012 (5-year average) American Community Survey data) and low-income populations were identified at the census tract level (based on 2008-2012 (5-year average) American Community Survey data).

Minority Census Block Groups

A block group is considered a minority census block group when the minority population of the block group is at least 50 percent. Out of the planning area's 124 census block groups, 28 have a minority population equal to or greater than 50 percent, and therefore, are considered minority, environmental justice populations. The concentrations of minority, environmental justice populations are generally located inside Loop 323, within the City of Tyler.

Low-Income Census Tracts

The Department of Housing and Urban Development defines low-income as “a family whose annual income does not exceed 80 percent of the median income for the area.” Based the 2008-2012 American Community Survey data, the median household income in Smith County across all census tracts is $47,310. Therefore, any census tract with a median household

income equal to or less than $37,850 is considered to be a low-income, environmental justice population. Of the planning area's 40 census tracts, there are 12 tracts in Smith County considered low-income, environmental justice areas.

EJ View

EJView (formerly known as the Environmental Justice Geographic Assessment Tool) is a mapping tool available for users to create maps and generate detailed reports based on the geographic areas and data sets they choose. EJView includes data of many factors, such as demographic, health, environmental, and facility-level data, with the potential to affect human and environmental health within a community or region.

Environmental Justice Analysis

Minority and low-income populations are closely related and heavily concentrated inside Loop 323 as shown in Figure XII-5. Although there are low-income areas outside of Loop 323 (to the immediate northwest and far southeast) and high minority populations to the east, the Tyler Urbanized Area largely follows spatial patterns common to the majority of United States cities, where low-income individuals and minorities reside near the city core, while more affluent and mostly white individuals live in the outlying suburbs.

Projects in Relation to Environmental Justice Populations

Following the project selection process that is detailed in *Project Prioritization – Chapter XIV*, twelve projects were prioritized in the MTP. The prioritized projects range from new construction to roadway widening projects; and of the twelve, federally funded projects, there are four projects[10] which have a portion of their improvement located in an EJ designated area. Two projects solely affect a low-income area, and both are to widen existing lanes. The other two prioritized projects are located in both a high minority and low-income location. The construction and subsequent operation of these projects could have the following effects:

- Potential displacement due to property acquisition associated with right-of-way acquisition;
- Closing of lanes or inaccessibility of sidewalks during the construction phase; and
- Once completed, projects have the potential to increase traffic and introduce greater noise and air pollution to the area.

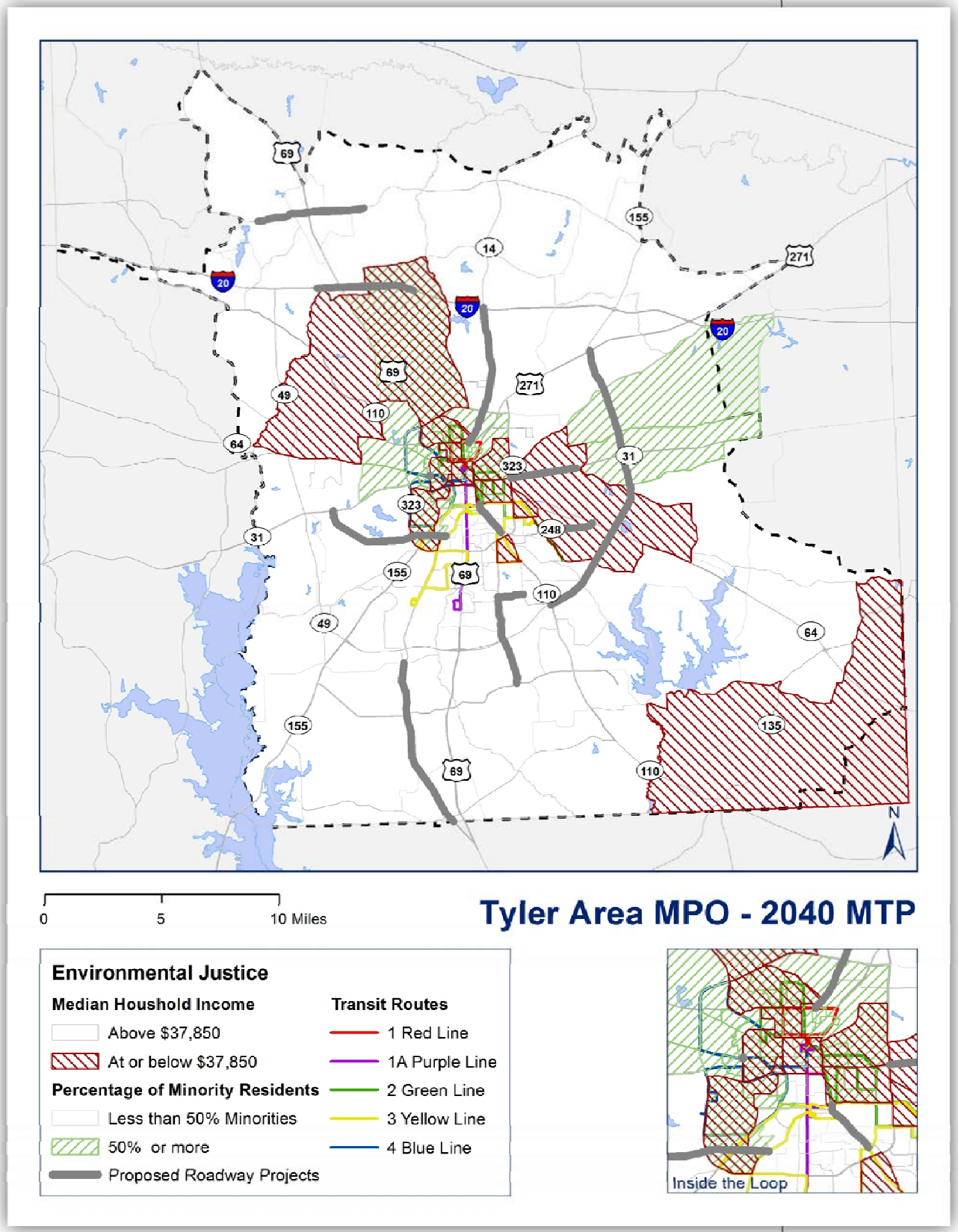
These are major concerns that were considered during the planning process. Most of the proposed improvements are located outside of the core areas, where the highest concentration of environmental justice areas occurs. Although five of the proposed projects are located in areas with designated Environmental Justice populations, disproportionately adverse impacts are, however, not anticipated.

Public Involvement in Relation to Environmental Justice

The Tyler Area MPO is committed to using strategies to ensure that all populations are involved in the transportation process, especially populations that are traditionally underserved by the transportation system. This commitment to all-inclusive efforts to properly identify and assess the transportation needs for everyone in the Tyler Urbanized Area also drove the public involvement efforts detailed in *Public Involvement - Chapter III*.

[10] *Three locally sponsored projects and the NET RMA sponsored Toll 49 extension are also located in EJ areas.*

Figure XII-5: Environmental Justice Areas



Source: 2008-2012 (5-year Average) American Community Survey and 2010 Census

LIMITED ENGLISH PROFICIENCY

As recipients of federal transportation funds, Tyler Transit and the Tyler Area MPO have pledged to take reasonable steps to provide meaningful access to its transit services for persons who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English.

As the population grows in the Tyler Urbanized Area, so too will the number of non-English speaking residents. Consideration of the needs of this population must be included in the metropolitan transportation planning process. Individuals who do not speak English as their primary language, and who may also have a limited ability to read, speak, write or understand English, are considered limited English proficient, or LEP. According to 2008-2012 (5-year estimate) American Community Survey, 16 percent of the population within Smith County speaks a language other than English, and 7 percent speak English less than "very well."

In 2012, the Tyler Area MPO revised its Limited English Proficiency Four Factor Analysis and Implementation Plan. The LEP plan was adopted to meet the Federal Transit Administration's requirement to comply with Title IV of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin. The Tyler Area MPO and Tyler Transit coordinate the implementation of identified measures and annually review the plan and its effectiveness.

CONTENTS

LIST OF TABLES

XIII. PROJECT PRIORITIZATION

Funding for regional transportation projects is limited. It is therefore important to have a project prioritization process in place that implements the community's vision and incorporates both a quantitative and qualitative assessment of the proposed improvements.

For the development of the 2040 Metropolitan Transportation Plan for the Tyler Urbanized Area, a project scoring tool was designed and used. To assess the community benefits of proposed transportation projects, the tool combined various key planning components:

- Input gathered from the public during the Visioning Workshop;
- Outputs obtained from the regional travel demand model; and
- The expertise of the Technical Advisory Committee (TAC) members.

The resulting product is a prioritized list of short-term transportation improvements - planned for implementation between 2015 and 2024, and a prioritized list of long-term transportation improvements - planned for implementation between 2025 and 2040. Based on this multi-faceted prioritization process, the listing of transportation projects is not only reflective of the community's vision, responsive to mobility needs, as well as technically sound, but it also complies with federal requirements for metropolitan transportation planning.

PLANNING FACTORS AND PROJECT CRITERIA

The most recent federal surface transportation bill - Moving Ahead for Progress in the 21st Century (MAP-21) - requires the transportation planning process for metropolitan areas to consider strategies and projects that address the following planning factors:

- Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness;
- Increase the **safety** of the transportation system for motorized and non-motorized users;
- Increase **security** of the transportation system for motorized and non-motorized users;
- Increase **accessibility and mobility** of people and freight;
- Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight;
- Promote **efficient system** management and operation; and
- Emphasize the **preservation** of the existing transportation system.

Based on these eight MAP-21 planning factors, a set of project scoring criteria was developed to ensure each aspect of the factors was taken into consideration in assessing the merits of the proposed projects. The project scoring criteria, which are listed below, are the same criteria used during the public Visioning Workshop to gather input regarding the community's priorities.

- Improve safety;
- Improve security;
- Protect the environment;
- Reduce congestion;
- Promote efficiency;
- Support economic development goals;
- Support land use goals;
- Increase connections;
- Improve access;
- Connect modes of travel;

- Conserve energy;
- Improve quality of life;
- Increase multi-modal options; and
- Preserve right-of-ways.

For a detailed description of each of the 14 project scoring criteria, please refer to the *Public Involvement - Chapter III.*

VISIONING WORKSHOP AND DEVELOPMENT OF EVALUATION CRITERIA

During the March 2014 Visioning Workshop, the public was asked to rank the criteria based on each participant's values. The ranking of the criteria was undertaken twice - once as a group exercise, and then, individually weighted.

For the group ranking of the criteria, each participant was provided with 24 sticky dots. The workshop participants were then asked to rank the criteria by distributing the dots among the 14 project scoring criteria according to the participant's personal preferences for the future of the transportation system. Participants were given the option to place as many or as few dots next to each of the 14 project scoring criteria as the participant deemed appropriate.

For the individually weighted ranking of the criteria, participants were asked to assess each of the project scoring criteria on a scale from 1 to 5 in the individual's participant workbook according to the level of importance perceived by the participant - with five representing an "extremely important" and one representing an "unimportant" criterion.

The results of both exercises were tabulated and a weight was assigned to each of the 14 project scoring criteria based on the participants' expressed preferences. The results are summarized in Table XIII-1.

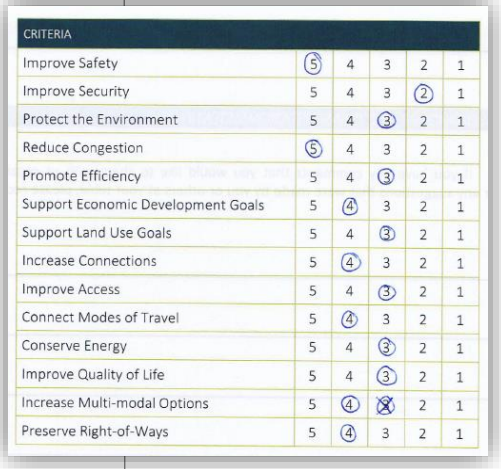


Table XIII-1: Project Scoring-Criteria Weighting

Public Ranking	Criteria	Weighting
1	Reduce Congestion	2.0
2	Improve Safety	1.9
3	Improve Quality of Life	1.8
4	Increase Connections	1.7
5	Connect Modes of Travel	1.6
6	Support Economic Development Goals	1.5
7	Increase Multi-modal Options	1.4
8	Conserve Energy	1.3
9	Improve Access	1.2
10	Preserve Right-of-Ways	1.1
11	Support Land Use Goals	1.0
12	Promote Efficiency	0.9
13	Protect the Environment	0.8
14	Improve Security	0.7
Total Weighting Points		18.9

The project scoring tool used the final list of prioritized criteria in its qualitative and quantitative evaluation process.

DEVELOPMENT OF PROPOSED PROJECT LIST

The list of proposed projects was developed iteratively in consultation with state and local transportation partners. The initial list of projects to be considered for inclusion in the 2040 Metropolitan Transportation Plan was developed from the following sources:

- For continuity purposes, the project selection process used in the previous MTP was reviewed and its validity was confirmed. Those projects that had been identified by the previous MTP, but had not yet been implemented were moved forward for prioritization and consideration in the 2040 Metropolitan Transportation Plan.[1]
- In June 2013, the Tyler Area MPO released an official call for projects to municipalities and transportation stakeholders within the Tyler Urbanized Area. One project was submitted by the North East Texas Regional Mobility Authority (NET RMA), which has been included, but does not require inclusion in the prioritization, as the project is expected to be fully funded by NET RMA. No other projects were submitted as a result of the call for projects.
- Through coordination with the Texas Department of Transportation district, additional projects were identified for prioritization and possible inclusion in the 2040 Metropolitan Transportation Plan.

The complete list of projects for evaluation and prioritization is shown in Table XIII-2.

Table XIII-2: Projects Proposed for Consideration

Project	Extent	Description	Source	Included in Scoring
SS 248	1.75 mi West of FM 848 (Old Omen Rd) to SH 64	Widen to 4-lane divided roadway with flush median	TxDOT	Short-term
Railroad ROW Acquisition	Hagen Road in Whitehouse to FM 346 in Troup	Purchase 7.25 miles of abandoned Union Pacific Railroad corridor	TxDOT	Short-term
IH 20	US 69 in Lindale to 0.8 mi East of US 69	Realign and lengthen WB exit and EB entrance ramp for US 69	TxDOT	Short-term
IH 20	0.8 mi East of US 69 to 1.75 mi East of US 69 (Jim Hogg Rd)	Realign and lengthen WB exit and EB entrance ramp for US 69	TxDOT	Short-term
FM 2493	FM 2813 in Gresham to FM 346 in Flint	Widen from 2 lanes to 4 lanes with flush median	TxDOT	Short-term
US 69	At FM 346 East of Flint	Construct grade-separated interchange	TxDOT	Short-term
IH 20	US 69 in Lindale	Ramp reversal and one-way frontage roads	TxDOT	Short-term
FM 16	4 mi West of FM 849 (CR 481E) to US 69 in Lindale	Widen to 4 lanes with flush median to Toll 49, then center turn lane for the rest	TxDOT	Short-term

[1] *Please note that the locally funded projects will not be prioritized, as these projects are anticipated to be funded with only local dollars and have already been ranked through the City's Capital Improvement Program.*

Project	Extent	Description	Source	Included in Scoring
FM 2493	FM 346 in Flint to 0.3 mi South of FM 344	Widen from 2 lanes to 4 lanes with flush median	TxDOT	Short-term
FM 756 (Paluxy)	Jeff Davis Dr to FM 346	Widen from 2 lanes to 4 lanes with flush median	TxDOT	Long-term
FM 756 (Paluxy)	FM 346 to FM 344 at Walnut Grove	Widen from 2 lanes to 4 lanes with flush median	TxDOT	Long-term
FM 2493	SL 323 to FM 2813	Widen from 4 lanes to 6 lanes with flush median	TxDOT	Long-term
FM 2964 (Rhones Quarter)	SH 110 to FM 346	Widen from 2 lanes to 4 lanes	TxDOT	Long-term
SH 31, East	SL 323 in Tyler to CR 236 (MPO boundary) 1.6 mi East of FM 757	Widen 2 lanes to 4 lane divided highway	2035 MTP – State Long-term	Long-term
SS 364	SH 31 to Loop 323	Widen to 4 lanes	2035 MTP – State Long-term	Long-term
Legacy Trail	FM 2813, N along FM 2493, 3 Lakes PKWY, Cumberland Rd	Construct 10' wide multi-purpose Legacy Trails, Phase 1	City of Tyler	Unscored grant supported local project
Shiloh Road	SH 110 to Old Omen	Widen to a minor arterial with CTL	City of Tyler 2017 CIP List	Locally funded and ranked
Earl Campbell Parkway	SL 323 to SH 31W	Construct divided 4-lane minor arterial with raised medians and bike lanes	City of Tyler 2017 CIP List	Locally funded and ranked
Towne Park	SL 323 to SH 155	Construct in new location, 4-lane with bike, raised median	City of Tyler 2017 CIP List	Locally funded and ranked
Lake Placid Rd	Old Jacksonville Hwy to SH 155	Widen to 4-lane with bike, raised median	City of Tyler 2017 CIP List	Locally funded and ranked
Roy Road	Paluxy Dr to Rhones Quarter Rd	Widen to 2-lane major collector	City of Tyler 2017 CIP List	Locally funded and ranked
Toll 49 Segment 6	SH 110 to 0.35 mi E of US 271/ FM 2908 intersection	Construct New 2 Lane Controlled Access Toll Road as Extension of Toll 49	NET RMA	NET RMA funded

TRAVEL DEMAND MODEL QUANTITATIVE SCORING

Once the list of potential transportation projects was developed, the travel demand model was used to develop traffic data to assess the proposed improvements. The first step in this process was to update the future year population and employment demographic estimates within the model. A model run was then performed to estimate deficiencies on the existing-plus-committed (E+C) network in 2040. The existing-plus-committed network refers to all existing roadways, as well as transportation projects that are already funded and scheduled for construction either in the Tyler Area MPO's short-term Transportation Improvement Program (TIP) or the Tyler Area MPO's member jurisdictions' Capital Improvement Programs (CIPs). The data from this E+C run was used to establish a No-build baseline for use in comparing the impact of proposed projects on the regional transportation system.

Following the E+C deficiencies analysis, each of the projects was coded into the network in order to determine how well each proposed improvement addressed the identified deficiencies. The travel demand model is designed to report on several performance measures that quantify each project's impacts. The model outputs, which are discussed in detail below, were used to determine the score for each project's impact on reducing congestion - one of the 14 project scoring criteria.

Volume

For each of the roadways for which improvements were proposed, points were awarded based on the forecasted volumes on the roadway prior to any improvements (E+C data). Volume is measured as the number of vehicles per day traveling on a specific roadway. Roadways with higher forecasted volumes prior to any improvements being made were awarded a greater number of points, as high volumes indicate the roadway is a significant regional corridor, used by a large number of vehicles. Therefore, roadways that exhibited high forecasted volumes prior to any improvements were awarded more points than roadways with low volumes prior to any improvements.

Increase in Volume

The travel demand model was used to also estimate the volumes along the roadways after the proposed improvement was made in order to determine whether or not the number of vehicles per day using the roadway would increase if additional capacity is added. If investments are made to add capacity to a roadway, it is important that the number of cars using that roadway does not decrease after additional lanes have been added, which would indicate that traffic is now using an alternative route and an investment into a capacity improvement might not be necessary. Project improvements that resulted in a decrease in the number of vehicles using the roadway per day were awarded no points and projects that showed an increase were awarded points commensurate with the change.

Decrease in Volume to Capacity Ratio

The volume to capacity ratio, or V/C ratio (also referred to as volume over capacity [VOC]), measures the number of vehicles using a roadway as compared to the number of vehicles that the roadway is designed to accommodate. For example, if a roadway is designed to accommodate 100 vehicles and the actual volume on the roadway is 50 vehicles, the V/C ratio would be 0.5. On the other hand, if a roadway is designed to accommodate 100 vehicles and the actual volume on the roadway is 200 vehicles, the V/C ratio would be 2.0. A V/C ratio greater than 1 indicates that the roadway is operating with a vehicle volume above the design capacity of the roadway. The higher the V/C ratio, the more likely it is that the roadway is congested and vehicles are experiencing delay.

The travel demand model was used to analyze the change in the V/C ratio - before and after the proposed improvements. Points were awarded to projects based on how much the V/C ratio decreased after the construction of the proposed transportation improvement.

Volume to Capacity Ratio

Also taken to account was the starting V/C ratio. If a project had a significant drop in V/C ratio, but the "before" V/C ratio was already low, meaning the roadway's existing capacity still had room to accommodate more vehicles without any improvements, the project received fewer points than a project with a high "before" V/C ratio.

Change in Speed

The travel demand model is also capable of reporting average, congested vehicle speeds along roadways. Vehicle speeds were forecasted both before and after the introduction of proposed

improvements. Roadways with significant increases in vehicle speeds were awarded more points than roadways that showed little to no increase in congested vehicle speeds.

Vehicle Hours Traveled

Vehicle hours traveled (VHT) is defined as the total vehicle hours expended traveling on the roadway network in a specified area during a specified time period. VHT is a good indicator of changes in overall delay along a segment of a roadway - the higher the VHT, the more time people are spending in their vehicles along the roadway segment being evaluated. The lower VHT the less time people are spending to travel the roadway segment and are, therefore, getting to their destination faster.

VHT along roadways with proposed improvements were forecasted for the year 2040, and before and after values were compared. A greater number of points was awarded to projects that decreased VHT versus those that showed little to no decrease in VHT, which indicated that the proposed project did not improve travel time.

Vehicle Miles Traveled

Vehicle miles traveled (VMT) are defined as the total number of miles traveled by vehicles in a specified area for a specified time period. For this project, VMT for existing roadways was calculated as the number of miles traveled for a 24-hour period within the limits of the proposed project improvements. VMT was used to determine the intensity of the use of the existing roadways being considered for improvement. Points were awarded to projects along roadways that exhibited a high VMT before any improvements. Similar to overall volumes, a high VMT indicates a roadway is regionally-significant.

Quantitative Scores

The results from the travel demand model analysis, as shown in Table XIII-3, were used to award points to projects based on each project's impact on the reduction of congestion as described above. This quantitative analysis was only one portion of the evaluation process.

Table XIII-3: Tyler Area MPO Travel Demand Model Results

Project Scoring - Future Project Analysis

	Project Number and Name of Roadway	2040 E+C Vol WAvg	2040 Built Vol WAvg	Increase in Vol WAvg	Increase in Volume Points	Volume Points	2040 E+C LOS Avg	2040 Built LOS Avg	Improvement VC Ratio WAvg	Improvemed V/C Ratio Points	V/C Ratio Points	2040 E+C Speed WAvg	2040 Built Speed WAvg	Improvement Speed WAvg	Increase in Speed Points	2040 E+C VHT	2040 Built VHT	Improvement in VHT	VHT Points	2040 E+C VMT	2040 Built VMT	Increase in VMT	VMT Points	Average Score (Model)
1	IH 20 -- 1.0 mi W of US 69 to CR 496	47,643	44,992	(2,651)	0	4	0.85	0.55	0.30	2	2	51.7	55.4	3.6	3	4,463	4,134	329.0	1	232,735	228,169	(4,566.0)	4	2.3
2	FM 2493 -- FM 346 to S of FM 344 (Cherokee C/L)	11,553	13,844	2,291	0	2	1.32	0.65	0.67	4	4	31.1	42.6	11.6	4	1,337	1,315	22.0	0	46,785	58,548	11,763.0	2	2.3
3	FM 16 -- 0.3 mi W of FM 849 (CR 481) E to US 69 (Lindale)	13,602	11,692	(1,910)	0	2	1.74	0.77	0.97	4	4	19.1	42.4	23.3	4	585	253	332.0	1	12,792	10,862	(1,930.0)	1	2.3
4	FM 14 -- LP 323 to IH 20	11,759	16,423	4,664	0	2	1.52	1.06	0.47	3	4	24.9	37.1	12.3	4	2,007	1,972	35.0	0	51,048	73,348	22,300.0	3	2.3
5	SS 364 -- SH 31 to LP 323	10,614	14,561	3,947	0	2	1.14	0.94	0.20	1	3	32.7	39.3	6.6	4	1,825	1,768	57.0	0	48,579	63,752	15,173.0	2	1.7
6	FM 14 -- MLK Jr Blvd to LP 323 E	8,276	8,782	506	0	1	0.77	0.35	0.42	3	1	34.1	36.4	2.2	2	349	349	0.0	0	11,887	12,631	744.0	1	1.1
7	FM 756 (Paluxy) -- Jeff Davis Drive to FM 346	13,466	18,459	4,994	0	2	1.49	0.83	0.66	4	4	22.8	35.5	12.7	4	2,089	1,816	273.0	1	47,049	64,908	17,859.0	2	2.4
8	SH 31 E -- LP 323 E to FM 850	13,745	26,313	12,568	1	2	1.23	0.98	0.25	2	3	28.3	35.9	7.5	4	1,388	2,087	(699.0)	0	38,888	74,424	35,536.0	2	2.0
9	SH 110 -- 5th Street to Golden Road	33,903	37,565	3,663	0	3	1.08	0.80	0.28	2	3	28.1	32.0	3.9	3	1,944	1,852	92.0	0	53,016	58,720	5,704.0	3	2.0
10	FM 16 -- US 69 to 2.4 mi E of US 69	11,900	15,266	3,366	0	1	1.53	0.99	0.53	4	4	25.3	37.1	11.9	4	998	777	221.0	1	23,381	29,315	5,934.0	2	2.3
11	FM 2493 -- from FM 2813 in Gresham to FM 346 in Flint	12,704	15,229	2,525	1	2	1.44	0.86	0.58	4	4	27.3	36.2	8.9	4	919	867	52.5	0	26,310	31,779	5,469.0	2	2.4
12	SS 248 -- 1.75 Mi W of FM 848 (Old Omen Rd), E to SH 64 SE of Tyler	12,252	15,683	3,431	1	2	1.01	0.59	0.43	3	3	30.5	40.4	10.0	4	850	835	15.2	0	25,701	33,736	8,035.0	2	2.1
13	Purchase 7.25 miles of abandoned railroad corridor	0	0	0	1	1	0.00	0.00	0.00	1	1	0.0	0.0	0.0	1	0	0	0.0	1	0	0	0.0	1	1.0

TECHNICAL ADVISORY COMMITTEE QUALITATIVE SCORING

For the remaining qualitative project scoring criteria, as developed from the public Visioning Workshop, the technical expertise and local knowledge of the Tyler Area MPO's Technical Advisory Committee (TAC) was used to score each of the proposed projects. The TAC scored the projects according to how well each of the projects aligned with, and contributed towards, achieving the community's vision as defined in the *Metropolitan Transportation Planning Process - Chapter II* of this document.

For each of the projects, TAC members were asked to assign one, two, or three points based on the degree to which the project addressed the project scoring criteria.

- Projects with a high direct correlation to the criteria were assigned three points;
- Projects with medium influence on the criteria were assigned two points, and
- Projects with minimal to no impact on the criteria were assigned one point.

As an example, if a project was thought to have a significant impact on safety, the project would be assigned three points. On the other hand, if a project did nothing to increase multi-modal options, it would be assigned one point for that criterion. The short-term and long-term projects were scored and ranked separately. Table XIII-4 shows the average score for the projects as they relate to each criterion, which was based on the average of all input received from the Technical Advisory Committee members.

Table XIII-4: Tyler Area MPO Qualitative Assessment by TAC Members

Project Scoring - Future Project Analysis

	Project Number and Name of Roadway	Average Score (Model)	Improves Safety	Supports Econ. Dev. Goals	Conserves Energy	Promotes Efficiency	Protects the Environment	Improves Access	Improves Quality of Life	Increases Connections	Supports Land Use Goals	Improves Security	Increase Multi-modal Options	Connect Modes of Travel	Preserves ROW
1	IH 20 -- 1.0 mi W of US 69 to CR 496	2.3	2.375	2.25	1.875	2.125	1.5	2.75	1.875	2.25	2.5	1.5	1.375	1.25	2.125
2	FM 2493 -- FM 346 to S of FM 344 (Cherokee C/L	2.3	2.75	2.75	2.375	2.625	1.75	2.625	2.5	2.125	2.5	1.5	2.125	1.75	1.75
3	FM 16 -- 0.3 mi W of FM 849 (CR 481) E to US 69 (Lindale)	2.3	1.875	2	1.75	2	1.375	2	2	1.75	2	1.125	1.125	1.125	1.625
4	FM 14 -- LP 323 to IH 20	2.3	2.5	2.375	2	2	1.375	2.125	1.75	2.125	2.125	1.25	1.375	1.375	1.5
5	SS 364 -- SH 31 to LP 323	1.7	2.25	2.375	2.25	2.25	1.5	2.25	2.125	1.75	1.875	1.125	1.125	1.25	1.5
6	FM 14 -- MLK Jr Blvd to LP 323 E	1.1	2.25	2	1.875	1.875	1.25	2	1.75	2	1.875	1.375	1.375	1.5	1.375
7	FM 756 (Paluxy) -- Jeff Davis Drive to FM 346	2.4	2.5	2.75	2.5	2.125	1.5	2.625	2.25	2.125	2.5	1.25	1.875	1.5	1.625
8	SH 31 E -- LP 323 E to FM 850	2.0	2.5	2	1.75	2.25	1.25	1.875	2	2	1.875	1	1.125	1.125	1.375
9	SH 110 -- 5th Street to Golden Road	2.0	2.5	2.125	2	2	1.25	2.125	2	1.75	2	1.125	1.5	1.5	1.375
10	FM 16 -- US 69 to 2.4 mi E of US 69	2.3	1.5	1.625	1.25	1.75	1.25	1.875	1.5	1.625	1.625	1	1.25	1.25	1.375
11	FM 2493 -- from FM 2813 in Gresham to FM 346 in Flint	2.4	2.857	2.857	2.286	2.429	2	2.571	2.714	3	2.714	1.857	2.429	2.286	2.143
12	SS 248 -- 1.75 Mi W of FM 848 (Old Omen Rd), E to SH 64 SE of Tyler	2.1	2.714	2.286	2.143	2.286	2	2.429	2.571	2.714	2.429	1.714	2.143	2.286	2
13	Purchase 7.25 miles of abandoned railroad corridor	1.0	1.25	2	1.5	1.75	2.25	1.75	2.5	1.875	2.625	1.125	2.5	1.875	3

FINAL PROJECT SCORES

The following table depicts the combined results of the project scoring process. Table XIII-5 shows the final scores derived from the publicly weighted criteria, the quantitative travel demand model analysis, and the qualitative analysis by the Technical Advisory Committee, based on the TAC members' local knowledge and expertise.

Table XIII-5: Short- and Long-term Projects in Order of Priority

Project Ranking	Name of Roadway	Project Description	Final Score
Short-Term Projects (2015-2024)			
1	FM 2493 -- from FM 2813 in Gresham to FM 346 in Flint	Widen from 2 lanes to 4 lanes with flush median	2.53
2	SS 248 -- 1.75 Mi W of FM 848 (Old Omen Rd), E to SH 64 SE of Tyler	Widen to 4-lane divided roadway with flush median	2.33
3	FM 2493 -- FM 346 in Flint to 0.3 mi South of FM 344 (Cherokee County Line)	Widen from 2 lanes to 4 lanes with flush median	2.29
4	IH 20 -- At US 69	Ramp improvements at US 69	2.03
4a	US 69 in Lindale to 0.8 mi East of US 69	Realign and lengthen WB exit and EB entrance ramp for US 69	
4b	0.8 mi East of US 69 to 1.75 mi East of US 69 (Jim Hogg Rd)	Realign and lengthen WB exit and EB entrance ramp for US 69	
4c	US 69 in Lindale	Ramp reversal and one-way frontage roads	
5	US 69 -- At FM 346 East of Flint	Construct grade-separated interchange	2.00
6	Railroad ROW Acquisition -- Hagen Road in Whitehouse to FM 346 in Troup	Purchase 7.25 miles of abandoned Railroad corridor	1.89
7	FM 16 -- 4 mi West of FM 849 (CR 481E) to US 69 in Lindale	Widen to 4 lanes with flush median to Toll 49, then center turn lane for the rest	1.76
Long-Term Projects (2025-2040)			
1	FM 756 (Paluxy) -- Jeff Davis Drive to FM 346	Widen from 2 lanes to 4 lanes with flush median	2.05
2	FM 756 (Paluxy) -- FM 346 to FM 344 at Walnut Grove	Widen from 2 lanes to 4 lanes with flush median	2.05
3	FM 2964 (Rhones Quarter) -- SH 110 to FM 346	Widen from 2 to 4 lanes	2.03
4	SH 31 E -- SL 323 to FM 850	Widening from 3 to 4 lanes	1.92
5	SS 364 -- SH 31 to LP 323	Widening from 2 to 4 lanes	1.85
6	FM 2493 -- LP 323 to FM 2813	Widening from 4 to 6 lanes	1.79

APPROVAL OF THE PRIORITIZED PROJECT LIST

On November 20, 2014, the Policy Committee reviewed the prioritized project list prior to its formal action on the 2040 Metropolitan Transportation Plan.

On October 13, 2016, the Policy Committee reviewed the amended prioritized project list prior to its formal action to amend the 2040 Metropolitan Transportation Plan.

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XIV. FINANCIAL PLAN

According to federal regulations, transportation improvement projects included in a metropolitan transportation plan (MTP) must fall within the financial capabilities of the community. The final project list included in the MTP must therefore be fiscally constrained, i.e. the amount of revenues available for projects must be greater than or equal to the anticipated cost of the projects.

This chapter includes a list of the funding sources and dollar amounts anticipated to be available to fund the Tyler Area 2040 Metropolitan Transportation Plan projects. Historical trends in funding were assessed and reasonably expected funding levels were forecast to determine the funds available.

As federally required, the revenues and costs contained in this chapter were calculated in year-of-receipt and year-of-expenditure dollars, respectively. Year-of–receipt or -expenditure means that the revenues and costs calculations correlate with the year the funds will be received or spent.[1]

ROADWAY FUNDING SOURCES

Historically, there have been several funding streams available for transportation improvement projects, including Federal, state, and local sources, which will be discussed in the following sections. For ease of overview, the funding for roadway and transit improvements is included in separate subchapters.

Federal Highway Administration

MAP-21 authorizes the Federal surface transportation programs for highways, highway safety, and transit for the two-year period 2013-2014. MAP-21 builds on the firm foundation of three previous landmark transportation bills – the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the Transportation Equity Act for the 21st Century (TEA 21), and the Safe, Accountable, Flexible, Efficient Transportation Equity Act – Legacy for Users (SAFETEA-LU).

Funds for roadway construction are made available by the Federal Highway Administration (FHWA) on a formula basis to each state.[2] The funding includes several categories, under which many of the projects in the financially constrained plan will be eligible for Federal funding assistance. These categories are as follows:

National Highway System (NHS)

This category covers all Interstate routes and a large percentage of urban principal arterials. The Federal/state funding ratio for arterial routes is 80/20, meaning 80 percent of the funding is provided from this federal source and requires a 20 percent state match. The Interstate system, although a part of NHS, will retain its separate identity and receive separate funding at a 90/10 ratio. The U.S. Congress passed the NHS bill in 1996.

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[1] *For example, a roadway project included on the list is scheduled for 2015 at a cost of $500,000 to complete. If the project is delayed or rescheduled for a later year (like 2016), the cost of the project will increase by the yearly inflation rate. If the inflation rate for this scenario is 3.5%, the project cost in 2016 becomes $517,500 ($500,000 x 3.5% = $17,500 + $500,000).*

[2] *During the economic downturn at the end of the previous decade, additional Federal funds had been made available for transportation infrastructure. However, as the American Recovery and Reinvestment Act provided a one-time allocation, it was not considered in the forecast of reasonably expected revenues.*

Surface Transportation Program (STP)

The STP is a block grant funding program with subcategories for states and urban areas. The funding ratio is 80/20. These funds can be used for any road, including NHS, that is not functionally classified as a local road or rural minor collector. The state portion can be used on roads within an urbanized area, whereas the urban portion can only be used on roads within an urbanized area.

Subcategories of the STP funds are:

- STP greater than 200,000 population (STP>200K)
- STP less than 200,000 population (STP<200K)
- STP less than 5,000 population (STP <5K)
- STP Flexible (STP-FLEX)
- STP Hazard Elimination (STP-HAZ)

Bridge Replacement and Rehabilitation Program (FBR)

Federal Bridge Replacement and Rehabilitation funds can be used to replace or repair any bridge on a public road. The Federal/state funding ratio is 80/20.

Congestion Mitigation and Air Quality (CMAQ)

Urban areas which do not meet ambient air quality standards are designated as nonattainment areas by the U.S. Environmental Protection Agency (EPA). CMAQ funds are apportioned to nonattainment urban areas for use on projects that contribute to the reduction of mobile source air pollution through reducing vehicle miles traveled, fuel consumption, or other identifiable factors. Starting in fiscal year (FY) 2013 all CMAQ projects require a 20 percent local match, with the exception of carpool & vanpool projects, which remain 100 percent Federal. The eligibility of projects under these funding categories is based on the functional classification system mandated by SAFETEA-LU. Please note that the study area is currently an attainment area for monitored air quality pollutants, and the Tyler Urbanized Area does not receive funds under this category at this time.

System Maintenance and Operation

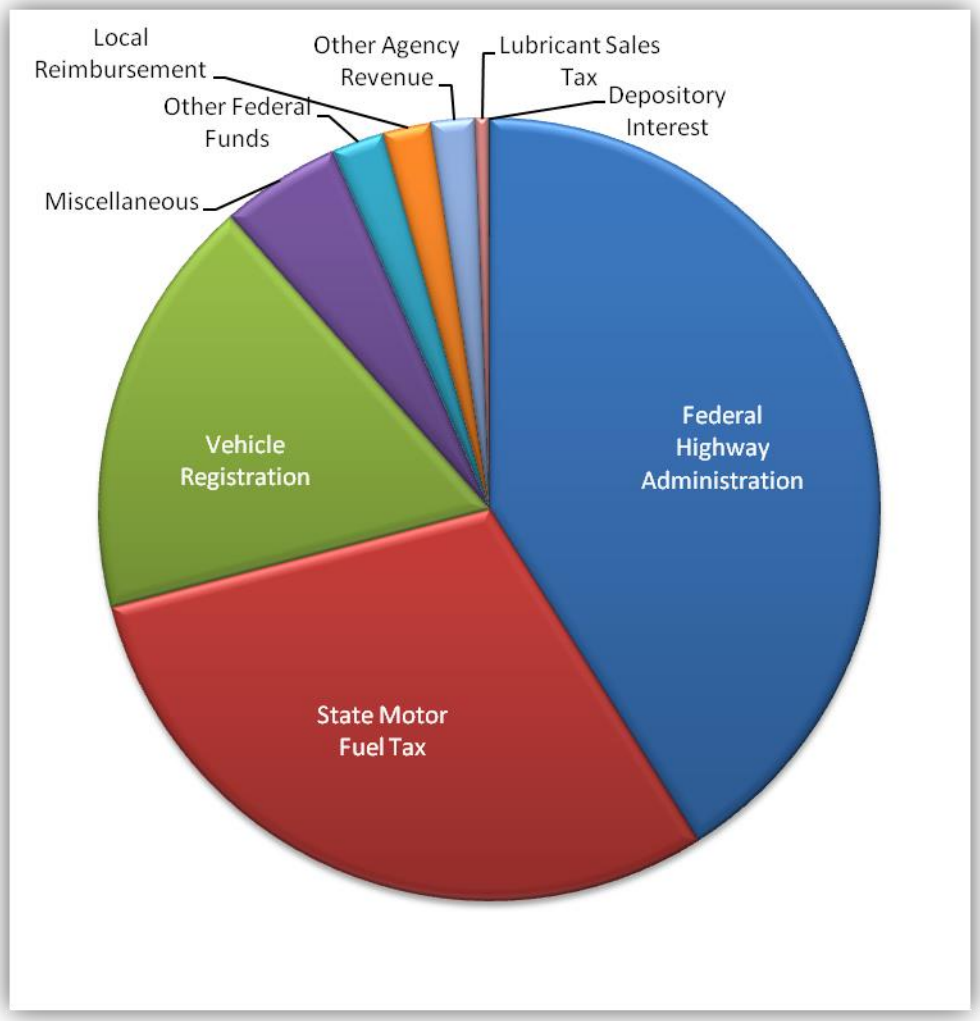
The maintenance and operation of the transportation system was considered in the development of the plan and staged program. Typically, maintenance costs are applicable to the system as a whole. Where possible, maintenance projects are identified individually; however, it is not possible to develop project specific maintenance schedules beyond the near term. The maintenance costs identified in this plan are the responsibility of various governmental jurisdictions.

The balancing act of meeting identified transportation improvement needs and maintaining the present transportation system will continue to place local decision makers and revenue forecasts somewhat at odds. (Recommendations included in this plan are conservative, because they factor in the impact of maintenance costs into the determination of available funding.)

State of Texas and Texas Department of Transportation

To fund needed transportation improvements, the State of Texas not only receives federal transportation funds from federal programs that the State then passes through to the metropolitan areas, but also revenues from the State motor fuel tax, vehicle registration fees, lubricant sales tax, and other federal and local sources that are used to fund transportation improvement projects. The Texas Department of Transportation (TxDOT) was estimated to have just over $8 billion available for transportation projects in FY 2014. Figure XIV-1 shows the breakdown by funding source.

Figure XIV-1: State of Texas – Transportation Revenue



Source: Texas Transportation Plan 2040 – FY 2014 Estimates

Traditional Funding Sources

TxDOT distributes both Federal and State transportation funds on select projects based on the following funding categories:[3]

1. Preventive Maintenance and Rehabilitation
2. Metropolitan and Urban Area Corridor Projects
3. Non-Traditionally Funded Transportation Projects
4. Statewide Connectivity Corridor Projects
5. Congestion Mitigation & Air Quality Improvement
6. Structures Replacement and Rehabilitation
7. Metropolitan Mobility and Rehabilitation
8. Safety

[3] Based on its size and air quality attainment status, the Tyler Area MPO has not been eligible for project funding under the following categories: 2, 5, and 7.

9. Transportation Enhancements
10. Supplemental Transportation – i.e. State Park Roads, Railroad (RR) Grade Crossing, RR Signals, Landscaping and Environmental
11. District Discretionary
12. Strategic Priority

Table XIV-1 provides a general overview of the categories and breakdown of funding sources.

Table XIV-1: TxDOT Funding Categories

Funding Category		Starting Point	Project Selection By	Summary	General Funding Breakdown		
					Fed	State	Local
1	Preventive Maintenance and Rehabilitation	TxDOT District	TxDOT Districts	Preventive maintenance and rehabilitation of the existing state highway system including interstate main lanes, structures, signs, markings, striping.	90% 80% 0%	10% 20% 100%	0% 0% 0%
2	Metro and Urban Area Corridor Projects	TxDOT District	MPOs in consultation w/ TxDOT	Mobility and added capacity projects for TMA MPOs	80% 0%	20% 100%	0% 0%
3	Non-Traditionally Funded Transportation Projects	TxDOT District	MPOs in consultation w/ TxDOT	Mobility and added capacity projects for non-TMA MPOs	80% 0%	20% 100%	0% 0%
4	Statewide Connectivity Corridor Projects	TxDOT District	TxDOT Commission	Mobility and added capacity projects which serve the mobility needs of statewide connectivity	80% 0%	20% 100%	0% 0%
5	Congestion Mitigation & Air Quality Improvement	TxDOT District	MPOs in consultation w/ TxDOT	Addresses attainment of air quality standards in non-attainment areas	90% 80% 80%	10% 0% 20%	0% 20% 0%
6	Structures Replacement and Rehabilitation	TxDOT District	TxDOT Bridge Division	Rehab of bridges on and off the state system, replacement of existing highway-railroad grade crossing or railway underpass	90% 80% 80%	10% 20% 10%	0% 0% 10%
7	Metropolitan Mobility and Rehabilitation	TxDOT District	MPOs in consultation w/ TxDOT	Transportation needs within MPOs with populations of 200,000 or greater	80% 80% 0%	20% 0% 100%	0% 20% 0%
8	Safety – Federal Hazard Elimination Program	TxDOT District	TxDOT Commission / Federal Safety Indices	Safety related projects	100% 90% 90% 0%	0% 0% 10% 100%	0% 10% 0% 0%
	Safety – Federal Railroad Signal Safety Program	TxDOT District	TxDOT Commission / Federal Safety Indices	Installation of automatic RR warning devices	100% 90% 90% 0%	0% 0% 10% 100%	0% 10% 0% 0%
9	Transportation Enhancements	TxDOT District	TxDOT Commission	Projects that enhance the traveling experience	80% 80%	20% 0%	0% 20%

Funding Category		Starting Point	Project Selection By	Summary	General Funding Breakdown		
					Fed	State	Local
10	Supplemental Transportation Projects - State Park Roads	TxDOT District or TPWD	Tx Parks & Wildlife	Construction and rehabilitation of roadways within or adjacent to state parks	0%	100%	0%
	Supplemental - RR Grade Crossing Replanking Program	TxDOT District	Traffic Operations Division	Replacement of rough railroad crossing surfaces	0%	100%	0%
	Supplemental - RR Signal Maintenance Program	TxDOT District	Traffic Operations Division	Contributions to RR Companies based on number of crossings	0%	100%	0%
	Supplemental - Construction Landscape Programs	TxDOT District	TxDOT District	Landscape, aesthetic, and environmental improvements	0%	100%	0%
	Supplemental - Landscape Cost Sharing Program	TxDOT District	TxDOT District	Allows the department to execute joint landscape improvement projects through partnerships	0%	100%	0%
	Supplemental - Landscape Improvement Program	TxDOT District	TxDOT District	Landscape projects for non-attainment air quality or near non-attainment areas	0%	100%	0%
	Supplemental - Supplemental (Federal)	Federal allocations	Varies	Federal programs such as Forest Highways, Indian Reservation Highways, Federal Land Highways and Ferry Boat Discretionary	100% 80% 0%	0% 20% 100%	0% 0% 0%
11	District Discretionary	TxDOT District	TxDOT District	Projects selected at district's discretion	80% 80% 0%	20% 0% 100%	0% 20% 0%
12	Strategic Priority	TxDOT Commission	TxDOT Commission	Projects must promote economic development, provide system continuity with adjoining states, increase efficiency on military deployment routes	80% 0%	20% 100%	0% 0%

Non-Traditional Funding Sources

There are several non-traditional sources of funding that have been successfully used to provide funds for transportation improvements within the Tyler Urbanized Area.

Texas Mobility Fund

Voters authorized the creation of the Texas Mobility Fund (TMF) in 2001. To accelerate completion of TxDOT projects and improvements, the TMF provides a method of financing the construction, reconstruction, acquisition, and expansion of state highways, including the costs of any necessary design and costs of acquisition of rights-of-way. The TMF may also be used to provide participation by TxDOT in the payment of all or a portion of the costs of constructing and providing publicly-owned toll roads and other public transportation projects. The fund allows the State to issue bonds backed by dedicated revenue sources. The Texas Transportation Commission administers the fund as a revolving fund program to advance projects by spending, granting, or loaning funds for highway improvements including toll roads.

Proposition 14

In 2003, voters approved Constitution Proposition 14 to authorize the state to borrow money for the implementation of transportation projects on a short term basis of two years or less. On October 30, 2008, the Texas Transportation Commission directed TxDOT to issue an additional $2.9 billion in Proposition 14 bonds, or revenue bonds backed by the State Highway Fund, to advance the construction of several much needed projects across the state. The projects selected for accelerated implementation using these bond proceeds include:

- Projects previously delayed due to funding limitations;
- Priority projects, including the last phase of multiple-phased projects as well as projects of statewide significance;
- Projects to address congestion problems in regions previously not addressed; and
- Projects that provide safety improvements in areas with high accident rates. (TxDOT, 2014)

$2.2 million of Proposition 14 funds were allocated to the construction of additional lanes for State Highway 64 within the study area.

Proposition 12

In 2007, voters approved Constitution Proposition 12 authorizing the state to borrow up to $5 billion in general revenue bonds for highway improvements. The Texas Transportation Commission has approved distribution of $5 billion in Proposition 12 bond funding to address congested highways, rehabilitate bridges and improve connectivity between the State's metropolitan areas. $1.4 billion were directed to TxDOT's 25 districts and $600 million were directed to the 25 Metropolitan Planning Organizations (MPOs) around the state according to existing formulas. Proposition 12 also provided $200 million for statewide highway connectivity improvements, $500 million for bridges and $300 million for relief in the four most congested regions of the State: Houston, Dallas-Fort Worth, Austin and San Antonio.

$4.4 million of Proposition 12 funds were allocated to the study area to date for the widening of State Highway 31. Of the $1.4 billion set aside for rehabilitation and safety projects for all of TxDOT's districts, the Tyler District's portion amounts to nearly $32.6 million.[4]

Proposition 1 (Potential Funding Source)

On August 5, 2013 legislators approved House Bill (HB) 1 and Senate Joint Resolution (SJR) 1, which could provide an estimated $1.7 billion to the State Highway Fund in the first year of implementation. Texas voters approved this proposed amendment on Nov. 4, 2014, as stated:

> *The constitutional amendment providing for the use and dedication of certain money transferred to the state highway fund to assist in the completion of transportation construction, maintenance, and rehabilitation projects, not to include toll roads.*

With this recent approval of the proposition, the implementation process will begin shortly. However, since funding allocations had not been determined at the time this MTP was developed, any potential funds from this source were not yet included in the available revenue totals.

[4] *It is important to note that the TxDOT Tyler District encompasses not only Smith County, but also covers Anderson, Cherokee, Gregg, Henderson, Rusk, Van Zandt, and Wood counties, consequently, the portion of the money that will be spent in the study area will be smaller than the amount listed.*

Local Roadway Funding

Any costs not covered by Federal and State programs will be the responsibility of the local governmental jurisdictions. Local funding can come from a variety of sources including property taxes, sales taxes, user fees, special assessments, and impact fees. Each of these potential sources is important and warrants further discussion.

Municipalities

Local funding is received primarily from sales and property taxes. The City of Tyler is the only local agency in the study area with annual construction dollars dedicated to roadway projects. Smith County has also provided local matching funds for past projects. The majority of its funds for transportation improvement projects are received from road and bridge fees.

General Sales Taxes

The general sales tax is an important revenue source for local governments. The most commonly known form of the general sales tax is the retail sales tax. The retail sales tax is usually a uniform percentage of the selling price of a commodity.

General sales taxes play an important role within the study area, where a half-cent sales tax was approved by Tyler voters in 1995. The tax annually provides approximately $9.5 million for the City's capital projects. The Tyler City Council and One Half Cent Sales Tax Corporation Board of Directors determine how the funds are spent. Since 1995, the half-cent sales tax has funded multiple projects, including drainage, public safety, the construction of several buildings and amenities, as well as various transportation improvements. (Tyler, 2014)

Property Taxes

Property taxation has historically been the primary source of revenue for local governments in the United States. Property taxes account for more than 80 percent of all local tax revenues. Property is not subject to Federal government taxation, and state governments have, in recent years, shown an increased willingness to leave this important source of funding to local governments.

User Fees

User fees are fees collected from those who utilize a service or facility and draw direct benefits from their provision. The fees are collected to pay for the cost of a facility, finance the cost of operations, and/or generate revenue for other uses. User fees are commonly charged for public parks, water and sewer services, transit systems, and solid waste facilities.

Special Assessments

Special assessment is a method of generating funds for public improvements, where the cost of a public improvement is collected from those who directly benefit from the improvement. In many instances, new streets are financed by special assessment, where the owners of property located adjacent to the new streets are assessed a portion of the cost of the new streets, based on the amount of frontage they own along the new streets.

Special assessments have also been used to generate funds for general improvements within special districts, such as central business districts. In some cases, these assessments are paid over a period of time, rather than as a lump sum payment.

Toll Roads

A non-traditional method of funding transportation improvements for the construction of controlled access roadways is to construct the roadway as a tolled facility and sell revenue bonds to build the toll road based on the premise that anticipated toll revenues are used to

repay the bonds. Toll roads can be built by the state or through an agreement with a private contractor.

A toll road has the ability to generate project revenue, which means projects can be fully or partially financially self-sufficient. As toll roads are generally funded by revenue bonds backed by the anticipated toll revenues, toll road projects have the ability to be started sooner and completed quicker than projects relying on the incremental allocation of federal funding

Toll equity allows state funds to be combined with other funds to build toll roads. Toll Conversion allows the commission to transfer segments of any non-tolled state highway to a county or regional toll authority for operation and maintenance, which provides local authorities another option that can accelerate maintenance and expansion improvements.

Toll 49 is the only tolled facility within the study area. Expansions to the current extent are planned and are anticipated to be funded by the North East Texas Regional Mobility Authority.

North East Texas Regional Mobility Authority (NET RMA)

A regional mobility authority (RMA) is a political subdivision formed by one or more counties to finance, acquire, design, construct, operate, maintain, expand or extend transportation projects. RMAs have considerable authority over transportation decisions within their communities, and may also seek grants or loans from TxDOT.

To support RMA operations, revenue can be generated from various sources, including tolls, fares, or other charges from transportation projects; proceeds from the sale or lease of the project; and proceeds from the sale or lease of adjoining property.

NET RMA encompasses a total of twelve counties, including Bowie, Cass, Cherokee, Gregg, Harrison, Panola, Rusk, Smith, Titus, Upshur, Van Zandt, and Wood counties. It is anticipated that NET RMA will contribute funding for the construction of Toll 49 Segments 4 and 6 over the life of the 2040 Metropolitan Transportation Plan.

Pass-Through Toll Agreements

The Pass-Through Toll Financing program was created by the Texas legislature as a means to allow local areas to accelerate the construction of transportation improvements in mobility and safety on the state highway system. It is a partnership between a developer and TxDOT where roadway construction is funded with a per-vehicle or per-vehicle mile fee paid to the developer by TxDOT. A local government or private entity makes a transportation improvement and is reimbursed from the state based on the number of vehicles using the highway. This allows the local area to implement projects quicker while providing for project repayment under TxDOT's funding Category 12.

The Pass-Through Toll Financing program terminology is statutory and does not imply that each proposed project must have a physical toll collection component. A proposed project may or may not have this component.

State Infrastructure Bank

State Infrastructure Banks (SIB) were authorized in 1995 as a part of the National Highway Designation Act to help accelerate needed mobility improvements through a variety of financial assistance options made to local entities through state transportation departments. SIB allows TxDOT to offer various loans and credit enhancement products for highway projects to accelerate the construction time and reduce construction costs for transportation improvements.

The SIB program allows borrowers to access capital funds at or below market interest rates, and operates as a revolving loan fund, where the account balance grows through the monthly interest earned and repaid principal and interest payments. In Texas, SIB financial assistance can be granted to any public or private entity authorized to construct, maintain or finance a transportation project, which must be eligible for funding under the existing federal highway rules. This usually requires a project to be on a state's highway system and included in the statewide Transportation Improvement Plan, as well as the MTP.

Eligible activities include planning and preliminary studies, feasibility, economical and environmental studies, right of way acquisition, surveying, appraisal and testing, utility relocation, engineering and design, construction, inspection and construction engineering.

Since 2006, two SIB loans for a total amount of $3.12 million were given to study area entities and have enabled a $9.32 million investment in transportation projects within Smith County. (TxDOT, 2014)

Comprehensive Development Agreements

Comprehensive Development Agreements enable private investments into the Texas transportation system. In other areas of the State, TxDOT has successfully used this tool to share the risk and responsibilities of design and construction with a private developer. This project delivery method combines design and construction into one comprehensive contract, instead of the traditional method of having individual contracts for separate phases of a project, which results in faster delivery of the project, and often, greater cost certainty due to lump sum pricing.

This type of public-private partnership is particularly useful for accelerated financing, design, construction, operation and/or maintenance of a project. (TxDOT, 2014)

TRANSIT FUNDING SOURCES

The following funding sources area available for transit related improvements and services.

Federal Transit Administration

The Federal Transit Administration (FTA) administers all of the following programs to fund services by Tyler Transit.

Please note that Section 5316 - New Freedom and Section 5317 - Job Access and Reverse Commute programs available in the past were absorbed into Section 5307, 5310, and 5311 programs with the passage of MAP-21.

Section 5307 Urbanized Area Formula Program

Section 5307, the Urbanized Area Formula program (49 U.S.C. 5307), makes Federal resources available to urbanized areas for transit capital and operating assistance in urbanized areas, and for transportation related planning. An urbanized area is an area with a population greater than 50,000 as designated by the US Census Bureau. Funding for the formula based program is determined based on the level of transit service provision, population, and other factors. Section 5307 funds are the main source of Federal revenue for Tyler Transit.

Activities previously eligible under the Job Access Reverse Commute (JARC) program, which focused on providing transportation to low-income individuals for job or job-related activities, are now eligible under Section 5307.

Section 5309 Capital Investment Program

Section 5309, the transit capital investment program (49 U.S.C. 5309), is administered by the FTA, and provides capital assistance for the replacement of buses and facilities, as well as the implementation or modernization of fixed guideway systems.

Section 5310 Transportation for Elderly Person and Persons with Disabilities

The Section 5310 program (49 U.S.C. 5310) provides formula funding to states to assist private, nonprofit groups in meeting the transportation needs of the elderly and persons with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.

Activities previously eligible under the New Freedom program and projects that provided transportation services to individuals with disabilities that went above and beyond the requirements of the Americans with Disabilities Act (ADA) are now eligible activities under Section 5310.

Section 5311 Formula Grants for Rural Areas

Section 5311 is a formula-based grant program that provides funding for the purpose of supporting public transportation in rural areas, with a population of less than 50,000. The goal of the program is to provide the following services:

- Enhance the access of people in non urbanized areas to health care, shopping, education, employment, public services, and recreation.
- Assist in the maintenance, development, improvement, and use of public transportation systems in non urbanized areas.
- Encourage and facilitate the most efficient use of all transportation funds, used to provide passenger transportation in non urbanized areas, through the coordination of programs and services.
- Assist in the development and support of intercity bus transportation.
- Provide for the participation of private transportation providers in non urbanized transportation.

Activities previously eligible under the JARC program are now eligible for funding using Section 5311 funds, with no threshold on the amount of funds that can be spent on JARC activities.

Section 5324 Public Transportation Emergency Relief Program

The Public Transportation Emergency Relief (ER) program allows FTA to provide grants to public transportation agencies that have experienced serious damage to transit assets as a result of an emergency. An emergency is defined as a natural disaster which affects a wide area, such as a flood, hurricane, tidal wave, earthquake, severe storm, or landslide, or a catastrophic failure from an external cause, resulting in the governor of a state declaring an emergency concurrence from the Secretary of Transportation or the President has declared a major disaster.

Grants are provided for capital projects and may reimburse operating expenses that are outside the scope of an affected recipient's normal operations, including but not limited to evacuations; rescue operations; bus, ferry, or rail service to replace inoperable service or to detour around damaged areas; additional service to accommodate an influx of passengers or evacuees; returning evacuees to their homes after the disaster or emergency; and the net project costs related to reestablishing, expanding, or relocating public transportation service before, during, or after an emergency or major disaster.

Section 5337 State of Good Repair Formula Program

The State of Good Repair Formula Program provides funding to urbanized areas with fixed guideway systems and high intensity motorbus systems. The program helps maintain these public transportation systems in a state of good repair by financing replacement and rehabilitation projects for existing fixed guideway systems and high intensity motorbus systems that have been operating for at least seven years.

Section 5339 Bus and Bus Facilities Formula Program

The Bus and Bus Facilities Program provides funding to states and urbanized areas for bus-related capital projects. A portion of the funds are allocated through an initial national distribution to states, while the remaining funds are apportioned by formula based on population, vehicle revenue miles, and passenger miles.

Texas Department of Transportation

In the past, the State of Texas has occasionally used Section 5304 – Statewide Transportation Planning funds for select transit projects

Local Transit Funding

Local matching funds are provided through transit fare revenues and transfers from the City of Tyler's general fund.

HISTORICAL AND PROJECTED FUNDING

Historically, transportation improvement projects in the Tyler Area MPO have been funded through a combination of Federal, State, or local dollars, with NET RMA contributing funding towards select Toll 49 segments. Historical funding from 1995 to 2014 is summarized in Table XIV-2,[5] with a particular breakout of currently programmed Fiscal Year 2015 through 2018 funding.

Over the past ten years, state and federal funding in the region totaled almost $231 million. For the "Maintain It" funding categories (Categories 1 and 6), approximately $63.8 million were received, equivalent to 27.6 percent of total funding. A review of the "Build It" funding categories showed that just over $167 million, a 72.4 percent share of the total amount, had been expended within the study area.

Through 2009, the Tyler Area MPO had seen a trend of upward revenue for roadways. However, since 2010, and particularly in light of the recent strain on the National Highway Trust Fund from which Federal transportation funding is expended, a continued upward trends is not anticipated:

- Based on the analysis of rolling averages, it was determined that the more recent historical funding figures (2011 or later) provided a better base line for the revenue projections, as special earmarks for Toll 49 in earlier years would otherwise have created unrealistic, future revenue expectations.
- Based on a trend analysis of the funding received over the last 20 years, a downward trend of -2 percent per year was assessed for Federal and State roadway funding.
- Recent year inflation was used to determine an average inflation rate of 2 percent per year to account for the year-of-receipt growth adjustment.
- Combining the downward funding trend and the year-of-expenditure growth adjustment, Federal and State roadways funding is not expected to grow annually.
- The project-level year-of-expenditure cost associated with the respective implementation phase (short- or long-term) was based on the phase's mid-term inflation factor.
- City of Tyler half-cent sales tax funding for transportation improvements was considered in the revenue forecast, albeit at a lower limit (25 percent) that what can be drawn done according to City code.

Transit funding has steadily increased over the past 20 years. To assume a more conservative growth trend, a trend analysis was conducted for funds received since 2005:

- Annual transit funding grew by 0.15 percent per year between 2005 and 2014.

Based on these assumptions, projections were developed for expected Federal, State, and local funding for the 10-year short-term (2015-2024) and the 15-year long-term (2025-2040) implementation phases. Table XIV-2 also contains the projected revenues, which were broken out by mobility and non-mobility projects for planning purposes, as well as for allowing a direct comparison with historical revenue information.

[5] For an exact breakdown of Federal, State, and local shares, this funding data was compiled from project-level information contained in historical Transportation Improvement Programs (TIPs) for the Tyler Urbanized Area, as well as Statewide Transportation Improvement Programs (STIPs), provided the project was implemented within the Tyler Metropolitan Area.

Table XIV-2: Historical and Projected Revenue

Revenue Projection	Historical	Historical	Historical	Historical	Currently Programmed	Short-term	Long-term
	1995-1999	2000-2004	2005-2009	2010-2014	2015-2018	2015-2024	2025-2040
Streets and Highways							
Build It	$49,781,925	$56,772,403	$149,241,411	$17,915,000	$16,922,755	$ 165,507,255	$ 220,005,000
Maintain It (Cat 1 & 6)	$53,067,396	$65,966,856	$31,168,623	$32,641,481	$12,580,513	$59,885,413	$118,262,250
Total Federal & State	**$102,849,321**	**$122,739,259**	**$180,410,034**	**$50,556,481**	**$29,503,268**	**$225,392,668**	**$338,267,250**
Gov't Earmarks (TxDOT/MPO/City)			$37,900,000	$9,814,146	$0	$0	$0
NET RMA (Toll Revenue, Bonds)			$0	$29,000,000	$0	$137,521,960	$0
Local	$42,530,000	$52,376,974	$42,075,978	$79,730,701	$412,081	$23,750,000	$35,625,000
Combined Roadway Funds	**$145,379,321**	**$175,116,233**	**$260,386,012**	**$169,101,328**	**$29,915,349**	**$264,536,941**	**$220,029,283**
Transit							
Tyler Transit Federal	$1,760,000	$3,335,789	$5,673,808	$6,603,943	$5,935,326	$14,615,504	$27,814,834
Tyler Transit State	$1,300,000	$1,802,662	$1,448,279	$1,464,698	$1,089,289	$2,842,837	$5,619,084
Tyler Transit Local	$350,000	$605,172	$2,148,001	$1,935,269	$2,655,771	$5,826,238	$10,159,469
Toll Credits (Transit)	$0	$0	$659,125	$0	$0	$0	$0
Total Transit	**$3,410,000**	**$5,743,623**	**$9,929,213**	**$10,003,910**	**$9,680,386**	**$23,284,579**	**$43,593,388**

COST ESTIMATION FOR PROPOSED PROJECTS

Fiscal constraint is a key component of the MTP. Developing the financial plan for the 2040 Metropolitan Transportation Plan did not only include the estimation of reasonably expected funding, but it also considered the cost of the proposed transportation improvements. The following assumptions guided the development of cost figures for the proposed projects, as well as the cost estimation for maintenance and operation of the already existing transportation system.

- Since Federal regulations do not require that the cost of maintenance and operations activities be broken out into individual project costs, the funding needed for maintenance and operations of the transportation infrastructure was accounted for on a system-wide level.
- The funding required for an individual project does not only encompass the cost of construction, therefore, the cost estimates used to determine fiscal constraint also included engineering cost and right-of-way related expenses.
- Whenever a detailed engineering estimate for a particular project was not available, planning-level, generalized unit cost figures were used to assess the cost of each of the project's components. These generalized unit cost figures were based on the analysis of roadway projects constructed between 2004 and 2014.
- In the absence of detailed, local inflation information for construction related activities, an annual inflation rate of four percent was used for project cost estimation. (FHWA, 2014)

The table on the following page lists the proposed roadway projects and associated cost estimates in current year ($2014) and year-of-expenditure dollars.

Table XIV-3: Cost Estimates for Proposed Projects

Rank	Project Roadway	From	To	Description	Project Length	Estimated Construction	Estimated Engineering	Estimated ROW/Utility	Total Project Cost ($2014)	Year-of Expenditure 2015-2024 Cost	Year-of Expenditure 2025-2040 Cost
Short-term 1	SS 248	1.75 mi West of FM 848 (Old Omen Rd)	SH 64	Widen to 4-lane divided roadway with flush median	2.2	$9,109,470	$1,312,072	$0	$10,421,542	$12,930,501	$0
Short-term 2	Railroad ROW Acquisition	Hagen Road in Whitehouse	FM 346 in Troup	Purchase 7.25 miles of abandoned Union Pacific Railroad corridor	7.25	$0	$0	$400,000	$500,000	$500,000	$0
Short-term 3	IH 20	US 69 in Lindale	0.8 mi East of US 69	Realign and lengthen WB exit and EB entrance ramp for US 69	0.8	$9,586,157	$1,676,619	$325,000	$9,400,000	$11,587,775	$0
Short-term 4	IH 20	0.8 mi East of US 69	1.75 mi East of US 69 (Jim Hogg Rd)	Realign and lengthen WB exit and EB entrance ramp for US 69	2.0	$4,079,216	$713,455	$0	$4,000,000	$4,792,670	$0
Short-term 5	FM 2493	FM 2813 In Gresham	FM 346 in Flint	Widen from 2 lanes to 4 lanes with flush median	2.2	$13,979,795	$2,179,450	$3,109,765	$13,400,000	$19,269,010	$0
Short-term 6	US 69	At FM 346 East of Flint		Construct grade-separated interchange	0.9	$16,118,495	$2,751,427	$2,146,750	$15,450,000	$21,016,672	$0
Short-term 7	IH 20	US 69 in Lindale		Ramp reversal and one-way frontage roads	1.8	$16,708,326	$2,922,286	$0	$15,000,000	$19,630,612	$0
Short-term 8	FM 16	4 mi West of FM 849 (CR 481E)	US 69 in Lindale	Widen to 4 lanes with flush median to Toll 49, then center turn lane for the rest	4.4	$28,180,269	$4,393,304	$0	$24,730,000	$32,573,573	$0
Short-term 9	FM 2493	FM 346 in Flint	0.3 mi South of FM 344 (Cherokee County Line)	Widen from 2 Lanes to 4 Lanes with flush median	5.2	$37,811,610	$5,894,830	$0	$32,640,000	$43,706,440	$0
Long-term 1	FM 756 (Paluxy)	Jeff Davis Drive	FM 346	Widen from 2 lanes to 4 lanes with flush median	3.7	$22,890,852	$3,568,684	$0	$19,000,000	$0	$27,773,438
Long-term 2	FM 756 (Paluxy)	FM 346	FM 344 at Walnut Grove	Widen from 2 lanes to 4 lanes with flush median	3.2	$9,312,963	$1,451,891	$0	**$7,730,000**	$0	**$10,764,853**
Long-term 3	FM 2493	SL 323	FM 2813	Widen from 4 lanes to 6 lanes with flush median	5.1	$66,384,149	$10,349,289	$0	**$52,300,000**	$0	**$76,733,438**
Long-term 4	FM 2964 (Rhones Quarter)	SH 110	FM 346	Widen from 2 lanes to 4 lanes	5.1	$18,973,018	$2,957,893	$0	**$14,000,000**	**$0**	**$21,930,911**
Long-term 5	SH 31, East	SL 323 in Tyler	CR 236 (MPO boundary) 1.6 mi East of FM 757	Widen 2 lanes to 4 lane divided highway	10.9	$111,460,067	$17,376,624	$0	$85,000,000	$135,234,499	$162,065,321
Long-term 6	SS 364	SH 31	SL 323	Widen from 2 to 4 lanes	4.3	$14,168,463	$1,983,585	$6,868,632	$23,020,680	$28,562,848	$46,635,674
(NETRMA funded - not ranked)	Toll 49 Segment 4	IH 20 SW of Lindale	US 69 N of Lindale	Construct 2-lane controlled access toll road on new location	5.76	$54,893,000	$5,216,000	$24,072,000	$119,473,000	$75,619,000	$0
(NETRMA funded - not ranked)	Toll 49 Segment 6	SH 110 (appr. 1.2 miles north of Whitehouse)	0.35 miles east of US 271/FM 2908 intersection	Construct 2-lane controlled access toll road on new location	12.5	$76,739,133	$10,743,479	$23,355,388	$110,838,000	$137,521,958	$224,537,451

BALANCING OF FUNDING AND COST

Stagnant funding levels and rising project construction cost considerably limit the number of projects can that be implemented within each phase of the 2040 Metropolitan Transportation Plan.

- For short-term implementation, the following funding is expected to be available: -
  - $ 128,427,746 Federal and State "Build It" funding
    - The funding is sufficient to implement the widening of FM 2493, FM 16, SS 248, FM 756, and FM 2964 as well as upgrades to the US 69/IH 20 ramp, US 69/FM 346 ramp and railroad ROW purchase.
  - $59,885,413 Federal and State funding for maintenance activities
  - $137,521,958 NET RMA funding
    - The funding is sufficient to implement the eastward extension of Toll 49 (Segment 6).
  - $23,284,579 Federal, State, and local funding for Tyler Transit
    - The amount is expected to be sufficient to sustain current transit services provided.
- For long-term implementation, the following funding is expected to be available: -
  - $ 186,765,000 Federal and State "Build It" funding
    - The funding is sufficient to implement the widening of FM 756, FM 2943, FM 2964, SS 364 and a portion of SH 31E.
  - $118,262,250 Federal and State "Maintain It" funding for maintenance activities
  - $43,593,388 Federal, State, and local funding for Tyler Transit
    - The amount is expected to be sufficient to sustain current levels of transit services.

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XV. PLAN RECOMMENDATIONS

The development of the 2040 Metropolitan Transportation Plan was based on a planning process that examined travel and transportation issues and needs within the Tyler Urbanized Area. The process involved valuable input and feedback from planning partners, local stakeholders, and the public. It further included the analysis of socioeconomic characteristics of the study area and a demographic analysis of the community's growth. In addition, a regional travel demand model was used to examine travel patterns, assess roadway deficiencies, and evaluate transportation improvements.

The resulting plan discussed proposed projects, which were subsequently ranked in terms of how they address congestion, safety, and efficiency concerns and travel demand, and in terms of how well they address other community needs and support the community's vision for its transportation future.

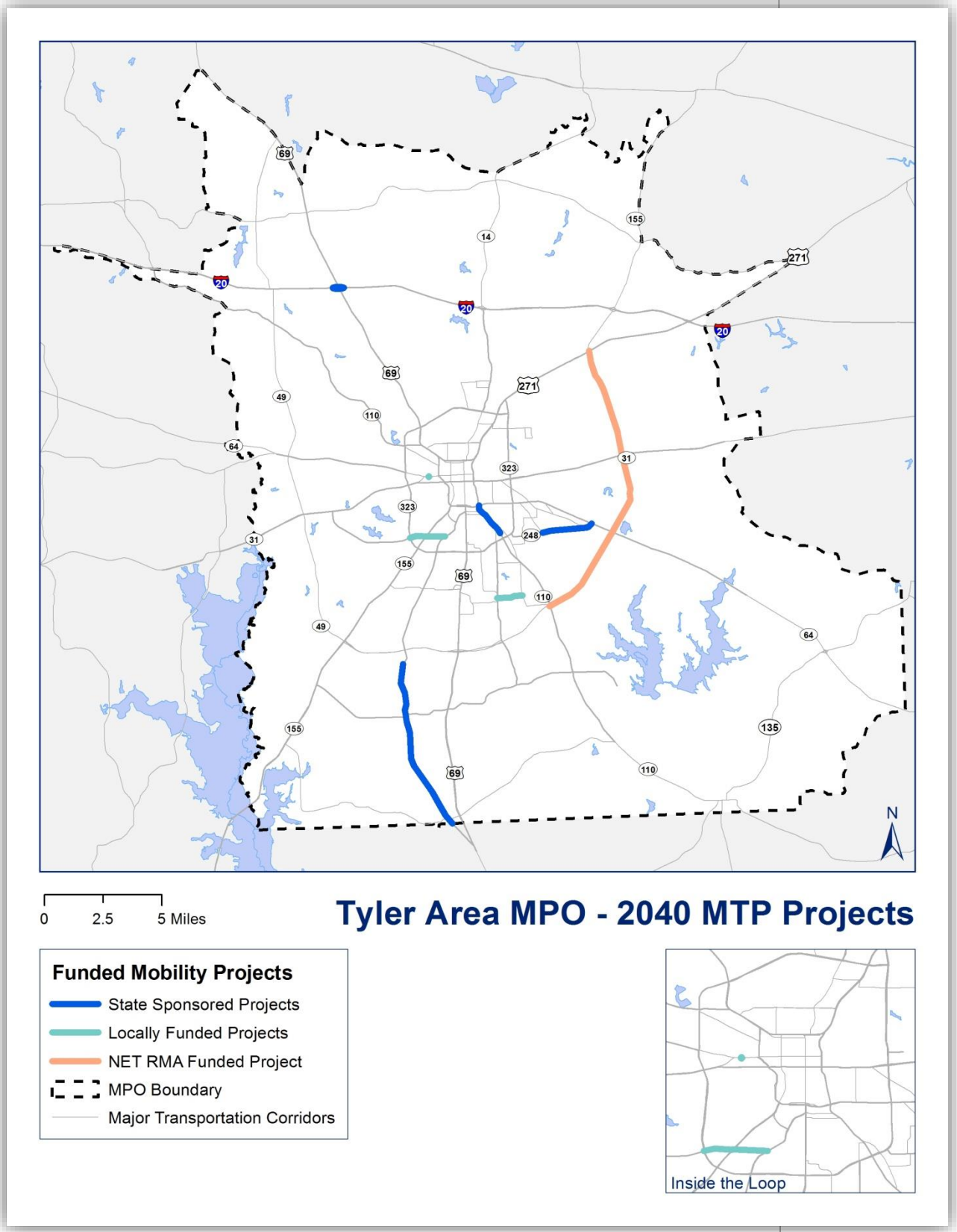
Most importantly, the 2040 Metropolitan Transportation Plan analyzed all modes of transportation. Therefore, the following chapter lists not only the recommended roadway improvement, but also the multi-modal recommendations, which were discussed in each individual modal chapter.

ROADWAY PROJECTS

Based on the ranking of the proposed projects, which is detailed in the *Project Prioritization - Chapter XIII*, and the application of fiscal constraint, which is described in the *Financial Plan - Chapter XIV*, the 2040 Metropolitan Transportation Plan includes a short-term implementation plan (2015-2024) and a long-term implementation plan (2025-2040) for State-sponsored, NET RMA, and locally funded roadway projects.

For overview purposes, both short-term and long-term mobility projects are shown in Figure XV-1.

Figure XV-1: Tyler Area Recommended Projects



Short-term Implementation

The following projects are recommended for implementation during the short-term phase (2015-2024). They are broken out into mobility and non-mobility projects and are listed by project sponsor:

Table XV-1: Roadway Projects Short-Term Implementation Plan

Project Roadway	From	To	Description	Total Project Cost
Short-term Mobility Projects				
State-Sponsored				
SS 248	1.75 Mi W of FM 848 (Old Omen Rd), E	SH 64 SE of Tyler	Widen to a 4-lane divided roadway with flush median	$12,930,501
Railroad ROW Acquisition	Hagen Road in Whitehouse	FM 346 in Troup	Purchase 7.25 miles of abandoned Union Pacific Railroad corridor	$500,000
IH 20	US 69 in Lindale	0.8 mi East of US 69	Realign and lengthen WB exit and EB entrance ramp for US 69	$11,587,775
IH 20	0.8 mi East of US 69	1.75 mi East of US 69 (Jim Hogg Rd)	Realign and lengthen WB exit and EB entrance ramp for US 69	$4,792,670
FM 2493	FM 2813 in Gresham	FM 346 in Flint	Widen from 2 lanes to 4 lanes with flush median	$19,269,010
US 69	At FM 346 East of Flint		Construct grade-separated interchange	$21,016,672
IH 20	US 69 in Lindale		Ramp reversal and one-way frontage roads	$19,630,612
FM 16	4 mi W of FM 849 (CR 481E)	US 69 in Lindale	Widen 4 lanes with flush median to Toll 49, then center turn lane for the rest	$32,573,573
FM 2493	FM 346 in Flint	0.3 mi South of FM 344 (Cherokee C/L)	Widen from 2 Lanes to 4 Lanes with flush median	$43,706,440
Legacy Trail	FM 2813, N along W side of FM 2493	3 Lakes PKWY, S to Cumberland Rd	Construct 10' wide multi-purpose Legacy Trails, phase 1	4,937,650
Short-term Non-Mobility Projects				
Categories 1 and 6 - Preventative Maintenance, Replacement and Rehabilitation				$59,885,413
Total State-Sponsored Short-term Expenditure				$165,507,225
Expected Short-term Funds Available				$225,392,668

Long-term Implementation

The following projects are recommended for implementation during the long-term phase (2015-2024). They are broken out into mobility and non-mobility projects and are listed by project sponsor:

Table XV-2: Roadway Projects Long-Term Implementation Plan

Project Roadway	From	To	Description	Total Project Cost
Long-term Mobility Projects				
State-Sponsored				
FM 756 (Paluxy)	Jeff Davis Drive	FM 346	Widen from 2 lanes to 4 lanes with flush median	$27,773,438
FM 756 (Paluxy)	FM 346	FM 344 at Walnut Grove	Widen from 2 lanes to 4 lanes with flush median	$10,764,853
FM 2493	SL 323	FM 2813	Widen from 4 lanes to 6 lanes with flush median	$76,733,438
FM 2964 (Rhones Quarter)	SH 110	FM 346	Widen from 2 lanes to 4 lanes	$21,930,911
SH 31, East	SL 323, East	FM 850	Widen to a 4-lane divided principal arterial	$135,234,499
SS 364	SH 31	SL 323	Widen from 2 to 4 lanes	$28,562,848
Long-term Non-Mobility Projects				
Categories 1 and 6 - Preventative Maintenance, Replacement and Rehabilitation				$118,262,250
Total Long-term Expenditure				$220,005,000
Expected Long-term Funds Available				$338,267,250

Unfunded Needs

Although additional projects had been scored for potential inclusion in the financially constrained plan, funding limitations required that they be moved to an unfunded needs list. The following list shows State-sponsored projects that could be considered for implementation if additional funds become available.

Table XV-3: State-Sponsored - Unfunded Needs

Location	From	To	Description
FM 14	IH 20	Loop 323	Widen to 4-lane minor arterial with CTL
FM 14	Loop 323	MLK Jr, Blvd	Widen to 4-lane minor arterial with CTL
FM 16	US 69	2.4 mi E of US 69	Widen from 2 to 4 lanes
IH 20	Van Zandt County Line	1.4 mi East of US 69	Widen controlled access facility from 4 lanes to 6 lanes
IH 20	1.4 mi East of US 69	0.9 mi East of US 271	Widen controlled access facility from 4 lanes to 6 lanes
IH 20	Toll 49	Harvey Road	Add frontage roads to interstate
SH 31, West	FM 206	FM 2661	Widen from 4 to 6 lanes
SH 31, West	FM 2661	County Line	Widen from 4 to 6 lanes
SH 64, West	FM 724	FM 2661	Widen to a 4-lane divided principal arterial
SH 64, West	FM 2661	County Line	Widen to a 4-lane divided principal arterial
SH 64, East	CR 220, East	FM 3226	Widen to a 4-lane divided principal arterial
SH 64, East	FM 3226	County Line	Widen to a 4-lane divided principal arterial
US 69, North	Loop 323	IH 20, West	Widen from 4 to 6-lane divided principal arterial
SH 110, North	IH 20	FM 849	Widen from 2 to 4 lanes
SH 110, North	FM 849	FM 2016	Widen from 2 to 4 lanes
SH 110, North	FM 2016	Loop 323	Widen from 2 to 4 lanes
SH 110. South	5th Street	Golden Road	Widen to a 6-lane divided principal arterial
SH 110. South	Hagan Road	Troup City Limits	Widen to a 4-lane divided principal arterial
SH 155, North	US 271 North	IH 20, East	Widen to a 4 lane principal arterial
SH 155, North	IH 20 East	County Line	Widen to a 4-lane principal arterial
US 271	Loop 323	IH 20, East	Widen from 4 to 6-lane divided principal arterial
Loop 323 Extension	Loop 323 NE	US 271	Widen from 2 to 4 lanes

Local Illustrative

Locally funded projects that were not identified in the short-term or long-term implementation plans are considered illustrative projects. As additional funds become available, these projects could be considered for implementation as part of the 2040 Metropolitan Plan.

Table XV-4: Locally Funded - Illustrative Projects

Location	From	To	Description
Bellwood Lake Drive	Bellwood Lake Drive	Briarwood Road	Extend road as a 2-lane collector
Bellwood Road	Bellwood	SH 31 / Pioneer Drive	Extend road as a 2-lane collector
Big Eddy Road	FM 2868	SH 155 / CR 168	Upgrade east portion to a minor arterial
N. Broadway Ave	Blackfork Creek	N. Loop 323	Widen to 4-lane minor arterial with CTL
Cambridge Road	Broadway Ave	Jeff Davis Drive	Widen to 2-lane major collector with CTL
Charlotte Drive	Van Highway	Loop 323 Northwest	Widen to a 2-lane collector with CTL
Copeland Rd	Grande Blvd	Jeff Davis Drive	Construct new location, 4-lane minor arterial
Copeland Rd	Old Troup Hwy	Shiloh Road	Widen to 2-lane major collector with CTL
Copeland Rd	Jeff Davis Drive	Cumberland Rd	Construct new location, 4 lanes
CR 493 / CR 4196	US 69, North	CR 431	Add roads as a 2-lane collector
Crow Road	SH 155	Old Jacksonville Hwy	Widen to 2-lane major collector with CTL
Cumberland Rd	Broadway Ave	Paluxy Drive	Widen to 4-lane minor arterial with CTL
Dawson Street	Clinic Drive	Fleishel Drive	Widen to 2-lane major collector with CTL
Donnybrook Avenue	Shiloh Road	Rieck Road	Widen from 32 to 40 ft urban street
W Erwin Street	Bonner Ave	Glenwood Blvd	Widen to a 4-lane minor arterial
E. Erwin Street	Spring Street	Beckham Ave	Widen to 4-lane minor arterial with CTL
E. Erwin Street	Beckham Ave	Loop 323	Widen to 4-lane minor arterial with CTL
East-West Whitehouse Arterial	FM 346	East-West Whitehouse Arterial	(Phase 1) Upgrade county roads to a 2-lane minor arterial with CTL
East-West Whitehouse Arterial	FM 346 West	Includes Wildwood, Fowler, Dudley Rds	(Phase 2) Extend road as a 2-lane minor arterial
Elm Street	Beckham Ave	Saunders	Widen to 2-lane major collector with CTL
Fleishel Ave	E. Houston Street	E. Front Street	Widen to 2-lane major collector with CTL
W. Grande Blvd	SH 155	Toll 49	Extend 4-lane divided minor arterial and add an interchange at Toll 49
W. Grande Blvd	Toll 49	FM 2661	Extend 4-lane divided minor arterial
E. Grande Blvd	SH 110	Old Omen Road	Extend road as a 4-lane minor arterial with CTL
Indian Creek Road	South of Spur 364	Lake Placid Road	Extend road as a 2-lane collector

Location	From	To	Description
Jim Hogg Road	IH 20	FM 16	Widen to a 4-lane minor arterial
Lake Placid Extension	SH 155	CR 1141	Extend road as 2-lane collector
Lyons Ave	W. Front Street	W. Erwin Street	Widen to 4-lane minor arterial with CTL
New Omen Road	Shiloh Road	Grande Boulevard	Extend road as a 4-lane divided minor arterial
North Whitehouse Arterial	South Point Road	SH 110	Extend road as a 2-lane minor arterial
Old Henderson	E. Front Street	E. Erwin Street	Widen to 4-lane minor arterial with CTL
Porter Street	Front Street	Devine	Widen to 2-lane major collector with CTL
Rice Road	SH 155	Old Jacksonville Hwy	New location, 4-lane minor arterial with CTL
Rice Road	Old Bullard Rd	Old Jacksonville Hwy	Widen to 4-lane minor arterial with CTL

ADDITIONAL ROAD AND HIGHWAY RECOMMENDATIONS

Congestion and safety are often closely related, as highly congested corridors can significantly increase the potential for crashes, while crashes are often a major source of non-recurring congestion. The following recommendations aim to address both transportation issues:

- Work with state and local transportation partners to identify and monitor the performance of highly congested corridors and bottlenecks within the study area;
- Work with state and local transportation partners and law enforcement to identify the cause of crashes at hotspot locations within the study area;
- Prepare a local congestion mitigation and crash avoidance strategies, and identify and monitor related performance measures;
- Assist transportation partners with the implementation of operational improvements and, if necessary, capital improvements, and monitor effectiveness of implemented strategies and progress made towards locally defined targets.

PUBLIC TRANSPORTATION PROJECTS

According to the funding presented in the *Financial Plan - Chapter XIV*, $23,284,579 will be available for short-term and $43,593,388 for long-term implementation, available for operating and capital expenditures.

Currently Tyler Transit is in the process of updating the Strategic Plan to determine additional future projects. Upon completion, inclusion of potential projects in the 2040 Metropolitan Transportation Plan should be considered - as unfunded needs - to be considered for implementation if additional funds become available.

PUBLIC TRANSPORTATION RECOMMENDATIONS

In order to progress toward the goal of an expanded and improved transit system, the following recommendations have been developed based on identified issues and needs. They are presented in no particular order:

- As planned, it is recommended that Tyler Transit pursues grant funding for a route study in the near future. This may provide strategies for the agency to improve routes, headways, and overall performance of the transit system.
- Close coordination between Tyler Transit, the MPO, and local entities ahead of major commercial or residential developments would provide for the planning of transit routes and placement of stops and passenger amenities as an integral part of the transportation network.
- In order to help increase levels of service and coverage areas, public and private transportation providers should consider enhanced coordination and collaboration efforts.

Furthermore, several regional short-, mid-, and long-term strategies should be considered, as recommended in ETCOG's Regional Transportation Coordination Plan:

- Short-Term Strategies
  - Increase public transportation education and promotion of services
  - Interconnectivity Day
  - One-stop regional transportation call center
  - Campaign stressing time/monetary value of riding transit
  - Seek funding to extend transportation network service hours
  - Expand agency participation
  - Regional Transportation Marketing Plan
- Mid-Term Strategies
  - Adhere to needs of growing senior population
  - Transit-friendly amenities
  - Ensure multiple transportation providers serve transfer points and key activity centers
  - Online regional transit trip planner
  - Regional vehicle maintenance
  - Volunteer driver program
  - Shared-use vehicles
- Long-Term Strategies
  - Administer a regional vanpool program
  - Consolidation of scheduling service into one system
  - Collaborate future public transit planning with multi-modal efforts

BICYCLE AND PEDESTRIAN RECOMMENDATIONS

The following recommendations, listed in no particular order, are proposed to enhance the bicycle and pedestrian networks, making these non-motorized modes of transportation more viable for Tyler MPO area residents.

- Develop the trail system in accordance with the Regional Trail Plan and the City of Tyler Parks & Open Space Master Plan.
- Complete upgrade of sidewalk and ramp projects to become fully compliant with ADA and TAS requirements.
- Prioritize projects that connect existing bicycle and pedestrian infrastructure whenever possible to take advantage of cost benefits.
- Prioritize projects that provide connection to neighborhood services and employment centers.
- Add bicycle lanes to roadways as outlined in the Tyler Unified Development Code.
- Mark on-street bike lanes along designated bicycle routes.
- Create educational materials for motorists and cyclists.
- Adopt smart land-use and growth patterns to keep the built environment at a 'human' scale, creating a more bicycle- and pedestrian-friendly environment.

INTERMODAL AND INTERREGIONAL RECOMMENDATIONS

As an increasingly globalized economy and interconnected world raises the demand for business and personal interaction, it is necessary for the region to maintain and improve upon its interregional passenger transport options. Recommendations include:

- Continue to partner with Amtrak, and other partner agencies, to ensure residents and visitors are aware of available passenger rail, station resources, and connectivity options.
- Continue to promote the use of the nearby Amtrak stations for passenger rail access to metropolitan areas outside of the region and encourage expansion of GoBus service to Mineola and Longview.
- Continue coordination with NET RMA and regional planning partners to advance the planning and potential implementation of the proposed Multi-Modal Facility.

In the past decade, the airport has undergone considerable changes and flight enplanements are expected to continue to grow in the future:

- Encourage exploration of airport upgrades, including access and parking.
- Continue coordination with regional transportation partners to implement a public transportation link to the airport.
- Encourage consideration and planning of innovative financing mechanisms to maintain the competitiveness of the Tyler Pounds Regional Airport and the connectivity to other parts of the state and the U.S.

SAFETY AND SECURITY RECOMMENDATIONS

Under MAP-21, state and metropolitan planning organizations are required to adopt a performance- and outcome-based approach to transportation planning that relies heavily on existing and projected data to evaluate the effectiveness of strategies in addressing goals and objectives, including those related to safety.

The following recommendations, shown in no particular order, are designed to prepare the Tyler Urbanized Area for the final rulemaking in regard to safety performance management:

- Identify measurable safety goals and objectives;
- Transition to a more data-driven, strategic approach to safety planning;
- Collaborate with key safety stakeholders;
- Coordinates closely with the State in the development, evaluation, and reporting of performance targets that support the statewide safety goals and objectives, as well as regional and local safety goals; and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation safety planning.

The following recommendations, shown in no particular order, are designed to strengthen transportation security planning in the Tyler Urbanized Area:

- Create a local definition of security;
- Continue to assess the most significant threats, high-potential targets, and least hardened infrastructure elements within the Tyler Urbanized Area;
- Work with federal, state, regional, and local jurisdictions and transportation providers to develop evacuation plans for the "transportation disadvantaged;"
- Collaborate with security and emergency response professionals and organizations on an ongoing basis;
- Adopt a Continuity of Operations Plan (COOP); and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation security planning.

NO-BUILD STRATEGY RECOMMENDATIONS

The following recommendations are listed in no particular order:

- Encourage continued coordination of the metropolitan transportation planning process with the development of local transportation and comprehensive plans to promote the inclusion of facilities and systems related to transit, biking, and walking.
- Encourage transportation planning partners to consider cost-effective, no-build strategies, such as Travel Demand Management, Transportation Systems Management & Operations, and Complete Streets design prior to investing in roadway capacity improvements.
- Work with large area employers to explore and implement employer-based travel demand management tools and Incentives.
- Consider giving funding preference to projects that incorporate Travel Demand Management and Transportation System Management & Operations strategies, reflect Complete Streets design principles, or set regional multi-modal transportation goals and community priorities through a robust public involvement process.