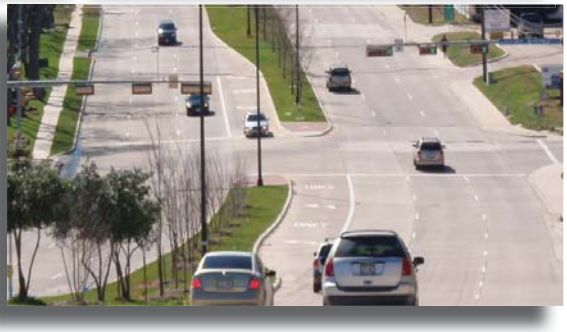
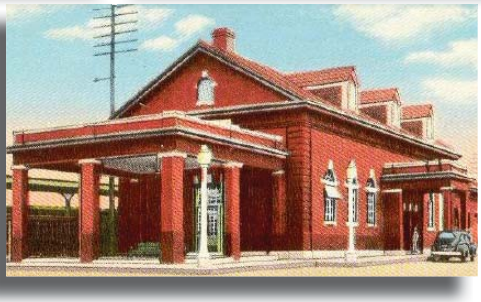
Longview Metropolitan Planning Organization

Metropolitan Transportation Plan 2040





Adopted - November 10, 2014
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Real East Texas
CITY OF LONGVIEW
Metropolitan Planning Organization

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CHAPTER 1 – INTRODUCTION & BACKGROUND

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Introduction & Background

Efficient transportation systems are the backbone of successful communities. Moving freight and people through multiple modes of transportation safely creates economic and cultural growth of communities. However, these transportation systems are costly. Construction and right-of-way acquisition costs continue to rise, creating a growing shift between the supply of roadway capacity and the population demands of the region. The area that the Longview Metropolitan Planning Organization (MPO) plans for has been steadily increasing since 1800s. In the 1930s, the area saw an exponential increase in population due to the oil boom of East Texas. This, coupled with the rising costs of fuel sources, causes the demand on the transportation system to be ever increasing. To plan for this change in the region, the Metropolitan Transportation Plan (MTP) was created.

The MTP is the Longview Area's strategy to respond to the transportation needs of the community for the next twenty-five years. It includes plans for meeting existing and projected transportation needs identified through the continuing, comprehensive, and cooperative planning efforts of the Longview MPO.

This is the sixth major transportation plan for the Longview Metropolitan Area developed under the auspices of the MPO. The Metropolitan Area encompasses the cities of Longview, White Oak, Gladewater, Warren City, Union Grove, Clarksville City, East Mountain, and Lakeport as well as portions of Gregg, Harrison, and Upshur Counties. The initial concept for a 'thoroughfare plan' was published in 1965. This effort was updated and expanded after the establishment of the MPO, with major updates published in 1976, 1988, 1994, 1999, 2004, and 2009.

This MTP was created in accordance with the federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21) Act. MAP-21 , enacted in 2012, creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

Planning Process

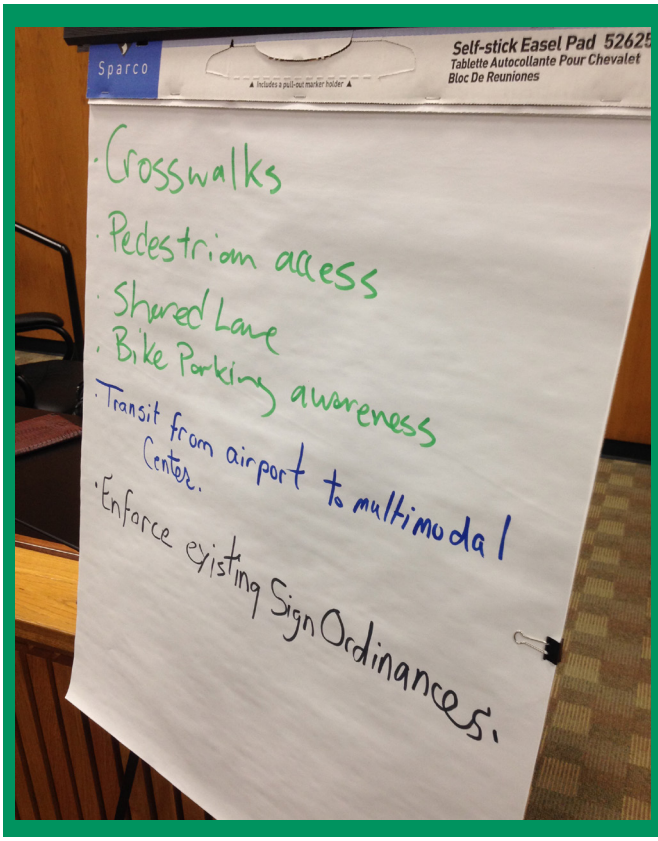
Transportation planning is a process of projecting future transportation needs, investigating and evaluating alternative actions for meeting those

needs, assessing the financial ability of the community to implement those actions, and recommending reasonable strategies based on needs and available resources. Elected officials and others in decision-making roles need access to this information to help them develop policies, programs, and projects.

The transportation planning process is continuous. Conditions affecting the transportation system, such as population growth, land use patterns, employment changes, and traffic volumes are monitored. All transportation modes for the entire metropolitan area are studied and addressed in a comprehensive manner. The transportation planning process is structured to include cooperative input and direction from participating cities, counties, agencies, and the public.

As an urbanized area with a population of over 50,000, the City of Longview was designated as a Metropolitan Planning Organization (MPO) by the Texas Governor. The MPO is governed by a Policy Board composed of elected officials and senior staff members from Longview, White Oak, Gladewater, Gregg County, Harrison County, and the Texas Department of Transportation (TxDOT). Representatives of the Federal Highway Administration, TxDOT, and the State Representatives serve as non-voting members of the Policy Board. The MPO Technical Committee consists of staff members from participating public entities and agencies develop policies, plans, and projects for recommendation to the Policy Board.

Daily operations of the MPO are accomplished by the City of Longview Transportation Planning Department staff. Federal metropolitan planning funds and state matching funds for transportation planning are provided to the MPO through the Texas Department of Transportation.



The MTP development process involves data collection and analysis, socioeconomic data projection, special studies, extensive technical analysis, and citizen input. The MTP serves as a framework for project development, and guides public entities in selecting projects from the Plan for implementation through the State's

Transportation Improvement Program (STIP), the City of Longview's Capital Improvements Program (CIP), and other transportation programs.

Supporting Organizations

These agencies, organizations, and entities were vital in the creation of this long-term plan.

Cities

Counties

State Agencies

Federal Agencies

Local & Regional Agencies

Committee Makeup

The Longview MPO is comprised of two committees: the Technical Committee which provides technical analysis and review and the Policy Board which is the top-level transportation planning committee providing both review and policy guidance for transportation planning efforts in the Longview Metropolitan Area.

Policy Board

Voting Members

Hon. Jay Dean, *Longview Mayor*
Hon. Bill Stoudt, *Gregg County Judge*
Hon. Rick May, *White Oak*
Hon. Dean Fowler, *Upshur County Judge*
Hon. Harold Wells, *Gladewater Mayor*
James Greer, *Harrison County Commissioner*
Dennis Cooley, *TxDOT District Engineer, Tyler*
Robert Ratcliff, *TxDOT District Engineer, Atlanta*
David Willard, *Longview City Manager*
Rolin McPhee, *Longview Dir. of Public Works*
Michael Shirley, *Longview Dir. of Development Services.*

Non-Voting Members

David Simpson, *State Represenative*
Chris Paddie, *State Representative*
Genevieve Bales, *Federal Highway Admin.*
Chris Petro, *TxDOT MPO Field Represenative*

Technical Committee

Vernon Webb, TxDOT, *Tyler*
Eric Fisher, *TxDOT, Tyler*
Will Buskell, TxDOT, *Longview*
Rea Donna Jones, *TxDOT, Atlanta*
Deanne Simmons, *TxDOT, Atlanta*
Steve Swindell, TxDOT *Longview*
Rolin McPhee, *City of Longview*

Keith Bonds, *City of Longview*
Michael Shirley, *City of Longview*
Stephen Ha, *City of Longview*
Ingrid Self, *City of Longview*
Scott Lewis, *Longview Transit*
Chris Petro, TxDOT, *MPO Field Represenative*

John Hedrick, *ETCOG*
Debbie Sadler, *City of White Oak*
Paul Jaap, *City of Gladewater*
Genevieve Bales, *FHWA*
Lynn Hayes, *Federal Transit Admin.*
Dave Spurrier, *NET RMA*

MPO Staff

Karen Owen, *Longview MPO Director*

Brett Huntsman, *Longview MPO Planner*

CHAPTER 2 – PLANNING FACTORS

www.pedbikeimages.org/Laura Sandt

Planning Factors

Introduction

On July 6, 2012, President Obama signed into law P.L. 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 funds surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014. MAP-21 represents a milestone for the U.S. economy – it provides needed funds and more importantly, it transforms the policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure.

MAP-21 creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

MAP-21 builds on and refines many of the highway, transit, bike, and pedestrian programs and policies established in 1991. This summary reviews the policies and programs administered by the Federal Highway Administration. The Department of Transportation will continue to make progress on transportation options, which it has focused on in the past three years, working closely with stakeholders to ensure that local communities are able to build multimodal, sustainable projects ranging from passenger rail and transit to bicycle and pedestrian paths.

Setting the course for transportation investment in highways, MAP-21:

- Strengthens America's highways - MAP-21 expands the National Highway System (NHS) to incorporate principal arterials not previously included. Investment targets the enhanced NHS, with more than half of highway funding going to the new program devoted to preserving and improving the most important highways -- the National Highway Performance Program.

- Establishes a performance-based program. - Under MAP-21, performance management will transform Federal highway programs and provide a means to more efficient investment of Federal transportation funds by focusing on national transportation goals, increasing the accountability and transparency of the Federal highway programs, and improving transportation investment decision making through performance-based planning and programming.

- Creates jobs and supports economic growth - MAP-21 authorizes $82 billion in Federal funding for FYs 2013 and 2014 for road, bridge, bicycling, and walking improvements. In addition, MAP-21 enhances innovative financing and encourages private sector investment through a substantial increase in funding for the TIFIA program. It also includes a number of provisions designed to improve freight movement in support of national goals.

- Supports the Department of Transportation's (DOT) aggressive safety agenda - MAP-21 continues the successful Highway Safety Improvement Program, doubling funding for infrastructure safety, strengthening the linkage among modal safety programs, and creating a positive agenda to make significant progress in reducing highway fatalities. It also continues to build on other aggressive safety efforts, including the Department's fight against distracted driving and its push to improve transit and motor carrier safety.

- Streamlines Federal highway transportation programs. - The complex array of existing programs is simplified, substantially consolidating the program structure into a smaller number of broader core programs. Many smaller programs are eliminated, including most discretionary programs, with the eligibilities generally continuing under core programs.

- Accelerates project delivery and promotes innovation. - MAP-21 incorporates a host of changes aimed at ensuring the timely delivery of transportation projects. Changes will improve innovation and efficiency in the development of projects, through the planning and environmental review process, to project delivery.

MAP -21 replaces the previous transportation bill, Safe, Accountable, Flexible, and Efficient Transportation Equity Act (SAFETEA-LU). SAFETEA-LU put an emphasis on increasing mobility and reducing congestion through the highway system. MAP-21 also puts a large emphasis on multimodal transportation and performance based planning

Perfomance Management

The MAP-21 legislation places a major emphasis on the use of performance-based planning. As a part of this process, a set of national performance goals were identified as listed below. Although these goals were developed specific to the federal-aid highway program, many of these themes have a universal application over all travel modes.

- Safety: To achieve a significant reduction in traffic fatalities and serious injuries on all public roads

- Infrastructure condition: To maintain the highway infrastructure asset system in a state of good repair

- Congestion reduction: To achieve a significant reduction in congestion on the National Highway System

- System reliability: To improve the efficiency of the surface transportation system

- Freight movement and economic vitality: To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development

- Environmental sustainability: To enhance the performance of the transportation system while protecting and enhancing the natural environment

- Reduced project delivery delays: To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion

through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

MAP-21 Eight Broad Goals

The Metropolitan Planning program under MAP-21 provided funding for the integration of transportation planning processes in the Metropolitan Planning Organizations (MPOs) into a unified metropolitan transportation planning process, culminating in the preparation of a multimodal transportation plan for the MPO. Title 23 of the United States Code, section 134(f) (revised in SAFETEA-LU section 6001(h)) describes Federal Planning Factors issued by Congress to emphasize planning factors from a national perspective. Under MAP-21, these planning factors remain unchanged. The Longview MTP was prepared in compliance and consideration with the requirments of MAP-21 and the addressed planning factors listed below. The eight planning factors (for both metro and statewide planning) are as follows:

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

MTP Goals & Objectives

To effectively establish a performance-based long-range transportation plan it is important for the Longview MPO to institute clear goals that match with regional needs and satisfy the national performance goals set through MAP-21.

The previous MTP adopted by the MPO for the forecast year of 2035 set clear goals and guiding principles to be implemented through the 2035 MTP Update. Below are the goals for this MTP update. These goals will be accomplished by the continued coordination between Federal, State, and Local agencies, utilizing the tools available to the MPO, and the practice of performance based planning set in place by MAP-21.

- To develop a unified transportation plan encompassing all transportation modes that will effectively accommodate future growth for a twenty-five year period and address the mobility needs of all residents.
- To promote efficient use of existing transportation systems.
- To identify and prioritize improvements to transportation systems to enable transportation development to occur in conjunction with future development of the urban area.
- To identify and preserve transportation corridors for future growth.
- To evaluate the resources of the community and to implement necessary improvements.
- To develop methods of maintaining existing infrastructure.
- To develop a performance-based approach to transportation planning.

Establishing 2040 MTP Update Goals & Objectives

Through the 2040 MTP Update process, the goals set forth through the previous plan were updated to reflect new regional desires and also to more align them with new federal requirements in MAP-21. Early on in the MTP process, MPO staff coordinated with MPO Policy Board and the Technical Committee members to determine the goals for the 2040 MTP. This was accomplished by holding a joint Policy Board and Technical Committee meeting in May 2014. The two groups, facilitated by the MPO and consultants Kimley-Horn & Associates (KHA), discussed goals created by KHA that were derived from the national performance goals. They are as follows:

- Safety
- Maintenance and System Efficiency
- Congestion and Freight
- Environmental Sustainability
- Transportation Choices
- Economic Vitality

With the comments and suggestions from the two groups, KHA and the MPO were able to refine the measures and apply a percentage to extract a weighted measure for project prioritization scoring. This process was examined and tested in September 2014 to create a final performance based prioritization method. This was presented to the Technical Committee and Policy Board for review and comments before final approval by the Policy Board in October 2014.

Summary of Planning Factors

Safety

Safety in the Longview MPO region was discussed as the most important transportation element to consider in the MTP update process. The Tyler TxDOT District, which covers a large portion of the MPO area, has one of the highest crash rates in the state. Much of the concern for high crash rates are on rural, high-speed facilities that comprise over 40% of the crashes in the region. There was also concern with tractor-trailer crashes on Interstate 20. Due to the restricted geography of the I-20 corridor, when a crash occurs on the corridor, there is little to no congestion relief in parallel routes to direct traffic during a crash incident.

Maintenance & System Effciency

The maintenance of the existing roadways in the regions is the second highest priority element in the region. With the amount of truck traffic in the region for a variety of reasons, many of the roadways face a greater need for pavement replacement and upgrading. The current Pavement Management Information System (PMIS) maintained by the City of Longview and also TxDOT provides an up-to-date status on the pavement conditions in the region.

System efficiency refers to the improvement of the corridors in the region due to low-cost and operational improvements. This can include access management, signal timing and travel demand management. In the region, improving traffic signal timing and operations is an important element to consider when maximizing the current capacity of the roadways that are already built and maintained by the City of Longview, the surrounding cities and TxDOT.

Congestion & Freight

Within the Longview region, congestion and freight accommodations are an important element of the transportation network. Ensuring that freight traffic can get to its destinations with limited interruption is important for the economy of the region. Congested corridors can also limit the productivity of employees in a region due to increased time spent in traffic. Air quality can also degrade as a result of congestion. Although congestion is an important issue in the region, it is not a problematic concern with both the MPO committees' members and the public in the region. There are a few areas in the region that are of concern as it pertains to high traffic and congestion, but as an overall transportation concern, it ranked low among the members of the MPO with regards to the prioritization of transportation elements.

Environmental Sustainability

Environmental concerns in the region are largely out of the MPO's control. Due to the industry in the region and the amount of point-source emissions, air quality is an issue in the region. However, high amounts of truck traffic and with the Interstate 20 proximity, mobile-source emissions are a growing source of pollution in the region. The MPO has been close to non-attainment for many years and if the ozone standards were to change, the Longview region would become non-attainment. Ensuring that the transportation projects in the region are helping to reduce the environmental impact to air quality is an important factor to consider when prioritizing projects. This can be done by reducing congestion through operational or capacity improvements particularly at intersections and also by increasing the number of multimodal trips such as walking, biking or using transit. Reducing congestion and reducing number of vehicle trips will help to reduce the impact to the environment in the region.

Transportation Choices

The discussion of transportation choices in the region is relatively new. Focusing primarily on the automobile has been the trend for transportation improvements. However, increasing demand has been needed for multimodal transportation such as walking, biking and transit. The rise of this need has many reasons:

- The health benefit of using alternative modes of travel,
- The rising cost of fuel has limited some people's ability or desire to own a vehicle,
- Funding sources from the federal and state government has changed to focus a portion on multimodal improvements,
- New Texas legislation requires that bike accommodations are provided on state facilities,
- Employers are seeing an increased number of employees using alternative options for traveling to work.

The types of multimodalism choices addressed are bicycle, pedestrian, and public transportation. Roads benefit from having facilities either existing or planned that accommodate for all three of these forms. Small rural roads, do not receive any benefit because of the lack of sidewalks, bike lanes, etc.

Economic Vitality

Due to limited funding for transportation improvements at all levels of government, the funds that are spent on projects should be focused on those that can also improve the economic vitality of the region. The actual return on investment (ROI) that is developed through a transportation project can be determined through a cost-benefit analysis. This element of transportation project prioritization is low on the weighting scale, but more because of the need to improve safety and maintain quality infrastructure along transportation corridors in the region.

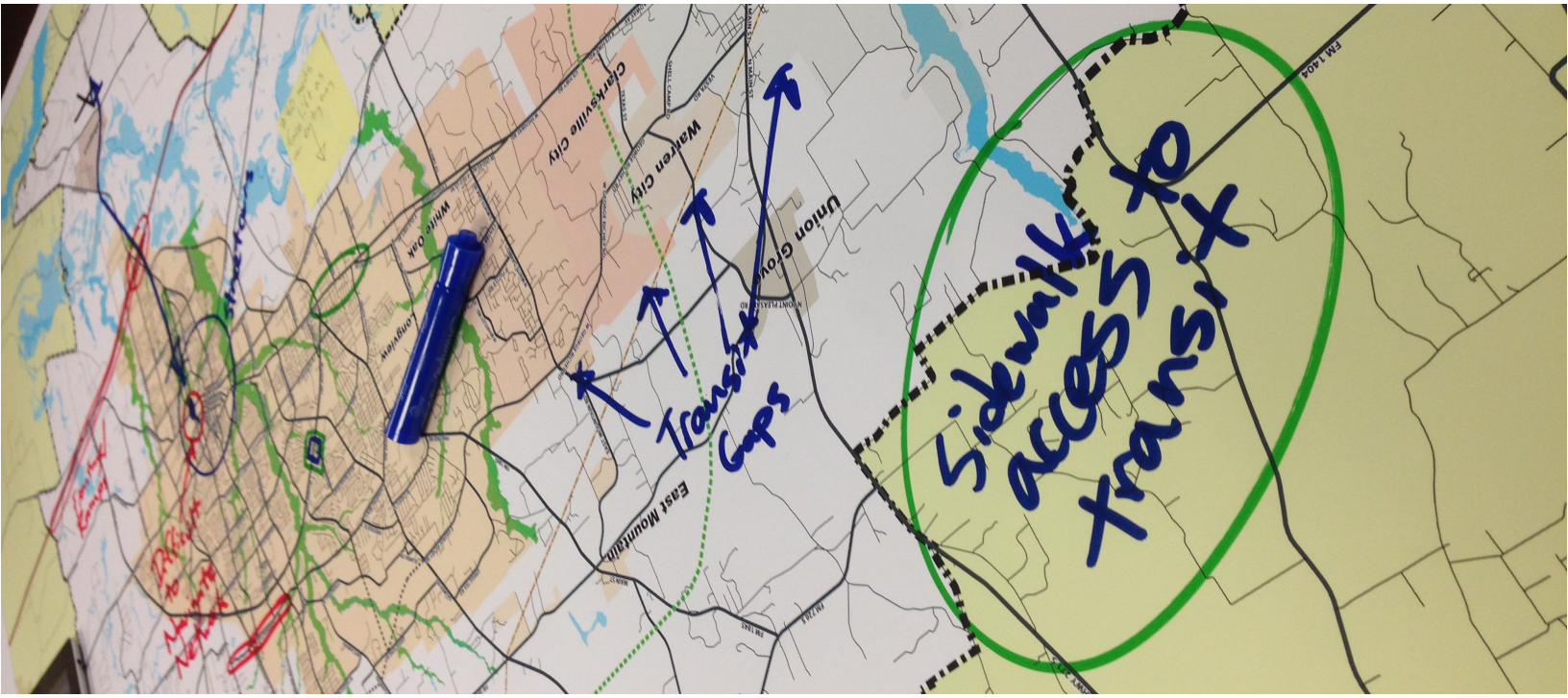
Conclusions

Through the Longview MPO MTP Update process, the goals and policies developed previously have been refined and updated. These goals were developed through a comprehensive and responsive community-driven program. These goals also coordinate closely with the requirements specified under MAP-21.

The 2040 MTP Update equips the region with the tools to make smart, strategic and community-driven mobility investments and leverage resources to create a sustainable transportation system reflective of the shared vision of the Longview MPO area.

The 2040 MTP Update builds upon the criteria and the decision-making process of the previous MTP and adds upon it the need to develop a multi-performance-based project scoring methodology. This methodology allows for the project selection process be weighted by specific performance measures and measures of effectiveness that are important to the Longview region. This process helps the community and the MPO recognize problems, select solutions and prioritize their implementation in both the short and long term.

CHAPTER 3 – PUBLIC PARTICIPATION



Public Participation

Introduction

Federal regulations require the designation of an MPO to provide continuous, cooperative, and comprehensive transportation planning for areas with an urbanized population of 50,000 or more. To accomplish this '3-C Process,' the Longview MPO created a public participation plan, in accordance with the Moving Ahead for Progress in the 21st Century (MAP-21) Act, which emphasizes the importance of early, on-going public involvement in the transportation planning process.

It is the intent of the MPO to provide every opportunity for the involvement of citizens, as well as staff and elected officials, in the transportation planning process. Recognizing the importance of public involvement, the Longview MPO implements the procedures outlined in our Public Participation Plan to insure that the public is fully informed about transportation issues and is given reasonable public access to transportation plans and project documents, and that the public has adequate opportunities to express their opinions and concerns about transportation issues in an orderly manner in an appropriate forum.

In order to better communicate transportation plans with the general public, MAP-21 emphasizes the use of visualization techniques to depict transportation plans. Examples of visualization techniques utilized in this transportation plan are charts and graphs, tables and maps overlaid with data and aerial photography. The intent for this technique is to better depict the programs and their impact on the public. The Longview MTP contains several charts, graphs, tables, maps, and other similar visual tools to provide the reader with a display of transportation-related data and information.

The Longview MPO ensured that the public was able to fully able to participate in the creation of this long-term plan in accordance with the adopted Public Participation Plan.

Transportation Survey

In creation of this plan, the MPO created a survey to acquire quantifiable public feedback, as well as qualitative responses. This survey was created with the assistance of consultants Kimley-Horn & Associates as well as the Longview MPO Technical Committee.

The survey was created in three different versions to be accessible through different mediums. The MPO created a one-page, double-sided, version to be distributed in person and by mail, a full version formatted to fit in the local newspaper, and an online version that was designed to be user friendly and mobile friendly. This survey was brought before the Longview Technical

Advertisement in the Gladewater Mirror on July 16th which highlighted the open house and where to fill out the transportation survey.

Committee on May 20th for a review and July 9th as a completed document. It was then presented to the Policy Board on July 16th.

The online survey was launched on July 6th through the website surveygizmo.com and was posted to be easily accessible/ visible for the public. Information on where to find the survey was distributed through several sources such as; Longview News Journal (July 6th), Gladewater Mirror (July 16th), East Texas Review (July 10th), MPO email distribution lists, Longview Transit buses, Longview Chamber of Commerce news letters, Facebook, Twitter, LinkedIn, through the live broadcast and rebroadcast of a July 16th public meeting on Channel 5, City of Longview news releases, county courthouses, city halls, local economic development corporations and also at several public buildings such as the Multimodal Center, Longview Library, Greyhound station, Longview Senior Recreation Center, and Broughton Recreation Center. On every publication, the link to the MPO's website was provided so that the public could find the survey. The MPO also provided laptops at the Julty 16th open house public meeting so that participants could fill out the survey while at the meeting.

The hard-copy of the survey was created and distributed at several meetings in the area. This included all Longview MPO meetings, Public Transportation Advisory Council meetings, and Longview Economic Development HR Alliance meeting. The hard-copy was also placed at city buildings, such as the senior recreation center, for the public to fill out and be sent back through inter-office mail. The hard-copy was also mailed to the MPO's distribution list with instructions on how to return the survey once completed.

Lastly, the MPO created a full-version formatted to fit in the Longview News Journal as its' own block ad. This survey was intended to be cut out and mailed back with additional comments included in the return envelope. This was published on July 6th which was a Sunday edition of the paper. Since Sunday's paper are the most population edition, this ensured highest visibility through this format. The survey also contained the link for the online version, so respondents

could choose to fill it out that way instead in case respondents preferred to fill it out online.

The MPO received a total of 353 survey responses. All hard-copy responses were entered, in their exactness, into the online format by MPO staff. This allowed for faster, and more accurate, data compiling. The information was calculated and a document was created to show the results. These results were presented to the Technical Committee on August 28th, the Public Transportation Advisory Committee on September 30th, and the Policy Board on October 9th. The results were posted on the MPO website and all survey respondents who added their emails to the survey were sent a message making them aware of the online publication. A copy of the survey results was placed at the Multimodal Center for review by waiting passengers.

Public Meetings

The Longview MPO held two public meetings prior to the adoption of this plan. The first meeting was an open house held on July 16th at the Longview City Council Chambers. This open house served as a call for projects for the public who attended. There were large maps and the public was asked to identify potential projects to improve the overall system. This meeting was hosted by consultants Kimley-Horn & Associates (KHA) as they were gathering feedback for their creation of the Longview MPO Thoroughfare Plan.

Extensive work was done to advertise for the open house. Block ads were placed in the Longview News Journal, East Texas Review, and Gladewater Mirror. The MPO also created 'postcard' which listed information about the open house. These were placed at numerous public buildings around Longview, Gladewater, and White Oak. It was sent through online news releases and other social media formats. The MPO also created posters to be put up in Longview Transit buses. Public notices for the meeting were posted in accordance with the Longview MPO Public Participation Plan. This meeting was preceded by an informational presentation. This presentation was broadcasted live and rebroadcasted for a month on Longview Channel 5 City View.

Welcome sign for July 16th open house.

On October 9th, 2014, the MPO held a Policy Board meeting which served as the opening of a 30-day public comment period for this document. The MTP was presented by staff to the audience and Policy Board. The meeting was broadcasted live and rebroadcasted four times a day on Longview Channel 5 City View. During the presentation, information on where to find the draft document as well as where to send comments. After the presentation, the MPO allowed for citizen comment to ask any questions or express concerns with the MTP in its' draft form.

A third public meeting was held on November 10th, 2014. This was a Policy Board meeting in which

the MPO presented the draft, with the revisions from the public, for final approval. The Policy Board approved the Metropolitan Transportation Plan on November 10th, 2014.

Expanded Consultation

Various provisions of MAP-21 require Expanded Consultation and cooperation with federal, state, local and tribal agencies responsible for land use, natural resources and other environmental issues during the adoption of the long-term transportation plan. These agencies are responsible for historic preservation, natural resource conservation, environmental protection, and land use management, as appropriate, in the development of the long-term transportation plans. As part of the Metropolitan Transportation Plan public involvement process, the Longview Metropolitan Planning Organization contacted a list of Expanded Consultative Partners, to seek and identify environmental mitigation concerns they may have. Longview MPO staff mailed a letter describing the possible environmental and land considerations along with a public notice for the October 9th Policy Board meeting to the following list of federal, state, local and tribal agencies.

- Gregg County
- Gregg County Historical Museum
- Harrison County
- Upshur County
- Local Parks and Recreation Departments
- Longview Economic Development Corporation (LEDCO)
- Longview Partnership (Chamber of Commerce)
- Texas Commission on Environmental Quality (TCEQ)
- Texas General Land Office
- Texas Historical Commission
- Texas Parks and Wildlife
- Native American Tribal Agencies

Environmental mitigation activities conducted during the planning process ensure that the environmental functions affected by the transportation plan are restored and maintained. Environmental mitigation activities serve to avoid, minimize or compensate for impacts associated with implementation of the transportation plan; they consider neighborhoods, homes, businesses, cultural resources, parks, recreation areas, wetlands, water sources, forests and agriculture. Refer to Chapter 5, 'Environmental Considerations,' for more information about environmental mitigation in the greater Longview Area.

Environmental justice

Title VI of the 1962 Civil Rights Act states, "No person in the United States shall, on the grounds of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to the discrimination under any program or activity receiving federal financial assistance." A Presidential Executive Order issued in 1999 further amplifies Title VI by providing that each federal agency shall make achieving Environmental Justice (EJ) part of its mission by identifying, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

During the adoption of the Metropolitan Transportation Plan, it was the Longview Metropolitan Planning Organization's policy to ensure fair and full participation in the transportation planning process by all citizens who may be potentially affected. Public outreach to low-income and minority populations was

made by maintaining a distribution mailing list of community organizations and inviting them to public meetings. Public notices were placed in a free community newspaper, East Texas Review, to reach the maximum extent of low-income and minority citizens in the area. Prior to the adoption of the Metropolitan Transportation Plan, the Metropolitan Planning Organization Technical Committee reviewed the data for low-income and minority populations identified by Census Block Groups and Census Blocks respectively. Long-term projects, both on and off-system, were overlaid on a map with this data. EJ areas were defined as being at least 51% minority population and/ or under the 2010 Census defined poverty threshold average of $22,315. The effects or burdens of transportation programs of the MTP on these populations were reviewed by the Technical Committee on September 9th, 2014, and the Technical Committee found that the projects were not disproportionately distributed or against low-income and minority populations. The Technical Committee also found that no projects in EJ area had disproportionately high adverse effects to the neighboring populations.

MTP Revisions

The Metropolitan Transportation Plan was revised on January 25, 2017. The revisions consisted of the addition of three highway projects to the Unfunded Needs List and the removal of one intersection project. The three projects added to the Unfunded List were: SH 42, from US 80 to Interstate 20, widen from two to four lanes, divided; US 271, from FM 16 to SH 155, widen from two to four lanes, divided; and Loop 485, widen from two to four lanes, divided, from US 271 N. to US 271 S. The US 259 at Eden and Tryon Rd. intersection project was removed from the MTP due to lack of public support. A public comment and review period was held from December 7, 2016 to January 7, 2017. The first public meeting to present the draft revisions was held on December 7th. The second public meeting was held on January 25, 2017 during which the MPO Policy Board approved these revisions.

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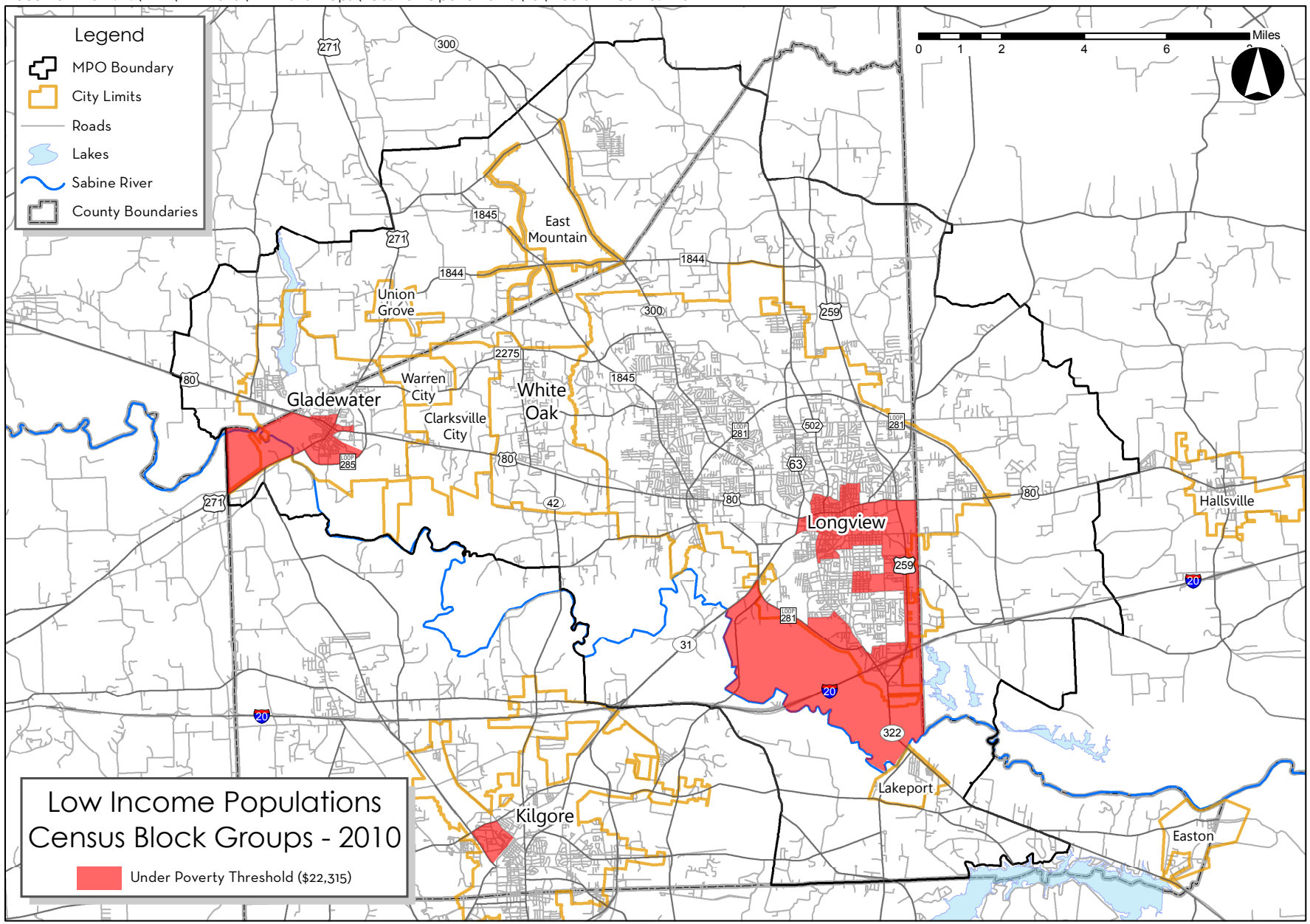

3 - A Environmental Justice

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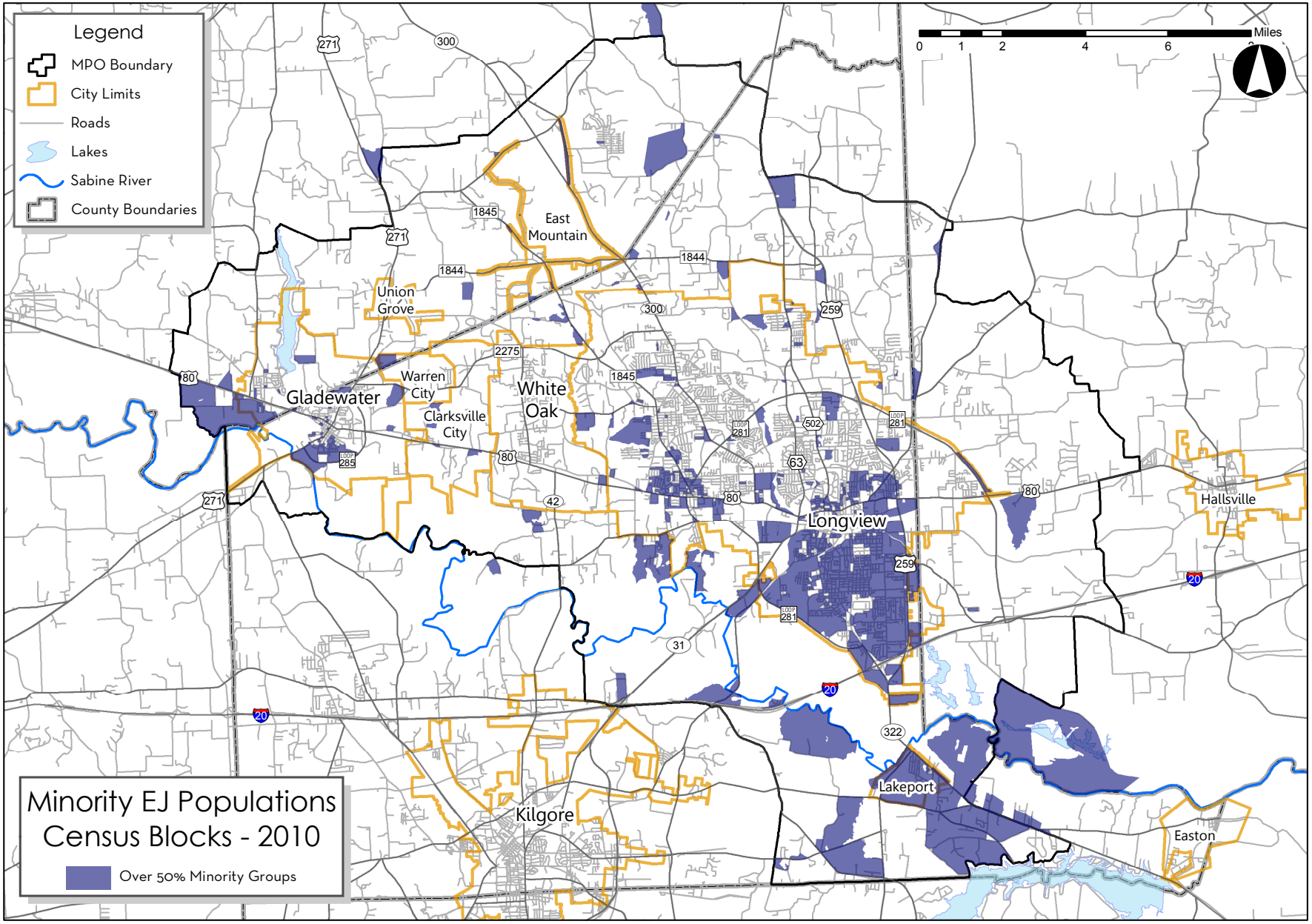

3 - B Environmental Justice

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11/17/2014

CHAPTER 4 – DEMOGRAPHICS & TRENDS

The Gladewater Museum

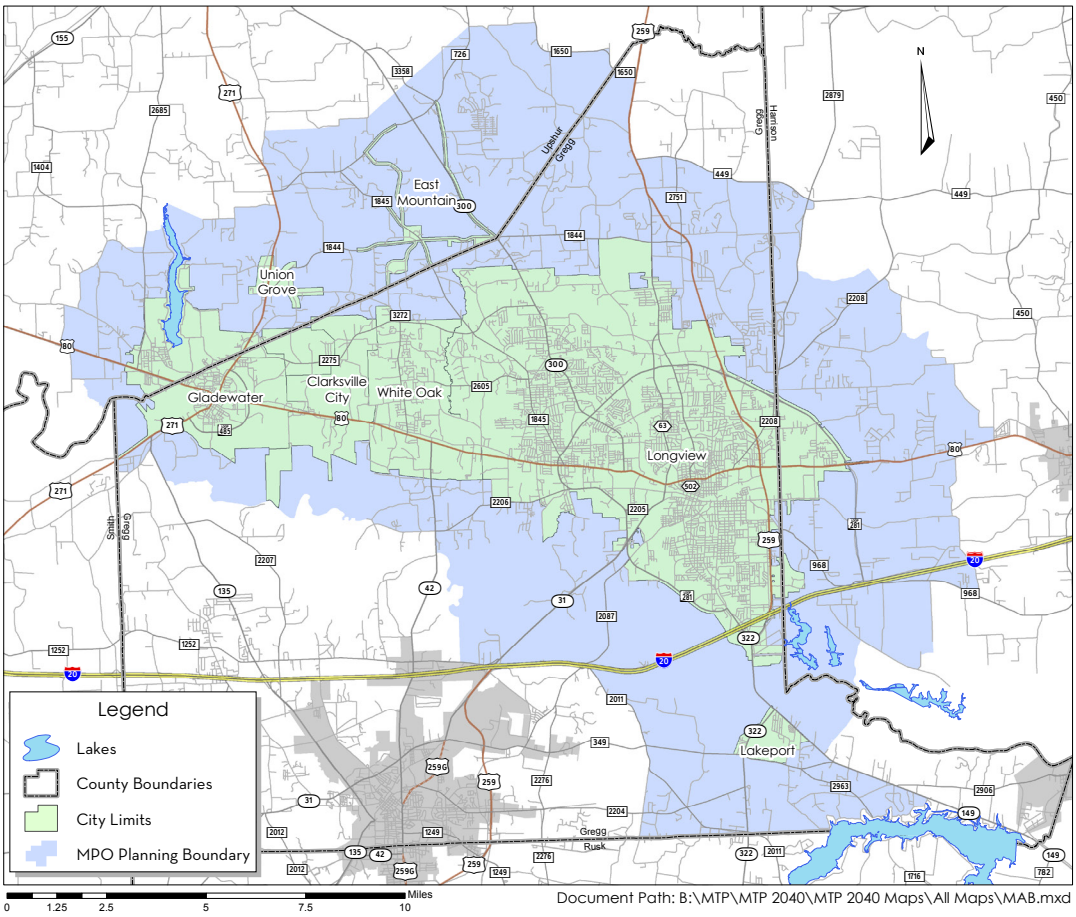
Planning Area

Introduction

In November of 2013, the Metropolitan Planning Organization (MPO) increased its' planning area to reflect changes in the Census designated 'urbanized area.' This change is a result in increased population density in the area causing an increase in the contiguous 'urbanized area.' The original planning area covered approximately 180 sq. miles in Gregg and Harrison counties. The new size is approximately 260 sq. miles and includes portions of Gregg, Harrison, and Upshur counties. This is an increase in approximately 80 sq. miles. Within this increase, five new cities are now being planned for.

The Longview MPO currently plans for eight cities in the counties of Gregg, Upshur, and Harrison. The cities include Longview, White Oak, Gladewater, Clarksville City, Lakeport, Union Grove, Warren City, and East Mountain. Rural areas in the counties outside of the city limits of these cities are also planned for. This can be seen on map found below.

Planning Boundary



According to the 2010 census, the population for the planning area was roughly 123,000. The 2010 population of the previous boundary was roughly 108,000. This represents an increase in around 15,000 new individuals (a ~14% increase).

Major Cities

Longview

The original area of land in which Longview was founded was a 100 acre tract bought from farmer O.H. Methvin in September of 1870. The land was purchased after the Civil War by Southern Pacific rail. This was in an effort for the area to serve as westward expansion from its' pre-war terminus Marshall to the East. Longview was founded in May of 1871. In 1872, Longview served as the temporary head of the Southern rail line and fostered economic and demographic growth.[1]

In 1904, the growth of the automobile was seen in the area. All roads outside of the city, however, were still mainly dirt. This caused rail travel to dominate intercity and regional travel. In 1910, Longview had 18 daily passenger trains coming through its' station. In the 1930's, Longview saw another substantial growth when the oil boom reached the area. This led to the development of several oil wells, as well as the 'big inch' pipeline. With infrastructure and community services built, population and industry soon followed.[1]

According to 2013 American Community Survey (ACS) estimates, the City of Longview had a population 81,443. This is estimate represents a growth of 1.2 % since the 2010 census was conducted. The town's composition is 7.7% under 5 years old, 25.4% under 18, and 13.4% over 65 years of age. The city's elderly population is 3% higher than the state average. The ethnic composition is 56% White, 18% Latino or Hispanic, 22.9% Black or African American, and 1.4% Asian.[2]

[1] "Brief History of Longview and Gregg County Texas." Longview Chamber of Commerce | History of Longview. Longview Chamber of Commerce, n.d. Web. 23 Sept. 2014. <httvp://www.visitlongviewtexas.com/PageDisplay.asp?p1=6535>.

Longview is home to some of the largest industries in the area. Trinity Rail which has over 1800 employees, is the largest industrial company in the city. Eastman Chemical Company is the second largest with just over 1500 employees. These two industries account for large amounts of traffic due to the number of employees and freight associated with their operations. In addition to these companies in overly industrial areas, Longview also is home to two business parks. These parks have not reached capacity but need to be planned appropriately to accommodate future growth in freight traffic.

Longview is home to LeTourneau University offering nationally recognized programs in engineering, aeronautical science, education, and business. The university employs 400 professors and support staff serving 2,700 students.

Commercial traffic generators include companies such as Wal-Mart, Good Shepherd Medical Centers, Longview Regional Hospital Medical Complex, and more. Two sites, in particular, are large commercial traffic generators in the city limits. The developments north of Loop 281 along 4th Street and U.S. 259 at Hawkins Parkway have become a popular shopping area for Longview residents. Longview also serves as a regional medical hub for northest Texas.

Gregg County courthouse

Longview is the county seat for Gregg County. The Gregg County Courthouse is located in downtown Longview and was expanded to meet the needs of the growing county.

Gladewater

Gladewater is located 13 miles west of Longview and White Oak along Highway 80. The downtown area is intersected by Highway 271 and Highway 80. These two roads are also connected to a loop that covers the eastern portion of the city.

The City of Gladewater was also founded by a railroad company, in this case it was the Texas and Pacific Railway Company. The railroad company purchased this land in 1873 from Jarret Dean and Anderson White. The town was named after Glade Creek located in the region called the Glades. In 1874, the City of Gladewater was incorporated. However, the original incorporation did not last. It was not until the 1930's, with the influx of population due to the oil boom, that the city re-incorporated to meet the infrastructure needs of the growth.[3]

City of Gladewater
Treasuring the past
While embracing the future

[2]"United States Census Bureau." American Community Survey Main. N.p., n.d. Web. 23 Sept. 2014. <http://www.census.gov/acs/www/#>.
[3]"About the City." City of Gladewater. N.p., n.d. Web. 23 Sept. 2014. <http://www.cityofgladewater.com/index.php?option=com_content&view=article&id=122&Itemid=167>.

According to 2013 American Community Survey (ACS) estimates, the City of Gladewater had a population 6,454. This is estimate represents a growth of 0.3 % since the 2010 census was conducted. The town's composition is 7.8% under 5 years old, 27% under 18, and 14.6% over 65 years of age. The city's elderly population is 4.3% higher than the state average. The ethnic composition is 72.7% White alone, 6.4% Latino or Hispanic, 17.6% Black or African American, and 0.6% Asian.[2]

Gladewater Downtown - Billy Hawthorn

Gladewater is medium size city relative to the planning area. There are some industries located in Gladewater, but nothing as large as some seen in Longview. Gladewater does have attractions that act as traffic generators during certain times of the year. The Gladewater Rodeo, during a limited number of times throughout the year, operates as a high traffic generator. Gladewater is also known as the 'Antique Capital of Texas.' This attracts shoppers from the region to the city's downtown area. Because of limited capacity in that area, traffic can become congested during peak hours. The city is also home to a smaller airport. It does not operate commercial flights, however, it offers recreational and private access to the area. There is minimal high traffic generators less the local attractions. This includes companies such as Brookshire's which operates off of a major roadway and plays a vital role to the local residents.

White Oak

The City of White Oak was developed after the installment of a school in the late 1880's. The community was built around this school. The community remained small until the 1930's when the oil boom took off throughout East Texas. Much like the surrounding cities, White Oak grew almost overnight. It is said that the city got its' name from two trees growing next to the school.[v]

According to 2013 American Community Survey (ACS) estimates, the City of White Oak had a population 6,395. This is estimate represents a decline of -1.1 % since the 2010 census was conducted. The town is composition is 7.0% under 5 years old, 29% under 18, and 11.6% over 65 years of age. The city's elderly population is 1.3% higher than the state average. The ethnic

[2]"United States Census Bureau." American Community Survey Main. N.p., n.d. Web. 23 Sept. 2014. <http://www.census.gov/acs/www/#>.
[4]"Profile for White Oak, Texas, TX." White Oak, Texas City Information. N.p., n.d. Web. 23 Sept. 2014. <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=27201>.

composition is 90.2% White, 5.3% Latino or Hispanic, 2.3% Black or African American, and 0.5% Asian.[2]

Because of its' 'landlocked' position and proximity to Longview, White Oak is not home to large industry. It, instead, has much of Highway 80 developed with retail and commercial buildings. These are mainly to serve the travelers on the highway and residents west of Longview. White Oak has become over time a 'suburb' of Longview. Many of its citizens work in Longview, but prefer the rural life that can be found within White Oak city limits.

Gerald Massey

Other Regions

There are other towns within the planning boundary. These include Lakeport, Clarksville City, Warren City, Union Grove, and East Mountain. These areas are rural in nature and all have populations below 5,000. Because of their low populations, Census data available are at the minimum. The populations of these cities and surrounding rural areas accounts for approximately 23%, or 29,000 but are spread out over approximately 75% of the planning area. The areas of Longview, Gladewater, and White Oak only make up 25% of the land area, but account for 77% of the population.

Notable features of these rural regions include primarily agricultural traffic on county maintained roads as well as East Texas Regional Airport south of Longview. The airport serves as a regional air transportation hub. This will be discussed in the chapter 'Multimodal Solutions.'

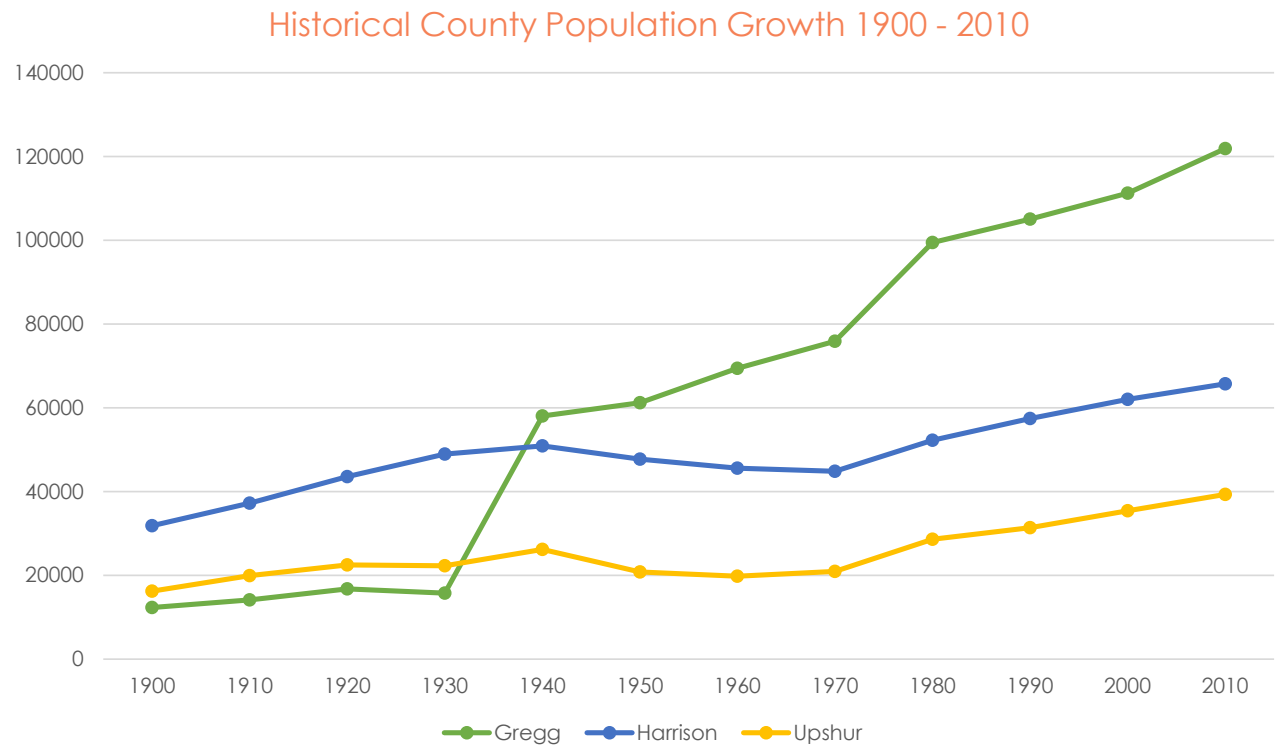
Historical Data

[2]"United States Census Bureau." American Community Survey Main. N.p., n.d. Web. 23 Sept. 2014. <http://www.census.gov/acs/www/#>.
[4]"Profile for White Oak, Texas, TX." White Oak, Texas City Information. N.p., n.d. Web. 23 Sept. 2014. <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=27201>.

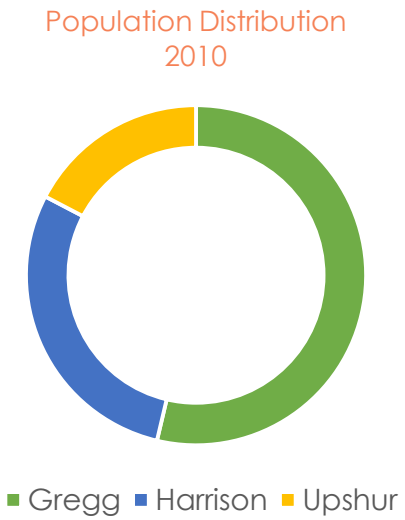
Counties

The planning area of the Longview MPO includes three counties that have been historically signifigcant in the development of East Texas. As shown in the graph below, the shift in population happened in the 1930's, which was the start of the oil boom in East Texas. The population of Gregg County increased by 268% between 1930 and 1940. The population center for the area shifted from the rail and industry dominant Marshall, TX, to the newly discovered oil reserves in Gregg County. This caused a dramatic shift of freight to move from Marshall to Longview and Kilgore which spurred the increased economic development of the area. Upshur County remained relatively unaffected by this turn of events. Gladewater saw the benefit of this oil production but not to the degree seen in Longview.

The county populations vary by quite a large margin according to the most recent census. In 2010,

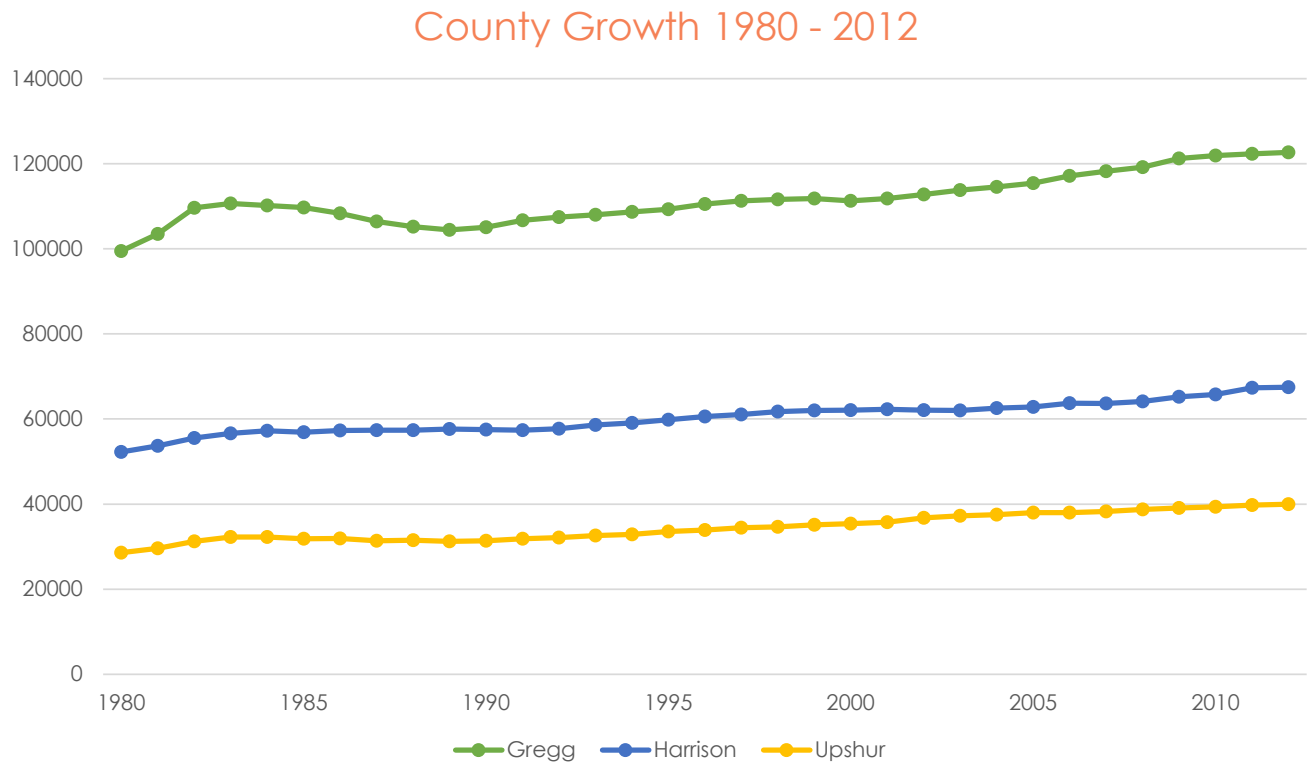


Gregg, Harrison, and Upshur was home to 121,879, 65,744, and 39,359 residents respectively. A graphical representation of the population distribution can found in the graph to the right.

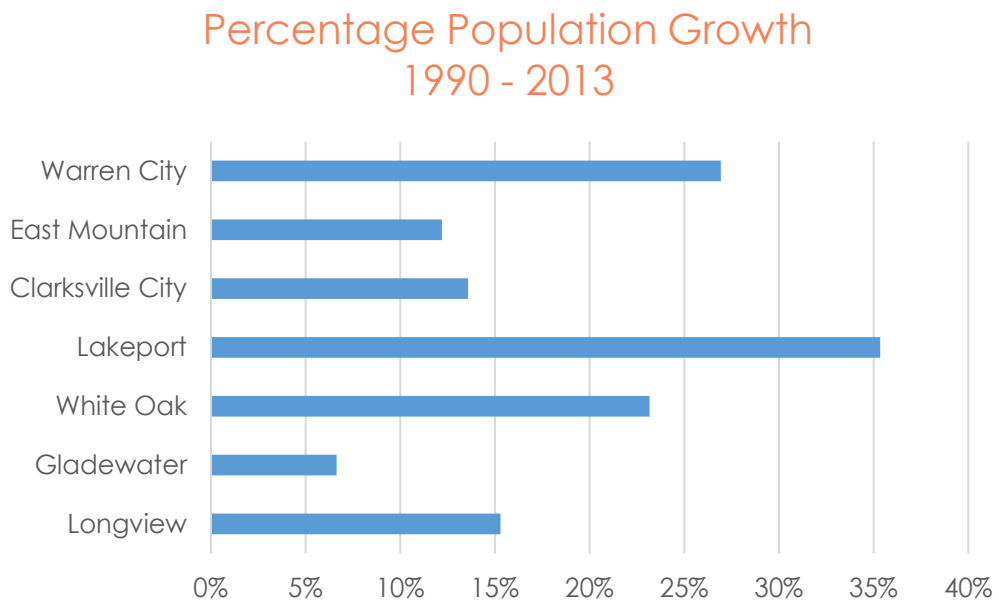


The counties have grown at steady rates since 1980. Gregg County has grown at a rate of 37.0%, Harrison County at 38.0%, and Upshur at 39.8%, which is the highest of the three counties. In total numbers, Gregg still exceeds with the smallest land area of the three counties. On the next page, a graph of the population growth for each year can be found.

Cities



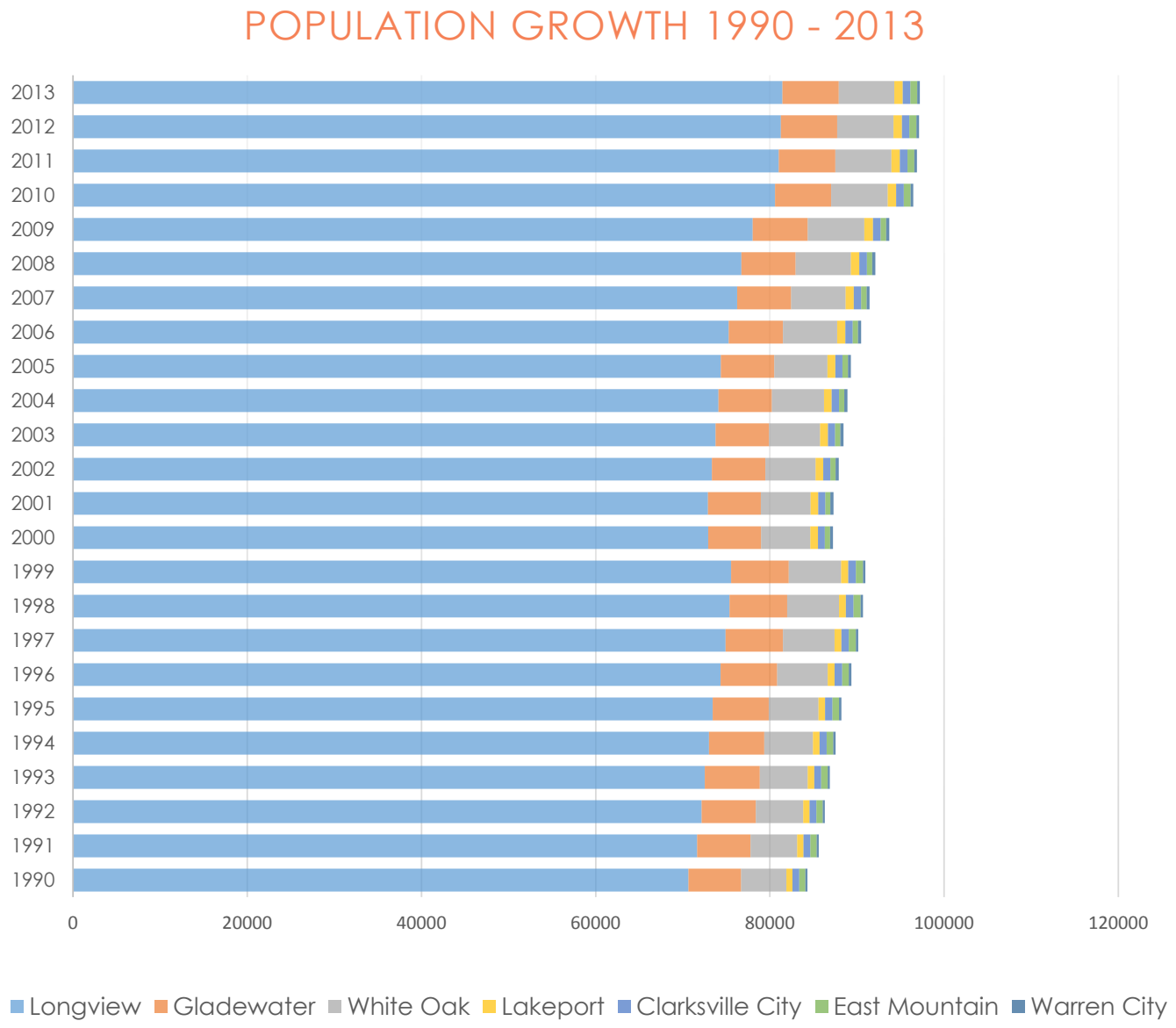
As described earlier in this chapter, each city has unique characteristics that affect population. Below is a chart of the percentage growth each of the cities within the planning boundary have experienced since 1990.



According to Census data, Lakeport has experienced the highest percentage population growth in the past 23 years. However, due to population momentum, Longview and Gladewater remain two of the

most populous cities in the region despite lower growth rates. White Oak has similiar population totals to Gladewater with a much higher growth rate. This could possibly be contributed to the expansion of Longview citizens settling in suburban areas within the White Oak city limits.

The graph below shows the population by total numbers for each year from 1990 to 2013.



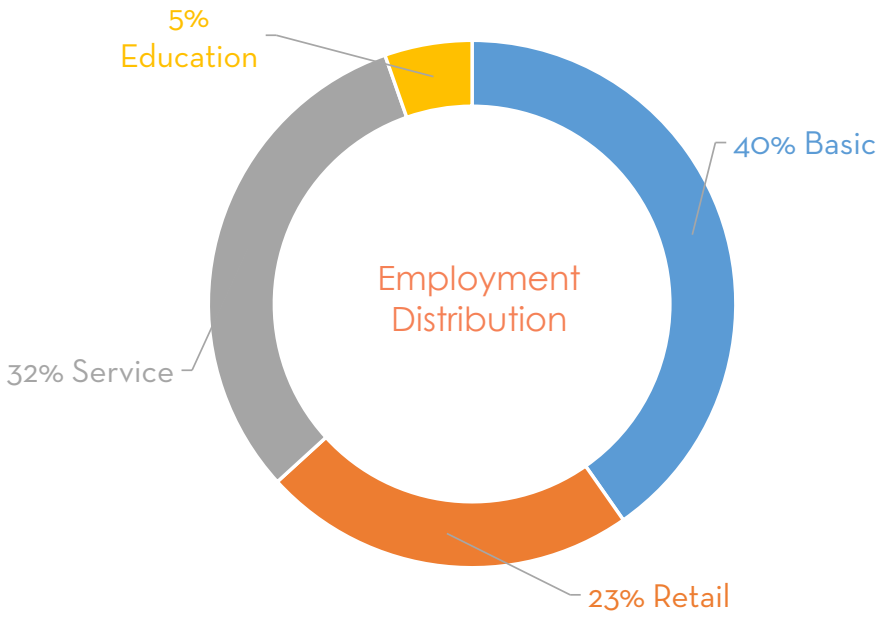
Travel Demand Model Demographics

The Travel Demand Model, which is a tool used to predict needs within the current transportation infrastructure, requires demographics to be inputted and is forecasted out to interim years. In 2007, the Longview MPO worked extensively in creating the 2002-2035 travel demand model. During this process, the socioeconimc data for 2007 was also provided and calibrated. When the 2007 base year model was created in 2012, the 2007 base year data was verified by trends and recalibrated due to local trends in demographics.

The MTP is based upon a base year of 2007, interim years of 2012, 2020, 2030, and a forecast year of 2040. The socioeconomic data included population, household size, employment, and median income. These measures were apread acorss 336 traffic analysis zones (TAZs). The Longview planning model area represents all of Gregg County and small portions of Harrison and Upshur counties. The study area has been divided into 336 TAZs and it includes 41 external stations. The 336 TAZ structure (shown in the Appendix) is maintained and applied for the 2007 base year condition, the 2012, 2020 and 2030 interim year applications as well as the 2040 forecast application. This model was created, calibrated, validated, and finalized before the inclusion of Upshur County in the MPO's planning area. Therefore, Upshur County demographic data is not repsented in this data set by TAZs. To compensate for the new areas of Upshur County, modeling assumptions were made and are documented in Chapter 7 - 'Streets & Highways' under Off-Model Methodology.

Below is a summary of the 2007 demogrpahic inputs.

Population	127,535
Households	49,150
Household Size	2.59
Med. HH Income	$43,455
Total Employment	85,015



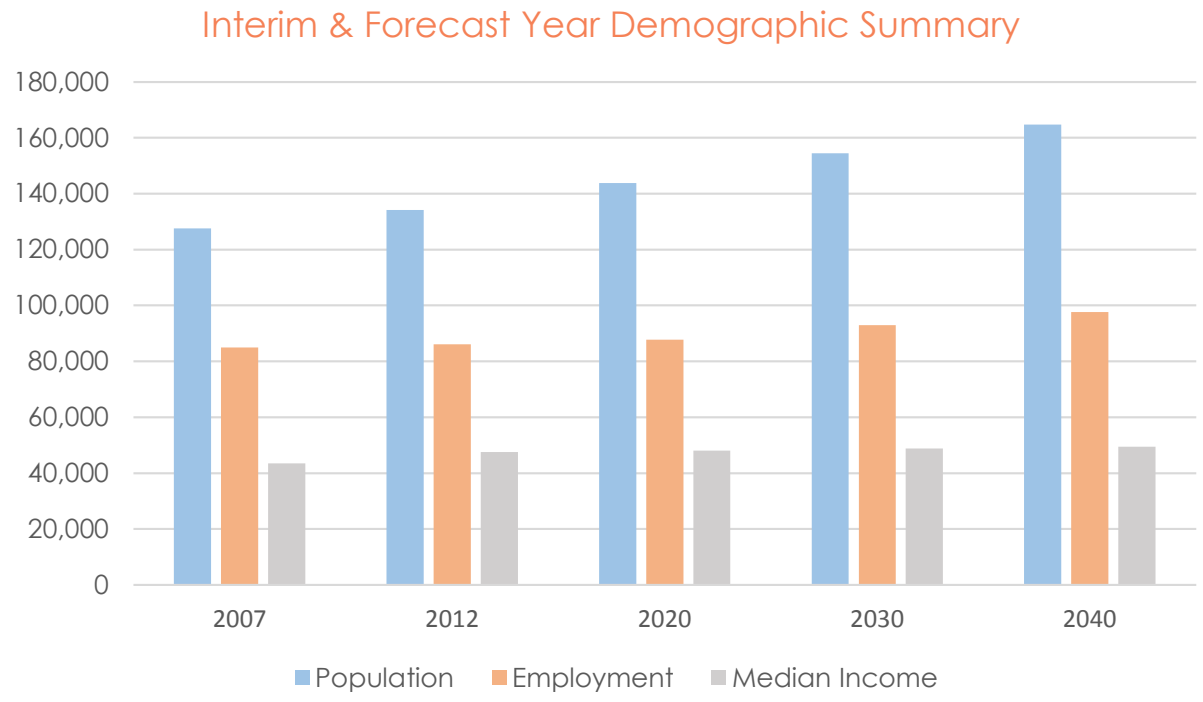
The chart delow presents population, employment and median household income for the interim years 2012, 2020 and 2030 along with the MTP horizon year 2040. These data indicate that between 2007 and 2012 population grew by over 6,500 persons (5.2%) and over 1,000 employees (1.2%). Population and employment is forecasted to grow by more than 30,000 persons (22.8%) and 11,600 employees (13.5%) between 2012 and 2040.

Within a model, households produce the majority of a region's trips and are viewed as the origin point of most trips. The number of trips produced by a household is a function of household size and income. A total of 49,150 households were reported for 2007, which yields an average household size of 2.59. The Longview MPO provided the population and household data to TxDOT-TPP.

Employment is used by the model to determine the destination of trips. The total number of trips destined to a particular Traffic Analysis Zone (TAZ) is determined by the number of employees within a TAZ and its density as measured by a weighted combination of population and employment in relation to total TAZ acres. Total 2007 employment for the Longview study area provided by the MPO equaled 85,015.

Interim & Forecast Year Demographic Summary

Year	Population	Employment	Median Income ('12 Dollars)
2007	127,535	85,015	$43,455
2012	134,195	86,073	$47,602
2020	143,768	87,812	$48,013
2030	154,432	93,018	$48,825
2040	164,728	97,674	$49,498



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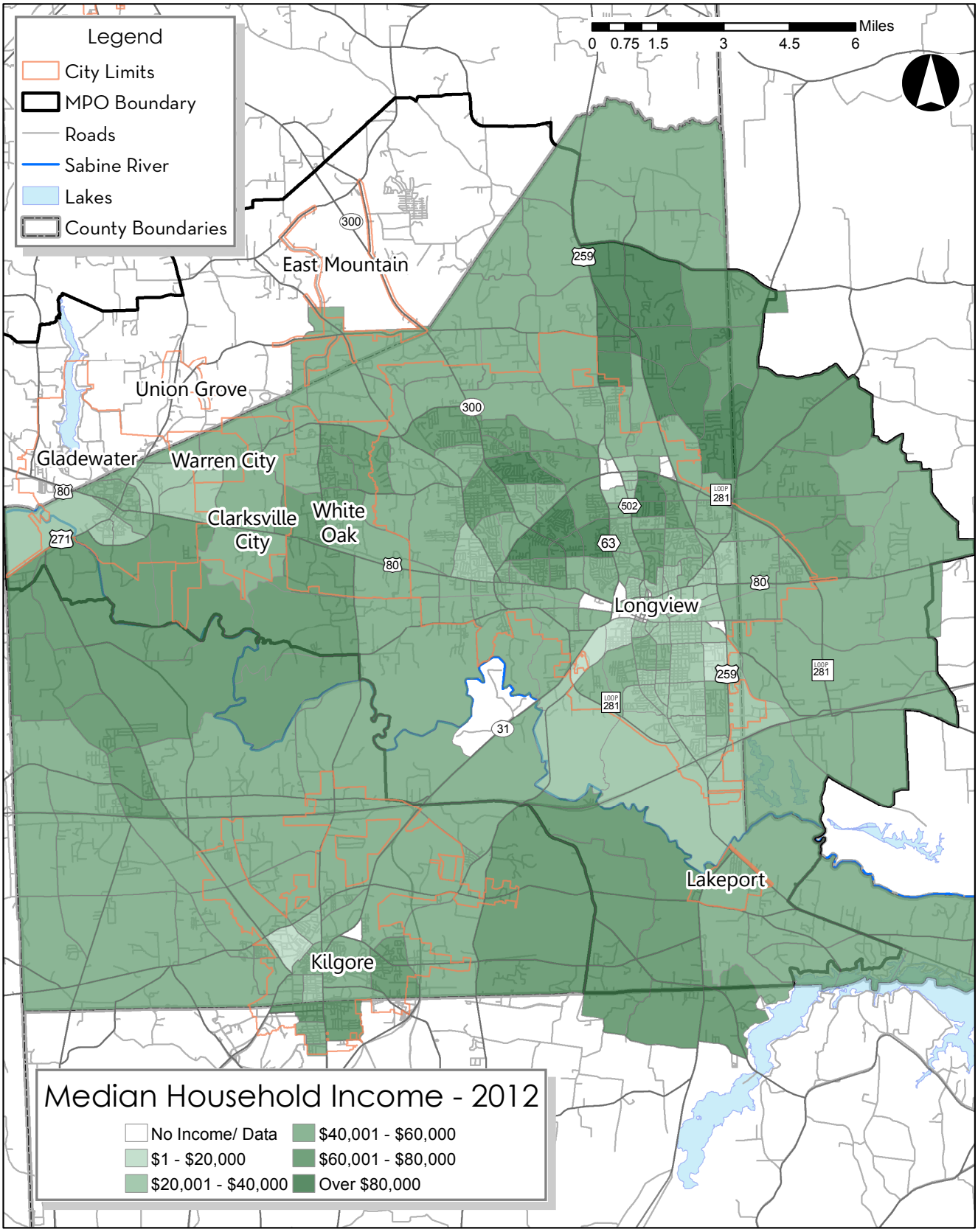

4A - Median Household Income - 2012

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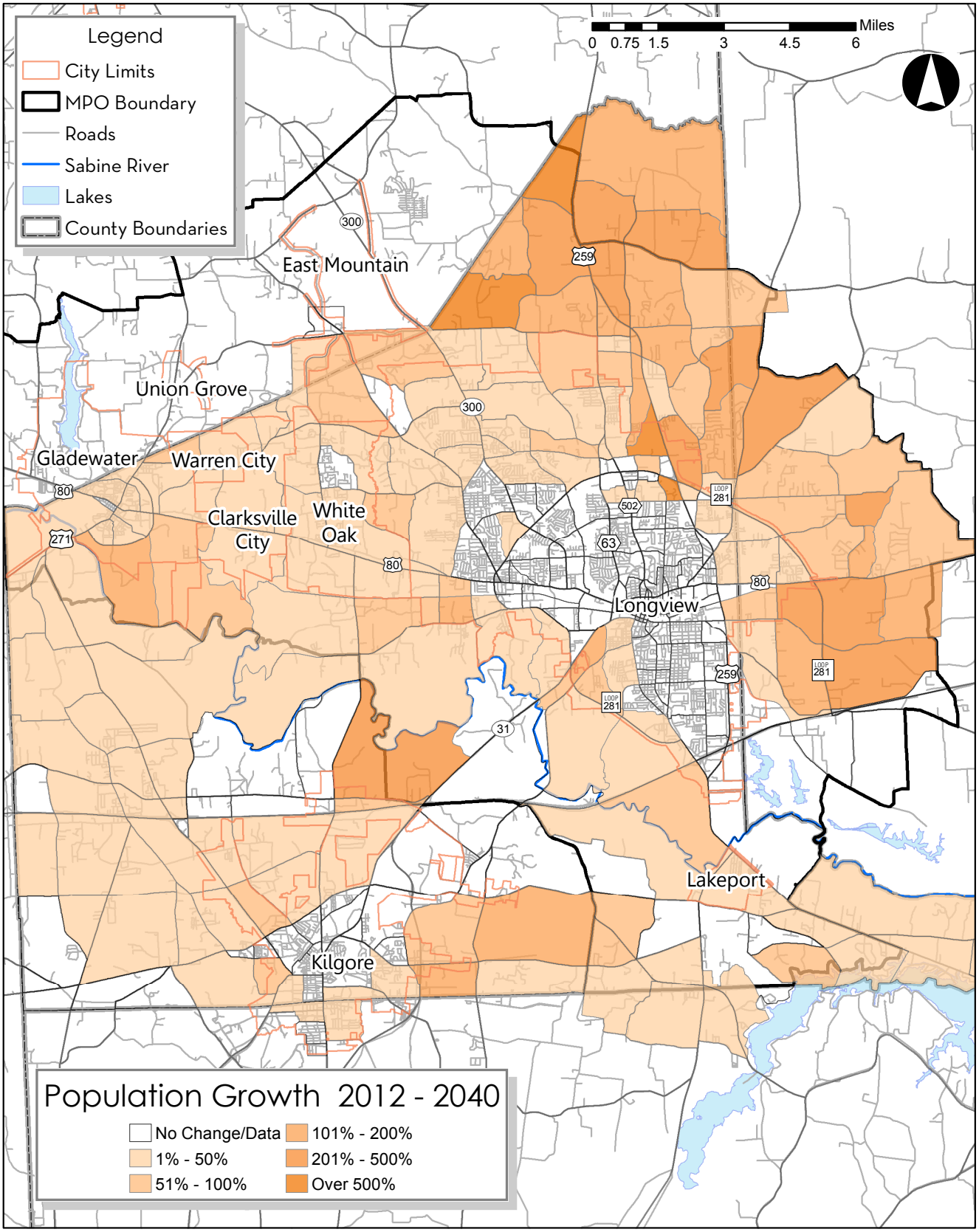

4B - Population Growth 2012 - 2040

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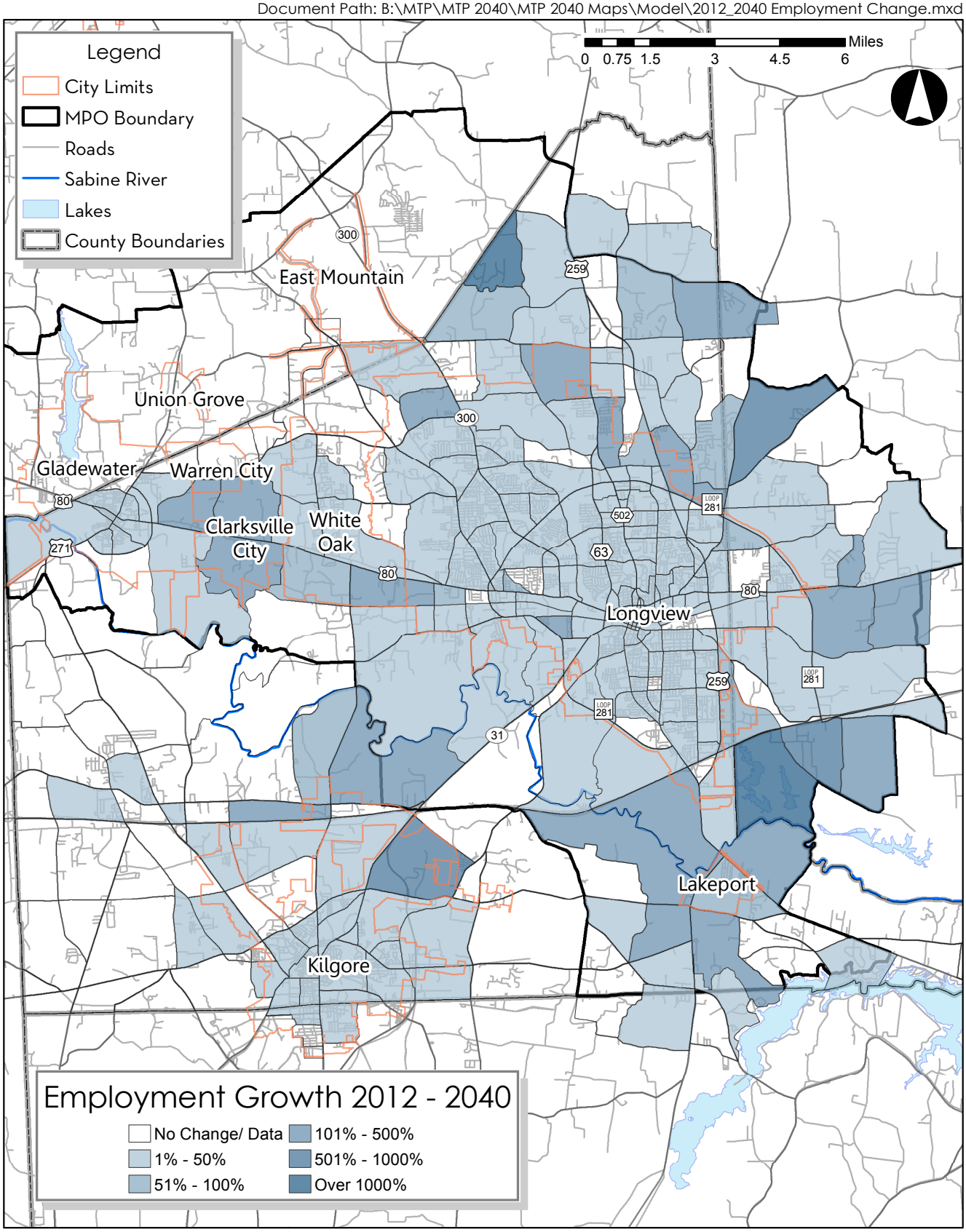

4C - Employment Growth 2012 - 2040

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11/14/2014

CHAPTER 5 – ENVIRONMENTAL CONSIDERATIONS

Environmental Considerations

Introduction

In transportation planning, monitoring and mitigating adverse effects to the environment are integral in the development of a healthy community. Using planning practices and following guidelines from various environmental agencies and mitigation policies, cities have the ability to create a sustainable environment for all of the residents. In this chapter, the ideas and principles of sustainability are explained. The benefits that sustainable planning has on the environment are also noted in this chapter.

With the Longview area teetering on the fringe of 'non-attainment,' and the entire nation placing a larger emphasis on reduction of negative environmental impacts, environmental issues have secured a place in the forefront of planning. All new roads or projects are not only assessed on their environmental impact, but are also scrutinized to find ways to improve multimodalism. In addition, the added value of healthier communities is a benefit that comes with direct correlation to the reduction of toxic emissions and increase of 'sustainable' practices

Sustainability

The principals of sustainability are gaining momentum in the realm of transportation. In simple terms, sustainability is maintaining the quality of life into the future while addressing social, environmental and economic concerns. Sustainable solutions make our cities more livable by integrating and balancing the social, economic and environmental needs of the community for future generations. The three core principles of sustainability are:

- Social – sustainable solutions increase opportunity and improve quality of life for all. They are accessible, safe and secure; ensure mobility choices and are an asset to communities.
- Economy – sustainable solutions support economic vitality, are cost-effective, affordable and make wise use of economic resources such as human, natural, manufactured and financial capital.
- Environment – sustainable solutions are compatible with natural systems and minimize resource use and pollution

A sustainable community sees itself as existing within a physical environment and natural ecosystem and tries to find ways to co-exist with that environment. It does its part by avoiding unnecessary degradation of the air, oceans, fresh water, and other natural systems. In some cases, this means simply protecting the environment by finding ways to redirect human activities and development into less sensitive areas.[1] Cities can increase their sustainability by implementing more environmentally friendly infrastructure and planning practices. Alternative fuels, cleaner forms of producing electricity, and eco-friendly infrastructure such as LED street lighting are examples of sustainable planning. These changes can reduce pollution and increase overall health of a community.

Transportation plays an integral role in sustainable planning. It has a direct, and large effect on the environment. It is a part of everyday life and is required for day to day activities. How transportation planners and local stakeholders plan and develop their communities and how consumers choose to travel affects the social, economic and environmental quality. There are numerous benefits when applying the principles of sustainability to the transportation planning process. Many of these benefits rely on multimodalism. The role transportation plays in sustainability will be covered in more detail in the next chapter, Multimodal Solutions.

Climate Change

There is general scientific consensus that the earth is experiencing a long term warming trend and that human-induced increases in atmospheric greenhouse gases (GHGs) are the primary cause. The combustion of fossil fuels is by far the biggest source of GHG emissions. In the United States, transportation is the second largest source of greenhouse gas (GHG) emissions, after electricity generation. On-road vehicles account for 82% of transportation emissions. Figure A-2 shows the full break-down of transportation emissions.

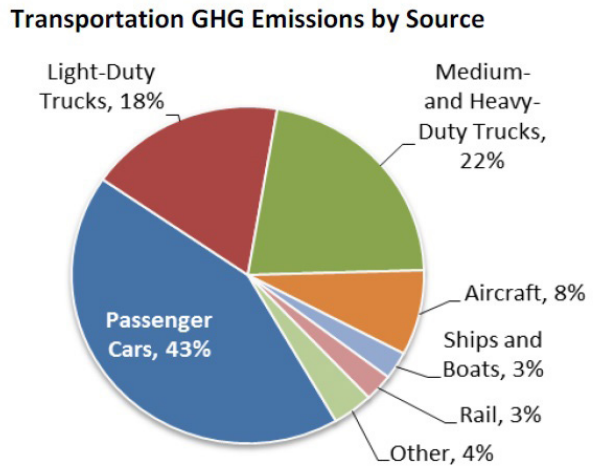


Figure A-2: The pie chart shows the sources of greenhouse gas emissions by type of transportation. Passenger cars make up the majority of these emissions.

Gases that trap heat in the atmosphere are called greenhouse gases. CO_2 is the major greenhouse gas created by cars and trucks and it has a long atmospheric lifetime of 100 years or more. Atmospheric concentrations of GHGs are growing every year because CO_2 emissions are growing. Unlike urban air pollution, which dissipates under the right weather conditions, CO_2 accumulates in the atmosphere because plants and the oceans can't absorb it fast enough.

Opportunities to reduced GHG emissions from transportation include switching to alternative fuels, using more fuel efficient vehicles, and reducing the total number of miles driven. Each of these options requires a mixture of public and private sector involvement. Transportation planning activities, which influence how transportation systems are built and operated,

[1] "Principles of Sustainability." Principles of Sustainability. University of Colorado, n.d. Web. 27 Aug. 2014. <http://www.colorado.edu/hazards/publications/informer/infrmr3/informer3c.htm>.

while accessibility and mobility have often been interpreted as synonymous with more travel by car and truck, these goals can also be achieved with reduced vehicle travel. Multimodal transportation systems can be coordinated with land use patterns such that people and goods need to travel shorter distances and make fewer trips by car and truck. In fact, travel by private car is inherently inaccessible for many low-income, elderly, and young people. The systematic provision of other options both improves mobility for these populations and helps to reduce GHG emissions.

The impacts of climate change need to be taken into consideration as the transportation system is planned and projects are developed. Issues to consider when evaluating climate change are: the growth of vehicle miles traveled, traffic congestion levels, changing development and land use patterns, temperature swings, sea level rise, accelerated aging of infrastructure from climate change, and rapidly changing fuel and vehicle technologies. Nationally, planners are addressing climate change through existing inter-agency groups. Climate change issues span boundaries of geography and jurisdiction. Many agencies recognize that multi-agency action has the greatest potential to incorporate change into transportation planning.

To ensure a transportation system that will serve the mobility needs of passengers and freight and that fosters economic development between areas, states, cities and counties will need to consider the implications of climate change on their infrastructure to ensure connectivity is preserved. Some strategies to reduce greenhouse gas emissions are:

- Planning Practices
  - Density focused land use planning and urban design
  - Reduce fleet usage by optimizing trips and routes.
  - Encourage ride share programs and 'park & ride' programs. Continue using the travel demand model to assist in planning for future mobility projects.
  - Explore and utilize alternative fuels.
  - Provide incentives for truck stop electrification technologies
- Multimodalism
  - Promote and improve transit services
  - Develop carpooling and van-pooling programs
  - Construct bicycle and pedestrian improvements
- Traffic Operations
  - Implement Intelligent Transportation System Technologies (ITS)
  - Develop congestion management programs
  - Improve signal coordination

Transportation infrastructure, such as roads, highways and interstates, are susceptible to predicted changes in sea levels and increases in severe weather and extreme high temperatures. Long-term transportation planning will need to respond to these threats.

In addition to a physical threat, climate change also poses an economic threat. Climate changes can damage natural environmental assets as well as man made assets. Weather-related natural disasters (as a side-effect of global climate change), can cause damage worth billions of dollars. These losses have a direct toll on local, regional, and national economies.

A secure transportation system ensures the protection of critical infrastructure and exposes users to less risk. Infrastructure protection will require assessing risk from climate-related stresses on the system. Transportation agencies need to consider security as part of a broader consideration that incorporates planning for natural disasters, emergency response and preparedness and infrastructure preservation.

A safe transportation system protects users from hazards, including hazards resulting from climate-related stresses on the system. Transportation agencies need to protect the system from potential floods and perform routine maintenance and replacement on infrastructure components affected by extreme temperatures and storms. Other safety enhancements can actually reduce GHG emissions. Enhancements that reduce the risk of crashes, can also improve traffic flow, as well as reduce GHG emissions. In some cases, slowing vehicle travel speeds can contribute to improved fuel efficiency and improved safety.

Addressing climate change is in the transportation planning process will ensure the sustainability of the nation's highways and transportation system. Because of the increased severity and occurrence of weather related environments, steps must be taken to ensure the sustainability of infrastructure as well as provide safe and efficient movement through natural disasters. The MPO has identified some strategies to adapt to such change and provide a safe and secure transportation system.

- Develop effective safety management strategies.
- Conduct studies on new technology to increase infrastructure resiliency.
- Work with local groups to identify vulnerabilities in emergency management.
- Continued development of the area's Emergency Operations Center (EOC).
- Recognize the potential for damage to the transportation network such as flooded roadways, bridge damage, and accelerated pavement deterioration.

The City of New Orelans in the aftermath of Hurricane Katrina.

Air Quality

Policies

Air quality concerns all of us and has a direct effect on our health and our environment. Most modes of transportation contribute to air pollution. In spite of the relatively low level of traffic congestion in the Longview Metropolitan area, there are occasional short-term spikes in levels of certain pollutants that contribute to the formation of ozone. These spikes could put the area above federal air quality standards. Failure to meet these standards would have a severe impact on capacity transportation improvements as well as on existing business and economic development.

"The Clean Air Act authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards to protect public health and the environment."

To combat the effects of hazardous emissions from automobiles, Congress enacted the Clean Air Act in 1990. This act is a comprehensive law that regulates airborne emissions from area, mobile, and stationary sources nationwide. Since 1990, ground-level ozone pollution, both regionally and nationally, has been significantly reduced.

The Clean Air Act authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards to protect public health and the environment. This law specifically;

- Encourages the use of market-based principles and other innovative approaches, like performance-based standards and emission banking and trading;
- Provides a framework from which alternative clean fuels will be used by setting standards in the fleet and a California pilot program that can be met by the most cost-effective combination of fuels and technology;
- Promotes the use of clean, low sulfur coal and natural gas, as well as innovative technologies to clean high sulfur coal through the acid rain program;
- Reduces enough energy waste and creates enough of a market for clean fuels derived from grain and natural gas to cut dependency on oil imports by one million barrels/day;
- Promotes energy conservation through an acid rain program that gives utilities flexibility to obtain needed emission reductions through programs that encourage customers to conserve energy.[2]

There are seven titles in the Clean Air Act. These titles compliment the law to promote a healthy, productive environment, and are linked to sustainable economic growth and a sound energy policy. Title II contains provisions relating to mobile sources. Motor vehicles have become much cleaner in the past decades, with reductions in certain emissions up to 80%. Cars and trucks still account for almost half the emissions of the ozone precursors volatile organic compounds

[2] "Overview." EPA. Environmental Protection Agency, n.d. Web. 27 Aug. 2014. <http://www.epa.gov/ttn/caaa/gen/overview.txt>.
[3] Theodore, Louis, and R. Ryan Dupont. Environmental health and hazard risk assessment: principles and calculations. Boca Raton: CRC Press, 2012. Print.

(VOCs) and nitrogen oxides (NOx), and up to 90% of the carbon monoxide (CO) emissions in large urban areas.[3] This is because the number of automobiles grow as population grows in these urban areas. While the ratio of number of cars to individuals is decreasing, the population momentum of these larger urban areas causes large increases in hazardous emissions. The curbing of this increase is becoming a major concern for planning agencies. An increased emphasis has been put on alternative forms of transportation and sustainable practices. This has become a larger focus for federal, state, and local governments. Sidewalks, bike lanes, trails and other forms of alternative transportation have become important considerations in the planning process to combat negative environmental impacts.

Ozone Formation

The ozone layer in the upper atmosphere protects us from harmful ultraviolet radiation. But this layer is ten miles or higher than the air we breathe. Sustained high concentrations of ozone at ground level can have harmful effects on personal health and vegetation. Breathing ground level ozone can result in respiratory problems such as coughing, throat irritation, burning when taking a deep breath, shortness of breath, and can trigger asthma attacks.[4]

Ozone is formed by a photochemical reaction in the atmosphere. In the presence of sunlight, oxygen reacts with nitrogen oxides (NOx) and volatile organic compounds (VOCs) to produce ozone. NOx and VOC are known as ozone precursors, and reductions in these precursors would decrease ozone. NOx is a mixture of nitrogen oxide and nitrogen dioxide produced by man-made sources, such as boilers, engines, and incinerators, and by natural sources, such as plant decay and lightning. Volatile organic compounds or VOCs are chemicals that evaporate or volatilize when exposed to air. Because they contain carbon, they are called organic. VOCs are used as fuels, such as gasoline and heating oil, and also used in industry and government as degreasers and solvents. Biogenic VOCs emitted by the trees and plants are byproducts created during photosynthesis. Most plants emit some VOCs, but the largest emitters are oaks, pines, sweet gums, and poplar. Plants and trees manufacture and emit a variety of substances called phytochemicals, many of which are VOCs. While biogenic sources are the largest contributor of VOC emissions, producing 1,530 tons per day (tpd), they only contribute 2 tpd, or 0.9% of NOx emissions. This is according to data collected by Environ in 2006.

Status

As of November 2014, the National Ambient Air Quality ozone standard is 75 parts per billion, measured as the annual fourth-highest daily maximum 8-hour concentration, and averaged over three years. Ozone attainment status is the achievement of measured ozone levels below the current air quality standard designed to protect public health.

As of August 2014, based on the Texas Commission on Environmental Quality data, the 8-hour design values for 2012 - 2014 are 71 parts per billion (ppb) at the Longview monitor, 71 ppb at the Tyler monitor and 69 ppb at the Karnack monitor. A map of these monitoring locations can be found in the appendix of this document. These fourth highest readings are averaged with the fourth highest readings from 2012, 2013, and 2014 averages to determine the 2012 – 2014 design

[4] "Indoor Air Can Cause Health Problems." Health Encyclopedia. University of Rochester Medical Center, 27 Aug. 2014. Web. 27 Aug. 2014. <http://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=1&ContentID=2163>.

value. These values are below the 8-hour ozone National Ambient Air Quality Standard of 75 parts per billion; therefore, the air quality of the five-county region of Gregg, Harrison, Rusk, Smith and Upshur has attainment status for ozone.[5] Ozone levels are measured at three monitoring stations at the East Texas Regional Airport in Gregg County, the Tyler Airport in Smith County, and at Karnack in Harrison County.

Ozone and Emission Trends

The chart below is a representation of ozone trends from 1998 to 2013. The chart identifies the annual fourth highest eight-hour ozone values for the air quality monitoring sites in Longview, Tyler and Karnack. A map of these locations is available in the appendix. The solid red line marks the 2008 ozone standard of 75 parts per billion (ppb). The dashed red line marks the previous 1996 standard of 84 ppb. Overall, there has been a decline in ozone values since 1998 and a steep decline between 2005 and 2008. The national economic downturn in 2008 and 2009 is one contributing factor for the lowest ozone values. Between 2011 and 2013, the area has seen a decline that has dropped below the current ozone standard.

Figure 5.1 shows that since the 2008-2010 period, ozone levels have shown an overall increase, then a decline to 2011-2013 at all three Northeast Texas monitors. To determine whether or not the region's air

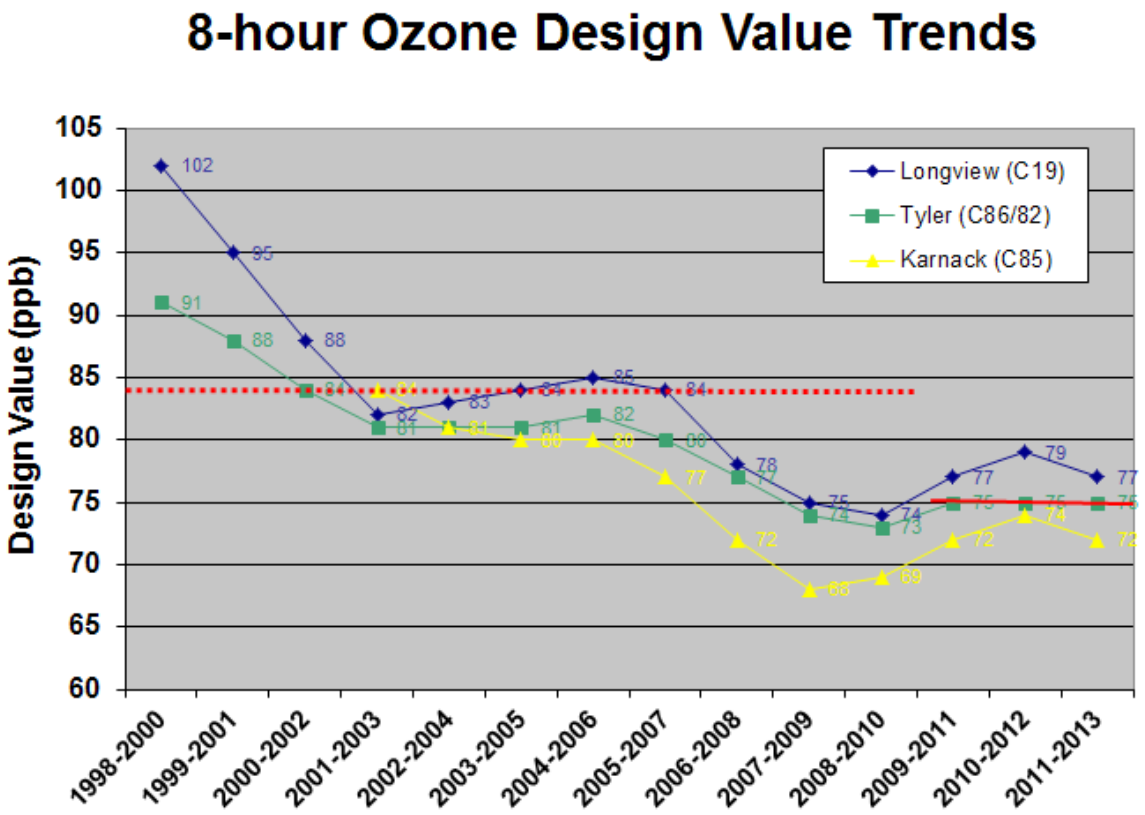


Figure 5.1 Trends in annual 4th highest 8-hour ozone values (upper panel) and design values (lower panel) at the Longview, Tyler, and Karnack monitors in Northeast Texas. The dashed red line indicates the previous 1996 84 ppb standard and the solid red line shows the 2008 75 ppb ozone standard. All data have been validated by the TCEQ. Source: Environ, Inc.

[5] Conceptual Model Update. Tyler-Longview-Marshall: ENVIRON, 2013. Print.`

quality status is in attainment, the EPA averages the annual fourth-highest daily ozone readings over three years. The 3-year average design value for the years 2011-2013 indicates the Longview monitor exceeded the 75 ppb ozone standard. However, the design values for the years 2012-2014 is 71 ppb, which is below the ozone standard.

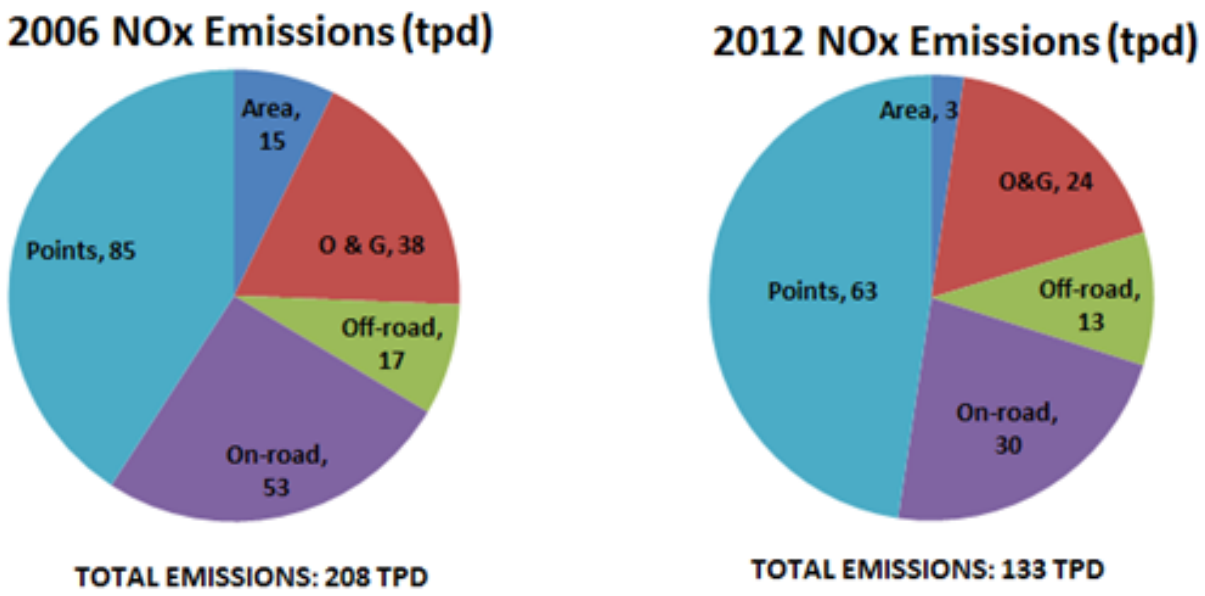


Figure 5.2 Typical summer weekday NOx emissions by sector for 5-county area in Northeast Texas. Comparison between 2006 (left) and 2012 (right) anthropogenic emissions.

Under the Clean Air Act, the EPA is required to review the National Ambient Air Quality Standard (NAAQS) periodically. EPA's next review of the ozone standard is scheduled to be finalized in late 2014. During its previous review in 2010, the EPA announced its intention to reconsider the 75 ppb 2008 ozone standard and proposed to set the new standard in the range 60-70 ppb. In July 2011, the EPA completed its reconsideration of the standard, but did not release a final rule. In September 2011, President Obama announced his decision to let the 2008 ozone standard remain in effect. If the EPA decides to lower the NAAQS to the 60-70 ppb range following its current review, the Longview, Tyler and Karnack monitors will no longer attain the standard. Because failure to comply with the NAAQS carries adverse public health impacts and significant economic penalties, ozone air quality planning is important for Northeast Texas.[5]

Nitrous Oxide (NOx) emissions typically come from 5 different sources. These included point, on-road, off-road, oil & gas, and area. Point sources are defined as stationary, chemical plants, refineries, electric utility plants or other industrial sites that emit more than 10 tons per year of any single or 25 tons of aggregate hazardous air pollutants, such as Volatile Organic Compounds (VOCs), Nitrogen Oxides (NOx) and Carbon (CO). Area sources are comprised of gasoline stations, dry cleaners, oil and gas product storage and transport distribution, painting operations, solvent use, landfills and wastewater treatment facilities. Highway vehicles, both gasoline and diesel belong to the on-road mobile source category. Off-road mobile sources include recreational vehicles, lawn and garden equipment, construction, industrial

[5] Conceptual Model Update. Tyler-Longview-Marshall: ENVIRON, 2013. Print.

and agricultural equipment, and aircraft. The emission totals for 2006 and 2011 can be seen on Figure 5.2.

Other factors contribute to ozone formation: time, place, temperature, and atmospheric conditions, and quantity of transport emissions from other areas. The highest probability of an ozone exceedance occurs on clear days when winds are less than 10 miles per hour and the temperature is over 90 degrees. These conditions most often occur during the summer months. The "ozone season" which runs from May through September is the period when the Texas Commission on Environmental Quality (TCEQ) actively monitors area ozone precursors.

Transport ozone also contributes to the air quality of the region. Ozone formed within and immediately upwind of the Tyler/Longview/Marshall area is often augmented by transport of elevated ozone concentrations from outside the area, almost always from the east/northeast or south/southwest. Only a small amount of additional local ozone production is needed under such conditions to produce exceedances of the 8-hour NAAQS of 75 ppb. The majority of this ozone transported by air comes from the major cities, such as Dallas, Houston, and Shreveport.

NOx emissions showed a significant (36%) decrease from 2006 to 2012. The percentage contribution of each source category to the total NOx emission inventory, however, does not change dramatically. Point sources made up 41% of the NOx emission inventory in 2006 and 48% in 2012. On-road mobile sources went from 26% of the inventory in 2006 to 22% in 2012, while off-road sources went from 8% in 2006 to 10% in 2012. Oil and gas area sources were 18% of the total NOx emissions in both 2006 and 2012 and non-oil and gas area sources went from 7% of the inventory in 2006 to 2% in 2012.[5]

Transportation Conformity

Should Longview be designated as nonattainment, added capacity transportation projects must be subjected to a process known as model-based transportation conformity determination. Transportation conformity is a requirement of Section 176[c] (42 U.S.C. 7506(c)) of the federal Clean Air Act. Section 176[c] states that "No federal agency may approve, accept or fund any transportation plan, program or project unless such plan, program or project has been found to conform to any applicable implementation plan in effect under this act." The transportation conformity rule requires Metropolitan Planning Organizations in nonattainment areas to demonstrate through regional analysis, that the estimated on-road motor vehicle emissions from the transportation plans, programs and projects will be less than the allowable estimated on-road motor vehicle emissions listed in the state's air quality plan called the State Implementation Plan (SIP). Developed by the Texas Commission on Environmental Quality, the SIP is submitted to the EPA to show that the state is fulfilling the requirements of the Clean Air Act. Elements contained in the SIP are an area emissions inventory, monitoring data, motor vehicle rules, industrial controls, consumer project rules and other control strategies. The SIP also includes a requirement of the Clean Air Act, to maintain a certain rate of progress where the emissions are reduced on an annual basis by a certain percentage.

Nonattainment areas are required to demonstrate transportation conformity within the Metropolitan

[5] Conceptual Model Update. Tyler-Longview-Marshall: ENVIRON, 2013. Print.

Transportation Plan and Transportation Improvement Program. Failure to meet these requirements can have grave consequences such as withdrawal of federal funds for transportation capacity improvement projects.

If transportation conformity cannot be demonstrated, a conformity lapse occurs where only certain projects are allowed to progress through the transportation programming process. Certain highway projects are exempt from the transportation conformity rule. Exempt projects are safety, maintenance, mass transit or non-capacity projects, transportation control measures listed in the SIP, and non-federal projects from the first three years of the last conforming Transportation Improvement Program. Capacity projects, where additional lanes are added or new roadways are constructed, could experience funding forfeiture if conformity cannot be demonstrated. Past experience in nonattainment cities has shown that the conformity process is burdensome and that demonstrating conformity is extremely challenging. In addition to controls directly affecting transportation planning, nonattainment designation will impact economic growth. Industrial facilities may have to limit decision-making in the permit process. The expansion; new businesses may prefer to locate elsewhere to avoid regulatory burdens; and automobile owners may be required to have emissions inspections.

Wetlands

Wetlands are areas that connect deep water and land, which help control floodwater and can filter pollutants. Wetlands areas such as marshes, swamps, ponds and bogs are biological nurseries for migratory birds, fish and aquatic plants. They also provide an important function of natural flood and erosion control. Unfortunately over time, wetlands are disappearing nationwide. In Texas, the U.S. Fish and Wildlife Service estimates the state lost approximately 8.4 million acres or 52 percent of wetlands between Colonial times and the 1980's. The U.S Department of Transportation's Federal Highway Administration joined with the Environmental Protection Agency and the U.S Army Corps of Engineers

Wetlands pool at Franklin Parker Preserve Wetlands are some of the most productive and dynamic habitats in the world.

and issued guidance in 2003 to help ensure the effective replacement of wetlands affected by federal-aid highway projects and improve regulatory Transportation Equity Act for the 21st Century established a preference for mitigation banking to compensate for unavoidable losses to wetlands or other natural habitats caused by transportation projects receiving federal assistance. Mitigation banking is a system for balancing wetland losses against wetland gains. The National Wetlands Mitigation Action Plan affirms the goal of "no net loss" of the nation's wetlands.[6]

Sabine River seen with iconic East Texas oil wells - u/redmutt1898

Located throughout the Longview Metropolitan Area, the Sabine River is an important water source serving multiple cities and communities. Valued as a critical natural resource, the Sabine River poses challenges for transportation planning efforts. Environmental issues must be addressed early in the planning process and transportation projects should be developed to minimize adverse impacts to environmentally sensitive areas. The U.S. Army Corps of Engineers has jurisdiction over waters in the United States and is the designated agency that issues wetlands permits. Prior to issuing a permit, the Corps of Engineers solicits input from environmental entities such as the Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the Texas Commission on Environmental Quality. Project owners like the Texas Department of Transportation and cities use the following mitigation measures to lessen environmental impacts to wetlands:

- Avoidance: Whenever possible, the preferred option is location of the project on an alternate upland site to avoid wetland damage or loss.

- Minimization: If there is no reasonable alternate path, the project is designed to minimize adverse environmental impact. An example is surrounding a wetland area with a silt screen to prevent eroding soil from damaging the wetlands

- Compensation: In some cases, construction is allowed in a wetlands area when equal amounts of wetlands elsewhere are permanently preserved from development.

From a transportation construction standpoint, building a project in or through wetlands is not only costly and time consuming in terms of environmental assessment and permitting, but is also usually expensive because of the additional engineering required to stabilize roads or bridges in wet soil and avoid flooding during heavy rains or wet seasons. For these reasons, construction through designated wetlands tends to be avoided whenever possible.

The most significant wetlands in Longview are along the Sabine River, which runs east west through southern Gregg County. Longview's primary east-west transportation corridor, Interstate 20, traverses major wetland areas along the Sabine River system. Arterial development in Longview has skirted most of the wetlands

[6] "Federal Agencies Advance Wetlands Protection and Transportation Goals (7/11/03) | Press Releases | Federal Highway Administration." Briefing Room. FHWA, n.d. Web. 27 Aug. 2014. <http://www.fhwa.dot.gov/pressroom fhwa0324.cfm>.

system. Access to Interstate 20, particularly from western Longview, is limited and frontage roads are few. State Highways 31, 149, and FM 2087 are the only principals arterials crossing through major wetland areas to connect with Interstate 20. When new alignment projects directly cross wetland areas or the Sabine River, they will require a significant number of bridges. It is important to note the cost/benefit scale is highly affected by the overall cost to provide mobility across the wetlands. It is most likely that the proposed new alignments would be used for mobility purposes only, since land use development within the wetlands area will be minimal.

Environmental Initiatives

NETAC

Maintaining our air quality attainment status is one of the region's primary goals. A voluntary coalition of government, industry, business and individuals in the five county region of Gregg, Harrison, Rusk, Smith and Upshur, known as Northeast Texas Air Care (NETAC), was formed in 1994. Dedicated to improving air quality, NETAC supplies technical assistance to local industry and provides public education and is committed to ensuring air quality standards are met to ensure public health and economic growth. NETAC is comprised of two committees: the Policy and Technical Advisory Committees. The Policy Committee is co-chaired by the Tyler mayor and the Gregg County judge. The remaining twenty-four members of the Policy Board include county judges, mayors, city managers, and chief executive officers from major employers. NETAC's Technical Committee consists of environmentalists and technical staff from the cities of Longview, Tyler, Marshall, Kilgore, utility companies, major employers, medical professionals, economic development corporations, the Texas Department of Transportation, Longview MPO and the Tyler MPO. The Technical Committee is responsible for technical review and detailed analysis of regional air quality related policy and technology.

In order to raise public awareness, NETAC has developed a public education and outreach program. NETAC has developed radio and television public service announcements informing citizens and companies of the steps they can take to reduce emissions, such as carpooling, share rides, riding transit, delay fleet refueling until late in the day, postpone maintenance painting, cleaning and mowing activities until ozone action days have passed.

Ozone Advance

In 2013, the five-county NETAC area was approved as a participant in the Ozone Advance Program. Ozone Advance is a collaborative effort by the EPA, states, and local communities to encourage reductions in ozone attainment areas to maintain the ozone standard, especially in areas that are near nonattainment. This proactive program encourages expeditious emission reductions to help the area meet the National Ambient Air Quality Standard. Strategies in this program include such activities as alternative commuting, burn bans, travel efficiency strategies, etc. These are to be implemented and carried out by the local agencies. The goals of the Ozone Advance Program are:

- Help attainment areas reduce emissions in order to ensure continued health protection,
- Better position areas to remain in attainment, and
- Efficiently direct available resources toward actions to address ozone and fine particle problems quickly.

While participation in the program is not a guarantee that an area will avoid a future

nonattainment designation, it can better position the area to comply with the requirements associated with such designations. NETAC provides technical assistance to local industry and public education.

Ozone Action Days

Since conditions favoring ozone formation can be predicted, the Texas Commission on Environmental Quality alerts the community, in the form of announcing an Ozone Action Day, when these conditions are likely to cause an exceedance. Publicity and media news releases heighten public awareness, which in turn, can assist in reducing emissions. Suggested measures for citizens to reduce ozone precursors are: reducing vehicular trips, walking, bicycling, postponing filling of gas tanks or mowing lawns until late in the day, keeping cars in good operating condition, and buying products with lower Volatile Organic Compound (VOC) ratings. These voluntary measures are cost-effective and could make the difference in improving air quality status.

Alternative Fuels

Another method of reducing mobile source emissions is to use cleaner burning fuels than regular gasoline. The Alternative Fuels Program promotes the use of alternative transportation fuels in Texas through demonstrating their positive environmental impact, technical feasibility and energy efficiency. Originally designed to assist state agencies under legislative mandate to operate a percentage of their fleets on alternative fuels, the program currently is more inclusive. Some alternative fuels have already been implemented and being used in the Longview area. the City of Longview sanitation department invested in a fleet of compressed natural gas (CNG) as well as a refueling station at their offices. in

Photos: Left - South Korean bus being implemented in Seoul that uses only electricity as a fuel source, Top Right - Truck that uses ultra low sulfur disel as a primary fuel source, Bottom Right - Natural gas fuel pump at the Longview Public Works Building.

[7] "NEPAssist Tool." NEPAssist Home. US Environmental Protection Agency, n.d. Web. 27 Aug. 2014. <http://nepassisttool.epa.gov/nepassist/entry.aspx>.

addition to the city's sanitation services, a travel center along I-20 currently offers a CNG refueling station for interstate travel. Longview Transit currently utilizes the ultra-low sulfur diesel as its' primary fuel source. The transit agency is currently investigating the benefits of using CNG and diesel/ electric hybrid options to be implemented within the next ten (10) years

City of Longview's sanitation fleet runs on CNG fuel.

Impact & Assessment Tools

NEPAssist

NEPAssist is a tool that facilitates the environmental review process and project planning in relation to environmental considerations. The web-based application draws environmental data dynamically from EPA's Geographic Information System databases and web services and provides immediate screening of environmental assessment indicators for a user-defined area of interest. These features contribute to a streamlined review process that potentially raises important environmental issues at the earliest stages of project development.[7]

This tool is designed to assist in the NEPA process. The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

To meet NEPA requirements, federal agencies prepare a detailed statement known as an Environmental Impact Statement (EIS). EPA reviews and comments on EISs prepared by other federal agencies, maintains a national filing system for all EISs, and assures that its own actions comply with NEPA.[8] While using the NEPAssist tool does not complete an EIS, it does give planning agencies an early idea of what issues currently exist in a project location. Examples include stream and wetlands location, as well as demographic data. Environmental Justice (EJ) determination by the MPO is assisted by the NEPAssist tool. Using census demographic data in the process, the NEPAssist tool includes up-to-date information on potential EJ populations. This allows for early detection to properly plan for and mitigate adverse effects to the EJ populations by transportation projects.

[7] "NEPAssist Tool." NEPAssist Home. US Environmental Protection Agency, n.d. Web. 27 Aug. 2014. <http://nepassisttool.epa.gov/nepassist/entry.aspx>.
[8] "Natural Environment Policy Act (NEPA)." Natural Environment Policy Act (NEPA). Environmental Protection Agency (EPA), n.d. Web. 27 Aug. 2014. <http://www.epa.gov/Compliance/nepa/index.html>.

CHAPTER 6 – MULTIMODAL SOLUTIONS

Multimodal Solutions

Cultural Change and Planning Ideologies

Introduction

It is no question that automobile traffic has dominated the transportation landscape since the 1940's. The ownership of a car has become not only a universal necessity, but also a status symbol within the American culture. In a 2009 study conducted by the Federal Highway Administration, it revealed that there was an average of 1.86 vehicles per household[1]. This equates to, if derived from Longview's recent census data, almost 58,000 vehicles in our city. In addition, the census showed that out of the 35,676 workers, 33,013 of them commuted by automobile.

In 2010, only 458 residents took public transportation or walked directly to work.[2] Cities have been built around automobile access and movement. This includes vast parking lots, wide highways running through the middle of urbanized areas, and sparsely dense residential development. This has improved the convenience of automobiles, but also made them a necessity in many cities. Longview, due to its' development patterns in the past century, has become reliant on automobiles to comfortably move about.

Services such as local transit and train travel have reduced the necessity by a small margin, but convenience of the multiple services is still lagging behind automobile transportation options. In turn, demand for these services is kept relatively low. In making automobile traffic more convenient, cities are effectively reducing demand for alternative solutions. These multimodal forms currently service the residents in the Longview area that do not access to an automobile or are unable to drive themselves. The middle class citizens, however, have no incentive to make use of these alternative forms. Having the means to travel via automobile, alternative forms, in their current state within the MPO's planning area, are less convenient and require additional travel planning.

However, transportation in the United States is, and has been for some time, undergoing dramatic changes in the way individuals perceive traveling from point A to point B. Perception of the environment and global change is becoming more on the forefront in political arenas and in the minds of the general public. Public transportation is becoming less associated with negative connotations and being realized for its' benefits

[1] "2009 National Household Travel." Summary of Travel Trends. FHWA, 1 June 2011. Web. 13 Oct. 2015. <http://nhts.ornl.gov/2009/pub/stt.pdf>.
[2] "United States Census Bureau." Longview (city) QuickFacts from the US Census Bureau. N.p., n.d. Web. 9 Sept. 2014. <http://quickfacts.census.gov/qfd/states/48/4843888.html>.

in urban areas. Even in the Longview area, it can be seen from the MPO's public involvement activities, both for this document and the Comprehensive Plan that sidewalks, bike lanes, and public transportation are becoming more popular and are being requested by the general public. This is seen at all ages but more prevalent in the 'Millennials' generation. The 'Millennials' of this generation are focused less on cars and more on technology and interconnectivity. "It used to be that having your own car provided the ultimate sense of freedom for young adults, allowing them a means to get together with friends, establish independence and separate from their parents... Today however, older teens and young adults don't need cars to achieve a sense of self and freedom. This generation's coming of age consisted of graduating from the Internet and CD-ROM computer games to hand-held mobile devices where they're establishing identities, relationships, and individualism online all day long, as much as, if not more than, in the real world.[3]"

Multimodal is, in some ways, synonymous with 'sustainable transportation,' which is akin to the idea of 'sustainability.' 'Sustainability is also discussed in the Environmental Considerations chapter of this document. The most popular types of multimodal transportation includes pedestrian, bicycle, bus, train, and airplane. This chapter will identify these forms in detail their importance, history in the planning area, and future planning practices. This chapter will clearly identify the positives and negatives of each form of transportation. In addition, this chapter will also identify planning strategies and cultural changes that have an effect on multimodal transportation. Local committees and planning groups, federal and state funding programs, planning studies, and future projects to increase multimodal transportation are also included in the chapter.

What is "Sustainable Transportation"

Sustainable transportation are forms of transport that utilize renewable resources or high ridership. Conventional automobiles use gasoline, a non-renewable resource, as the primary fuel. In addition, automobiles typically cannot carry more than eight passengers at a time. With this being a common and oftentimes necessary form of transportation, roads are sometimes congested with many vehicles carrying a small number of individuals. With a small carrying capacity, the benefit to fuel consumption ratio suffers. With public transportation, it is greatly reversed.

Two of the most popular forms of sustainable transportation are pedestrian and bicycle mobility. These forms of transportation require no fuel, and have no effect on the environment. In addition, the facilities that carry this type of

[3] Ross, Darren. "Millennials Don't Care About Owning Cars, And Car Makers Can't Figure Out Why." Co.Exist. N.p., n.d. Web. 9 Sept. 2014. <http://www.fastcoexist.com/3027876/millennials-dont-care-about-owning-cars-and-car-makers-cant-figure-out-why>.

movement usually require little maintenance at a large cost reduction than that of typical roads and highways. The downside of these forms of transportation is efficiency and comfort. Walking is slow and cycling requires the correct facilities to operate safely. In addition, weather can play a large factor in the ability to use these modes. In many cases, that is where public transportation plays a large role.

There are many forms of public transportation used in the country. This ranges from the small shuttle buses to large passenger rail lines. Many of these varieties run on non-renewable sources, such as diesel, but have a much higher benefit to fuel consumption ratio. However, there are emerging technologies to make these systems more efficient. In addition, transport types such as trams, or street cars, use electricity as their primary energy source. These forms of transportation are intended to move large amounts of people at a time, often on fixed routes. In Texas, public transportation is often seen as a way for the elderly and low-income to move about. However, large metropolises are utilizing public transit for many reasons. Major reasons for this include congestion mitigation, emission reduction, safety, and efficiency. While they have not made significant strides in popularity in Texas, mass transit systems remain the most efficient and sustainable way to move a large number of individuals a long distance. This system, however, has been hindered by the style of development seen in the past century. The MPO is continuing to focus on strategies to improve the functionality and popularity of these sustainable forms of transportation.

What is "Livability"

The concept of 'livability' differs from the idea of 'sustainability' and 'sustainable transportation.' 'Sustainability' focuses on the environment, equity, and economy of cities by changing technology and infrastructure. 'Livability' is a concept that relies on and is strengthened by the principles of 'sustainability.'

Livability is focused on the human experience of place, and is specific to the place and time in question. It includes an interrelated set of economic, spatial, and social components that together are challenging to understand and measure in the defined world of planning and development As such, it is best defined by the state, region, association, or community in question, and is best measured at a geographic scale where definitional consensus about livability can be found.

A shared, definitional framework for livability is established by the inter-agency Partnership for Sustainable Communities, formed in 2009. This collaboration of U.S. DOT, EPA, and HUD set forth the following six livability principles:[4]

- Provide more transportation choices to decrease household transportation costs, reduce our dependence on oil, improve air quality and promote public health.
- Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.
- Improve economic competitiveness of neighborhoods by giving people reliable access to employment centers, educational opportunities, services and other basic needs.
- Target federal funding toward existing communities – through transit-oriented and

[4] Stanford, Elizabeth L.. "Ask the Experts" Planning for Sustainable and Livable Communities." Planning for Sustainable and Livable Communities. N.p., n.d. Web. 9 Sept. 2014. <http://www.camsys.com/kb_experts_livability.htm>.

land recycling – to revitalize communities, reduce public works costs, and safeguard rural landscapes.

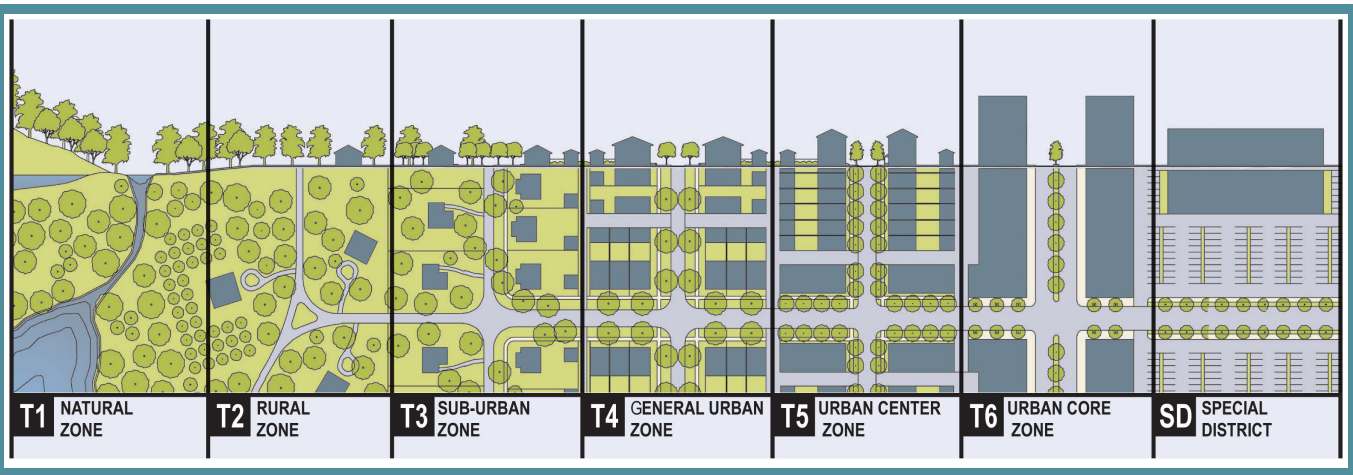
- Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the effectiveness of programs to plan for future growth.
- Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods, whether rural, urban or suburban.[5]

Livability can be increased by adhering to these six principles. However, the achievement of these principles requires change in culture and planning practices by the local entities. Cities have a set of codes and ordinances that govern the way that communities are developed. It also defines road standards. These codes, in their present form, may not foster the growth of sustainability and livability in their communities. These changes, however, are becoming increasingly important as the demographics start to shift. In 2008, The City of Longview was named a Certified Retirement Community by the Texas Department of Agriculture. The certification is part of a statewide program to attract retirees to Texas. Becoming a Certified Retirement Community was one of the goals established within the Longview Vision 2010 strategic planning process. Texas is the second most popular retirement state, and native Texans account for one-fifth of retirees returning to Texas. Because of this, more livability improvements are required to meet the needs of an elderly community.

Practices that attempt to improve livability have been gaining momentum in past years. Practices such as Smart Growth and Transit-Oriented Development (TOD) are essentially guidelines for cities to act upon. The promotion of renewable resources, 'sustainable' forms of transportation, and multimodal connectivity are the building blocks of these concepts. Some of the major practices are mentioned in this chapter.

Smart Growth

Smart Growth has become a popular idea in the forefront of the 'sustainable development' movement. This concept is formulated around developing cities in a way that promotes healthy living, ease of access, and utilizing more environmentally friendly forms of transportation. One way that this has been promoted is by encouraging cities to develop dense, mixed-use living communities. This style of development



Smart Growth diagram - Galleryhip.com

[5]"Livability 101." Department of Transportation. N.p., n.d. Web. 9 Sept. 2014. <http://www.dot.gov/livability/101>.

has been recommended to address health and environment issues facing the current popularity of urban sprawl as a means of development.

Urban sprawl refers to the practice of building cities outward rather than inward. This development style spreads the city to where it puts a higher necessity on automobiles as a form of transportation. This, in turn, strains highway systems and reduces the effectiveness of public transportation. In addition, automobiles have been confirmed as large producers of greenhouse gases. In relying in this method of transportation, we are putting more cars on the roads and increasing total emissions. Ways to mitigate urban sprawl, increase health, and city attractiveness is through smart development. Focusing around sustainable forms of transportation instead of conventional forms, creates new opportunities for cities and helps mitigate environmental concerns.

Transportation in Smart Growth focuses on alternative means of moving people. Some of the core concepts involve constructing sidewalks and bike lanes, improve existing pedestrian facilities, and promoting transit oriented developments in cities. Studies have been conducted that show pedestrian fatality rates are six times higher in the United States than in similarly sized European cities. This has been attributed to the style of development seen in European cities. These cities emphasize the importance of walking, biking, and mass transit by making it more convenient to use these modes of transportation than it is to drive. Driving has grown in the opposite direction in the United States. Cities are making it more and more convenient to drive to their location than walk, bike, or take transit. This can be directly linked to the lack of transit oriented development being pushed by cities, which is a major cause of urban sprawl.

Complete Streets

Complete streets are designed to accommodate all forms of transportation. A complete street may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more.

The Planning Partnership Limited

There is no standard for what a street has to have to be complete however. This delves into the realm of context sensitive design. A complete street in a rural area would look very different than that of a downtown street. In areas where a fixed routes routinely stop, those streets would have different needs than areas that are far away from transit stops. In rural areas, highway shoulders are adequate for some riders, especially in low traffic areas. Side paths or trails are separated from traffic and are a great way to safety ride or walk in rural areas with high traffic volumes. There are more factors that are looked at besides use and location. Factors such as speed and traffic volumes must be looked at when determining what features should be included. For example, sidewalks along Interstate-20 would not be beneficial. However, freight specific lanes would make a large impact. If that same scenario was

developed for a residential neighborhood, the benefits would reverse. Freight lanes would be unnecessary yet sidewalks would be much more beneficial.

Complete streets would need to be implemented on a policy level to become effective in the Longview Metropolitan Planning Organization (MPO) planning area. Adding to existing streets is costly and requires extensive studies to prove the effectiveness of those additions. When building new streets, to have complete streets there must be collaboration between the local agencies and the developer. This public/ private partnership is essential in the development of these user-friendly, multimodal solutions. The MPO is exploring options to address this collaboration and find unique funding solutions.

Transit-Oriented Development

Transit-oriented development (TOD) is a community design that integrates mixed-use buildings into a walk/ bike friendly environment. These neighborhoods are constructed densely near transit stops. This allows for individuals to have communities in where they are able to walk

Wieneck & Associates

or bike to shops, restaurants, and other everyday activities. This is effective in creating smart communities people of all ages and income levels.

With TODs, individuals are rarely limited by modes of transportation they have access to. Those without automobiles in typical suburban areas are subject to hazardous conditions in traveling from place to place. There are safety issues commonly seen in the Longview MPO planning area as a result of this lack connectivity.

There are many additional benefits to TODs that cities can take advantage of in future development. They range from environmental, to health, to ease of access. Some, not all, of the benefits are listed below.

- Reduced household driving and thus lowered regional congestion, air pollution and greenhouse gas emissions
- Walkable communities that accommodate more healthy and active lifestyles
- Increased transit ridership and fare revenue
- Potential for added value created through increased and/or sustained property values where transit investments have occurred
- Improved access to jobs and economic opportunity for low-income people and working families
- Expanded mobility choices that reduce dependence on the automobile, reduce transportation costs and free up household income for other purposes[6]

TODs are not only beneficial to the overall transportation system, but can also serve as economic generators. Having mixed-used developments in dense spaces create opportunities for business to be in much close contact with their consumers. Having clustered communities allows for target demographics with ease of access to all individuals.

[6] *"What is TOD?." Reconnecting America. N.p., n.d. Web. 9 Sept. 2014. <http://www.reconnectingamerica.org/what-we-do/what-is-tod/>.*

Multimodalism/ Livability Goals

- Ensure safe, accessible, and convenient mobility between all forms of surface transportation.
- Investigate the feasibility of an incentives program to encourage development of Transit-Oriented Developments (TODs), which emphasize multimodal usage.
- Utilize MPO Thoroughfare Plan to increase multimodalism in future road projects.
- Find ways to increase the use and availability of renewable fuels in the planning area.
- Collaborate with local planning & zoning departments to follow the concepts of Smart Growth, which help limit urban sprawl.
- Encourage a context sensitive approach in new roadway projects to develop the area's first complete street.
- Investigate funding solutions for improvements identified in the Longview Pedestrian-Transit Access study.
- Develop strategies to connect LeTourneau University, Multimodal Center, and downtown Longview.
- Encourage the rural areas of the Longview MPO to develop long-term strategies for increasing multi-modalism in their communities.

Pedestrian Transportation

Introduction

With the majority of transportation funding focusing on capacity, maintenance, and signalization improvements, pedestrian transportation has suffered. This lack of pedestrian mobility is accompanied by the non-development of sidewalks in the past decades. The southern part of Longview has the majority of the sidewalks while the more recent developments have a scarcity of pedestrian friendly areas. Gladewater is another area in the region that has sidewalks, although they are similarly scarce. There are sidewalks along US 80 in well developed areas and in their downtown. However, given the rural nature of Gladewater, there is not as large of a need. Similarly, the City of White Oak has very few sidewalks. With growing concerns over environment change and unhealthy transportation habits, planning for increased pedestrian mobility is essential for any city.

Resurgence

With the large number of vehicles on the road and the direct correlation between unhealthy behaviors and pollution, livable and walkable cities have become a feature point of future development for many major cities. Large cities have seen a shift to planning for more walkable and 'greener' streets. In these developments, wide sidewalks and vegetation for shade and aesthetics are becoming much more popular. These streets are aimed at slower traffic to be safer for pedestrians as well as creating a friendly atmosphere. The City of Longview is part of this resurgence with their most recent 'Comprehensive Park, Recreation, and Open Space Master Plan.' This plan aims to increase the functionality of all aspects of the City's parks and open space system.

Analysis was conducted to show under-served areas as well as trails that may be need of repair. In addition, the City's Master Trail Plan recommends the use of additional linkage opportunities such as utility easements and rail corridors to connect existing and future parks, schools, businesses, and other significant destinations. The City of Longview Parks Department currently operates close to 14 miles of trails throughout the city. Public feedback from the MPO's survey also showed a demand for sidewalks and pedestrian improvements. In one of the questions, respondents were asked to put a dollar amount of how much they would like to spend on various types of improvements. Of the choices, sidewalks ranked as the third most important. It was only a small margin away from the top

choice. Pedestrian safety also ranked high as an important challenge facing our community. In addition, many respondents left comments asking for sidewalk improvements.

The Federal Highway Association is also on board with increasing pedestrian mobility as demonstrated by the Transportation Alternatives Program (TAP) as an initiative of the Moving Ahead for Progress in the 21st Century Act (MAP-21). This is a redeveloped version of the Transportation Enhancement Program. TAP is a program that encourages and helps funds alternative means of transportation. This includes on-system, which includes sidewalks and roadway development and re-development that aims to increase pedestrian mobility, as well as off-system measures such as hiking trails. The Recreational Trails Program (RTP) provides funds to help municipalities and state agencies to develop, build, and maintain trails for multimodal; forms of transportation. The non-motorized trail types are varied and include such uses as hiking, in-line skating, and even skiing.

Safety

According to crash data given by the Texas Department of Transportation (TxDOT), there were 75 reported pedestrian accidents from January 2010 to June 2013. Of these 75 accidents, 13 of them reported a fatality at the scene. This averages out to almost four fatalities per year with most of them during the weekend. However, many pedestrian accidents go unreported. This is primarily if no injury occurs, and common on private roads and parking lots. Implementation of traffic calming devices, improved crosswalks and pedestrian infrastructure could reduce these numbers along roads with a higher percentage of pedestrian accidents. In addition, programs have been implemented by state and federal entities to help reduce the dangers for pedestrians by integrating pedestrian features in high traffic area.

One such program, Safe Routes to School, is an attempt to increase the number of children walking and bicycling to school. "Safe Routes to School is a national and international movement to create safe, convenient, and fun opportunities for children to bicycle and walk to and from schools... Safe Routes to School can also play a critical role in reversing the alarming nationwide trend toward childhood obesity and inactivity."[7] This is accomplished by integrating safety features into existing routes and investing in these facilities in areas which do not currently have them.

Planning Practices

To reduce pedestrian accidents, tools must be implemented to create a barrier between walkers and automobiles. These barriers are not always physical, but rather awareness tools so that drivers can recognize areas where the number of pedestrians are higher. Listed below are some elements implemented by Longview and other large cities.

- Marked Crosswalks
  - Marked streets where pedestrians can cross and where drivers should expect them to cross.
  - These can be seen in newer developed roads such as Loop 281 and the redeveloped streets in downtown Longview.

- Pedestrian Refuge Islands
  - A protected area, usually defined by raised medians, which provide an area for

[7] "What is Safe Routes to School?." Safe Routes to School National Partnership. PeopleForBikes, n.d. Web. 9 Sept. 2014. <http://saferoutespartnership.org/about/history/what-is-safe-routes-to-school>.

pedestrians to wait while crossing large road segments.
    - Four and six lane roads could benefit from having this feature. The intersections of Loop 281 at Judson Rd, Fourth St. and Airline Rd. have refuge islands.

- Signal Timing (walk signs, traffic signals, etc.)
    - Timed crossing signs can let pedestrians know when the traffic signals are set to change.
    - Pedestrians who arrive at the crosswalk will know if there is enough time to cross without impeding traffic.

- Road Diets
    - This is a reduction of lanes on roads that have below a set amount of average daily traffic (ADT) to create more space for sidewalks, bike lanes, and street beautification.
    - Smaller roads also act as a traffic slowing device to increase safety for pedestrians.

- Bump-outs
    - This is the narrowing of streets at traffic controlled intersections. This most likely occurs at stop sign intersections in neighborhood areas.
    - The benefit is that pedestrian walking time across intersections is reduced.

Pedestrian Connectivity

In order for pedestrian activity to increase and become safer, having a connected network is essential. Impeded walkways can discourage walking and also become very dangerous for those who must walk. Construction is a common impediment and pedestrians must be accounted for by the construction companies. In addition to disrupting short travel lengths, it can also affect pedestrian circulation networks. Pedestrian circulation networks include primary routes and residential access walks. Primary pedestrian routes generally span a long distance from their beginning to ending points. Primary routes serve as transportation routes by accessing traffic generators, such as stores, schools, employment, and business areas. Most often, primary routes are located within the right-of-way of major arterials.

There are few primary pedestrian routes existing in Longview and Gladewater areas. Improvements to US 80 in 1991 included sidewalks along both sides of a six-mile section of that facility, forming the longest continuous primary pedestrian route in the area. In the early 1980's, asphalt sidewalks were installed along sections of High Street, Fourth Street, and Martin Luther King Jr. Blvd. These asphalt walks are discontinuous and in generally poor repair. Concrete sidewalks were installed in conjunction with the Spur 63 (McCann Rd.) widening project (Loop to Hawkins Pkwy.), the FM 2208 (Alpine Rd.) widening project (US 80 to US 259), the Spur 502 (Judson Rd.) widening project (north of Loop 281), and the FM 2275 (George Richey Rd.) Extension project (US 259 to SH 300).

As noted previously, there are very few residential access sidewalks in Longview, Gladewater, White Oak, etc. Developers have been required to build relatively wide residential streets as they build new subdivisions, but are not required to build sidewalks. Though the wide streets afford some measure of pedestrian safety in comparison to narrow streets, pedestrians are not as safe as they would be on separate walks.

Health

Walking as a means of transportation is an added health benefit. While behind the wheel of a vehicle, no physical activity is conducted. Therefore, all the time spent traveling to work,

shopping, eating, etc. is spent in a sedentary state. Walking to complete these trips can make a huge benefit to a region's health while increasing the health of the environment. The American Heart Association has listed several benefits of walking 30 minutes a day.

- Reduce the risk of coronary heart disease
- Improve blood pressure and blood sugar levels
- Improve blood lipid profile
- Maintain body weight and lower the risk of obesity
- Enhance mental well being
- Reduce the risk of osteoporosis
- Reduce the risk of breast and colon cancer
- Reduce the risk of non-insulin dependent (type 2) diabetes

Public officials in the area have made progress in promoting healthy lifestyles for their cities. In 2010, Longview Mayor Jay Dean created the Mayor's Council on Physical Fitness and partnered with Texas Fitness Challenge to create healthy communities. "Get Fit Longview", a fitness campaign was launched in an effort to engage citizens and surrounding communities in fitness through exercise programs and educational events. To supplement this type of activity, the MPO supports creating transit-oriented development, which focuses on dense, mixed-use communities, would allow residents to reach popular destinations for needs and entertainment without ever having to get behind the wheel of a car.[8]

Livability in Pedestrian Transportation

Pedestrian travel is more than just reaching a desired destination. In order promote walkable spaces, maintained and quality public spaces and sidewalks are required. Currently, many sidewalks within the cities of Longview, Gladewater, and White Oak are in disrepair. In addition, conventional traffic engineering has made the area less walkable and less 'livable.' Reversing this thinking requires a demand for public spaces. While creating linkages to connect sidewalks,

A concept drawing of a livable and walkable community in an urban setting.

[8]"The Benefits of Walking." American Heart Association. N.p., n.d. Web. 9 Sept. 2014. <http://www.startwalkingnow.org/whystart_benefits_walking.jsp>.

trails, and places, having desirable areas for people to congregate around is a must. On the next page are some methods of increasing this demand.

Methods of increasing livability in with pedestrian space:

- Programming Pedestrian Space
  - Creating places that have a purpose. Examples of this would include playgrounds, parks, recreational fields, scenic viewing, and more.
  - Usable space attracts people and keeps them in the area longer.

- Maintenance of Existing Areas
  - Unmaintained areas push pedestrians away while creating havens for criminal activity.
  - Having an inventory of well-maintained spaces can increase demand by the public for more.

- Pedestrian Friendly Development
  - In developing and re-developing areas of the cities, keeping the pedestrian in mind will increase pedestrian activity while also providing framework for future growth of multimodal transit.

Space built for a certain type of pedestrian use.

Crews repair damaged sidewalks.

Pedestrian-friendly development - Village Walk West Apartments

Pedestrian Goals

- Determine the need and benefits of a MPO-wide Pedestrian Master Plan
- Identify unsafe pedestrian areas within the planning-area and develop strategies to mitigate hazards.
- Find methods to collect an inventory of all sidewalks within the MPO planning area.
- Develop method for quantifying pedestrian traffic along major corridors.
- Encourage the creation of programmed pedestrian space along corridors with high pedestrian traffic.

Bicycle Transportation

Introduction

Bicycles are a simple, yet elegant forms of transportation that are often overlooked for the convenience of high-tech automobiles. However, bicycles remain one of the cleanest, healthiest, and cheapest forms of transportation. In addition, less automobiles on the roads and more bicycles reduces congestion and increases longevity of roads. Not only in quality of pavement, but in need of capacity. Because of the low impact bicycles have on pavement, roadway systems have a much longer longevity with less need for maintenance. In addition, bicycles have no negative environmental impacts. Exploring options to promote and facilitate safe and efficient bicycle travel in the Longview MPO planning boundary can drastically benefit the area.

Popularity

The Outdoor Foundation reported that in 2010, Bicycling was the second most popular outdoor activity in the United States. This could be for many reasons, including relative low cost and health benefits from cycling. In addition, the bicycle industry recorded sales of over $5.5 billion in 2009 of bikes and equipment. The number of bicycles sold also tripled that of new cars according to the U.S. Department of Transportation. The popularity of cycling is increasing at an exponential rate in the U.S. and many cities are planning for this. A study conducted by the National Highway Traffic Safety Administration reported that in 2008, 47% of Americans over the age of 16 wanted more bicycle facilities in their communities. To plan for this, many cities have developed bicycle master plans to increase facilities and ridership in their area. For example, the City of Dallas created a bicycle master plan in 2011 that aims at 'creating a fully interconnected, seamless bikeway system...,' 'identify funding sources,' and 'improve education and enforcement, establish supporting policies.[9]' Following the nation in its movement to facilitate cycling can increase ridership in the Longview area.

Cost Benefit

A study by the U.S. Department of Transportation (USDOT) showed that the average cost per mile to own and operate an automobile in 2009 was $0.57. In a typical 15,000 mile year, as defined USDOT, an owner will spend on average $8,550 a year driving an automobile. While studies on bike care, theft prevention, and apparel put cycling costs in the hundreds of dollars a year. With such low initial and overhead costs of cycling, lower income families could greatly benefit from having a bicycle friendly environment.

Safety

A 2011 Census study showed that no more than 300 people commuted to work by bike. Its estimate hovered around 100 with a large margin of error. This could be explained by the lack of accident preventives currently in place. There are no bike friendly facilities along major roads within

[9] "2013 Outdoor Participation Report." Outdoor Foundation. Outdoor Foundation, n.d. Web. 9 Sept. 2014. <http://www.outdoorfoundation.org/pdf/ResearchParticipation2013.pdf>.

the City of Longview to support bicycles as a viable and safe form of commuting, however, the first bicycle friendly facility began construction in 2014. George Richey Rd, a new four-lane roadway, is being constructed with designated bike lanes. The first phase of the George Richey project, between U.S. 259 and McCann Rd. is scheduled to be open to traffic in 2015 and second phase is set to be open in 2017.

Safety along these roads has been in question, especially toll roads, in Texas. While offering convenient routes and large shoulders for cyclists, they border high speed traffic where a collision would most likely produce a fatality. However, there have not been a large amount of reported accidents in the Longview area. From January 2010 to June 2013 there were 21 reported accidents. Of the 21, only 1 was reported as a fatality. The rest were reported as a non-incapacitating injury, possible injury, or no injury at all.

The benefits of cycling include the increased health, the pure enjoyment, the cost benefits, both to the rider and the community.

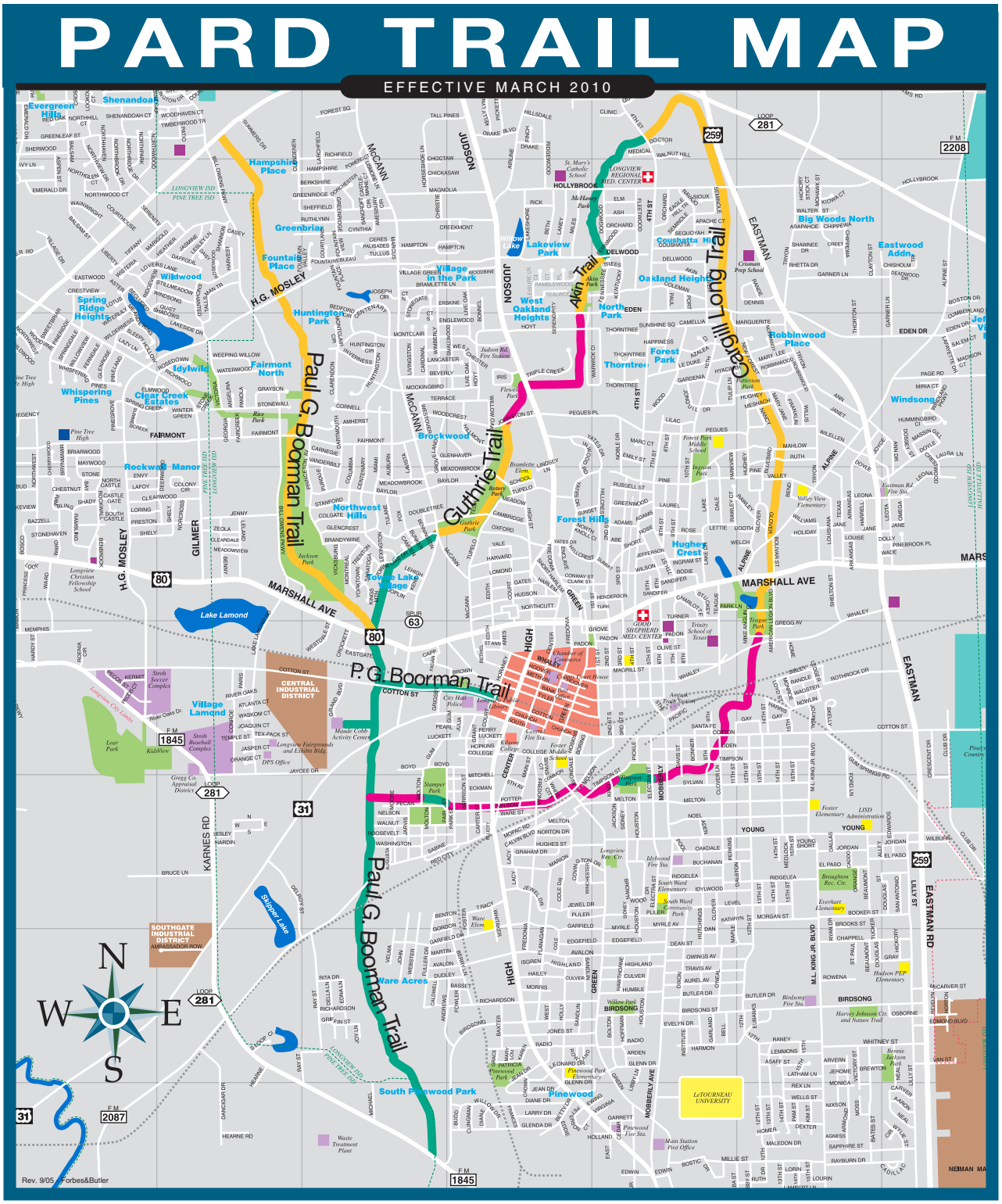
Bicycle Connectivity

Several types of bicycle facilities exist to assist cyclist in many communities. A bicycle plan may include one or more of these facility types.

- Bike Trails (*Class I*): Bicycle or bicycle/pedestrian trails on a separate right of way from motor vehicles. Bike trails, also known as shared-use paths, are generally not preferred by expert riders, particularly if pedestrians are permitted on the facility. Because trails require construction and right-of-way acquisition, cost per mile is relatively high. In May of 2013, the City of Longview, in coordination with the Longview Bicycle Club, opened a new 3-mile mountain bike trail that prohibits any motor vehicle activity. The City of Longview currently operates approximately 10.5 miles of trails. A full map of City of longview trail System can be found on the next page.

- Bike Lanes (*Class II*): A bicycle lane is a portion of the roadway that has been designated by striping and pavement markings for the exclusive use of cyclists. It can consist of re-striping an existing road if sufficient lane width for vehicular traffic exists or it can consist of adding additional road width when widening or constructing new roads. Most bicycling studies suggest that striping bike lanes on the roadway has a positive impact on the actual and perceived safety of the bicyclists. Bike lanes support and encourage bicycling as a means of transportation. Bike lanes help define road space, remind motorists to look for cyclists, and promote an orderly flow of traffic, and increase the predictability of both motorists and bicyclists. The installation of bike lanes is the highest cost option when comparing the three bicycle facility types, and is the option generally preferred by serious cyclists.

- Bike Routes (*Class III*): Based on a "shared roadway" concept, bike routes are numbered and marked by signs with or without a specific route number. Signed bicycle routes are best implemented on existing low traffic volume residential or secondary roads and normally do not include additional pavement width. The bike route signs improve bicycle safety by alerting drivers to the likely presence of bicyclists. Cyclists do not have an exclusive right-of-way, and must follow all existing rules of the road. The installation of bike route signs is the lowest cost option and is preferred to connect to bike lanes and trails.



Existing Trail System

Future Trail Development (City Owned Property)

Proposed Future Trail Development (Privately Owned Property)

Real East Texas
CITY OF LONGVIEW

Livability in Bicycle Transportation

While cycling is a very popular form of recreation in America, it also serves as a vital form of transportation. Often, low-income residents that do not have the means to purchase and maintain an automobile use bicycles to get to their place of employment or just to move about the city. This is not a large number within the planning area, but there is also a lack of infrastructure that restricts bicycle movement. Trails, lanes, and routes allow for bicycles are limited in the region and thus, limits the usage of this transportation form.

Mass. Metropolitan Area Planning Council

To increase 'livability,' bicycle integration is vital as an effective and sustainable means of transportation. Communities can become more 'livable' by offering bicycle options as an alternative to driving everywhere that is needed. We can make the assumption, based on observation and existing infrastructure, that most residents in East Texas drive, even short distances, to get from place to place. Having options for bicycles could reduce the number of motor vehicles making these short trips to relieve congestion, ands to provide more efficient, healthier options for area residents.

Bicycle transportation requires no fuel source and thus, have no adverse effects on the environment. Portions of the planning area that have air quality issues could see a health benefit as a result of more frequent bicycle use. The health benefits realized from increased bicycling and reduced automobile usage can be found in the next section. In addition to air pollution reduction, this would also mitigate some noise pollution that is associated with dense urban living.

Health

Several studies have been conducted to show the health benefits of cycling leisurely and as a mean of commuting. For example, women who cycle at least 30 minutes a day have a lower risk of breast cancer. Also, children who cycle are 48% less likely to be overweight as an adult.[10] The physical activity, whether it is recreational or as a means of commuting, is healthier than driving a motor vehicle for all trips.

Cycling not only improves personal health, but also helps curb pollution. Traffic congestion accounted for the loss of nearly 4 billion gallons of gasoline in 2009 according to the National Bicycle Dealers Association. Also, the Bureau of Transportation Statistics reported that for every mile replaced by riding a bike, nearly a pound of CO_2 is saved from entering the environment.[10]

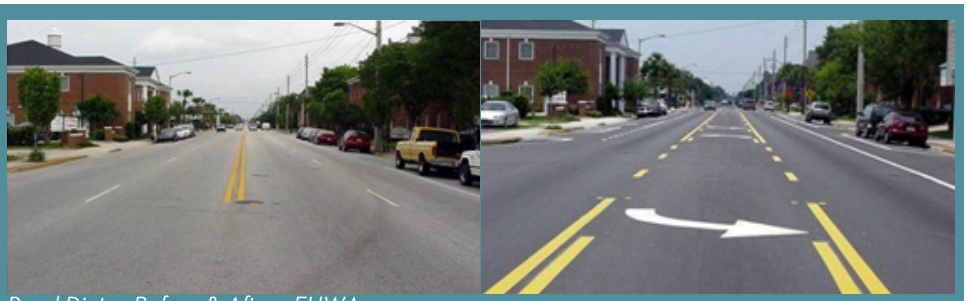
[10]"Statistics Library - Economic Statistics Archives." PeopleForBikes. N.p., n.d. Web. 9 Sept. 2014. <http://www.peopleforbikes.org/statistics/category/economic-statistics>.

Planning Practices

There are several improvements and strategies that cities can use to improve their bike friendliness. These range from infrastructure improvements to policy changes.

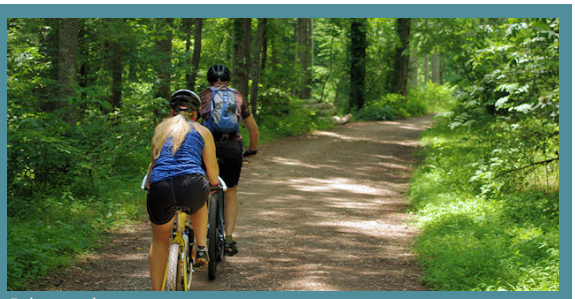
- Road Diets
  - Redeveloping roads that have more capacity than needed can allow for the creation of bike lanes for cyclists.
- Shared Bicycle Roads
  - Roads with a higher Average Daily Traffic (ADT) that give cyclists full privileges traveling in the same lane as automobiles.
- Signage
  - An inexpensive form of awareness on roads with high cyclist traffic.
  - Important in denoting shared lanes or bike trails.
- Improvement of Existing Trails
  - Redeveloping trails to increase connectivity and quality of cycling in the city.
- Widening of Major Roads
  - Widening roads that are at or over capacity can create necessary room for bicycle traffic.
  - Separating bicycle traffic from automobile traffic can reduce congestion and improve safety of roadway
- Guidelines
  - Encourage bicycle consideration in all road projects.
  - Helps create a uniform system throughout the city.

To implement these planning practices, documentation is required demonstrating the need and benefit to the community. This can be accomplished through a bike master plan or corridor studies that focus on multimodalism.



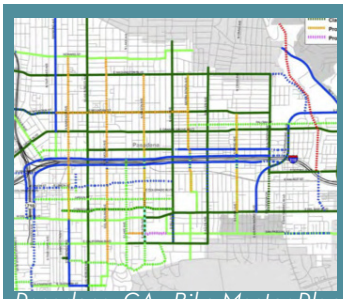
Road Diets - Before & After - FHWA

Signage



Bike trails

Shared Bike Route



Pasadena, CA - Bike Master Plan

Bicycle Club Recommendation

In September 2014, members of the Longview Bicycle Club were asked by Longview MPO staff to prioritize the street and highway projects they would prefer to ride on, if bicycle lanes could be feasibly installed.

High priority projects for installation of bicycle lanes:

- FM 2208 (Alpine Rd.)
- FM 2275 (George Richey Rd.)
- Loop 281
- Bill Owens Pkwy. (Spring Hill Pkwy. to Graystone Rd.)

Medium Priority:

- FM 2206 (Harrison Rd.)
- Loop 281, FM 2206 to Estes Pkwy.
- Bill Owens Pkwy. south
- Lake Lamond Rd.
- US 80
- Silver Falls Rd.
- Spring Hill Pkwy.

Low Priority:

- Highway 149/322
- Highway 300 (Gilmer Rd.)
- Highway 42
- Dundee Rd.
- Reel Rd.

Bicycle Goals

- Determine the need and benefits of an MPO-wide Bicycle Master Plan.
- Encourage bicycle racks at public and government offices to increase bicycling as a form of transportation.
- Create seamless integration with local trail systems.
- Increase safety of cycling through the distribution of information and creation of bike facilities to help drivers be aware and reactive of cyclists.
- Investigate the feasibility of incentive programs to encourage the use of cycling as an alternative mode of transportation.

Public Transportation

Introduction

Public transportation is a system of vehicles such as buses and trains working as an interconnected means of transit for public use. The Longview area is fortunate enough to have access to multiple forms of public transportation, including intracity bus, intercity bus, passenger rail, taxi, and commercial air travel. Public transportation provides an alternative method of commuting at a lower price than owning and operating automobiles. However, compared to the automobile, convenience is lowered because of the time and locational limitations of public transportation. Buses, trains, and planes operate on fixed schedules and routes that require trip planning. In many cities, though, there are low-income and elderly populations that require these services to move from place to place. Because of the higher costs and risks of owning and operating an automobile, public transportation offers effective alternatives. In this section, there is a detailed description of the various transit providers offered in the Longview area. In addition, each of the various planning and advocacy groups supporting public transportation and multimodalism in the region are identified.

Longview Transit

Longview Transit is the local, fixed-route bus system for the City of Longview, located at 908 E. Pacific sharing building space with the Greyhound Bus terminal and directly across from the Amtrak station. Fixed route operations began in 2003 and buses run six days a week. The agency's mission statement is "to provide safe, efficient, and reliable transportation services while providing quality customer service." The agency provides a safe, clean, affordable, and comfortable commute to passengers. The transit facility was recently renamed the 'Sidney Bell Willis Transportation Facility' after former councilwoman Mrs. Willis who was a strong advocate for a public transportation system in Longview.[11]

Longview Transit has made significant strides in the past 5 years. In 2014, the transit agency purchased two new 35 ft. El Dorado National EZ-Rider II transit vehicle. The new buses accommodate up to 35 passengers sitting, or 26 passengers if the 3 wheelchair positions are being utilized. Previously, the entire Longview Transit fleet consisted of the 29 foot International buses which can accommodate 21 passengers, or 15 if the 2 wheelchairs positions were being used. The agency currently has 7 of these International buses. There are 6 fixed routes operated. Most buses run on 1-hour headways. One route operates 30-minute headways. The El Dorado buses are rotated on routes based on ridership numbers.

Longview Transit's 35' El Dorado EZ-Rider II

Longview Transit also operates a paratransit, shared ride public transportation program, enabling routes and scheduled to transport multiple passengers to their destinations. The demand-response service is available to eligible

[11]"Longview Transit." Longview Transit. N.p., n.d. Web. 9 Sept. 2014. <http://www.longviewtransit.com/>.

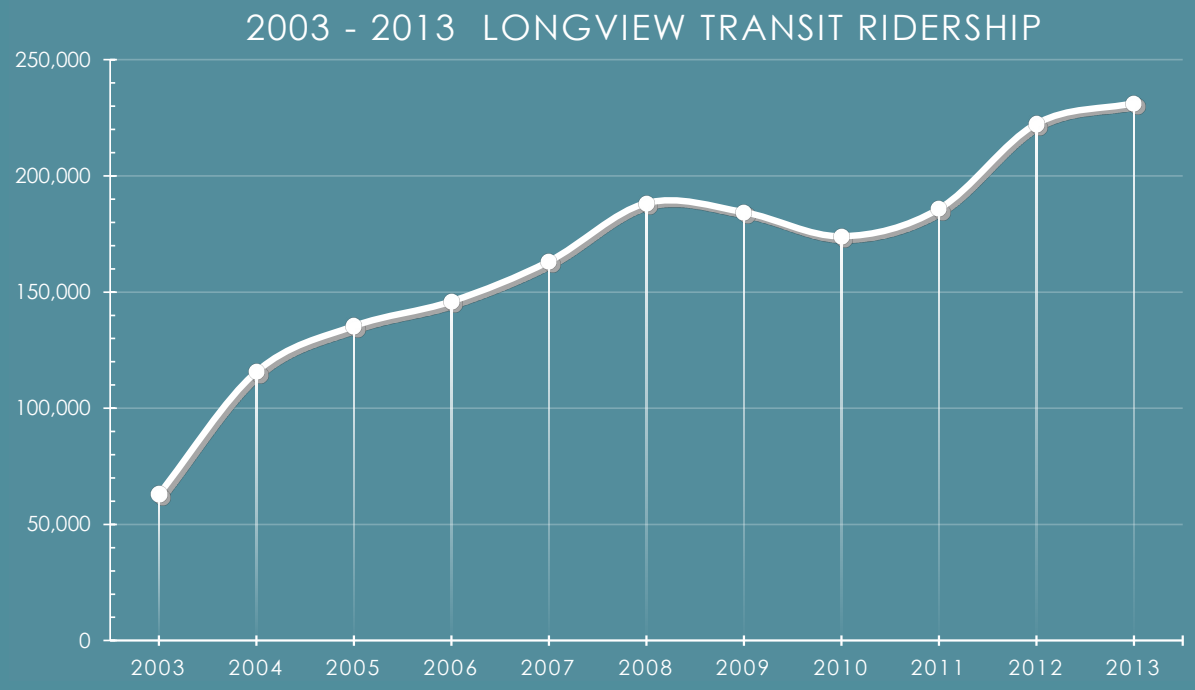
passengers, who are certified by a licensed health care provider, unable to utilize the regular fixed route service. Once approved, eligible riders call the transit office in advance to schedule rides. Longview Transit has 5 paratransit vehicles in service. These differ from the International and El Dorado buses in that they are vans to carry a smaller number of people. These vans are more effective for the type of service they provide compared to the larger buses. Longview Transit ridership has greatly exceeded ridership projections since its inception in 2003. From 2003 to 2013, ridership has increases 280%.

Within the next ten (10) years, Longview Transit plans to renovate the area surrounding their facility. This is in effort to move the transfer center from its home in Magrill Park to the multimodal center. This would be done by demolishing some existing buildings and constructing new facilities that allow for smoother bus operations and a safer environment.

The transit agency also provides maintenance for the regional, rural transit provider, GoBus. If one of their buses breaks down, they are transported to the Longview Transit facility. They are provided the repairs needed as well as a 50-point inspection as preventative maintenance. Longview Transit receives payment for this service and acts to supplement other Longview Transit programs.

A new program in the near future for the agency is to install an ADA compliant announcement system on all Longview Transit buses. This allows for those who have disabilities to be able to hear the stops as the bus approaches them. This also allows for the possibility of an additional Spanish announcement. This is useful to reach out into new demographics and individuals with limited english proficiency that cannot effectively communicate with drivers.

A full route map can be found in the appendix of this document.



Longview Transit's ridership numbers from 2003 to 2013. Data provided by Longview Transit Staff.

Rural Public Transportation

GoBus Operations

ETCOG's rural transportation system makes 500-700 trips a day, 5 days a week, throughout the 14 counties of East Texas. The rural transportation program is a shared ride concept, enabling routes and are scheduled to transport multiple passengers to their destinations. Re-branded in 2010, the rural transportation service is called GoBus. The new name "GoBus" encourages East Texans to "Get on the Go" in the eye catching purple and green buses. There are approximately 40 vehicles in the GoBus fleet and are equipped with wheelchair lifts.[12]

Kilgore College Ranger Ride

The Kilgore College Ranger Ride is operated by the East Texas Council of Government's Rural Transit GoBus. With the popularity of the Kilgore College Longview Campus, the East Texas Council of Governments (ETCOG) Rural Transit District has provided a shuttle to commute students between the campuses. The service is a shuttle bus capable of carrying 20 passengers and operates five times per day Monday through Friday. The service is free to Kilgore College students with a valid student Id. Non-students are able to utilize the route, but a $2 fare is required.[13]

Regional Public Transportation Coordination

As a largely rural region, East Texas has many transportation challenges. A reliable network of public transportation is essential to those who do not have the means to purchase and sustain personal transportation. In order to implement, sustain, and improve this network of transportation providers, detailed planning is required.

In 2003, the Texas legislature passed HB 3588 aimed at reducing the wastefulness of transportation resources by maximizing coordination between agencies. The intended effect was to create a more efficient and clean public transportation system in the State. As a part of this new legislation, the East Texas Regional Transportation Coordination Planning Steering Committee was formed in 2005 and later renamed EasTexConnects. The responsibility of EasTexConnects is to address the goals of HB 3588 and develop a regional coordination plan for the 14-county area of State Planning Region 6.

The EasTexConnects Committee is comprised of local transportation providers, elected officials or their appointees, representatives of social service agencies, metropolitan planning organizations, citizens and businesses. The committee's goal is to improve the quality of life in East Texas through transportation choices. EasTexConnect's mission is to create and connect a comprehensive, flexible and sustainable public transportation system throughout East Texas Region 6. EasTexConnects officially adopted six goals to fulfill their mission:

1. People first, barrier free.
2. Multimodal interconnectivity across the region.
3. Aggressive outreach and education to a broad base.
4. Increased and flexible funding.
5. Increased and expanded services..
6. Emergency planning and homeland security.[14]

[12] "GoBus." GoBus. East Texas Council of governments, n.d. Web. 9 Sept. 2014. <http://www.etcog.org/234/GoBus.htm>.
[13] "Ranger Ride." Kilgore College. Kilgore College, n.d. Web. 9 Sept. 2014. <http://www.kilgore.edu/current-students/student-services/ranger-ride>.
[14] "EasTexConnects." EasTexConnects. East Texas Council of Governments, n.d. Web. 9 Sept. 2014. <http://www.etcog.org/511/EasTexConnects.htm>.

To address the six regional priorities, a Regional Transportation Coordination Transportation Plan was formulated in 2006 and updated in 2011 to reflect the current needs of the region. This plan, created by Moore & Associates in conjunction with the East Texas Council of Governments (ETCOG), highlights and improves on many of the same objectives in the previous plans. The plan was broken into six sections to document existing conditions, needs, implementation, and more. In order to achieve the objectives of the Regional Coordination Plan, the consulting group identified all forms of transportation within the region. The needs, inventory, and target populations of each of these agencies was then compiled and analyzed to find strategies for improvement. This resulted in marketing strategies, coordination strategies, and implementation plans.

Moore & Associates also produced a Marketing and Outreach Plan that coincides with the Regional Coordination Plan. This plan identifies the demographics of the population in order to effectively market transit services in an appropriate manner. The planning region comprises 14 counties and each have distinct demographic profiles that affect who uses transit and how. This Marketing and Outreach Plans take these data to offer effective communication and advertising strategies for the region. The plan also gives the cost associated with the recommended strategies. This becomes the foundation for a budgeted plan for use by the region, not individual agencies.

Accomplishments of EasTexConnects are:

- Regional Transportation Coordination Plan
- Marketing and Outreach Plan
- Regional Mobility Guide, listing transportation providers in the region
- Basic Training brochure for riders new to transit
- Regional Maintenance and Refueling Program
- Quarterly driver safety training for all transportation providers
- Marketing and Outreach videos for each of the 14 counties
- EasTexConnects website
- Coordinated Customer Service and Regional Transfer Plan
- Marshall depot accessibility improvements

In 2013, a team from the Texas Transportation Institute researched and formulated the Coordination Strategies Report for EasTexConnects. For each of the six original goals, the Coordination Strategies document clearly identifies the goal, objective, background, strategies, activities, expected outcomes, responsibility, time line, and estimated fiscal impact. The Coordination Strategies are broken up in to short-term (1 year horizon), mid-term (2 - 5 year horizon), and long-term (6 - 10 year horizon). Examples of these strategies include a regional call center, online regional trip planners, and the encouragement of MPOs to promote transit-oriented development (TOD). Because MPOs do not directly affect the day to day operations of transit providers in the region, developing plans for TOD in the planning boundary can assist the growth of transit services and providers. According to the plan, the MPO can be most effective by facilitating coordination between local transit agencies with state and federal government entities. Also, the Longview MPO can pursue TOD within the Longview area. EasTexConnects is the conduit by which the region's transportation providers, and interested parties, come together in a collaborate environment to work together to seek transportation solutions for the 14-county East Texas region.

Intercity Bus

Greyhound

Greyhound bus, a popular intercity bus service, operates in Longview on a daily basis. In 2013, the bus service moved station operations from E. Magrill Street to 908 E. Pacific Street. The station was located on Magrill for over 50 years before it moved. It now shares its' new location with Longview Transit and the Amtrak Station. This is a step in the direction to make that site a hub for multimodal transportation in the region. The city set aside $50,000 to renovate the existing space to have it operate as the Greyhound terminal.

The service currently operates 10 buses each day. These buses make nationwide and international connections throughout North America. The station recorded around 40 passengers per day that were entering and exiting the buses. The services operate from about 8:00 in the morning until 11:00 at night.[15] The hope with the move from their old location, is to produce interconnectivity between several forms of transportation at a singular location in the region.

Passenger Rail

Passenger rail is the utilization of railroad lines as a form of transportation. While conventional passenger trains are capable of running at speeds up to 100 mph, they are often slower as the tracks they run on are not designed for high speed and they rely on the clearance from the track's owner. This causes lack of convenience compared to automobile transportation. In addition to the current lack of efficiency, the vast majority of the 22,000 miles of track that offers passenger rail service is owned by freight railroad companies. This causes congestion as the types of rail must share the track, with freight taking priority. To alleviate the problem, rail sidings, double tracking and new rail must be constructed. This is a cumbersome endeavor for the entities involved that requires a significant expense.

Amtrak

The subsidized passenger rail service, Amtrak, makes the largest portion of the market in the United States and is the sole provider of passenger rail in Texas. Nationally, rail travel in the north east U.S. has the highest percentage. In recent years, Texas has seen a surge in ridership. In the 2013 fiscal year, Amtrak recorded ridership numbers in excess of 31.6 million nationwide and 445,054 riders in Texas.[16]

Amtrak passenger rail service provider

Longview is home to an Amtrak station along the Texas Eagle route, operating two trains per day, seven days a week. The Texas Eagle is a 1,306-

[15]"Greyhound.com | Longview, TX." Greyhound.com | Longview, TX. N.p., n.d. Web. 9 Sept. 2014. <https://www.greyhound.com/en/locations/terminal.aspx?city=681770>.

[16]"AMTRAK SETS RIDERSHIP RECORD AND MOVES THE NATION'S ECONOMY FORWARD." News Release. N.p., n.d. Web. 14 Sept. 2009. <http://www.amtrak.com/ccurl/730/658/FY13-Record-Ridership-ATK-13-122.pdf>.

mile passenger train route operated by Amtrak in the central and western United States. Trains run daily between Chicago, Illinois, and San Antonio, Texas, and continue to Los Angeles, California, 2,728 miles total, three days a week, incorporated as part of the Sunset Limited. For connections east and south, Amtrak's thruway charter buses depart the Longview station for the Shreveport Regional Airport twice each day and depart for Houston once a day.[17]

By the numbers

14	Number of trains per week at Longview train station.
4	Rank of station by ridership in Texas
113	Riders per day at the Longview station
8	Number of America's 20 largest cities connected by the Texas Eagle route thru Longview.
42	Number of Amtrak bus trips connecting Longview multimodal center, Shreveport Airport, and Houston per week
33%	Reduction in energy consumption per passenger mile by using passenger rail instead of automobiles.

High-Speed Passenger Rail

Details & Cost

High Speed Passenger Rail (HSR) is the utilization of rail tracks to accommodate trains that travel at much higher speeds than conventional passenger rails. This allows for shorter commutes between major metropolitan areas. High speed rail has become very common in European and Asian countries. The benefits of HSR include promoting economic expansion, including new manufacturing jobs; it creates new choices for travelers in addition to flying or driving, it reduces the national dependence on oil and fosters urban and rural community developments. HSR technology is green and energy efficient. It is estimated that if lines are built on all federally-designated corridors, it could results in an annual reduction of 6 billion pounds of carbon dioxide emissions.[18] However, HSR in the United States has been a slow and arduous process for all levels of governments. One of the biggest hurdles has always been cost. For example, the three legged 'Texas T-bone' project linking Dallas, Houston, San Antonio, and Austin is estimated to cost $24 billion.[19] The approximate distance of the three legs combined is 419 miles. This equates to roughly $57 million per track mile. The High Speed Rail project gaining the most momentum is the Texas Central Railway's Houston to Dallas route, which is privately funded. Texas Central Railway's officials have proposed a $10 billion line connecting Houston to the Dallas/Fort Worth metroplex by 2021. The company is in partnership with Japan's JR Central Railway to use the same technology featured on the Tokyo to Osaka high speed route. A federal environmental study is underway, although a specific route alignment has not been released.

[17]"Welcome aboard!." Amtrak's Texas Eagle. Amtrak, n.d. Web. 9 Sept. 2014. <http://www.texaseagle.com/.>.
[18] Lee, Jesse. "A Vision for High Speed Rail." The White House. The White House, n.d. Web. 9 Sept. 2014. <http://www.whitehouse.gov/blog/09/04/16/A-Vision-for-High-Speed-Rail>
[19] MacKechnie, Christopher. "Profile of the Texas High Speed Rail "T-Bone"." About Money. N.p., n.d. Web. 9 Sept. 2014. <http://publictransport.about.com/od/Transit_Projects/a/Profile-Of-The-Texas-High-Speed-Rail-T-Bone-Project.htm>.

Many proponents of HSR suggest the benefits are relative to the costs. Planning theory also sees these benefits by examining successful examples found around the developed world. Seeing the connections to be made between rail, air, buses, etc. can create exciting opportunities within dense urban areas. HSR can enhance the movement of goods and people, shift trucks and people from highways to railroads and will benefit the entire region per infrastructure dollar. While the initial cost is high, these added benefits will be valuable to urban areas decades later.

Existing Lines

There is currently one high speed rail line in the United States. Amtrak operates an 'Acela Express' which runs from Boston to Washington D.C. It services the major cities of Baltimore, Philadelphia, and New York City in between. This route was created by the electrification of designated rail lines to allow for the train. However, with train congestion in that region, the Acela faces lack of the consistent high speed that is desired by many. The Longview area faces a similar challenge in the creation of an East-West high speed rail connection. The lack of suitable rail lines and congestion of existing rail facilities has severely hampered growth. In addition, funding for such projects has been scarce. It wasn't until President Obama's 'Vision for High-Speed Rail in America' and the American Recovery and Reinvestment Act of 2009 that high speed rail starting gaining momentum.

Policies

The 'Vision for High-Speed Rail in America' is a strategic plan to build a high-speed rail network in the United States. The report formalizes the identification of ten high-speed rail corridors as potential recipients of federal funding. The idea behind the report is to reduce less sustainable forms of transportation, especially across long distance. Selling points for the plan included this quote, "What we're talking about is a vision for high-speed rail in America. Imagine boarding a train in the center of a city. No racing to an airport and across a terminal, no delays, no sitting on the tarmac, no lost luggage, no taking off your shoes. Imagine whisking through towns at speeds over 100 miles an hour, walking only a few steps to public transportation, and ending up just blocks from your destination. Imagine what a great project that would be to rebuild America."[18]

Acela Express at Baltimore/Washington International Airport Station.

The American Recovery and Reinvestment Act (ARRA) was a stimulus bill to help the U.S. economy during the 2008 economic downturn.[21] Included in this was $850 million appropriated to Amtrak. This money was to be allocated for funding to rebuild and modernize infrastructure, equipment, and business systems. The Longview Amtrak station was awarded $25,000 of these funds for signage renovations. While not improving the rails themselves, this was a step forward in the re-branding of Amtrak as a popular and efficient form of long-distance transportation. Additional funding can be approved if comprehensive planning has been conducted in the study

[18] Lee, Jesse. "A Vision for High Speed Rail." The White House. The White House, n.d. Web. 9 Sept. 2014. <http://www.whitehouse.gov/blog/09/04/16/A-Vision-for-High-Speed-Rail>

[21] "Track the Money." Recovery.gov. N.p., n.d. Web. 9 Sept. 2014. <http://www.recovery.gov/arra/Pages/default.aspx>.

corridor. These studies have been slow to come to fruition because of the multiple parties involved. These funds along with the Multimodal Center renovations makes Longview a better candidate for high-speed rail initiatives.

High-Speed Rail Corridors

With the funding opportunities in place for municipalities, the federal government has designated high speed rail corridors along or near existing rail lines.

In 1992, the U.S. Department of Transportation initiated a high speed rail corridor program under the Intermodal Surface Transportation Efficiency Act (ISTEA). This program designated corridors and established a special program to fund safety improvements at highway-rail grade crossings on corridors based on their present utility and their potential for future development. Corridors were selected based on projected ridership, public benefits, and anticipated partnership of states, localities and the freight railroads. The Longview Metropolitan Area is in close proximity to the South Central Corridor. The South Central Corridor consists of a hub at Dallas/Ft. Worth with spokes extending to Oklahoma City and Tulsa to the north, Texarkana and Little Rock to the east and northeast, and Austin and San Antonio to southwest. Currently, Amtrak serves these cities with the long-distance train, the Texas

Eagle and the shorter route of the Heartland Flyer.

While the corridors have been established in the United States, no authorization for funding was reached in the latest federal funding bill. MAP-21 did not authorize a discretionary grant program to fund the construction of high-speed and intercity passenger rail. If such a program were to be included, it would have been a breakthrough in establishing a fully coordinated federal program for development of connected high-speed rail systems.

Planning & Advocacy Groups in E. Texas

Ark-La-Tex Corridor Council

The Ark-La-Tex Corridor Council is a non-profit, regional coalition for capacity investments to implement higher speed rail incrementally for the 7 million residents along the Interstate 20 and Interstate 69 corridors from Dallas/Ft. Worth to connect with Arkansas and Louisiana. Founded in 2004, the corridor council includes 35 municipalities between Fort Worth and Shreveport and north to Texarkana concerned with increasing the efficiency and capacity of rail service in East Texas.

The goals of the ALTCC are focused on rail capacity improvements in the East Texas region with a primary focus to double track Union Pacific rails between the Dallas/Fort Worth metroplex and Shreveport-Bossier City with a connection at Marshall, north to Arkansas. Project phasing of a double track project in sections would be the most cost effective way of improving the rail line. In 2007, the Ark-La-Tex Corridor Council was awarded a grant of $455,000 and in 2008, a $285,000 federal grant to fund a feasibility study for higher-speed passenger rail along the Interstate 20 corridor between Dallas & Shreveport. Working closely with the Texas Department of Transportation's Rail Division, in 2012, the rail feasibility study began. The scope of the Amtrak Corridor Study is to investigate the feasibility of two additional passenger rail round trips per day on the existing Union Pacific rail line between Fort Worth and Shreveport. The study will estimate the order of magnitude capital improvements and operating costs needed to provide two additional round trips and its impact to Union Pacific's freight rail. The study will consider factors such as potential schedules, train operating costs, revenue, ridership, rail car and locomotive requirements, and capital needs for route infrastructure improvements to accommodate the two additional passenger round trips.

The Ark-La-Tex Corridor Council recognizes the importance of both passenger and freight rail services. Collectively, they are important components of the state's multimodal transportation system and a major player in expanding economic opportunity in Texas. Improving rail capacity is beneficial to both freight and passenger rail.

Texas-Louisiana Rail Coalition

The Texas – Louisiana Rail Coalition (TLRC) was formed in 2011 with the goal of facilitating communication and action between municipalities with rail corridors between the Dallas/ Fort Worth Metroplex and Shreveport/ Bossier City. Currently, there are two main goals of the TLRC as listed on their web page. The TLRC is made up of policy leaders and technical staff from agencies and municipalities along the corridor and is focused on implementation and development of a funding strategy for a future passenger rail investment in East Texas. The TLRC grew out of a local cooperative agreement between the North East Texas Regional Mobility Authority (NETRMA) and Dallas Area Rapid Transit (DART).

Members to date include the NETRMA, DART, East Texas Council of Governments, North Central Texas Council of Governments, and the cities of Longview, Mesquite, Mineola, Terrell, Tyler, Longview MPO, Tyler MPO and Smith County.

The T-L Rail Coalition is currently monitirng two studies in the East texas region. An Amtrak Corridor Study, which uses a grant obtained by the Ark-La-Tex Corridor Council (ALTCC), is being led by the Texas Department of Transportation (TxDOT) and Amtrak in coordination with the ALTCC and the East Texas Council of Governments (ETCOG). Also, the T-L Rail Coalition is also conducting a TxDOT Statewide Ridership Analysis. This study will examine city pairs and analyze transit connectivity and appropriate levels of service. The study will include a line from the Dallas area to Shreveport-Bossier City on the east end.

"These two efforts will provide insight as to the funding requirements to enhance rail service in the existing UPRR corridor, and will increase the understanding of the long-term service needs for a potential new rail corridor through east Texas within a broader corridor linking the two urban areas. Most importantly, they will lay the groundwork for future implementation efforts to bring a more reliable and enhanced passenger rail service to this part of Texas and Louisiana."[22] Future passenger rail could use the existing Union Pacific/Amtrak railroad corridor, or if warranted, develop a new east-west corridor to link East Texas communities with the DART transit system and the Shreveport-Bossier City area.

Air Travel

Air travel provides customers with fast, efficient travel between urban centers that can sustain commercial air travel. Commercial flights have also been deemed the safest way to travel. The odds of a fatality occurring during a commercial flight is 1 in 7 million. While the chance of fatality while driving is averaged around 1 in 14,000. A person is more likely to be struck by lightning than to be killed during a commercial flight. Though it is the safest and fastest form of travel available, it is also very costly. The average one-way fare from the Dallas-Fort Worth Airport is upward of several hundred dollars. Prices depend on length of flight, time of day, number of stops, quality of service, etc. These prices can deter some lower to middle income individuals from using this service.

While airports support general aviation of locals, not all are suited for commercial travel. There are two airports located within the Longview Metropolitan Planning Boundary; Gladewater Municipal Airport and East Texas Regional Airport with the latter servicing commercial flights.

Local Airports

Gladewater Municipal

Gladewater Municipal Airport, located on State Highway 271, southwest of Gladewater, Texas, focuses on general aviation and recreational activities such as skydiving. The Civil Aeronautics Administration, the Texas Department of Aviation, and the City of Gladewater provided the necessary funds to purchase the land and construct the facilities. Gladewater Municipal Airport is owned by the City of Gladewater and is a public-use general aviation airport located in Gregg County, Texas. The airport operates two asphalt runways: Runway 14/32, which measures 3,299 feet in length and 75 feet in width; and Runway 17/35, measuring 2,298 feet in length and 50 feet in width. The airport also consists of a terminal building, two runways, six enclosed city-

[22] "TX-LA Rail Coalition." Northeast Texas Regional Mobility Authority. N.p., n.d. Web. 14 Sept. 2009. <http://www.netrma.org/tx-la-rail-coalition>.

owned hangars, ten T-hangars and 49 privately owned hangars. It is an important economic generator for the city as it generates more than $3.2 million in total economic output, 34 full-time jobs, and close to $1 million in payroll.

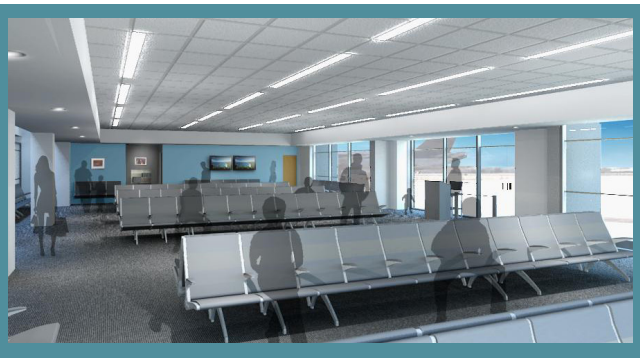
East Texas Regional Airport

The East Texas Regional Airport, located on State Highway 322, four miles south of Longview, is serviced by one commercial airline, American Eagle, with two arriving and two departing flights to the Dallas/Fort Worth Airport daily. Owned by Gregg County, the airport was officially opened on July 15, 1947 and is operated by the Gregg County Commissioner's Court. The airport has been serving the residents of East Texas for over 60 years.

The airport is served by two runways; the longest is 10,000 feet and the other is 6,100 feet in length. Because of its exceptional runways, the East Texas Regional Airport has been used as a military training facility and is capable of handling nearly any type of aircraft, including the space shuttle and Air Force One. During the days of space shuttle operations, the airport operated as an alternate landing site for the shuttle.

In 2014, construction was finalized on a $3.3 million renovation project for the airport passenger terminal. The project enlarged the passenger waiting area, added a larger baggage carousel, remodeled the front building facade and created a sky bridge for covered passenger boarding.

American Eagle currently uses Embraer ERJ-145 regional jets to connect passengers from East Texas Regional to Dallas-Fort Worth International Airport. These planes seat up to 50 people and are an upgrade from the previous EMB-145 model. These jets are less fuel-efficient than the turbo prop planes that were used prior. This is because of the short distance to DFW, the jets do not reach an altitude where their engines are most efficient. However, the increase in capacity allows for less flights with a similar number of passengers being served.



Passenger enplanements (departing passengers) have decreased every year since 2009 according to the FAA. In 2009, the enplanements were recorded at 24,944. In 2012, the number dropped to 18,787. This is a decrease of 6,157 or 25%.[23] The reason for this drop can be misleading. In the past three years, American Eagle has been servicing less flights to and from the airport. While the larger jets allow for more capacity, a recent cut in the flight schedule keeps the planes at capacity but the enplanements are decreasing. The East Texas Regional Airport plans to increase activity in several ways. The terminal upgrades should give passengers a better experience and increase

[23] "Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports." Federal Aviation Administration. Federal Aviation Administration, n.d. Web. 14 Sept. 2009. <http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/.>.

attractiveness of the airport. In addition, upgrades to local transportation to and from the terminal are currently underway.

There is currently a lack of transportation options connecting to the airport and needs to be remedied to increase passenger numbers. In 2014, Longview Transit, the local fixed-route provider, submitted a request to the Federal Transit Administration to offer a shuttle service scheduled around the flight arrival and departure times. Due to the distance between Longview Transit services and the airport, the Federal Transit Administration did not approve the request for a shuttle service to the airport. In addition, the airport plans to add another rent-a-car service to give arriving passengers more transportation options. Currently, the airport sponsors Avis as a car-rental agency in their terminal. The airport also has taxi and limousine service in the area that can be used as transport to and from the terminal. For individuals who have personal vehicles, parking at the airport is free of charge.

Two-fixed base operators service the airport, supplying fuel, hangar space, flight school, charters and a maintenance facility. Other businesses furnish airport related services, including LeTourneau University's School of Aeronautical Science, which provides a flight school and mechanic training. In 2009, LeTourneau University moved its entire Aeronautical Science program to a 55,500 square foot facility at the airport. There are four classrooms, technical labs, conference rooms, a student lounge, and more located at their Abbott Aviation Center.[24] There are approximately 150 aircraft based at the airport, mostly private and corporate planes. On an annual basis, takeoffs and landings, also known as operations, number about 40,000 according to the FAA master records and reports.

The East Texas Regional is the site of a Foreign Trade Zone (FTZ). Also known as Free Trade Zones, FTZs are restricted-access sites that are treated as being outside the U.S. Customs Port of Entry. Foreign and domestic merchandise may be admitted into the Foreign Trade Zone for storage, manufacture or assembly without being subject to customs duties or taxes if the merchandise is exported from the United States.

Livability in Public Transportation

In a 'livable' city, connections are vital to ensure that members of the community that do not have and do not wish to use automobiles can access all parts of the city. Public transportation provides an affordable alternative to those who need it. There are also many more benefits that it can provide to make a city more sustainable and 'livable.' Some of the benefits include:

- Public transportation usage save approximately 4.2 billion gallons of fuel in 2013.
- Households near public transit drive an average of 4,400 fewer miles than households with no access to public transit.
- Public transportation use in the United States reduces our nation's carbon emissions by 37 million metric tons annually.
- Public transportation has a proven record of reducing congestion.
- From 2006-2011, residential property values performed 42 percent better on average if they were located near public transportation with high-frequency service.[25]

[24] "THE PAUL AND BETTY ABBOTT AVIATION CENTER." LeTourneau University. N.p., n.d. Web. 9 Sept. 2014. <http://www.letu.edu/_Academics/Aero-Science/AbbottCenter/.>.

[25] "Dump The Pump Transit Facts." Help Spread the Word About the Many Benefits of Public Transportation on National Dump the Pump Day. APTA, n.d. Web. 17 Sept. 2014. <http://www.apta.com/members/memberprogramsandservices/advocacyandoutreachtools/dumpthepump/Pages/TransitFacts.aspx>.

These benefits help create more environmentally- friendly and efficient communities. However, as discussed earlier in this chapter, transit-oriented development plays an integral role in the effectiveness of public transportation choices. Communities that are built around the usage of automobiles alone, such as suburban sub-divisions, struggle to integrate future public transportation options. The lack of density and multimodal features (e.g. sidewalks, bike lanes) make connections between multiple modes of transportation more difficult.

Planning Practices

To increase the effectiveness of public transportation in the area, several planning practices can implemented. Some examples of these practices are listed below:

- Utilize public transportation to interconnect different types of facilities.
  - An example of this would be using local transit buses or private shuttle service to connect the passenger rail center to air travel.

- Promoting transit-oriented development regulations through the city's planning and development offices.
  - Set standards for new development and redevelopment to increase the effectiveness of public transportation within the urban core.

- Coordinate data collection and analysis from the regional transportation providers and local agencies to identify possible correction in inefficiencies between services.

- Promote the benefits of public transportation to local groups/ businesses to expand ridership.
  - Coordinating services with large employers offers workers reliable transportation.

Public Transportation Goals

- Maintain, develop, and expand existing Longview Transit services that will increase transit options for the aging community and general public while increasing ridership.

- Explore opportunities to reduce one-hour transit route headways to 30-minutes to increase ridership.

- Help local agencies identify special needs populations within to region to increase service to individuals with limited transportation options.

- Develop methods of connecting local public transportation options to East Texas Regional Airport.

- Investigate the feasibility of an incentives to encourage use of public transportation as an alternate form of transportation.

Multimodal Studies & Improvements

Multimodal Center

Construction of the Texas & Pacific/Missouri-Pacific passenger station was completed in May 1940. Located at 905 Pacific Ave., the building is approximately 9,300 square feet and currently serves Amtrak passenger rail and as a communication site for Union Pacific Railroad. From 1990 to 2013, only a small portion of the building was occupied by Union Pacific for office use and as an Amtrak passenger waiting room.

Postcard of original depot in the 1940s.

In 2002, a master plan for the restoration and rehabilitation of the Historic Texas & Pacific / Missouri- Pacific passenger train station was completed by Gerald Bratz, Architect. The master plan was initiated by the City of Longview to determine the feasibility for restoring and adapting the structure as a transportation center. The study formed a part of the Longview 21st Century Steering Committee's report. The master plan recommended returning the circa 1940 structure to its original condition with strict attention to historical accuracy. The plan also recommended adapting the use of this facility from strictly a passenger rail station to providing services for multiple modes of transportation. The study proposed the full utilization of the building with services that will enhance transportation convenience and efficiency while securing its place in history. The historical aspect of the transportation center serves as a reminder of the advancement of ground transportation in the last 70 years. The historical interpretation links past generations of travelers with the present while serving as an integral part of surface transportation. By using original 1940 blueprints, the master plan included an adaptive reuse that is beneficial to the user and functions as a living interpretation of history. Union Pacific Railroad recognized the importance of this project and transferred ownership of the depot to the City of Longview in October 2009.

In 2010, the multimodal center project received funding from the Transportation Enhancement Program (TE), now known as the Transportation Alternatives Program (TAP), to restore and renovate the historic train station. In addition to the $2.1 million of TE funds, the City of Longview also contributed $550,000 to the project. During 2013 and 2014, the dilapidated 9,300 square foot depot was restored to its historic condition and renovated to increase the passenger waiting room area from 400 to 1400 square feet. In May 2014, the Longview Multimodal Center opened for service. In a ceremony during Historic Depot Days, the renovated building was rededicated on May 10, 2014.

As the focal point for the transportation hub, the multimodal center enhances the connectivity of Longview Transit, Amtrak passenger rail, Greyhound Bus, local taxicab services, and other transportation providers. Future plans include providing a shuttle service to connect to the East Texas Regional Airport. The traveler is the greatest beneficiary from this project in the form of increased efficiency and improved convenience. The multimodal center improves

accessibility, safety, security and mobility options for the traveling public.

The restoration of the 70 year old historic train station has the potential to spur economic development and revitalization of the surrounding properties. The City of Longview bond program has funded street improvements to Cotton St., just to the south of the depot. Improving the building and landscaping of the multimodal center will encourage other property owners to do likewise. With the City's transit offices and bus stop located adjacent to the train station, Longview Transit plans on being the connecting link to provide step-on tours and transportation to dining and shopping destinations. The nearby historic "Junction" is an area that is currently being restored as well as vacant buildings nearby to provide services within walking distance from the depot. The South Longview community will be able to use this project to launch new opportunities that will improve the economics of the area. As a transportation hub, the multimodal center has the ability bring in an influx of people to the immediate area, thus creating the need for supporting services, dining and convenience items, and boosting the economic climate.

To enhance the multimodal center's surrounding area, Longview Transit, which currently occupies the space, has begun preliminary planning on a redevelopment of their facility. This redevelopment would alter their driveway access from Pacific Ave. to Mobberly Ave. and add bus terminals for Longview Transit buses and Greyhound. Longview Transit will need to demolish a building structure to make way for the renovations. The goal of this renovation is to move the Longview Transit transfer center from Magrill Park to the Pacific Ave. headquarters. This, in turn, would make the area more akin to a 'true' multimodal center.

East Texas United Route

The East Texas Council of Governments (ETCOG) is evaluating the feasability, with coordination from multiple agencies in the region, of a regional GoBus route. The route is designed to unite the two largest urbanized areas in East texas through regional transportation coordination. The route will directly address the issues regarding the transition of funding from rural demand response to the urban public transportation providers. This shift was due to the expansion of the Urbanized Zone Areas (UZA) after the completion of the 2010 U.S. Census.

The total population of this 14-county area, according to the 2010 Census, was estimated at 829,749. Of that population, 229,131 live in an urbanized cluster. This represents a 4% increase in UZA population from 2000.

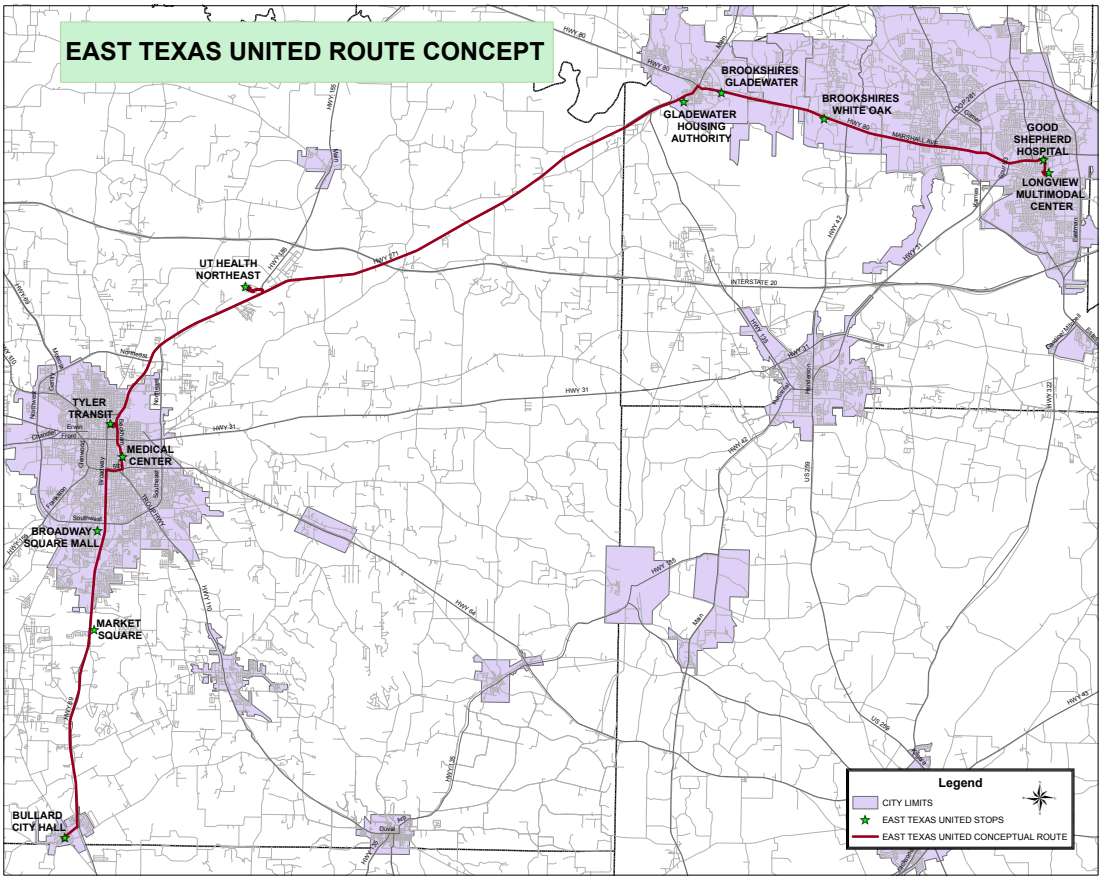
This growth affects the rural transit provider GoBus by limiting the response area, but also puts a strain on urban providers, which included Tyler Transit and Longview Transit.

The East Texas United Route seeks to aid those who are in need of regional service but are now within the newly designated UZAs. The route would run from the Longview Multimodal Center, through White Oak, Gladewater, along Hwy. 271 to Tyler Transit, then through Tyler along Hwy. 69 ending its route in Bullard. This route was originally conceived to run each direction twice a day. This would allow for residents needing to make return trips able to do so.

This route requires extensive coordination between transportation providers in the region to make seamless transistions between the rural service to urban providers. This coordination is

being investigated by the East Texas Council of Governments (ETCOG) and the regional transportation coordination agency EasTexConnects.

This route would further the ability of rural residents in the Longview and Tyler areas to travel regionally and connect to multiple forms of transportation conviniently. A conceptual map of the route can be found below.



Pedestrian-Transit Access Study

In conjunction with Longview Transit and the City of Longview, the MPO contracted consultant group Freese & Nichols (FNI) to complete a study that was intended to identify the barriers that exist for pedestrians between the origins and destinations along three primary corridors of Longview Transit's fixed routes.

The Pedestrian Transit Access Plan focused on identifying potential capital improvements along the focus corridors that will (1) connect current land uses with transit stops; (2) connect market segments, such as LeTourneau University, retail centers, medical facilities and the Lear Park complex, to the multimodal complex; (3) and create improved, safe, ADA-compliant, and attractive passenger access. These pedestrian facilities were identified along the following corridors:

- Mobberly Avenue, from the Multimodal Center on Pacific Avenue to High Street
- Cotton Street, from the Multimodal Center on Pacific Avenue to Loop 281 (Lear Park)
- Fourth Street, from the Multimodal Center on Pacific Avenue to Hawkins Parkway

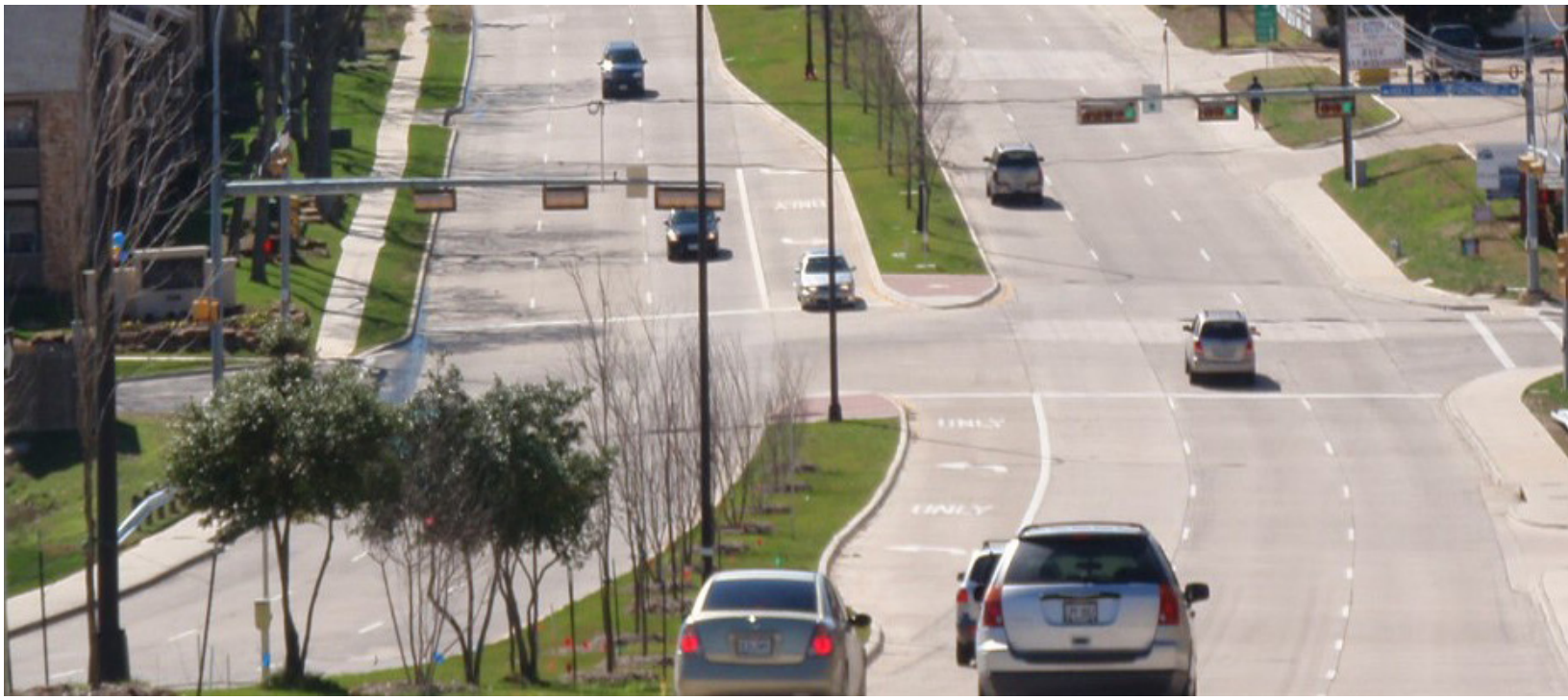
FNI looked at these corridors to improve mobility of the area. Radii around several transit stops were identified. Within these radii, current and potential destination with high pedestrian traffic were identified. Needs were identified and capital improvements were suggested. These improvements catered to the context of the area and destination type. Improvements included curb ramps, pedestrian heads, crosswalks, HAWK signals (user-activated signalization device that allows for street crossing movement), signage, and more.

The plan identified the improvements for each area and included the associated costs. Using the cost, among many other factors, the project locations were prioritized and split into short, medium, and long range periods. The total cost new construction totaled $2,039,200. The cost to replace existing infrastructure that was not ADA compliant or in poor condition along the three corridors totaled $476,640. The plan identified the top three locations for improvements are:

- High Street at Kilgore College - $14,970
- High Street at College Street - $52,010
- Lake Lamond at Temple Street - $10,770

Lastly, the plan provided possible funding opportunities for these types of capital improvements. They included local and non-local sources, such as bond elections, and federal programs such as the Transportation Alternatives Program (TAP). Because of locational factors associated with many of the projects, funding categories were split further into prime and non-prime funding opportunities. Locations that are located near trails may qualify for National Recreational Trails Funding (NRTF), while man y other locations would not be eligible for this funding. A full copy of the Freese & Nichols/ City of Longview Pedestrian Transit Access Study can be found through the Longview MPO office or at mpo.longviewtexas.gov.

CHAPTER 7 – STREETS & HIGHWAYS



Streets & Highways

A well-planned and designed transportation network of streets and highways is the lifeblood of the community and local economy. Investments in our transportation system are essential to sustained regional job creation, economic prosperity and quality of life. In order to develop a sound transportation plan to meet the mobility needs of the greater Longview area, it is critical to forecast future growth and forecast traffic on major streets and highways throughout the region to determine the demand for transportation facilities.

Technical Evaluation of Roadway Projects

Forecasting Future Traffic

Travel demand modeling is an important tool in the analysis of transportation projects. Modeling results are useful during the technical evaluation of candidate transportation projects. The Longview Metropolitan Transportation Plan was developed using several tools, including the Longview Travel Demand Model created by the Transportation Planning and Programming Division of the Texas Department of Transportation. Travel demand modeling uses a mathematical process to replicate observed travel patterns under existing demographic conditions, and then assigns future traffic to the street network based on projected demographic conditions. The model can then be used to locate corridors with future congestion problems and test alternatives for reducing congestion, such as building new thoroughfares or increasing capacity of existing roadways.

Travel Demand Modeling - The Process

The Longview Metropolitan Organization utilizes TransCad 6.0 and runs the three-step modeling process in a colloborative effort with the Texas Department of Transportatrion. The travel demand model forecasts trips in the region based on a number of factors. The primary method that trips are forecasted in the region is based on future projections of population and employment. These projections help to determine how many trips are going to be produced on a daily basis and where these trips are going. The model was used to forecast trips that people take on a daily basis within and between the cities of Gregg and Harrison counties.

The travel demand model uses a series of mathematical models that simulate travel on the transportation system. The model divides the region into traffic analysis zones or TAZs which have specific demographic and land use data associated with them and are used to determine trip demand and travel patterns. The modeling process encompasses the following three steps:

- Trip Generation – the number of trip produced and attracted to a destination or zone.
- Trip Distribution – the estimation of the number of trips between each traffic analysis zone or in other words, where trips are going.
- Traffic Assignment – the amount of travel or number of trips that is loaded onto the transportation network through path building and is used to determine network performance.

Products of the travel demand model are 24-hour traffic volumes that show the "demand"

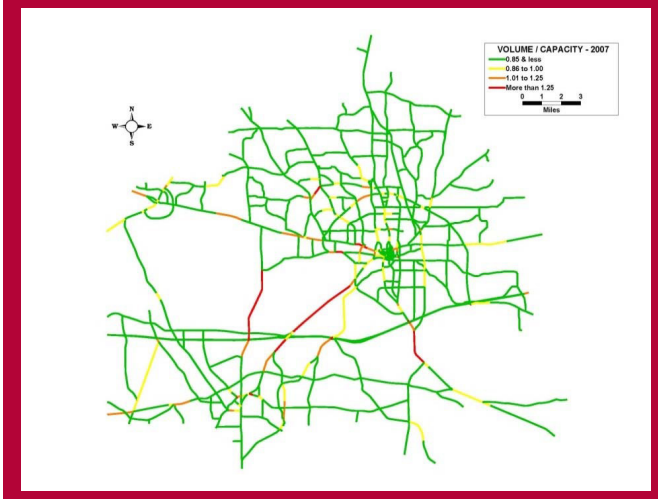
on the major street and highway network that is produced as a result of future growth and assigned trips. The more desirable a roadway is; the higher daily volume will be produced on the road. There is a clear connection between traffic volumes and travel time in most regional travel demand models. The faster the path, the more trips it will attract. This is evident when looking at higher functional classification roadways, such as interstates, principal arterials, which have higher speeds.

Each individual roadway or model network link in the travel demand model has an associated capacity assigned to it. The roadway capacity is based on the functional classification, the area type (urban, suburban or rural) and the number of lanes. The roadway capacity is the "supply" of the thoroughfare network, or the amount of available daily trips that could occur along any particular segment.

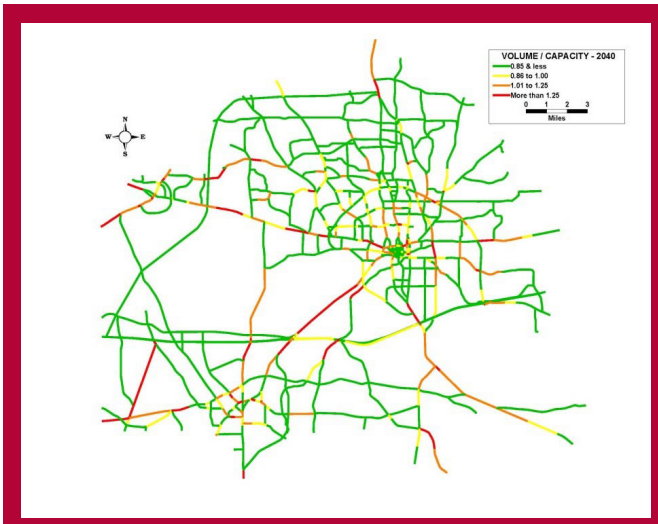
Traffic Congestion & Level of Service

Traffic congestion is a measure or an indicator that is analyzed as part of each model run or alternative analysis. It's also known as Level-of-Service (LOS) or Volume-to-Capacity ratio (V/C). LOS or V/C is a tool that is used to quantify traffic congestion along specific roadways and within the entire transportation network. LOS is calculated by dividing the traffic volume by the roadway capacity (V/C). Roadways are designated in a range of LOS A to F.

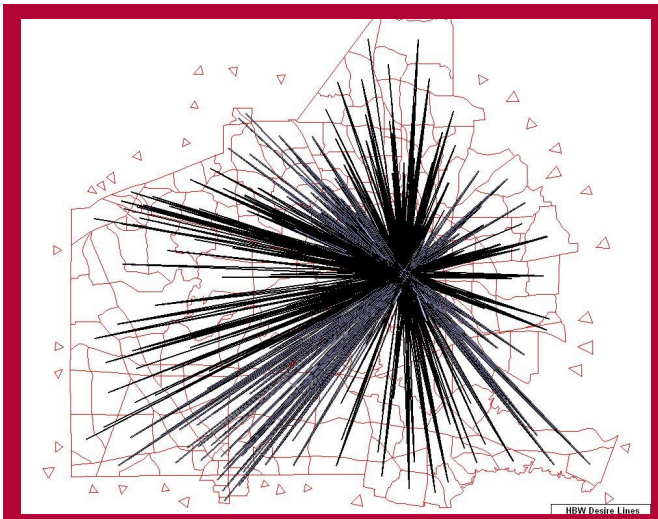
- LOS A represents a roadway where traffic volumes are much lower than the capacity for that roadway or free flowing.
- LOS F represents a roadway where traffic volumes are greater than the capacity of the roadway or extremely congested.



Assignment V/C Ratio Map (2007)



Assignment V/C Ratio Map (2040)



HBW Desire Lines

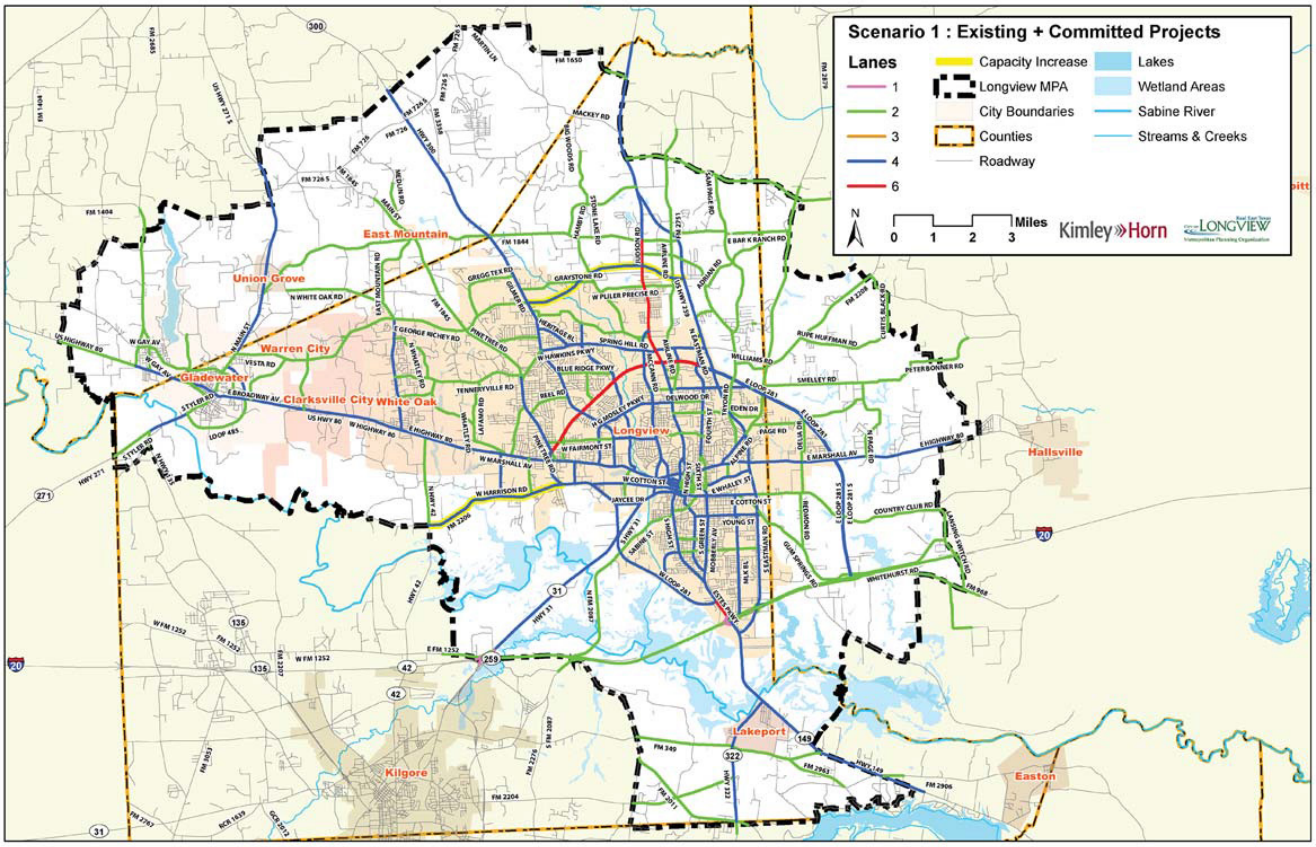
This indicator helps to balance where the demand exceeds the supply and to determine if additional capacity is needed, or if the demand is much lower than the supply and the capacity can possibly be reduced.

Alternative Analysis

Testing different corridor alternatives in the region is an important element of the transportation planning process. Alternatives Analysis examines the change in forecasted traffic volumes as unique alignments of future roadways and the expansion of existing roadway capacity is altered. To analyze future traffic demand, four transportation scenarios were developed and tested using forecasted 2040 demographic assumptions.

Scenario 1 - Existing Network + Committed Projects (No-Build Scenario)

The initial alternative to test in the travel demand model is with the future 2040 population and employment projections on the existing network plus committed projects. This involves looking at what the impact on traffic volumes and congestion would be if the future development was using the roads that existing today. Committed projects, such as those roadway projects included in the MPO Transportation Improvement Program were also included. This gives a clear indication of where the congested areas in the region are located.



Longview MPO Travel Demand Model - Scenario 1 run by Kimley-Horn & Associates

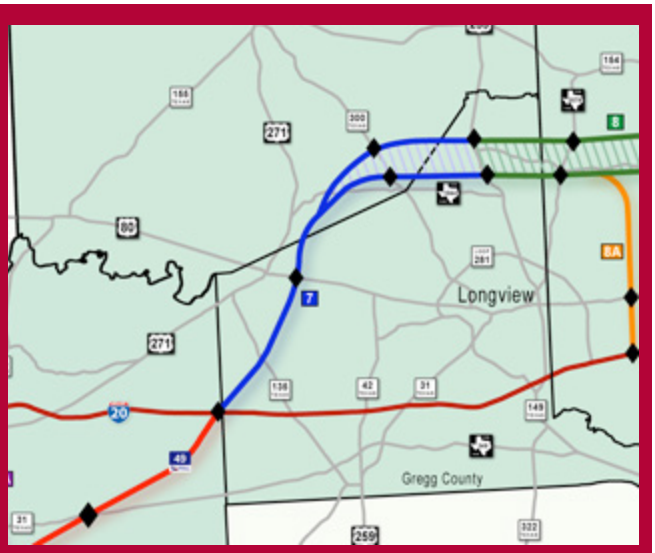
Scenario 2 - Build-Out Network

The Scenario 2 network was developed with the assistance of the MPO Technical Committee on May 20th, 2014. During a work session with this group, they were challenged to include all of the roadway improvements that were necessary and reasonable to be completed in the next 25 to 50 years. The purpose of this scenario was to not be fiscally constrained.

The Build-Out alternative scenario showed noticeable improvements in congestions levels throughout Longview and the MPO region. However, some of the primary arterials and highways were still generating results of C-F for the congestion levels.

Toll 49 Modeling Analysis

This model alternative included two analyzes; one version included the Toll 49 alignment through northern Gregg County and Upshur County, and one version did not include the Toll 49 alignment. The results of analysis did not demonstrate a need based on model volumes for an additional facility north of IH 20 to connect to the Longview region, at least in the next 25 years. The volumes on the modeled toll facility ranged from the high of 12,900 vehicles per day (vpd) to a low of 4,400 vpd. There were no changes in the regional congestion levels when comparing the Toll 49 model run with the model run that excluded the Toll 49 extension.



Original Toll 49 - Segment 7 alignment modeled

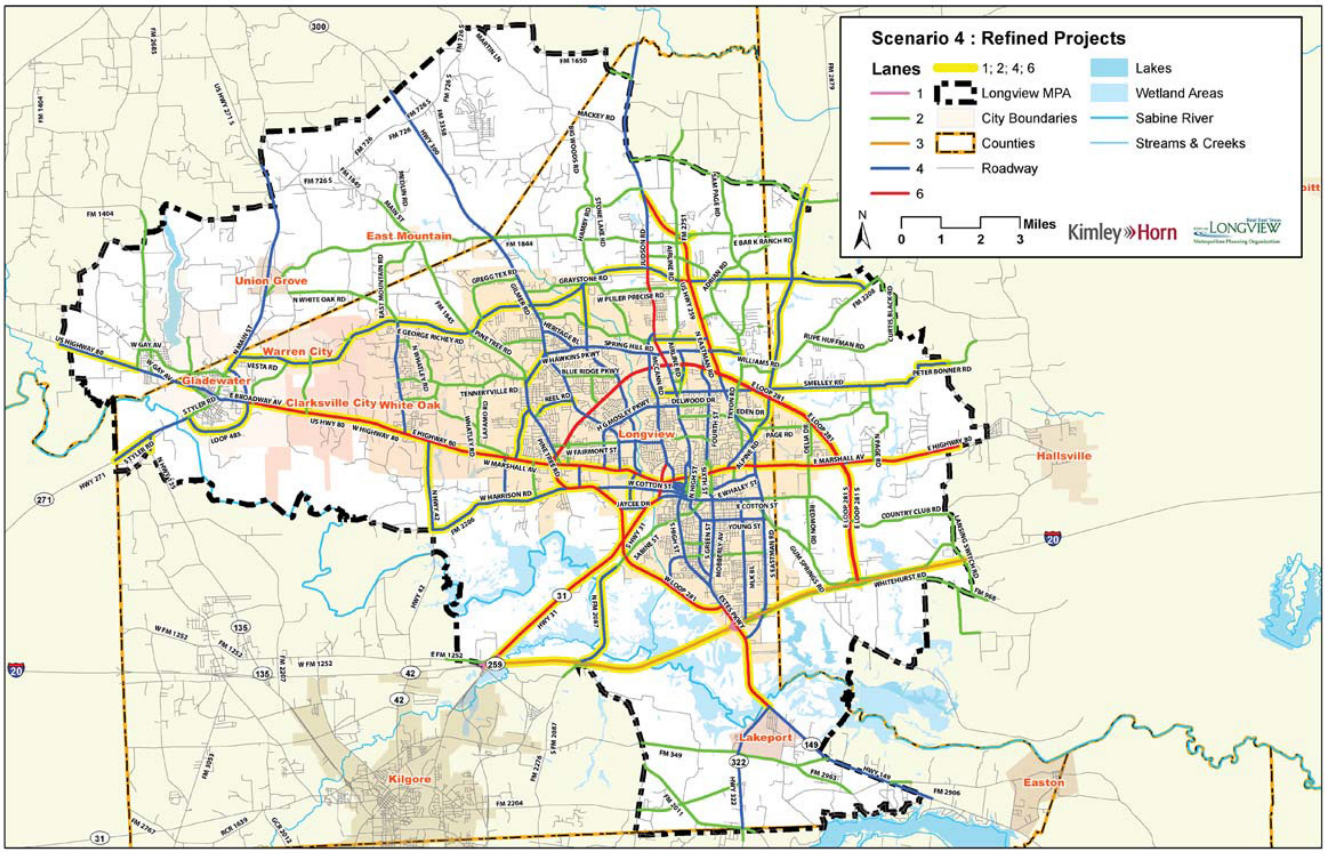
Scenario 3 - Adjusted Build-Out Network

After completing Scenario 2 and showing all of the potential improvements to the roadway network in the region, the 3rd scenario was used to adjust the roadways that may need to be improved further or scaled back, it was easy to see that some corridors did not need the added capacity as modeled in the build out and vice versa. From Scenario 2 to Scenario 3, greater improvements in congestion levels were achieved. Enhanced LOS occurred on the highways and other major corridors. Toll 49 was not modeled in this scenario due to the lack of volumes produced in the previous scenario.

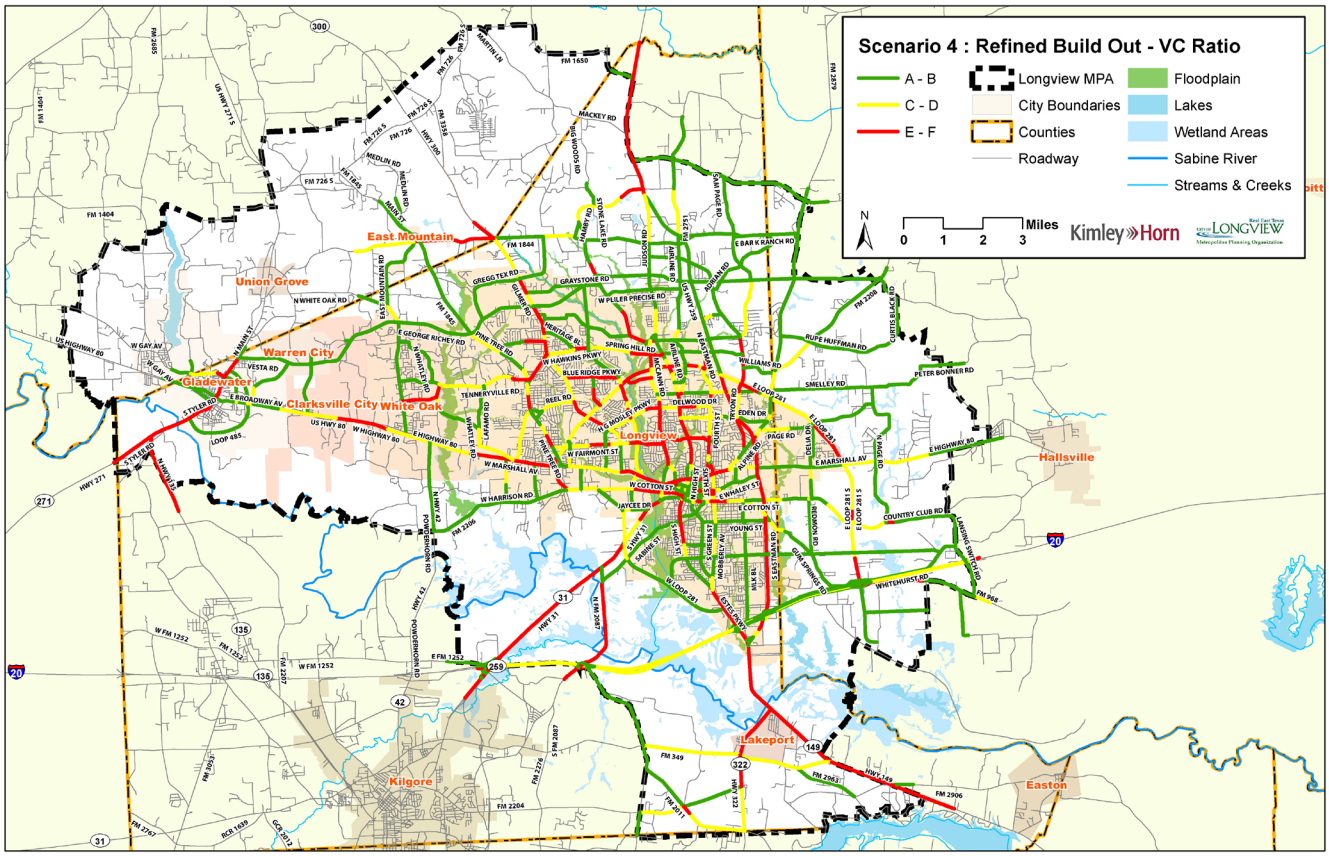
Scenario 4 - Refined Build-Out Network

Following the review of the Adjusted Build-Out network, a few roadways in the region were modeled with additional capacity to determine the comparison with Scenario 3. The results of this model alternative showed improvements along those corridors and resulted in better traffic performance. Toll 49 was not modeled in this scenario. The proposed Regional Thoroughfare Plan map is based on the number of lanes modeled in this scenario.

The comparison of these four alternatives created a process to develop a comprehensive plan for the Longview region. Using indicators of regional vehicle miles traveled (VMT), vehicle hours traveled (VHT), and delay, the thoroughfare plan was able to be refined to reflect the best possible scenario to improve the region's future traffic concerns.



Longview MPO Travel Demand Model - Scenario 4 run by Kimley-Horn & Associates (Top) Projects (Bottom) V/C Ratio



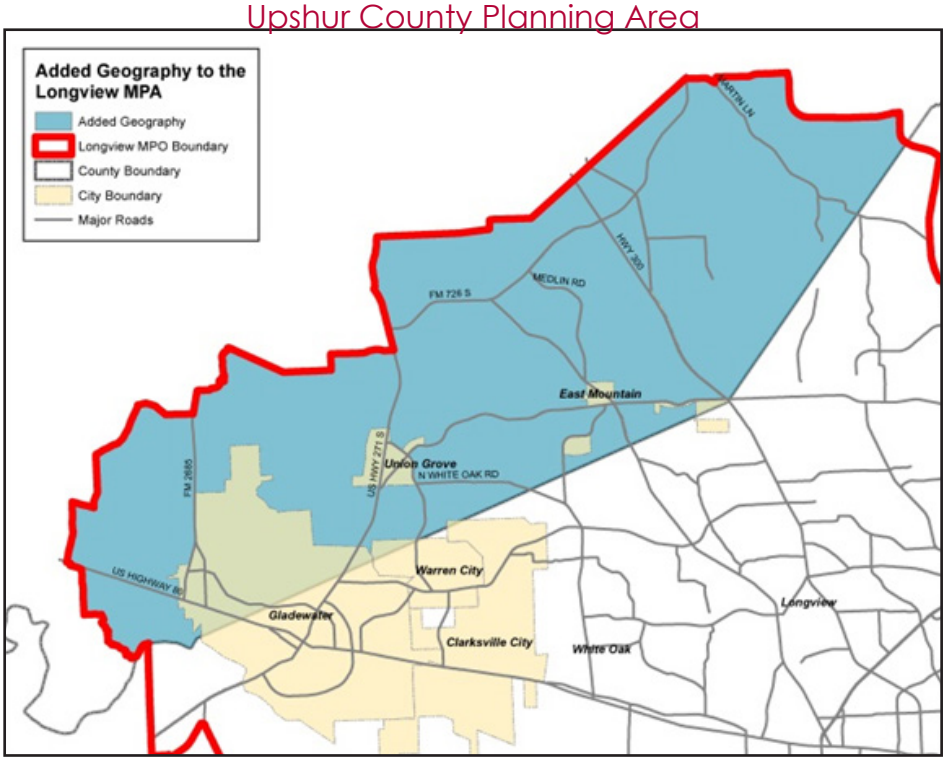
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Vehicle Miles Traveled	7,738,35	7,701,113	7,685,665	7,684,653
		(-0.5%)	(-0.7%)	(-0.7%)
Vehicle Hours Traveled (VHT)	287,345	261,775 (-10%)	258,269 (-11%)	258,980 (-11%)
Delay	96,718	72,229 (-35%)	69,242 (-40%)	69,928 (-38%)
Lane Miles Added	26.43	331.12	264.04	255.69

Off-Model Methodology

Background

The current Longview MPO Model as produced by the TxDOT TPP division was completed in July 2013 for the base year of 2007 and forecast years of 2012, 2020, 2030 and 2040. In November of 2013, the Longview MPO expanded its boundaries to include 55 square miles of Upshur Country on the south eastern portion of the county. This new geography includes a number of on-system roadways and the jurisdictions of Union Grove, East Mountain and the western portions of Gladewater. The land use in this portion of the MPO is rural in nature with low residential densities and very few employment generators. This newly added portion of Upshur County was not included in the current travel demand model analysis, however transportation impacts were considered for the MTP Update to improve mobility in this portion of the MPO area.

Upshur County Planning Area



Base Year Demographics

According to the 2010 decennial census, the portions of Upshur County that have been included in the Longview MPO boundary amount to an additional 3,500 households and an additional 8,600 in population. This is a small portion of the entire Longview MPO region which contains just fewer than 50,000 households and around 125,000 in population. The numbers of employees in this newly added area of the MPO are also few compared to the region of 85,000. According for InfoUSA data, there are currently 680 employees in the Upshur County portion of the Longview MPO planning area.

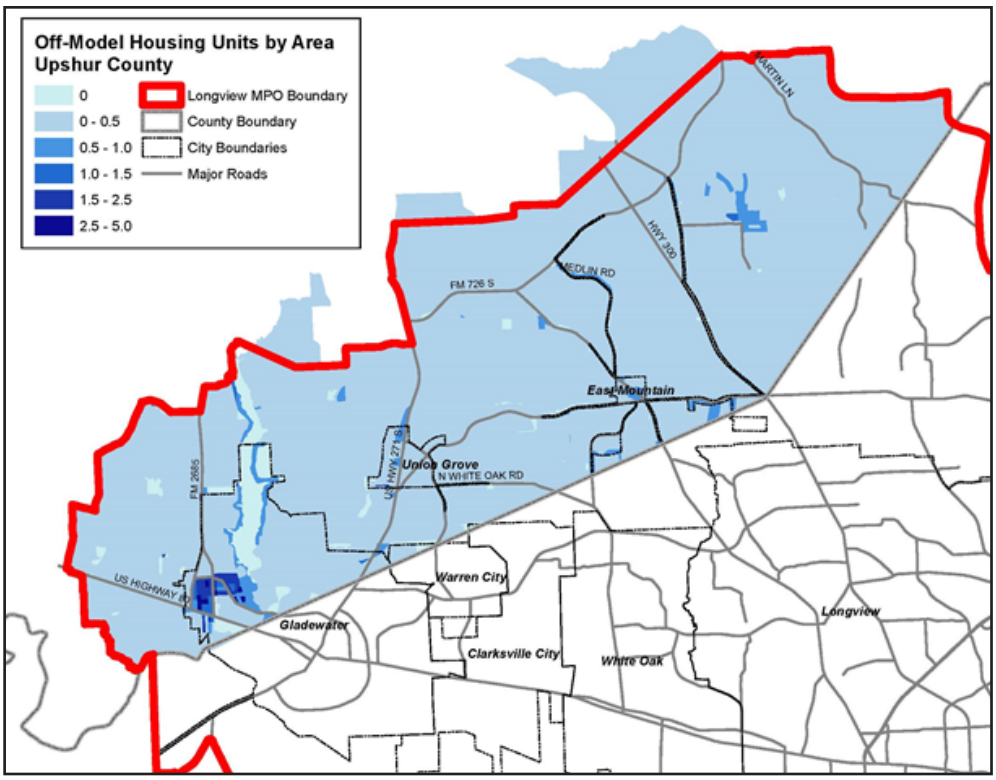
Forecast Year Demographics

According to the Texas State Demographer, the population projection for Upshur County is minimal with a forecasted increase in population of just under 10,000 in the next 25 years. The portion of Upshur County within the Longview MPO boundary is even smaller with an increase in 2,100 people between 2010 and 2040. The population projections were based on the 0.5 growth scenario for Upshur County (Texas State Demographer).

Off-Model Considerations

The additional area in the Longview region consisting of the 55 square miles in Upshur County accounts for an additional 3,500 households growing by less than a thousand by 2040 will account for a minimal amount of impact to the current Longview regional travel demand model. This will amount to approximately 33,500 daily trips being generated in the model for the base year and 42,100 in the forecast year. These additional trips in Upshur County would add less than 10% of the total trips in the Longview region.

2010 Census Households - Upshur County



Much of the existing vehicle capacity in Upshur County satisfies the current needs and also the forecasted needs that are projected in the region. The minor amounts of trip generation and trip attractions in this portion of the region limits the need for any significant transportation improvements in Upshur County.

	2010 MPO Upshur	2040 MPO Upshur	2010 Upshur County	2040 Upshur County
Area	55 square miles		593 square mile	
Population	8,600	10,700	39,300	49,100
Household	3,500	4,400	16,600	20,700
Employment	680	1,200	11,950	21,100

Anticipated growth in population and employment for the Upshur County portion of the Longview MPO

US 271 that connects Gilmer to Gladewater is one potential exception that was considered during the MTP Update process. US 271 is a principal arterial that ranges from 4 lanes in the suburban and rural portions of Gregg and Upshur County to a 2 lane urban arterial as it goes through Gladewater's downtown. One proposed alignment of Toll 49 would use a significant portion of the existing US 271 from Upshur County through to the City of Tyler. This could possible add at least another 10,000 daily trips to this roadway as it passes through the Longview MPO region. As a result, US 271 may need to be widened through Gladewater to accommodate this new alignment and potential traffic volumes.

Summary - Technical Evaluation of Roadway Projects

The technical analysis, conducted through the MTP Update process, validates proposed recommendations for future growth and expansion in the Longview region. It allows for future conflicts to be anticipated and resolved or minimized, while at the same time adjusting the roadways that do not need improvements between 2015 and 2040. By testing different alternatives in the forecast year and by comparing unique network options, the technical analysis was able to ascertain recommended outcomes in the region regarding mobility improvements.

Project Prioritzation

The model provides the Longview Metropolitan Planning Organization with an accurate tool to predict what the street and highway system will need to look like to accommodate future transportation needs. With model scenarios and alternatives analysis completed, a second technical tool was utilized to rank the candidate projects in priority order. The Metropolitan Planning Organization's Technical Committee worked in concert with the MPO's consultant, Kimley-Horn and Associates to formulate and test an evaluation standard used to prioritize and rank major streets and highway projects for near-term and long-term funding. This evaluation standard was developed with a major emphasis on the use of performance-based planning.

Incorporating Goals

Through the 2040 MTP Update process, the goals set forth through the previous plan were updated to reflect new regional desires and also to more align with new federal requirements in MAP-21. Early on in the MTP process, MPO staff coordinated with MPO Policy Board and the Technical Committee members to determine the goals for the 2040 MTP. MTP goals are located in Chapter 2, Planning Factors. The following planning themes were discussed with the group and were given a preliminary ranking to determine the importance of each theme within the region.

MTP Planning Themes

- Safety
- Maintenance and System Efficiency
- Congestion and Freight
- Environmental Sustainability
- Transportation Choices
- Economic Vitality

Safety

Safety in the Longview MPO region was discussed as the most important transportation element to consider in the MTP update process. The Tyler TxDOT District, which covers a large portion of the MPO area, has one of the highest crash rates in the state. Much of the concern for high crash rates are on rural, high-speed facilities that comprise over 40% of the crashes in the region. There was also concern with tractor-trailer crashes on Interstate 20. Due to the restricted geography of the I-20 corridor, when a crash occurs on the corridor, there is little to no congestion relief in parallel routes to direct traffic during a crash incident.

Maintenance & System Effciency

The maintenance of the existing roadways in the region is the second highest priority element. With the amount of truck traffic in the region for a variety of reasons, many of the roadways face a greater need for pavement replacement and upgrading. The current Pavement Management Information System (PMIS) maintained by the City of Longview and also TxDOT provides an up-to-date status on the pavement conditions in the region.

System efficiency refers to the improvement of the corridors in the region due to low-cost and operational improvements. This can include access management, signal timing and travel demand management. In the region, improving traffic signal timing and operations is an important element to consider when maximizing the current capacity of the roadways that are already built and maintained by the City of Longview, the surrounding cities and TxDOT.

Congestion & Freight

Within the Longview region, congestion and freight accommodations are an important element of the transportation network. Ensuring that freight traffic can get to its destinations with limited interruption is important for the economy of the region. Congested corridors can also limit the productivity of employees in a region due to increased time spent in traffic. Air quality can also degrade as a result of congestion. Although congestion is an important issue in the region, it is not a problematic concern with the MPO committees' members and the public in the region. There are a few areas in the region that are of concern as it pertains to high traffic and congestion, but as an overall transportation concern, it ranked low among the members of the MPO with regards to the prioritization of transportation elements.

Environmental Sustainability

Environmental concerns in the region are not much of a choice. Due to the industry in the region and the amount of point-source emissions, air quality is an issue in the region. High amounts of truck traffic and with the Interstate 20 proximity, mobile-source emissions are a growing source of pollution in the region. The MPO has been close to non-attainment for many years and if the ozone standards were to change, the Longview region would become non-attainment. Ensuring that the transportation projects in the region are helping to reduce the environmental impact to air quality is an important factor to consider when prioritizing projects. This can be done by reducing congestion through operational or capacity improvements particularly at intersections and also by increasing the number of multi-modal trips such as walking, biking or using transit. Reducing congestion and reducing number of vehicle trips will help to reduce the impact to the environment in the region.

Economic Vitality

Due to limited funding for transportation improvements at all levels of government, the funds that are spent on projects should be focused on those that can also improve the economic vitality of the region. The actual return on investment (ROI) that is developed through a transportation project can be determined through a cost-benefit analysis. This element of transportation project prioritization is low on the weighting scale, but more because of the need to improve safety and maintain quality infrastructure along transportation corridors in the region.

Transportation Choices

The discussion of transportation choices in the region is relatively new. Focusing primarily on the automobile has been the trend for transportation improvements. However, increasing demand has created a need for multi-modal transportation such as walking, biking and transit. The rise of this need has many reasons:

- The health benefit of using alternative modes of travel,
- The rising cost of fuel has limited some people's ability or desire to own a vehicle,
- Funding sources from the federal and state government has changed to focus a portion on multi-modal improvements,
- New Texas legislation requires that bike accommodations are provided on state facilities,
- Employers are seeing an increased number of employees using alternative options to travel to work.

Prioritaztion Method Summary

Each of these transportation themes discussed above incorporate elements from MAP-21 and the previous goals identified in the region. The MPO Policy Board and Technical Committee discussed how important each of the themes are as it relates to transportation issues in the Longview region. Specific measures of effectiveness (MOEs) or performance measures were developed for each transportation theme. These performance measures are discussed in detail in the next section.

Weighting Transportation Goals

The previous 2035 MTP has set the stage for the MAP-21 requirements of performance-based planning and project selection. This plan set clear guidance on the project ranking by goals determined through public involvement, stakeholder involvement, and the MPO Policy Board. These goals and ranking criteria focused on three important elements: quality of service, traffic and safety. The scoring of each element was quality of service or congestion, 50 points,

traffic, 25 points, and safety, based upon accident rates, 25 points.

In the 2035 MTP, the focus on project ranking criteria weighed most heavily on levels of congestion, however since the last update, the priorities in the region have shifted slightly to reflect the changes in the new federal legislation and local factors.

Through the process of developing the 2040 MTP, the discussion of goals in the region and criteria to rank projects with has changed slightly. The MPO has added four additional criteria to use in ranking projects: maintenance, air quality, economic benefit, and transportation choices. Previously, congestion was determined to be the most important indicator. Since then, it was emphasized that safety and maintenance were the most important issues in the region. A revised weighting matrix was developed to guide project ranking in developing the 2040 MTP project list and improvements.

MTP 2040 Evaluation Criteria	Combined Weight
Safety	30%
Functional Classification	25%
Maintenance	20%
Air Quality	10%
Economic Benefit	5%
Transportation Choices	5%
Congestion	5%

Performance Measures and Measures of Effectiveness (MOEs)

It is the role of the state, MPOs and other stakeholders to establish performance measures for a number of indicators including but not limited to: pavement conditions, bridge conditions, injuries and fatalities, traffic congestion, on-road mobile source emissions, and freight movement on the Interstate System. The state's role is to develop and set performance targets that support the measures identified by FHWA.

Functional Classification

The functional classification of roadways as specified in the Longview MPO Regional Thoroughfare Plan is used.. This measure looks at the comparison of projects and their weighting based on functional class designation. Higher scores are given to roadways that are more regionally significant. Interstate highways and principal arterials are scored the highest and minor collectors and locals are scored the lowest. The source for defining this Measure of Effectiveness (MOE) is the travel demand model-based Longview MPO Regional Thoroughfare Plan of 2014. The scoring breakdown by functional class is demonstrated in the table on the previous page.

Functional Class Score	
Freeway	10
Principal Arterial	8
Frontage Roads	8
Minor Arterial	6
Major Collector	4
Minor Collector	2
Local	0

Safety - Crash Rate

This MOE involves looking at the corridor crash rate as a three year average and comparing it with the statewide crash rates for similar corridors. Each year, TxDOT publishes the crash rates for each corridor type in the state. The table below shows the 2013 statewide crash rates per 100 million VMT.

The crash data that was used to generate the crash comparison was from the TxDOT's Crash

Records Information System (CRIS) for the years 2011 – 2013. The crash rates for each corridor were averaged for the three years of data available. The scoring criteria for the results varied depending on the statewide crash rate. If the corridor crash rate was lower than the statewide average the project received the lowest score, with the higher scores given depending on how much higher the crash rate was from the statewide average.

Road Type	Traffic Crashes per 100m Vehicle Miles Traveled	
	Rural	Urban
2 lane, 2 way	105.15	214.4
4 or more lanes, divided	58.39	137.49
4 or more lanes, undivided	101.85	295.97
Interstate	58.28	120.84
US Highway	68.95	158.97
State Highway	93.39	210.11
Farm-to-Market	125.89	228.45

Crash Rate Score			
	Score	Range (High End)	
Over 100% Above State Average	10		100%
60 - 100% Above State Average	8	60%	100%
30 - 60% Above State Average	6	30%	60%
15% - 30% Above State Average	4	15%	30%
0% - 15% Above State Average	2	0%	15%
Below State Average	0		0%

Maintenance & System Effciency

In the Longview region, pavement quality and maintenance are important elements of the transportation network. Pavement quality can affect the safety and capacity of a roadway. TxDOT and the City of Longview maintain an up-to-date database of pavement quality data known as the Pavement Management Information System (PMIS). This data rates the quality of pavement on a scale of 0 – 100, with 0 as very poor pavement quality and 100 as very good pavement quality. The inverse is applied for scoring projects as it relates to evaluation criteria, with the lower PMIS getting a higher score as it relates to project selection.

PMIS Score	
Very Poor 1 - 34	10
Poor 35 - 49	8
Fair 50 - 69	6
Good 70 - 89	4
Very Good 90 - 100	0

Environmental Sustainability

Air quality in the region is a key issue and with pressures of the EPA raising the emissions

standards across the country, it is important that the Longview region continue to promote projects that reduce the air quality impacts. Improving traffic congestion and delay is one method to reduce mobile source emissions in the region. Projects can be evaluated on their reduction on delay by looking at the region's travel demand model. This measure looks at the reduction in delay as it pertains to each specific project. By comparing the project from the forecast year to the base year network, a reduction in delay can be determined.

Air Quality Score	
High Reduction in Delay	10
Moderate Reduction in Delay	5
Low Reduction in Delay	0

Economic Vitality

The measure of economic vitality is one of the few subjective measures in the evaluation criteria. This measure looks at how each specific project benefits the economic vitality for the area and the region. This measure is subjective because it does not specifically relate to a quanitative measure. However, a few rules of thumb occurred in the scoring of projects:

- New construction projects that are proposed in areas with potential commercial or economic benefit get scored higher
- New construction projects that are proposed in residential areas are scored moderately because they do improvve the tax base, but not at the level that commercial activity does
- Projects that require additional right-of-way or are in areas with little or no potential of development or redevelopment are scored the lowest.

Economic Benefit Score	
High Benefit	10
Medium Benefit	5
Low Benefit	0

Transportation Choices

A shift of focus in recent years from accommodating only vehicle trips to looking at multimodal mobility improvements has provided additional funding mechanisms for transit, bicycle and pedestrian projects. During the MTP Update process, the inclusion of bicycle and pedestrian projects was important to many of the involved stakeholders. Similar to economic vitality, this measure is also relatively subjective and allows for flexibility as the project is defined. Higher scores get assigned to projects that integrate multiple modes of travel, while low scores are assigned to those projects that only focus on vehicle trips. The following table describes the scoring for Transportation Choices.

Transportation Choices Score	
Bike, Ped & Transit Integration	10
Bike and Pedestrian	8
Transit and Bike	6
Pedestrian and Transit	4
Transit Only	2
No Multimodal Integration	0

Congestion & Freight

Congestion and level-of-service is one of the most common quantitative measures to determine transportation system performance. It looks at the supply or capacity of the roadway and compares it with the relative demand or traffic. In the Longview region, the MPO uses the

travel demand model to predict future congestion issues based on both existing roadway capacity and also future capacity though recognized improvements in the region. Through the Metropolitan Transportation Plan, both funded and unfunded projects are analyzed to see system performance and potential improvements as it relates to congestion.

To evaluate congestion as an MOE in the project scoring methodology, the unconstrained network (all projects) was compared to the existing network using the 2040 demographic inputs in the model. This methodology provided a look at the "before" and the "after" based on future traffic volumes and roadway capacities. The percent difference between the congestion on the existing and the unconstrained network provides for the scoring. The greater the percent change the higher the score. The table on the right describes the scoring for congestion.

Congestion Score			
	Score	Range (High End)	
Over 100% reduction in LOS	10	101%	-
60 - 100% reduction in LOS	8	60%	100%
30 - 60% reduction in LOS	6	30%	60%
15 - 30% reduction in LOS	4	15%	30%
0 - 15% reduction in LOS	2	0%	15%
No reduction in LOS	0	-	0%

Performance Measures Summary

The seven performance measures identified above help to quantify the relative need and benefit of transportation projects developed through the MTP Update. Using technical data such as the travel demand model, crash records and pavement information clear comparisons can be developed regarding the benefit of each specific project. The score of each project will be determined based on the performance measure results and also the weight of each transportation theme.

Project Ranking Process

Street and highway projects were selected through the alternative analysis exercise that was completed as part of the MPO Thoroughfare Plan and MTP 2040 Update. Through an iteration of modeling alternatives that were tested on the 2040 demographic forecast for the Longview region, over 70 projects were identified and scored based on available data and the performance measures identified previously. The ranking of each project depended on the score for each performance measure and the weight for the transportation theme.

A project prioritization method helps to create a systematic and quantitative methodology for scoring projects in the Longview MPO planning area. The new focus in federal legislation in creating performance-based long-range transportation plans has encouraged this plan in adopting a method that selects projects based on their relative performance. The goals and transportation themes identified early on in the process were weighted based on local issues with safety being weighted the highest and transportation choices, environmental and congestion being weighted the lowest. This ultimately led to the creation of project evaluation criteria. This criteria was formulated in the summer of 2014 by the MPO Technical Committee and adopted by the MPO Policy Board on October 9, 2014. The criteria is as follows:

MTP 2040 Evaluation Criteria	Combined Weight
Safety	30%
Functional Classification	25%
Maintenance	20%
Air Quality	10%
Economic Benefit	5%
Transportation Choices	5%
Congestion	5%

Following the criteria listed above, a scoring matrix was created to guide project selection when developing this long-term plan. The resulting project lists were divided into three (3) sections:

1. Projects expected to be funded in the years 2015 to 2024
2. Projects expected to be funded in the years 2025 to 2040, and an
3. Illustrative List of Projects that are identified as needs but not expected to be funded within the 25-year time frame.

A full listing of these projects can be found in Chapter 9 'Financial Plan'

Intersection Improvements

During the development of the project evluation criteria and the MPO Regional Thoroughfare Plan, extensive technical analysis was conducted. The projects listed below are the needed intersection improvements within the Longview MPO Planning area.

Intersection	Description
Bill Owens Pkwy. at US 80	Realign double curve.
Page Rd. at E. Loop 281	Realign and adjust route of Page Rd., southward, move Delia Dr. intersection with Page Rd. to the west.
Reel Rd. and Silver Falls Rd. at Pine Tree Rd.	Realign and reroute existing roads.
N. Airline Rd. and S. Airline Rd. at Hawkins Pkwy.	Realign and reroute existing roads.
Fairmont and Johnston St.	Realign and reroute exisitng roads.

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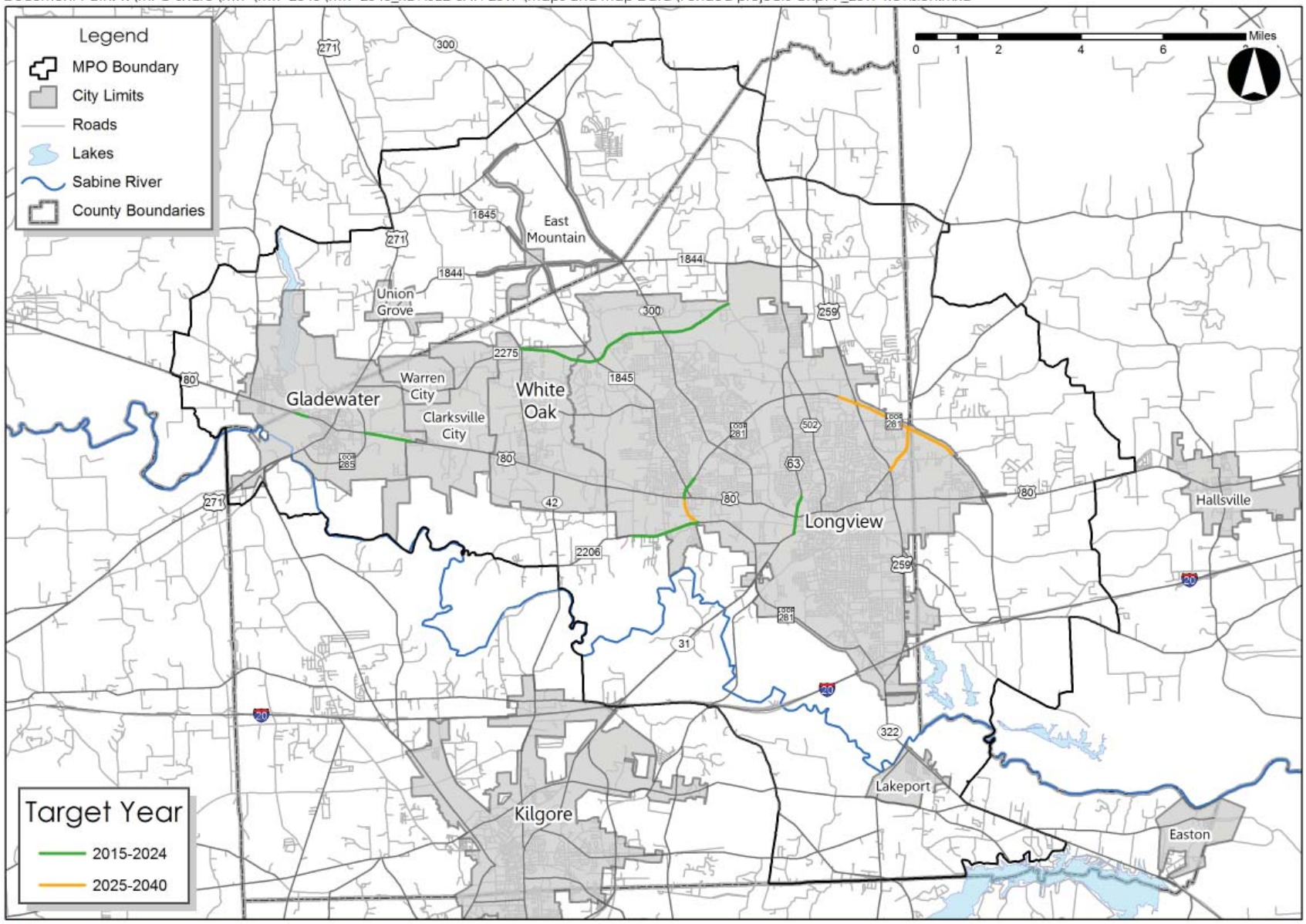


7 - A Street & Highway Projects 2015 - 2040

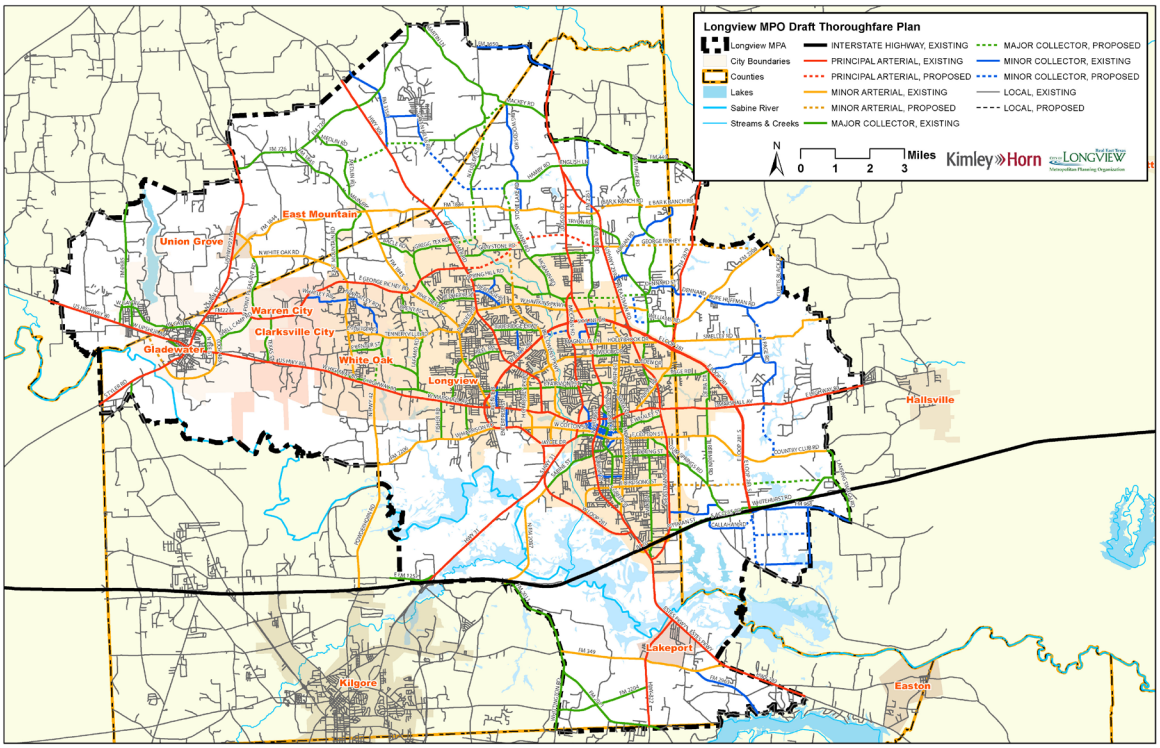
Brent Bradberry
Revised January 25, 2017

Thoroughfare Planning

As part of this Metropolitan Transportation Plan update in 2014, a Longview Metropolitan Planning Organization (MPO) Thoroughfare Plan was created to provide policy guidance for the agencies within the MPO planning area. The regional thoroughfare plan is a long-range plan that identifies the location and type of roadway facilities that are needed to meet the projected long-term growth in the region. The plan serves as a tool for jurisdictions with the MPO planning area to preserve future corridors for transportation system development.

The purpose of a Thoroughfare Plan is to provide consistency of roadway standards among the member cities, counties and agencies. The proposed thoroughfare recommendations are based on future growth and development in the region to size roadways based on future capacity needs. The Thoroughfare Plan also includes information related to roadway classification, right-of-way requirements, and number of through travel lanes for each thoroughfare.

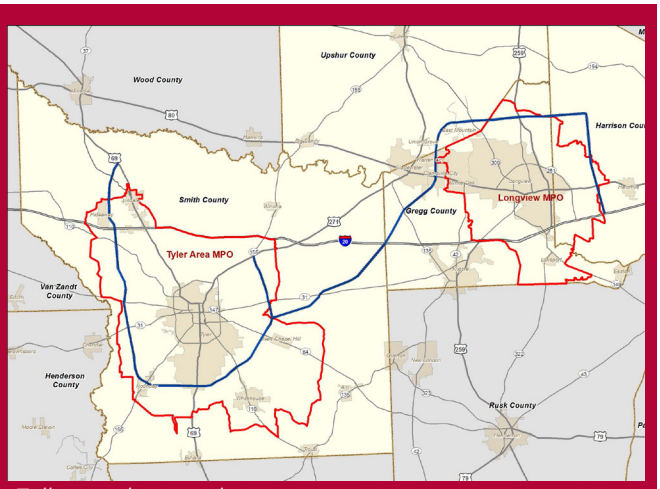
The Longview MPO Thoroughfare Plan was established to determine street design standards, future capacity of roadways, required right-of-way and multimodal integration. The regional thoroughfare plan map identifies the functional classification and new alignments of proposed thoroughfares in the region. The Longview MPO hired Kimley-Horn and Associates as a consultant to perform the specialized technical analysis to verify the future traffic demands and multimodal recommendations based on the forecasted population and employment growth in the region of the Longview travel demand model. The model-based technical analysis assisted in determining the number of lanes of the roadways in the thoroughfare plan. Projects from the Build-out model scenario of the MPO Thoroughfare Plan were used as candidate projects and were prioritized based on the adopted project evaluation criteria.



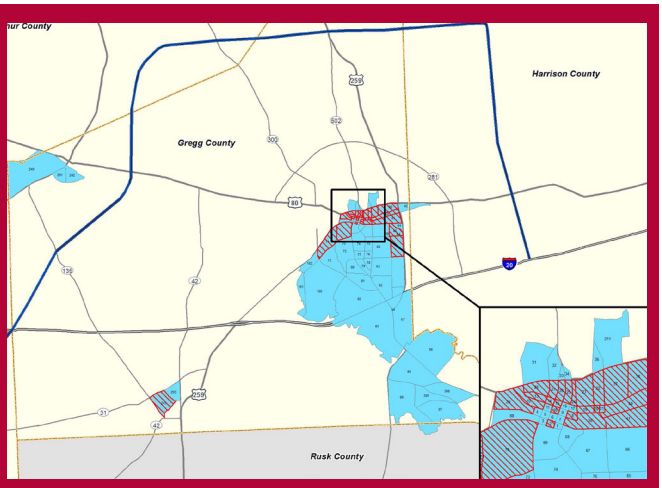
Longview MPO Regional Thoroughfare Plan

Toll 49 Regional Toll Analysis

The Texas Department of Transportation (TxDOT), in conjunction with the North East Texas Regional Mobility Authority (NETRMA), has prepared a regional toll network analysis for the Tyler-Longview area. The analysis examines the overall potential indirect and cumulative effects of the proposed toll network, including the potential impacts to environmental justice (EJ) populations, land use and air quality. The regional toll analysis began in June 2012 and concluded in 2014. The Tyler-Longview regional toll network is envisioned as a proposed 46 mile long, limited-access toll network located in the northeast Texas counties of Smith, Gregg, Upshur, and Harrison. The toll analysis report is intended to supplement the 2035 Tyler and Longview Metropolitan Transportation Plans (MTPs).



Toll netowrk project location



Environmental Justice Areas

The Longview MPO and Tyler Area MPO travel demand models were used for this analysis to determine potential toll users, travel times associated with toll road use, and average trip lengths on the toll road. These travel demand models have a base year of 2002, include the future road network to the MTP horizon year of 2035, and include interim model years such as 2007, 2012, 2020, 2030, and 2035. The travel demand model networks include a total of 756 Traffic Analysis Zones (TAZs) within the Tyler-Longview area.

The models were updated to include current and future toll rates and toll link updates before the 2012 base year model was calibrated against actual 2012 traffic data. The 2035 travel demand models were used to create a merged travel demand model network in Geographic Information System (GIS) software. This merged network was used to determine travel times and average trip lengths for candidate trips under both No Build and Build scenarios. Candidate trips are defined as those trip routes that could result in a time savings of at least 30 seconds by taking some portion of the toll road.

The following information provides a summary of the analysis:

Environmental Justice Populations

- A total of 756 Traffic Analysis Zones (TAZs) were identified in the Longview-Tyler region. Of these, 195 TAZs were determined to have environmental justice populations.

- Longview MPO: Within the Longview MPO, 84 TAZs were found to have environmental justice populations. This represents 25% of

TAZs in the Longview MPO. Of these, 28 TAZs were identified as low income and 84 were identified as minority. A total of 28 TAZs were found to have both low income and minority populations.

- Tyler Area MPO: Within the Tyler Area MPO 111 TAZs were found to have environmental justice populations. This represents 26 % of TAZs in the Tyler Area MPO. Of these, 31 TAZs were identified as low income and 99 were identified as minority. A total of 19 TAZs were found to have both low income and minority populations.

Travel Time Savings

- Travel times were assessed for the No Build and Build scenarios and compared between EJ TAZs and non-EJ TAZs. For EJ TAZs region-wide, an average time savings of 2.65 minutes was modeled for candidate trips taking the toll road under the Build scenario, compared to 1.89 minutes saved under the No Build scenario. For non EJ TAZs, the time savings was similar, with 2.77 minutes saved under the Build scenario and 1.53 minutes saved under the No Build scenario.

Economic Impacts to Environmental Justice Populations for the Build Scenario

- Longview MPO: Based on 2002 income data, the Build scenario estimates that 5.5 to 10.6 percent of the median household income could be required to use the toll road. Estimates are based on 500 trips per year with average trip lengths ranging from 9.6 to 17.2 toll road miles and a future toll rate of 15 cents per mile.

- Tyler Area MPO: Based on 2002 income data, the Build scenario estimates that 4.7 to 10.2 percent of the median household income for environmental justice populations could be required to utilize the toll road. Estimates are based on 500 trips per year with average trip lengths ranging from 10.2 to 20.1 toll road miles and a future toll rate of 15 cents per mile.

Economic Impacts to Environmental Justice Populations for the No-Build Scenario

- Longview MPO: In Longview, no candidate trips were identified under the No Build Scenario as no segments of toll road currently exist within this area.

- Tyler MPO Area: Based on 2002 income data, the No Build scenario estimates that 3 to 3.8 percent of median household income could be required to use existing portions of toll road that are currently built. Estimates are based on 500 trips per year with average trip lengths ranging from 6.3 to 8.2 toll road miles and a future toll rate of 15 cents per mile.

Land-Use Impacts

Because the proposed toll network would be constructed on new location, it has the potential to influence development and cause changes to land use in the vicinity of the project area. Municipalities in the region have been planning for the regional toll network for some time and evaluating compatible land use. Many of the goals and expectations discussed in existing planning documents have already taken place including the completion of portions of the toll road in Smith County. The toll network would be a limited access facility, with frontage roads and access points only at major intersections. The lack of frontage roads could limit commercial development adjacent to most of the toll corridor, but may encourage development at and

immediately adjacent to the interchanges. Impacts to land use associated with specific sections of the toll network will be discussed and evaluated in the individual project documents.

Air Quality Impacts

The proposed regional toll network is located in Gregg, Harrison, Smith, and Upshur Counties, which are part of the Northeast Texas regional area in the Texas air quality State Implementation Plan (SIP). These counties are in attainment or unclassifiable for all national ambient air quality standards (NAAQS). The proposed action is consistent with Tyler Area MPO's Metropolitan Transportation Plan 2035 and Longview MPO's Transportation 2035. Because the project area is in attainment or unclassifiable for all NAAQS, and the toll network is consistent with the two area MTPs, the transportation conformity rules do not apply. As environmental documents are developed for each project segment, a Texas Air Quality Analysis will be conducted, as appropriate. It is anticipated that the Tyler-Longview region would continue to meet air quality standards.

Toll 49 Regional Analysis Conclusions

Based on the time savings and toll cost analysis, it is not anticipated that the proposed Tyler-Longview regional toll network would cause disproportionately high or adverse effects on low-income or minority communities in the MPO regions. The existing road network connects many of the identified EJ populations in the region to major employment centers. Because the proposed toll network would be constructed on new location, low-income populations wishing to avoid paying a toll would have many existing non-toll routes as alternatives. If EJ populations do choose to use the toll road, they would realize a time benefit over using the non-toll network, though the regular use of the toll network would be an added expense to low income populations.

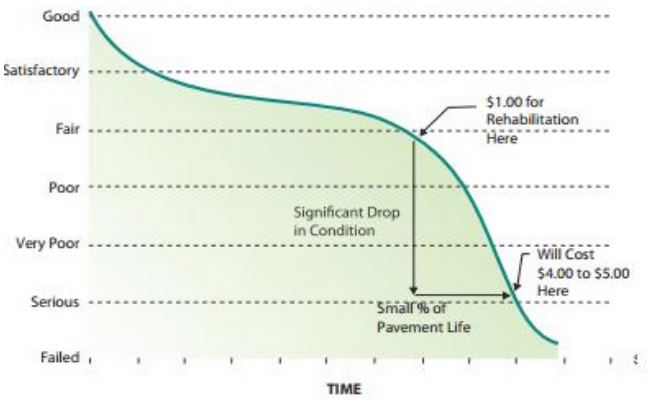
Pavement Maintenance

The cost of streets and pavement represent a large portion of the taxpayers' investment in transportation infrastructure. Protection of that investment through adequate maintenance should be a high priority. Unfortunately, the process of pavement deterioration is sometimes not understood by those in decision-making capacity. Faced with the difficult task of apportioning limited funds, street maintenance budgets have been cut in some communities, particularly in the important category of preventive maintenance. But savings accrued in the short term by deferring maintenance are obliterated in the long run by extremely expensive rebuilds and overlays.

Pavement Life Cycle

Pavements typically have a design life of about twenty years. Though the deterioration process

Pavement Life Cycle



begins immediately, the surface generally remains in good riding condition for about fifteen years. After this, the process of deterioration accelerates quickly. The pavement reaches a critical point at which the materials no longer hold together. As water permeates the subbase through cracks, the ability of the surface to carry weights declines, intensifying the surface cracking. Within about five years, the condition drops from fair to poor, then plunges quickly to the failure point. The chart above illustrates the pavement life cycle.

The critical question is this: at what stage in the pavement life cycle is maintenance most cost effective? Is it less expensive on an annualized basis to perform frequent minor maintenance before cracks appear? Studies have shown that the annualized cost of performing preventive maintenance in the form of seal coats and timely overlays are about one quarter of the annualized cost of rehabilitating failed pavements. Simply stated, this means that each year, it costs as much to rehabilitate one road as it costs to prevent four roads from needing rehabilitation next year.

In practice, this means that the immediate highest priority for the street maintenance budget should be to protect the taxpayers' investment in pavement infrastructure by practicing low-cost preventive maintenance to those streets in good to fair condition. Rehabilitation of streets rated poor to very poor should be part of a planned program to bring those streets up to standard without cutting into the preventive maintenance budget. Over a period of years, this will result in an overall higher quality of pavement condition. At times, implementation can be politically difficult. Public perception may be that "we're spending money to fix roads that are okay, and ignoring those that are falling apart". Support of elected officials and public education are critical in effecting a sound pavement management policy.

The City of Longview maintains 956 lane miles of pavement, with an asset value in excess of $500,000,000. About 53% of the streets within the Longview Metropolitan Area are maintained by the City of Longview. Another 15% are maintained by the Texas Department of Transportation. Gregg and Harrison Counties maintain 22%. In Gregg County, the County Commissioner determines road maintenance for each precinct. Maintenance in Harrison County is under the County Engineer. The City of White Oak maintains 6% of the streets in the Metropolitan Area, and about 1% are privately owned and maintained.

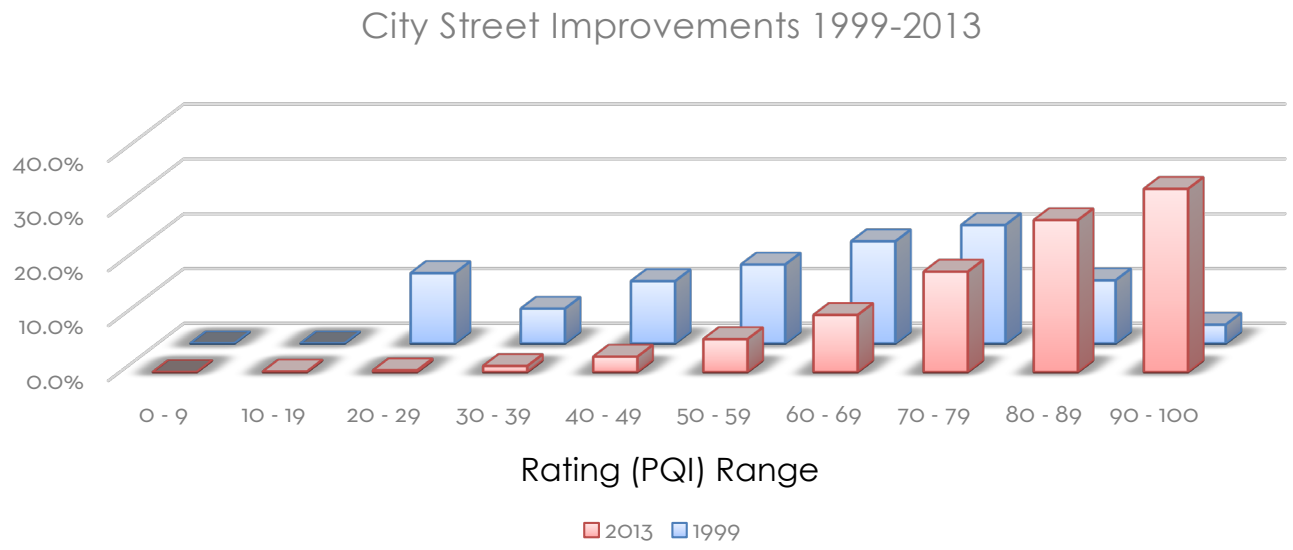
The Longview MPO laid the foundation for a pavement management system for the City of Longview in 1985 with the development of the Street Survey database. The database includes a record for each street segment in the metropolitan planning area. Within the City of Longview, about one-fourth of the streets are maintained by the Texas Department of Transportation, which maintains a statewide Pavement Management system of its own to determine priorities and strategies. Oil-dirt streets, comprising about 3.5% of the total, are maintained cooperatively by the

City of Longview and Gregg County. Most of the remaining streets and asphalt are maintained by the City of Longview under the pavement management system.

Pavement Management System

In June 1997, the pavement evaluation system was modernized and replaced with a high tech pavement management system. Using Metropolitan Planning Organization Federal PL 112 funds, the Longview MPO and the City's Public Works Department jointly contracted with Stantech, Inc. (formerly ITX Stanley), to use state-of-the-art equipment to inventory the street pavement conditions, enter pavement data into a database software program, identify deficiencies and recommend a pavement management plan to address the city's maintenance needs. The previous Street Survey database was used as a foundation for this endeavor. Stantech staff surveyed 360 miles of city maintained asphalt streets and conducted an ultrasonic analysis of pavement surfaces utilizing a specially equipped van.

The system has flexible report generation capabilities allowing sorting and filtering of data to be reported. Report types include sectional attribute reports; maintenance needs reports, financial analysis reports and performance histograms. Reports can provide priority listings indicating the pavements in order of best to worst, or worst to best pavement conditions. In the priority programming mode, the user specifies the budgets expected for each year within the specified programming period and the software determines how these annual budgets should be spent to maximize the benefits. The pavement management software is capable of establishing a five-year maintenance program based on the amount of city-appropriated funds and the desired overall pavement performance. The Public Works Department staff routinely updates the database, as streets are seal coated and overlaid.



The current program, Roadmatrix, is currently funded through the general funds. The City's Public Works and Engineering department maintains the inventory of all City maintained streets. The street rating based on the pavement quality index rates the streets from worst to best. The PQI or pavement quality index is a scale from 0 to 100. The three factors that give the PQI value are riding comfort,

surface distress, and structural adequacy. The riding comfort measures smoothness of the road by checking for any bumps, dips and depressions. The surface distress measures the surface defects such as cracking and aging. Lower traffic streets tend to age faster as flexible pavements need regular traffic to maintain resilience. Structural adequacy measures the strength of the pavement and underlying foundation. This factor is important for heavier traffic streets or those that have more truck traffic.

Previously, city streets with no recent preventive maintenance activities were visually inspected on an annual basis. The method of maintenance to be performed was determined by the inspector based upon his experience. The street rating or PQI informs us about the action that needs to be taken with respect to the street condition. For instance, if a street has a good riding comfort rating, a good structural adequacy rating, and a poor surface distress rating, the maintenance activity would be a seal coat or if a street has a poor riding comfort rating, a good structural adequacy rating, and a poor surface distress rating, the maintenance activity would be an overlay. Similarly, if all the ratings were poor, the street would be beyond maintenance and would need to be reconstructed.

The graph on the previous page illustrates the inventory of all streets in the City of Longview with an average street rating of 61 for the year 1999. After improvements were made, the rating increased to a score of 83 in the year 2013.

Traffic Operations

Capacity is a measure of a facility's ability to accommodate the flow of vehicles or people. Congestion is the result of traffic increasing beyond the capacity of a road. Congestion delays are costly in terms of time, accidents, and increased air pollution from idling vehicles. Projects, goals and objectives in the Traffic Operations Plan are designed to improve the performance of existing transportation facilities to relieve congestion and to maximize the safety and mobility of people and goods.

Congestion can be relieved by increasing capacity or by reducing traffic. Reducing traffic involves modifying travel behavior, a very difficult task. Capacity can be increased by adding driving lanes or making operational improvements. In some cases, widening a street may be the best alternative, but it is also very costly, and usually takes many years to plan, acquire funding, and construct. Capacity is influenced by many factors besides number of lanes, including adjacent land uses and driveways, grades, lighting, surface type and condition, and traffic conflicts. Traffic conflicts at intersections are usually the primary capacity limiting factor on urban arterials. Widening a road may not adequately address these critical, complex locations.

Kaitlin McKeown / Daily Press

Functional capacity can also be increased by improving operational flow to minimize or eliminate delays. Operational improvements are far less costly than road widening projects, can usually be funded more quickly, and can make a significant difference in a relatively short time. Operational improvements can be considered "real-time" responses to problems, and can focus on critical intersection problems. Well-planned operational improvements frequently reduce traffic accidents as well.

Operational improvements include traffic engineering improvements and traffic control improvements. Examples of traffic engineering improvements are dedicated turning lanes, channelization, acceleration and deceleration lanes, median control, and pavement markings. Traffic control includes signal optimization and coordination, upgrading signal equipment, and computer based traffic control.

Though some operational improvements can be projected over a long period, others are best implemented in response to actual traffic problems as they develop. Changes in general travel patterns can be anticipated, but modifications to signal phasing, for example, must be made in response to actual situations.

Traffic Signal System

Traffic signals exist to regulate traffic patterns to eliminate traffic conflicts, reduce accidents, and increase travel speed and flow on arterials with high traffic volumes. There are numerous factors in determining when signals are the best option. According to the U.S. Department of Transportation Research and Innovative Technology Administration and the Bureau of Transportation Statistics, the following variables are generally thought to warrant traffic-signal operation:

- General Traffic Volumes - When traffic volumes at most of the intersection approaches reach the point where other forms of control cannot efficiently assign right of way to the approaching motorists.

- Interruption of Continuous Traffic - When traffic on a major street is so heavy that traffic on a lightly travelled side street has little opportunity to cross or enter the main-street traffic. This condition requires heavier traffic on the main street than the previous condition, but allows lighter traffic on the side street.

- Pedestrian Volumes - When pedestrian traffic is heavy enough to justify the interruption of vehicular traffic.

- School Crossings - If judged necessary by the traffic engineer, a traffic signal may be used to facilitate the crossing of school children.

- Progressive Movement - Sometimes a traffic signal will help keep platoons of cars tightly formed to enhance the coordinated flow along a street and encourage an appropriate speed.

- Accidents - Traffic signals are sometimes effective in reducing accidents that result from the inability of motorists to safely assign their own right of way. These accidents typically involve right-angle collisions.

- Some Combination of the Above - A collection of conditions that generally comprise some of the above conditions, or when streets that are clearly major elements of a transportation network intersect.

There are two categories that signals can be broken down into. There are pre-timed signals and actuated (Semi-actuated and fully-actuated) signals. These signals have pros and cons based on location and use.

Pre-timed Signal Operation

On a pre-timed signal, all signal phases for the various traffic movements and cycle lengths are preset to fixed intervals. These cycles repeat themselves continuously without change. Pre-timed signals are often used in synchronization with nearby signals to reduce stop-go traffic by allowing a group of vehicles to progress along the arterial through two or more intersections without being stopped by a red light.

These signals are found in isolated areas or in closely spaced areas such as a downtown. In the latter example, signals are spaced closely, usually block to block, and there is a consistent amount of traffic to prepare for. This allows for pre-timing coordination with other lights to create a predictable flow of traffic.

In isolated areas, where these signals are most common, traffic moves sporadically and thus, too unpredictable for these signals to be the best choice. However, without the need for traffic monitoring equipment, such as mounted sensors, these signals become much cheaper than actuated ones. In turn, these signals are placed in areas of the city that are isolated and do not warrant the funds for full actuation.

Semi-actuated Signal Operation

Semi-actuated signals are designed to monitor minor movements at intersections. This usually involves major road through movements. The primary arterial always has a green light until sensors detect a vehicle on a side street. The signal actuates a change interval and a green light for the side street until all vehicles clear the intersection or until a preset maximum green time is reached. This works well where there is significant difference in volumes between the main street and the side street, and where

Semi-actuated signal sensor

synchronization with other signals is not necessary.

Semi-actuated intersections can be useful in the coordination of multiple signals. The system could effectively reduce congestion on major thoroughfares if timed correctly. In addition, without detectors on the major road, failure in the system could have a minimal effect on traffic flow. However, if the minor road experiences high fluctuations in traffic, there could be delay as a result on the major road. There is also an added cost of installing and maintaining detectors.

Fully-actuated Signal Operation

Signal phases for both streets are actuated by sensors. Maximum green times and cycle lengths are usually specified. There are many benefits to this form of signal actuation. The biggest advantage is the optimization that can be implemented. For instance, fully-actuated lights can be set to skip phases if no traffic is present on minor roads. This allows for free flow traffic on major roads during certain periods of the day. It also is responsive to unusual or fluctuating traffic patterns. The only drawback of this system is the initial capital cost and continued maintenance of the system.

Communications

The system currently in place currently uses three forms of communication. These systems are in place so that the traffic engineers can remotely monitor and adjust signals when needed from the public works office. There are three forms of communication lines that connect to Longview's 135 traffic signals currently in operation.

The difficulty with any of these types of signal operations is that traffic movements are complex, and may vary considerably at different times of day, days of the week, or times of the year.

Affordable computer technology has greatly increased the sophistication of traffic signal operations in the last decade. Computer controlled closed loop systems that allow multiple phasing plans and phase modifications from a central location are now available, which can utilize a variety of signal timing plans based on multiple factors and conditions.

The first closed loop traffic signal in Texas was installed on Eastman Road at Alpine in the mid-1980's. The signal controller and traffic sensors were connected by a communications cable to a microcomputer in the Traffic Maintenance Department of the City of Longview. This system allowed the Traffic Manager to set up a signal phasing plan which varied by time of the day, and to monitor the intersection's performance and modify the phasing plan as needed from his office computer using the On-Street Arterial Master Systems (OSAMS).

The computerized system allows alternate phasing plans to be implemented automatically based on the time of day, time of year, workday status, or other factors selected by the traffic operations personnel. Alternately, the signal can be placed in free plan mode, in which the computer selects the appropriate phasing based on traffic conditions as relayed by the sensors.

The closed loop system has since been expanded, and includes all 135 signals in Longview. The system is most effective on arterials with closely spaced signals. Currently, all arterials within the City of Longview are controlled by OSAMS.

Most of the signals on the OSAM system are set for an AM plan, which operates during the morning peak traffic period, a PM plan, which

operates during the evening rush hour, and an off-peak plan. Signals in school zones also have a special phasing plan which is activated only on school days. Some signals, particularly those at a distance from other signals, operate in free plan mode.

There are currently no new signal projects scheduled for the City of Longview Traffic Department. The main goal of the department is optimizing existing signals to reduce congestion and increase traffic flow. Widening of roads is an expensive fix to congestion in cities. Optimization can effectively reduce congestion while remaining a minimal cost to the local budget.

Traffic Signals Current Conditions

- Downtown Longview currently utilizing fixed signals
- Loop 281, McCann, High, Mobberly, Cotton

Recently installed signals

- Fourth & Medical
- Gilmer & Heritage
- George Richey & Pine Tree

Fiber Optics

- Judson Rd
- Loop 281
- N. Gilmer Rd
- 25% of remaining lights utilize Ethernet connections. These are faster than comcables, but slower than fiber optics.

Recent Upgrades

- Mobberly & Cotton
- Hollybrook & US 259
- Cotton & US 259
- Hawkins & US 259
- High & Jean

Streets & Highways, Maintenance, and Traffic Operations Goals

- Maximize the operational efficiency of the transportation network by investing in the upgrades of traffic control and traffic signal infrastructure.

- Continue to work with Federal, State, and Local agencies to maintain a classification system of streets and highways based on function as roadway improvements are planned, designed and constructed.

- Continue to work with State and Local agencies to maintain street design standards based on the functional classification system of roadways.

- Work with City and State agencies to control access in new developments in order to reduce safety hazards and alleviate congestion.

- Continue to evaluate the safety of intersections and road segments in the Longview area to develop accident mitigation strategies.

- Encourage City Planning & Zoning staff to balance the type of new development with the functional characteristics of the adjacent street or highway.

- Invest in the preservation of the existing transportation system to maintain the integrity and acceptable level of roadway pavement conditions.

- Promote the Thoroughfare Plan by working with Planning & Zoning staff to enforce right-of-way preservation when new developments are being considered.

- Develop a mobility management system to measure congestion and reduce the amount of hazardous emissions contributing to the area's environmental concerns.

- Continue to utilize a performance based approach to prioritizing new roadway projects.

CHAPTER 8 – FREIGHT TRANSPORTATION

Freight Transportation

Introduction

Moving products efficiently is the foundation to a strong economy. Products need to move from transportation modes seamlessly and safely. In addition, those forms of transportation must be unobstructed. A common form of obstruction is traffic. When freight vehicles idle in traffic jams, time is lost, and therefore, the operation is losing profits. It has been a goal in Texas to have an advanced infrastructure supporting these industries. Every sector including energy, agriculture, and retail relies on the freight network in one way or another. Texas has been exceedingly efficient in this process and has one of the most complex, and reliable freight networks in the country. This has helped create a diverse market and created jobs at a rate of 2.5% in 2012.[1] This puts Texas in the top 10 of states with the highest job creation rates. The State of Texas also has the highest exports of any state. In 2013, the US Census Bureau reported that Texas exported $2.7 trillion in 2013. This made up nearly 18% of all exports in the United States.[2]

Because of the uniqueness of Texas, there are multiple forms of transportation and shipping options that can take place. One notable feature is its' oil market in proximity to the Gulf coast. East Texas is also a beneficiary of these natural features. The Texas Department of Transportation (TxDOT) recognizes the importance and history of oil and natural gas reserves in East Texas. With

Posey Internation, Inc. - Sea Freight

Salinas Forwarding - Rail Freight

Sonic Express - Truck Freight

[1] "10 States With Biggest Rate of Job Growth in 2013." Kiplinger. N.p., n.d. Web. 19 Sept. 2014. <http://m.kiplinger.com/slideshow/business/T012-S001-10-states-with-the-biggest-rate-of-job-growth-in-2/>.
[2] "International Trade Administration (ITA)." Texas Exports, Jobs, and Foreign Investment. U.S. Department of Commerce, n.d. Web. 19 Sept. 2014. <http://www.trade.gov/mas/ian/statereports/states/tx.pdf>.

this, several forms of transportation have been implemented in the region to accommodate this market activity. The City of Longview, as well as some of the surrounding cities, benefit from road, rail, and air modes of moving freight. The majority, however, is moved by truck along the interstate and highway corridors. There are benefits to each form as well as negative impacts.

Truck Freight

Moving large amounts of goods along roadways require large vehicles to move the volume necessary. These vehicles move along the state and national highways, as well as the nation's interstate system, to reach various destinations. Trucks use these systems to their advantage. With a various number of routes and locations serviced by roads, the freight industry can more adequately adapt to changing conditions. An example would be a truck detouring off of the interstate because

TxDOT Statewide Freight Flowband Map - 2012

of an accident and traveling parallel along a state highway to reach its' destination on time. Rail freight, on the other hand, has far less options if there is any obstruction along the tracks. Large freight vehicles typically do not travel on local roads until they are in close proximity to their final destination. These destinations include distribution centers, retail centers such as shopping malls, factories, etc.

Due to the diversity of truck freight, it is difficult to estimate the volume of truck traffic within the area. Tonnage moved through the area is also hard to predict because of varying industries and routes. In order to properly plan for these unknown, coordination between freight companies and the MPO is essential. However, private companies have been reluctant to share information with government entities. Communication between government and private entities could produce benefits for both parties. In knowing when, where, and how much freight will be moved through the planning area, local agencies can better prepare those roadways for the increase in traffic. This would help curb the negative effects of truck freight.

In past years, the MPO has identified key roadways in which freight traffic can be seen. These roads are; Highway 31, US 259, Highway 300, US 80, Loop 281, Spur 502 (Judson Rd.), and Spur 63 (McCann Rd.). The needs included:

- Access to major intercity routes, particularly I-20, US 259, and SH 31.
- Adequate thoroughfares and access to major industrial and commercial areas.
- Adequate physical facilities to accommodate trucks, including pavement condition, turning radii, and acceleration/deceleration lanes.

Meeting with private entities to address these major routes would give planners the ability to

foresee needed improvements and maintenance. Negative impacts of truck freight that could possibly be avoided include cracks in pavements, noise concerns, and congestion. In identifying popular truck routes, development and roadway improvements could be built to accommodate the freight. It could also help mitigate the negative effects associated with freight transportation. Some of the issues include noise, congestion, and pavement damage. Two-lane roads often are slowed down by freight traffic due to slow acceleration. These vehicles are better suited to be on roads with four or more lanes to allow vehicles to pass.

Rail Freight

According to the Federal Rail Administration (FRA), rail makes up the largest percent of means by which freight moves in the United States. Close to 40% of all ton miles are carried by rail cars every day. This $60 billion industry consists of 140,000 rail miles and provides over 221,000 jobs across the country.[3] This is not only the most used freight transportation system in the United States, but also in the world. The U.S. rail freight network also connects the country to both Canada and Mexico through several gateways. This allows for efficient international trade through key locations across the country.

Of the states, Texas contains the most rail miles. According to the Bureau of Transportation Statistics and the Department of Transportation (DOT), Texas has 10,425 rail miles used for freight transportation. Texas has more than 3,000 miles more than any other state in the country. The state ships nearly $1.2 billion in freight every year and over 2 million tons of products terminating within the state.[4]

Two major rail lines operate through Longview. Union Pacific, with its terminal facilities and yards located in the Longview junction area east of downtown Longview, runs about thirty-five trains per day through the area. A Union Pacific main line runs between El Paso and St. Louis runs east and west through central Longview. Longview is also a junction point with a Union Pacific line heading south to Houston, Laredo, and Gulf ports. The Burlington Northern Santa Fe (BNSF) line terminates in Longview, running south through Silsbee toward Beaumont.

Because of the amount of freight in the United States moved by rail, the market has become incredibly competitive. Valuable resources such as coal and oil are primarily moved by freight. Other resources that play important roles in the industrial also highly utilize freight as a means of transportation. These can be chemicals, grains, lumber, etc.

Railroads are more fuel efficient than other modes of transportation, on average, they are three times more fuel efficient than trucks. In 2009, railroads could move a ton of freight an average nearly 450 miles per gallon of fuel. That number is an 80 percent increase from 1980.[5] Because of their fuel efficiency, railroads also have an advantage over other modes of transportation in terms of greenhouse gas emissions, most notably carbon dioxide.

[3]"Freight Rail Today." FRA. N.p., n.d. Web. 19 Sept. 2014. <https://www.fra.dot.gov/Page/P0362>.
[4]"2015-2019 Strategic Plan." Texas Department of Transportation. N.p., n.d. Web. 19 Sept. 2014. <http://ftp.dot.state.tx.us/pub/txdot-info/sla/strategic-plan-2015-2019.pdf>.
[5]"About CSX." Fuel-Efficiency - CSX. CSX, n.d. Web. 19 Sept. 2014. <http://www.csx.com/index.cfm/about-csx/projects-and-partnerships/fuel-efficiency/>.

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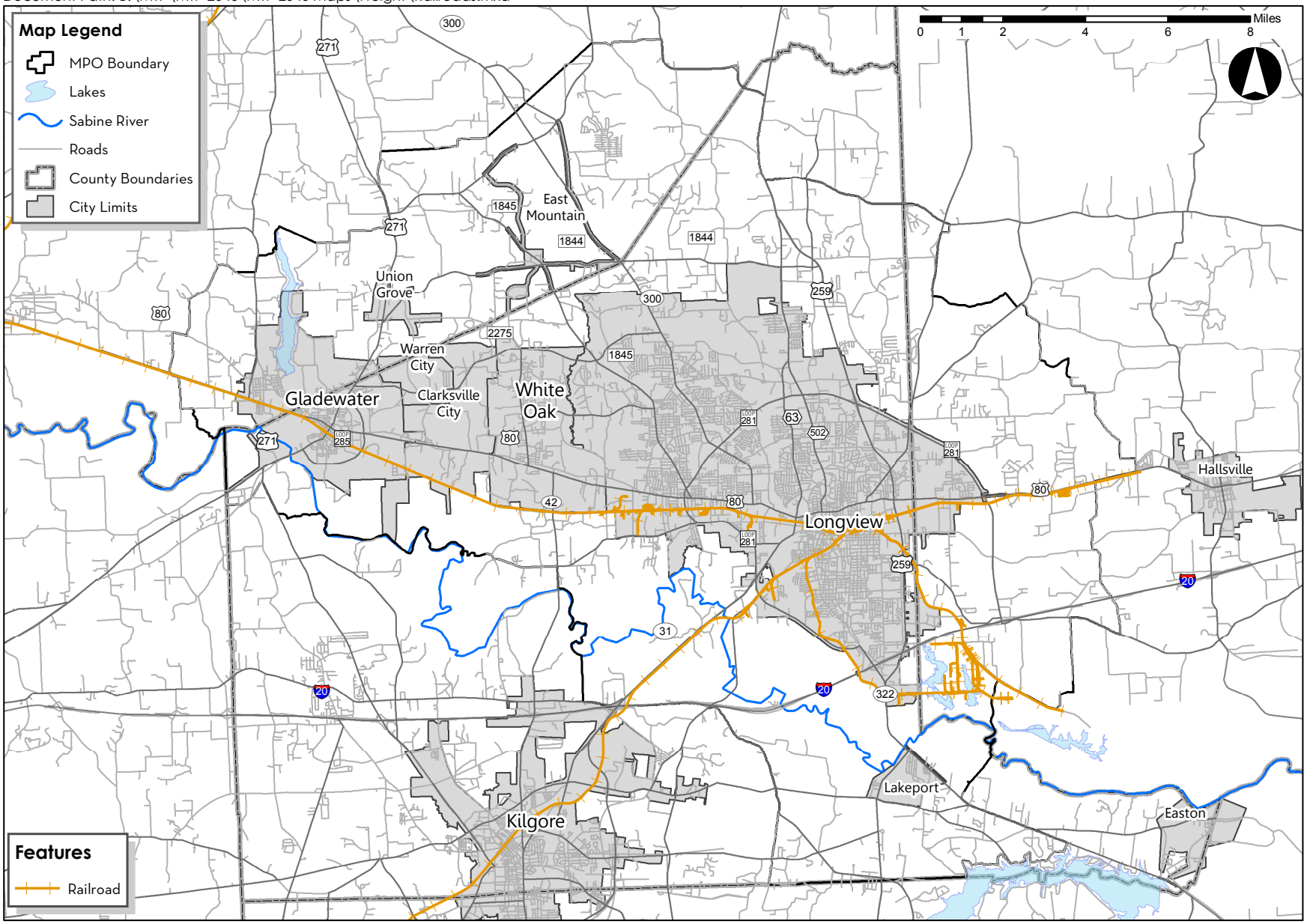


8A - Railroads

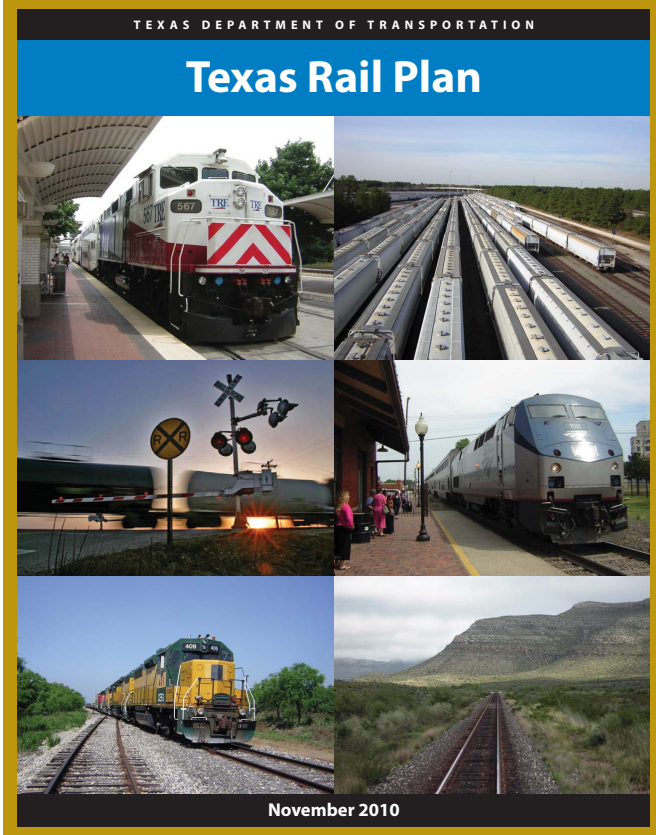
Brett M. Huntsman
11/17/2014

Texas Rail Plan

In 2005, the Texas Department of Transportation (TxDOT) developed its' first rail plan. This was after statewide planning authority for all rail was transferred from the Texas Railroad Commission (RRC). With the transition, there lacked direction for rail in the state. The purpose of the plan, known simply as the Texas Rail Plan (TRP), is to set policy, direction, and vision for the state in compliance with both federal and state regulations. This plan focuses on both passenger and freight rail systems in the state. The goals of the plan are listed:

- Develop an organizational structure and strategies designed to address the future multimodal needs of all Texans.
- Enhance safety for all Texas transportation system users.
- Maintain the existing Texas transportation system.
- Promote congestion relief strategies.
- Enhance system connectivity.
- Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners.

While the plan focuses on all uses for rail in the state, they do provide a vision for freight in the state. This vision is that Texas will provide safe and reliable freight movement internally as well as from external sources. With connections to the Gulf Coast, Mexico, and the southern states, facilitating movement to and from these regions has been identified of great importance. This can be done by maximizing the effectiveness of the current network by implementing advanced technology. These advancements could reduce bottlenecks in high traffic areas as well as streamline the efficiency of the system in emerging markets. This can be accomplished through public/ private partnerships in the state.



TxDOT - Texas Rail Plan

With the strong of economy of Texas in past decades, especially through the last national, the freight rail industry has seen equal growth. This is noted in the plan and several factors were given as the reason for this growth. They are listed as:

- Overall economic activity in Texas has outpaced the national economic output, as measured by the growth in the gross domestic product and gross state product. Projections from the state comptroller estimate continued Texas growth in the next 25 years.

- Texas is the second most populous state in the nation. The state's population is forecasted to grow an additional 9.4 million people by 2035, a 38.9% increase over projected 2010 levels. The forecast average annual percent per year increase is 1.56%.

- The population growth is not going to be spread evenly across Texas. The Texas State Data Center estimates that 92% of the 2010–2035 population growth will occur in the existing metropolitan counties (over 50,000 population). However, even rural areas will experience growth.

- Texas travel patterns, particularly by motor vehicle, have outpaced the growth in the population and are expected to continue in this trend. Vehicle miles traveled on Texas highways are projected to grow 72% from 2008 to 2035, while population is projected to grow 43% in the same period.

As a significant contributor of the national freight networks, these growth factors show promising signs for the future of rail freight in the Texas. The Longview MPO works closely with TxDOT and the Federal Rail Administration (FRA) in accommodating any rail freight projects that head through the busy Longview Multimodal Center.

Air Freight

East Texas Regional Airpark is a 300-acre industrial airpark which offers opportunities for businesses to buy lots near the airport for several benefits including foreign trade zones, fixed base operator, charter services and commercial development opportunities. Two current fixed base operators, KRS Express, Inc. and Stebbins Jet Center, offer amenities and services including fuel and courtesy cars. Air freight transport is commonly used for relatively small shipments of urgently needed shipments. Air freight is handled by American Eagle through the East Texas Regional Airport. In general, freight fluctuates greatly from year to year but has remained fairly steady over the last decade.

East Texas Regional Airport contains the area's only Foreign Trade Zone (FTZ)

The East Texas Regional Airpark has a Foreign Trade Zone. Under Foreign Trade Zone procedures, foreign and domestic merchandise may be admitted into the trade zone for operations such as storage, exhibition, assembly, manufacture or processing, without being subject to formal customs entry procedures, such as the payment of custom duties or federal excise taxes. When merchandise is removed from a Foreign Trade Zone, customs duties may be eliminated if the goods are then exported from the United

States. If the merchandise is formally entered into U.S. commerce, customs duties and excise taxes are due at the time of transfer from the Foreign Trade Zone. The advantages of location in the East Texas Foreign Trade Zone are the easy access to the airport, minus the congestion of flying and operating in a larger, busier airport. The landing fees are significantly lower at East Texas Regional Airpark compared to the Dallas Ft. Worth Airport.

Rail Access to FTZ

Plans are being developed to connect the existing east/ west rail lines running along Higwhay 80 to the Foreign Trade Zone. This rail line serves as a major freight corridor for several companies in the region. It also serves as a pedestrian corridor utilizing the Amtrak service.

This connection would be made available by the creation of a new rail spur that runs south to the FTZ at East Texas Regional Airport. This spur would add another form of transporting goods from the FTZ to major markets such as Dallas, Shreveport, and Houston.

Goals

- Work with State and Local agencies to identify important freight corridors within the planning region.
- Develop strategies to increase the mobility and safety of freight shipments along designated corridors.
- Find ways to develop seamless integration between multiple forms of freight transportation.
- Work with Federal, State, and Local agencies to determine the impact freight transportation on pavement quality and maintenance operations in the area.
- Investigate potential issues reducing the mobility of rail freight in the area.
- Investigate the feasibility and economic benefit of connecting East Texas Regional's Foreign Trade Zone to existing rail freight lines through the creation of new rail lines in the area.

CHAPTER 9 – FINANCIAL PLAN

Financial Plan

Introduction

The development of identifying estimated costs and revenues is vital to the creation of a long term transportation plan. The financial plan summary summarizes the costs and projected funds for the projects in the twenty-five year period. A revenue forecast was prepared to estimate the funding levels for the upcoming twenty-five years. The purpose of the financial plan is to evaluate the resources of the community to build and maintain transportation facilities. It is based on an analysis of past funding and expected funding from federal, state and local sources.

The federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21) requires that the financial plan demonstrates how the adopted transportation plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs. In simplest terms, the long term transportation plan must be financially constrained which demonstrates the projected revenue will be available to fund the projects in the long-term transportation plan. The financial plan may include, for illustrative purposes, additional projects that would be included in the long range transportation plan, if reasonable additional resources beyond those identified in the financial plan were available.

Total Project Costs and Year of Expenditure

In accordance with MAP-21, the financial plan's expenditures and revenues contain Total Project Costs and Year of Expenditure dollars for each project. The Year of Expenditure is the year when a construction project is anticipated and the project's associated inflated cost estimates are indentified in the transportation plan. An annual inflation rate of 4% was applied to project costs. Total Project Costs are provided in order to break down the various components of each project, such as: preliminary engineering, right of way purchase, utility relocation, and, in the case of transit projects: operating, planning, maintenance and capital. The revenues and expenditures address the construction of highway projects or the implementation of public transportation projects, as well as address the operation and maintenance needs of the existing transportation system and public transportation systems. The revenues and expenditures for the Metropolitan Transportation Plan are financially constrained by the Year of Expenditure federal requirement.

The spreadsheets, which follow this narrative, identify the Total Project Costs and Year of

Expenditure dollars for the projects within this Metropolitan Transportation Plan (MTP). In the case of the public transit program, the year in which major capital purchases or construction, such as buildings and facilities has been identified. Cost escalation must be accounted for as part of the fiscal constraint determination. It is understood that future revenues may not grow at the same rate, as construction expenses costs are subject to inflation over the twenty-five year window, therefore, project reductions or change in project scope, over time, may be needed. While reviewing the MTP for financial constraint, the Longview Metropolitan Planning Organization's Technical Committee found that it was extremely challenging to address the mobility and maintenance needs of the area. Without alternative funding sources, future anticipated funding revenues will not meet the mobility needs of the Longview planning area.

No discussion of highway funding would be complete without an explanation of the multifaceted factors which currently deplete funding for the Longview area. These factors severely affect the ability for the Longview area to receive state and federal mobility funding for highways. With gas tax revenues declining and construction cost fluctuations, it is becoming more difficult to pay for new highway construction.

- Declining gas tax revenues - Over the next two decades, fuel consumption will most likely decrease because of the impact of increased fuel efficient vehicles, even though there will be an increase in the driving population. More fuel efficient vehicles are good because they improve the quality of our air and motorists save money at the pump. As fuel consumption decreases, so do gas tax revenues. The federal gas tax is 18.4 cents per gallon and the state gas tax is 20 cents per gallon. These taxes were last increased in 1993 and 1991 respectively. The gas tax wasn't indexed to inflation; therefore, its buying power has been reduced since 1993.

- The uncertainty of federal funds - Established in 1956 to provide a dedicated source of federal funding for highways, the National Highway Trust Fund is the primary way federal highway and transit programs are funded for projects across the country. In 2008, the Highway Trust Fund experienced a zero balance and neared insolvency in 2014. The fund is being depleted because the estimated outlays exceed the revenues. The last increase in the federal gas tax was in 1993. A grave challenge faces Congress to remedy the highway funding problem.

- The movement of state transportation dollars to pay for other state priorities - Over time, diversions in the state gas tax have been moved from the State Highway Fund to pay for other priorities such as education and the Texas Department of Transportation. Out of the 20 cents per gallon gas tax, 5 cents goes to education and 4 cents goes to the Department of Public Safety, which leaves 11 cents per gallon for transportation. The last increase in the state gas tax was in 1991.

- The impact of inflation - Inflation has rapidly driven construction costs at an unprecedented rate. Between, 2002 and 2007, in only five years, highway construction costs increased 62%. The volatility of inflation creates a level of uncertainty. As a result, the years in which future projects

are constructed or implemented could change. Additionally, the longer projects are postponed, the higher the project cost can become.

Total Project Costs and Year of Expenditure

The Texas Department of Transportation (TxDOT) utilizes the Unified Transportation Program (UTP) as the state's project development for a ten year period. The UTP authorizes projects for construction, development, and planning activities and includes projects involving highways, public transportation, aviation, state and coastal waterways and rail. Projects in the first 10 years of 2015-2024 UTP are identified in this MTP. TxDOT utilizes a category system of programs for statewide highway projects.

Category 1 – Preventative Maintenance and Rehabilitation
Category 2 – Metro and Urban Area Corridor Projects
Category 3 – Non-traditionally Funded Transportation Projects
Category 4 – Statewide Connectivity Corridor Projects
Category 5 – Congestion Mitigation & Air Quality Improvement
Category 6 – Structures Replacement & Rehabilitation
Category 7 – Metropolitan Mobility & Rehabilitation
Category 8 – Safety
Category 9 – Transportation Enhancements
Category 10 – Supplemental Transportation Projects
Category 11 – District Discretionary
Category 12 – Strategic Priority

Revenue Forecasting

State & Federal Highway Projects

In order to assist Metropolitan Planning Organizations with their long range planning requirements, TxDOT agreed to go five years beyond the twenty year requirement of the Texas Administrative Code § 16.151 and § 16.152 for statewide revenue forecasting. In addition to the Association of Texas Metropolitan Planning Organizations, members of TxDOT's administration, district and division representatives, the Texas Transportation Institute was involved in the production of the forecast. TxDOT updates its long range forecast for the State Highway Fund revenue estimates on an annual basis.

During the formulation of a revenue forecast for the twenty-five term of the transportation plan, the MPO Technical Committee utilized TRENDS (Transportation Revenue Estimator and Needs Determination System). Various TRENDS scenarios were discussed and evaluated. To meet the growing demand on the transportation network, the committee agreed that some type of alternative revenue source to fund transportation will occur at some juncture in the next twenty-five years. Possible revenue sources are federal and state gas tax increases and indexed for inflation. Other revenue sources may be user-based fees, such as the sales tax of vehicles directed to the state highway fund or perhaps a small increase in vehicle registration fees. Based on previous local participation with the SH 42, SH

149 and George Richey Rd. Extension projects, the Technical Committee determined county and city participation is very likely to occur with future streets and highway projects.

The revenue projections in this transportation plan consist of funding amounts which are reasonably expected to be available for the twenty-five year planning horizon. For the Street and Highway Plan, in 2014 dollars, a total of $4 million per year or a total of $100 million is the estimated total funding for state and federal mobility projects for the upcoming twenty-five years. The $100 million is primarily based upon the funding forecast from the first ten years of the 2015-2024 Unified Transportation Program, other categories of anticipated funding, potential District and Commission Discretionary funding and funding from Category 2, Urban Area Corridor Projects. The Longview Metropolitan Planning Organization Technical Committee discussed and reviewed the funding forecast. On September 24, 2014, the MPO Technical Committee concurred with the amount of $100 million (in 2014 dollars) as the reasonably expected funding for the street and highway projects of the twenty-five year term.

For categories that are non-bank balanced programs, in which projects are selected upon a score or index, an average per year value was obtained and multiplied by twenty-five to derive forecasted funding. Federal funding is subject to specific type of allocations and sub-allocations.

The Illustrative List of Projects contains a list of unfunded federal and state funded street and highway projects. These are projects that are identified as needs, but are not expected to be funded within the twenty-five year planning horizon.

Over time, inflation will erode the buying power of current gasoline taxes used for highways, therefore, the implementation of alternative revenue sources will be required in the upcoming twenty-five years to meet the growing need for transportation improvements. Continued cooperative regional transportation planning will be required to explore and investigate regional partnerships to address the increasing transportation needs of the Longview area. New or additional funding sources will be considered to assist with the traditional streams of funding. Public and private partnerships will be explored to address the transportation needs of the area. Transportation Reinvestment Zones, North East Texas Regional Mobility Authority funding, local participation, user fees and innovative funding are possible options to make up the funding shortfall.

State & Federal Highway Projects

City of Longview street projects - With the exception of the Bill Owens Parkway extension project, the City of Longview street projects are not regionally significant. The Bill Owens Parkway extension, from Hawkins Parkway to George Richey Rd, is currently unfunded, but expected to be funded in the upcoming twenty-five years.

Public Transportation Projects

The projected expenses for Longview Transit fixed route/demand response projects of operations, planning and capital were derived from an annual average of the 2015 - 2018 Transportation Improvement Program. The annual average for the categories of operating, capital and planning expenses was multiplied by 25 for the twenty-five year time frame of the plan. An inflation factor of 4% per year was then applied to the twenty-five year figure. Total project costs were calculated for major capital purchases, such as buildings, transit facilities and major fleet expansions. Total project cost is not required for the types of

expenses such as operating, planning, and minor capital purchases.

Given current inflation rates and the uncertainty of future federal funding, it is fairly certain there will be a funding gap between the expenditures and revenues for the twenty-five year term. The funding gaps are identified as the amount the public transportation program must be reduced to match projected revenues. Current apportionments, which have stayed relatively the same during the previous five years, are not increasing enough to cover the ever-increasing rate of inflation. Strategies to address the funding gaps might be to reduce service hours and routes, to reduce the rate at which buses are replaced or to generate additional revenue through advertising, fare increases, explore other revenue generation methods or increase local funding to the transit program. The public transportation financial plan was developed in consultation with the Metropolitan Planning Organization, and Longview Transit, the Section 5307 urban transportation provider and the Texas Department of Transportation.

Grouped Projects - Traffic Operations, Safety, Bicycle, Pedestrian, Bridge and Maintenance

For traffic operations, safety, bicycle, pedestrian, bridges and pavement maintenance projects, a twenty-five year projection of federal, state and local revenue funding was calculated based upon a combination of historical funding since 1994, future projects from the current four-year Transportation Improvement Program, the ten year Unified Transportation Program (UTP), and expected future district allocations.

For the development of the federal and state funding forecast for pavement maintenance projects, an annual average percentage of the Tyler District maintenance funds (preventive maintenance and preventive rehabilitation projects) spent within the Longview Metropolitan Area was determined by the Technical Committee to be $61.6 million, given historical trends. This methodology was also utilized to predict the on and off-system bridge program, safety and traffic operations funding.

Basic and preventive maintenance, including overlays, seal coats, patching, and other maintenance activities for City of Longview streets are funded through the City's General Fund. General Fund revenues primarily consist of property taxes, the local option sales tax, licenses, permits and fees. Future construction projects will not be possible without another bond election. Forecasted funding levels for City of Longview funded maintenance projects were derived by researching historical expenditure trends, the bond elections of 1994, 1998, 2007 and 2011 the expected future funding levels.

Maintenance project estimates for the City of White Oak and Gladewater were based upon previous historical expenditures. An annual

average was obtained from the total amount spent on maintenance, which was divided by five, then multiplied by twenty-five to derive a total estimate for the twenty-five year planning term. An inflation factor of 4% per year was applied to the twenty-five year estimate.

Most of the county road and bridge funding for Gregg, Harrison & Upshur counties is spent outside the Metropolitan area. No historical information on funds spent solely within the Metropolitan area is available. Gregg, Harrison and Upshur counties maintain approximately 25% of the total roads in the Metropolitan area. These county roads have extremely low traffic volumes and annual maintenance cost of county roads within the planning area is relatively low compared to cities and state maintenance costs. Funds for road and bridge expenditures for the counties are derived from general tax revenue.

Financial Plan Summary

The Financial Plan includes systems-level estimates of costs and revenue sources for adequately operating and maintaining the facilities. Highway preservation is a top priority for Texas. The integrity of the existing highway system should not be allowed to deteriorate. Maintaining the public transportation transit system buses, building and program is important as well. The revenues and expenditures address the construction or implementation of transportation projects, as well as address the operation and maintenance needs of the existing transportation system and public transportation systems.

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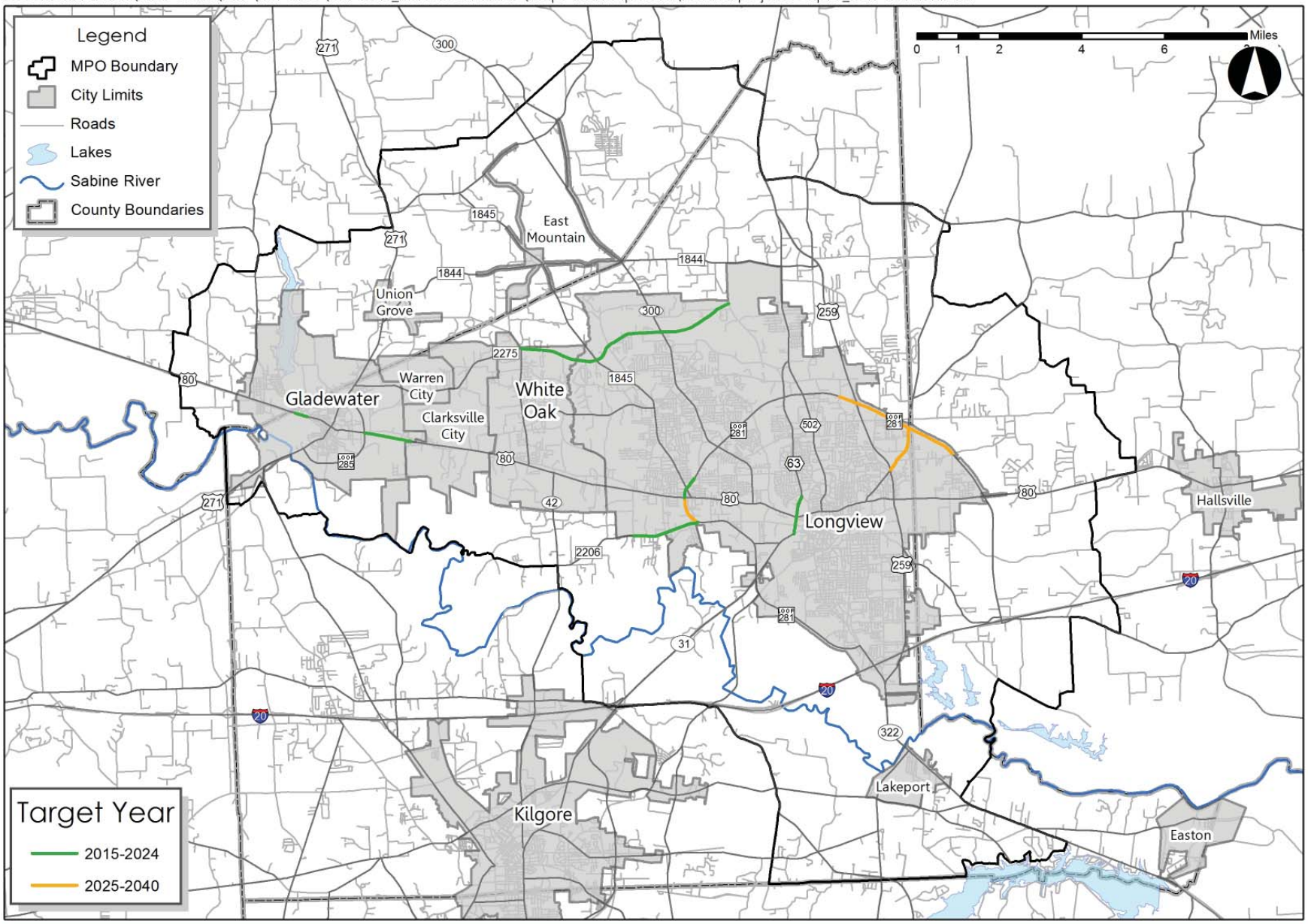

9 - A Street & Highway Funded Projects 2015 - 2040

Brent Bradberry
Revised January 25, 2017

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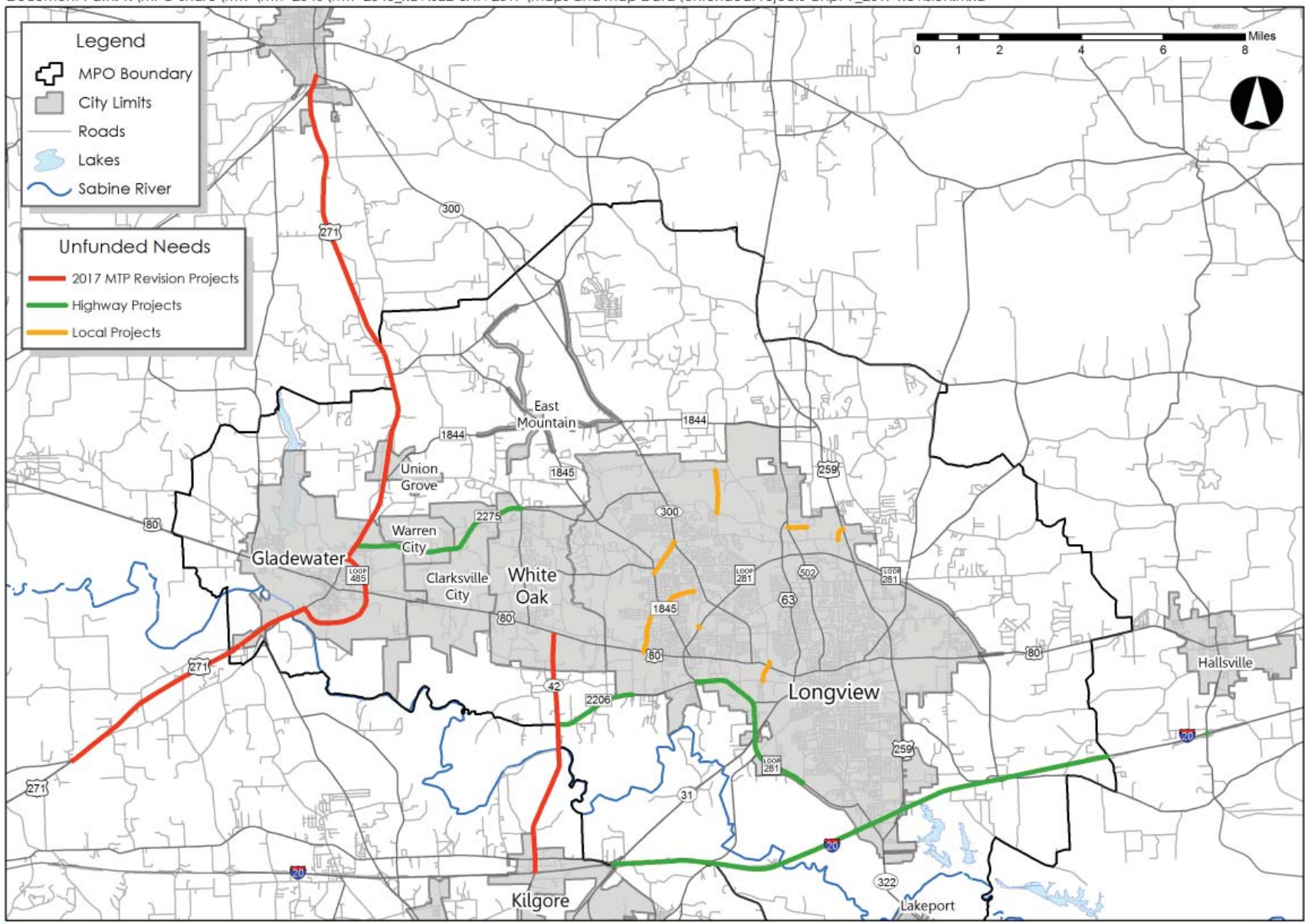

9 - B Street & Highway Unfunded Projects

Brent Bradberry
Revised January 25, 2017

FINANCIAL PLAN - Street & Highways 2015-2040

ESTIMATES ARE FOR PLANNING PURPOSES ONLY AND ARE BASED UPON AVAILABLE INFORMATION

MTP PROJECT ID#	SCORE	TARGET YEAR	PROJECT	LOCATION	DESCRIPTION	TOTAL PROJECT COST ESTIMATES: CONSTRUCTION: Federal & State	CONSTRUCTION: Federal & State Interstate 20	CONSTRUCTION: Toll Road	Preliminary Engineering[3] (Footnote #3)	Right of Way	Utility Relocation	Total
2015 - 2024			**FEDERAL & STATE PROJECTS:**						***FIGURES INCLUDE ANNUAL 4% INFLATION***			
F 245	N/A	2015	FM 2275 (GEORGE RICHEY RD.)	SH 300 (GILMER RD) TO MCCANN RD	FIVE LANE DIVIDED ROADWAY ON NEW LOCATION	$12,300,000			$3,169,100	$1,000,000	$1,000,000	$17,469,100
F 107	N/A	2017	US 80	LOOP 485 TO LOCKER PLANT RD	RECONSTRUCT ROADWAY WITH CENTER TURN LANE	$2,849,440			$618,330	$0	$0	$3,467,770
F 115	4.0	2019	FM 2206 (HARRISON RD)	LOOP 281 TO FISHER RD	WIDEN FROM 2 TO 4 LANES DIVIDED	$10,528,730			$3,454,590	$2,047,250	$11,698,590	$27,729,160
F 130	4.5	2020	W. LOOP 281	US 80 TO SHOFNER RD	WIDEN FROM 4 TO 6 LANES, DIVIDED	$2,163,390			$834,450	$2,321,370	$304,160	$5,623,370
F 109	6.5	2020	US 80	MUSTANG TO VIRGINIA DR	RECONSTRUCT ROADWAY WITH CENTER TURN LANE	$3,649,960			$1,157,040	$912,490	$304,160	$6,023,650
F 246	6.5	2021	FM 2275 (GEORGE RICHEY RD.)	FM 1845 to SH 300	WIDEN FROM 2 TO 4 LANES, DIVIDED	$10,758,450			$3,726,430	$8,363,760	$2,846,970	$25,695,610
F 247	8.5	2023	FM 2275 (GEORGE RICHEY RD.)	FM 3272 (WHITE OAK RD) TO FM 1845	WIDEN FROM 2 TO 4 LANES, DIVIDED	$13,175,540			$4,364,520	$1,149,600	$6,842,850	$25,532,510
F 110	6.2	2024	SPUR 63 /SH 31	SOUTH ST TO MCCANN RD	WIDEN FROM 4 TO 6 LANES, DIV.& REPLACE RR BRIDGE	$12,437,610			$3,552,950	$15,320,530	$853,990	$32,165,080
					2015 to 2024	**$67,863,120**			**$20,877,410**	**$31,115,000**	**$23,850,720**	**$143,706,250**
2025 - 2040			**FEDERAL & STATE PROJECTS:**						***FIGURES INCLUDE ANNUAL 4% INFLATION***			
F 120	5.0	2027	FM 2208 (ALPINE RD)	LOOP 281 TO US 259	WIDEN FROM 2 TO 4 LANES, DIVIDED	$9,406,750			$2,521,580	$4,220,320	$960,620	$17,109,270
F 140	4.7	2030	E. LOOP 281	FOURTH ST TO FM 2208	WIDEN FROM 4 TO 6 LANES, DIVIDED	$30,255,850			$7,105,800	$5,402,830	$540,280	$43,304,760
F 250	N/A	2030	TOLL 49	US 271 TO US 259	NEW 2 LANE TOLL ROAD OF AN ULTIMATE 4 LANE RD			$115,260,380	$6,843,590	$22,511,790	$4,322,260	$148,938,020
F 141	3.5	2032	E. LOOP 281	FM 2208 TO PAGE RD	WIDEN FROM 4 TO 6 LANES, DIVIDED	$21,816,490			$5,318,550	$1,363,530	$389,580	$28,888,150
F 131	4.5	2035	W. LOOP 281	FM 2206 TO US 80	WIDEN FROM 4 TO 6 LANES, DIV. & REPLACE RR BRIDGE	$16,681,630			$4,277,250	$14,976,330	$1,205,120	$37,140,330
					2025 to 2040	**$78,160,720**		**$115,260,380**	**$26,066,770**	**$48,474,800**	**$7,417,860**	**$275,380,530**
					2015 to 2040	**$146,023,840**		**$115,260,380**	**$46,944,180**	**$79,589,800**	**$31,268,580**	**$419,086,780**
UNFUNDED NEEDS			**FEDERAL & STATE PROJECTS:**						***FIGURES BELOW ARE SHOWN IN 2015 DOLLARS & ARE NOT INFLATED***			
F 234	6.1		INTERSTATE 20	VARIOUS LOCATIONS IN MPO AREA	BRIDGES, INTERCHANGES & FRONTAGE RD IMPROVEMENTS		$78,600,000		FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$78,600,000
F 235	6.1		INTERSTATE 20	VARIOUS LOCATIONS IN MPO AREA	WIDEN FROM 4 TO 6 LANES, DIVIDED		$121,400,000		FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$121,400,000
F 116	5.0		FM 2206 (HARRISON RD)	SH 42 TO FISHER RD	WIDEN FROM 2 TO 4 LANES DIVIDED	$17,762,930			$5,778,870	$2,960,490	$29,604,890	$56,107,180
F 248	4.9		FM 2275 (GEORGE RICHEY RD.)	TEXAS ST TO FM 3272 (WHITE OAK RD)	WIDEN FROM 2 TO 4 LANES, DIVIDED	$16,307,040			$5,166,900	$6,108,970	$1,480,240	$29,063,150
F 249	6.1		FM 2275 (GEORGE RICHEY RD.)	US 271 TO TEXAS ST	WIDEN FROM 2 TO 4 LANES, DIVIDED	$14,781,100			$4,835,770	$5,124,610	$1,480,240	$26,221,720
F 132	4.1		W. LOOP 281	COTTON TO FM 2206	WIDEN FROM 4 TO 6 LANES, DIVIDED	$6,430,850			$2,283,640	$7,445,630	$666,110	$16,826,230
F 133	5.3		W. LOOP 281	FM 2205 (JAYCEE DR) TO COTTON	WIDEN FROM 4 TO 6 LANES, DIVIDED	$6,019,200			$2,194,310	$3,596,990	$666,110	$12,476,610
F 134	4.7		W. LOOP 281	FM 2087 TO FM 2205 (JAYCEE DR)	WIDEN FROM 4 TO 6 LANES, DIVIDED	$16,238,150			$4,411,830	$7,374,580	$740,120	$28,764,680
F 135	4.9		W. LOOP 281	BIRDSONG TO FM 2087	WIDEN FROM 4 TO 6 LANES, DIVIDED	$17,518,260			$5,281,710	$16,774,130	$13,668,580	$53,242,680
* F 301	3.7		SH 42	US 80 TO INTERSTATE 20	WIDEN FROM 2 TO 4 LANES, DIVIDED	$40,000,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$40,000,000
* F 302	N/A		US 271	SH 155, S. OF GILMER, TO GREGG/UPSHUR CO. LINE	WIDEN EXISTING 4-LANE UNDIVIDED HIGHWAY TO 4-LANE DIVIDED	$60,000,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$60,000,000
* F 303	N/A		US 271	GREGG/UPSHUR CO. LINE TO LOOP 485 IN N. GLADEWA	WIDEN FROM 2 TO 4 LANES, DIVIDED	$3,500,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$3,500,000
* F 304	N/A		US 271	LOOP 485 IN S. GLADEWATER TO FM 16	WIDEN FROM 2 TO 4 LANES, DIVIDED	$44,000,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$44,000,000
* F 305	3.3		LOOP 485	US 271, IN S. GLADEWATER TO US 80	WIDEN FROM 2 TO 4 LANES, WITH CENTER TURN LANE	$8,000,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$8,000,000
* F 306	N/A		LOOP 485	US 80, IN E. GLADEWATER TO US 271	WIDEN 4 LANE ROADWAY FOR CENTER TURN LANE	$5,000,000			FOOTNOTE #2	FOOTNOTE #1	FOOTNOTE #1	$5,000,000
					UNFUNDED PROJECTS TOTAL	**$255,557,530**	**$200,000,000**		**$29,953,030**	**$49,385,400**	**$48,306,290**	**$583,202,250**

FOOTNOTES **1 = Right of way and relocation of utilities for this project will not be known until schematic & finalized design is determined.**
2 = Preliminary engineering, right of way and utilities are funded through non-construction funding sources.
3 = Preliminary engineering also includes construction engineering, contingencies & indirect costs.

*** Revised January 25, 2017**

FINANCIAL PLAN - Street & Highways 2015-2040

MTP PROJECT ID#	YEAR PROJECT BECOMES A NEED	PROJECT	LOCATION	DESCRIPTION	Construction	Preliminary Engineering (Footnote #3)	Right of Way	Utility Relocation	TOTAL
ESTIMATES ARE FOR PLANNING PURPOSES ONLY AND ARE BASED UPON AVAILABLE INFORMATION.									
2015 - 2040		**CITY OF LONGVIEW PROJECTS:**			*FIGURES INCLUDE ANNUAL 4% INFLATION*				
L 300	2015	FOURTH ST	HAWKINS PKWY TO US 259	NEW FOUR LANE ROADWAY	$2,500,000	$650,000	$0	$40,000	$3,190,000
L 301	2015	LAKE LAMOND & BILL OWENS REALIGNMENT	US 80 TO COTTON	WIDEN FROM 2 TO 4 LANES & REALIGN BILL OWENS DOUBLE CURVE	$3,890,000	$610,000	$180,000	$770,000	$5,450,000
L 302	2015	DUNDEE RD	GILMER TO PINE TREE	WIDEN FROM 2 TO 4 LANES	$4,600,000	$600,000	$400,000	$2,000,000	$7,600,000
L 303	2015	REEL RD (Phase II)	KNOBCREST TO PINE TREE RD	WIDEN FROM 2 TO 4 LANES	$5,800,000	$1,100,000	$400,000	$1,500,000	$8,800,000
L 304	2020	TOLER REALIGNMENT	TOLER RD TO LOOP 281	REALIGN TOLER AT LOOP 281	$1,766,580	$194,660	$456,240	$0	$2,417,480
L 305	2020	SPRING HILL RD EXTENSION	JUDSON TO AIRLINE	NEW FOUR LANE ROAD	$3,041,630	$456,240	$182,500	$0	$3,680,370
L 306	2030	SILVER FALLS RD (Phase II)	BIRCH TO US 80	WIDEN FROM 2 TO 4 LANES	$7,744,060	$1,620,850	$540,280	$1,800,940	$11,706,130
L 307	2030	BILL OWENS PKWY	SPRING HILL RD TO GEORGE RICHEY	NEW FOUR LANE ROADWAY	$12,606,600	$1,260,660	$1,080,570	$90,050	$15,037,880
				TOTAL COSTS 2015 - 2040	**$41,948,870**	**$6,492,410**	**$3,239,590**	**$6,200,990**	**$57,881,860**

The target year indicates the year that the project becomes a need. City projects are unfunded.

FOOTNOTES: 1 = Right of Way and relocation of utilities for this project will not be known until schematic & finalized design is determined.

2 = Preliminary Engineering, Right of Way and Utilities are funded through non-construction funding sources

3 = Preliminary Engineering also includes construction engineering, contingencies & indirect costs.

4 = Target year indicates the year that the project becomes a need. City projects are unfunded.

FINANCIAL PLAN - Public Transportation 2015 - 2040

ESTIMATES INCLUDE AN ANNUAL 4% INFLATION FACTOR

MTP PROJECT ID#	PROJECT DESCRIPTION	FEDERAL	STATE	CITY OF LONGVIEW	TOTAL
F 401	OPERATING EXPENSES - PUBLIC TRANSPORTATION (SEC. 5307) - LONGVIEW TRANSIT FIXED ROUTE & DEMAND RESPONSE	$13,825,264	$12,442,738	$1,382,526	$27,650,529
F 402	CAPITAL EXPENSES - PUBLIC TRANSPORTATION (SEC. 5307) - LONGVIEW TRANSIT FIXED ROUTE & DEMAND RESPONSE (BUSES, EQUIPMENT, MAINTENANCE, INTELLIGENT TRANSP. SYSTEMS, ETC.)	$26,291,950	$5,414,752	$5,530,575	$37,237,277
F 403	PLANNING EXPENSES - PUBLIC TRANSPORTATION (SEC. 5307) LONGVIEW TRANSIT FIXED ROUTE & DEMAND RESPONSE	$3,133,727	$0	$783,432	$3,917,158
	TOTAL FTA SECTION 5307	**$43,250,941**	**$17,857,490**	**$7,696,533**	**$68,804,964**
F 404	PUBLIC TRANSPORTATION PROGRAMS - SECTION 5303 MPO PLANNING, SECTION 5304 PLANNING ASSISTANCE, SECTION 5309 FIXED GUIDEWAYS CAPITAL INVESTMENT GRANTS, SECTION, SECTION 5310 SENIORS & DISABLED, SECTION 5337 STATE OF GOOD REPAIR, SECTION 5311(F) INTERCITY BUS AND OTHER PROGRAMS	$2,980,081	$0	$324,000	$3,304,081
F 405	LONGVIEW TRANSIT TRANSFER CENTER RELOCATION TO MULTIMODAL CENTER	$600,000	$0	$150,000	$750,000
F 406	MULTIMODAL TRANSPORTATION CENTER IMPROVEMENTS	$380,000	$0	$95,000	$475,000
F 407	MULTIMODAL TRANSPORTATION CENTER & LONGVIEW TRANSIT FACILITY IMPROVEMENTS & EXPANSIONS	$1,920,000	$0	$480,000	$2,400,000
	TOTAL COSTS FOR PROJECTS F 404, F 405, F 406 & F 407	**$5,880,081**	**$0**	**$1,049,000**	**$6,929,081**

ESTIMATES ARE FOR PLANNING PURPOSES ONLY.
DETAILED AND REVISED COST ESTIMATES MUST BE PREPARED BEFORE INCLUDING IN ANY WORKS PROGRAM.

FINANCIAL PLAN - Grouped Projects 2015 - 2040

MTP PROJECT ID#	PROJECT DESCRIPTION	LOCATION	YEAR	YEAR OF EXPENDITURE COST
		ESTIMATES INCLUDE AN ANNUAL 4% INFLATION FACTOR		
F 501	PAVEMENT MAINTENANCE - (SEALCOAT, OVERLAY, SURFACE REPAIRS) - FEDERAL/STATE FUNDED ON-SYSTEM ROADWAYS	MPO AREA	2015-2040	$88,623,489
F 502	PAVEMENT MAINTENANCE - (SEALCOAT,OVERLAY, SURFACE REPAIRS - LOCALLY FUNDED BY THE CITIES OF LONGVIEW, WHITE OAK & GLADEWATER & GREGG, HARRISON & UPSHUR COUNTIES FOR OFF-SYSTEM ROADWAYS WITHIN THE MPO AREA	CITY LIMITS & COUNTIES	2015-2040	$83,306,080
F 503	BRIDGE PROGRAM - ON-SYSTEM & OFF-SYSTEM BRIDGE MAINTENANCE & REPLACEMENTS	MPO AREA	2015-2040	$6,868,320
F 504	TRAFFIC OPERATIONS & SAFETY - TRAFFIC SIGNAL SYSTEM UPGRADES, NEW SIGNALS, TURNING LANES, CHANNELIZATION, REALIGNMENT OF INTERSECTIONS, MEDIANS, LIGHTING & SAFETY IMPROVEMENTS	MPO AREA	2015-2040	$32,144,483
F 505	BICYCLE & PEDESTRIAN PROJECTS - BICYCLE & PEDESTRIAN TRAILS, BICYCLE LANES, SIDEWALKS, COMPLETE STREETS IN LONGVIEW ON MOBBERLY AVE, GREEN ST, MLK BLVD. & VARIOUS LOCATIONS WITHIN MPO AREA	MPO AREA	2015-2040	$37,500,864

ESTIMATES ARE FOR PLANNING PURPOSES ONLY.
DETAILED AND REVISED COST ESTIMATES MUST BE PREPARED BEFORE INCLUDING IN ANY WORKS PROGRAM.

APPENDIX

FREDONIA ST
Downtown
LONGVIEW
100
Years of
Heritage
Toledo Finance
ONE
WAY

Appendix

Traffic Analysis Zones (TAZs)

Traffic analysis zones, also known as TAZs, are geographic units used to inventory existing and future demographic data required for the travel demand modeling process. The primary definition for traffic analysis zones is the major street network and in a few cases the zones are delineated by rivers or creeks.

For travel demand modeling purposes, the socio-economic data, such as population, households, median income, and employment are loaded into the 336 traffic analysis zones for the Longview Metropolitan Area. The study area encompasses all of Gregg County and a small portion of western Harrison County. The current 336 TAZ structure is maintained and applied during all model applications.

On the following page, Map X-A identifies the 336 traffic analysis zones for the Longview Metropolitan Area. The 2007 and 2040 socio-economic data is broken down by TAZ for population, number of households, median income, and three types of employment: basic, service and retail. The total number of trips destined to a particular TAZ is determined by the number of employees within a TAZ and its density as measured by a weighted combination of population and employment in relation to total TAZ acres. The trip generation model calculates trip productions and trip attractions by trip purpose for each TAZ in the region. Trip productions are a measure of how many trips a zone is expected to produce based on the number of households within the TAZ and each household's size (number of people) and income. Trip attractions are a measure of how many trips each TAZ is expected to receive.

This TAZ structure will be revised when the next model is produced. This will account for the expanded Metropolitan Planning Boundary. The next long term plan for the region will be based on the updated model.

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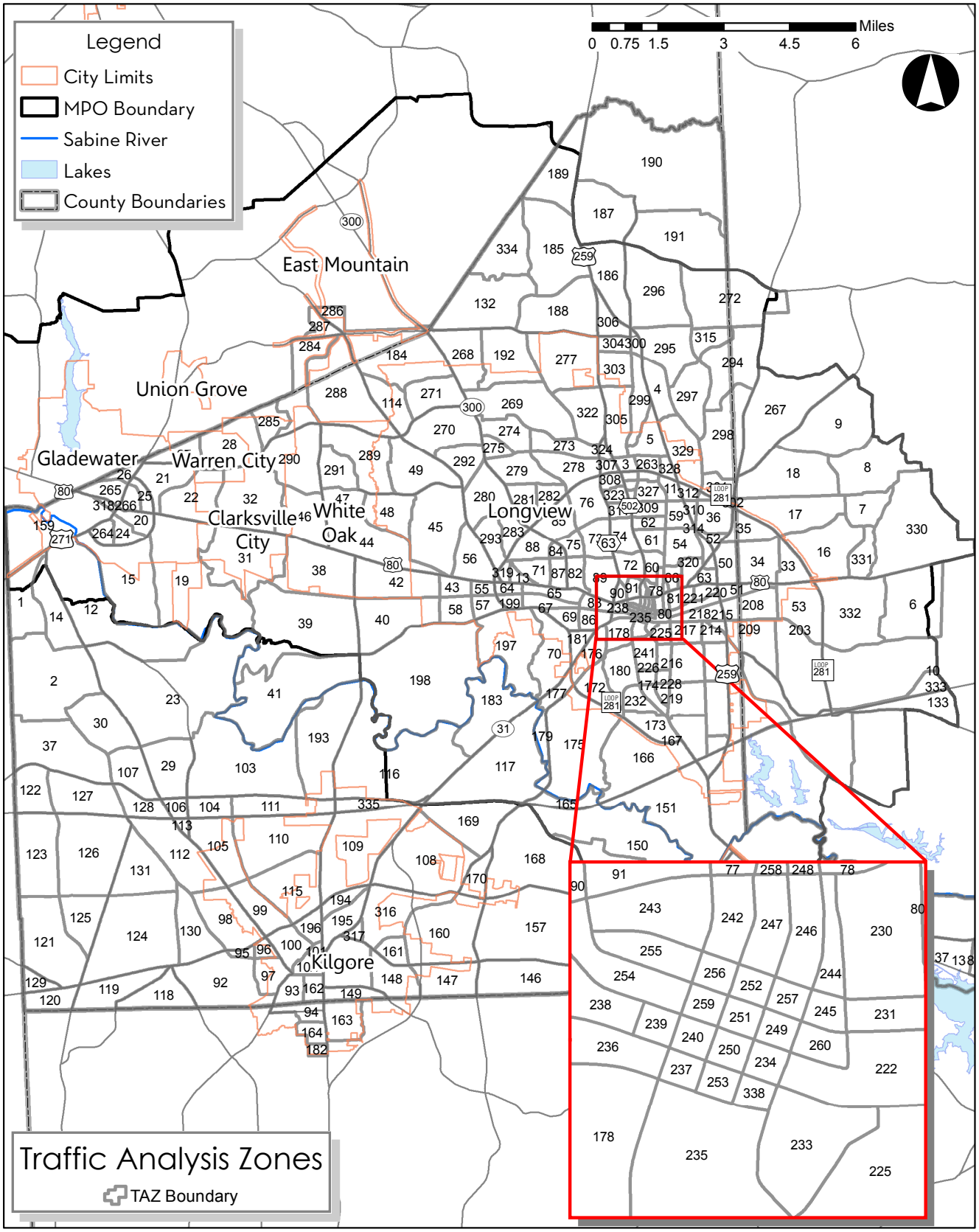


XA - Traffic Analysis Zones

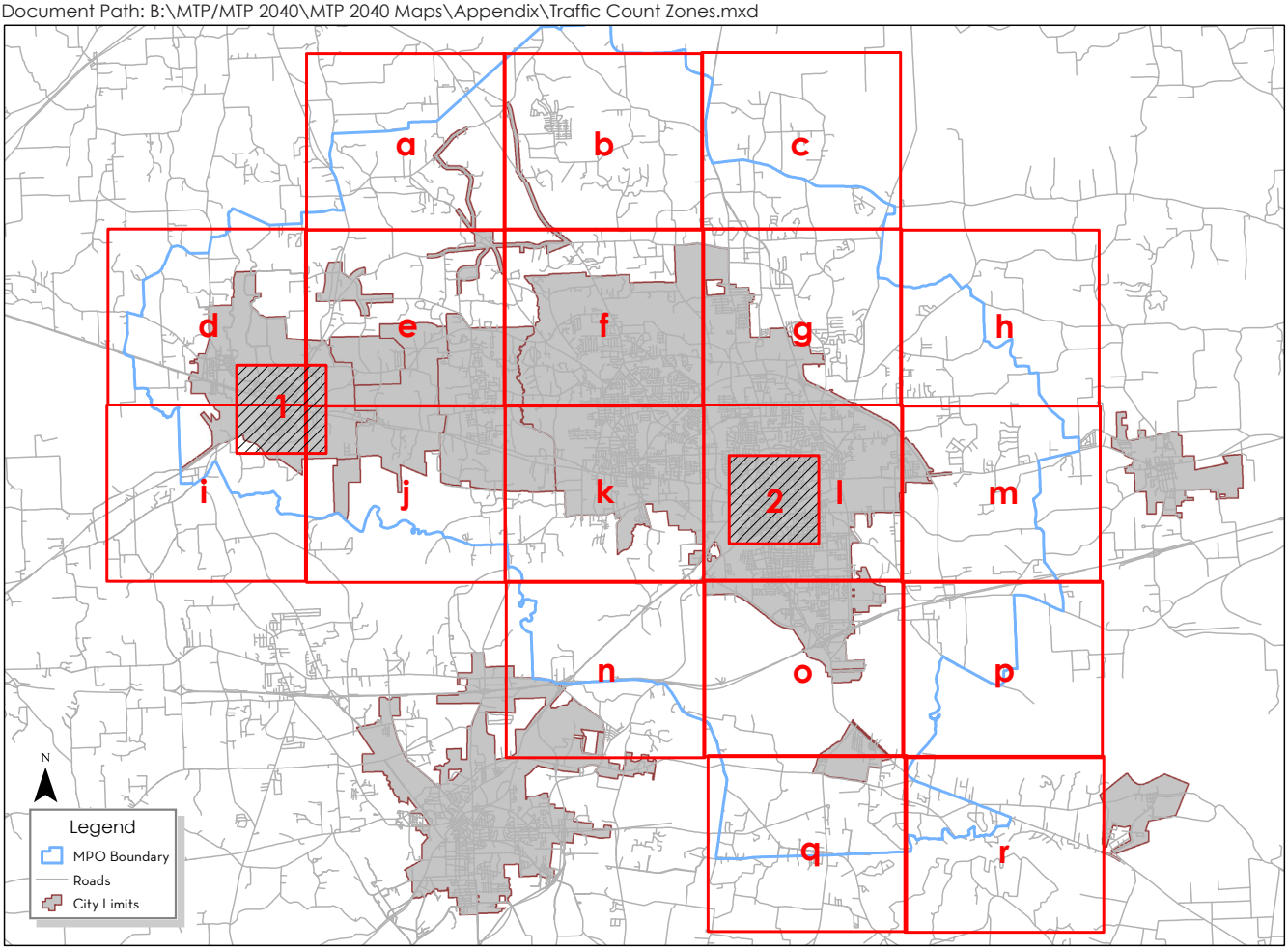
Brett M. Huntsman
11/17/2014

Traffic Counts

Every five years, TxDOT conducts saturation counts which encompass several hundred locations in the Longview MPO planning area. These counts are less accurate but cover a large number of locations in the area. These saturation counts are used in the developing of the traffic demand model the MPO uses to determine congestion in the planning area for the next twenty-five years.

Because of the volume of counts, and the relative closeness of counts in urban areas, the area has been divided up into several individual maps. The downtown area of Gladewater and Longview have been created with a more detailed view.

Document Path: B:\MTP/MTP 2040\MTP 2040 Maps\Appendix\Traffic Count Zones.mxd



XB - Traffic Count Zones

Brett M. Huntsman
10/29/2014

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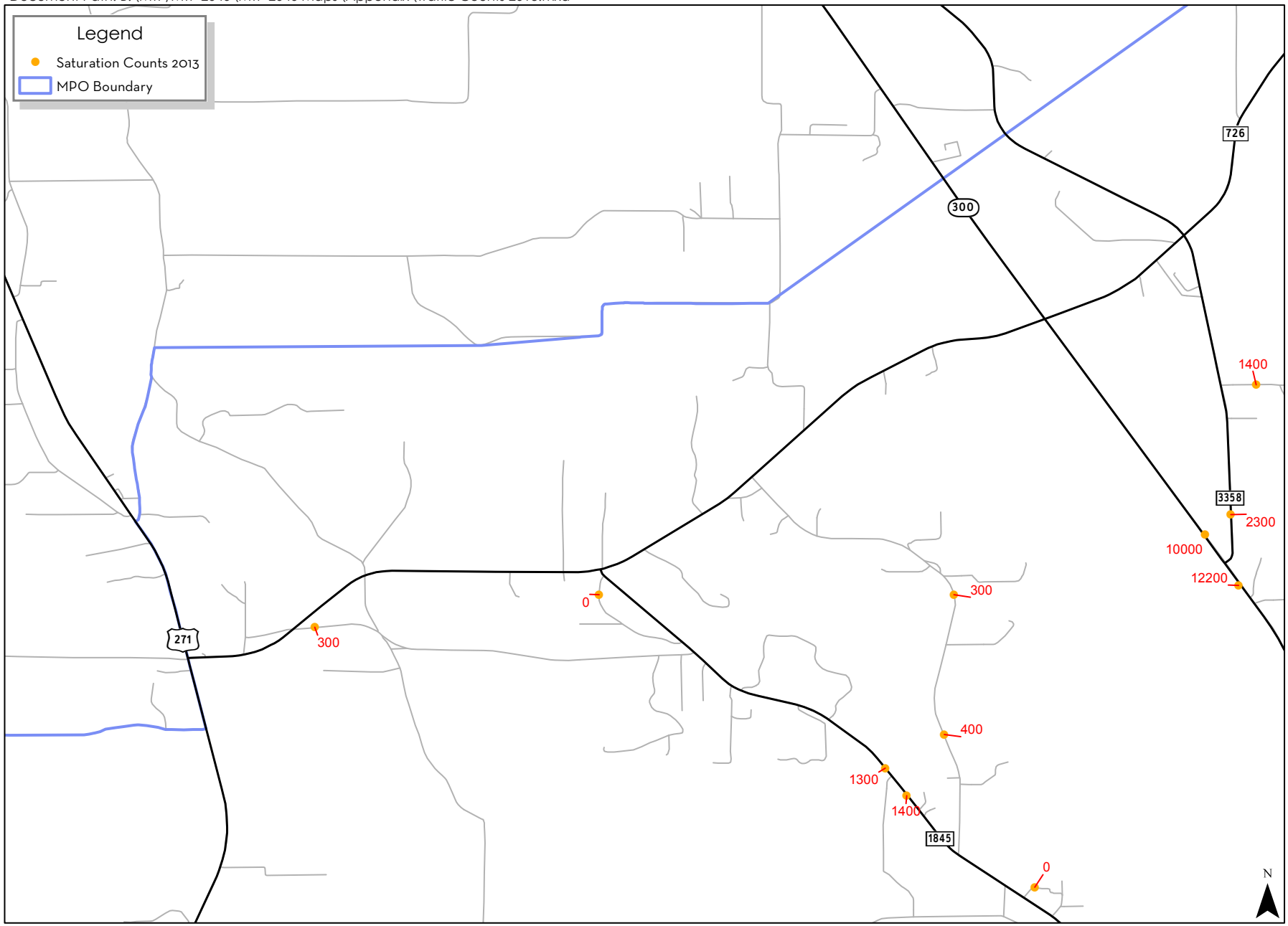

XB (a) - Traffic Counts

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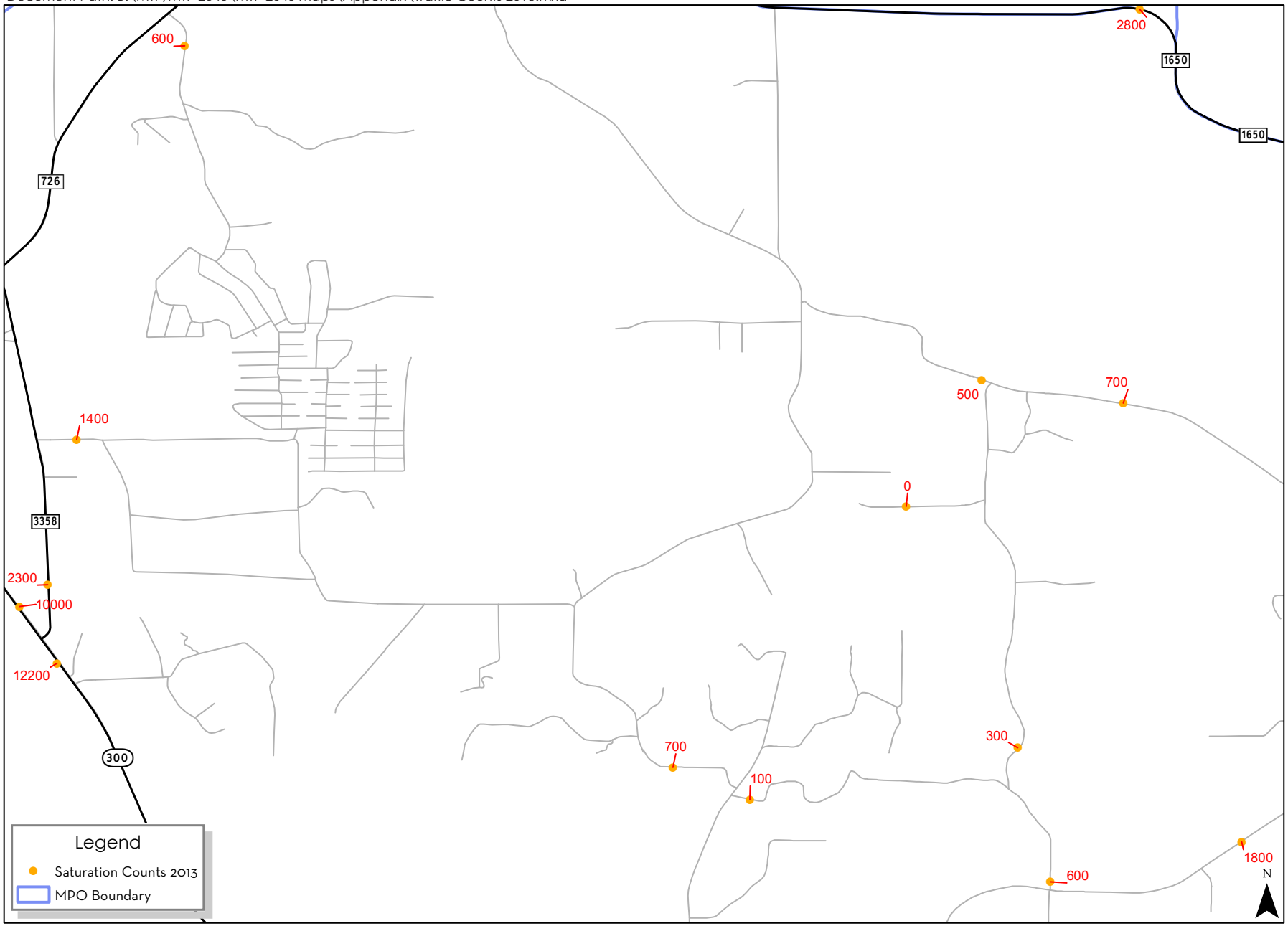

XB (b) - Traffic Counts

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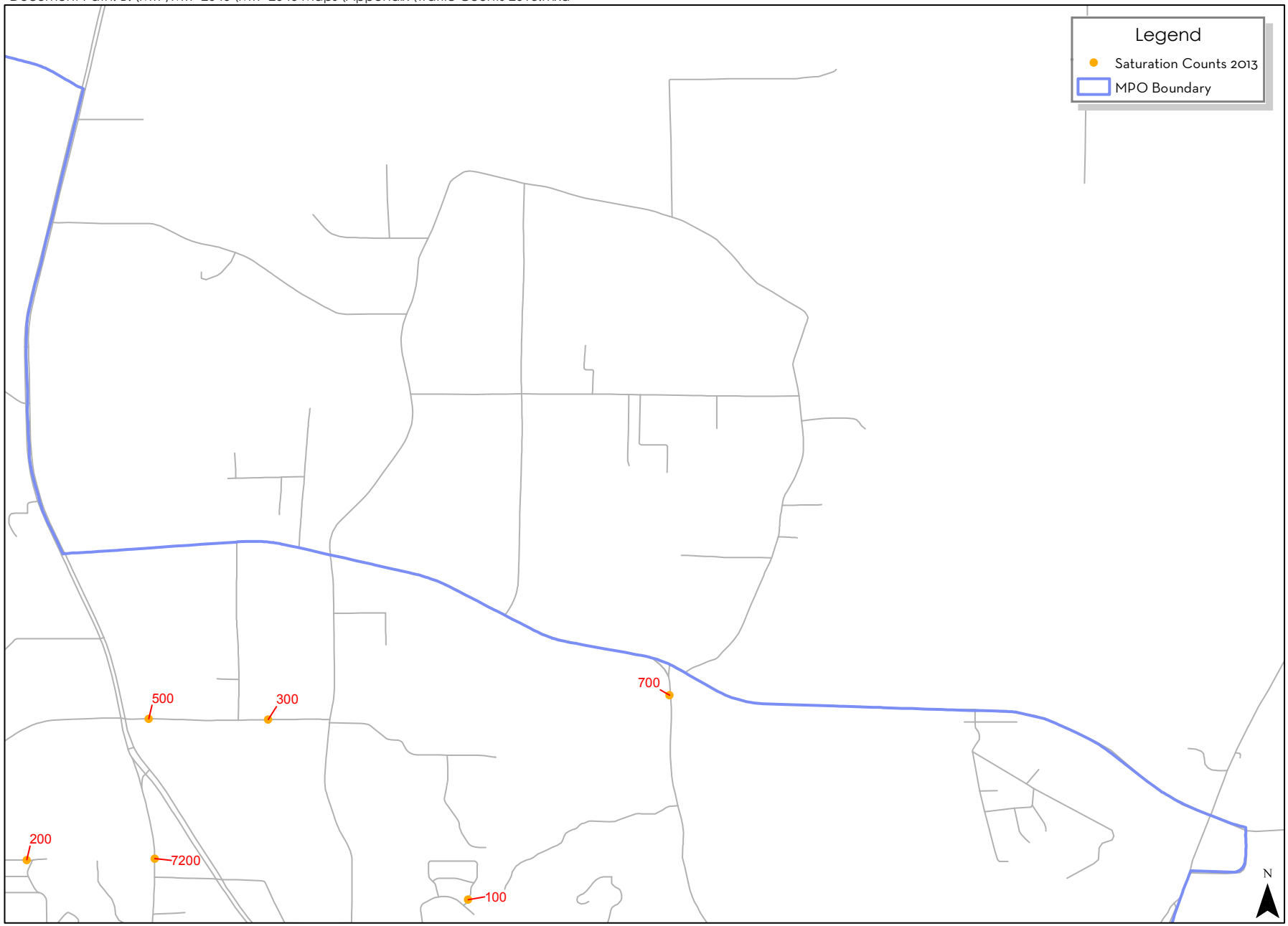

XB (c) - Traffic Counts

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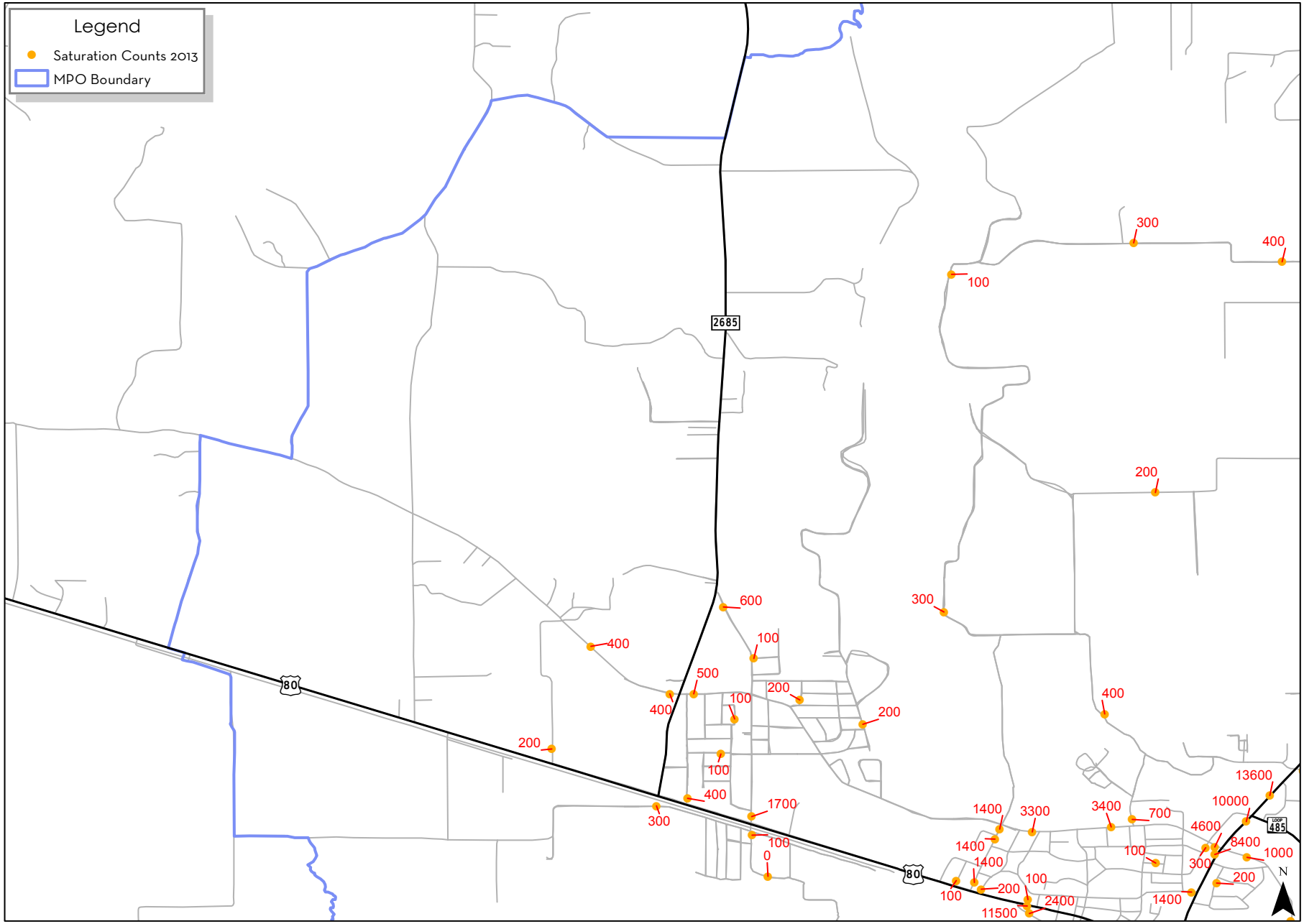

XB (d) - Traffic Counts

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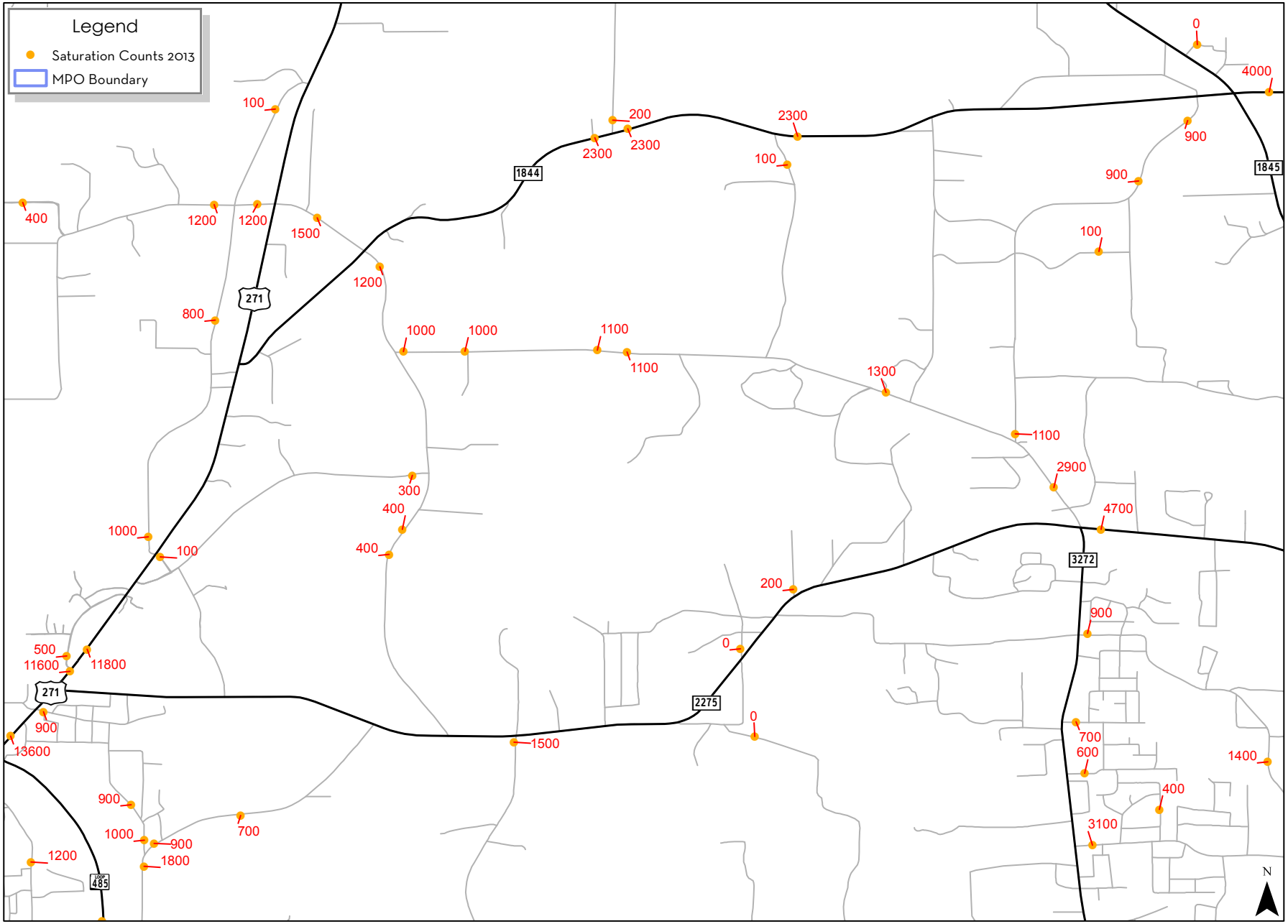

XB (e) - Traffic Counts

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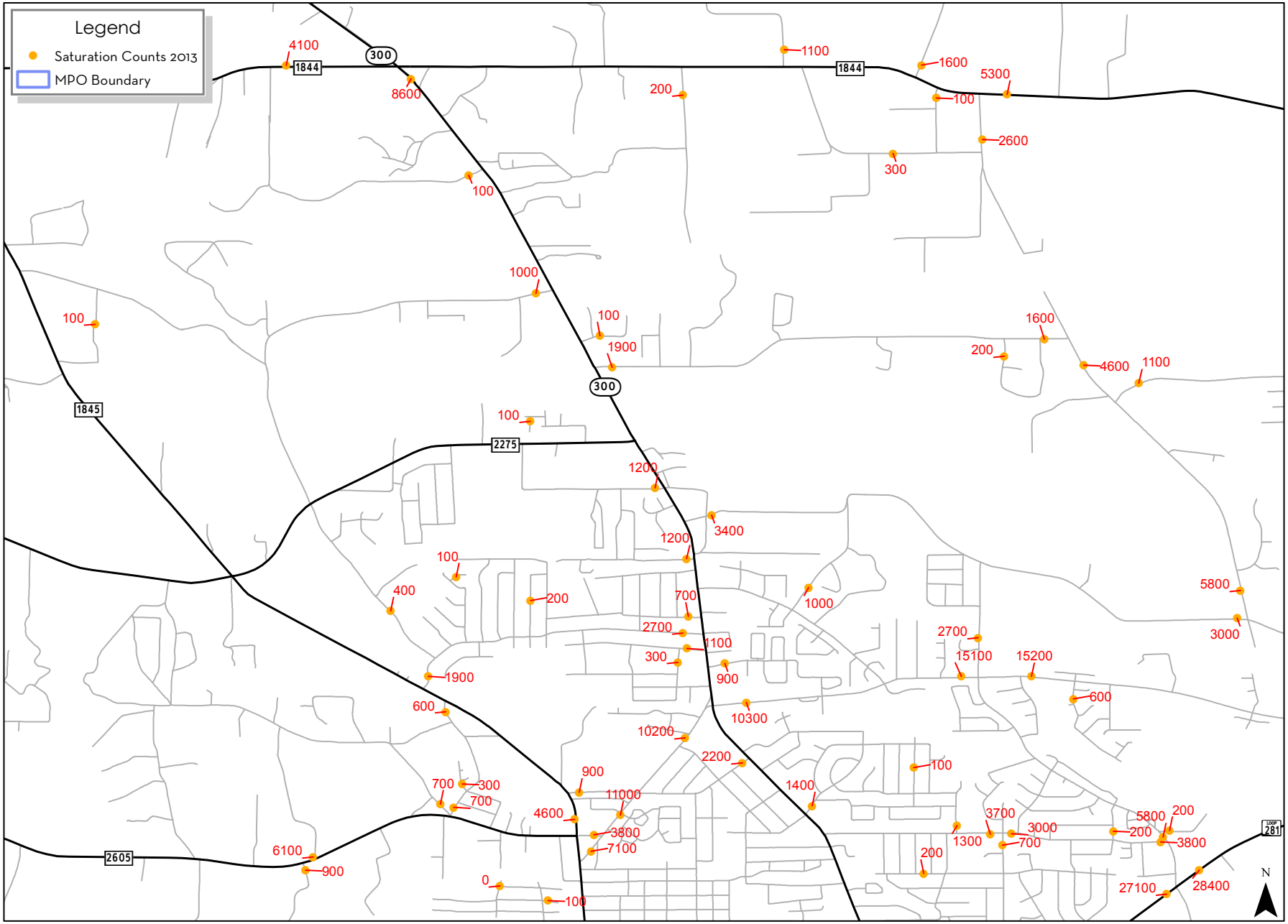

XB (f) - Traffic Counts

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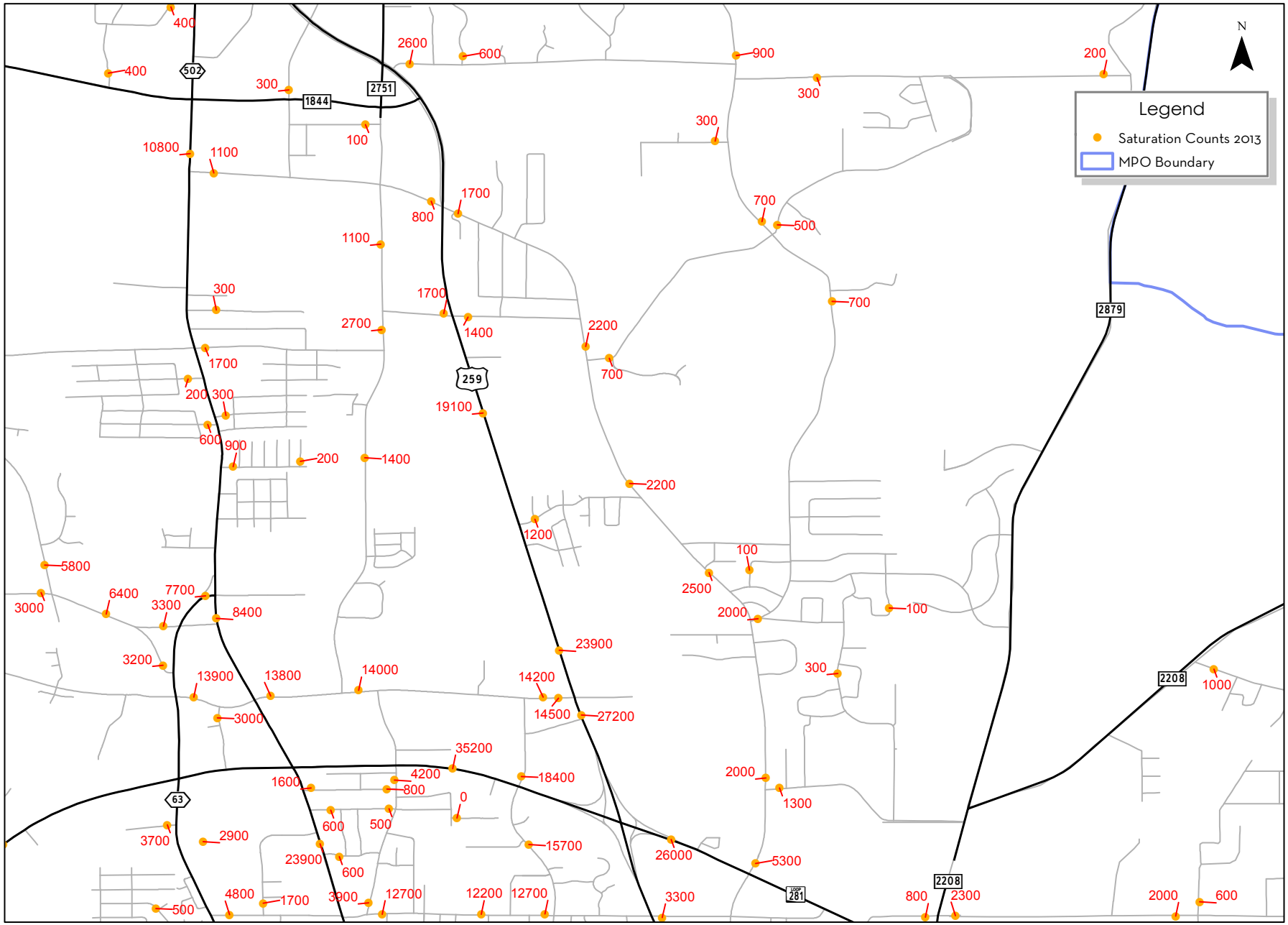

XB (g) - Traffic Counts

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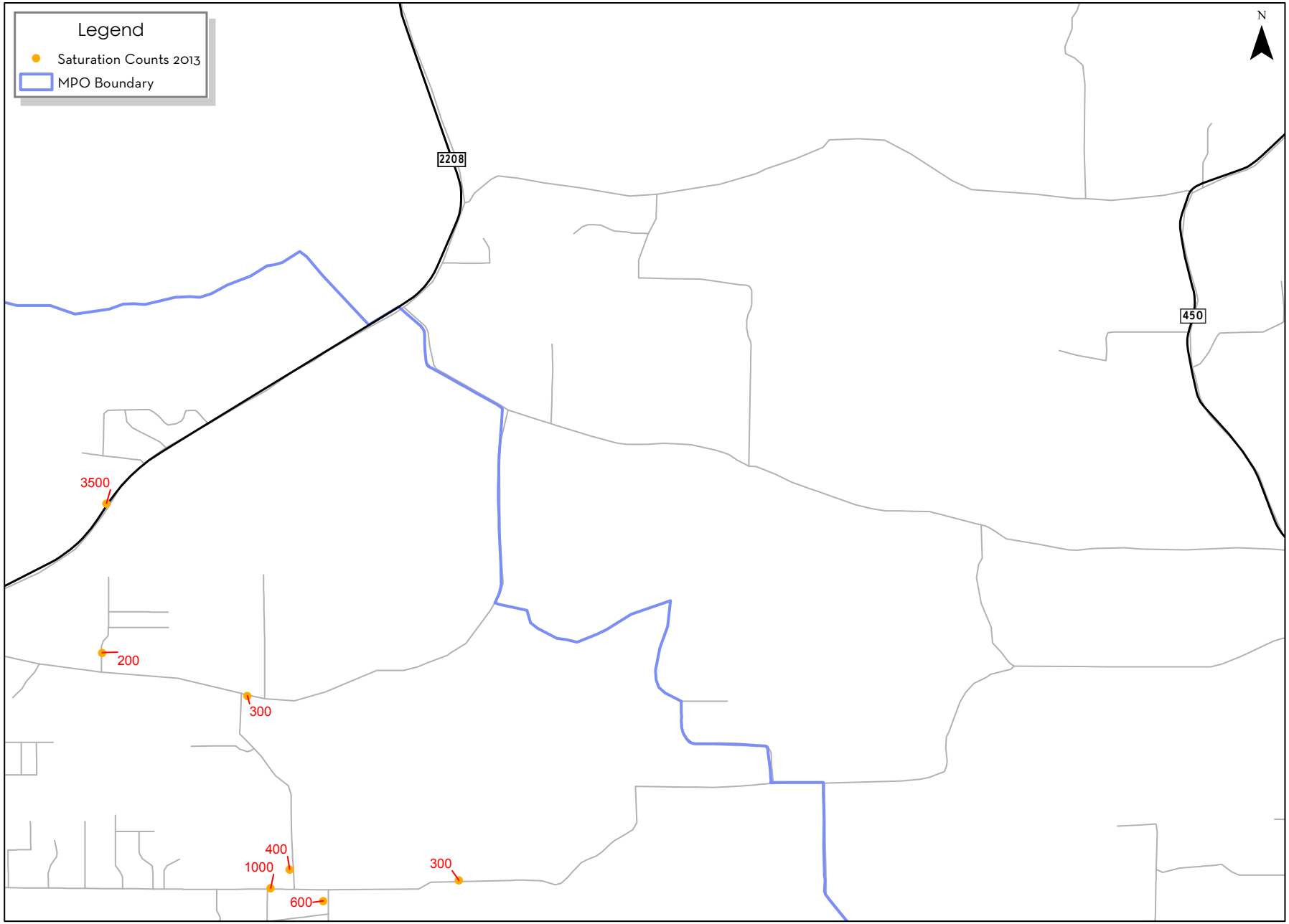

XB (h) - Traffic Counts

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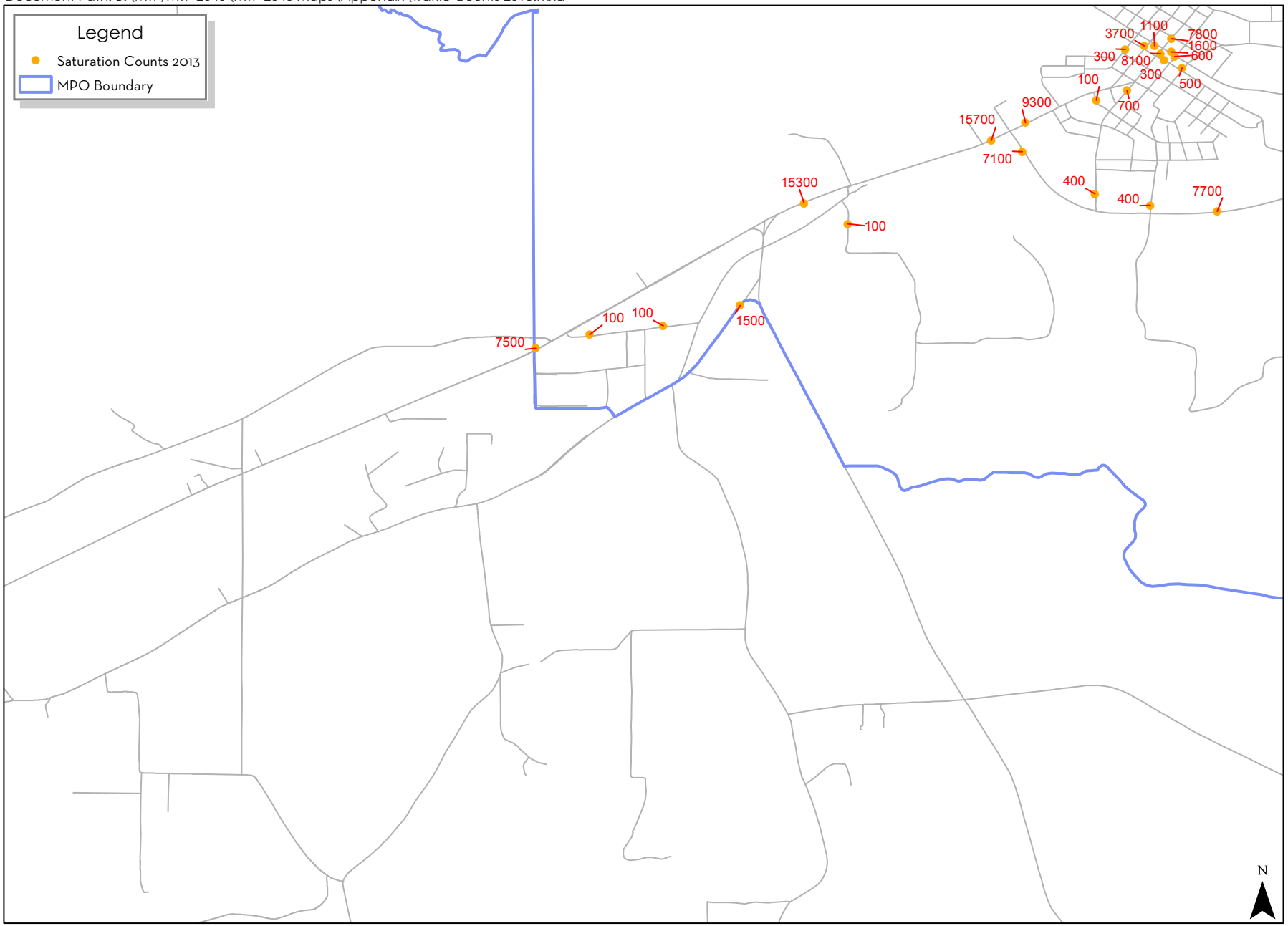

XB (i) - Traffic Counts

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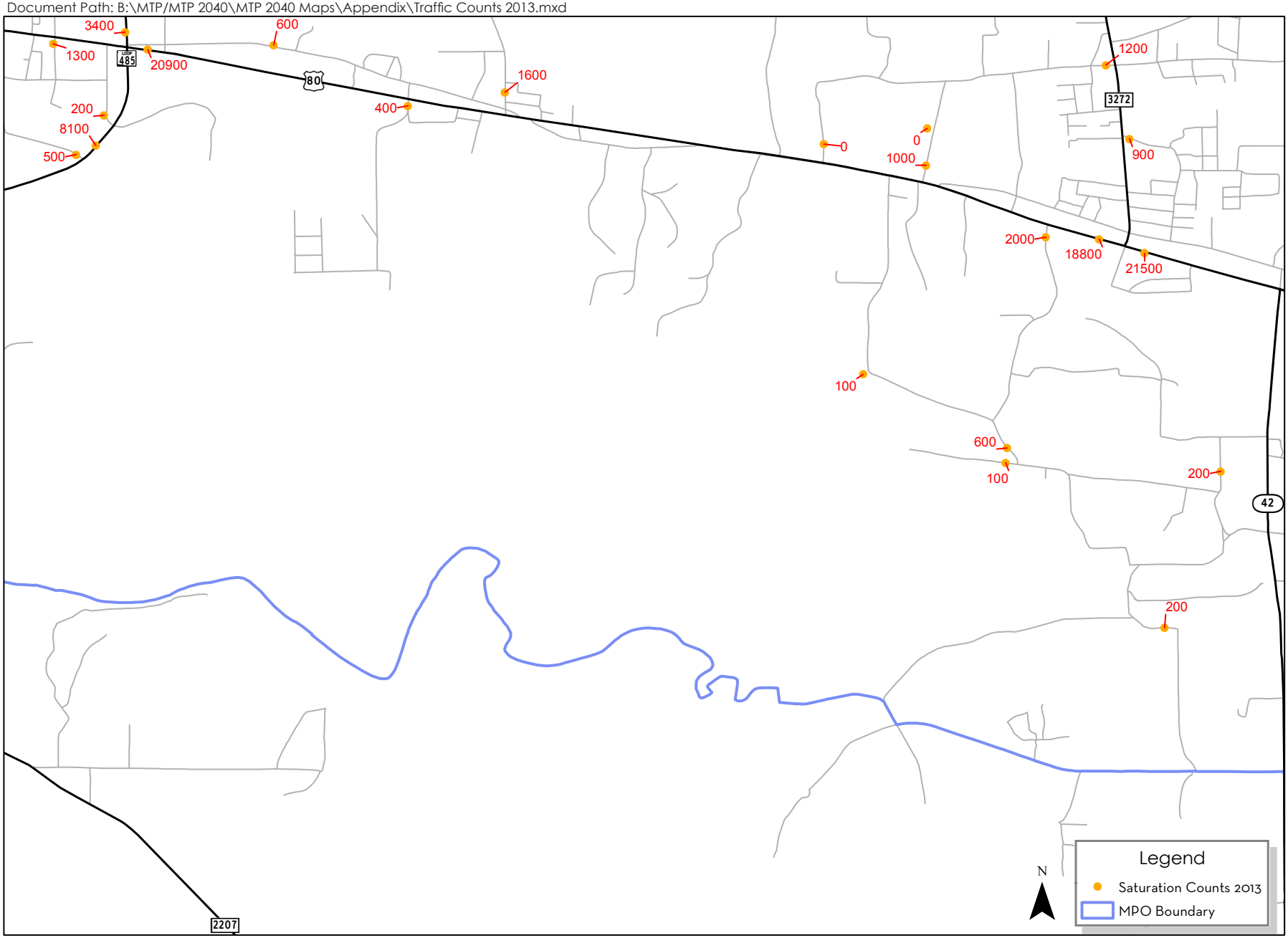

XB (j) - Traffic Counts

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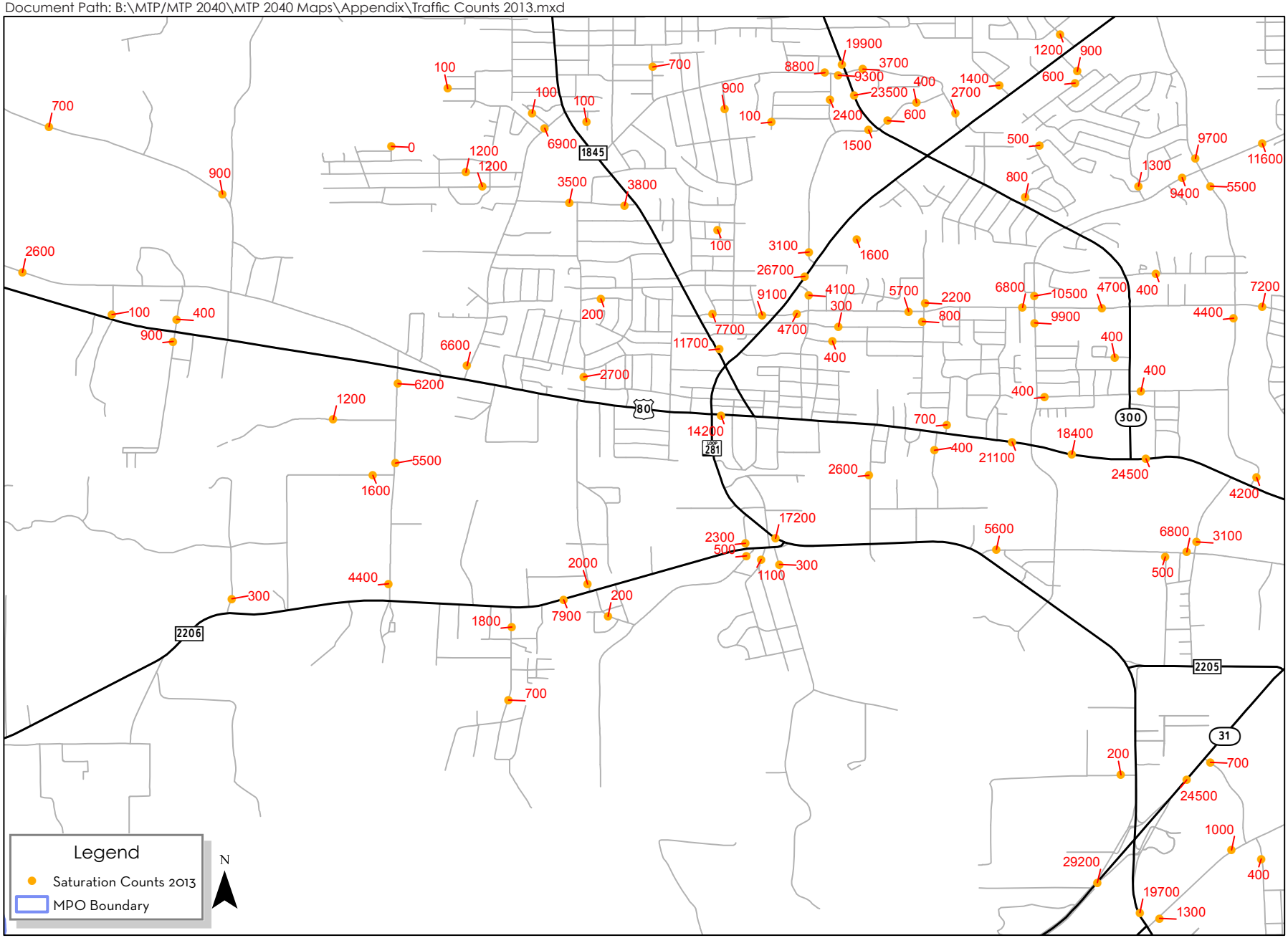

XB (k) - Traffic Counts

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10/28/2014

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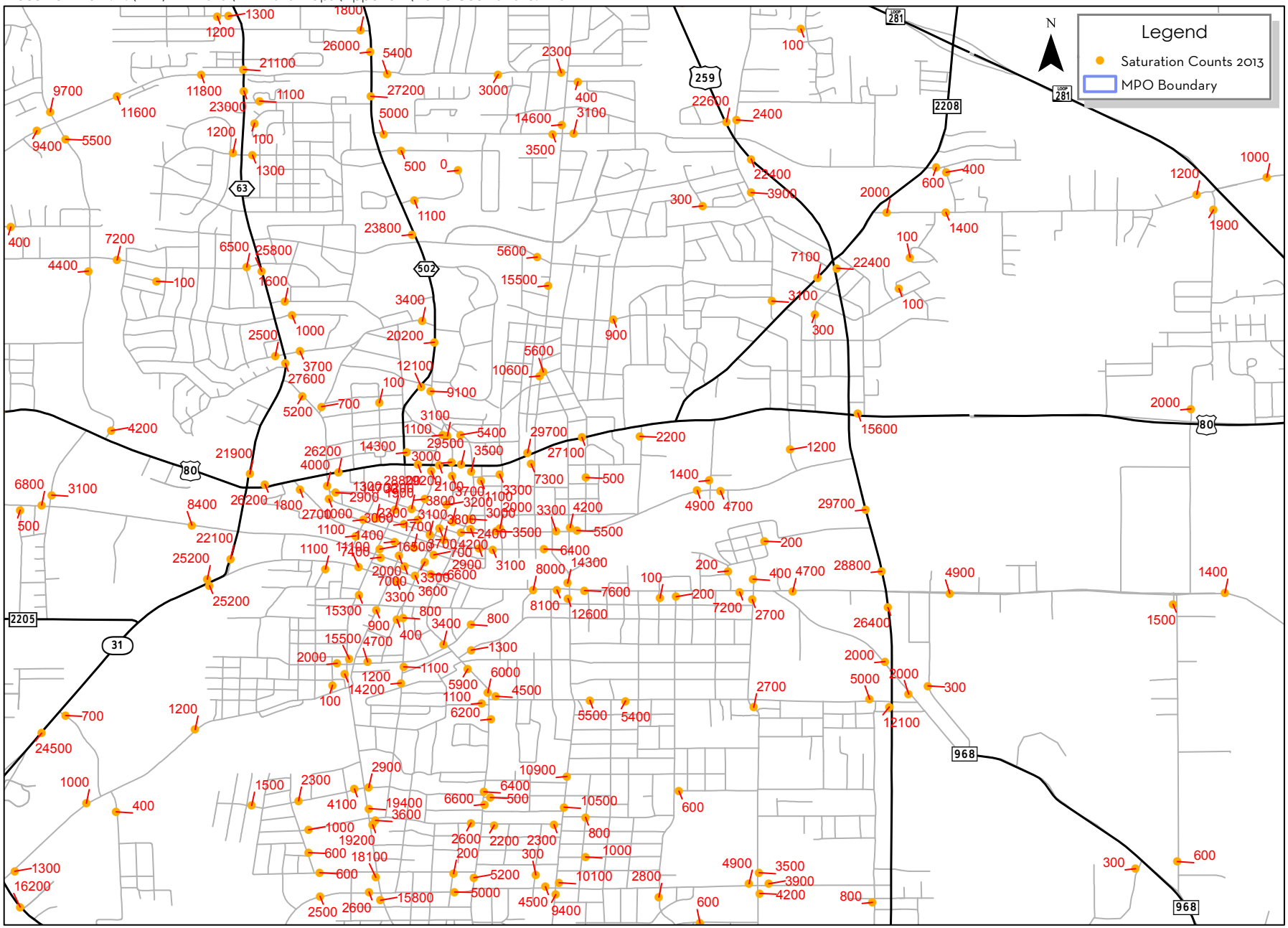

XB (I) - Traffic Counts

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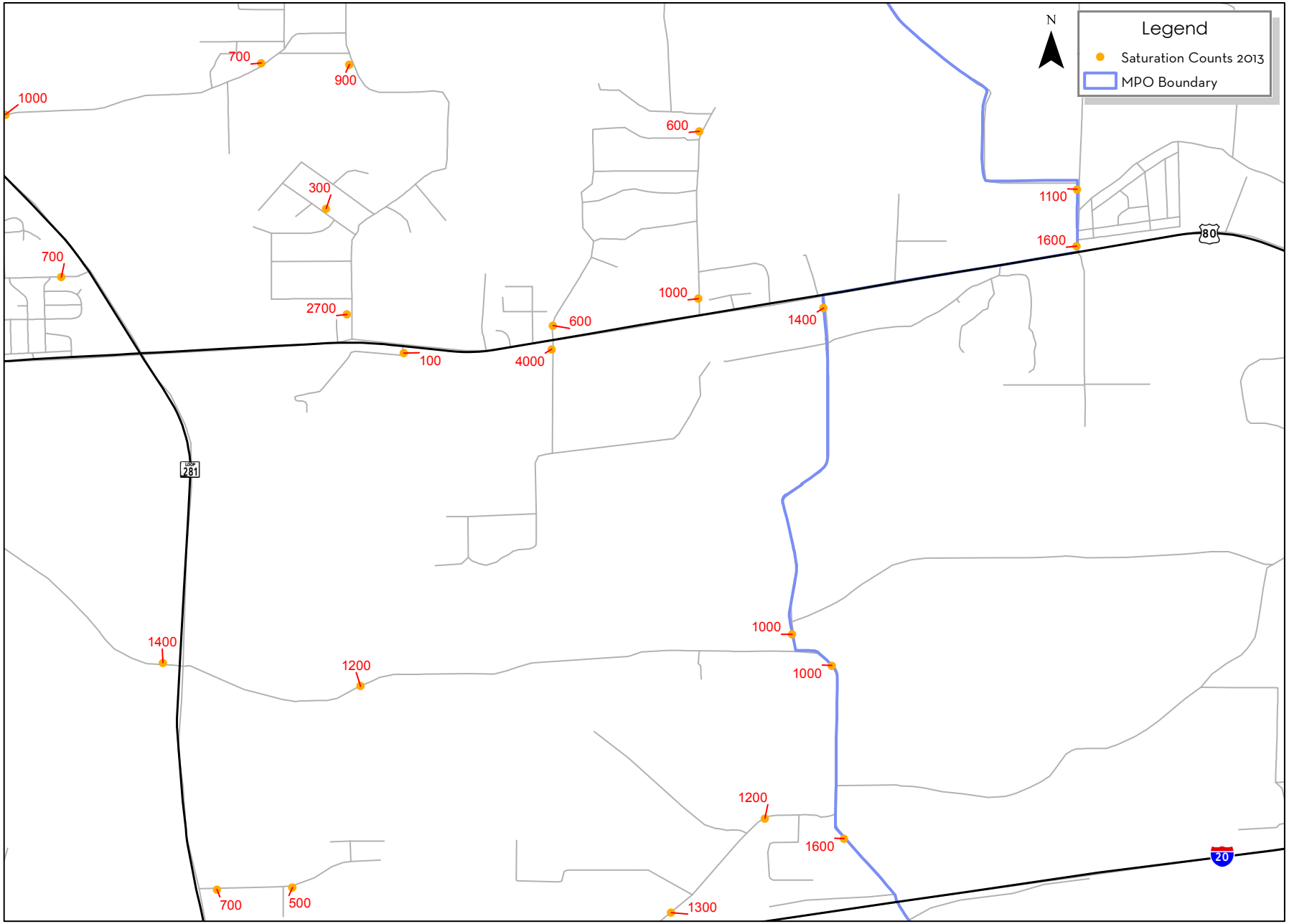

XB (m) - Traffic Counts

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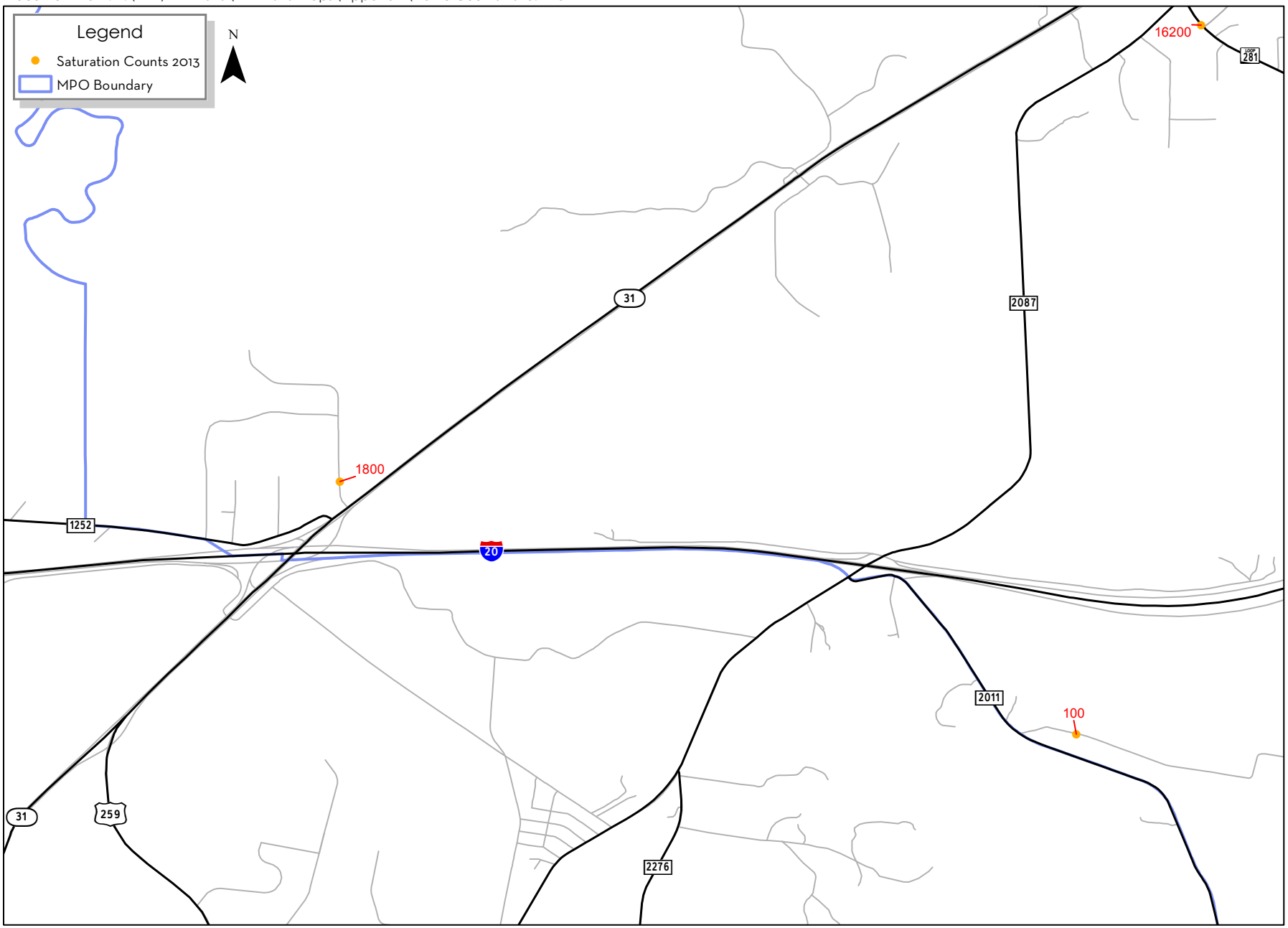

XB (n) - Traffic Counts

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10/28/2014

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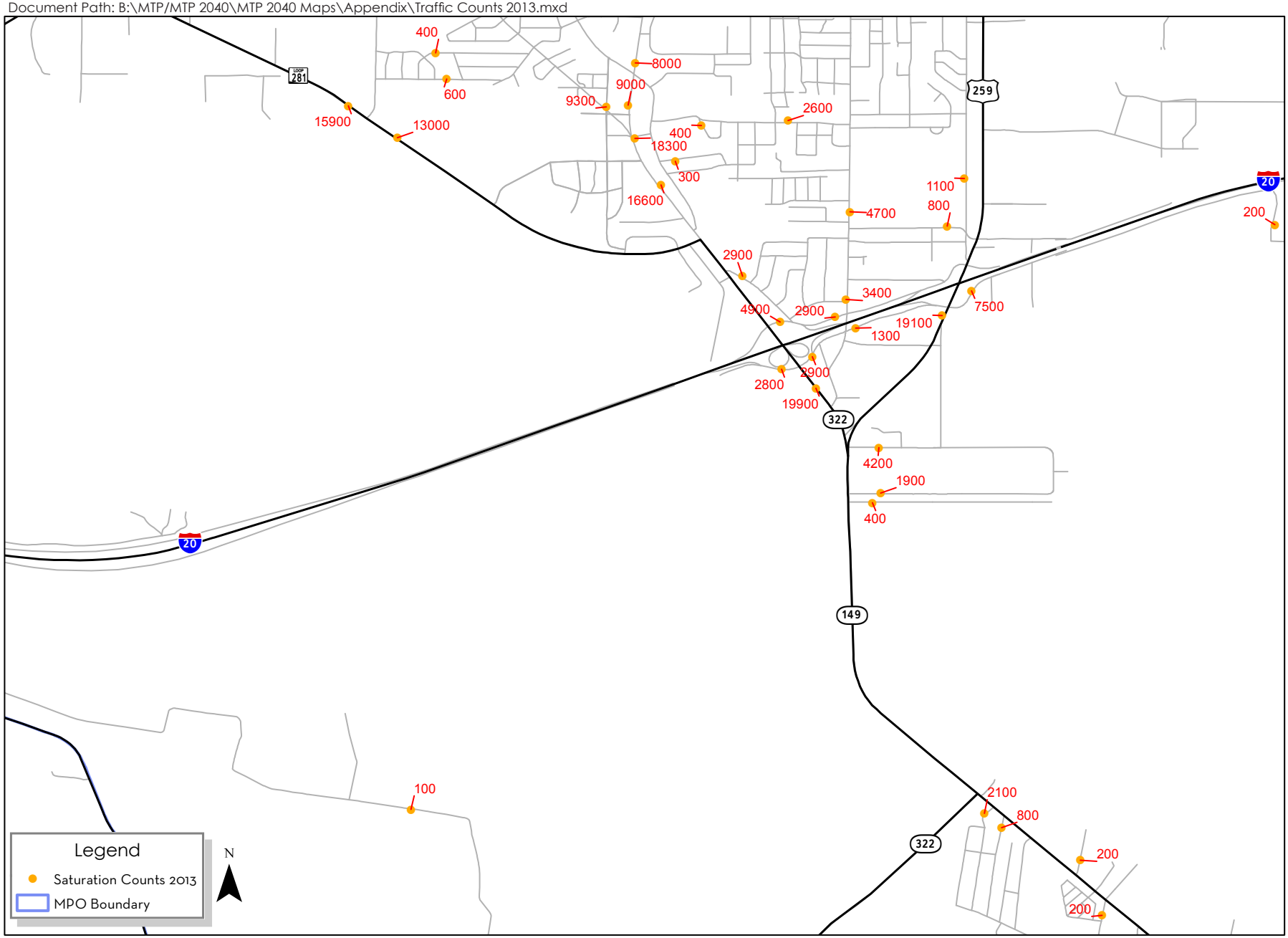

XB (o) - Traffic Counts

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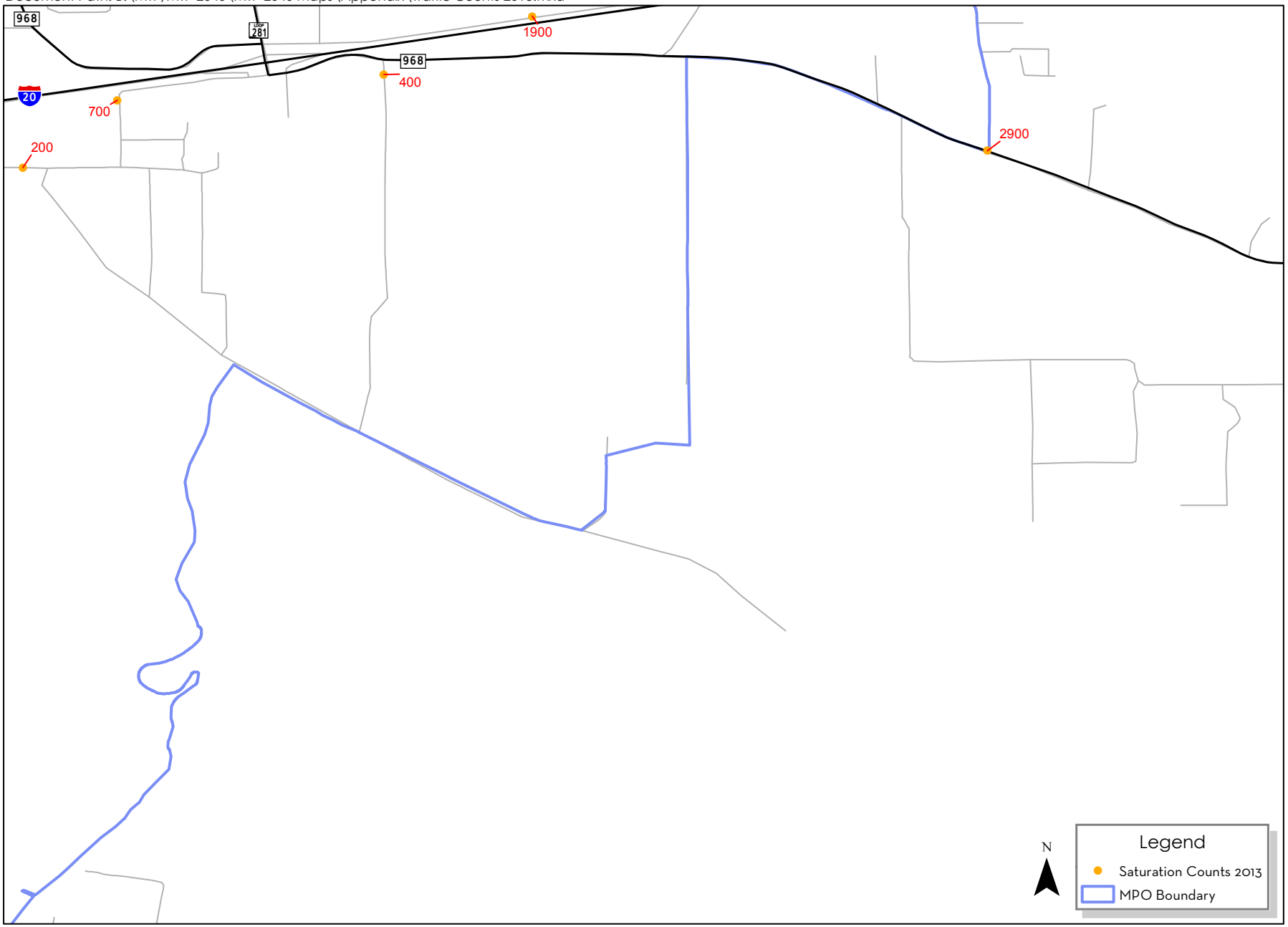

XB (p) - Traffic Counts

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10/28/2014

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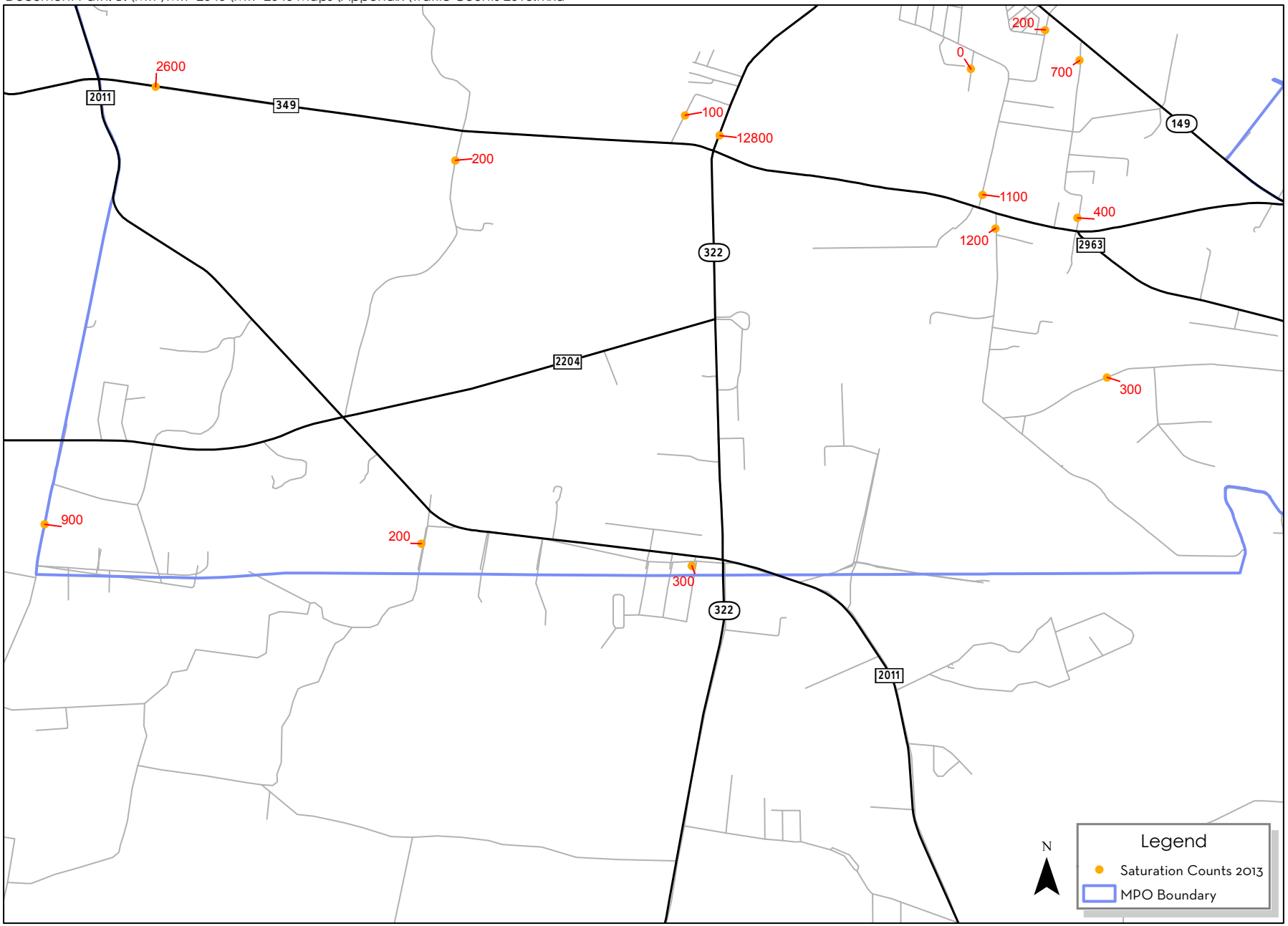

XB (q) - Traffic Counts

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10/28/2014

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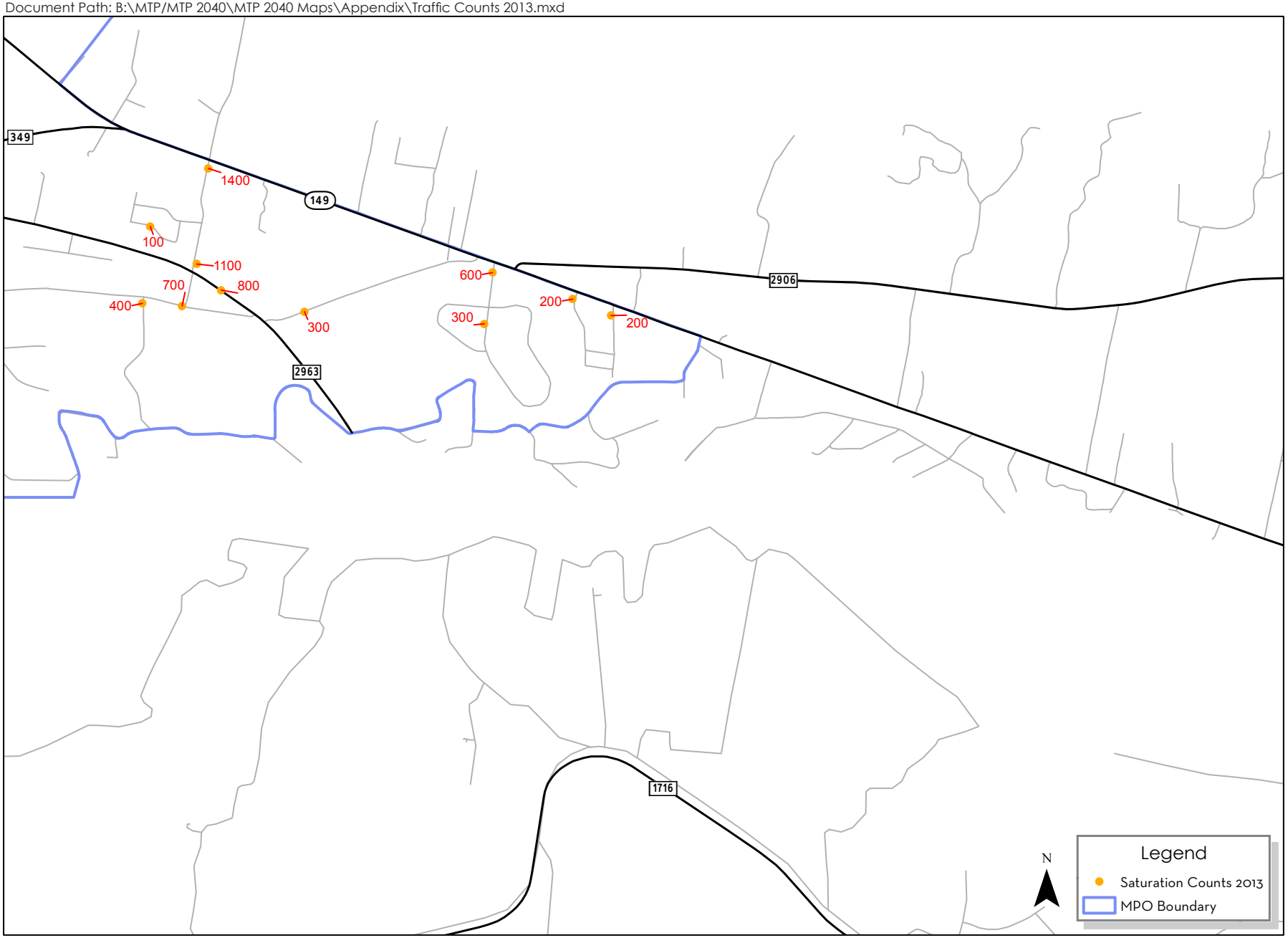

XB (r) - Traffic Counts

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10/28/2014

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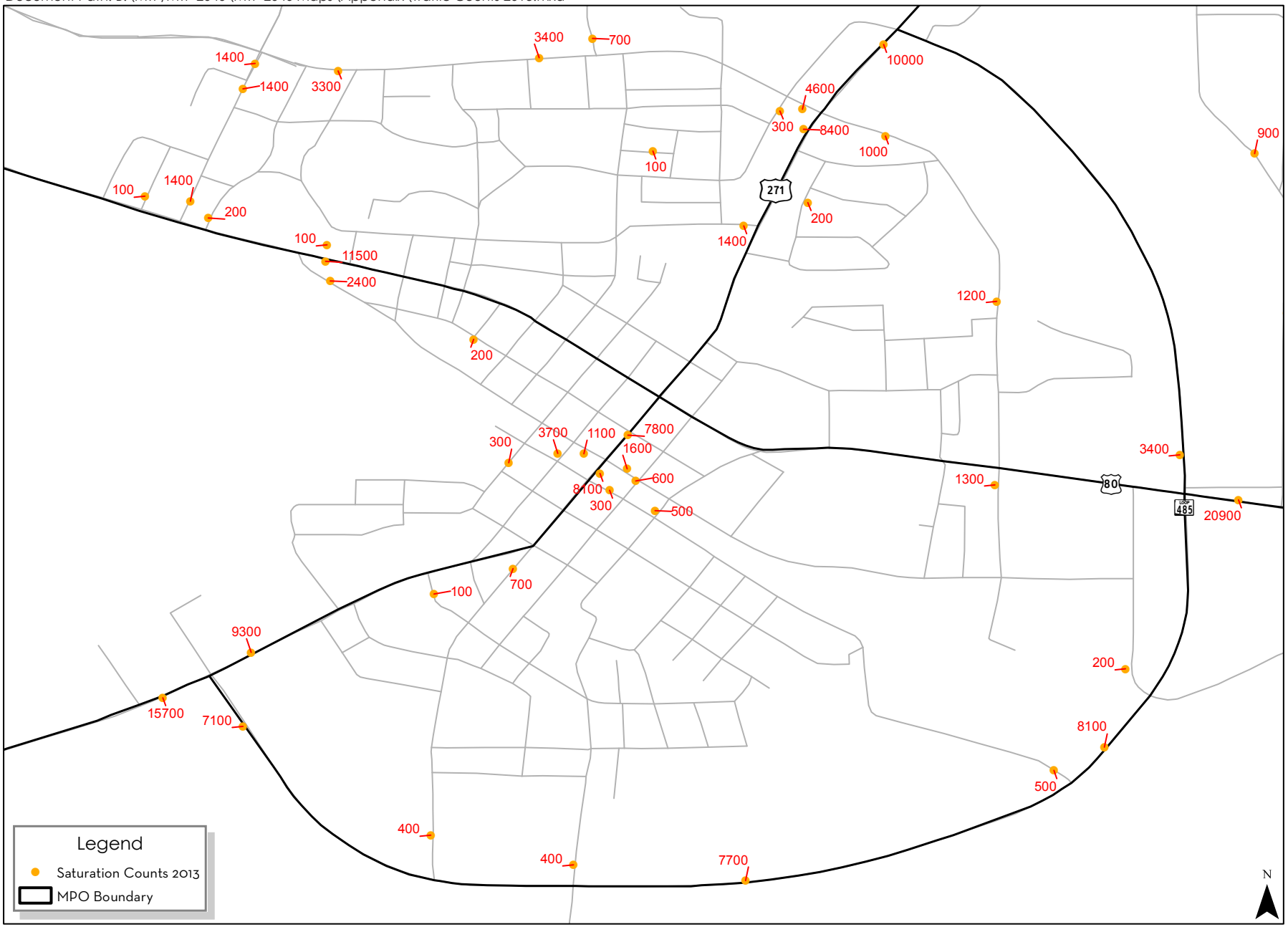

XB (1) - Traffic Counts - Gladewater

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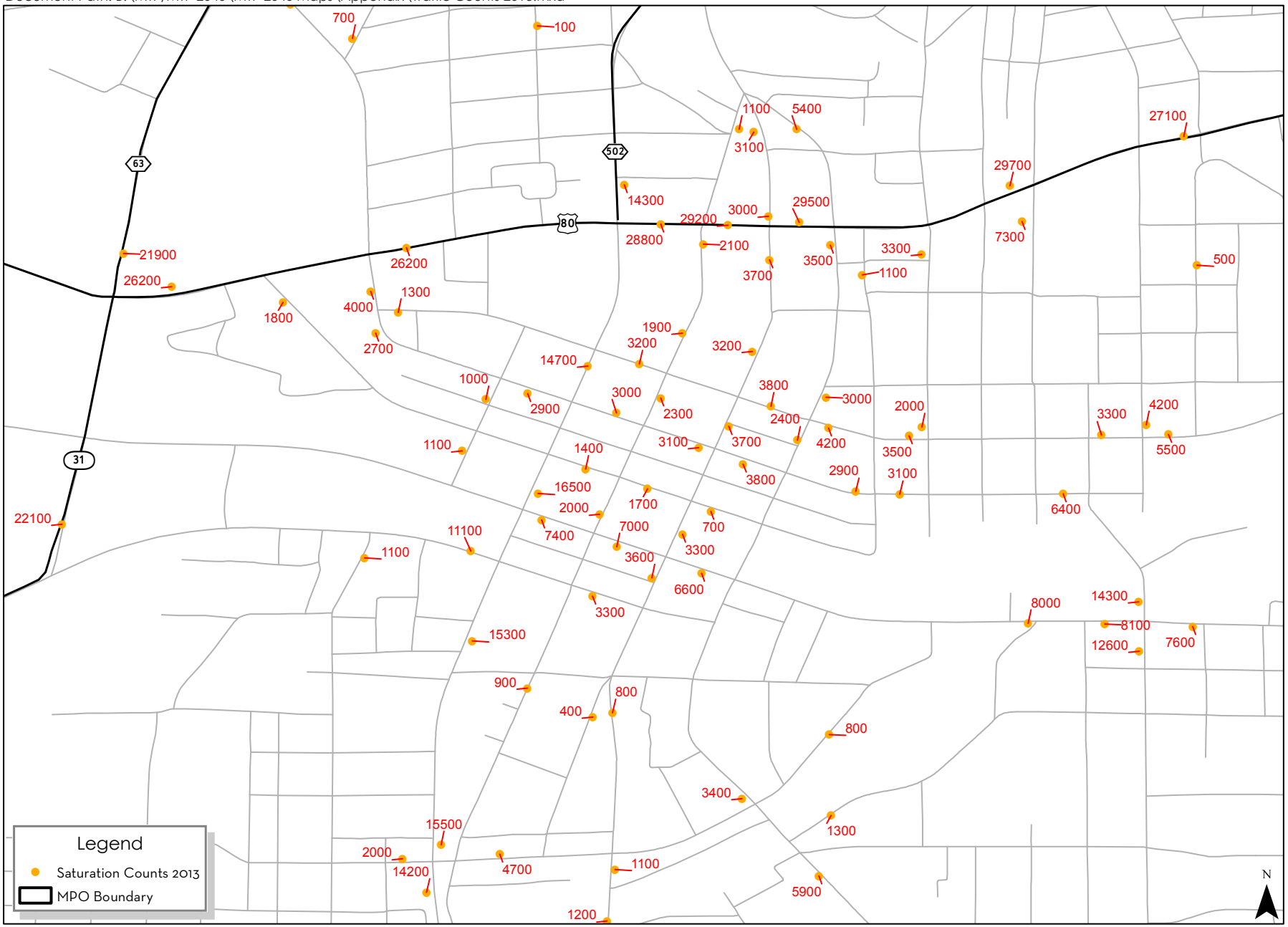


XB (2) - Traffic Counts - Downtown Longview

Brett M. Huntsman
10/27/2014

Functional Classification

Functional classification is the grouping of roads, streets, and highways based on the role they play in the transportation system. They are ranked by importance based on function and their impact on the region. These impacts can vary from mobility to economic benefits for the area. This hierarchical system serves as a guideline for making decisions along those roadways. These classifications are often updated based on the role they are playing in the community at a given time. They can be upgraded if they are serving an important purpose, or downgraded if they are no longer serving the same function.

Accurate federal functional classification is essential for informed transportation-related decision making and appropriate roadway funding. Data aggregated by functional classification are used extensively in the analysis of highway system condition, performance, and investment needs that make up the biennial Condition and Performance Reports to Congress. The data is also used by other federal, state, and local officials to make data driven decisions. Although roadway funding is no longer directly tied to the mileage percentage of each functional classification, funding for the federal-aid highway system is still linked to functional classification.

The amount of National Highway System funding apportioned to the state is dependent upon principal arterial data. Interstate maintenance funding can only be spent on roadways classified as interstates. Roadways of all functional classifications are eligible for some type of federal funding.

There are four basic functional classification categories; principal arterial, minor arterial, collector and local. Other factors that may be considered when determining the appropriate functional classification are; vehicle miles traveled, roadway spacing, roadway access versus mobility, signalization and posted speed limit. Roadway functional classification is relative and cannot necessarily be determined by any one aspect, such as traffic volumes. Two roads carrying the same traffic volumes may be serving different purposes, and therefore, has different functional classifications. This is particularly applicable among urban areas with very different populations or between urban and rural areas.

Previously, the Federal Highway Administration (FHWA) issued guidance for each functional classification category that included mileage percentages (of the total roadway network). While there are no mileage percentage limits, they should be used as a rule of thumb, according to the FHWA Highway Texas Division.

Functional Classification	Vehicle Miles Traveled	Percent of Mileage
Principal Artierial	40-65	5-10%
Minor Arterial	65-80	15-25%
Collector	5-10	5-10%
Local	10-30	65-80%

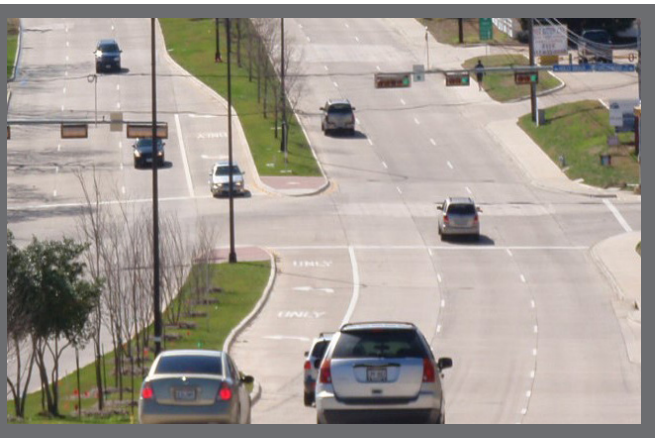
Map X-C shows the revised functional classification system as adopted by the MPO Policy Committee in 2014. Because of the mileage limitations, some streets that could have been appropriately classified as part of a higher system may have been moved to a lower system. Consequently, functional classification may not

be identical to classifications used for landscape ordinances, transportation modeling, etc.

Characteristics of each functional classification types are:

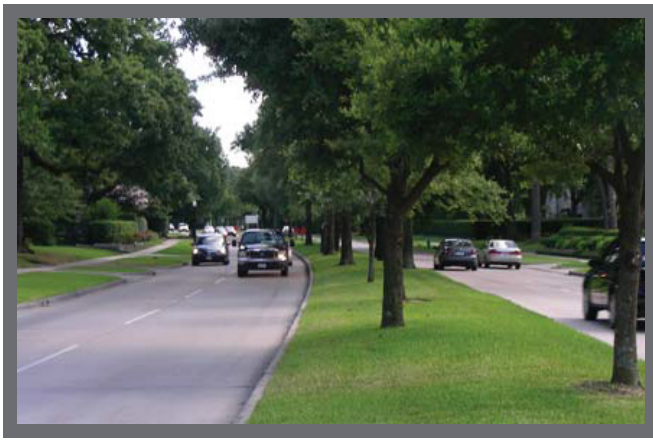
The Principal Arterial System:

- Serves major centers of activity, highest volume traffic corridors, and longest trip lengths
- Carries the major portion of trips entering and leaving the urban area and significant intra-urban travel (for example, between downtown and residential areas)
- Spacing ranges from 1 mile or less in CBD to 5 miles in urban fringes



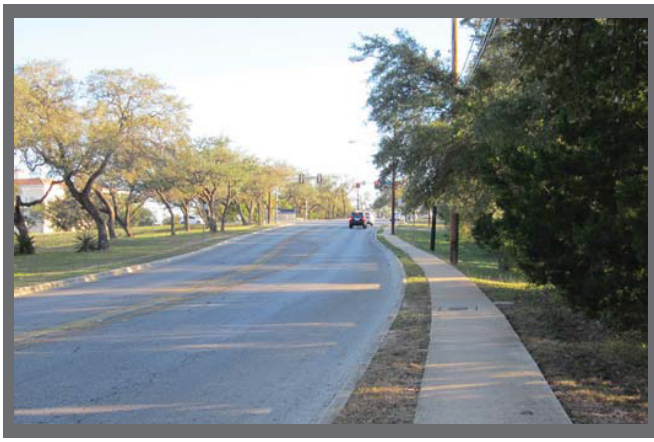
The Minor Arterial System:

- Interconnects with and augments the Principal Arterial System
- Accommodates trips of moderate length, distributes travel to smaller geographic areas than Principal Arterials
- Includes urban connections to rural collector roads, unless already classified as Principal Arterials
- Ideally, should not penetrate neighborhoods



The Collector System:

- Provides land access and traffic circulation within neighborhoods, commercial and industrial districts
- Distributes trips from arterials to ultimate destinations
- Collects traffic from local streets and channels it into the arterial systems



The Local System:

- Provides direct access to adjacent land and to higher systems
- Includes all facilities not on higher systems

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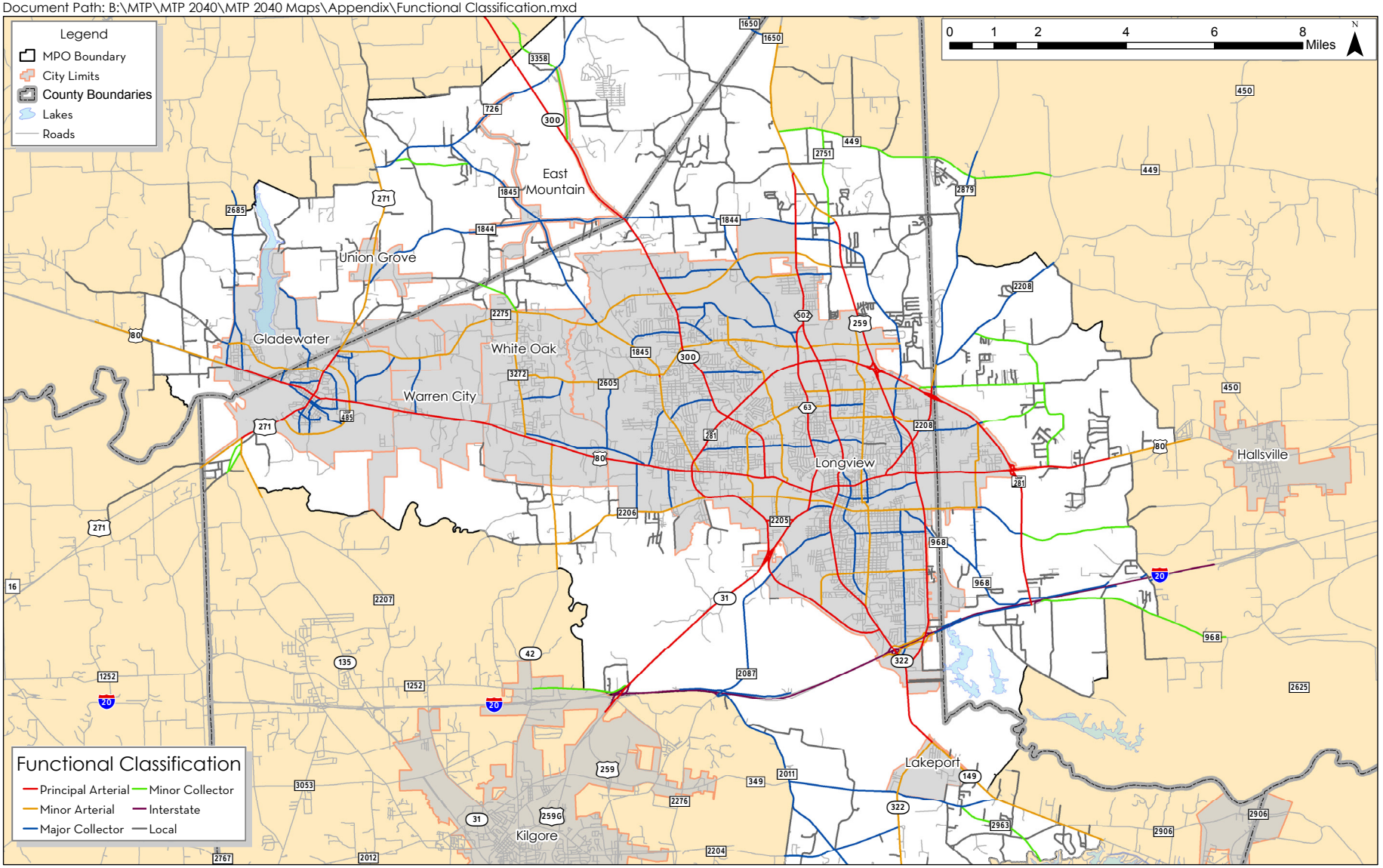

XC - Functional Classification

Brett M. Huntsman
11/17/2014

Future Land Use

The transportation system is the infrastructure element, which most influences urban form. Changes in the transportation system contribute to the dynamic nature of cities. Similarly, changes in land use impact the transportation system of the area.

Experience indicates that transportation planners must understand the relationships between transportation systems and land use activity patterns. Transportation planners must also anticipate and evaluate the nature of the change of land use activities, which can be expected as the result of changes in the urban transportation systems.

Reconstruction to widen and improve the level of service existing roadways is generally very costly. The improvement in the level of service is often temporary because the improved service will stimulate increased business activity. This, in turn, will generate more traffic and traffic conflicts with a decrease in traffic service. Furthermore, the shallow property depth, multiplicity of ownership, and right-of-way limitations generally preclude good access and site circulation design, even when substantial expenditures are made for reconstruction of existing streets. In order to better accommodate traffic demand, roadway improvements are required and a cyclical sequence of events occurs, which requires continuing capital investments for arterial improvements or relocation. In more severe cases, the arterial must be relocated due to the functional obsolescence and the process starts all over again on a new location. The cycle is illustrated in the figure below.

Map XD on the following page is the Future Land Use Plan for the City of Longview. This map is currently in draft form and will go to Longview City Council for approval in early 2015.

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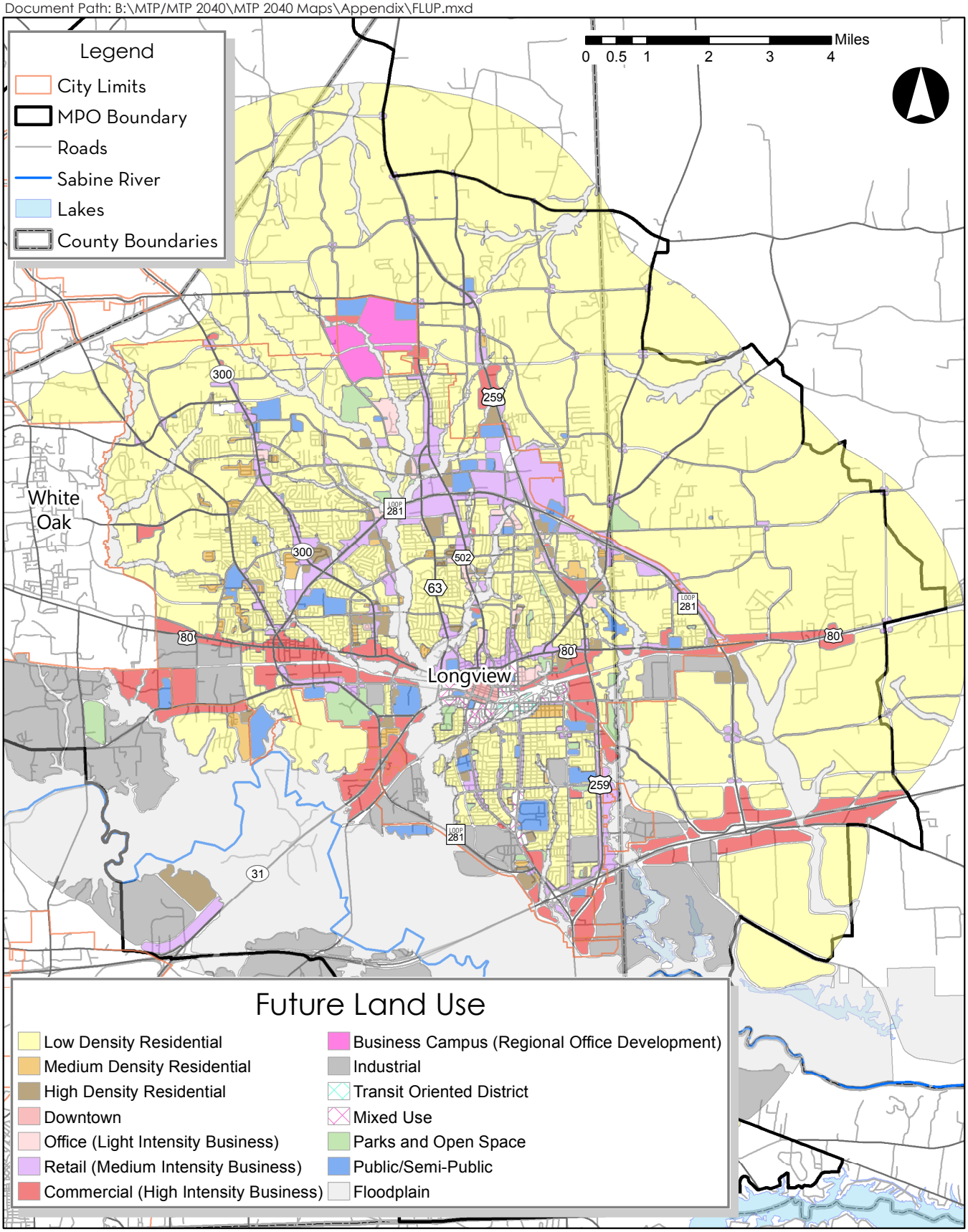

XD - Future Land Use Plan - *Draft 2013*

Brett M. Huntsman
11/6/2014

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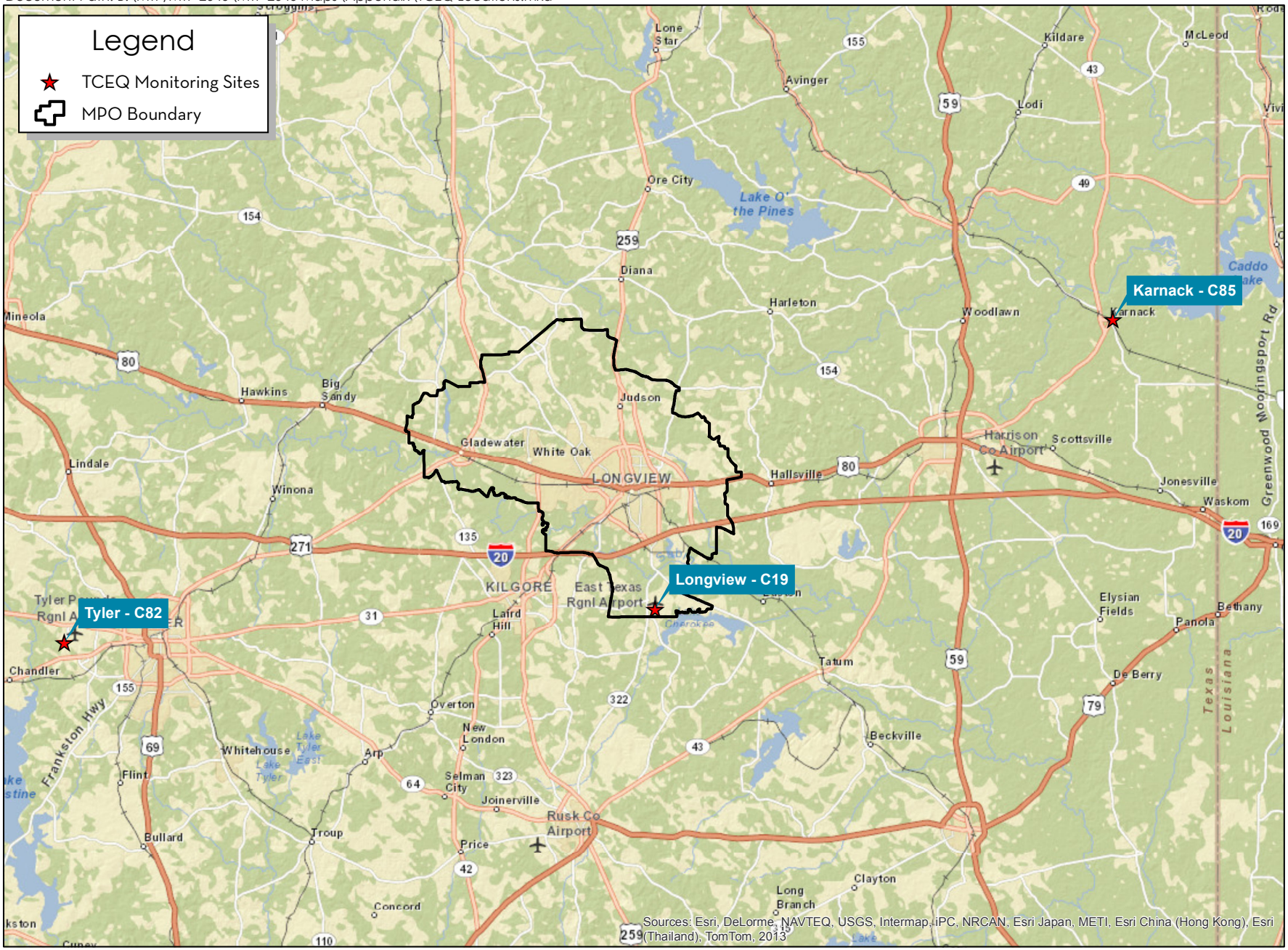
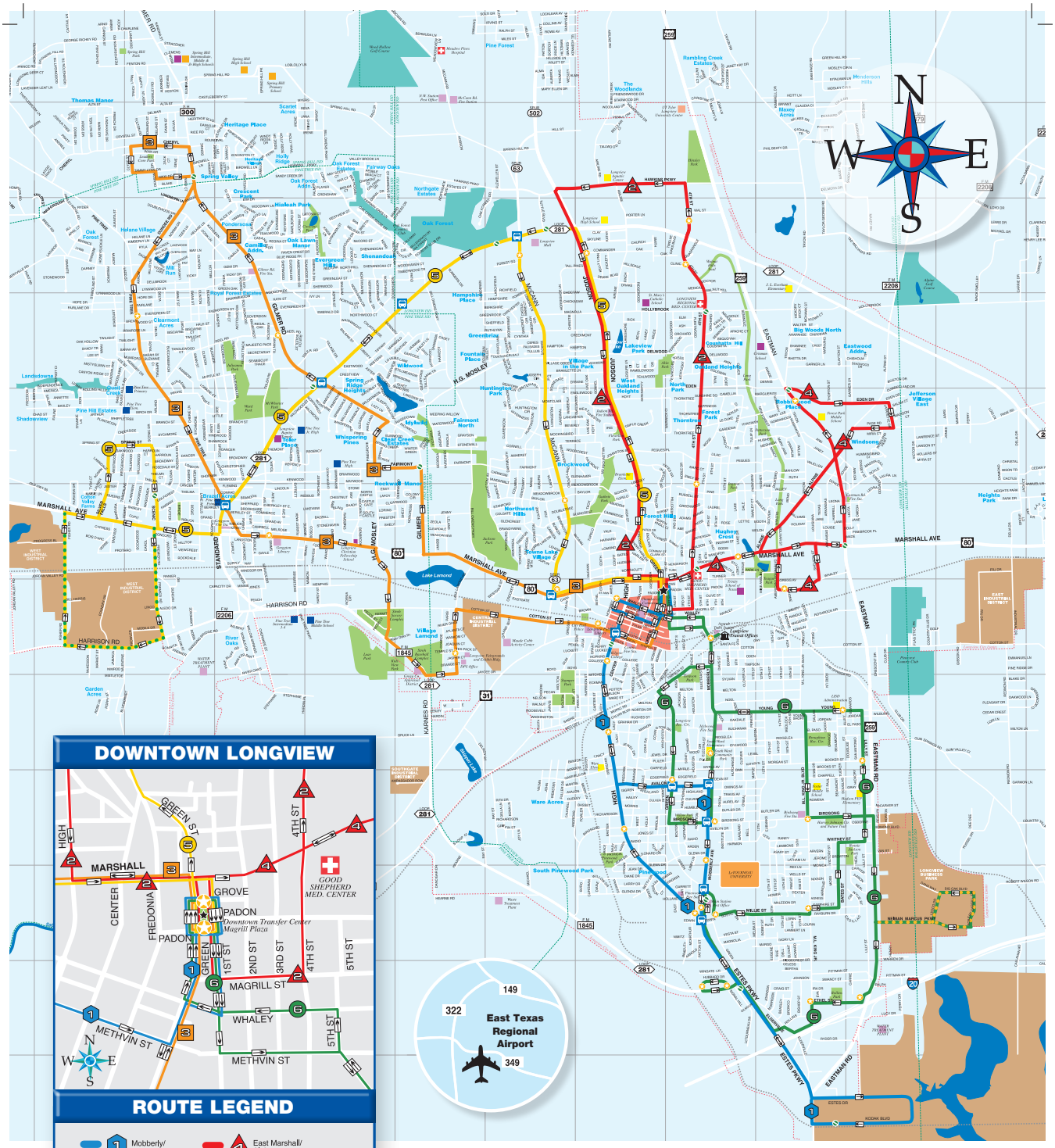


XE - TCEQ Air Quality Monitoring Locations

Brett M. Huntsman
11/21/2014



Longview Transit Bus Routes

LONGVIEW TRANSIT WELCOMES YOUR CALLS

If you have questions, suggestions, or need help planning your route, call Longview Transit at (903) 753-2287 (Voice) or (903) 753-5265 (TTY). Our friendly staff will be happy to help you.

Corrections to this map should be sent to the Longview Transit Office

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Real East Texas
City of Longview

16225 10/2013