Regional Thoroughfare Plan

Longview MPO

October 30, 2019

Longview MPO Policy Board

Real East Texas
CITY OF LONGVIEW
Metropolitan Planning Organization

MOBILITY 2045
connecting people & destinations

This page was intentionally left blank.

Acknowledgements

Technical Committee

Macie Wyers, Longview MPO
Vernon Webb, TxDOT - Tyler District
Jeffrey Harmon, TxDOT-Tyler District
Brooke Droptini, TxDOT-Tyler District
Will Buskell, TxDOT - Longview
Brigida Gonzalez, TxDOT - Austin
Katie Martin, TxDOT- Atlanta District
Terri McCasland, TxDOT - Atlanta District
Charlie Smith, City of White Oak
Ricky Tow, Gladewater
Scott Lewis, Longview Transit
Keith Bonds, City of Longview
Michael Shirley, City of Longview
Ingrid Self, City of Longview
Angela Choy, City of Longview
Rolin McPhee, City of Longview
Alton Bradley, City of Longview
Stephen Ha, City of Longview
Justin Morgan, FHWA
Dave Spurrier, NET RMA
Lynn Hayes, FTA-Region VI
Vince Huerta, ETCOG
John Paul Jones, Harrison County
Jamie Zech, TCEQ

Policy Committee

Hon. Andy Mack, Longview Mayor *
Hon. Bill Stoudt, Gregg County Judge *
Hon. Kyle Kutch, White Oak Mayor *
Hon. Todd Tefteller, Upshur County Judge *
Hon. J.D. Shipp, Gladewater Mayor *
Keith Bonds, Longview City Manager *
Glenn Green, TxDOT District Engineer, Tyler *
Rolin McPhee, Longview Dir. of Public Works *
Mike Anderson, TxDOT District Engineer, Atlanta *
Phillip Mauldin, Harrison County Commissioner *
Michael Shirley, Longview Dir. of Dev. Services*

Hon. Chris Paddie, State Representative, District 9
Justin Morgan, Federal Highway Administration
Hon. Jay Dean, State Representative, District 7
Brigida Gonzalez, TxDOT Austin, MPO Coordinator
(*denotes voting member)

Project Steering Committee

Macie Wyers, Longview MPO
Michael Shirley, City of Longview
Ingrid Self, City of Longview
Rolin McPhee, City of Longview
Brooke Droptini, TXDOT
Alton Bradley, City of Longview
Scott Lewis, Longview Transit

Consultant Team

Edmund Haas, Freese and Nichols, Inc.
David Paine, Freese and Nichols, Inc.
Brian Crooks, Freese and Nichols, Inc.
Kim Dresdner, Freese and Nichols, Inc.
Bryan Gant, Freese and Nichols, Inc.
Zeina Wafa, Cambridge Systematics, Inc.
Sean McAtee, Cambridge Systematics, Inc.
Brian Bream, Cambridge Systematics, Inc.

Table of Contents

Chapter 1 Executive Summary **5**
Thoroughfare Planning Process 5
Technical Background 5
Thoroughfare Plan Development 6
Longview MPO Regional Thoroughfare Plan (RTP) 6
Chapter 2 Introduction **9**
Longview at a Glance 9
Purpose and Need 10
Planning for the Future 10
Understanding Thoroughfare Planning 11
Key Attributes of Thoroughfare Plans 11
Understanding Proposed Alignments 11
Chapter 3 Thoroughfare Planning Process **13**
Agency Coordination 13
Data Collection 15
Existing Conditions 15
Network Connectivity 15
Challenges and Barriers 17
Current Traffic Volumes 17
Current Level of Service 18
Crash Data 19
Current Regional Thoroughfare Plan (RTP) 20
Public Involvement 20
Transportation Survey 21
Website 21
Open House Meeting 21
Stakeholder Presentations 21
Technical Analysis 22
Network Planning 22
Alternatives Analysis 23
Chapter 4 Technical Analysis **25**
Travel Forecast Modeling 25
Basic Model Theory 25

Future Demand and Projected Congestion 26
Projected Population and Employment Growth 26
Future Traffic Volumes 28
Traffic Congestion 29
Alternatives Analysis 31
Scenario 1: Planned Projects 31
Scenario 2: Buildout 33
Comparison of Scenarios 35
Chapter 5 Thoroughfare Plan Development 37
Functional Classification 37
Understanding Functional Classification 37
Typical Roadway Characteristics by Functional Classification 38
Recommended Thoroughfare Functional Classification and Design Standards 38
Street Types/Functional Classification 39
Principal Arterials 39
Minor Arterials 40
Major Collectors 42
Minor Collectors 43
Chapter 6 Longview MPO Regional Thoroughfare Plan (RTP) 47
Roadway Design Recommendations 47
Transit Design Recommendations 47
Bicycle and Pedestrian Recommendations 48
Context of Active Transportation in Longview MPO area 48
Recommendations 49

List of Tables

Table 1-1: General Roadway Design Recommendations 6
Table 2-1: Cities within the Longview MPO Study Area 9
Table 3-1: Longview MPO Key Corridors 16
Table 4-1: Level of Service Categories 29
Table 4-2: Comparison of Alternatives 35
Table 5-1: Typical Roadway Characteristics by Functional Classification 38

List of Figures

Figure 1-1: Longview Regional Thoroughfare Plan 7
Figure 3-1: Longview Metropolitan Area Boundary (MAB) 14
Figure 3-2: Longview MPO Key Corridors 16
Figure 3-3: 2018 MPO Traffic Volumes 17
Figure 3-4: 2018 MPO Level of Service 18
Figure 3-5: 2016-2018 Accident Density 19
Figure 3-6: 2014 Longview MPO Regional Thoroughfare Plan 20
Figure 4-1: Forecast Population Growth 26
Figure 4-2: Forecast Employment Growth 27
Figure 4-3: Forecast 2045 Roadway Volumes 28
Figure 4-4: Level of Service, Volume to Capacity Relationship 29
Figure 4-5: Forecast 2045 Roadway Level of Service 30
Figure 4-6: Scenario 1 Network 31
Figure 4-7: Scenario 1 Level of Service 32
Figure 4-8: Scenario 2 Network 33
Figure 4-9: Scenario 2 Level of Service 34
Figure 5-1: Land Use Access and Mobility 37
Figure 5-2: Urban 4-Lane Principal Arterial 39
Figure 5-3: Urban 6-Lane Principal Arterial 39
Figure 5-4: Rural 4 – 6 Lane Principal Arterial 40
Figure 5-5: Urban Minor 2 Lane Arterial 40
Figure 5-6: Urban Minor 4 Lane Arterial 41
Figure 5-7: Rural Minor 2-4 Lane Arterial 41
Figure 5-8: Urban Major 2 Lane Collector 42
Figure 5-9: Urban Major 4 Lane Collector 43
Figure 5-10: Urban Minor 2 Lane Collector 44
Figure 5-11: Rural Minor 2 Lane Collector 44
Figure 6-1: Longview MPO Regional Thoroughfare Plan 50

Executive Summary

Chapter 1 Executive Summary

As part of the Longview Metropolitan Planning Organization's (MPO) Metropolitan Transportation Plan (MTP) Update, Mobility 2045, the regional thoroughfare plan (RTP) was revised to provide guidance on long-range planning and project prioritization.

The RTP incorporates local and other plans to create a holistic transportation network aimed at serving long term mobility needs through the year 2045 and beyond. The RTP serves as a tool for the MPO and its stakeholders to preserve corridors for future transportation system development, and maintains consistency with MTP policies, programs and projects as well as conforming to Federal and State regulations.

The RTP update will also provide consistency of roadway standards among the member cities, counties and agencies. This thoroughfare plan includes information related to roadway classification, right-of-way requirements, and number of through travel lanes for each thoroughfare.

Thoroughfare Planning Process

The process of developing an RTP involves a number of important steps for implementation and thoroughfare recommendations. These steps are detailed in the document:

- Agency Coordination
- Data Collection
- Existing Conditions
- Public Involvement
- Technical Analysis
- Alternative Analysis

Technical Background

The regional travel demand model is the primary tool to evaluate transportation improvements into the future. It uses a series of mathematical equations to emulate human behavior. It does this by looking at existing demographic information as well as forecasted demographics along with characteristics of the transportation network to determine future trip patterns.

Model-based analysis was completed through the following steps during the thoroughfare development process:

- Ensured regional model included up-to-date network recommendations
- Analyzed existing street network outputs
- Generated and tested transportation network alternatives
- Finalized recommended thoroughfare network system

Thoroughfare Plan Development

Using the outcomes from the technical analysis, the design of the roadways was based on a number of factors, including functional classification, context and multimodal street elements. The functional class refers to the characteristics and purpose of the street. Table 1-1 summarizes the typical design of each functional class facility. Context of the surrounding land uses or development is another consideration for thoroughfare plan development. The last factor to consider is the street elements. The street elements establish which multimodal elements are required to accommodate along particular corridors and thoroughfares.

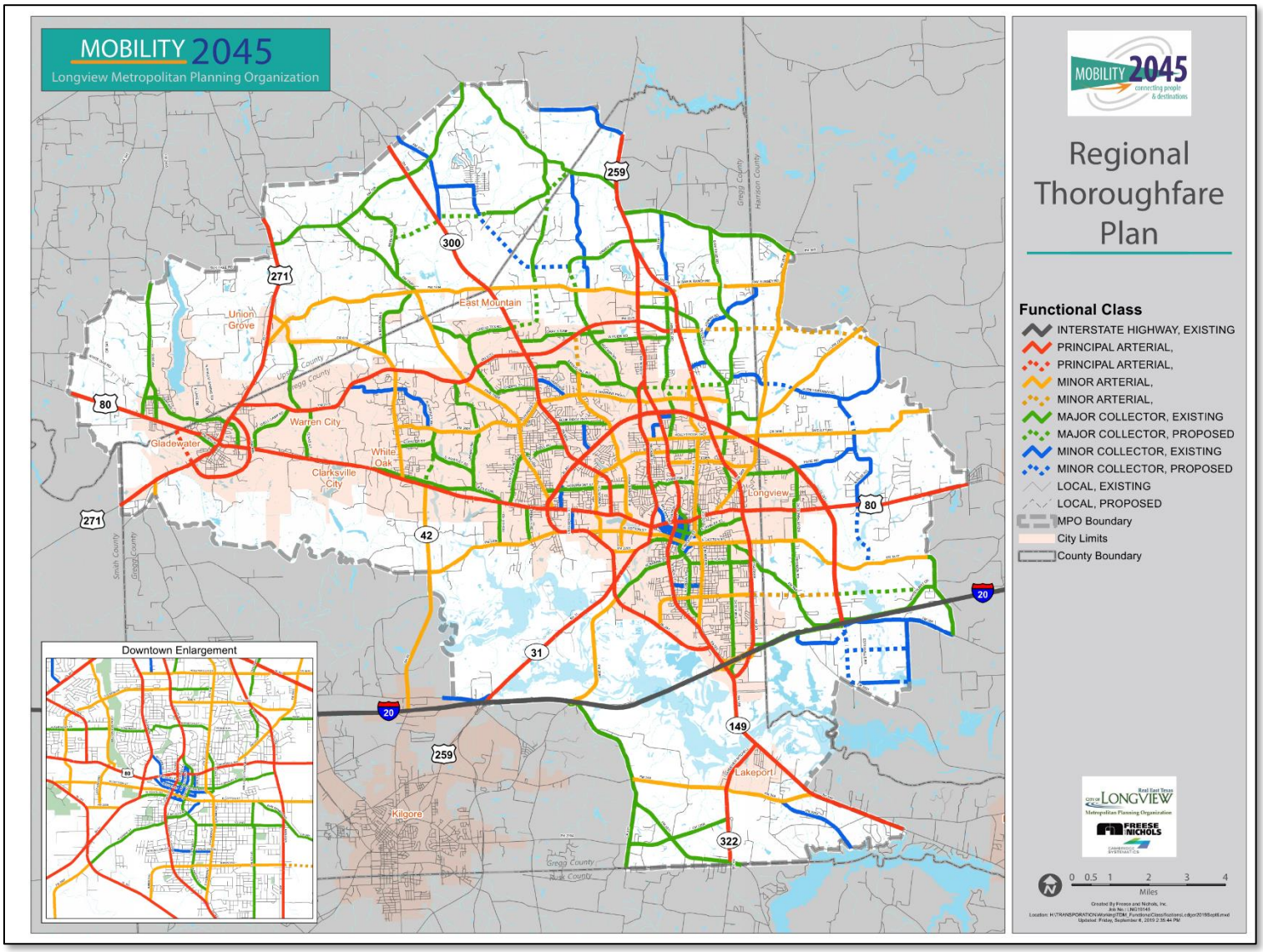
Table 1-1: General Roadway Design Recommendations

Functional Class	Principal Arterial	Minor Arterial	Major Collector	Minor Collector
Right-of-Way	120’	100’	80’	60’
Number of Lanes	4 or 6	2 or 4	2 or 4	2

Longview MPO Regional Thoroughfare Plan (RTP)

As shown in Figure 1-1, the RTP consists of all major thoroughfares in the region by their assigned functional classification. This classification sets the required right-of-way to be acquired or preserved to accommodate future traffic demand in the region. The thoroughfare plan also identifies multimodal elements to be considered along particular corridors in the region. It proposes alternative thoroughfare design elements to be incorporated in the retrofit or redesign as reconstruction is needed.

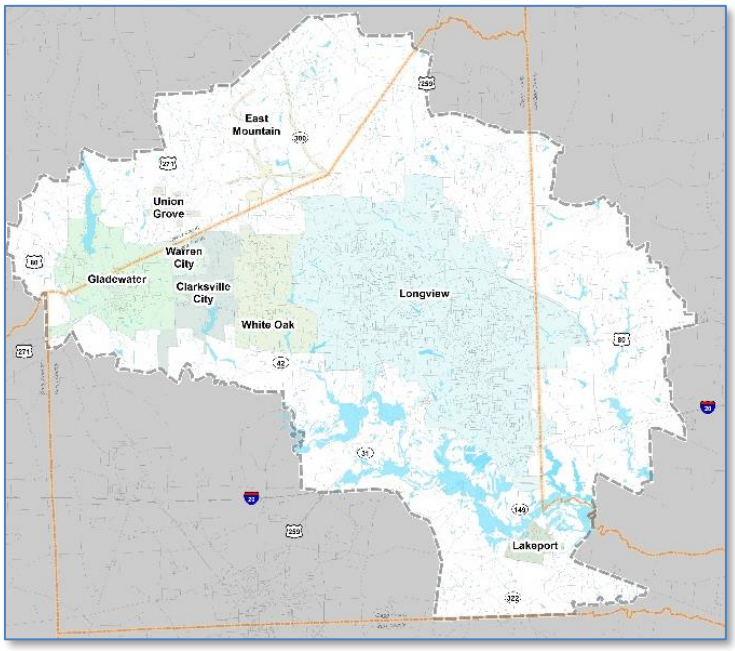
Figure 1-1: Longview Regional Thoroughfare Plan



Introduction

Chapter 2 Introduction

Longview at a Glance



Situated in East Texas at the crossroads of IH-20 and US Highways 80 and 259, the Longview Metropolitan Planning Organization (MPO) is home to the cities of Longview, Gladewater, White Oak and five other municipalities. The economy of the Longview area is primarily oil and gas, as well as some technology and manufacturing. The area has three major post-secondary institutions, Le Tourneau University, the University of Texas at Tyler (Longview Campus), and Kilgore College. Longview competes with Tyler as a regional shopping hub for the surrounding communities in East Texas.

The Longview area is known throughout Texas for its annual Great Texas Balloon Race and is considered by many to be one of the best kept secrets in Texas, boasting an exceptionally high quality of life for its residents.

The Longview MPO is responsible for the administration of the area's surface transportation planning activities. The Metropolitan Planning Area includes portions of Gregg, Harrison and Upshur counties. A list of cities within the MPO boundary is listed in Table 2-1.

Table 2-1: Cities within the Longview MPO Area

Cities
Clarksville City
East Mountain
Gladewater
Lakeport
Longview
Union Grove
Warren City
White Oak

The MPO is governed by a Policy Board composed of elected officials from each county, senior staff members from the City of Longview and officials from the Texas Department of Transportation. Representatives of the Federal Highway Administration and the local Texas State Representatives serve as non-voting members of the transportation board. The MPO Technical Committee, constituted of staff members from participating public entities and agencies, provides technical analysis, develops policies, plans, and projects for recommendation to the Policy Board.

Purpose and Need

Federal mandate requires a continuous planning process be retained for the Metropolitan Transportation Plan (MTP) update. As a building block of the new MTP, Mobility 2045, the Regional Thoroughfare Plan (RTP) serves to provide thoroughfare network planning as well as system planning by way of transit, bike and pedestrian systems integration. Several outcomes to be achieved by this RTP update include the following:

- Identify differences between the various thoroughfare plans that exist within the MPO boundaries
- Align thoroughfares that reduce jurisdictional inconsistencies, enhance connectivity and continuity, limit potential environmental implications, and enhance network constructability
- Review agency functional classification systems and develop a methodology that relates them to each other
- Assess long-term needs of travel demands and system capacity to identify areas of the region that should be the focus of future planning efforts
- Establish a common organizational structure and vocabulary to discuss thoroughfares across the region
- Define common design standards and associated right-of-way needs by functional classifications for urban and rural roadway corridors across the region
- Develop a "bridge" to understand how individual jurisdictions' existing classification systems align with the regional system

Planning for the Future

The MPO area will continue to see growth through 2045 with the region expecting annual growth rates of between 1-3 percent. While much of that growth will occur in and around Longview, growth pressure is expected to continue towards the north and northwest (see Chapter 4). The RTP identifies travel needs associated with anticipated growth, both population and employment, and subsequent impact to the region's transportation system. The MPO's recently completed Bike and Pedestrian Plan (2017) and other MPO planning initiatives, as well as the Longview Comprehensive Plan (2015), the Longview Pedestrian Transit Access Plan (2013), outline recommendations for accommodating growth as well as offering transportation choices for general mobility.

Understanding Thoroughfare Planning

Key Attributes of Thoroughfare Plans

While there is substantial variation between thoroughfare plans, all share several key attributes:

- **Role as a Policy Document**: While all thoroughfare plans provide long-term solutions to shape and direct future growth, a key feature of all plans is to set policies for orderly development of the roadway network that emphasizes network connections, roadway capacity, and stakeholder/public involvement. All thoroughfare plans identify the general location and type of facilities required to support growth.
- **Long-Range in Scope:** All thoroughfare plans are focused on addressing long-range transportation needs to manage forecast growth. The planning horizon for implementation is typically 20 years or more.
- **Focused on Right-of-Way Preservation:** A key component of the thoroughfare plan is to create a mechanism to preserve land for future roadways (right-of-way) so that an effective and efficient roadway network can be developed over time to support growth as it occurs.
- **Defined Roadway Functional Classification:** All plans include a discussion of proposed roadway functional classifications and design cross-sections for the study area. The thoroughfare plan designates roadway classifications of thoroughfares and supports the regional transportation system.
- **Thoroughfare Plan Map:** All thoroughfare plans include a map of proposed roadway recommendations, usually limited to major and minor arterials. The map identifies and integrates existing city thoroughfare plans within the MPO area to produce a clear and consistent vision for the development of the roadway network.
- **Living Document:** Roadway recommendations outlined in thoroughfare plans are not final. The plan itself is subject to constant revision and amendment and is typically updated at the local level every 5 to 7 years to provide considerations in accommodating the changing growth patterns of the study area. As such, the thoroughfare plan acts as a "living document".

> "A [Thoroughfare] plan is a statement of intention, not a guarantee of action."

Source: 2016 Montgomery County Thoroughfare Plan, HGAC.

Understanding Proposed Alignments

The alignments outlined in the plan are not definitive in nature and are subject to revision before a final alignment is approved, designed, and implemented. Such revisions are based upon a variety of reasons, some of which include environmental review, engineering design, compatibility with surrounding developments, future potential development, available funding, and stakeholder/public involvement.

Thoroughfare Planning Process

Chapter 3 Thoroughfare Planning Process

The RTP establishes a framework that will guide the long-term growth and development of the region. The updated process builds on work prepared as part of the 2014 RTP and incorporates updated planning initiatives, data from local and regional agencies, and stakeholder input to formulate a basis for planning and recommended changes to the RTP. Figure 3-1 on the following page illustrates the Longview Metropolitan Area Boundary (MAB) for which the planning process was undertaken.

Agency Coordination

The Longview MPO spans the region around the City of Longview incorporating the cities of White Oak, Clarksville City, Warren City, Gladewater, Union Grove, East Mountain, Lakeport and Gregg, Upshur and Harrison Counties. The MPO has pro-active continuous coordination with these member jurisdictions as well as with affected agencies, including the Texas Department of Transportation (TxDOT), East Texas Council of Governments (ETCOG) and North East Texas Regional Mobility Authority (NET RMA).

Many of these jurisdictions and agencies are represented on the MPO Technical Committee and the MPO Policy Board. Throughout the RTP update process, the Technical Committee and the Policy Board met to review public engagement and input, travel demand forecasting, analyses, recommended network improvements, candidate and project prioritization to the plan. These committees convened on the following dates:

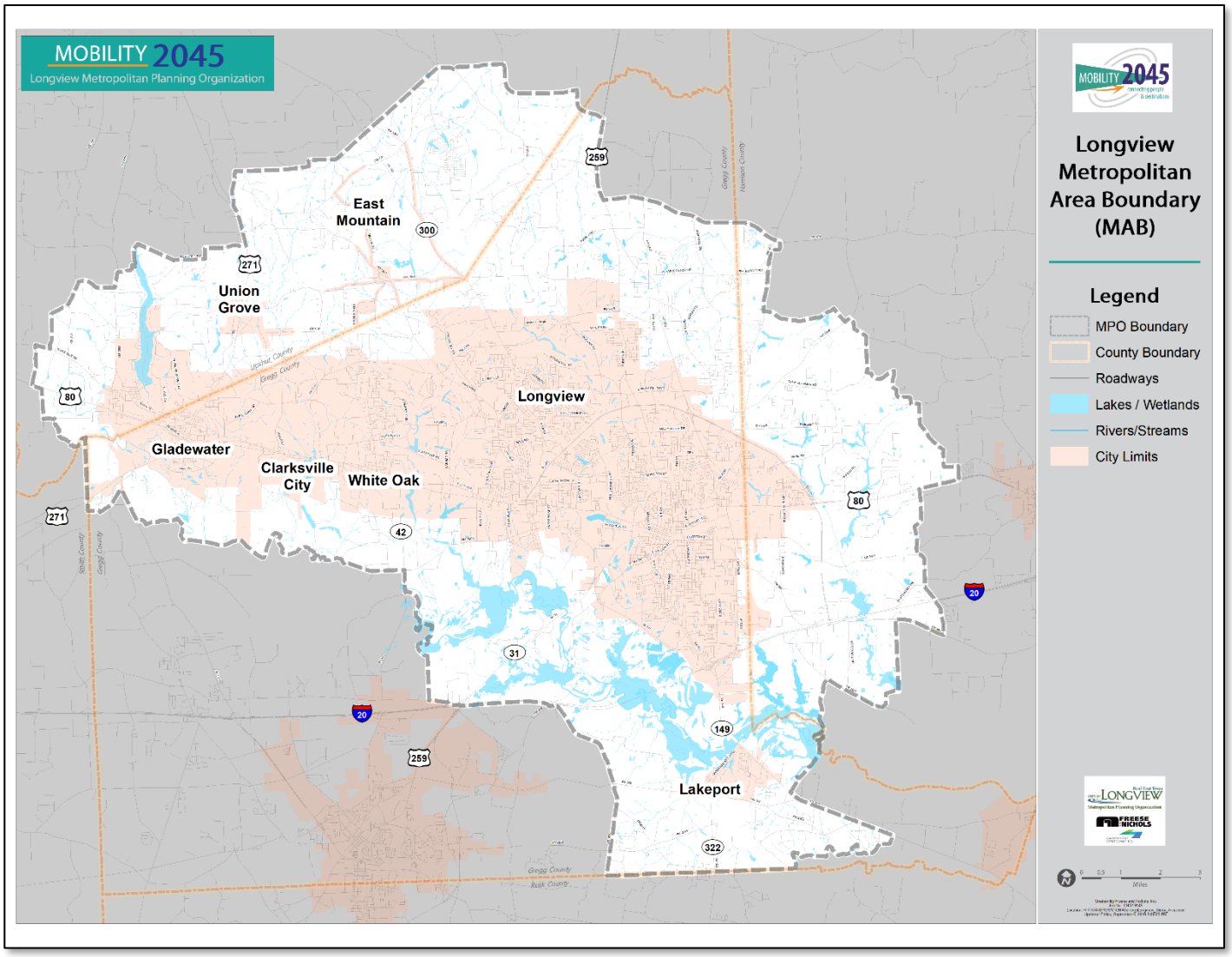
Technical Committee Meetings

- February 6, 2019
- April 17, 2019
- May 29, 2019
- July 24, 2019
- August 21, 2019
- September 18, 2019
- October 23, 2019

Policy Board Meetings

- February 13, 2019
- April 24, 2019
- July 31, 2019
- September 25, 2019
- October 30, 2019

Figure 3-1: Longview Metropolitan Area Boundary (MAB)



A Project Steering Committee, comprised of members from the Longview MPO, City of Longview, TxDOT and Longview Transit, met throughout the planning process to coordinate project needs, discuss technical analyses and plan recommendations. The Steering Committee met on the following dates:

<u>Project Steering Committee Meetings</u>

- January 10, 2019
- March 27, 2019
- May 22, 2019
- July 27, 2019
- August 15, 2019

Data Collection

The initial steps of the thoroughfare planning process included a detailed data collection effort to begin with the most accurate and up-to-date information. As part of the thoroughfare planning process, the following data was used to perform the technical analysis:

- Existing Roadway Facilities
- Traffic Counts
- TxDOT Crash Data
- TxDOT TexPACK Travel Demand Model Data
  - 2018/2045 Networks
  - 2018/2045 Demographics
- Existing Transit Routes (Longview Transit)
- Existing Railroad Lines
- City Comprehensive Plans
- City/Agency Thoroughfare Plans/Corridor Studies
- MPO Plans and GIS Data
  - City, County, MPO Boundaries
  - Rivers/Creeks/Floodplain/Lakes/Wetland Areas
  - Existing/Future Land Use, Thoroughfare Plans
  - 2040 Metropolitan Transportation Plan
  - 2019 – 2022 Transportation Improvement Program
  - 2018 Bicycle and Pedestrian Plan
  - MPO Planned and Under Development Project Data
  - Current Project Prioritization Criteria and Listing

Existing Conditions

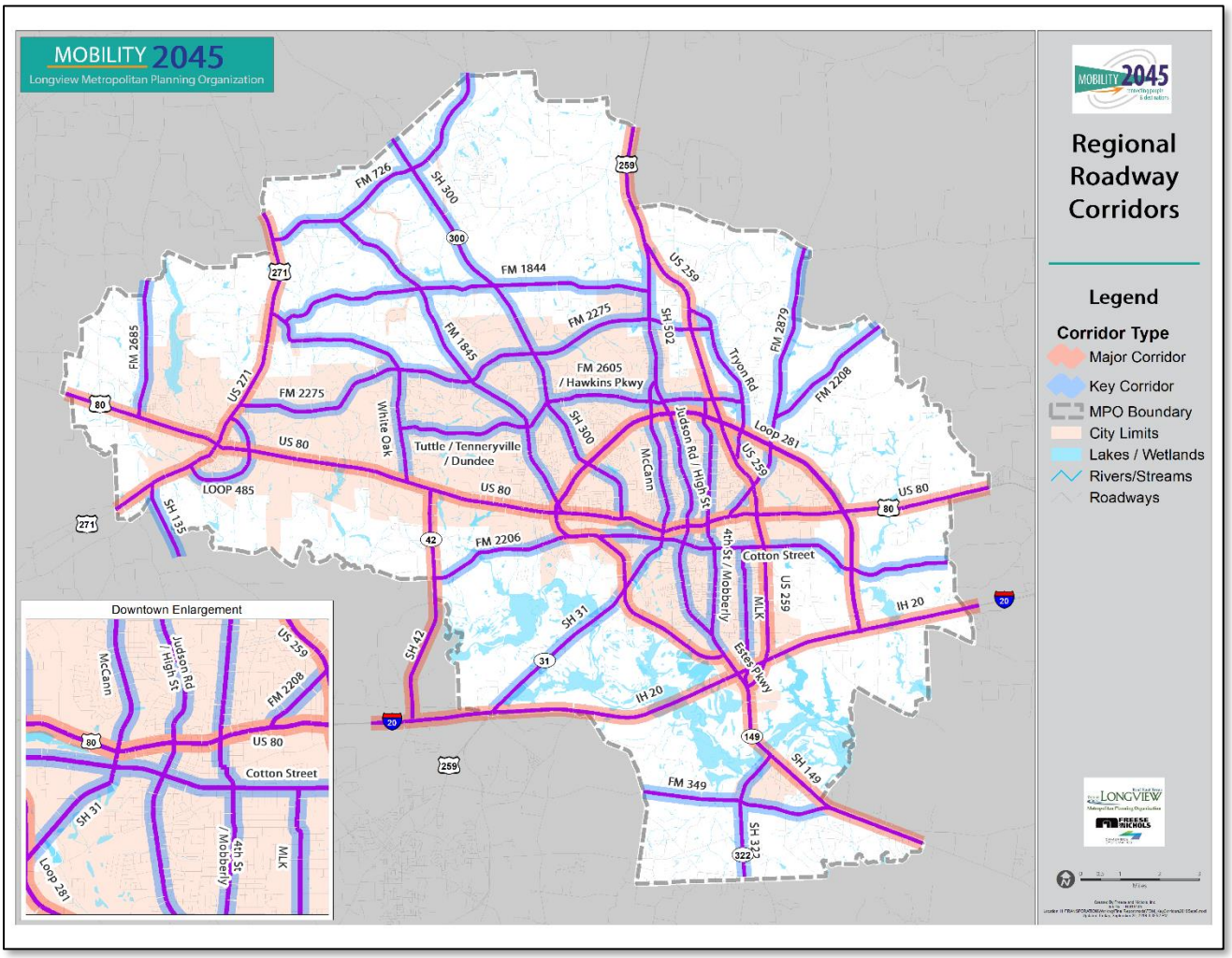
Network Connectivity

The MPO region is served primarily with a network of United States (US) and State Highway (SH), Farm-to-Market Roads (FM) and County Roads (CR). Interstate 20 (IH-20) is a heavily traveled corridor traversing the southern portion of the MPO and serves to provide accessibility to the nearby cities of Longview, Kilgore, Lakeport, Liberty City and Tyler as well as providing access to the major cities of Shreveport and the Dallas-Fort Worth Metroplex. US 80 is also a major east-west corridor and connects Longview to Gladewater, Clarksville City, White Oak, and Hallsville. Table 3-1 shows major travel corridors by direction of travel and roadway class, while Figure 3-2 shows all significant travel corridors within the MAB.

Table 3-1: Longview MPO Key Corridors

Roadway Class	E-W Corridors	N-S Corridors
Interstates	IH-20	
US Highways	US 80	US 259, US 271
State Highways	Loop 281	Loop 485, SH 42, SH 31, SH 300, SH 63, SH 502, SH 149, SH 322, SH 135
Farm to Market Roadways	FM 1844, FM 2275, FM 2206, FM 449, FM 2605, FM 726, FM 349,	FM 1844, FM 2208, FM 2879, FM 2685, FM 2208, FM 1845
Other Roadways	Cotton St, Hawkins Pkwy, Dundee Rd, Tenneryville Rd, E. Tuttle Rd, White Oak Rd	Tryon Rd, 4th Street, Mobberly Ave, Estes Pkwy, McCann Rd, Judson Rd, High St

Figure 3-2: Longview MPO Key Corridors



Challenges and Barriers

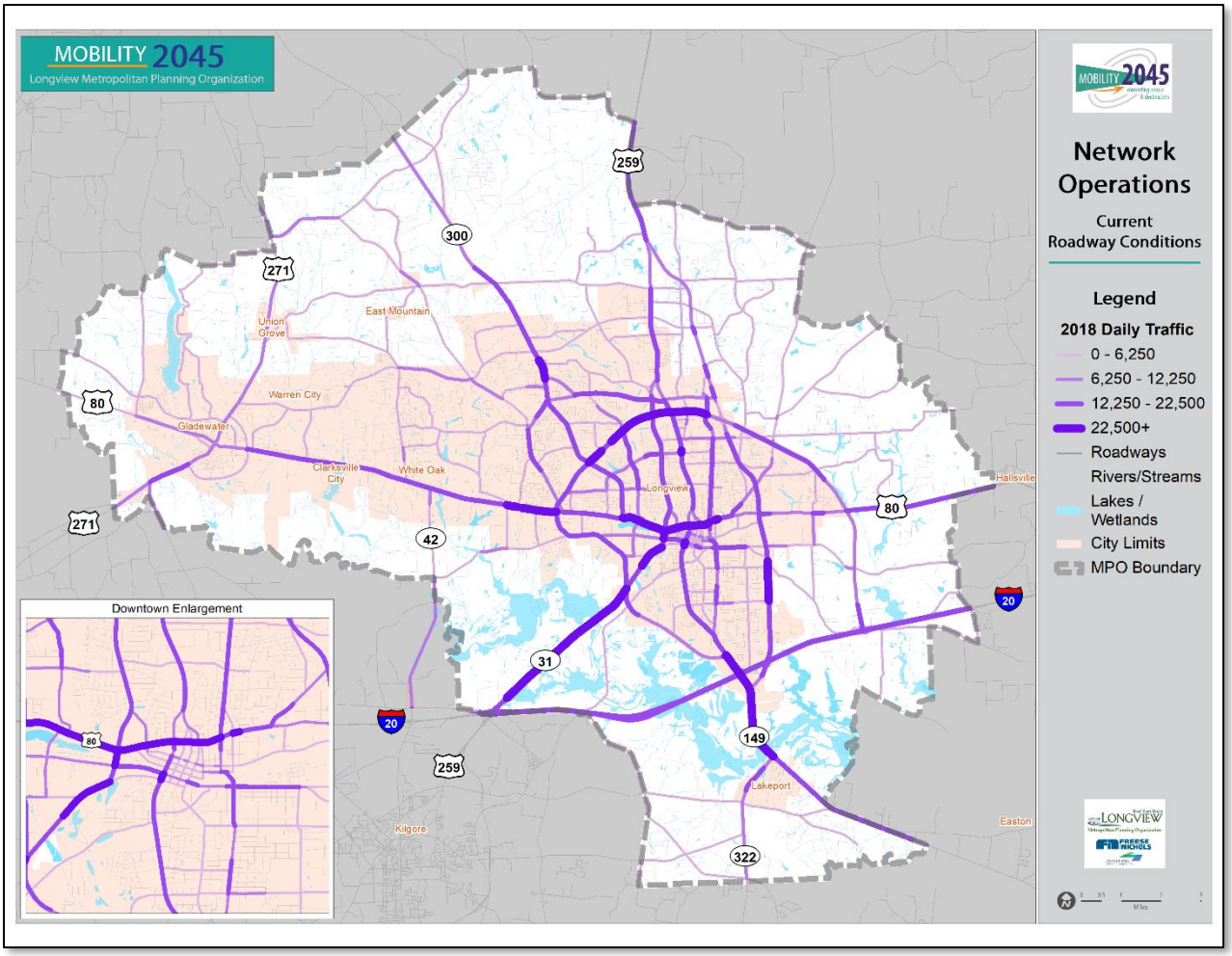
The Sabine River and surrounding floodplain bisects the region from east to west and creates challenges to adding or enhancing existing connections to IH-20. Potential barriers to network connectivity include lakes, rivers, railroads, and large industrial sites.

Current Traffic Volumes

Current traffic volumes within the MPO area are revealed in travel demand model outputs as shown in Figure 3-3 and vary by facility type and regional context. IH-20 carries more intrastate traffic, whereas Loop 281 or Gilmer Road carries more regional traffic, and Hawkins Parkway more localized traffic. The average annual daily volumes on these facilities in 2018 were:

- IH-20: 34,500 - 49,500
- Loop 281: 15,500 - 36,900
- Gilmer Road: 9,100 – 27,500
- Hawkins Pkwy.: 9,300 – 16,500

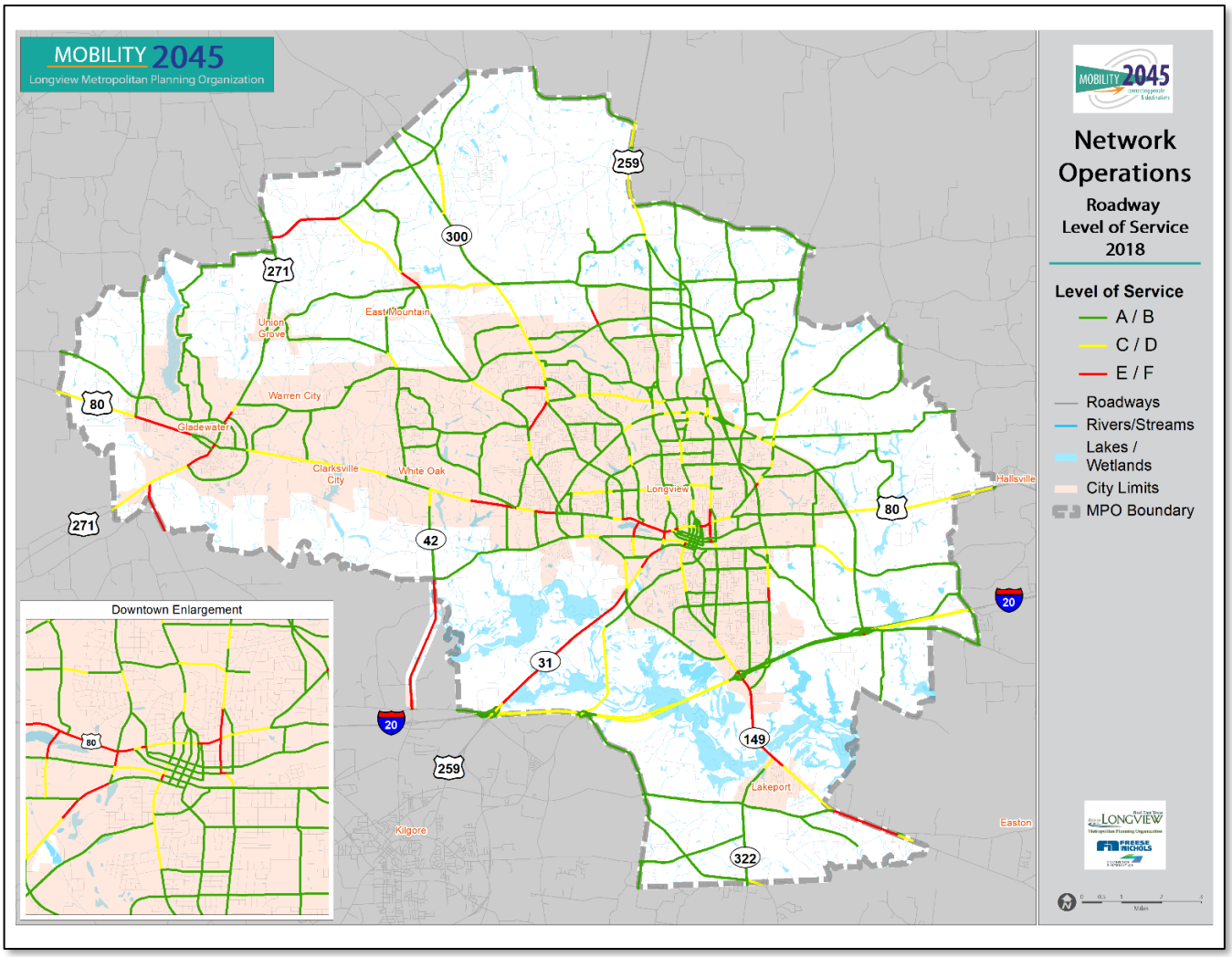
Figure 3-3: 2018 MPO Traffic Volumes



Current Level of Service

A capacity analysis evaluating volume-to-capacity was conducted using the regional travel demand model to identify link level deficiencies in the system. Level-of-Service (LOS) is a metric used to assess roadway congestion levels based on the volume of vehicles on a roadway relative to its overall carrying capacity. In this analysis, LOS ranges from "A" through "F", with "A" referring to free flow traffic condition and "F" representing severely congested facilities. More information on congestion is detailed in Chapter 4 (Traffic Congestion). Figure 3-4 illustrates the level of service analysis into three general categories: "A/B", "C/D", and "E/F". Under current prevailing conditions, the roadway network generally operates at acceptable operational conditions. Exceptions include portions of SH 42, SH 31, SH 149, US 80, US 271, FM 726 and segments of Fourth Street and Dundee Street. It is important to note that as growth and development continues, the network as currently built (without any further improvements) would experience far worse operational conditions to the link level analysis highlighted. For example, many segments of Loop 281 and other key corridors currently operate at LOS "D".

Figure 3-4: 2018 MPO Level of Service

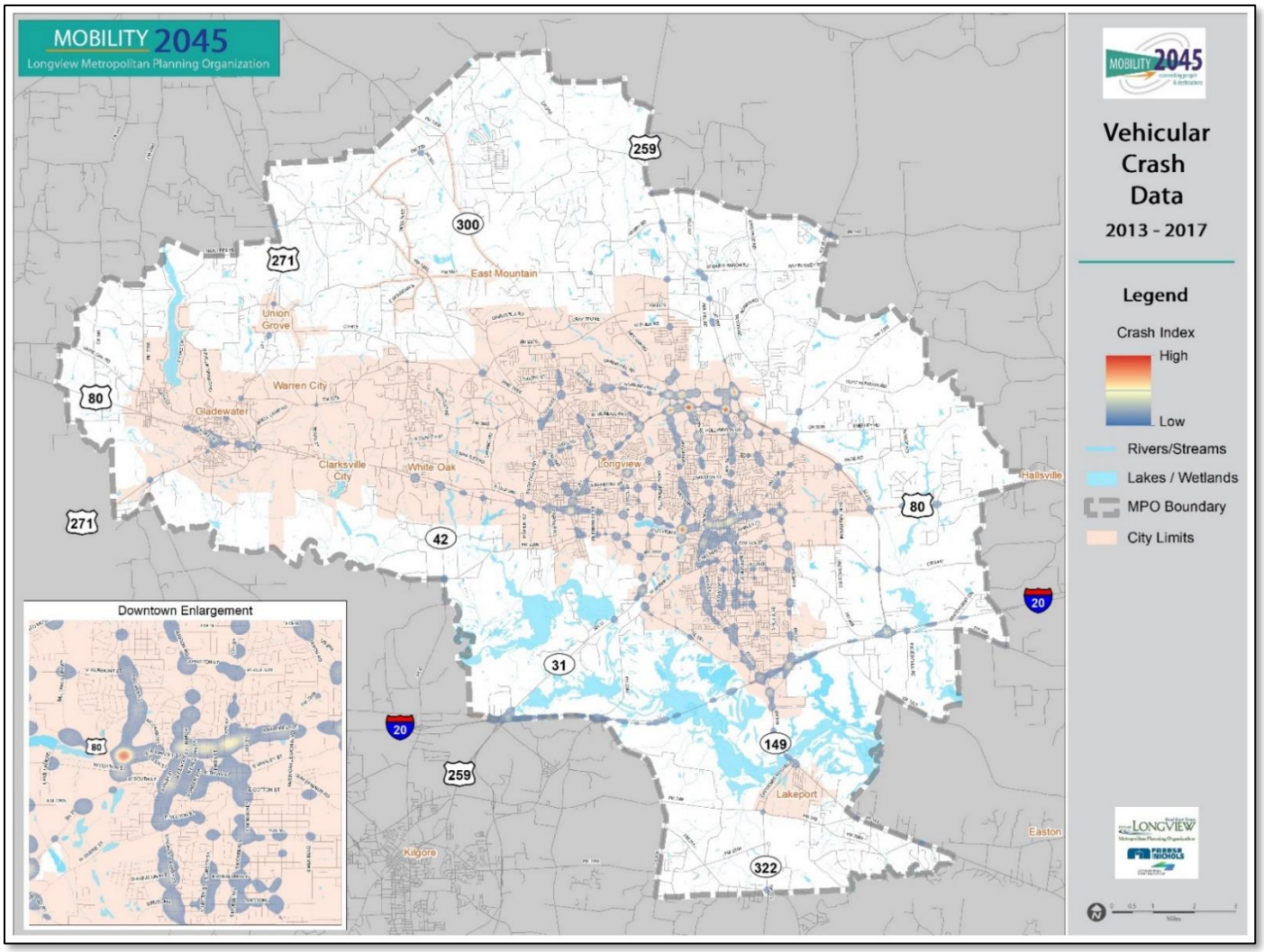


Crash Data

An analysis of traffic crash data was prepared to provide insight to locations on the roadway network with a history of accidents. Four-year data from TxDOT's Crash Records Information System (CRIS) was used in developing an accident density map illustrated in Figure 3-5. Data reveals higher accident density in areas including:

- Loop 281: at US 80, Gilmer Road, and the highest between McCann to Eastman Road
- US 80: between McCann and Fourth Street, Loop 281, Bill Owens Parkway
- Gilmer Road: Reel Road to H.G. Mosely Parkway
- McCann, Judson and Fourth Street: Loop 281 to Hawkins Parkway
- IH20: Eastman to MLK Boulevard, SH 31 and Loop 281

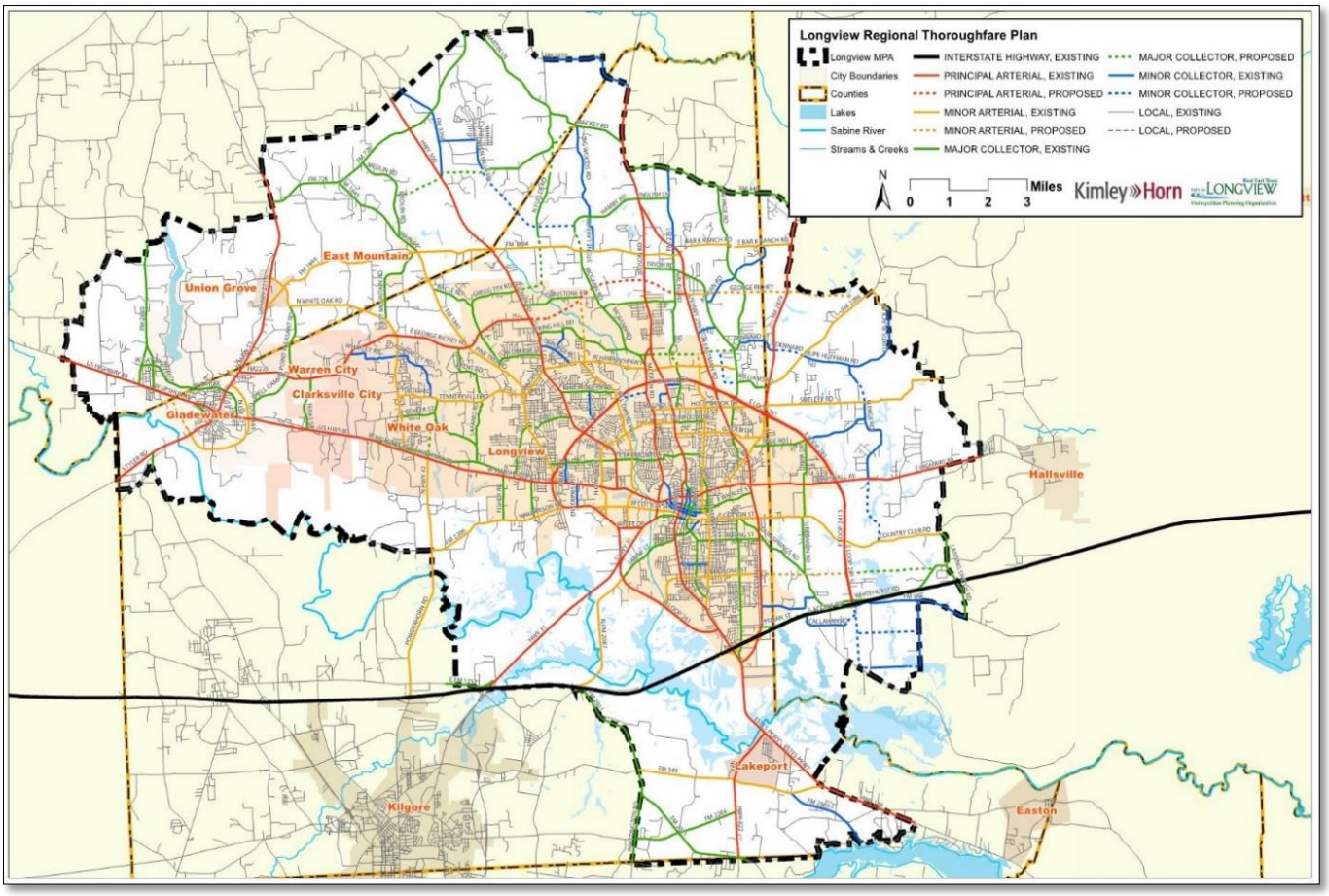
Figure 3-5: 2016-2018 Accident Density



Current Regional Thoroughfare Plan (RTP)

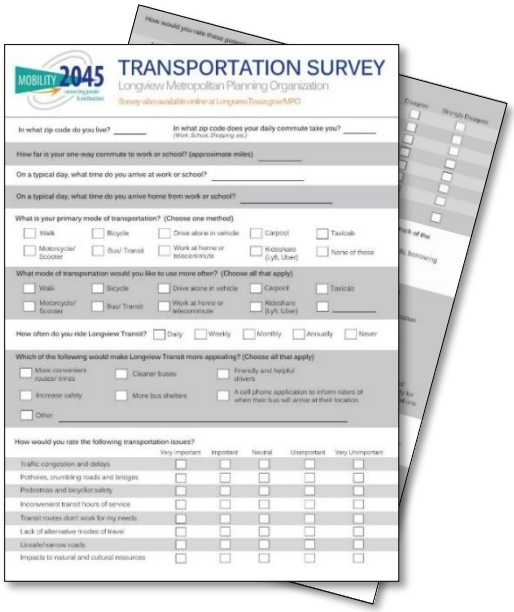
The current RTP adopted in 2014 serves as a starting point for the evaluation of transportation needs relative to continued growth and development. The 2014 RTP was evaluated using demographics projections through the year 2040. This update will evaluate transportation needs under growth and development through the year 2045. More information regarding demographic growth and travel demand modeling will be discussed in the Technical Analysis presented in Chapter 4.

Figure 3-6: 2014 Longview MPO Regional Thoroughfare Plan



Public Involvement

A series of public engagement activities were conducted during the planning process to inform residents of the thoroughfare planning events and needs from the public. Public engagement consisted of a transportation survey, on-line input to MPO website solicitation for public comment, and a project Open House meeting.


MOBILITY 2045
TRANSPORTATION SURVEY
Longview Metropolitan Planning Organization

Transportation Survey

The Longview MPO conducted an on-line transportation survey in partnership with the Metropolitan Transportation Plan (MTP) Update to gather feedback on the mobility needs in the region. This attitudinal survey, conducted with Survey Monkey and advertised in conjunction with Longview Transit, garnered 159 responses to the 16-question inquiry. Detailed survey results can be found in Mobility 2045 Metropolitan Transportation Plan.

Website

Public solicitation was also requested via the Longview MPO website in which 38 respondents provided input to specific needs. A geocoding tool enabled respondents to identify specific locations on a map for input. Key issues identified included the need to address congestion on Fourth Street north of Loop 281, the need for more sidewalks, transit system expansion to broaden usage, and the need for better roadway lighting among others.

Open House Meeting

A public open house was held on Tuesday, April 23, 2019 at the Maude Cobb Convention and Activity Center to gather feedback on key issues and needs regarding long-range thoroughfare planning for the MPO area. Project staff gave a brief presentation to participants and were interviewed by local media.

Stakeholder Presentations

Presentations were also given to various stakeholders regarding the RTP development, travel demand modeling, candidate project identification and prioritization. Project staff gave these presentations to the Longview MPO Technical Committee (October 23, 2019) and the Policy Board (October 30, 2019).

Technical Analysis

In addition to travel demand modeling, where updated networks and demographics coincided with analysis periods of 2018 and 2045 (to be discussed in more detail in Chapter 4), a range of planning activities and technical analyses were conducted to provide a sound technical basis for recommendations regarding future mobility needs within the Longview MPO. Ultimately, the technical analyses going into the RTP update will result in a plan identifying functional street classification, the general alignment and location of future roadways, and the necessary number of lanes needed to accommodate travel demand in 2045. Roadway design standards, compiled by functional classification, provide information on geometric cross-section and the recommended rights-of-way necessary to adequately accommodate roadway facilities. The following transportation planning steps were undertaken in the network development of the RTP. Travel demand modeling then provided the impetus for roadway needs and sizing.

Network Planning

A system of thoroughfares is needed to provide general access and effectively support the backbone of any vehicular transportation system – mobility. Through network planning, a logical order of roadway facilities can support both the regional and localized system within communities, which in turn fosters economic benefit through appropriate land planning. Several key considerations were a part of network planning.

- **Thoroughfare Designations** - The roadway designations (Functional Street Classification) used in the RTP are intended to provide regional consistency yet be broad enough to allow for local flexibility. The plan intends to standardize, from a regional perspective, how roadways are classified due to the wide variation in how roadways are characterized at the federal, state, and local levels.

- **Thoroughfare Spacing** - Desirable thoroughfare spacing is a function of the capacity of the system, supporting transportation modes, and the effect on the regional system. Spacing was reviewed to ensure logical roadway layout consistent with general transportation planning practices.

- **Completing Gaps** - Identifying gaps in the roadway network assists in minimizing potential strains to traffic flows that could then impact the surrounding system. The completion of a small roadway segment between two existing facilities can significantly reduce circuity. Similarly, connectivity between networks of neighboring jurisdictions is equally important for continuity and effective systems planning of the broader realm.

- **Continuous Regional Routes** - Providing for continuous routes linking multiple city and county population/employment centers is important for mobility and orderly development. Identifying the corridors where anticipated traffic demand exceeds the operational capacity of the network is essential for financially responsible planning and transportation improvement programming.

Ultimately, regional connectivity plays an increasingly important role to growing and emerging areas, as well as serving as alternate routes to relieve other congested corridors.

- **Review and Refinement** – Checking for jurisdictional inconsistencies, capacity and connectivity, and defining corridors for future consideration is increasingly important for sustainable planning. Equally important is modal consideration and transportation choice as the networks continue to expand. A proactive and continuous planning process helps to achieve these goals.

Alternatives Analysis

The testing of system alternatives in the region is an important element of the transportation planning process. The Alternatives Analysis examines the change in forecasted traffic volumes as unique alignments of future roadways and the expansion of existing roadway capacity are altered. Alternative scenarios combining packages of roadway improvements are described in detail as part of the Technical Analysis section of the report. The plan update process began with the recommended base of improvements from the Longview 2018 Bond Package, the MPO's 2019 – 2022 Transportation Improvement Program, and TxDOT's 2020 Unified Transportation Plan.

Technical Analysis

Chapter 4 Technical Analysis

Travel Forecast Modeling

The Longview MPO RTP was developed using several tools, including the Longview MPO Travel Demand Model (TDM), a computerized representation of a community or region's transportation system. TDMs use land use and demographic forecasts to simulate the movement of commuters throughout a transportation network under various conditions. Model results are used by transportation planners to understand and interpret transportation network conditions. These models also predict how changes to the system (such as roadway improvements, or changes in population and employment) will have on future travel demand.

Basic Model Theory

Travel demand model is a series of mathematical models that simulate travel on the transportation system based upon various parameters and assumptions. The model divides the Longview MPO study area (MAB) into smaller geographic zones called traffic analysis zones (TAZs), which have specific demographic and land use data associated with them. The TAZs are used to determine trip demand and travel patterns. The modeling process encompasses four primary steps:

- **Trip Generation** – the number of trips produced and attracted to a destination or TAZ – based on trip purpose.
- **Trip Distribution** – the estimated number of trips between each TAZ – where the trips are going.
- **Modal Split** – the anticipated number of trips made by each mode of transportation between each TAZ.
- **Trip Assignment** – the amount of travel (number of trips) loaded onto the transportation network through path-building. This is used to determine network performance.

The model results help the Longview MPO forecast future transportation conditions and evaluate strategies to mitigate long and short-term inefficiencies in the thoroughfare network.

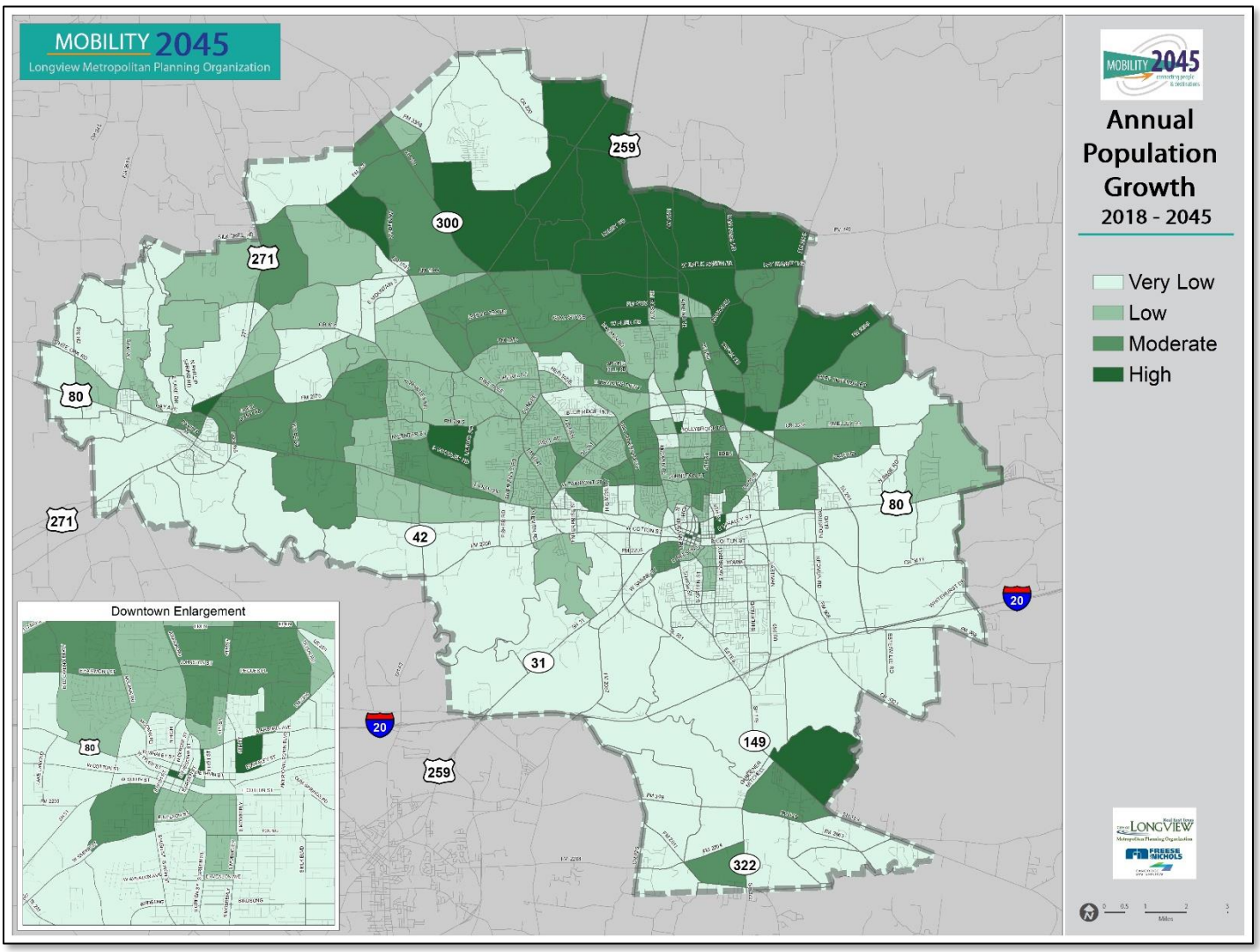
Future Demand and Projected Congestion

Travel demand models assist in the development of thoroughfare plans by forecasting future demand and associated roadway congestion. Roadway capacity, traffic volumes, congestion and delay are all indicators that are used to identify needs, evaluated proposed solutions, and develop plan recommendations.

Projected Population and Employment Growth

Key to forecasting future travel demand is understanding how population and employment growth will occur within the region. Demographics are an essential input into forecasting travel demand and directly impact when and where travel demand will occur. Adjustments were made to incorporate new key development occurring (input by respective City) and other key shifts in population or employment.

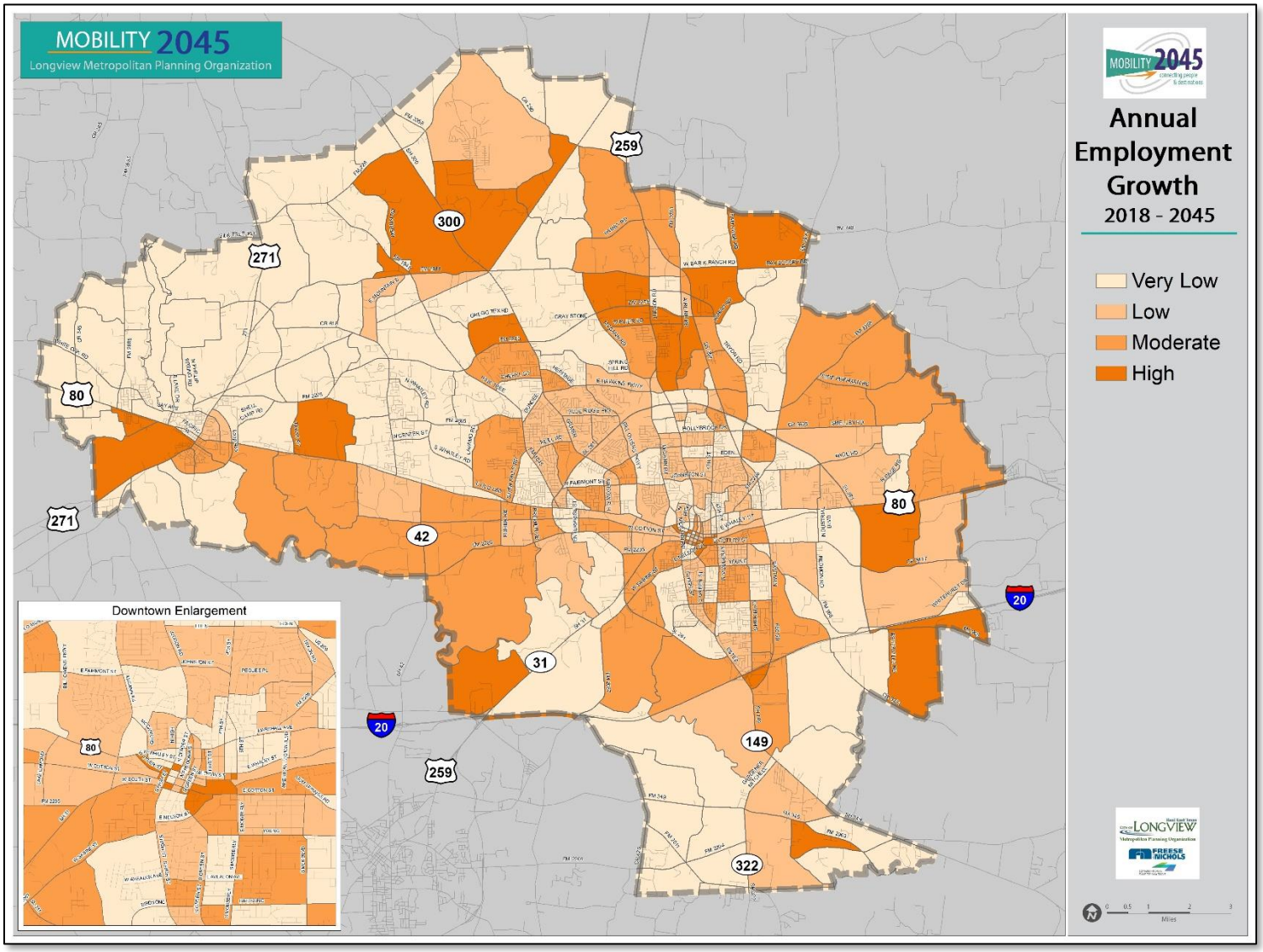
Figure 4-1: Forecast Population Growth



Increased in population growth are shown in Figure 4-1. As illustrated, a majority of forecasted population growth is expected to occur in the north central and northern areas of the Longview MPO study area. Note the limited projected growth along the IH-20 corridor in the south.

As illustrated in Figure 4-2, forecast employment growth reveal a much different picture than population growth. Projections indicate relatively widespread growth throughout the region, except for areas to the west-northwest. Higher increases in employment are forecasted in areas along; IH-20, US 80, US 259, George Richey Rd (Longview North Business Park), and FM 1844 areas.

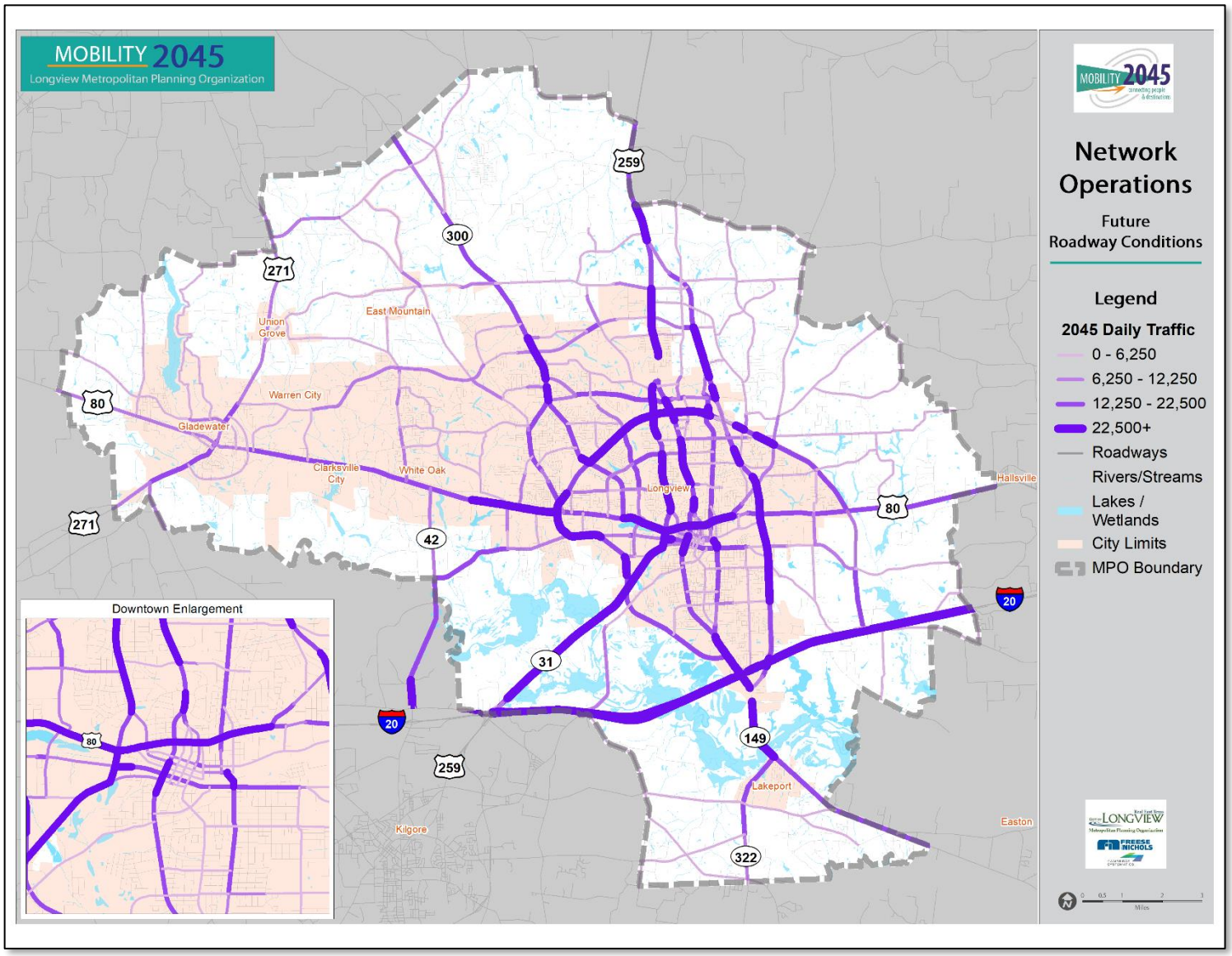
Figure 4-2: Forecast Employment Growth



Future Traffic Volumes

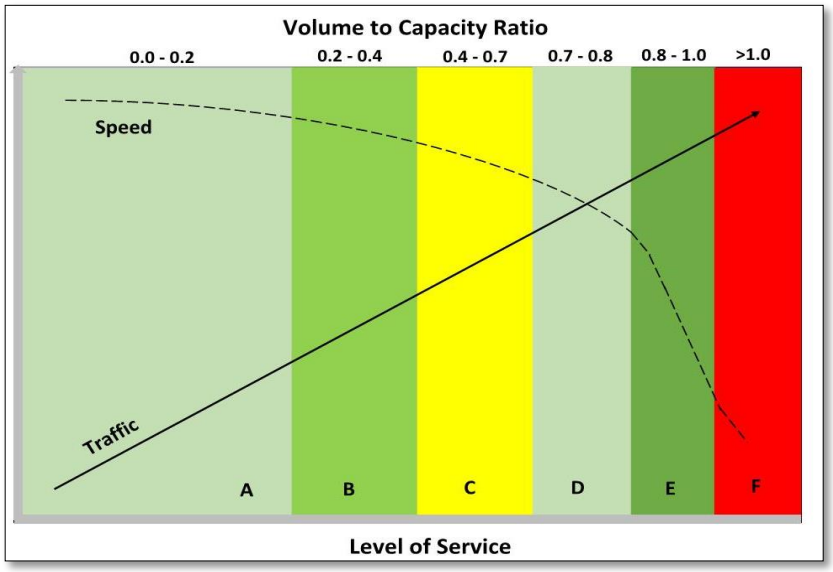
Traffic volumes show the "demand" on the thoroughfare network that is produced as a result of future population and employment growth, and vehicle trips associated with this growth. The desirability of a thoroughfare for travelers is based on capacity and speed; the more capacity and speed a thoroughfare can provide, the more travelers will be attracted to the roadway until it becomes so congested that other facilities become more attractive. This is one reason why higher functional class facilities usually have higher volumes of travelers as they can carry higher volumes at greater speeds. As shown in Figure 4-3, forecast volumes in the Longview MPO region show that most volumes are along its highway and arterial networks, with the highest forecast volumes along US 80, SH 31, IH-20, Loop 281, and US 259.

Figure 4-3: Forecast 2045 Roadway Volumes



Traffic Congestion

Figure 4-4: Level of Service, Volume to Capacity Relationship



Traffic congestion is typically measured by its level-of-service (LOS), a performance measure used by transportation engineers and planners to evaluate the function and flow of traffic through a transportation network. LOS assesses roadway congestion levels based on the volume of vehicles on a roadway relative to its overall vehicle capacity. This is called the volume to capacity (or v/c) ratio. Traffic operations range from A through F, with A referring to free flow traffic conditions and F representing severely congested facilities. The higher the v/c ratio, the closer a roadway is to meeting or exceeding its carrying capacity. Figure 4-4 illustrates the level of service and traffic movement, showing that speeds decrease along roadway lanes as traffic volumes increase and vehicle capacity is reached. Illustrated in Table 4-1, level-of-service can be grouped into three general categories: A/B, C/D, and E/F.

Table 4-1: Level of Service Categories

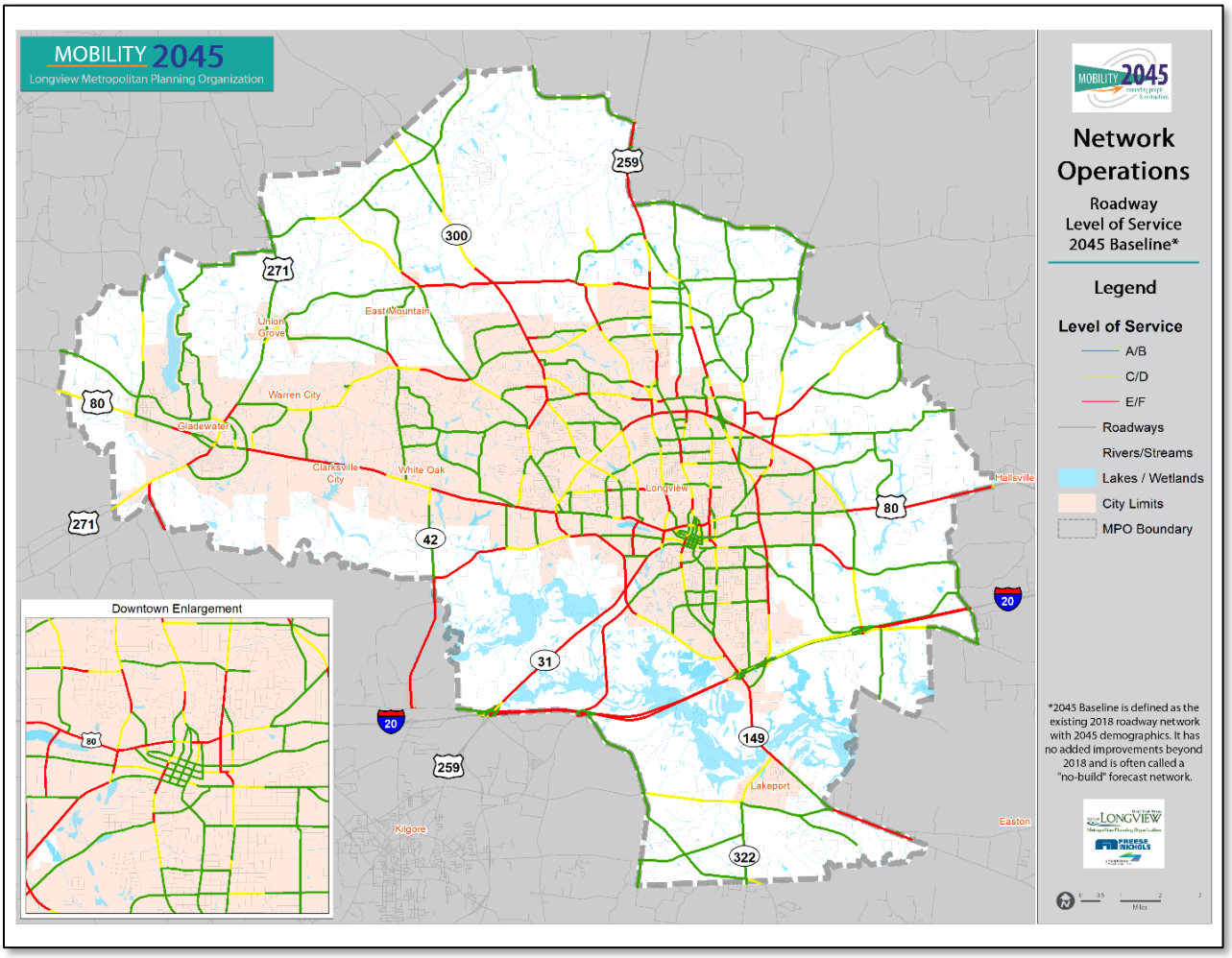
LOS A/B: Traffic flow in this category moves at or above the posted speed limit. Travel time in this category is not hindered as a result of congestion because traffic volumes are much less than the actual capacity.	
LOS C/D: This category is slightly more congested than LOS AB; however, traffic volumes are beginning to reach their capacity of the thoroughfare. Traffic usually moves along at an efficient rate and posted speeds may not be fully reached.	

LOS E/F: Congestion is apparent in this level-of-service category. Traffic flow is irregular, and speed varies. The posted speed limit is rarely, if ever, achieved in this category. In more congested corridors, traffic can be at a mere standstill with limited progression during peak hours.	

Most agencies design roadways for LOS C and D operational conditions during the peak hours (although agencies in highly congested, high density urban areas will accept LOS E or F conditions if right-of-way costs for additional roadway capacity are economically prohibitive). Roadways operating at LOS C or D are considered ideal for pedestrian activity.

Figure 4-5 illustrates the forecast level of service for roadways in 2045. Major roadways with high forecast levels of congestion include SH 31, US 80, US 259, FM 1844, Loop 281, SH 300, SH 149, SH 502, and Old Kilgore Hwy.

Figure 4-5: Forecast 2045 Roadway Level of Service



Alternatives Analysis

The purpose of these alternatives was to determine where the mobility needs in the region are and to determine which of the proposed projects would have the greatest benefit.

To analyze future traffic demand, two different network transportation scenarios were developed using revised 2045 demographic assumptions. The demographic update process began by reviewing the approved figures from TXDOT and adjusting these figures based on feedback from the MPO and the technical steering committee. Demographics were adjusted in several areas including; downtown Longview, George Richey Road, Hawkins Parkway, SH 149, FM 1844 and Gilmer Road.

Scenario 1: Planned Projects

This initial alternative was developed to test existing plus "committed" projects in 2045 against forecast 2045 population and employment. "Committed" projects are those roadway projects included in the MPO Transportation Improvement Program, that have been approved by the MPO Policy Board and have dedicated funding and a timeframe for project implementation. This also includes improvements listed in the Longview 2018 Bond Package and TxDOT's 2020 Unified Transportation Plan. Figure 4-6 illustrates the network by showing areas where roadway projects will create increases in capacity and the number of lanes. Figure 4-7 describes scenario 1 system performance by level of service.

Figure 4-6: Scenario 1 Network

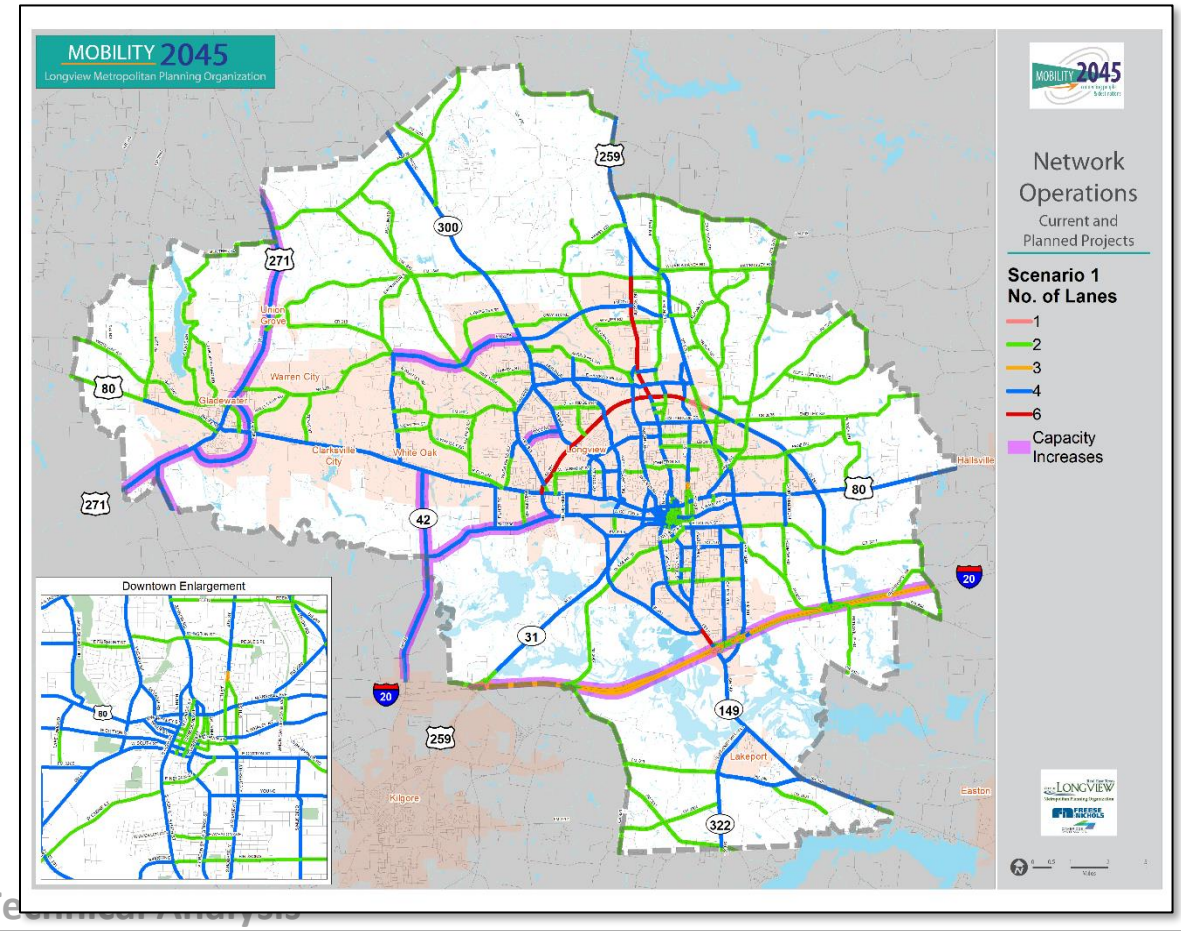
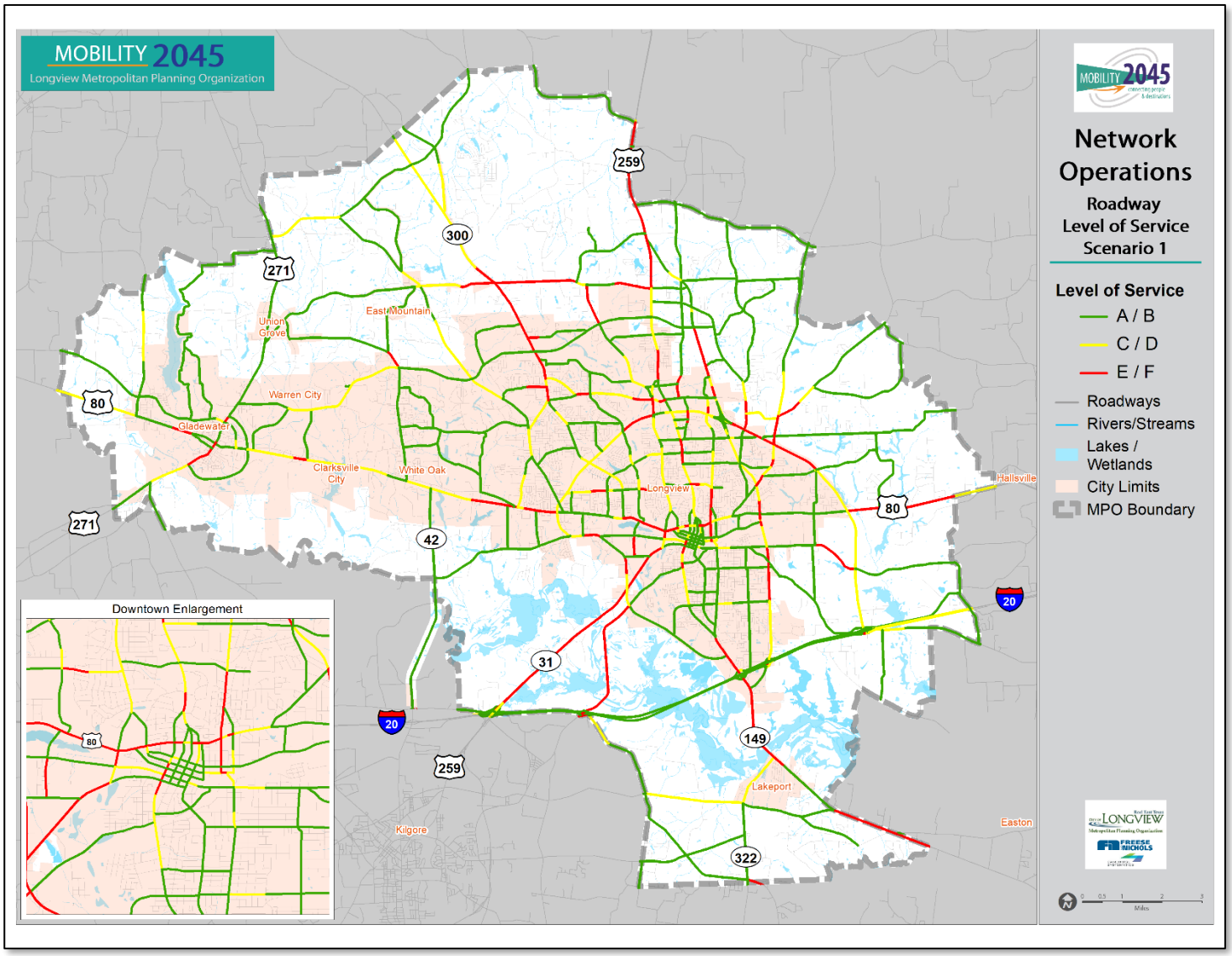


Figure 4-7: Scenario 1 Level of Service



Scenario 2: Buildout

The Scenario 2 network was developed in cooperation with key stakeholders and includes all planned projects plus additional proposed improvements identified by the MPO and its stakeholders. Figure 4-8 shows the network characteristics expressed as number of lanes and roadway projects with capacity increases. Figure 4-9 illustrates system performance expressed as level of service.

Figure 4-8: Scenario 2 Network

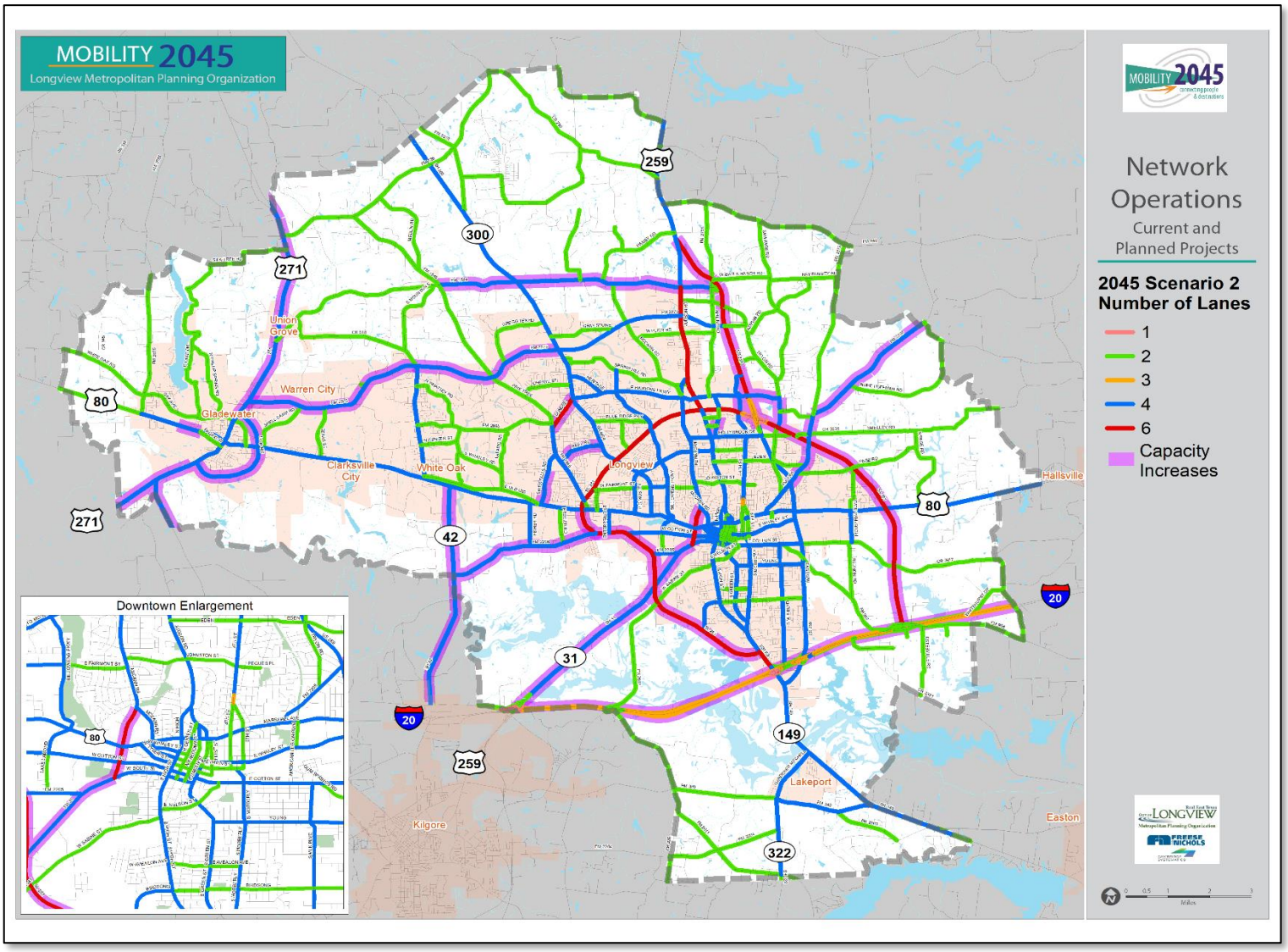
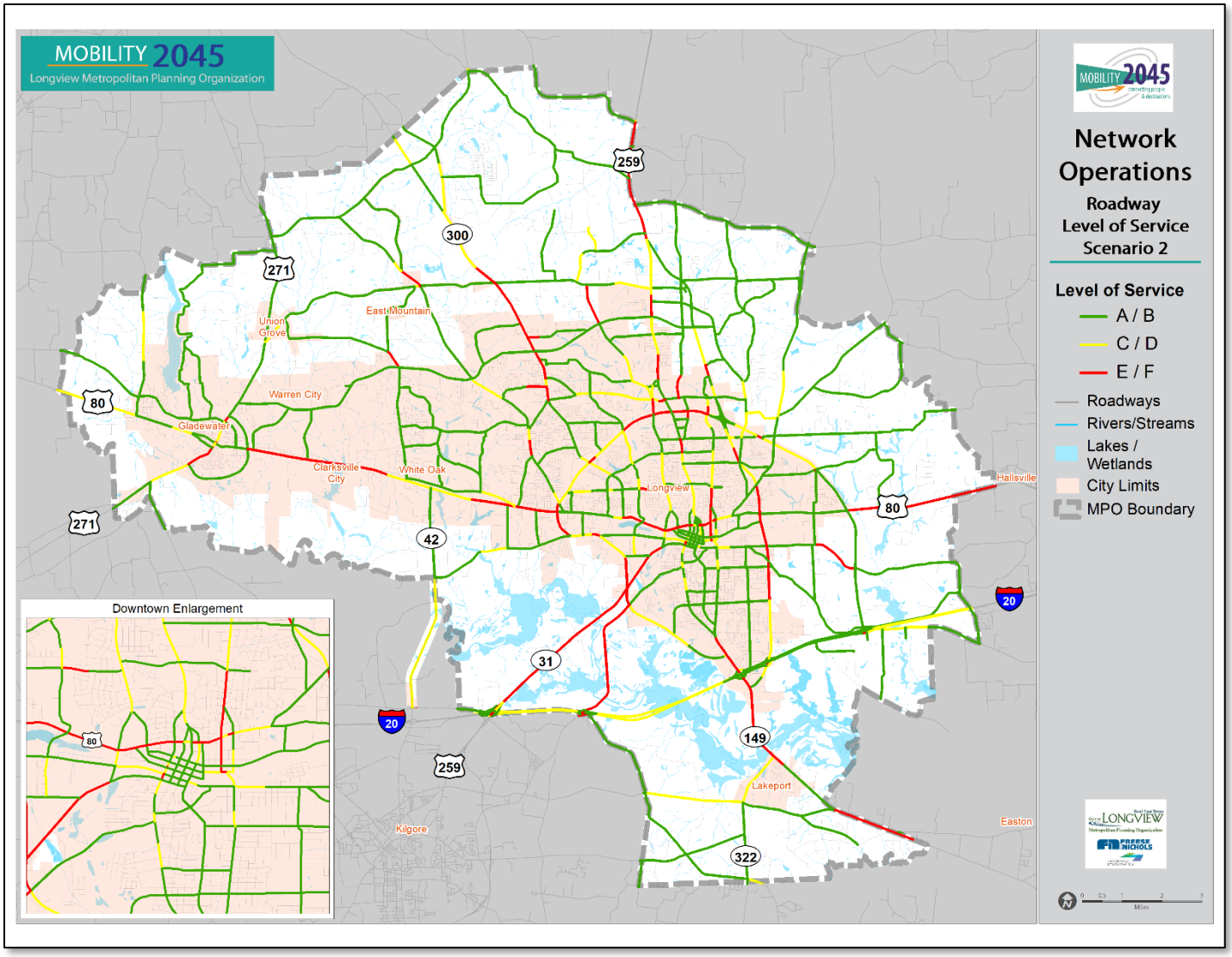


Figure 4-9: Scenario 2 Level of Service



Comparison of Scenarios

An evaluation of alternatives in Table 4-2 reveals change in vehicles hours traveled (VHT), vehicle miles traveled (VMT), lane miles, and total delay between the 2045 baseline and scenarios 1 and 2.

The 2045 baseline contains no improvements from 2018 (see lane miles) and has the most VHT and total delay out of all alternatives and was therefore not considered as a recommendation. Scenario 1 performs better than the 2045 baseline but has more VHT and delay than scenario 2. Scenario 2 has the most lane miles and less VHT and delay, indicating that its network does a better job of reducing congestion and provides the greatest benefit.

While scenario 1 does show an improvement over the 2045 baseline, only scenario 2 showed sufficient improvement and is thus the recommended alternative.

Table 4-2: Comparison of Alternatives

	2045		
	Baseline	Scenario 1	Scenario 2
Vehicle Miles Traveled (VMT)	6,466,051	6,474,013	6,474,954
Vehicle Hours Traveled (VHT)	171,882	168,547	166,745
Delay (hours)	18,435	14,880	13,259
Lane Miles	1,808	1,887	2,001

Thoroughfare Plan Development

Chapter 5 Thoroughfare Plan Development

Preserving and determining the appropriate amount of right-of-way to accommodate future growth while balancing public expenditures is always challenging. Considerations as to the type and function or proposed new thoroughfares include such factors as:

- Scale, density, and type of adjacent existing and planned developments
- Proximity of adjacent thoroughfares
- Classification of adjacent thoroughfares
- Existing transportation policies

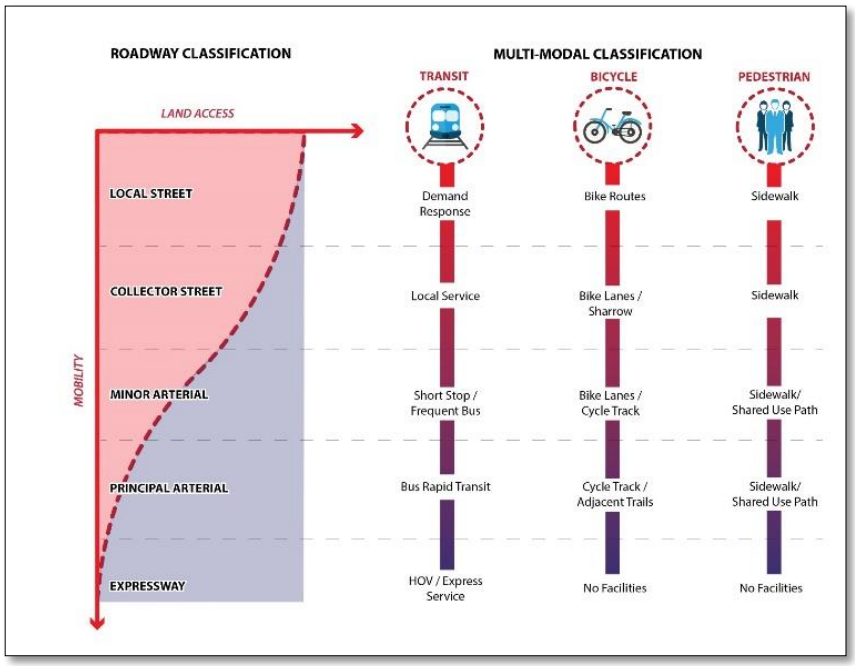
Functional Classification

Understanding Functional Classification

The functional classification of streets is used to identify the hierarchy, function, and dimensions of a roadway. Streets and highways are grouped into classes based on facility characteristics such as geometric design, speed, and traffic capacity. A roadway's functional class determines a traveler's ease of access to origins and destinations within the thoroughfare network.

As Figure 5-1 shows, the higher the roadway's functional classification, the higher the level of mobility and lower the level of land use access. The balance of land use access and mobility have a significant impact on the overall flow of traffic within a thoroughfare network. Typical functional classifications found in thoroughfare plans include principal or major arterials, minor arterials, and collector facilities.

Figure 5-1: Land Use Access and Mobility by Functional Class



Typical Roadway Characteristics by Functional Classification

All functional classes have general characteristics, such as spacing, capacity, speed, required right-of-way, and specific design criteria to delineate how each facility should be utilized. Table 5-1 below sets out typical characteristics for each type of functional class of roadway.

Table 5-1: Typical Roadway Characteristics by Functional Classification

Typical Attribute	Freeway/Expwy	Principal Arterial	Minor Arterial	Collector	Local
Roadway Spacing	2-10 miles	1-2 miles	0.25-1 mile	0.1-0.25 miles	200-500 feet
Facility Length	15+ miles	5-15 miles	1-5 miles	0.25-1 mile	<0.25 mile
Traffic Volume (vehicles/day)	Over 100,000	35,000-100,000	10,000-35,000	1,000-10,000	<1,000
Right-of-Way	300-500 feet	100-120 feet	70-100 feet	60-70 feet	50-60 feet
Number of Lanes	Main + Service Roads	4-6 lanes	3-5 lanes	2-4 lanes	2 lanes
Median	Yes	Yes	Yes/No	No	No
Speed Limit	55-75 mph	35-55 mph	30-45 mph	30-35 mph	Max 30 mph

Recommended Thoroughfare Functional Classification and Design Standards

Versatility is a strength in any policy document because it gives policymakers flexibility to address unforeseen issues that may arise during the implementation phase. To provide flexibility in the thoroughfare plan, additional functional classifications were developed with variable lane configurations to allow for consideration of the context of adjacent land uses (both existing and/or proposed in the future) as well as, from an urban or rural setting perspective. Minimum rights-of-way were established in consultation with the MPO, city officials, and TxDOT representatives.

Design Standards

There are established standards for design that are utilized by communities across the United States; these standards have been established based on research and field experience. These are the anticipated guidelines for implementation of the transportation system plan:

For Roadways:

- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, latest edition
- Transportation Research Board, Highway Capacity Manual, latest edition
- Texas, Manual on Uniform Traffic Control Devices, latest edition

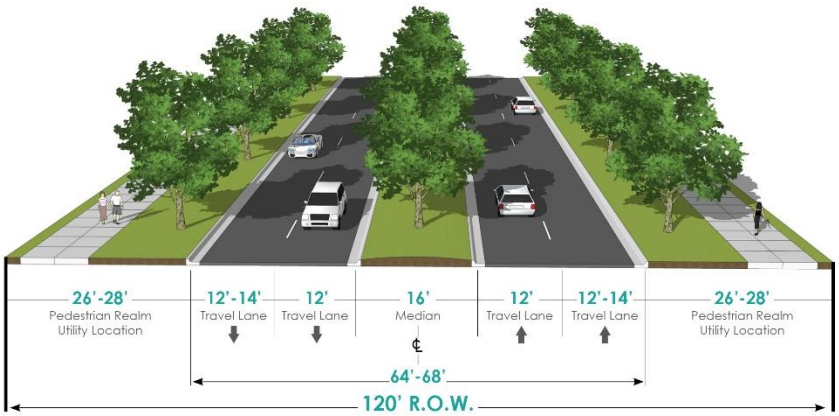
Street Types/Functional Classification

Functional classification systems are used to define a hierarchy of roadways, clarify their specific design characteristics, as well as prescribe the type of trip and volume of traffic they are expected to accommodate. The functional classification system in the Longview MPO MAB identifies thoroughfares as principal arterials, minor arterials, major collectors, and minor collectors.

Principal Arterials

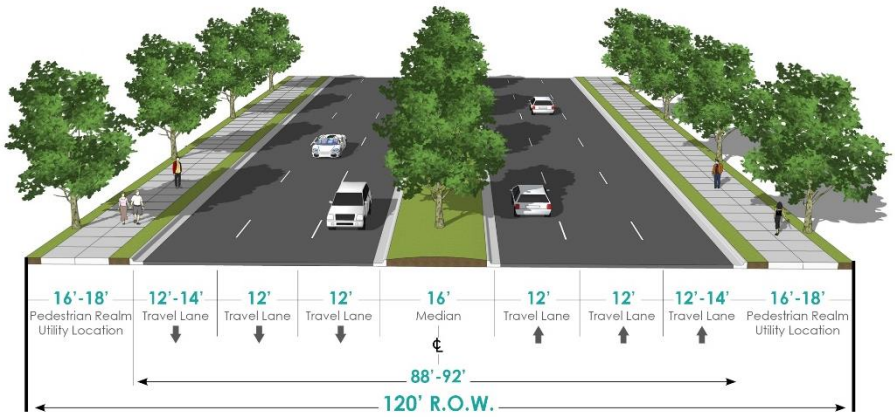
Regional arterials facilitate trips between cities and major destinations at high levels of mobility. Principal arterials are ideal for long distance trips and handling large volumes of traffic at a high level of mobility. Examples of principal arterials in the MAB include FM 2275, Loop 281 and US 80. Principal arterials are recommended to include four (4) to six (6) 12-foot lanes within a 120-foot right-of-way. Urban principal arterials are illustrated in Figures 5-2 and 5-3, while rural principal arterials are illustrated in Figure 5-4.

Figure 5-2: Urban 4-Lane Principal Arterial



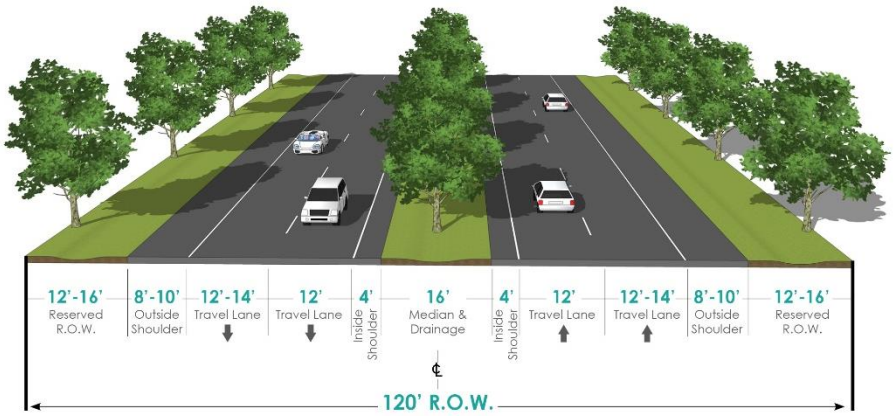
PRINCIPAL ARTERIAL- 4 LANES

Figure 5-3: Urban 6-Lane Principal Arterial



PRINCIPAL ARTERIAL- 6 LANES

Figure 5-4: Rural 4 – 6 Lane Principal Arterial

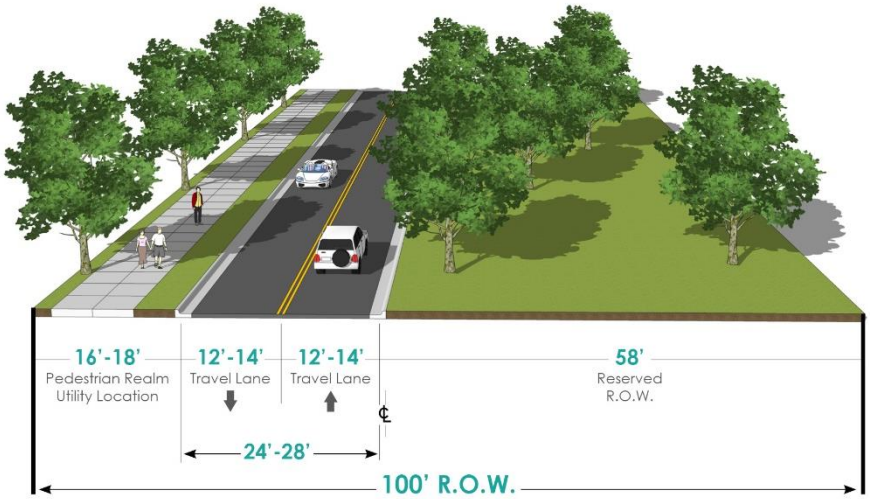


PRINCIPAL ARTERIAL RURAL- 4-6 LANES

Minor Arterials

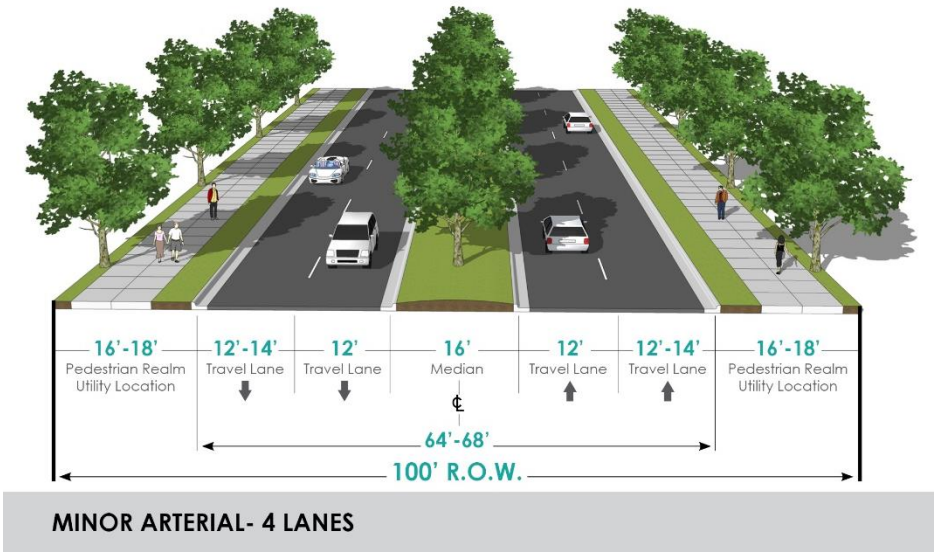
Minor arterials accommodate moderate traffic volumes at relatively low speeds and provide a link between principal arterials and collectors. Examples of minor arterials include East Hawkins Parkway, Hollybrook Drive, and FM 2206. Minor arterials are recommended to include two (2) to four (4) 12-foot lanes within 100 feet of right-of-way. Urban minor arterials are illustrated in Figures 5-5 and 5-6, and a typical cross section of a rural minor arterial is shown in Figure 5-7.

Figure 5-5: Urban Minor 2 Lane Arterial



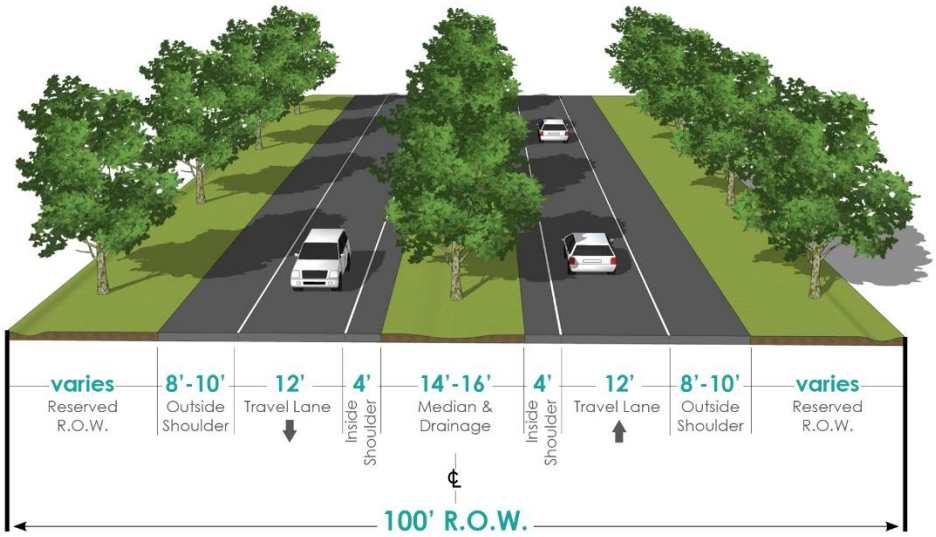
MINOR ARTERIAL- 2 LANES

Figure 5-6: Urban Minor 4 Lane Arterial



MINOR ARTERIAL- 4 LANES

Figure 5-7: Rural Minor 2-4 Lane Arterial



MINOR ARTERIAL RURAL- 2-4 LANES

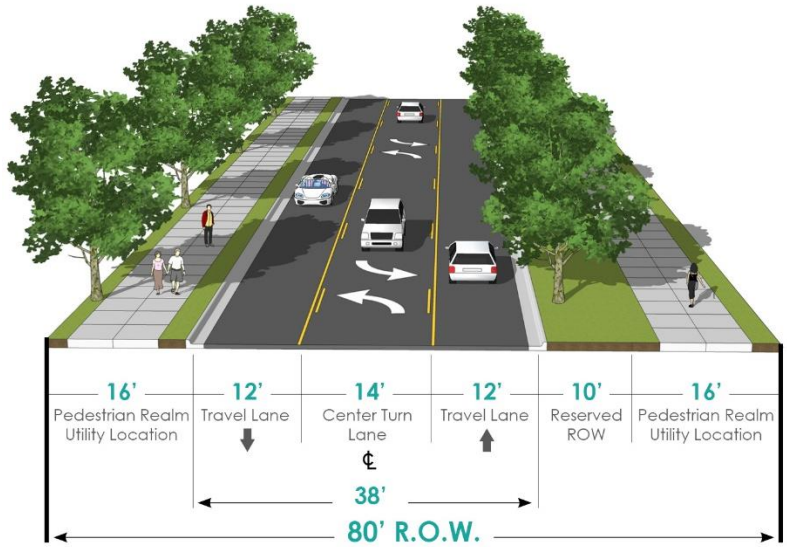
Major Collectors

This type of facility is usually designed for shorter trips and lower speeds, connecting trips from local roads to higher functional class facilities greater than ¾ of a mile away, and providing both land access and traffic circulation functionality in higher density areas[1].

There are several differences between major and minor collectors. Major collectors usually have higher posted speeds, greater spacing between facilities, higher traffic volumes, lower densities of driveways, and more travel lanes than minor collectors. In rural areas, major collectors may serve intra-county travel trips where travel distances are shorter than those on adjacent arterials. Another important distinction between major and minor arterials is that they comprise a smaller percentage of the total roadway network than minor arterials[2].

Examples of collectors in the Longview MPO MAB include Silver Falls Road and Spring Hill Road in Longview and North Lee Drive in Gladewater. Recommended collectors include two (2) to three (3) 12-foot lanes within 80 feet of ROW. A collector is illustrated in Figures 5-8 and 5-9.

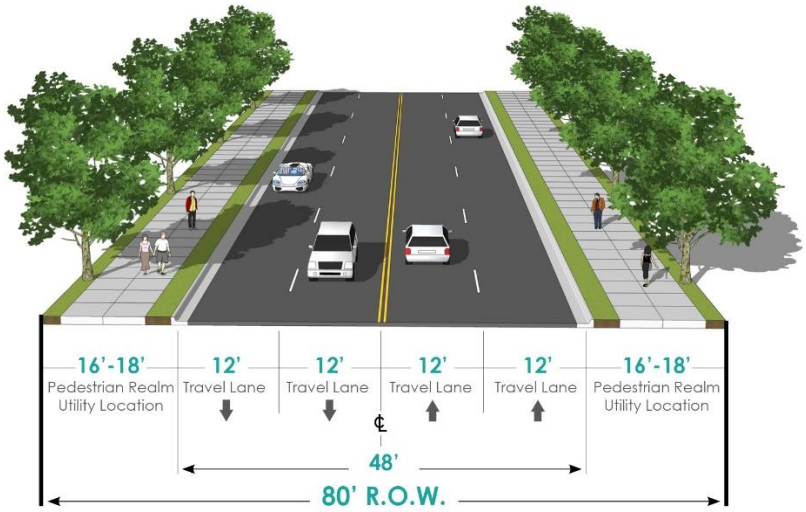
Figure 5-8: Urban Major 2 Lane Collector



MAJOR COLLECTOR- 2 LANES

[1] www/fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.htm
[2] www/fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.htm

Figure 5-9: Urban Major 4 Lane Collector



MAJOR COLLECTOR- 4 LANES

Minor Collectors

Minor collectors are usually designed for shorter trips and lower speeds and primarily connect trips to higher functional class facilities less than ¾ of a mile away and provide both land access and traffic circulation functionality in lower density areas. Minor collectors may have lower posted speeds, shorter spacing between facilities, lower traffic volumes, higher densities of driveways, and fewer travel lanes than major collectors[3].

Examples of minor collectors in the MAB include Enterprise Street and Rupe Huffman Road in Longview and North Whatley Drive in White Oak. Recommended collectors include two (2) 12-foot lanes within 60 feet of ROW for urban areas and 80 feet of ROW for rural areas. Urban and rural minor collectors are illustrated in Figures 5-10 and 5-11.

[3] www/fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.htm

Figure 5-10:Urban Minor 2 Lane Collector

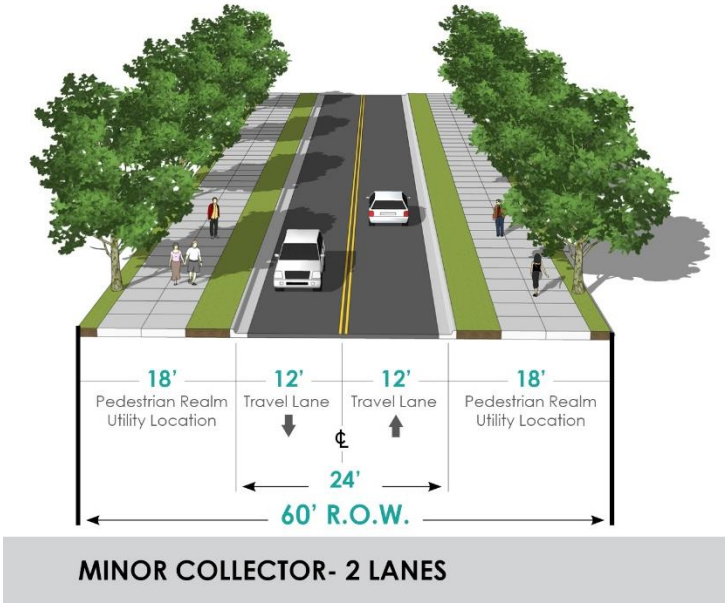
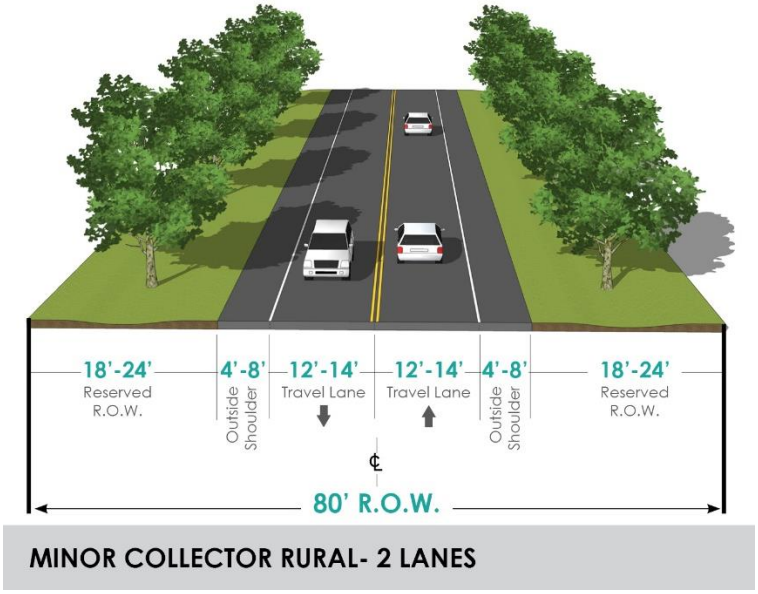


Figure 5-11:Rural Minor 2 Lane Collector



This page was intentionally left blank.

Longview MPO Regional Thoroughfare Plan

Chapter 6 Longview MPO Regional Thoroughfare Plan (RTP)

The Longview MPO RTP consists of all major thoroughfares in the region by their assigned functional classification. This classification sets the required right-of-way to be acquired or preserved to accommodate future traffic demand in the region. The RTP also identifies multimodal elements to be considered along particular corridors in the region. It proposes alternative thoroughfare design elements to be incorporated in the retrofit or redesign as reconstruction is needed.

Roadway Design Recommendations

A predetermined design of the roadway will allow for engineers, planners, developers and citizens to understand the overall look of a specific facility type. Roadway design will also influence the look and feel of other elements such as transit and non-motorized uses on the roadway and even the pedestrian realm.

The cross-sections described in Chapter 5 portray the typical roadway design for each functional class type. If additional multimodal elements are needed, the alternative standards can be adjusted based on recognized state and national design guidelines.

Transit Design Recommendations

Longview Transit is the service provider for public transit in the urbanized area of the Longview region. While its route structure rarely changes, the RTP remains consistent with the current Longview Transit routes and provides improved roadway recommendations along existing transit corridors.

Pedestrian access is the most essential element of transit service as it relates to transit design recommendations. Every transit rider is a pedestrian at some point along their trip whether that is walking to their bus stop, from the stop to their destination, or between destinations.

With this concept in mind it is easy to recognize the importance of planning for pedestrians in areas near transit stops. The safety of pedestrians boarding and alighting from the bus and walking to their destination is important. The infrastructure of the pedestrian realm should provide a buffer from motorized vehicles as well as safe and connected paths.

The following are transit corridors in the region:

- Estes Parkway
- High Street
- Mobberly Avenue
- Judson Road
- 4th Street
- Hawkins Parkway
- Gilmer Road
- Dundee Road
- Green Street
- FM 1845
- Cotton Street
- Marshall Avenue (US 80)
- FM 2208
- US 259
- W. Loop 281
- FM 2206
- MLK Boulevard

Bicycle and Pedestrian Recommendations

Context of Active Transportation in Longview MPO area

While it is well understood that active transportation (bike/ped) plays not only an important role in maintaining a robust and resilient transportation, and has numerous health benefits, it is also essential to recognize the current utilization of modes within the region and historical transportation and land use preferences of residents. With this in mind, it is recommended that proposed bicycle and pedestrian improvements should strategically focus on areas where there is the greatest opportunity to increase active transportation mode share, preserve and maintain the existing system, build high quality facilities, enhance safety, and provide opportunities to highlight the benefits of walking and cycling.

Recommendations

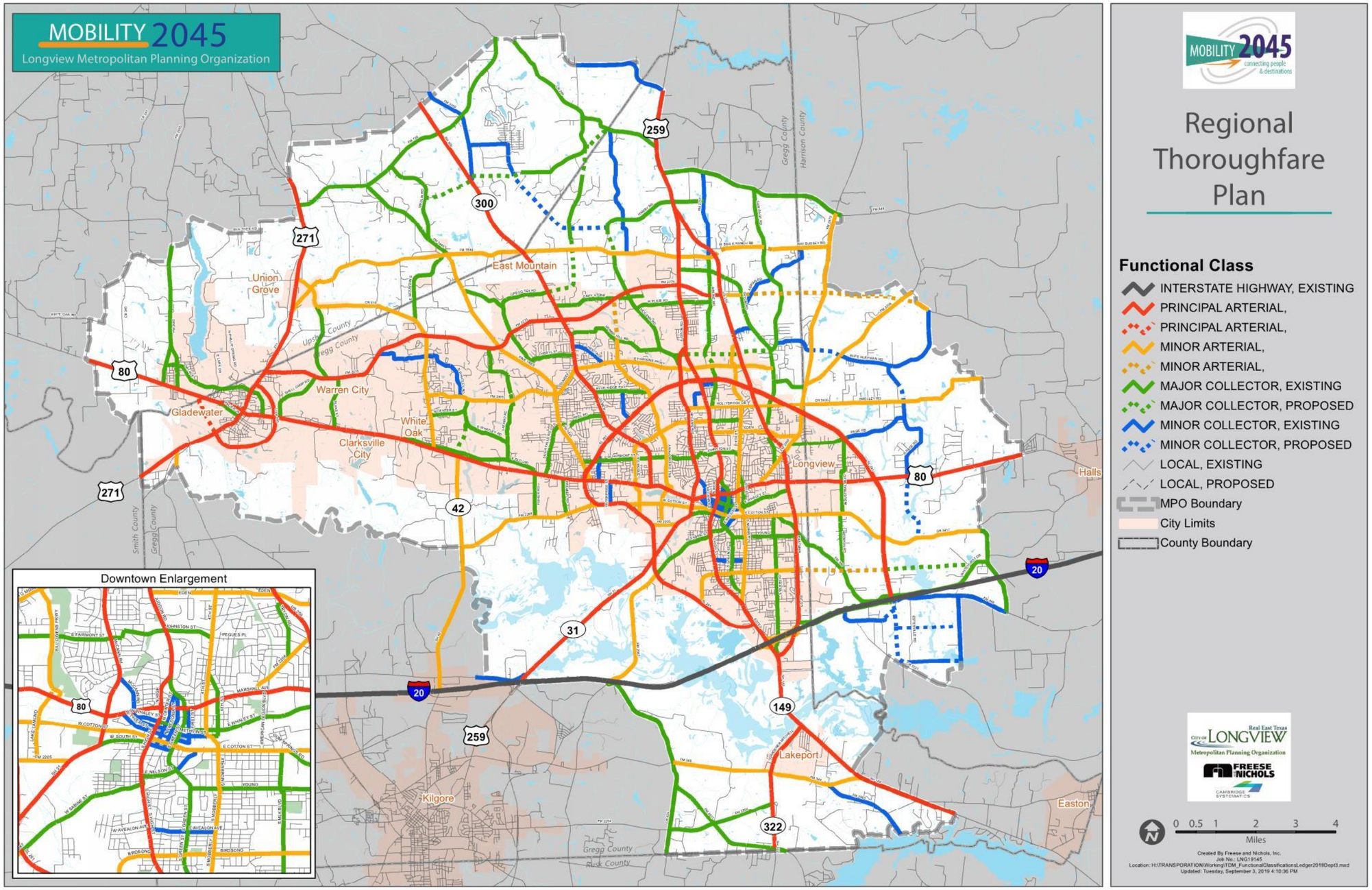
The primary purpose of the 2018 Longview MPO Bicycle and Pedestrian Plan is to provide strategic direction for incremental development of bicycle and pedestrian facilities for Longview, Gladewater, and White Oak. While there is currently no dedicated funding source for bicycle and pedestrian improvements, the 2018 plan provides direction as to where such facilities should be implemented and what design criteria they should follow. Specific recommendations focus on developing systems where there is known demand in conjunction with future roadway improvements.

As roadways are implemented within the MPO, it is recommended that strategic consideration to leverage and incorporate, to the extent possible, bicycle and pedestrian improvements. This will enable the opportunity to advance transportation choice, as a mobility option, within the MPO.

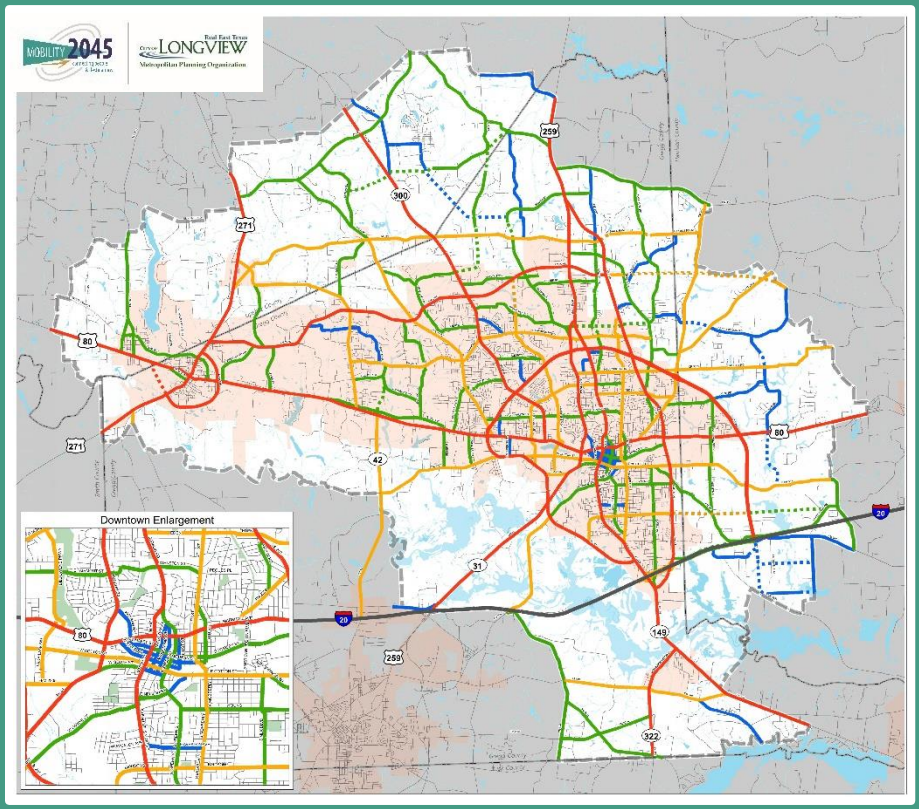
In the Longview region, recommended improvements outlined in 2018 include:

- Mobberly Avenue, from Estes Parkway to E. Pacific Avenue
- Green Street, from Mobberly Avenue to Cotton Avenue
- S. Martin Luther King Jr. Boulevard, from IH-20 to Cotton Avenue
- Birdsong Street, from Eastman Road to Loop 281
- H.G. Mosley Parkway, from Judson Road to West Loop 281
- Pine Tree Road, from Judson Road to West Loop 281 to Tenneryville Road

Figure 6-1: Longview MPO Regional Thoroughfare Plan



Longview MPO Regional Thoroughfare Plan



Longview MPO Policy Board

September 2019

Real East Texas
CITY OF LONGVIEW
Metropolitan Planning Organization