TRIP 2020 2045

Huntsville Area Metropolitan Planning Organization

Transportation Regionally Innovative Projects 2045

is a Long Range Transportation Plan prepared by the City of Huntsville Area Planning Division and the Huntsville Area Metropolitan Planning Organization (MPO). Funding was provided by the Federal Highway Administration (FHWA).

This Long Range Transportation Plan is a cooperative effort of the U.S. Department of Transportation, Federal Highway Administration, Federal Transit Administration, Alabama Department of Transportation, and local governments in partial fulfillment of Task 3.1 of the FY 2020 Unified Planning Work Program. This document is prepared by the City of Huntsville Planning Division, as staff to the Metropolitan Planning Organization, pursuant to requirements set forth in amended 23 USC 134 (FAST Act, Sections 1201 and 1202, December 2015) and CFR 450. The contents of this document do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

This document was prepared by

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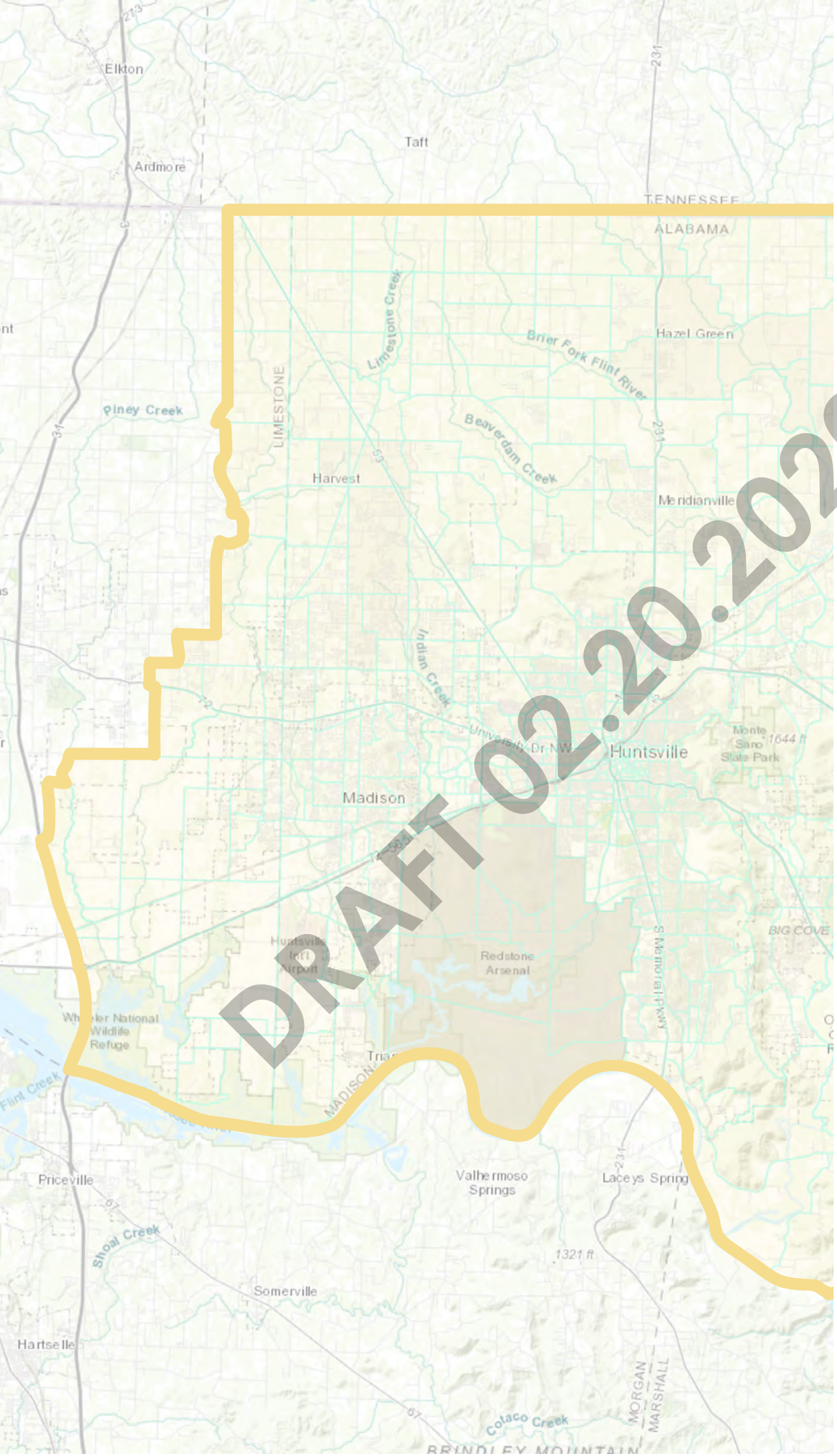


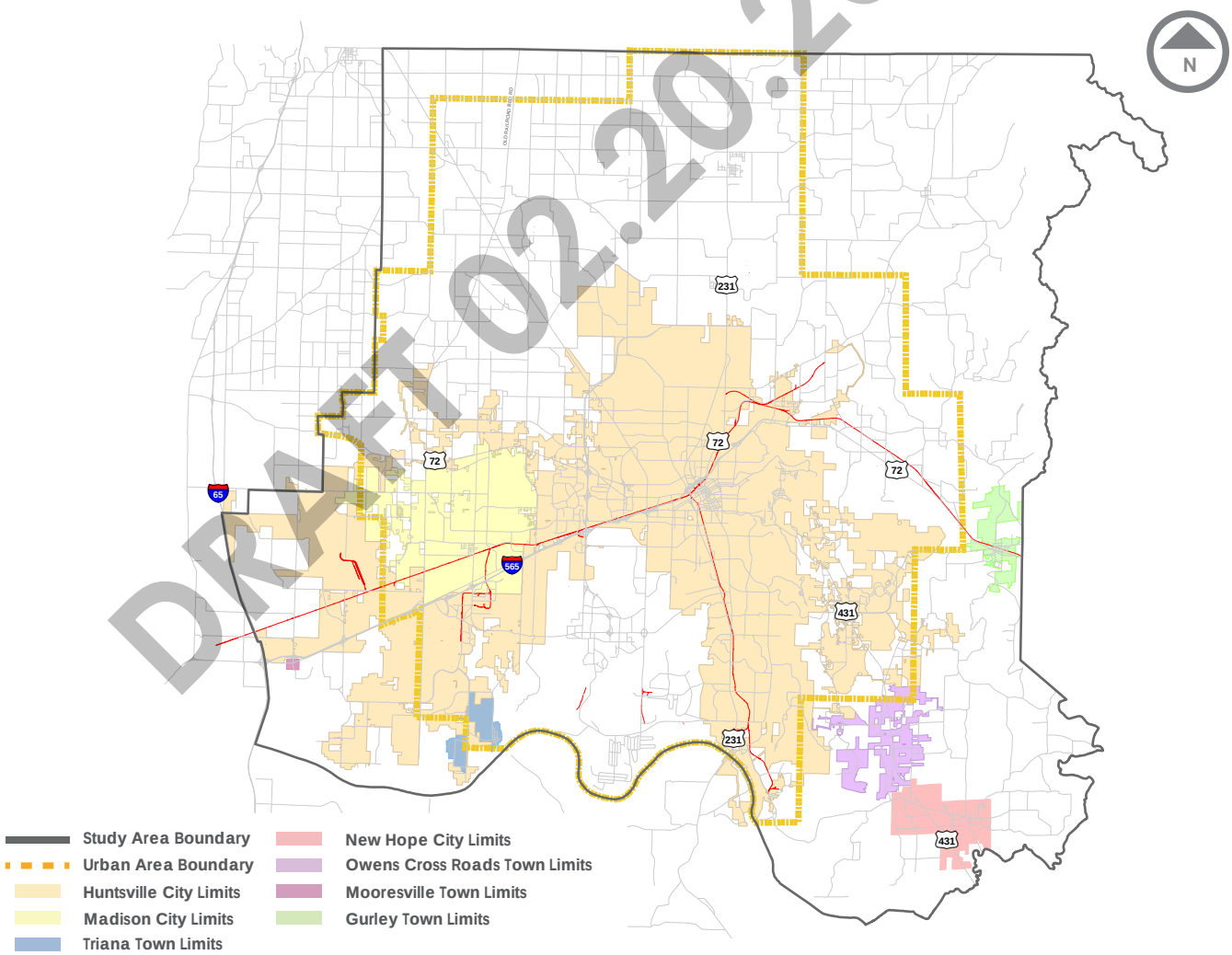
1. INTRODUCTION

Introduction

Transportation Regionally Innovative Projects for 2045 (TRiP 2045) is a vision for the future transportation needs of the Huntsville Metropolitan area and will serve as a decision guide for major transportation improvements in the Huntsville Urban Area (see map X) over a 25-year planning horizon. It addresses areawide transportation needs identified through forecasting future travel demand, developing and testing alternatives, and selecting those options which meet the mobility needs of the area. Additionally, it addresses future traffic volumes, roadway and intersection capacities, new transportation corridors, alternative transportation modes, pedestrian/bicycle trails, signalization needs, and funding alternatives.

TRiP 2045 has been developed by the transportation planning staff in collaboration with Croy Engineering and FuturePlan with input and involvement of city, county, state, local government officials, and the public. Fiscal constraint has been a priority during the selection of the proposed projects. Careful consideration has been given to projects that reduce congestion and/or minimize trip distances, in an effort to maintain air quality at current attainment standards.

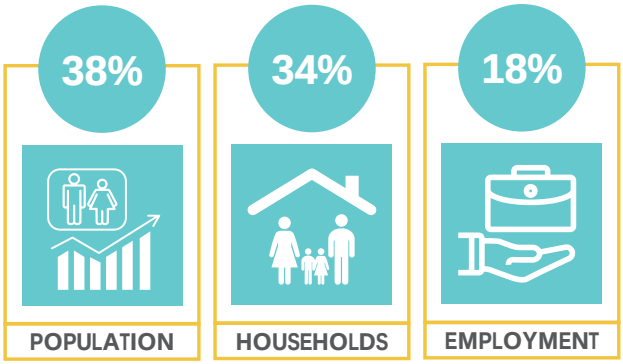
Map X: Huntsville Area MPO Planning Boundary (2014)



The Study Area includes all urban and rural areas included within the MPO's Travel Demand Model. The Urban Area includes all existing urbanized areas as defined by the US Census Bureau, as well as areas that are expected to become urban within the next 25 years.

Overview of Socio-Economic Projections

The Huntsville MPO Study Area (see Map X on Page X) demographic projections for 2045 show major growth in both households and employment. Between 2015 and 2045 the population is expected to increase by 38 percent, number of households will increase by 34 percent and total employment will increase by 18 percent. The basis of this growth is the area's diversifying economy, low cost of living compared to peer regions around the country, and solid foundation in aerospace and defense technology.



Graphic 1: Demographic Change 2015 - 2045
Source: Huntsville Area MPO

Community leaders envision that the Toyota-Mazda development mega-site and Cummings Research Park will continue to attract high technology jobs, and the other industrial parks will continue growth as well. Redstone Gateway, located just south of Cummings Research Park, has another 400+ acres of developable land available. Huntsville's downtown, as a center for employment will keep in step with market demand.

TRiP 2045 assumes that area residents will still rely primarily on motor vehicles for most trips, but will have more opportunities to utilize transit, walking, and cycling for shorter trips. Investment in transit, bikeways, and pedestrian ways, will result in a higher level of usage of these modes. **TRiP 2045** calls for continued investment in alternative modes of transportation in the short, mid, and long term.

Consistency with Other Plans

The projects included in **TRiP 2045** are consistent with local adopted short and long-range transportation plans as well as the master plans of other agencies and jurisdictions in the Huntsville Area MPO. For example, roadway projects in the **2020-2023 TIP** are included in **TRiP 2045**. Transportation projects which involve federal participation will also be consistent with the current Huntsville Transit Study 2019, Huntsville International Airport Master Plan, City of Huntsville BIG Picture master plan, Redstone Arsenal Joint Land Use Study, City of Madison 2040 Transportation Master Plan, Singing River Trail Master Plan and the TARCOG Human Services Coordinated Transportation Plan. Documentation of the overall planning process is provided in the Huntsville-Area MPO Final 2018 Public Participation Plan.

Plan Implementation

Successful implementation of the plan is dependent primarily upon the availability of financing the required improvements. MPO-directed funds (the STPHV category of funding) are planned for capacity projects for the full 25 years. A list of all projects to be financed with anticipated federal and local revenues is shown in Chapter 9. Funding projections are shown in Year of Expenditure (YOE) dollars, with projections reflecting 1 percent inflation compounded per annum.

Additional projects are currently visionary and unfunded. The financing of these unfunded projects is essential, as the future year network indicates that a majority of congested miles traveled on the transportation system occurs on minor and major collectors. A formal list of all unfunded projects can also be found in Chapter 9.

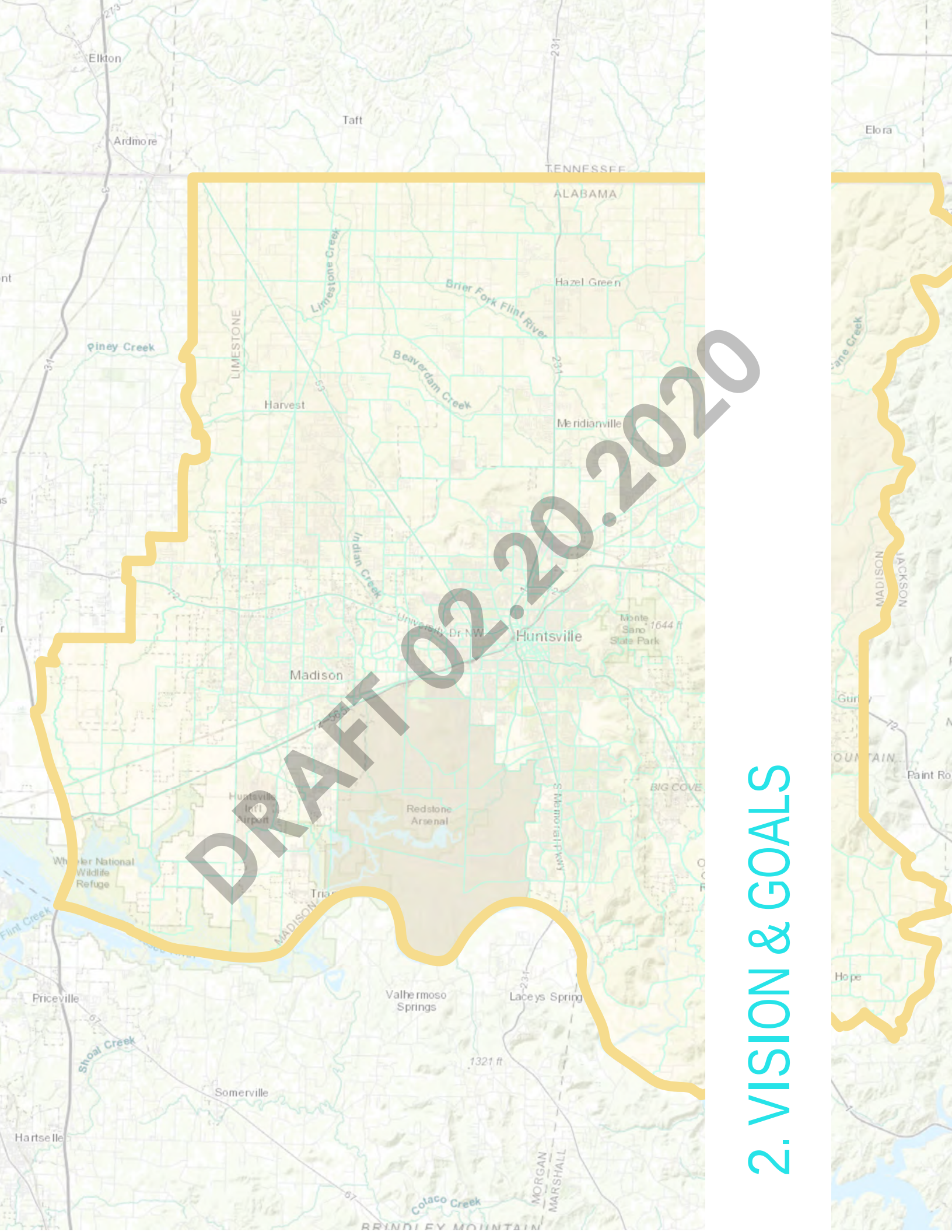
Huntsville-Area MPO Supports ALDOT's Performance Measures (PM)

Huntsville-Area MPO Trip2045 Linkage to Performance-Based Planning Documents and Targets

Each project listed in this document has a PM target delineating which Performance Measure Target each project supports. TRiP2045 contains both Highway and Transit Projects. Typical highway projects, such as highway capacity, system preservation, bridge, and safety projects, support the established performance measures targets. The same is true for the transit projects that are capital purchases. The MPO will continue to coordinate with ALDOT on updates and/or amendments to the Statewide Long Range Transportation Plan and support the State's selected performance targets (to the maximum extent practicable).

MPO and ALDOT Performance Measure Targets and Agreement

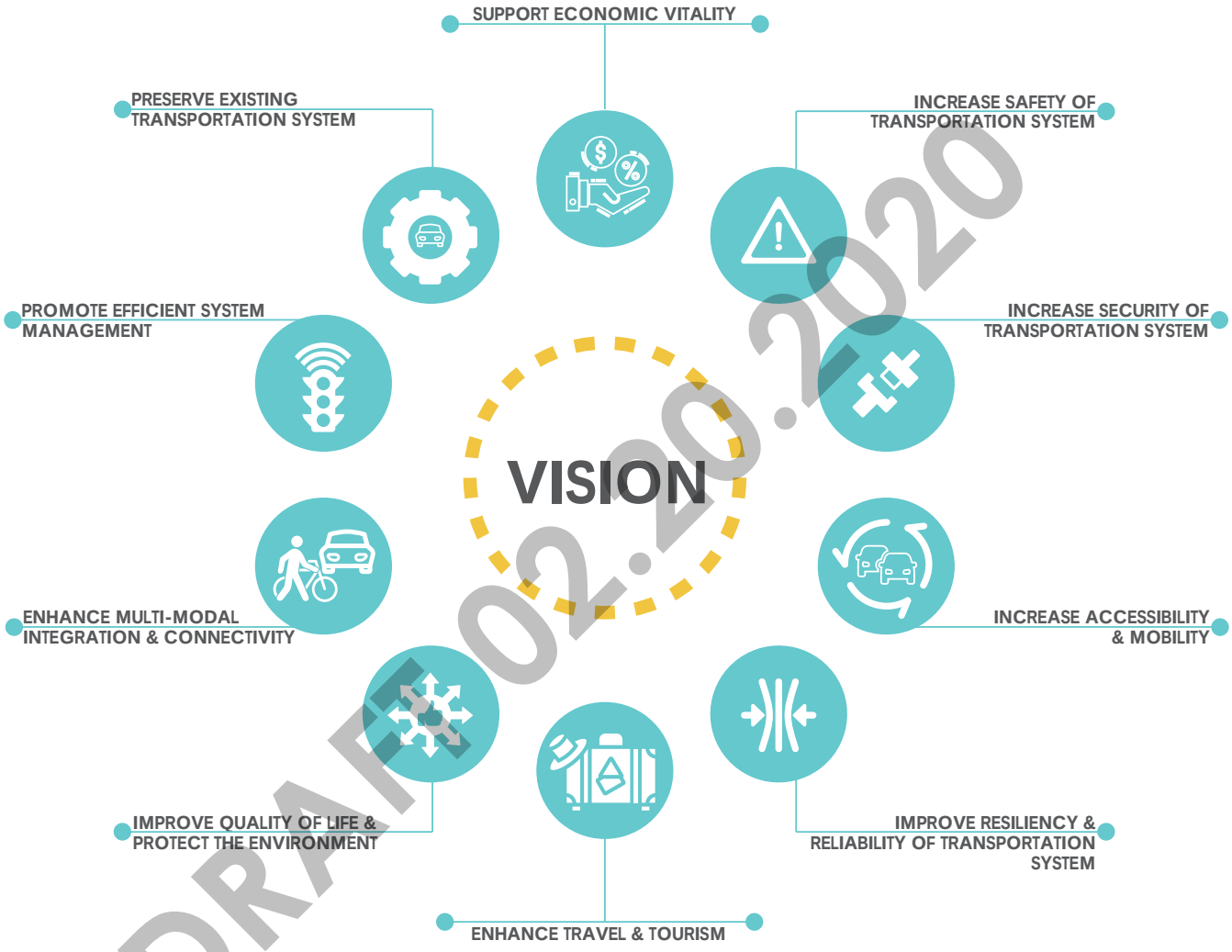
Some targets are required to be set on an annual basis while others are set on two (2)-year and four (4)-year cycles. ALDOT and the MPOs, along with the Transit Providers, have a cooperative agreement in place to coordinate the development of the targets, the sharing of information related to the transportation performance measures, selection of targets, and reporting requirements. The Performance Measures are found in Chapter 7 of the document and contains the ALDOT PM Targets supported by the MPO, as well as the statewide PM agreement.



2. VISION & GOALS

Vision and Goals

The MAP-21/FAST Act legislation centers on the growing importance of operating, managing, and increasing the safety and security of the transportation system. The focus was introduced in SAFTEA-LU as the ten planning factors and they are retained in FAST Act. These broad areas to be considered, analyzed, and reflected form the basis of the vision and goals of the planning process.



Graphic 1: Map-21/FAST Act Vision

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
   - Provide access to industrial parks, ports, airports, intermodal transportation facilities and military installations through the highway network.
   - Reduce congestion and increase accessibility.

2. Increase the safety of the transportation system for motorized and non-motorized users.
   - Include safety projects for transportation facilities used by all modes of transportation.

3. Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

- Provide projects that improve the quality of life through funding bicycle, pedestrian, historic preservation and other projects that make communities more livable.
- Enhance local planned growth and economic development by affording projects that encourage the quality of life.

4. Increase the security of the transportation system for motorized and non-motorized users.

5. Increase the accessibility and mobility of people and freight.

- Provide relief to traffic congestion for accessibility and mobility of people and freight.
- Identify challenges faced by the freight network.

6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

- Address better integration across all modes of transportation.

7. Promote efficient system management and operation.

- Promote Intelligent Transportation Systems as a means to encourage efficient management and operation of the transportation system.

8. Emphasize the preservation of the existing transportation system.

- Preserve the existing transportation system through upgrading and improving substandard and deficient facilities.

9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.

10. Enhance travel and tourism

- Promotion of existing tourist facilities (such as USSRC, EarlyWorks museum, etc.) along all major corridors

Planning Emphasis Areas

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) identify Planning Emphasis Areas (PEAs) annually to promote themes for consideration in the transportation process. These three priorities were carried forward and no new direction has been provided under the new administration. In the absence of explicitly defined planning emphasis areas, the MPO maintains that the original directives from 2014 still constitute important considerations in the metropolitan planning process.

1. MAP-21/FAST Act Implementation

Transition Performance Based Planning and Programming. The development and implementation of a performance management approach to transportation planning and programming that supports the achievement of transportation system performance outcomes.

2. Models of Regional Planning Cooperation

Promote cooperation and coordination across state and MPO boundaries where appropriate to ensure a regional approach to transportation planning. This is particularly important where more than one MPO or State serves an urbanized area or adjacent urbanized areas.

This cooperation could occur through the metropolitan planning agreements that identify how the planning process and how the planning products will be coordinated, through the development of joint planning products, and/or by other local coordination of transportation plans and programs, corridor studies, and products across adjacent operators of public transportation on activities such as: data collection, data storage and analytical tools and performance based planning.

3. Ladders of Opportunity

Provide access to essential services as part of the transportation planning process and identify transportation connectivity gaps in access to essential services. Essential services include housing, employment, health care, schools/education, and recreation.

This emphasis area could include MPO and state identification of performance measures and analytical methods to measure the transportation system's connectivity to essential services and the use of this information to identify gaps in transportation system connectivity that preclude access of the public, including traditionally underserved populations, to essential services. It could also involve the identification of solutions to address those gaps.

This planning theme pertains specifically to transit. In January 2019, the City of Huntsville's Transit Division completed the Huntsville Transit Study, a comprehensive study of its transit system in 2018 to identify the best approach for optimizing and expanding service over the next five years. The study builds upon the route and schedule improvements implemented as part of a 2011 study that resulted in a 19% ridership increase without any additional service hours.

Livability Principles and Indicators

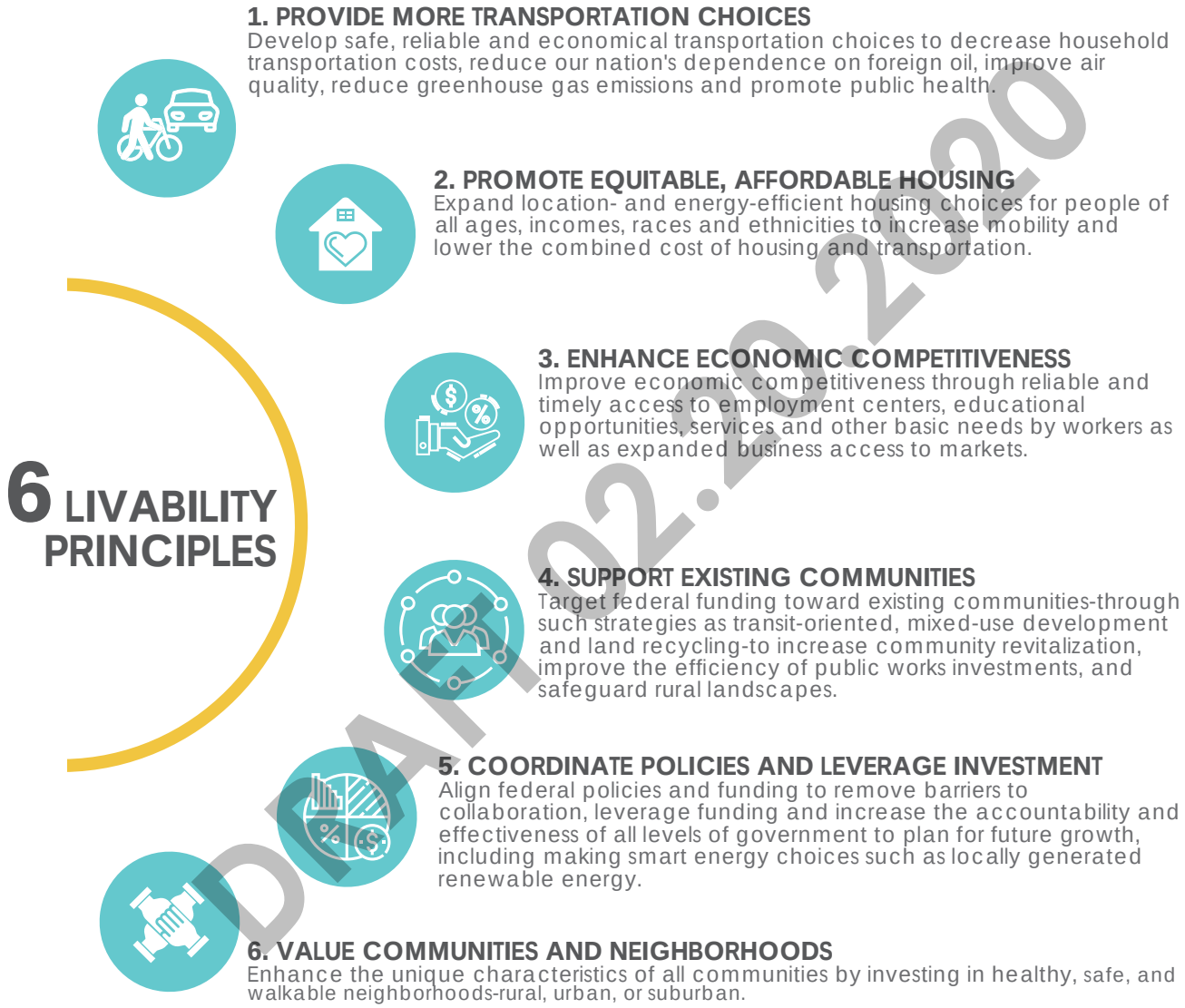
> ***"Livability means being able to take your kids to school, go to work, see a doctor, drop by the grocery or post office, go out to dinner and a movie, and play with your kids at the park – all without having to get in our car."***
>
> *- Ray LaHood, U.S. DOT, Former Secretary of Transportation*
> *(Sourced from Livability in Transportation Guidebook)*

Increasingly, federal and state agencies are using Performance Measures as a way of ensuring greater accountability for the expenditure of public funds in an ever growing number of programs and activities across a variety of disciplines. Within the transportation sector and the planning processes associated with transportation infrastructure development, the Alabama Department of Transportation has adopted the Livability Principles and Indicators as a sustainability measurement against future actions.

The Livability Principles and Indicators are described in the narrative of various MPO adopted plans. The principals identified cannot be changed; however, Alabama MPOs are charged with determining which indicators best reflects their local conditions and needs, and can easily be monitored and presented in tabular, graphic, or mapping format. All planning tasks must be measured against these Livability Principles.

The Huntsville Area MPO has made an effort to incorporate livability principles into this document by including bicycle and pedestrian facilities and coordinating with local governments on the land use impacts of proposed projects.

The MPO is open to incorporating other livability strategies in the future, such as Transit Oriented Development (TOD), should the need arise. The six livability principles established by the Partnership for Sustainable Communities identified in the Livability in Transportation Guidebook are displayed in Graphic X.



Graphic X: Livability Principles

The measurement of the sustainability of these Livability Principles are included below. These measurements were collected through the US Census Bureau and other sources. The future provision of this data is dependent upon these agencies and organizations. Graphic X shows the Livability Indicators that measure each of the Livability Principles.

15 LIVABILITY INDICATORS

1. PROVIDE MORE TRANSPORTATION CHOICES

Source: Esri, 2019 Estimates

Number of Housing Units Located Within 1/2 Mile of Transit Service Area • 48,356 (27.6% of total)	48,356 Units: 1/2 Mile To Transit
Total Number of Employees Located Within 1/2 Mile of Transit Service • 114,386 (46.7% of total)	114,386 Employees: 1/2 Mile To Transit
Total miles of alternative transportation routes currently built in MPO Area • Total Multi-use paths: 11.25 miles • Total Greenways: 37.25 miles • Total Bike Lanes: 7.28 miles	11.25 Miles Multi-Use Paths 37.25 Miles Greenways 7.28 Miles Bike Lanes

2. PROMOTE EQUITABLE AND AFFORDABLE HOUSING

Source: Housing & Transportation Affordability Index, Center for Neighborhood Technology

Percent of Household Income Spent on Housing • 24%	24% On Housing
Percent of Household Income Spent on Transportation • 24%	24% On Transportation

3. PROMOTE EQUITABLE AND AFFORDABLE HOUSING

Source: US Census Bureau, 2013-2017 American Community Survey, 5-Year Estimates

Percent of Workforce With 29 Minute or Less Commute Time • 72.8%	72.8% Commute < 29 Minutes
Percent of Workforce With 30 Minute or More Commute Time • 27.2%	27.2% Commute > 30 Minutes

Note: Includes workers ages 16 and over who did not work at home within Madison County and the Census tracts within Limestone County that intersect the MPO study area.

4. SUPPORT EXISTING COMMUNITIES

Number of projects contained in the current Transportation Improvement Program that enhance or support existing communities (non-roadway projects) • There are 49 non-roadway projects in the current 2020-2023 TIP. Three alternative modes projects and 46 transit projects.	49 Non-Roadway Projects 46 Transit Projects
Percentage of current LRTP projects that contain bicycle and pedestrian elements, excluding transit projects • 198 bicycle and pedestrian projects listed in 2040 LRTP • 441 total projects listed in the 2040 LRTP • ~45% of projects in the current LRTP contain bike-pedestrian elements	198 Bike-Ped Projects 441 Total Projects

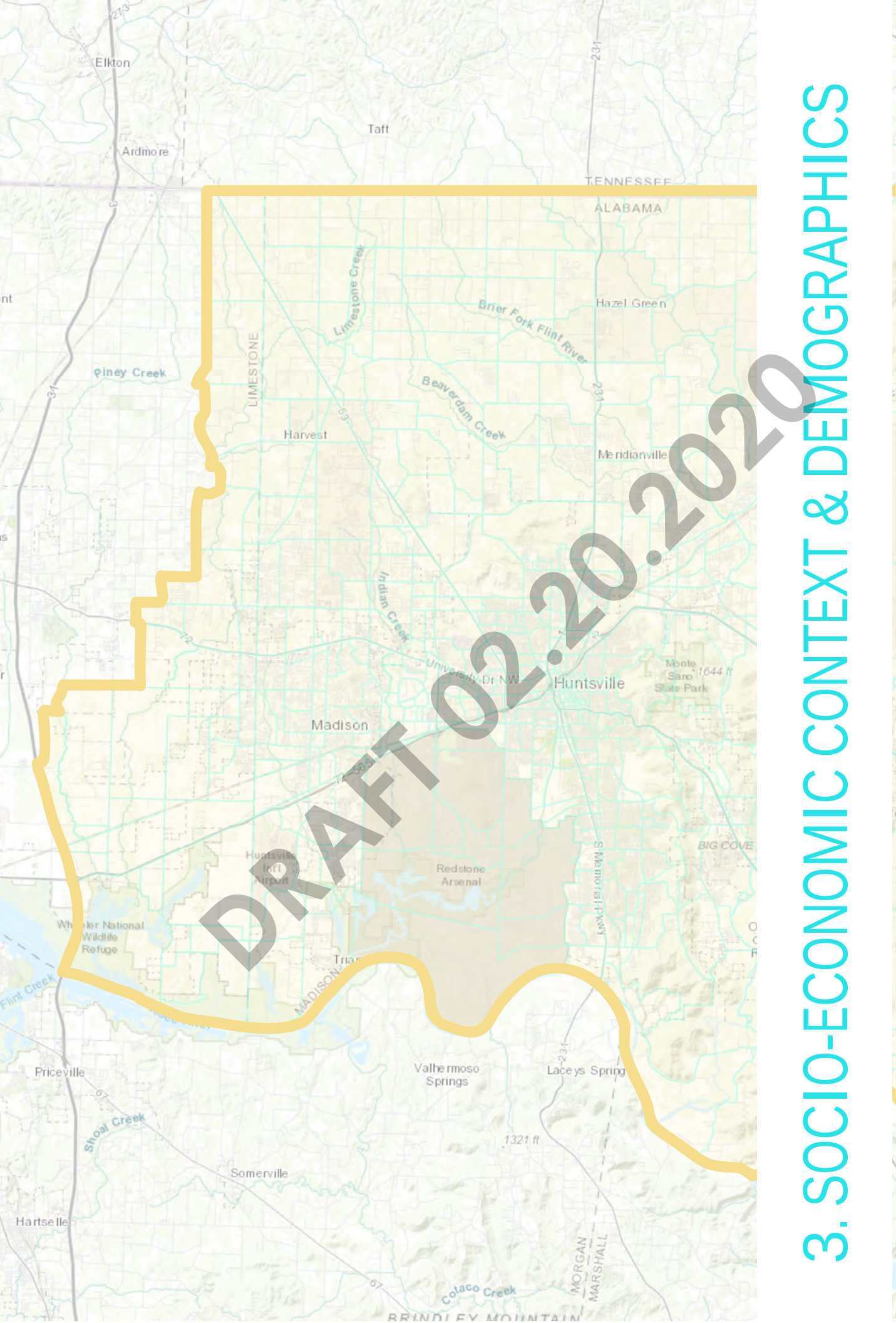
5. COORDINATE POLICIES AND LEVERAGE INVESTMENTS

Percent of Transportation Projects Where More Than One Funding Source is Utilized • Considering local match, local purchase or donation of right of way, and various state and local funding partnership programs (ATRIP, Restore our Roads), all projects (100%) in the TIP have multiple funding sources. • Considering multiple federal funding sources for a single project, six projects in the TIP have multiple federal funding sources.	100% Multiple Funding Sources 6 Projects Multiple Federal Funding Sources
List of policies and plans coordinated with MPO policies and plan • 2040 LRTP • 2020-2023 TIP • 2018 Public Participation Plan • BIG Picture master plan for City of Huntsville • Huntsville International Airport Master Plan • Congestion Management Process • City of Madison 2040 Transportation Plan • 2015 Human Services Coordinated Transportation Plan • 2019 Huntsville Transit Study	9 Plans and Policy Documents Leading To TRiP2045

6. VALUE COMMUNITIES AND NEIGHBORHOODS

Source: Esri, 2019 Estimates

Number of Housing Units Located Within 1/2 Mile of Transit Service Area • 48,356 (27.6% of total)	48,356 Units: 1/2 Mile To Transit
Total Number of Employees Located Within 1/2 Mile of Transit Service • 114,386 (46.7% of total)	114,386 Employees: 1/2 Mile To Transit
Housing Units Located 1/4 Mile From Major Retail Services • 7,814 (4.5% of total)	7,814 Units: 1/4 Mile To Major Retail
Housing Units Located 1/4 Mile From Recreational Facilities • 35,066 (20.1% of total)	35,066 Units: 1/4 Mile To Recreation



3. SOCIO-ECONOMIC CONTEXT & DEMOGRAPHICS

Introduction

Planning transportation facilities for urban areas requires research and analysis of population, economic activity, and land use. These elements are the basic determinants of travel. The future growth of travel demand in the Huntsville MPO Study Area is directly related to increases in residential, commercial and industrial construction.

For example, trips are produced from residential areas in proportion to the number of persons, households, income and automobiles. Trips are attracted to various commercial and industrial locations for purposes such as work or shopping. Therefore, it is important to analyze the expected growth of land use activities to aid in the determination of future travel demands.

The Huntsville MPO Study Area projections for 2045 show major growth in both households and employment. Between 2015 and 2045 the population is expected to increase by 38 percent, number of households will increase by 34 percent, and total employment will increase by 18 percent. The basis of this growth is the area's diversifying economy, low cost of living compared to peer regions around the country, and solid foundation in aerospace and defense technology.

Maps X illustrates current and projected trends in population. Maps depicting households, income, employment, and school enrollment throughout the MPO study area are attached in the Appendix X.

Employment

Employment in the Huntsville MPO Study Area is greatly supported by Redstone Arsenal. In 2019, more than 42,000 employees worked on the Arsenal. Redstone is a Federal installation home to U.S. Army, Department of Defense, National Aeronautics and Space Administration (NASA), and Department of Justice agencies.

Current organizations that have a significant presence at Redstone include the Army Materiel Command; Army Strategic Missile Defense Command; U.S. Army Aviation and Missile Command; Marshall Space Flight Center; Federal Bureau of Investigation; and Alcohol, Tobacco, Firearms and Explosives. Future rounds of Base Realignment and Closure (BRAC) will directly affect personnel on Redstone Arsenal, and these jobs will have indirect influence on employment in the study area for many years.

Cummings Research Park (CRP) is the center of business activity in the Huntsville MPO Study Area. The park occupies over 3,800 acres and approximately 500 acres of land is currently available for development. Redstone Gateway, located just south of CRP, has another 468 acres of developable land available. The study area also has eight industrial parks and one applied technology park, totaling over ten thousand acres. The two major parks are Jetplex, near the airport; and Chase, on US 72 East.

Downtown Huntsville is another major employment center in the study area. Historically, downtown was a center for government, financial and medical services, but employment is increasing in the technology sector as well. The MPO anticipates continued growth in this area as more land is redeveloped into retail and office space.

Households

Households in the Huntsville MPO Study Area are expected to increase by 52,730 units by the year 2045. A strong economy with a low unemployment rate is anticipated to be the driving force behind residential development. Following national trends, a higher growth rate is anticipated in established urban neighborhoods than in years past. Growth is expected in historically high-growth areas such as western and northern Madison County. When major industries locate to Limestone County as anticipated, that part of the study area will see major growth as well.

Projection Methods

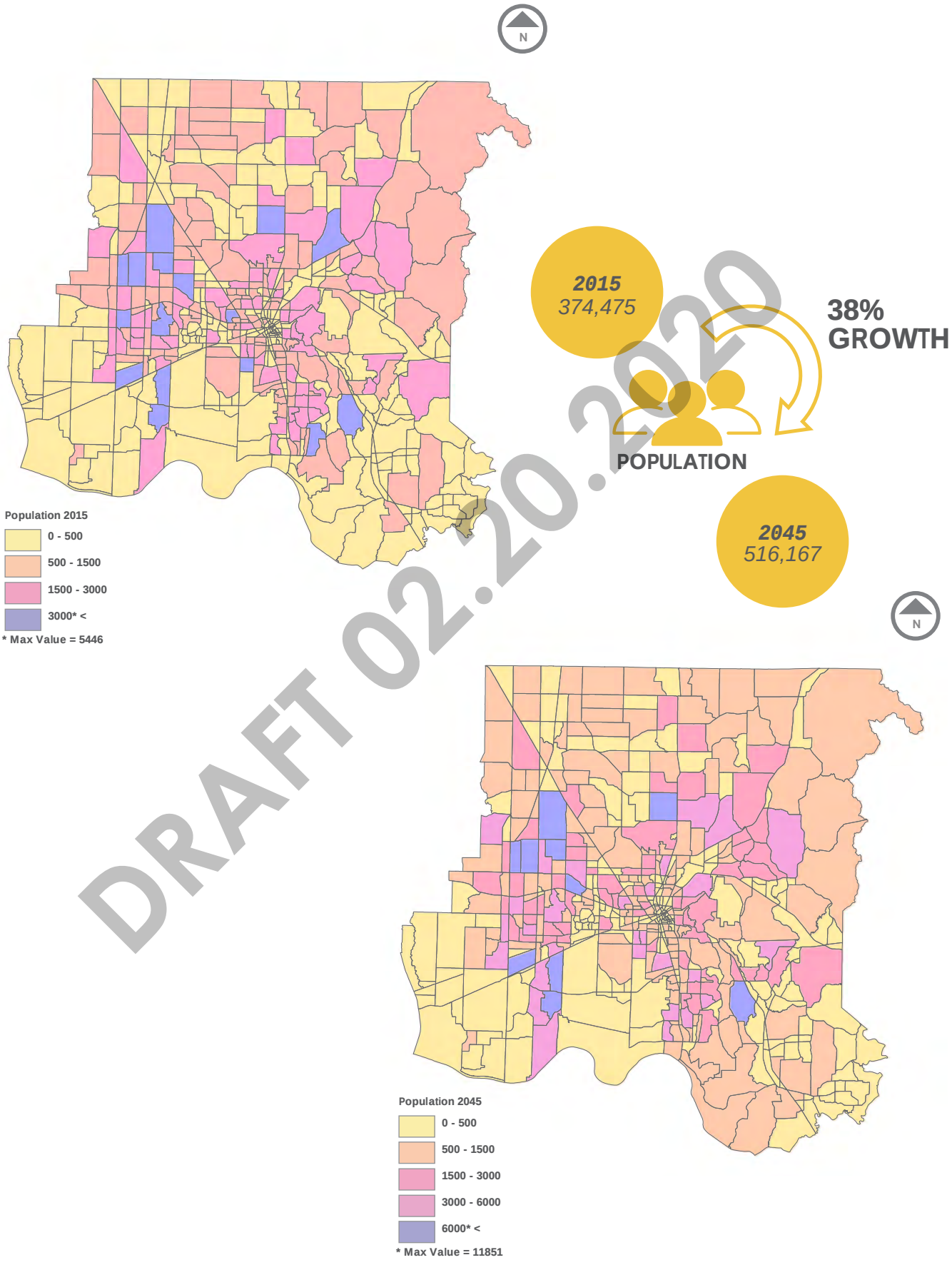
Factors such as zoning, historical patterns, and professional judgment were used in projecting employment and occupied housing for year 2045. The base year for the socioeconomic factors used in this model is 2015. Households, Income, Retail and Non-Retail Employment and School Enrollment data are all variables used in determining trip generation by populations. Historical data from the Census Bureau and estimates from the Center for Business and Economic Research (CBER) at the University of Alabama were used to project population and household growth through 2045.

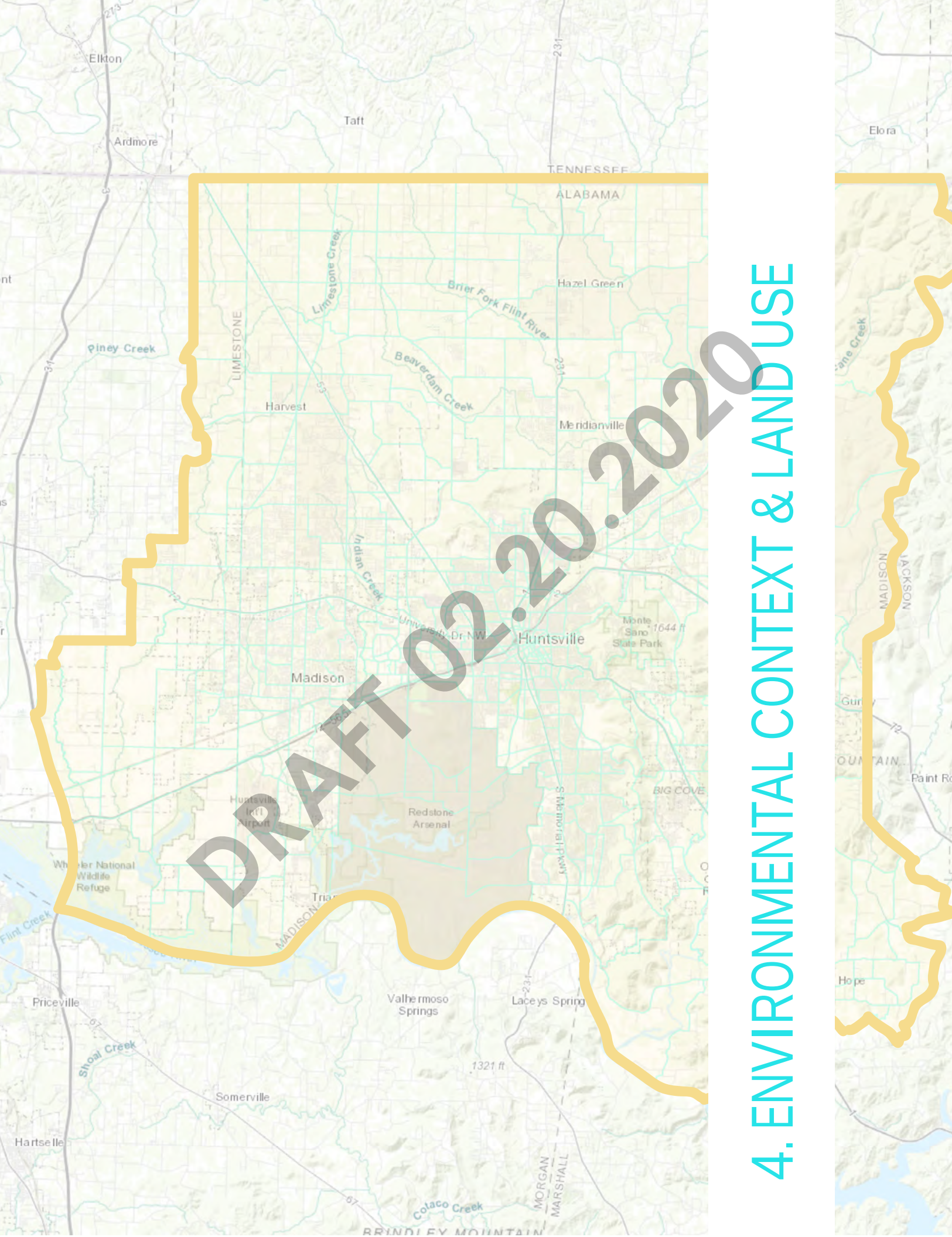
Employment estimates were determined by a modified linear trend based on historical data from the Bureau of Economic Analysis (BEA) and the CBER population estimates. Total employment is divided into retail and non-retail. Once a total for each variable was obtained, the difference between 2015 and 2045 was divided into traffic analysis zones (TAZ) for the Huntsville MPO Study Area travel demand model. The TAZ level data was formatted for entry into Trip Generation software and is shown in Map X.

SOCIO-ECONOMIC PROJECTIONS 2015 - 2045		
	2015	***2045***
Population	*374,475*	*516,167*
Households	*154,004*	*206,734*
Retail Employment	*46,597*	*57,851*
Non - Retail Employment	*178,072*	*207,621*
School Enrollment	*85,538*	*94,144*
Income	*$55,565*	*$70,066*

Table X: Growth Projections 2015- 2045

Map X: Population Change 2015 - 2045



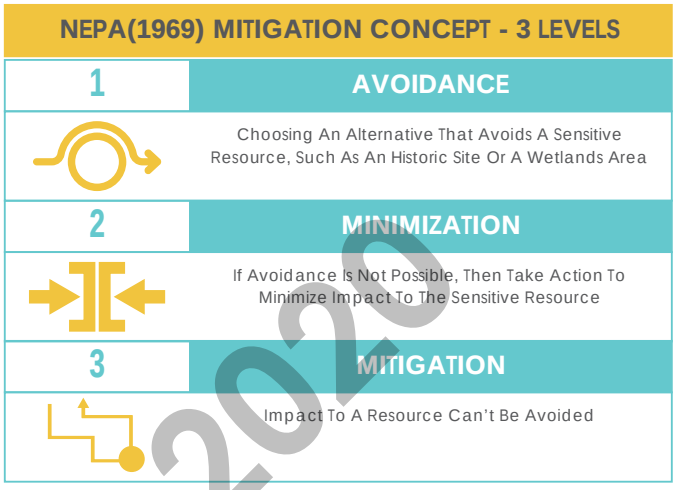


4. ENVIRONMENTAL CONTEXT & LAND USE

MAP-21/ FAST Act Requirements for Consultation and Environmental Mitigation

MAP-21/ FAST Act requires State transportation agencies to consult with other environmental agencies in order to eliminate or minimize conflicts with activities that could impact or be impacted by transportation.

Transportation decision makers must take into account the potential environmental impacts associated with a LTRP or other plan updates, in order to mitigate those impacts. Locally, the actions to be taken concerning environmental mitigation and determining environmental impacts as related to the LRTP is discussed in the 2018 Public Participation Plan for Transportation Planning for the Huntsville Metropolitan Planning Area. Mitigation as defined by the National Environmental Policy Act of 1969 (NEPA) is a three level concept as shown in Graphic X.



Graphic X: NEPA Mitigation Concept

Wetlands

Wetland impacts require avoidance, minimization, or mitigation. For these resources, the first attempt to avoid is by shifting alignments. When the wetlands are narrow, for example, stream bank wetlands, the area may be avoided by spanning both the stream and the adjacent lands. That assumes a reasonable cost to avoid. Minimization may also be obtained by:

- narrowing medians
- constructing fill slopes as steep as warranted by geotechnical investigation
- alignment shift that may not entirely miss the wetland, but lessen the impact
- partial bridging

While mitigation for State projects in Alabama can utilize credits purchased from an established wetland bank, on-site mitigation may be possible by enhancing the remaining portion of the wetland to function at a higher level. Restoration/enhancement efforts for isolated wetlands are usually successful only when involving simple actions like restoring water flow to a former wetland that has been drained.

Historic Properties

Historic properties are protected by both Section 4(f) of the DOT Act of 1966 (as amended) and Section 106 of the Historic Preservation Act. The Hunstville Area MPO mandates detailed consideration of shifts to either side of each individual resource as well as all protected resources. The costs and impacts associated with these avoidance alternatives must be substantial before FHWA can agree to use the resource.

Examples for minimizing impacts to historic property can take the form of planting to screen the view of a modern facility, restoring a stone wall taken by the ROW, or moving a building that is historic for architectural reasons and restoring it in an appropriate location.

Resources for Consultation and Environmental Mitigation

Considerations of potential environmental impacts associated with transportation projects include but are not limited to the following resources/issues, listed in Graphic X.

RESOURCES FOR CONSULTATION & ENVIRONMENTAL MITIGATION		
	RESOURCE	IMPORTANCE
1	HAZMAT SITES	Health hazards, costs, delays, liability for both State and federal projects on either existing or acquired right-of-way
2	AIR QUALITY	Public health, welfare, productivity, and the environment are degraded by air pollution
3	NOISE	Noise can irritate, interrupt, and disrupt, as well as generally diminish the quality of life
4	WETLANDS	Flood control, wildlife habitat, water purification; applies to both State and federally funded projects
5	THREATENED & ENDANGERED SPECIES	Loss of species can damage or destroy ecosystems, to include the human food chain
6	FLOODPLAINS	Encroaching on or changing the natural floodplain of a water course can result in catastrophic flooding of developed areas
7	FARMLANDS	Insure conversion compatibility with State and local farmland programs and policies
8	RECREATION AREAS	Quality of life; neighborhood cohesion
9	HISTORIC STRUCTURES	Quality of life; preservation of the national heritage
10	ARCHAEOLOGICAL SITES	Quality of life; preservation of national and Native American heritage
11	ENVIRONMENTAL JUSTICE	To avoid, minimize, or mitigate disproportionately high impacts on minorities and low-income populations; basic American fairness

Graphic X: Resources for Consultation and Environmental Mitigation

The primary contact for all the resources listed in Graphic X is ALDOT's Design Bureau Environmental Technical Section (ETS), not because it is a resource agency, as defined by federal regulations, but because it has the multidisciplinary experts who can guide the MPO through the early identification of impacts in the initial project planning and development stage. The sooner a potential environmental impact is identified, the more likely it can be avoided, minimized, or mitigated. Early coordination with the ETS can insure timely consultation with all potentially affected stakeholders and compliance with NEPA provisions and its enforcing regulations.

Environmental Factors and Land Use

An overview of environmental factors and land use must be conducted to determine the viability of proposed projects. In order to assess the impacts of the planned transportation improvements in the area, the following environmental/land use factors were considered as shown in Graphic X.

Air Quality

The Huntsville Urban Area is presently classified as an attainment area for all criteria pollutants (pollutants for which EPA has promulgated National Ambient Air Quality Standards (NAAQS) under the Clean Air Act). The most recent revision to the NAAQS for ground level ozone was promulgated in 2015 and lowered the standard from 0.075 ppm (parts per million) to 0.070 ppm.

The 2015 Air Quality Report (https://www.huntsvilleal.gov/environment/air-quality/air-pollution-control-program/air-quality-daily-index-reports/) published by the City of Huntsville's Department of Natural Resources and Environmental Management, indicates that over 70% of the ozone precursor emissions (78% oxides of nitrogen and 21% volatile organic compounds) in the area comes from mobile sources. While substantial reductions in emissions from individual vehicles have occurred due to Federal limitations on fuel volatility and national tailpipe emissions standards, increases in VMT (Vehicle Miles Traveled) have partially offset these reductions.

With stricter tail-pipe standards taking effect in 2004, and with imposition of tighter 2007 and 2010 diesel emissions standards, on-road emissions of ozone precursors should decrease in the coming years as a result of fleet turnover. However, further improvements in the transportation network to reduce congestion and improve connectivity are necessary to ensure these air quality benefits are actually realized.

As of 2019, the Huntsville Area MPO has met the requirements of the Clean Air Act and is in attainment status for the six principal pollutants set by the Environmental Protection Agency.

Graphic X: Environmental Factors and Land Use

The standard for these pollutants is reviewed from time to time, though it is not currently under review. The 2019 Air Quality Report was published in January 2020.

- **Transportation Conformity**

Transportation conformity is an analytical process required of MPOs in non-attainment and maintenance areas as a result of the Clean Air Act Amendments of 1990. FAST Act links compliance with conformity requirements to continued funding of transportation plans, programs and projects. States and MPOs must demonstrate, through the conformity process, that the transportation investments, strategies and programs they choose, taken as a whole, have air quality impacts consistent with the State Implementation Plan (SIP). Emissions from mobile sources may not exceed the SIP targets.

The State and MPO are responsible for deciding what transportation investments the area will make to attain the standards. Emissions reduction targets for mobile sources can be achieved through programs that address vehicle emissions (use of reformulated gasoline, implementation of inspection/maintenance programs), by changing how we travel (ridesharing or use of transit) or congestion mitigation programs (traffic signal synchronization).

- **CMAQ Funds**

The Congestion Mitigation and Air Quality (CMAQ) Program (formerly known as Congestion Management and Air Quality) was reauthorized in MAP-21/FAST Act. The primary purpose of the CMAQ is to fund transportation projects and programs in non-attainment and maintenance areas which reduce transportation-related emissions. Over $2.2 billion dollars per year are authorized nationwide for the program.

Cemeteries/Historic Properties

Cemeteries (public and private) were located using information from United States Geological Survey (USGS) Quad Maps and from a cemetery inventory map. Historic properties are properties listed on or eligible for the National Register of Historic Places, and/or are designated as National Historic Landmarks and/or are located in a Locally Designated Historic District. This information is kept on file in the City of Huntsville GIS office; however, information concerning eligible properties must be determined by field investigations conducted by qualified personnel.

Potential Protected and Protected Lands/Champion Trees

Potentially Protected and Protected Lands are from an inventory of properties that have been acquired by, or have been designated as having the potential to be acquired by, the non-profit Land Trust of North Alabama. Champion Trees are those trees that are considered to be of state and/or national significance due to their outstanding size. This information is available from the Alabama Forestry Commission.

Parks and Recreation/Landfills

The parks and recreation facilities inventoried include City of Huntsville neighborhood and community park and recreation facilities as well as Madison County park and recreation facilities. The locations of the known landfills (licensed and unlicensed) were provided by the Environmental Services Division of the Madison County Health Department.

Other

The locations of utility delivery points, universities, public properties, industrial parks, hospitals, water treatment plants, sewage treatment plants, and Redstone Arsenal facilities are found in this category.
Note: Information for environmental factors Topography, Floodplains, Wetlands and Other is kept on file in the City of Huntsville GIS office.

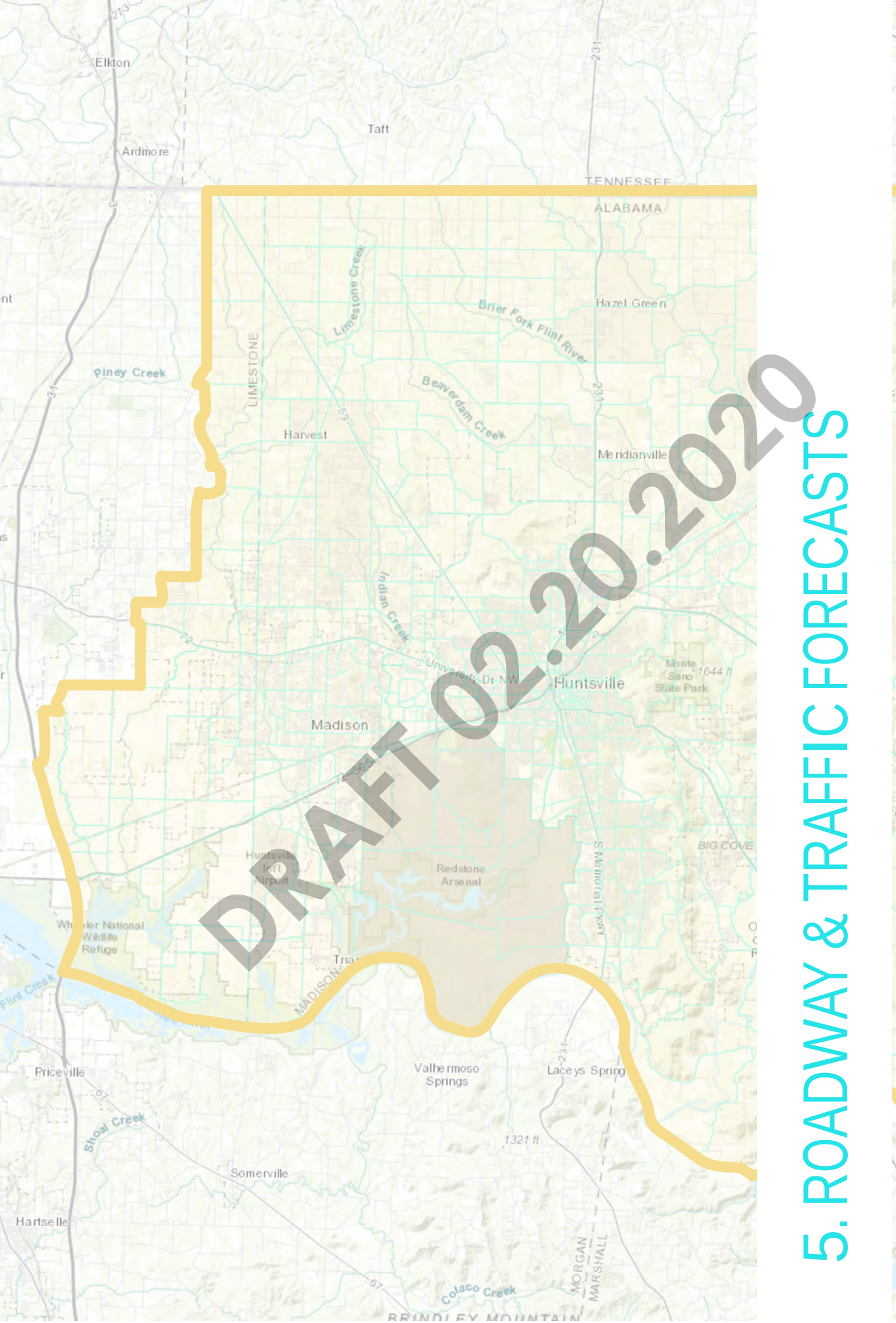
Environmental Mitigation and Climate Change

> ***"Opportunities to reduce 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, can contribute to these strategies. In addition to contributing to climate change, transportation will likely also be affected by climate change."***
>
> *- Introduction to Integrating Climate Change into the Transportation Planning Process, Federal Highway Administration, Final Report, July 2008*

- **Local Assessment**

All corridors identified for improvement have been analyzed for environmental concerns, so that mitigation activities can be considered during the planning phase. Discussions are also held with other agencies as applicable to determine any environmental concerns regarding the overall proposed future plan network. It is hoped that through close coordination with the appropriate entities, that creative environmental mitigation strategies may be developed prior to the project design phase.

The aggressive screening of projects, attached in the appendix, can lead to various mitigation strategies that may achieve a balance between economic concerns and environmental stewardship. While a more detailed study, such as the Environmental Assessment, is required once a project is selected for design and construction, the overview presented in this plan provides a brief synopsis of preliminary findings.



5. ROADWAY & TRAFFIC FORECASTS

The Modeling Process

The predictability of future traffic flow is complex and is best determined by a technique known as travel demand modeling or transportation modeling. Transportation models attempt to develop reliable mathematical relationships between socioeconomic data (number of households, household size and income, number of automobiles owned or available, school enrollment, number of people employed and the type of their employment) and trip-making. By manipulating these relationships and comparing predicted trips with known (or estimated) trip patterns, an accurate method for predicting future travel demand can be developed.

The modeling process consists of four steps: (1) trip generation, (2) trip distribution, (3) mode split, and (4) trip assignment. Each of these segments is explained in detail later except for mode-split, which is not taken into consideration. The overall accuracy of this model depends on the accuracy of trip generation (how well the model estimates the number and kinds of trips actually made in the area, both regionally and locally). Also, model results can be affected by the accuracy of trip distribution (how well the actual trip lengths compare to the model estimates and are actual, well-duplicated trip patterns).

The level of accuracy, in turn, is dependent on the quality of the input of data, the relationships developed from that data, and how the model assigns the estimated trips to the road system.

- **Network Development**

A network is made up of zones representing trip-ends, nodes representing intersections, and links representing roadways. The trips to and from zones enter the road system through nodes, which are connected by links. A set of links connecting any two zones is called a path, and a trip will always be assigned to the path with the lowest cost (measured as time or distance). However, depending on how much traffic is already on a street (path), the individual link costs, reflected by speed, are altered; therefore, paths can change. The relationship of speed and traffic volume is a function of capacity.

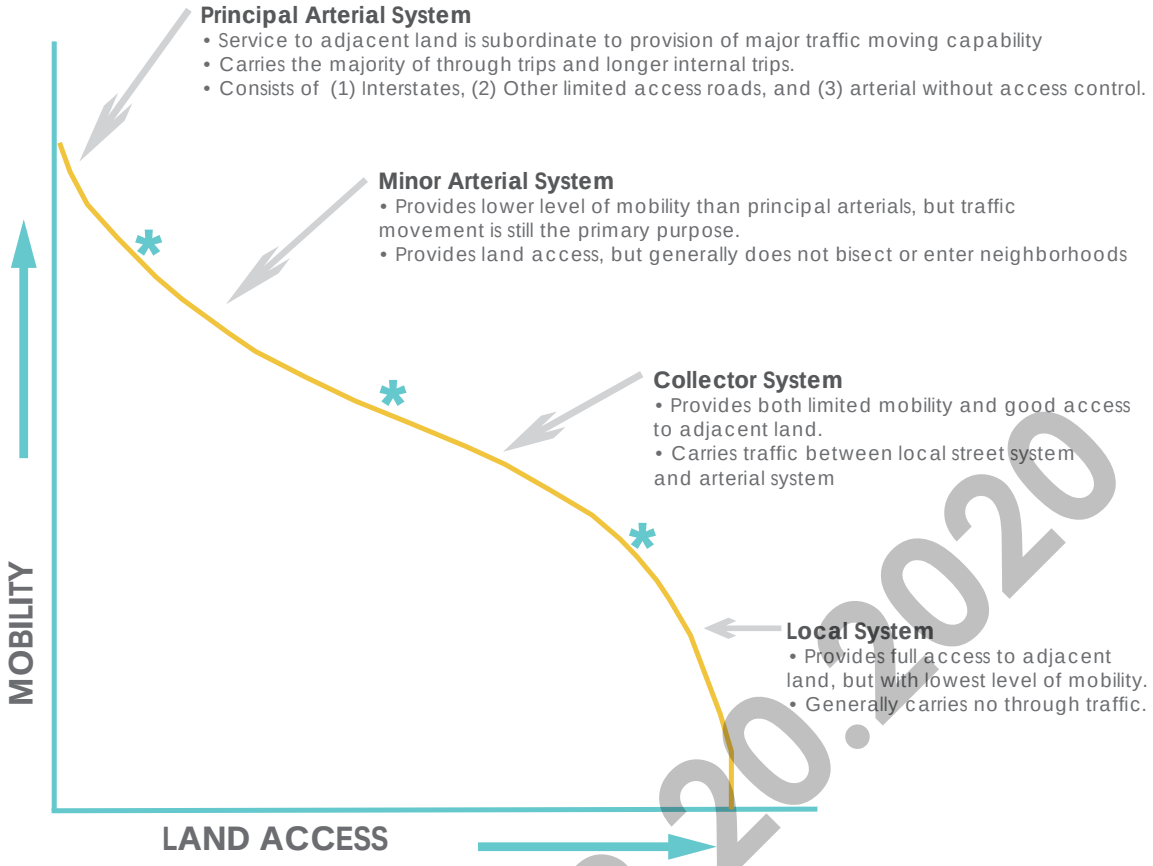
1. Roadway Capacity

The capacity of a road is usually determined by the capacity of its intersections and can be expressed as the capacity of each of the intersection approaches, or links. This capacity depends on numerous factors, among them the number of through lanes, number of turn lanes, lane width, peaking characteristics, and signalization. Of these factors, several are categorized as physical characteristics, others as operating characteristics. Models normally group links by both their physical and operating characteristics.

2. Roadway Classification

Different types of streets provide different types of service. This is determined by FHWA's hierarchy of streets and roads classified by the type of service provided, and referred to as the Functional Classification. Generally, roads within each functional class will exhibit similar operating characteristics, which will, in turn, vary between classifications. Since operating characteristics will, to a large degree, determine roadway capacity, it is extremely important that links are correctly classified in any travel model. The functional classification system used in urban areas is summarized in Graphic X.

The principal use of functional classification in modeling is to stratify roads throughout a system by primary purpose, thus allowing the development of a single set of general values to describe the operating characteristics of all roads of a given type.



Graphic X: Functional Classification and Mobility vs. Access
Source: FHWA

Two of the most important of these characteristics are speed and capacity - and the relationship between the two. Since most traffic assignment models operate on the premise that as traffic volumes approach capacity, speed decreases, the model will adjust link speed in some predetermined manner based on the relationship between a given load and coded capacity. This speed adjustment will affect the paths taken between zones.

- Network Speed

For the model to successfully replicate actual trip patterns, the speeds coded in the model network must have some relationship to reality. When testing future networks, however, speeds will need to be coded for roads that are not yet constructed, so the coding criteria must also be defined by some tangible characteristic that can be applied in a uniform manner. Therefore, link speeds are determined by either the physical features of the road and its surroundings (such as number of lanes, its physical design characteristics, or the type of adjacent development), the road's functional classification (operational characteristics), or a combination of the two. The number of lanes is the dominant factor in determining free speeds for arterials and collectors, but all else being equal, principal arterials are usually coded faster than lower level arterials.

- Level of Service

The Level of Service (LOS) concept is used to define the operational characteristics of roads at various traffic volumes. LOS can be used to establish the most severe conditions acceptable to the public. This is not to say or imply that the limits of acceptability are desirable - but simply tolerable. Levels-of-service range from A through F, with A being the best (least amount of traffic) and F being the worst (capacity, unstable flow).

Travel Demand Model Overview

The Huntsville Area MPO model was previously validated to base year 2010 conditions for the 2040 LRTP Update. For the 2045 LRTP Update, the demand side of the model was updated with demographic estimates for a new base year of 2015 and a horizon year of 2045. The supply side of the model was updated with highway network characteristics separately representing base year 2015 and existing-plus-committed (E+C) conditions. The 2015 network reflects all roadway projects completed between 2010 and 2015 while the E+C network reflects projects constructed since 2015, along with roadway changes funded in the MPO's Transportation Improvement Program.

The 2015/2045 model was streamlined from the previous 2010/2040 model structure. Feedback loops included in the previous model were deemed unnecessary with levels of congestion typically experienced in the study area. To make the model more user-friendly, the model was restructured as a single-level Cube model such that all steps are visible, eliminating the "drill down" process used in the previous model.

At the same time, the model was updated to reflect transferable model parameters and benchmark statistics from the report NCHRP 716 Travel Demand Forecasting: Parameters and Techniques. The 2010/2040 model used parameters from the previous 1998 report NCHRP 365, which has since been superseded by NCHRP 716, published in 2012, using data from the 2009 National Household Travel Survey (NHTS). In the absence of a local travel survey, NHTS model parameters were supplemented with Streetlytics data purchased by ALDOT. Streetlytics combines available GPS travel data with origin-destination matrix estimation models for every MPO in the state of Alabama.

- **Existing Conditions including Levels of Service (or "Congestion")**

In addition to available 2018 traffic counts from ALDOT and Madison County, the Huntsville Area MPO travel demand model was validated to represent conditions for the base year 2015. While traffic volumes from the base year 2015 MPO model are not a replacement for valid traffic counts, the model is the basis for system level comparisons between recent and future year 2045 conditions.

- **Trip Generation**

Trip production rates for the Huntsville 2015 and 2045 models were derived from NCHRP 716 and adjusted to reflect local data on household income and household size, along with NCHRP benchmark statistics on percent trips by purpose and auto availability data summarized by NCHRP for the study area. Trip attraction rates were derived from NCHRP 716 as well. The following table provides a comparison of person and vehicle trips by purpose for the years 2015 and 2045.

	Person Trips		Vehicle Trips	
Trip Purpose	2015 Base	2045 E+C, FC	2015 Base	2045 E+C, FC
Home Based Work	*279,363*	*383,146*	*253,940*	*348,280*
Home Based Other	*776,008*	*1,064,282*	*450,861*	*618,348*
Non Home Based	*496,668*	*681,165*	*298,994*	*410,062*
Trucks	*77,587*	*106,426*	*77,587*	*106,426*
Internal - External Trips	*166,666*	*246,134*	*166,666*	*246,134*
External - External Trips	*2,335*	*3,389*	*2,335*	*3,389*
TOTAL	***1,798,627***	***2,484,542***	***1,250,383***	***1,732,639***

Graphic X: Trip Generation

Person trips are converted to vehicle trips in the updated model using auto occupancy factors from NCHRP 716.

- **Network Analysis**

A total of 25 base year model runs were executed, iteratively adjusting model assumptions and continuously refining network accuracy, to achieve reasonable average trip lengths and match available traffic counts for the base year 2015. Average trip lengths are now close to NCHRP 716 targets for home-based work, home-based other, and nonhome-based. The ratio of 2015 model volumes over counts successively improved from 1.21 to 0.97 while the root mean square error was reduced from 54 percent down to 38 percent over the course of the 15 validation runs

- **Volume Capacity**

Volume-over-capacity (V/C) ratios were compared among four different modeling scenarios:
1. Base year 2015
2. Year 2045 E+C
3. Year 2045 Financially Constrained (FC) Plan
4. Year 2045 Visionary Plan (VP)

Network V/C ratio plots were generated for each scenario and total V/C was tracked and graphed. These summaries clearly show that V/C increases from 2015 (0.43) to 2045 E+C (0.56) and then decreases from the E+C network run to the FC (0.55) and VP (0.53) scenarios that include additional roadway capacity projects.

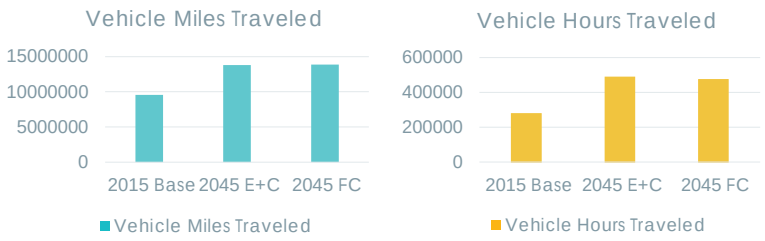
- **Future Congestion**

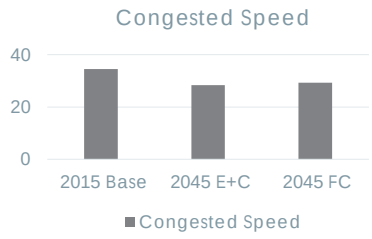
As expected, congestion will continue to increase without additional roadway capacity in the future. Average travel speeds during peak periods of congestion will decrease from 29.65 MPH in 2015 to 28.03 MPH in 2045 using the E+C network.

The 2045 FC plan works to increase congested speeds back up to 28.16 MPH while the 2045 VP scenarios shows speeds further increasing to 28.57 MPH. Other measures of congestion tracked included vehicle-miles traveled (VMT) and vehicle-hours traveled (VHT).

VMT represents the total number of miles vehicles will travel during a given scenario while VHT measures the amount of travel time that vehicles will spend on area roadways. VMT is projected to increase from **10.6 million in 2015 to 15.3 million in 2045** under E+C conditions. VHT is forecast to increase from 336 thousand in 2015 to **553 thousand for the 2045 E+C scenario** and then decreases to 548 thousand under the FC Plan and **532 thousand with the VP network**, which includes the greatest amount of roadway capacity of the four scenarios.

	2015 Base	2045 E+C	2045 FC
Vehicle Miles Traveled	*9,572,664*	*13,823,195*	*13,894,062*
Vehicle Hours Traveled	*267,474*	*477,762*	*462,335*
Congested Speed	*34.88*	*28.93*	*30.05*





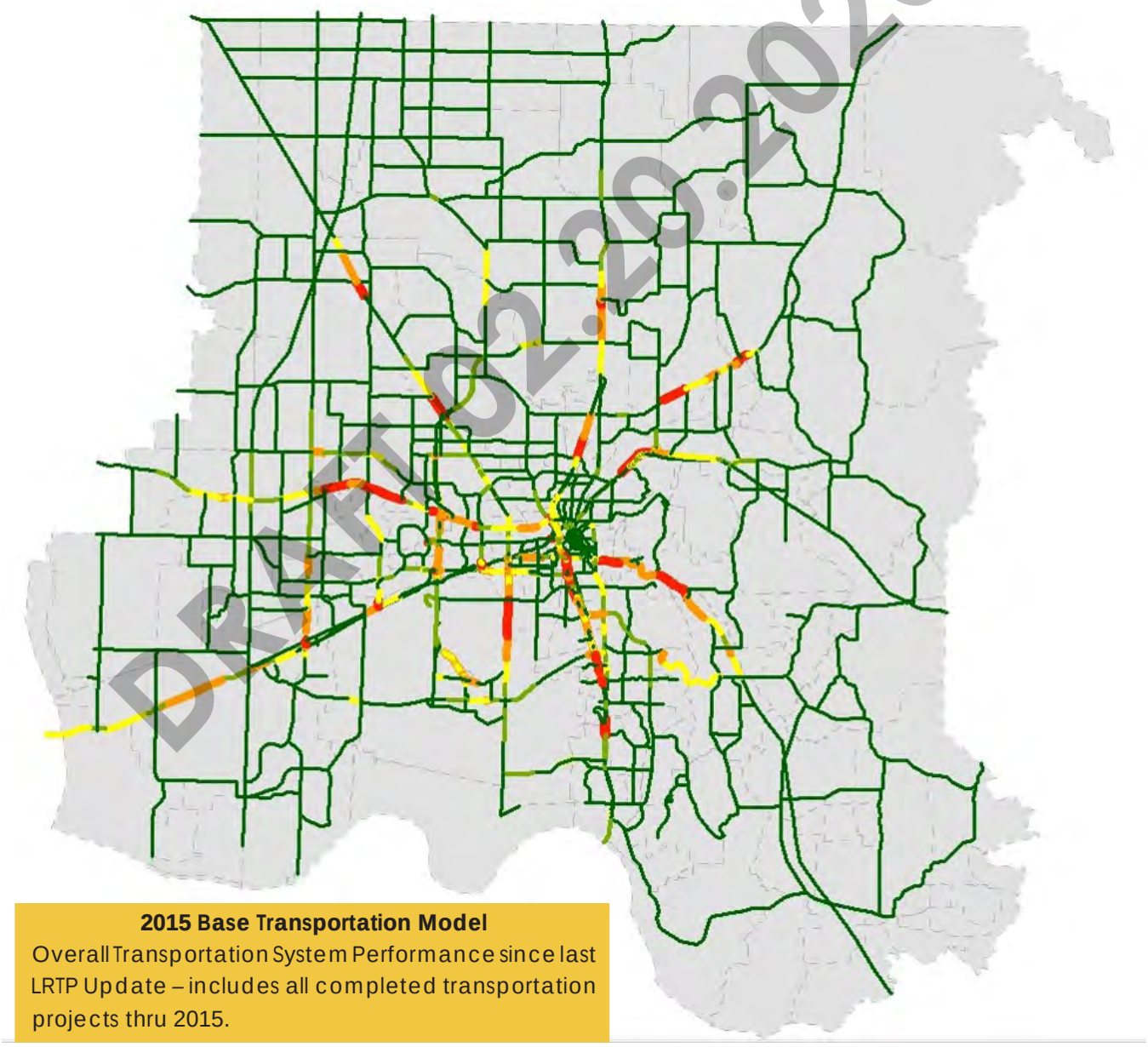
Graphic X: Future Congestion

- **Future Needs Assessment (identifies specific needed projects)**

V/C plots were reviewed for each scenario to identify the 20 most congested roadway segments in the MPO study area. Potential solutions were identified and added to subsequent network scenarios.

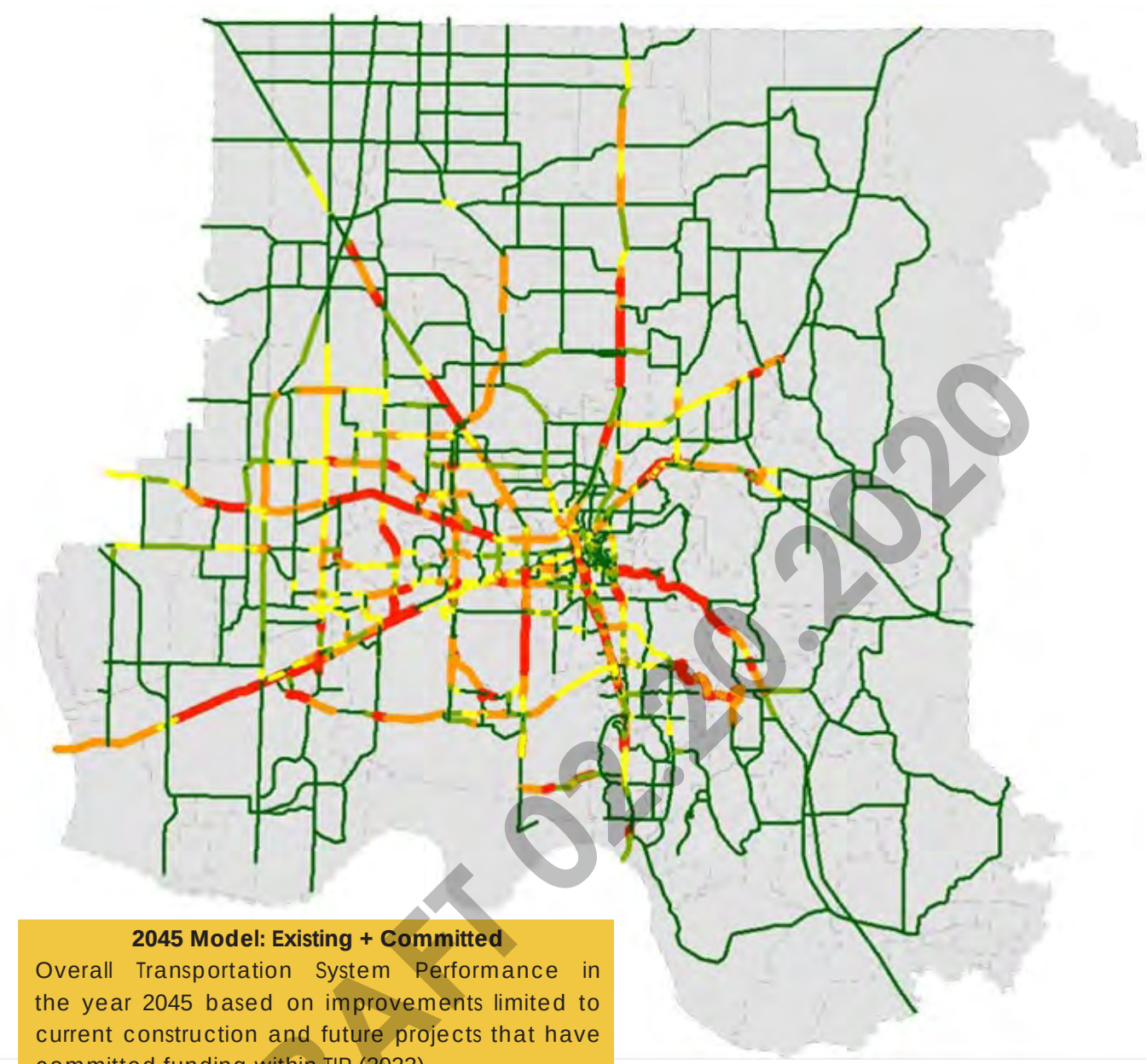
Transportation Network Evaluation

- System Modeling: Completed Transportation Projects since last LRTP update vs. future traffic projections (2015 Baseline)
- System Modeling: Funded TIP Projects vs. future traffic projections (funded projects thru 2023)
- System Modeling of 2045 traffic demands vs. Fiscal Constrained Projects (projects currently funded within 2045 Plan)
- Identifying Visionary Projects thru data driven System Modeling -(necessary future projects outside of current funding plan)



2015 Base Transportation Model
Overall Transportation System Performance since last LRTP Update – includes all completed transportation projects thru 2015.

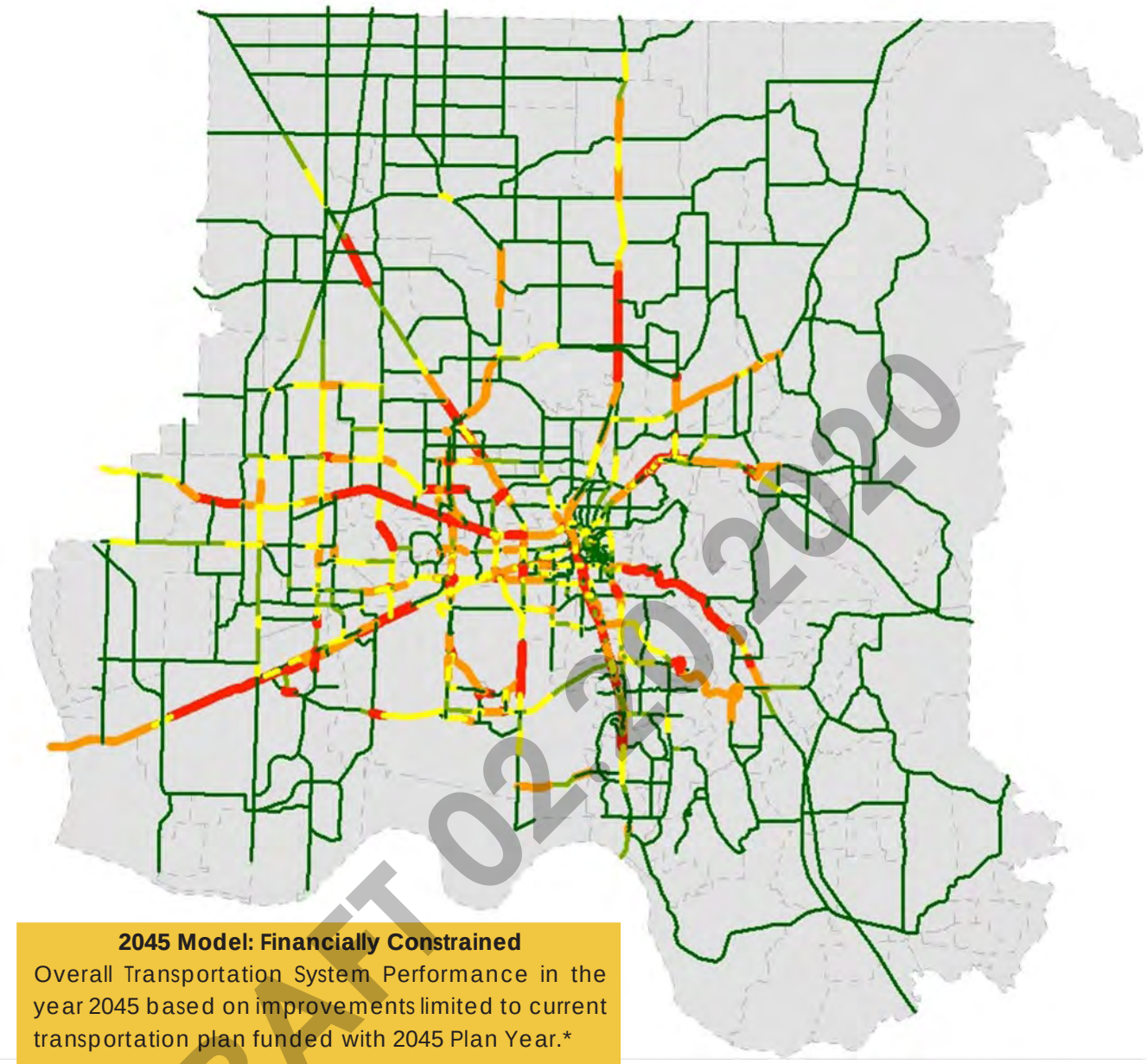
Graphic X: 2015 Base Transportation Model



2045 Model: Existing + Committed

Overall Transportation System Performance in the year 2045 based on improvements limited to current construction and future projects that have committed funding within TIP (2023).

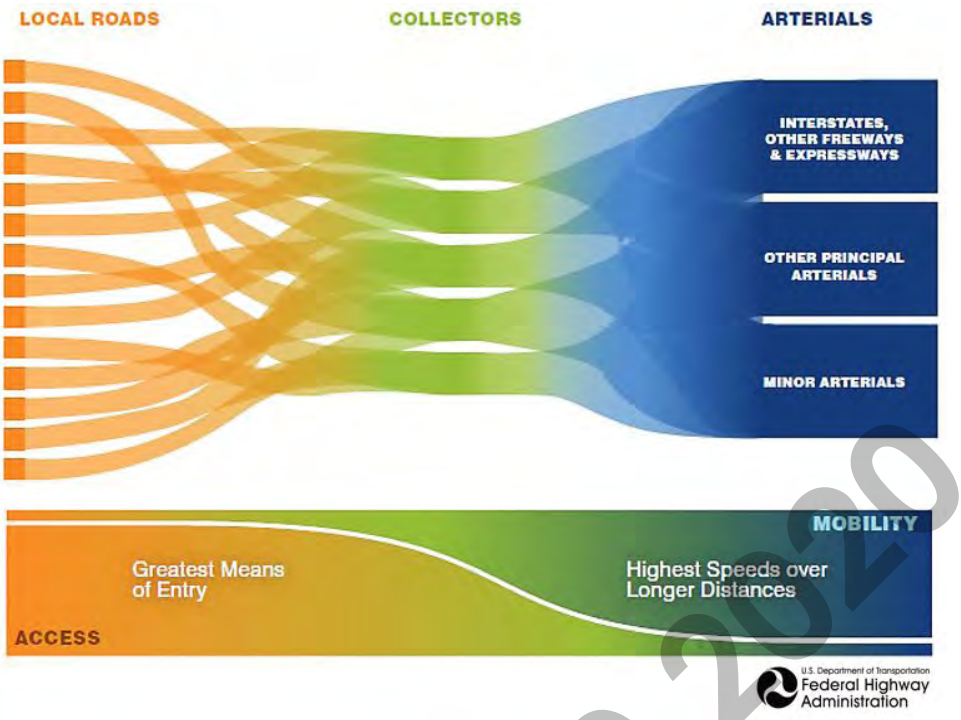
Graphic X: 2045 Model: Existing + Committed



2045 Model: Financially Constrained
Overall Transportation System Performance in the year 2045 based on improvements limited to current transportation plan funded with 2045 Plan Year.*

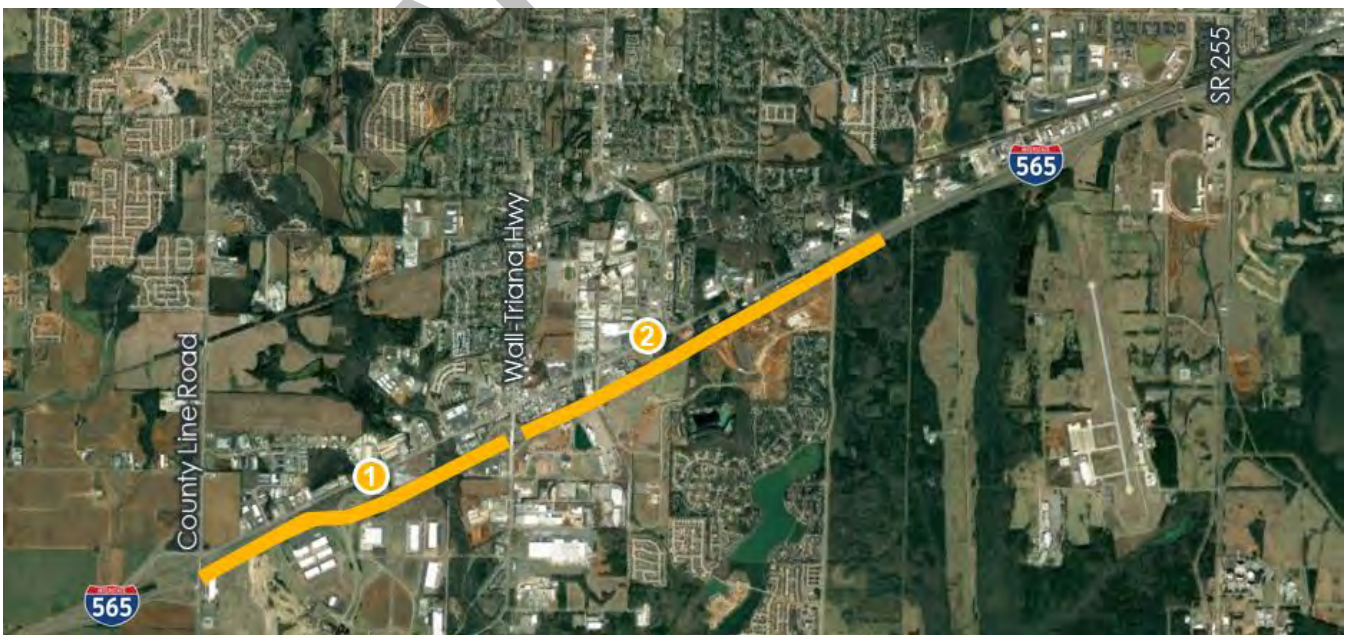
Graphic X: 2045 Model: Financially Constrained

** Note: This model is used to identify necessary future projects "Visionary Projects" based on volume/ capacity ratios.*



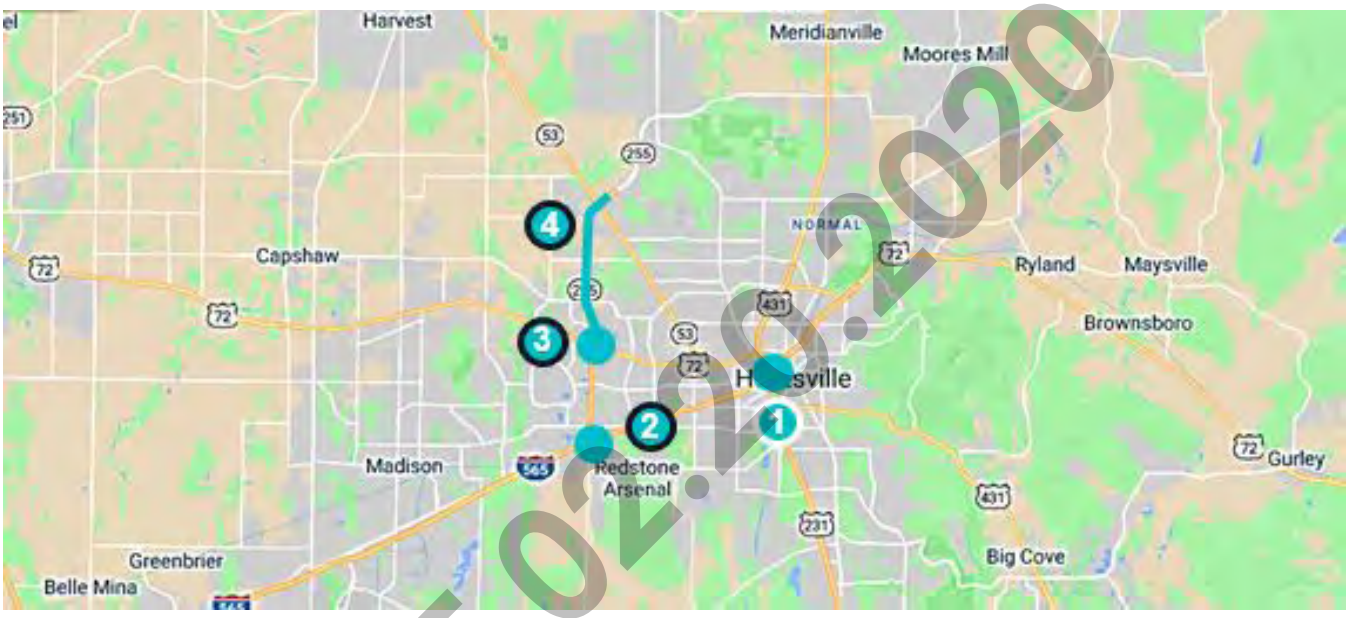
Graphic X: FHWA Functional Roadway Classifications

VISIONARY PROJECT RANKINGS: FREEWAY SYSTEM				
Based on 2045 FC Volume/Capacity Ratios				
RANK	PROJECT	FROM	FROM	DESCRIPTION
1	I-565	County Line Road	Wall-Triana Hwy	Widening to 6-lanes
2	I-565	Wall-Triana Hwy	Madison Blvd. Crossover	Widening to 8-lanes

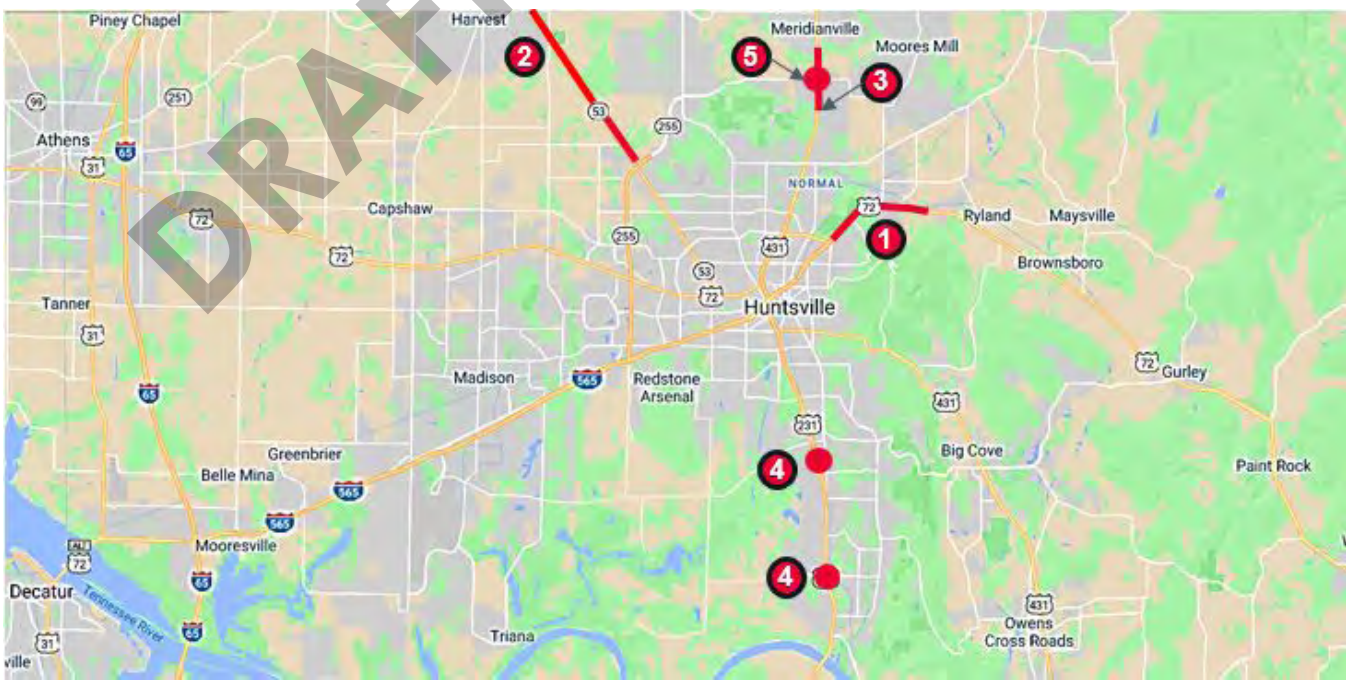


Graphic X: Visionary Project Ranking: Freeway System

VISIONARY PROJECT RANKINGS: EXPRESSWAYS				
Based on 2045 FC Volume/Capacity Ratios				
RANK	**PROJECT**	**FROM**	**FROM**	**DESCRIPTION**
1	Memorial Parkway	@ I-565 Interchange		Interchange Modification
2	Research Park Blvd	@ I-565 Interchange		Interchange Modification
3	Research Park Blvd	@ US-72 Interchange		Interchange Modification
4	Research Park Blvd	US 72	AL 53	Widening to 6-lanes



Graphic X: Visionary Project Ranking: Expressways



Graphic X: Visionary Project Ranking: Major Arterials

VISIONARY PROJECT RANKINGS: MAJOR ARTERIALS				
Based on 2045 FC Volume/Capacity Ratios				
RANK	**PROJECT**	**FROM**	**FROM**	**DESCRIPTION**
1	US 72 East (Corridor V)	Maysville Rd.	Shields Rd.	New Interchanges, Service Roads
2	AL 53	AL 255	Harvest Rd.	Widening to 6-lanes
3	US 231/431	Hollow Rd.	Patterson Ln.	Widening to 6-lanes
4	Memorial Parkway	Meadowbrook Dr.	Hobbs Rd.	New Interchanges, Service Roads
5	US 231/431	@SR 255 Intersection		New Interchange
6	US 72 – West	Maysville Rd.	Holladay Blvd.	Widening to 6-lanes
7	Memorial Parkway	@ Governors Dr.		Interchange Modification
8	US 231/431	@ Meridianville Bottom Rd.		New Interchange
9	SR 255	@ Pulaski Pike Rd		New Interchange
10	US 72 – East	@ Jordan Road		New Interchange
11	US 72 – West	Holladay Blvd	Mooresville Rd	Widening to 6-lanes
12	US 231/431	@ Patterson Lane		New Interchange
13	AL 53	Harvest Road	Old RR Bed	Widening to 4-lanes
14	Memorial Parkway	Hobbs Island Rd	TN River Bridge	Widening to 6-lanes
15	US 231/431	Walker Ln	Bobo Section Rd	Widening to 6-lanes

VISIONARY PROJECT RANKINGS: MINOR ARTERIALS				
Based on 2045 FC Volume/Capacity Ratios				
RANK	**PROJECT**	**FROM**	**FROM**	**DESCRIPTION**
1	Patton Rd.	Gate 10	Patriot Rd.	Widening to 7-lanes
2	Patton Rd.	Patriot Rd.	Martin Rd.	Widening to 5-lanes
3	Madison Blvd.	I-565	Resolute Way	Interchange Modification
4	Patton Rd.	Martin Rd.	Redstone Rd.	Widening to 5-lanes
5	Slaughter Rd.	Old Madison Pike	US 72	Widening to 5-lanes
6	Wall-Triana Hwy.	Interpro Drive	Dunlop Blvd.	Widening to 7-lanes
7	Sullivan Street	Kyser Blvd.	Front Street	Widening to 5-lanes

8	Winchester Road	Bell Factory Rd.	Riverwalk Trl.	Widening to 5-lanes
9	Pulaski Pike	Prosperity Drive	Patterson Lane	Widening to 3-lanes
10	Wall-Triana Hwy.	Mill Road	Gooch Lane	Widening to 3-lanes
11	Old RR Bed Rd.	US 72	Capshaw Rd.	Widening to 5-lanes
12	Old RR Bed Rd.	Capshaw Rd.	AL 53	Widening to 5-lanes
13	AL 53	US 72	Yarbrough Road	Widening to 5-lanes
14	Memorial Parkway	County Line Rd.	Mooresville Rd	Widening to 5-lanes
15	US 231/431	Riverwalk Trl.	TN State Line	Widening to 4-lanes

VISIONARY PROJECT RANKINGS: MAJOR/MINOR COLLECTORS

Based on 2045 FC Volume/Capacity Ratios

RANK	PROJECT	FROM	FROM	DESCRIPTION
1	Capshaw Rd.	Nance Rd.	Old RR Bed Rd.	Widening to 5-lanes
2	Oakwood Rd.	Adventist Blvd.	Research Pk. Blvd.	Widening to 5-lanes
3	Old Monrovia Rd.	Claude Cir.	Oakwood Rd.	Widening to 3-lanes
4	Plummer Rd.	Jordan Ln.	Indian Creek Rd.	Widening to 5-lanes
5	Moores Mill Rd.	Winchester Rd.	Countess Rd.	Widening to 5-lanes
6	Hughes Road	Millsford Lane	Brogan Drive	Widening to 5-lanes
7	Old Big Cove Road	Sutton Road	Terry Drake Road	Widening to 3-lanes
8	Old Madison Pike	Slaughter Road	Hughes Road	Widening to 5-lanes
9	Ryland Pike	Jordan Road	Dug Hill Road	Widening to 3-lanes
10	Jordan Road	Homer Nance Road	US 72 East	Widening to 5-lanes
11	Capshaw Road	Jeff Road	Nance Road	Widening to 5-lanes
12	Eastview Drive	Slaughter Road	Hughes Road	Widening to 5-lanes
13	Gillespie Road	Balch Road	Hughes Road	Widening to 5-lanes
14	Mill Road	Hughes Road	County Line Road	Widening to 5-lanes
15	Oakwood Ave	Andrew Jackson Way	Church Street	Reconfigure Lanes

Future Needs Assessment

Project Selection and Prioritization

The comprehensive project list was generated by projects listed in the current 2040 LRTP visionary, FY2020-2023 TIP, member capital improvements lists, and MPO model forecasted congestion for the year 2045. The Existing plus Committed (E+C) list are projects either completed, under construction, or authorized at the time of plan adoption.

The same procedure was followed for the financially constrained list, as these are funded projects with assigned funding from some source (local, state, or federal) inside of the planning year 2045. The model was used to output V/C ratios for all projects and then sort by roadway functional class and then by V/C ratio to produce a ranked, and modeled, prioritization of projects.

Two primary tools were used by MPO member jurisdictions, MPO staff, and TRiP 2045 consultants to develop a list of prioritized projects for the TRiP 2045. These tools and their use in developing project lists are outlined below.

1. Comprehensive Project Management System (CPMS)

- Anticipated federal funds for the next 25 years have been allocated during prior long-range planning efforts in the ALDOT CPMS.
- These existing CPMS allocations were examined by jurisdictional leadership.
- Each jurisdiction presented a list of projects important to their jurisdiction.
  - These lists were derived from prior project lists in prior plans as well as new projects envisioned since the last 2040 long-range planning process.
  - New projects were added based on new developments, anticipated land use changes, or anticipated population and job growth.

2. Travel Demand Model

- The travel demand model is a complex algorithm-based software program which forecasts road congestion for MPOs.
- ALDOT and the Huntsville-Area MPO use a travel demand model developed by CUBE Voyager.
- Demographics professionals and travel demand modelers conducted the network development described in “The Modeling Process” earlier in Chapter 5.
- Presented the MPO members, staff, and consultants were the results of the modeling process with the existing-plus-committed (E+C) congestion projects for 2045, as well as volume-over-capacity (V/C) ratios projects for different scenarios, as described above in “Travel Demand Model Overview”.

Analyses of Obstacles, Land-Use, and Environmental Factors

Adding capacity is not feasible on several roadways where the travel demand model projects future congestion issues. This is due to external factors such as surrounding land use or topography. On these corridors, the Huntsville-Area MPO recommends improvements in technology (ITS); emergency response (roadside assistance patrols); and improvements in carpooling and transit service to alleviate and/or provide alternatives to congestion.

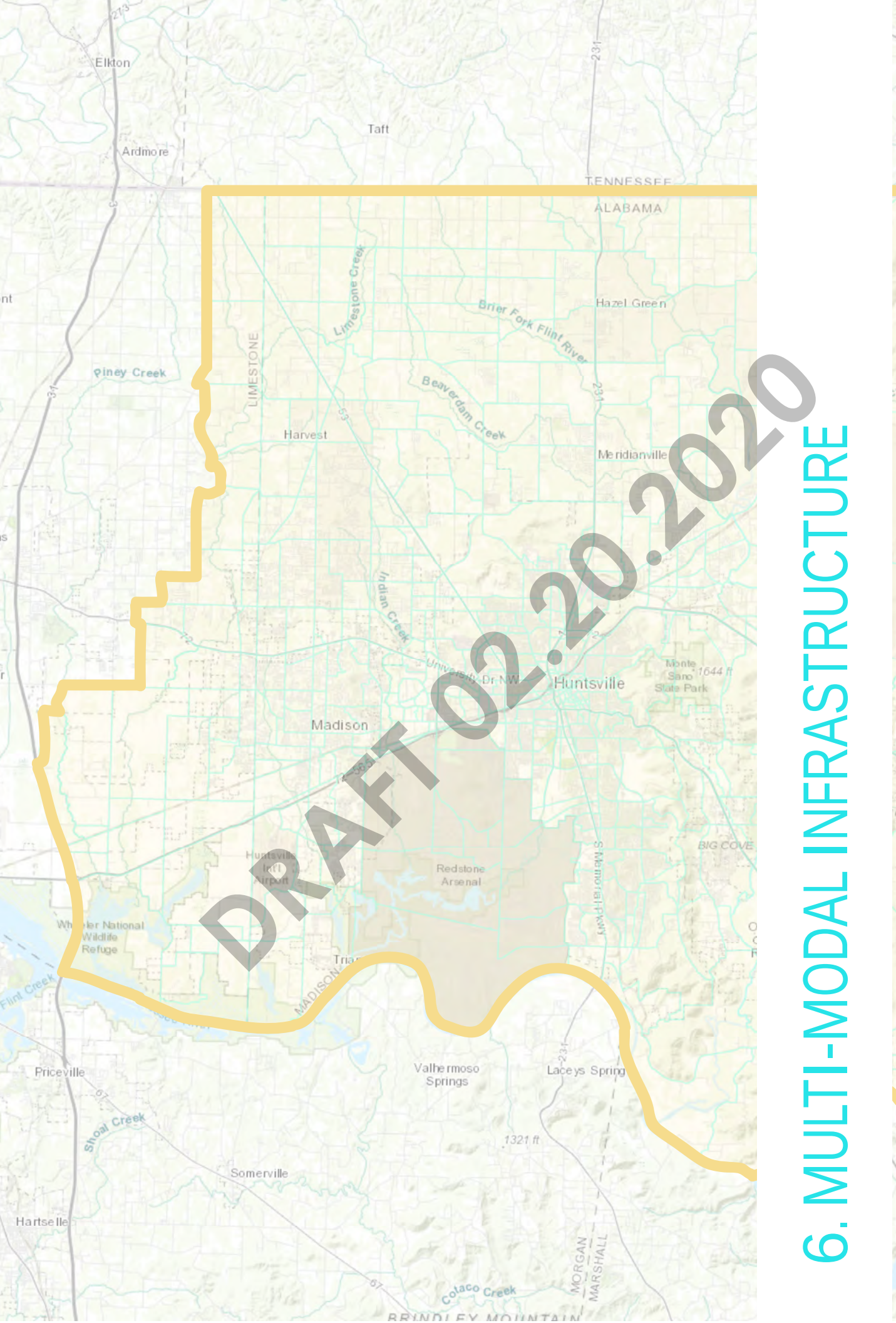
Decision Making Process:

The following decision-making process occurred after the above tools and analyses were performed:

1. Lists of congested roadways were based on the model's results for the financially constrained (FC) scenario and compared to the jurisdictions' lists of projects to check for overlap and offer the jurisdictions an opportunity to reprioritize based on the model results.

2. The Technical Coordinating Committee (TCC) of the Huntsville-Area MPO met multiple times to review the projects lists. The TCC made recommendations and edits to the proposed lists.

3. Jurisdictional leadership met and discussed the TCC's recommendations, the model's results, and the demands of the region's development in order to formalize the project prioritization list developed by CPMS, the travel demand model, the individual jurisdictions, and the TCC.



6. MULTI-MODAL INFRASTRUCTURE

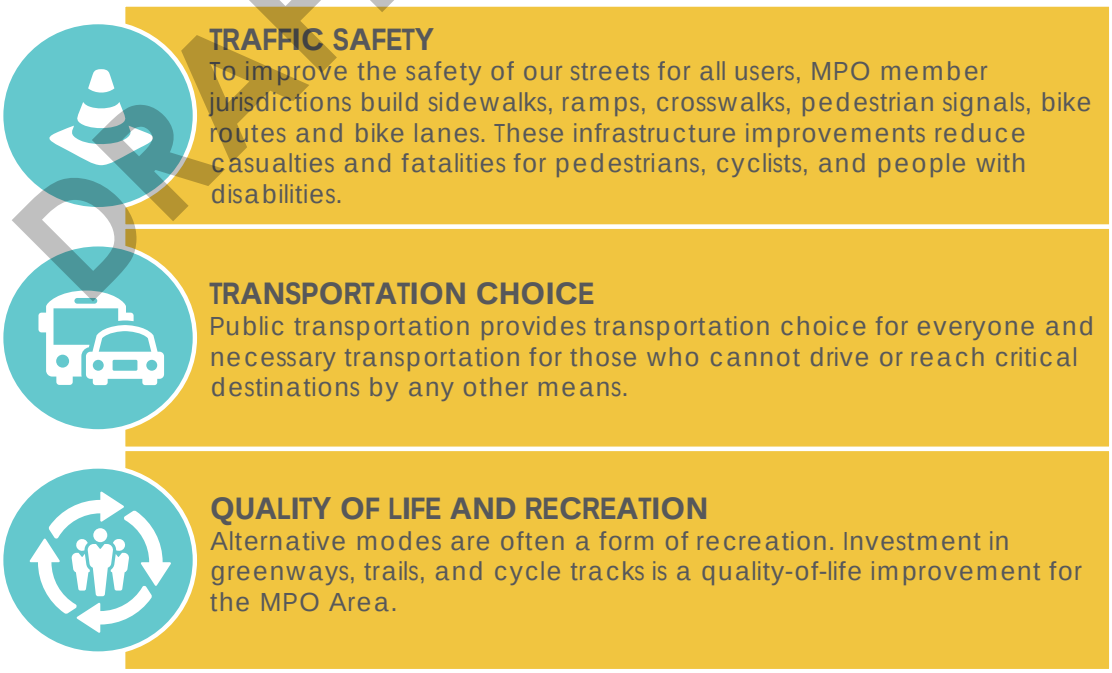
Defining Multi-Modal

> ***"Specifically, when effectively integrated, bicycling and walking to public transportation help advance various environmental, health, and congestion-mitigating benefits for communities. A successful integration between modes will likely increase the catchment area and subsequent use of public transportation, the efficiency of public transportation by reducing the necessity of feeder bus services, and the overall demand for bicycling."***
>
> *- Mineta, 2011*
> *(Sourced from transportation.gov)*

Multimodal access accommodates the many ways users get to and from a public transportation stop to access a public transportation service. For transportation planners, an "Alternative Mode" is a mode of transportation other than a motor vehicle. This includes walking, cycling, running, jogging, and using mobility aids such as wheelchairs and walkers. Some motorized alternative modes, such as scooters, electric bicycles, and motorized mobility aids also require alternative mode infrastructure. The term "Multi-Modal" includes all alternative modes, as well as individual motor vehicles, freight trucks, buses, carpools, vanpools, autonomous vehicles, trains, planes, boats, and barges. This chapter specifically addresses Alternative Modes and Public Transit modes; the Freight chapter covers trucks, trains, planes, boats, and barges.

Benefits of Investing in Alternative Modes and Public Transit

The Huntsville-Area MPO and its member jurisdictions invest in alternative modes and public transportation infrastructure to improve traffic safety, transportation choice, quality of life, and recreation opportunities for every resident of the MPO Area. These benefits are shown in Graphic X. Linking these investments to create an integrated regional network of multi-modal transportation options is an ongoing goal for the Huntsville-Area MPO.



Graphic X: Benefits of Investing in Alternative Modes and Public Transit

Building the Network

The goal of transportation infrastructure is to provide connectivity from point A to point B by the most efficient and safest route possible. Users of public transit and alternative modes require this same connectivity to travel safely from home to work, school, medical appointments, and shopping as those traveling by individual motor vehicles. Planners use phrases like “the sidewalk network” or “the greenway network” to describe a safe, connected network for alternative modes throughout the city. Beyond serving riders who need to take public transportation, transit planners endeavor to make the public transportation network a viable regional commuting alternative to driving for those who choose not to drive.

Ideally, where every bike lane ends, a greenway or multi-use path would begin; every street would have sidewalks on both sides; and every sidewalk would have ADA compliant ramps at all crossings. Every bus stop would be connected to walkable, bikeable, and accessible infrastructure to get all transit riders safely from the bus to their destinations. The Huntsville-Area MPO is continually working toward these ideals. The FHWA and FTA have set multi-modal priorities and funding opportunities to support MPOs in the growth of their alternative modes and public transportation networks.

Regional Transit Goals

The regional transit goals were divided into short term (2020 - 2024), mid-term (2025 - 2035) and long term (2035 - 2045) goals as shown in Graphic X.

Short Term: 2020 - 2024

1. Regional Park and Ride Locations Identified: MPO Commuter Study (see Congestion Management Chapter) will include recommended park and ride locations throughout the region for commuters to access regional public transit to major employment hubs identified in the commuter study.
2. Transit Model: Utilizing information from the updated Travel Demand Model a new Transit Model will be created.
3. Implementation of all Huntsville Transit Study Phases: see page number XYZ
4. New Downtown Bus Transfer Station: Huntsville Transit is in the process of design, funding negotiations, identifying potential grant sources, and locations for a new Downtown Bus Transfer Station.
5. Pilot Bus Rapid Transit: MPO Staff and Huntsville Public Transit are discussing a pilot BRT corridor, potentially funded with FTA Small Starts grant funds.
6. Expanded Inter-city Bus Service: Conversations with potential inter-city bus partners may lead to an expansion of regional inter-city bus service

Mid Term: 2025 - 2035

1. Regional demand-response partnership: Huntsville Transit is currently supporting demand-response transit services to other MPO member jurisdictions. Regional partners are discussing strategies for providing more seamless and customer-friendly transit services.
2. Implementation of pilot regional Park and Ride locations
3. Redstone Arsenal Transit Access Established: partnership between Huntsville Public Transit and Redstone Arsenal allows for Arsenal employees to take public transit into work
4. Bus Rapid Transit corridors opened in the region: At least two in Huntsville, perhaps one inter-city corridor.
5. Next Regional Public Transit Study: a follow-up transit study is conducted after all phases of the prior study are implemented.

6. Bus transport to and from Huntsville International Airport and Toyota-Mazda industrial park is established.
7. Pilot bus transportation schedules between City of Madison and City of Huntsville is initiated.
8. Preliminary route discussions and negotiations with Amtrak for a spur between Birmingham and Huntsville.

Long Term: 2035 - 2045

1. Regional transit service is established to include cities of Athens and Decatur.
2. Huntsville-Madison County Railroad Authority corridor running north to south in Huntsville is opened to include Bus Rapid Transit.
3. Additional park and ride locations implemented.
4. Additional regional transit studies are conducted.
5. Expanded transit service in all MPO member jurisdictions.
6. Construction of Amtrak spur for inter-city rail to and from Birmingham and Huntsville.

Graphic X: Regional Transit Goals

Transit Systems Serving the MPO

MAP-21/FAST Act places emphasis on the expansion, enhancement, and increased use of public transportation to help address traffic congestion problems. To fully address the existing and future traffic congestion problems in the study area, alternative solutions to single occupancy vehicles must be maximized to the extent feasible.

Transit services in the urbanized area are provided by Madison County, the City of Madison, and the City of Huntsville. These public transit operators fall under the authority of local government jurisdictions that are voting members of the Huntsville Area Metropolitan Planning Organization.

1. Madison County: Transportation for Rural Areas of Madison County (TRAM)
https://www.madisoncountyal.gov/departments/planning-and-economic-development/tram
Madison County operates demand response transit through the Transportation for Rural Areas of Madison County (TRAM) program. There are no service restrictions to the county's service, such as age or income; however, riders must reside in the rural communities of Madison County. Funding for this program is provided by federal transit funds administered by ALDOT's rural transit program.

TRAM operates Monday through Thursday from 6:30 am until 3:30 pm, and Fridays from 6:30 a.m. until 2:30 p.m., excluding official County holidays and hazardous weather. The service operates eight (8) vehicles that are wheelchair lift equipped. Fares for TRAM's demand response and subscription services are $8 for one-way trips and $10 for round trip service. TRAM service must be scheduled at least 24 hours in advance.

2. City of Madison: Madison Assisted Ride System (MARS)
https://www.madisonal.gov/122/Madison-Assisted-Ride-System
The City of Madison operates the Madison Assisted Ride System (MARS) through the City of Madison Department of Recreation. The program is fully funded by the City of Madison and its client base is restricted to those persons residing in the City of Madison that are eligible for paratransit services under ADA guidelines. The service primarily provides trips for medical and employment purposes for those that are qualified as disabled. Transportation service is limited to the Madison City limits; however, exceptions are made for essential services that are available in Huntsville such as medical appointments and employment. The City of Madison contracts with Huntsville Transit to provide scheduling and dispatch services.

MARS operates Monday through Friday from 7:00 a.m. until 5:00 p.m., excluding official City of Madison holidays. The service operates up to four (4) vehicles, which are also wheelchair lift equipped. Vans run full time. Fares for MARS service are $2.00 for each one-way trip. MARS service must be scheduled at least 24 hours ahead of time, and persons wishing to ride must be subscribers of the program.

3. City of Huntsville: Huntsville Orbit and Access
https://www.huntsvilleal.gov/ residents/streets/public-transportation/huntsvilletransit/
Huntsville Transit currently operates a variety of services targeted to specific community transportation needs. The City of Huntsville's funding program includes the Federal Transit Administration. Huntsville Transit aims to provide efficient and customer-friendly community transportation services for the general public, senior citizens, physically challenged citizens, commuters, and individuals with limited transportation alternatives.

Huntsville Transit currently provides these services through several programs. Most Huntsville Transit resources are currently directed to two services: the fixed route Orbit Huntsville (formerly Shuttle) service and the Access Huntsville (formerly Handi-Ride) paratransit program which serves senior citizens and individuals with disabilities. A Rideshare program through CommuteSmart provides matching services for commuters and encourages carpooling and vanpooling on a local and regional basis.

Huntsville Transit also provides transportation brokerage to assist citizens, groups, and agencies to find or help provide transportation for other specialized needs. Taxicab and Limousine support is also provided. This support includes inspections, advocacy, and other assistance as required by local privately owned and operated taxicab companies. The downtown Huntsville Bus Transfer Station also serves as a multimodal hub for intercity bus service and taxi service. The location provides space and sells tickets for private intercity bus service such as Greyhound.

During 2011, the City of Huntsville became the first city in Alabama to partner with Google Transit, and offers this service free of charge to residents. Google Transit provides the users of Huntsville's fixed route service bus times and locations, alternate walking routes, locations of bus shelters, and pinpoints the location of restaurants, coffee shops, and retail stores along the way.

During 2019, the City of Huntsville entered an agreement with RouteMatch to make the RouteShout 2.0 mobile application available which aids in improving the rider experience. This app will allow Huntsville Shuttle riders to know when buses are expected to arrive at a stop and when service revisions – such as detours, cancelled trips, and stop changes – are made.

Graphic X: RouteShout 2.0

The Orbit Huntsville (formerly Shuttle) is a fixed route transportation network currently operating along ten (10) fixed routes utilizing thirteen (13) buses. Map X depicts the transit routes within the City of Huntsville.

Map X depicts the transit routes within the City of Huntsville. Hours of operation are 6:00 AM to 9:00 PM, Monday through Friday and from 7 a.m. to 7 p.m. on Saturday; excluding official City of Huntsville holidays. Graphic X depicts Service Span and Transfer Station Departures prior to January 2020. Orbit Huntsville serves 387 bus stops throughout the city and approximately 87 stops have shelters.

Route	Weekday				Saturday			
	Span	Frequency	Buses	Hours	Span	Frequency	Buses	Hours
1 Brahan Spring	6am - 10pm	30	2	32	7am - 8pm	60	1	13
2 Patton	6am - 10pm	30	2	32	7am - 8pm	60	1	13
3 Holmes/UAH	6am - 10pm	60	1	16	7am - 8pm	60	1	13
4 University Dr	6am - 10pm	30	2	32	7am - 8pm	60	1	13
5 Byrd Spring	6am - 10pm	60	1	16	7am - 8pm	60	1	13
6 Jones Valley	6am - 10pm	60	1	16	7am - 8pm	60	1	13
7 Meridian/A&M	6am - 10pm	60	1	16	7am - 8pm	60	1	13
8 Blue Spring	6am - 10pm	60	1	16	7am - 8pm	60	1	13
9 Oakwood	6am - 10pm	60	1	16	7am - 8pm	60	1	13
10 Pulaski Pike	6am - 10pm	60	1	16	7am - 8pm	60	1	13
Daily Totals			13	208			10	130
Annual Hours	59,384							

Graphic X: Service Span and Transfer Station Departures
Source: Huntsville Transit

The downtown Huntsville Bus Transfer Station is a central transfer point where all fixed routes connect for riders transferring between fixed routes. There are also several additional transfer points where routes cross and connections can be made. System headways are thirty minutes and one hour. Routes 1, 2, and 4 serve stops every 30 minutes. Routes 5 & 6 depart downtown 30 minutes apart, creating another 30-minute corridor through downtown on Church Street to Whitesburg Drive and L & N Drive. Routes 3, 7, 8, 9, and 10 operate on one-hour headways and connect with all buses downtown at the top of each hour.

Base fare is $1.00. Senior citizens, individuals with disabilities and students are $.50. The half fare provision is in effect for all hours of service and is not currently limited to off-peak times. An unlimited monthly pass is available at $30.00 and single ride ticket books ($18.00) are sold in the Huntsville Transit office.

Huntsville Transit also administers a demand response paratransit service, known as Access Huntsville (formerly Handi-Ride). In accordance with the Americans with Disabilities Act (ADA) of 1990, Access Huntsville is available to persons traveling within ¾-mile of the Orbit Huntsville fixed route network (defined as ADA paratransit zone) with a physical, visual, or cognitive disabling condition that prevents them from accessing or using Orbit Huntsville service. Separate and in addition to the ADA mandated paratransit zone, the City of Huntsville provides paratransit service beyond the ¾ mile threshold to the city limits (known as the City of Huntsville service area). Access operates with 25 vehicles, all of which are wheelchair lift equipped.

Operating hours are 6:00 am until 9:00 pm, Monday through Friday and 7:00am to 7:00pm on Saturday, excluding official City of Huntsville holidays. Riders must call to request a trip. Fares for Access Huntsville are $2.00 per trip with no discounted tickets or passes. There are no restrictions on trip purposes.

4. Alabama A&M University Shuttle

Alabama A&M University and Oakwood University provide campus transportation for their students, faculty, staff, and visitors. Alabama A&M has been a recipient of federal funds for implementation of a campus transportation system consisting of a fleet of 11 buses, and the construction of bus support facilities. Current transportation services provide for students to travel within campus on fixed routes and provide transportation services for student to local shopping destinations and off campus on weekends.

Operating hours are from 7:00 am through 11:00 pm Monday through Friday and as needed on weekends. Fares are charged as transportation and parking fees. The university has future plans to expand service and infrastructure, procure more buses/rolling stock expand/build maintenance facility and garage, parking garage, pedestrian walkways, bus shelters, Intelligent Transportation System (ITS), and Transit Asset Management System (TAMS). In 2018, the university won funding from the FTA Low or No Emission Grant Program for two electric buses and a charging station. These electric buses are the first in the region and serve the campus as part of the fleet described above. There are ongoing discussions of future grant efforts and eventual expansion of the region's electric bus fleet beyond the university campus.

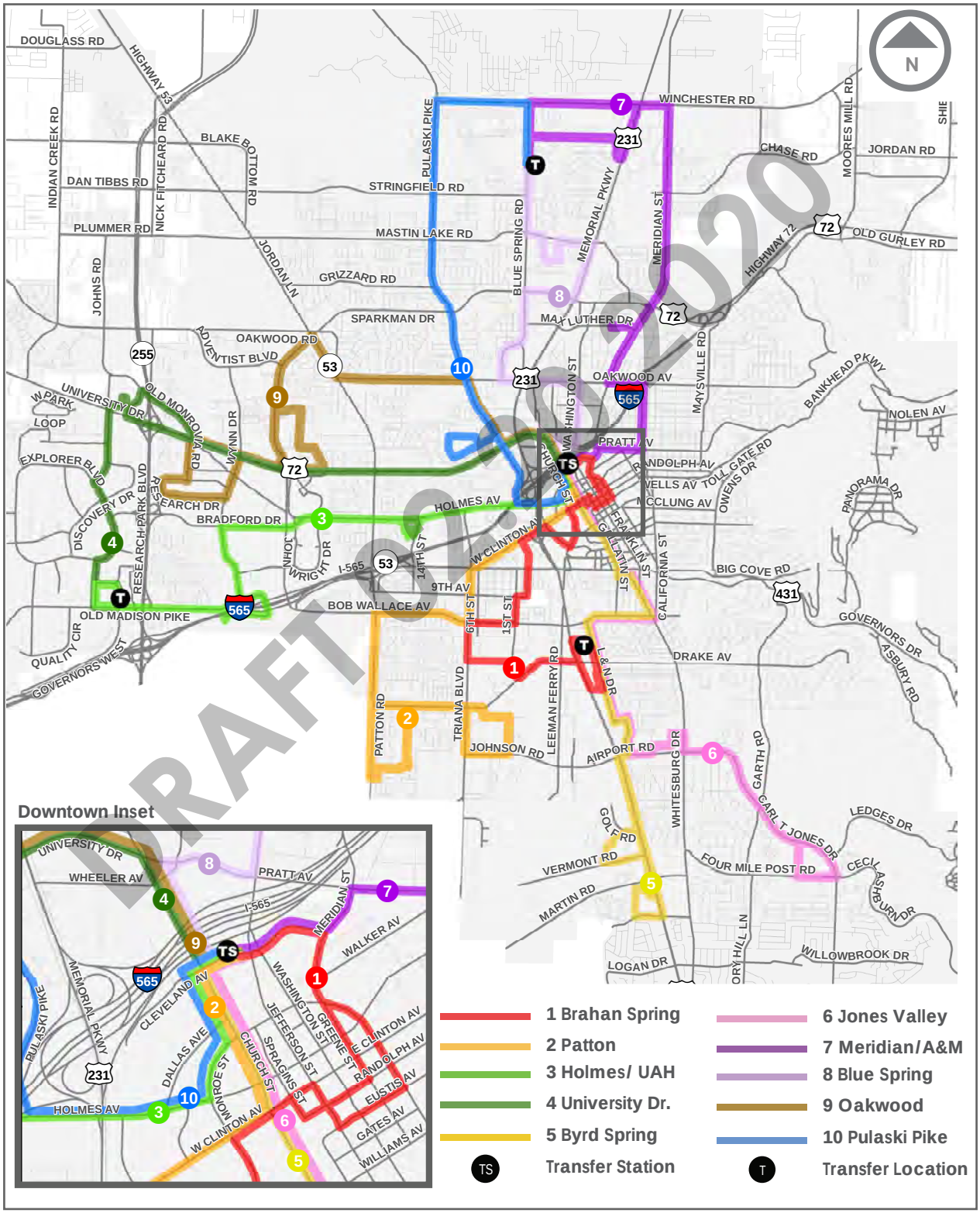
5. The University of Alabama in Huntsville (UAH) Shuttle

The UAH Shuttle is a Friday evening-only route intended to serve the general public and UAH students' shopping needs. The route operates as a large counterclockwise loop, with stops on UAH campus, the University Drive Walmart Supercenter, Target, and Bridge Street Town Centre shopping mall. It does not serve the Transfer Station. The UAH Shuttle helps fill a nighttime mobility gap for UAH students by effectively extending the western service area of Routes 3 and 4 to 10:15 p.m.

6. Oakwood University

Oakwood University provides transportation services for all campus students, for day time and evening classes, field trips, activities, and worship services. Additionally, the university follows a scheduled route for transporting their off campus students. They have been recipients of FTA's previous Section 5309 funds.

Map X: Huntsville Orbit Bus Routes



Source: City of Huntsville GIS

- **Rideshare: CommuteSmart**

https://www.commutesmart.org/huntsville/

The Rideshare program now operates through the CommuteSmart system online that links all major cities in Alabama. A person can call or go online and find if anyone is going in their general direction within the city proper or throughout Alabama. This service is promoted through signs located throughout the city.Certain human service agencies provide demand response services for their clients, and have received federal funding to provide for capital vehicle purchases. These organizations include the ARC Opportunity Center, Ability Plus, and the Huntsville-Madison County Mental Health Center. The provision of transit services to their own clients alleviates the need for TRAM, Huntsville Access, and MARS to do so.

Transit Systems Needs Assessment

The City of Huntsville, City of Madison, as well as rural Madison County, have experienced significant growth over the last 50 years. Huntsville's population increased dramatically during the space race and subsequent defense buildup. This growth placed heavy demands on the public infrastructure during these peak growth times. Workforce in the military and space industries resulted in significant numbers returning to Huntsville and the surrounding area to retire. This, coupled with the aging of the Baby Boom generation over the next 25 years, should mean significant increases in senior citizens and disabled residents. It is anticipated that services utilized by these populations will need to be expanded and enhanced to meet the demand.

As roadways near their capacity, efforts to encourage alternative modes of commuting, such as the transit and CommuteSmart programs, will become essential. When used effectively, these programs can assist in reducing peak hour congestion and increasing existing roadway capacities for the future. Increased hours of operation, weekend service, reduced headways, and implementing advanced technology will be important in making the system more appealing to commuters.

Because the City of Huntsville still qualifies for capital eligible operating expenses up to the rate of 75% of appropriation, any increase in capital outlays will decrease the eligible operating funding.One of the key elements in effective reform will be the provision of low cost transportation alternatives for employment opportunities, job training, and related requirements for gainful employment. Effective public transportation services in Huntsville will be essential in helping to provide these opportunities as the needs continue to increase.

Finally, the increasing federal requirements to reduce air pollution due to automobile usage will necessitate more reliance on alternative transportation. Ridesharing, vanpooling, and public transit will all play an increasing role in meeting these goals. With the changing status of environmental laws, Huntsville may become a nonattainment area for ozone. If this occurs, additional resources and efforts in the area of Ridesharing services will be necessary.

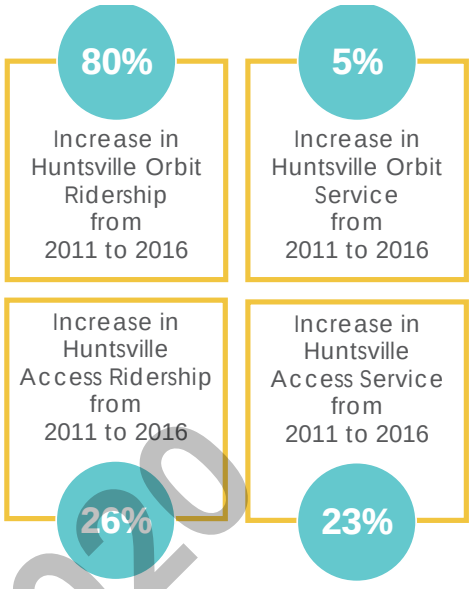
Current Ridership, Future Plans and Opportunities

1. City of Huntsville

The 2019 Huntsville Transit Study Final Report states that Huntsville Orbit ridership increased 80% from 2011 to 2016, while service increased by less than 5%, indicating an increasing demand for transit. Ridership is high along University Drive, at major shopping centers, and in dense, low-income neighborhoods. Demand for paratransit service, which primarily transports seniors to medical and social service destinations, has also increased at a significant rate.

Huntsville Access ridership increased by 26% while service increased by 23%, between 2011 and 2016, far outpacing the 10% increase in senior population over the same time period.* System headways are thirty minutes and one hour.

In 2018, rider feedback obtained through on-board surveys, community meetings, online surveys, and bus drivers revealed that existing riders overwhelmingly prefer Saturday service, later evening service, and increased frequency over other service and capital investments. These improvements were then implemented in July, 2019. The new fixed route network design replaced four (4) one-way loop routes with more direct bi-directional service reducing trip times and the need to transfer.



Graphic X: Ridership & Service Trends
Source: Huntsville Transit Study Final Report, January 2019

5-Year Service Plan

Orbit Huntsville optimization and expansion recommendations are detailed in a 5-phase implementation plan depicted in Graphic X.

5-Phase Implementation Plan

PHASE 1 - 2019

The initial phase focuses on restructuring the entire Huntsville Orbit route network, adding Saturday service, adding later evening service on weekdays, and adding 30-minute service. Saturday service is existing riders' most desired service improvement. Huntsville Orbit will provide later evening service until 9 p.m. on weekdays. Routes are re-designed and loop routes are replaced with two way service to improve convenience. Underutilized service is reallocated to areas with greater ridership potential. Mobility is improved in North Huntsville with a new route along Pulaski Pike and a new transit hub at the Showers Recreation Center and Library. Service is increased to employment centers.

The approximate incremental annual cost of Phase 1, excluding capital costs, is $600,000.

PHASE 2 - 2019

The second phase focuses on upgrading the redesigned Route 1 to 30-minute service on weekdays. Route 1 will serve downtown destinations, public senior housing, the Senior Center, Parkway Place, and Walmart on L&N Drive.

The approximate incremental annual cost of Phase 2, excluding capital costs, is $150,000.

PHASE 3 - 2021

The third phase addresses riders' second-most desired service improvement by extending service to 10 p.m. on weekdays and 8 p.m. on Saturdays for all routes.

The approximate incremental annual cost of Phase 3, excluding capital costs, is $200,000.

PHASE 4 - 2022

The fourth phase upgrades Routes 3, 7, and 8 to 30-minute service on weekdays to improve systemwide connectivity and improve access to University of Alabama-Huntsville, Alabama A&M University, Calhoun Community College, and Drake State College.

The approximate incremental annual cost of Phase 4, excluding capital costs, is $450,000.

PHASE 5 - 2023

The final phase of the service plan upgrades Route 4 to 15-minute frequency, setting the stage for future BRT implementation.

The approximate incremental annual cost of Phase 5, excluding capital costs, is $300,000.

Graphic X: 5-Year Service Plan
Source: Huntsville Transit Study Final Report, January 2019

** Values need to be updated to reflect changes post implementation of the 2019 Transit Study.*

5-Year Capital Plan

Implementation of the 5-year service plan requires several capital investments.

- **Vehicles**

Implementation of the service plan requires six additional buses over the 5-year implementation period. The local share for each bus purchase is approximately $120,000. The City of Huntsville should consider purchase of higher-capacity 40-foot buses for certain routes. New technology options can be considered for these vehicles, such as electronic fareboxes, automatic passenger counters (APCs), and pre-installed automatic vehicle location systems. All vehicles are also expected to be re-branded as either Orbit or Access.

- **Bus Stops**

New bus stop signage is recommended to provide essential information, including routes served, contact information, and a unique identification number for trip planning and feedback purposes. The cost of purchasing and installing new signage is approximately $100,000.

- **Showers Transit Center**

North Huntsville's Showers Center is a vibrant community center featuring a library and multiple recreation options. The service plan recommended increasing transit access at the Showers Center by having it serve as a hub for Routes 7, Route 8, and Route 10. Creating a transit hub at the Showers Center improved access to the community center, as well as created a safe and inviting connection point for riders that do not need to travel out-of-direction to the downtown Transfer Center.

As part of the 2019 Transit Study, a new transfer station was added at the Richard Showers Center. This included a new awning, lighting, benches, and a newly donated bicycle repair station, thanks to the Spring City Cycling Club. Three bus routes transfer at this location, creating greater convenience and efficiency for riders, many of whom no longer have to ride to the downtown transfer center to complete their trips. Additionally, ridership increased in North Huntsville more than any other portion of the service area after the 2019 study implementation.

Image X: Showers Center Transit Center
Source: City of Huntsville

- **Pedestrian Infrastructure**

Every fixed-route transit rider is a pedestrian, and infrastructure improvements are needed to ensure safe pedestrian access to existing bus stops. As a result, the 5-year capital plan recommends several crosswalks and sidewalk extensions across the city.

- **Rider Information**

Clear and concise transit information is extremely important to existing and potential transit riders. Huntsville Shuttle has the opportunity to improve rider information by developing a new rider guide and designing a stand-alone website. In the future, the City of Huntsville should also make its route, schedule, and real-time arrival information publicly accessible to promote the development of additional transit apps that are increasingly appealing to a wider range of riders.

Several additional policy and non-fixed-route transit recommendations to improve transit efficiency, transparency, equity, and cost-effectiveness can be found in the Huntsville Transit Study Final Report.

2. City of Madison

The 2040 Transportation Master Plan highlights that Madison currently has no generally accessible public transit service othen than MARS. However, given the existing and projected travel conditions along Highway 72, the demand for transit to serve the retail uses along the corridor will likely increase. The demand for transit may also increase in response to projected employment opportunities in the areas of Huntsville adjacent to Madison on the east. Many employers may also become interested in participating in ridesharing and/or carpooling programs.

The Plan recommends the addition of a new transit service via 4 transit corridors. Corridors identified include Highway 72, Madison Boulevard, Hughes Road, and Sullivan Street/Wall Triana Highway. Without having existing services to gauge transit propensity and/or ridership characteristics, the primary indicators for any potential new transit services are existing and projected traffic volumes and roadway congestion levels. Other indicators for potential transit service are the presence of higher density residential and employment concentrations and connections to activity centers, retail uses, and/or community facilities. Detailed information can be found in the City of Madison 2040 Transportation Master Plan.

Transit System Performance Measures

FAST Act requires States and MPOs to establish performance targets that address national performance measures issued by the U.S. DOT. These performance measures are based on goals outlined in law: safety, infrastructure condition, congestion reduction, system reliability, economic vitality, environmental sustainability, reduced project delivery delays, transit safety, and transit asset management.

1. Safety Management System (SMS)

The City of Huntsville Public Transit recognizes that the management of safety is a core value of the business. The management team will embrace the Safety Management System and is committed to developing, implementing, maintaining, and constantly improving processes to ensure the safety of employees, customers, and the general public. All levels of management and frontline employees are committed to safety and understand that safety is the primary responsibility of all employees.

Huntsville Transit is committed to:

- Communicating the purpose and benefits of the Safety Management System to all staff, managers, supervisors, and employees. This communication will specifically define the duties and responsibilities of each employee throughout the organization and all employees will receive appropriate information and SMS training.
- Providing appropriate management involvement and the necessary resources to establish an effective reporting system that will encourage employees to communicate and report any unsafe work conditions, hazards, or at-risk behavior to the management team.
- Identifying hazardous and unsafe work conditions and analyzing data from the employee reporting system. After thoroughly analyzing provided data, the transit operations division will develop processes and procedures to mitigate safety risk to an acceptable level.
- Ensuring that no action will be taken against employees who disclose safety concerns through the reporting system, unless disclosure indicates an illegal act, gross negligence, or deliberate or willful disregard of regulations or procedures.

- Establishing safety performance targets that are realistic, measurable, and data driven.
- Continually improving our safety performance through management processes that ensure appropriate safety management action is taken and is effective.

2. Transit Asset Management (TAM) Plan

The broadest goal for TAM is to provide a highly reliable public transit service to the public. This is achieved by tracking the age and condition of all assets to ensure reliable vehicles, equipment, and facilities that a consistent capital replacement plan is maintained. By ensuring a consistent age and condition, maintenance and customer service standards (such as low # of fixed route and paratransit service interruptions) are realized, maintenance costs are more predictable and future needs and funding requirements are more easily forecasted.

Listed below are TAM Goals:

- Goal 1: Ensure that the occurrence of fixed route service interruptions is less than 1% of all Main Transfer Station departures.
- Goal 2: Ensure 99% availability of a 18 bus daily pullout of paratransit service
- Goal 3: Implement the Service and Capital plan with 5 years

Targets for the fixed route fleet and paratransit fleet are established based on the useful life of each vehicle, forecasts of capital replacement funds, and spare ratios needed to ensure minimum service interruptions.

- All transit assets are tracked and reported according to current FTA requirements and updated as assets are retired or purchased/replaced.
- All written asset maintenance plans are followed and reported on according to current FTA requirements. These plans ensure adherence to standard practices and promote the safe and secure performance of assets and services.
- MPO Adopted Huntsville Transit PM TAM plan in 2018. A January 2020 TAM update is underway.

Financing of Transit Services

Financing of public transportation services for Madison County and the City of Huntsville include funding from the Federal Transportation Administration, local sources, and fare revenues. The financing of Madison's paratransit program is dependent upon local revenues. Alabama A&M University and Oakwood University's transit program may use federal grant monies for the purchase of rolling stock. Specific federal funding programs for transit in the Huntsville area are provided by the Federal Transit Administration. The source for program descriptions is available at https://www.transit.dot. gov/grants

Section 5303 – Metropolitan Planning Programs

This program provides for transportation planning in the MPO area, to include transit services. The State of Alabama combines FHWA Planning Funds (PL) and FTA Section 5303 Funds into the same category for allocation and distribution purposes. Funds are allocated to MPOs for planning activities and for the development of Transportation Improvement Program and metropolitan transportation plan documents that include transit programs, projects, and initiatives. Under MAP-21/ FAST Act, there is a requirement to establish a performance-based planning process. TAM Performance Measures are attached in Appendix X of this plan document. Matching funds for the Section 5303 program are paid for by the City of Huntsville, per financial agreement.

Section 5307 – Urbanized Area Formula Grants
This program provides grants to Urbanized Areas for public transit capital and planning. Operating expenses are eligible for areas with population less than 200,000 or areas with population greater than 200,000 that operate no more than 100 buses in fixed route service during peak hours. The City of Huntsville funds its fixed route system through this grant as well as its paratransit program. Matching funds for the Section 5307 program locally are paid for by the City of Huntsville. Activities that were eligible under the former JARC program are now eligible under this program.

Section 5310 – Enhanced Mobility of Seniors and Individuals with Disabilities (EMSID)
This program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve the special needs of transit-dependent populations beyond traditional public transit services and Americans with Disabilities complementary paratransit services. Section 5310 monies in the past have funded buses for human service agencies such as Ability Plus, the Mental Health Center, and the opportunity Center. Matching funds for the Section 5310 program locally are paid for by the project sponsor.

Additionally, activities that were eligible under the former New Freedom program are now eligible under this program. Matching funds for any EMSID projects under this section are to be paid for by the project sponsor. Recipients of funds must continue to certify under FAST Act that projects selected are included in a locally developed, coordinated public transit-human services transportation plan. Locally, the Top of Alabama Regional Council of Governments (TARCOG) developed a Human Services Coordinated Transportation Plan (September 2017) for the northeast Alabama region, which includes the non-metropolitan areas of its five-county region.

The Huntsville Area MPO contracted with TARCOG to amend their coordinated plan to include the metropolitan area of the Huntsville Area Transportation Study. In addition, TARCOG administers a competitive grant selection process to ensure a fair and equitable distribution of EMSID funds. In 2019, Huntsville Transit was awarded 5310 funds for the purchase of four vehicles to expand paratransit service beyond the ADA zone all the way to the city limits.

Section 5311 – Rural Area Formula Grants
This program provides for capital, planning, and operating assistance to support public transit services in rural areas. Madison County's TRAM program receives funding through this grant program, with the federal appropriations funneled to rural areas through the State of Alabama. Matching funds for the Section 5311 program locally are paid for by the Madison County Commission. Activities that were eligible under the former JARC program are now eligible under this program. Matching funds for any JARC projects under this section are to be paid for by the project's sponsor.

Section 5339 – Bus and Bus Facilities Program
This program replaced Section 5309 under SAFETEA-LU and provides for capital funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. The funds are restricted to fixed route transit. Matching funds for the Huntsville Orbit program are paid for by the City of Huntsville. Additionally, sub recipients may be eligible for this funding if they are public organizations engaging in public transportation, including those providing services open to a segment of the general public, as defined by age, disability, or low income. Huntsville Transit is considering an upgraded transit facility project for 2021, using these funds.

The specific financing of transit operations, capital items, and the programming of funds, is found in Chapter 9: Financial Plan.

Bicycle - Pedestrian Infrastructure

Bicycling and walking are viable transportation alternatives throughout many communities within the North Alabama region. Whether for commuting or recreational enjoyment, the Huntsville Area Metropolitan Planning Organization (MPO) understands the importance of these activities to one's health, safety and general welfare. Therefore, the Huntsville Area MPO is committed to improving bicycle and pedestrian conditions throughout the region. The MPO member jurisdictions of Madison and Huntsville have adopted bicycle and pedestrian plans or policies aimed at increasing the awareness and benefits of non-motorized modes of travel.

Bikeways improve the quality of life in the community. A bikeable community significantly impacts the economy by attracting the growing number of cycling tourists, retirees and sporting events. Cycling also helps reduce parking congestion, motorized vehicle congestion and air pollution. Regardless of purpose or ultimate destination, the FHWA has determined cycling as a mode of transportation that is entitled to a place on the American roadway (within certain limits).

A Bicycle Pedestrian Plan seeks to provide links and resources within the larger transportation network, encouraging construction or development of dedicated and fixed facilities, bike trails on-road and off, improvements to existing structures. Much focus is on encouraging safe travels on roads and highways that also accommodate motorized vehicles. Other efforts are geared toward providing linkages between residential neighborhoods, shopping areas, and central business districts or traffic-heavy urban centers. TRiP2045 expands on the previous bicycle and pedestrian plans included in the Year 2040 LRTP. MPO member jurisdictions are implementing strategies and techniques to improve the ridership and safety of bicyclists and pedestrians within the Huntsville Area MPO.

To encourage the use of alternative means of transportation, these plans collectively will feature linked transportation facilities for bicyclists and pedestrians, encourage community-wide support of educational programs, and promote coordinated bicycle and pedestrian programs and services. The ultimate goal of the 2020 MPO Area Bike Plan is to provide bicyclists with a countywide system of non-motorized corridors for safe travel and recreational enjoyment.

FHWA Requirements

> ***"Livable communities that support bicycling and walking are a high priority of the U.S. Department of Transportation. A livable community is one that provides safe and convenient transportation choices to all citizens, whether it's by walking, bicycling, transit, or driving. The Federal Highway Administration's Bicycle and Pedestrian Program promotes safe, comfortable, and convenient walking and bicycling for people of all ages and abilities. We support pedestrian and bicycle transportation through funding, policy guidance, program management, and resource development."***
>
> *- U.S. DOT, FHWA Bicycle Pedestrian Program*
> *(Sourced from www.fhwa.dot.gov/)*

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 enacted significant changes to federal transportation policy and programs that expanded consideration of and eligibility for bicycling and walking. The Transportation Equity Act for the 21st Century (TEA-21) of 1998 and the Safe Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU) of 2005 continued these provisions.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012 enacted program changes and continued broad consideration and eligibility for bicycling and walking. The Fixing America's Surface Transportation (FAST) Act of 2015 allowed for additional design flexibility for projects that benefit pedestrians and bicyclists.

The statutory provisions affecting bicycling and walking are codified in titles 23 and 49 of the United States Code (U.S.C.). This guidance describes the range of opportunities to improve conditions for bicycling and walking, consistent with Department of Transportation goals for a safe, comfortable, equitable, and integrated multimodal transportation network infrastructure that serves all ages and abilities.

Detailed information on policies, regulations and legislation can be found at the FHWA website - https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/guidance_2019.cfm

Huntsville Area MPO Requirements

The Huntsville Area MPO has carefully considered the appropriateness of the areas designated for bicycle and pedestrian travel. The Huntsville Area MPO intends to create a mobility system for its citizens that will realize long term cost savings in terms of improved public health, reduced fuel consumptions, reduced demand for single occupancy motor vehicles and increased public safety through the Complete Street program. To meet this goal, the MPO gives full consideration to non-motorized transportation facilities designed for bicyclists and pedestrians, when planning for new construction and the reconstruction of transportation facilities.

According to Smart Growth America, Complete Streets are roads that are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. They can benefit all communities, regardless of whether they are rural, suburban or urban. Complete Streets are intended to be safe, comfortable, and convenient for all users regardless of age or ability—motorists, pedestrians, bicyclists, and public transportation riders.

Huntsville Area MPO Bicycle and Pedestrian Planning

The MPO partners with member jurisdictions to provide a regional view of interconnected bicycle and pedestrian networks and identifies a county wide system of corridors aimed at improving non-motorized transportation and accessibility. The focus of the MPO is to emphasize regional connectivity to provide a framework for the development and enhancement of bicycle and pedestrian facilities throughout the counties, cities and towns of the MPO study area.

With growing interests in walking, cycling and the safety of these modes of travel, the MPO has carefully considered the appropriateness of the areas designated for bicycle and pedestrian travel. The MPO has supported the following bicycle and pedestrian plans, which collectively feature a linked network of non-motorized transportation facilities throughout the MPO study area.

1. The 2020 MPO Area Bike Plan

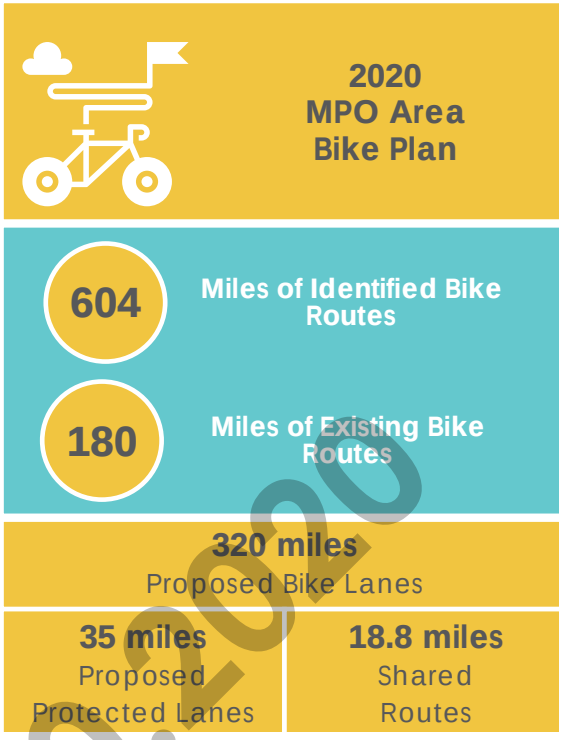
The goal of the upcoming 2020 MPO Area Bike Plan is to contribute to a healthy, active and livable community by improving bicycle and pedestrian infrastructure, increasing mobility and independence for those without cars, increasing capacity and ridership for local or public transit, thereby reducing health costs, travel times, noise and vehicle operating costs. The plan aims to develop a safe, continuous comprehensive network and to enhance non-motorized transportation facilities and projects throughout the metro area, by advancing education, enabling planning, and encouraging cycling.

The objectives for this plan include:

- Improving access to education facilities
- Addressing increasing levels of obesity within the MPO community
- Addressing lack of activities for young people
- Promoting good air quality

The plan also encourages the use of alternative means of transportation to promote active communities, and a bicycle friendly community with a transportation network supporting bicycles, pedestrians, transit, and motorists. It identifies bike routes that connect residential areas to major employers and shopping centers, covering a distance of over 604 miles throughout the MPO Area. There are over 180 miles of existing bike routes and 320 miles of proposed bike routes, of which 35 miles are proposed bike lanes.

The plan serves as a guide for improving bicycle activity and suggests education, promotion and policy projects to integrate bicycling into the existing transportation environment.

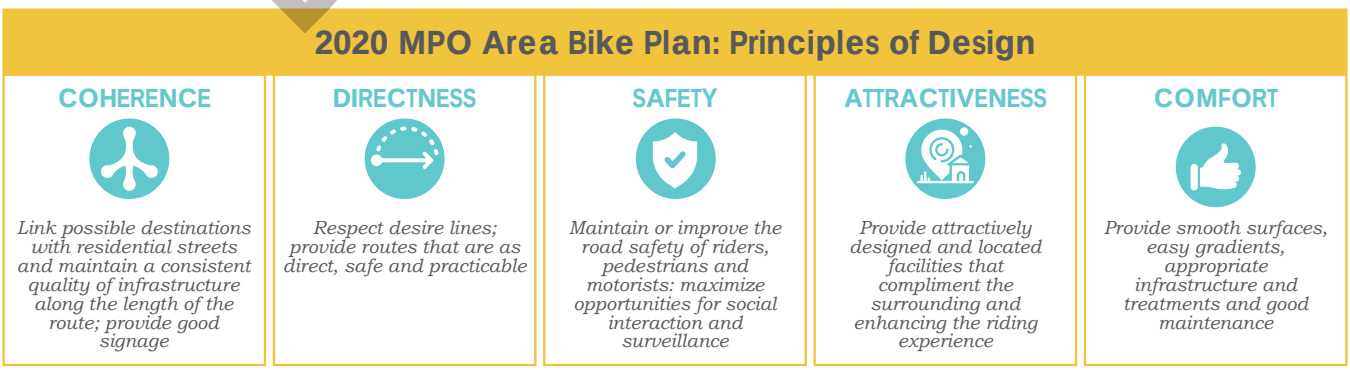


Graphic X: MPO Bikeway System
Source: 2020 MPO Area Bike Plan

Map X, shows an overall map of bike routes planned throughout the Huntsville Study Area. Graphic X depicts the 5 Principles of Design included in the Plan.

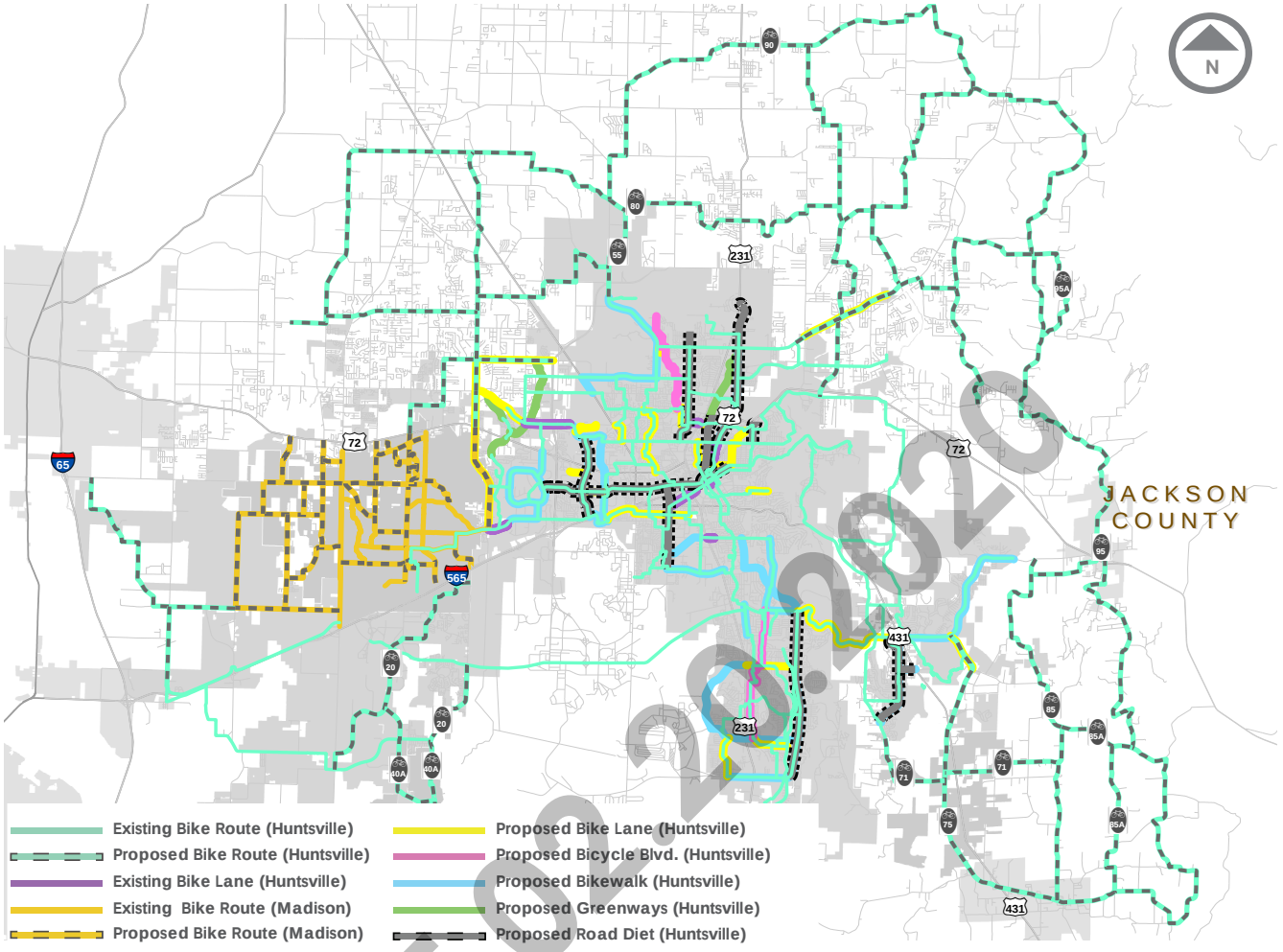
Performance Measures for the 2020 MPO Area Bike Plan includes -

- Number of bicycles observed as counts
- Number of bike racks installed around area
- Number of page views on bicycle website: www.bikehuntsville.com
- Number of fans on Facebook
- Percentage of roads with bike lanes or shoulders
- Number of linear greenway miles
- Double number of bicycle trips made in the City of Huntsville as a percentage of total trips by 2030
- Achieve a minimum of 80 percent good level of confidence and comfort for cyclists that ride in the City of Huntsville by 2030



Graphic X: Principles of Design
Source: 2020 MPO Area Bike Plan

Map X: Bike Plan 2020



Source: City of Huntsville GIS

2. The City of Huntsville Greenways Plan

The City of Huntsville Greenways Plan identifies over 200 miles of interconnected trails, which includes shared use paths for biking and walking as well as canoe trails and hiking trails for recreational enjoyment. The goal of this plan is to create and maintain a continuous greenway system of interconnected corridors that offer alternative non-motorized transportation to demonstrate the many benefits of greenways to the community. This includes access to facilities for recreation, increased quality of life and preserving cultural, natural and historic resources.

With approximately 7.3 miles of existing greenways and trails, local pedestrians and bicyclists will enjoy open space along natural features and scenic roadways throughout the Huntsville and Madison County area. Map X also shows the existing and proposed greenways and trails within the City of Huntsville, Madison County and Limestone County.

3. City of Madison Greenway Plan

In 2000 the Madison Greenway and Trails Committee, with assistance of the National Park Service, prepared a citywide plan for greenways and trails to guide the development of on and off-street facilities for pedestrians and bicyclists. At the time, a few sidewalk-lined streets, the multi-use path along Hughes Road and nature trails at the Rainbow Mountain Nature Preserve were the only bike-ped facilities in Madison.

The greenway and trail plan prioritized installation of sidewalks, bikeways, nature trails and multi-use paths based on their projected use, environmental context, linkage potential, funding opportunities and relationship to planned capital improvements. The City of Madison has since updated its Greenway Plan as part of its 2014-2025 Master Park and Recreation Plan which expands west into Limestone County. They city has initiated development of trails along Bradford and Mill Creeks, striped sharrows on Highland Drive, and constructed a multiuse path segment from Wall Triana to Hughes Road along Eastview Drive. Additionally, installation of sidewalks on major roads in concert with new development has also begun. Today, Madison has over 7.5 miles of multiuse corridors (including combined and separated paths) installed and open to the public, including a 2.5-mile segment of the Bradford Creek Greenway that was recently completed. Map X includes all future greenways and multi-use corridors projects along the major roads in the City of Madison.

4. The City of Huntsville Sidewalk Improvement Plan

http://bigpicturehuntsville.com/wp-content/uploads/2019/05/2019-Alternative-Modes-Review.pdf

The Sidewalk Improvement Program is an on-going effort by the City of Huntsville to maintain existing sidewalks as well as to construct sidewalk projects that provide connectivity to community facilities; thus encouraging an alternative means of transportation. The plan details a five-year schedule of prioritized sidewalk construction projects, allocating an annual budget of $300,000.00 for construction and $300,000.00 for maintenance. To learn more about the sidewalk program in Huntsville, see the Sidewalk Chapter of the 2019 Alternative Modes Review.

5. County Shared Bike Routes

The upcoming 2020 MPO Area Bike Plan highlights connecting bicycle routes, bike lanes and greenways throughout the counties, cities and towns of the MPO study area. These routes are depicted on Map X. These routes will be signed to alert cyclists and motorists of shared road usage while traveling on county roadways. The MPO will promote the use of Share the Road signs in efforts to alert motorists of the presence of bicyclists, thus encouraging and creating cooperative behavior, courtesy, and safety for both area cyclists and motorists. The use of Share the Road signs is an objective of the plan to enhance the existing bicycle and pedestrian programs by educating motorists and bicyclists on safe and effective ways to coexist – ultimately leading to a greater safe traveling environment for all.

Accessibility of Pedestrian Networks on State Routes

In 2017, ALDOT initiated a priority program for ensuring accessibility of sidewalks and pedestrian facilities. This is primarily done through retrofitting existing sidewalks along State Routes, and is managed by the ALDOT North Region Office. The State has dedicated over $500,000 to be spent in Madison County - including the cities of Huntsville and Madison - for the installation of curb ramps on various state routes. This action provides for public accommodation under the revised Americans with Disabilities Act Title III, codified under 28 CFR Part 36 Subpart D – New Construction and Alterations. According to the Department of Justice, the final rules went into effect on March 15, 2011.

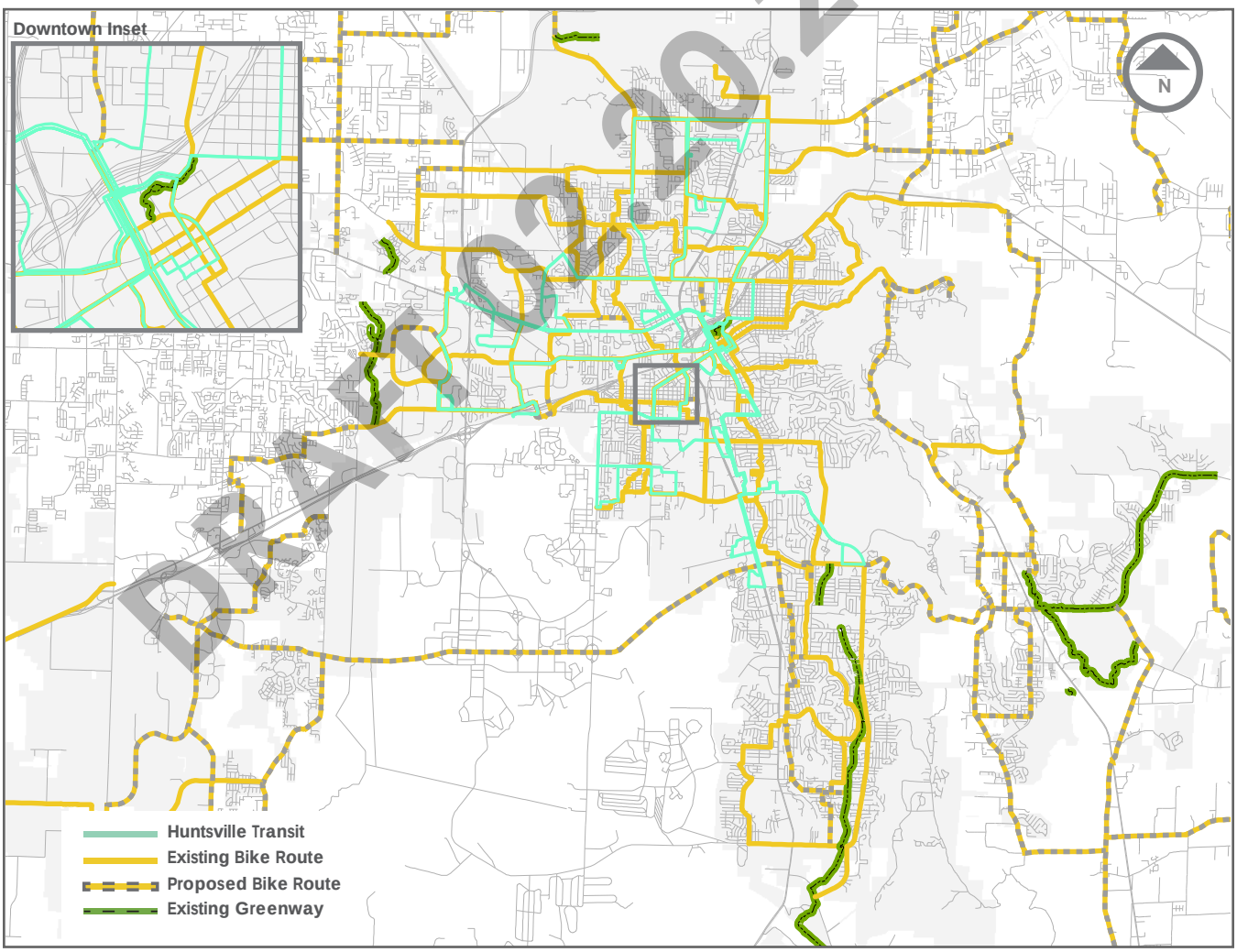
Bike and Pedestrian Accessibility to Transit

Federal regulations require that States and Metropolitan Planning Organizations accommodate pedestrians and bicyclists, especially to ensure the operability of an intermodal transportation system. In accordance with 23 CFR 450.322(f), metropolitan transportation plans shall, at a minimum include existing and proposed transportation facilities (including major roadways, transit, multimodal and intermodal facilities, pedestrian walkways and bicycle facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system.

The Huntsville Area MPO, as a provider of fixed route transit services, seeks to continue the provision of an integrated system of transportation modes that connects transit with bicycle and pedestrian facilities. During the 2013 TMA Certification Review, it was recommended by FHWA and FTA that the connectivity of transit routes to bike and pedestrian facilities be evaluated. FTA issued a policy in August 2011 regarding the eligibility of pedestrian and bicycle improvements for FTA funding, and defines the catchment area for pedestrians and bicyclists in relation to public transportation stops and stations. The policy is available at https://federalregister.gov/a/2011-21273

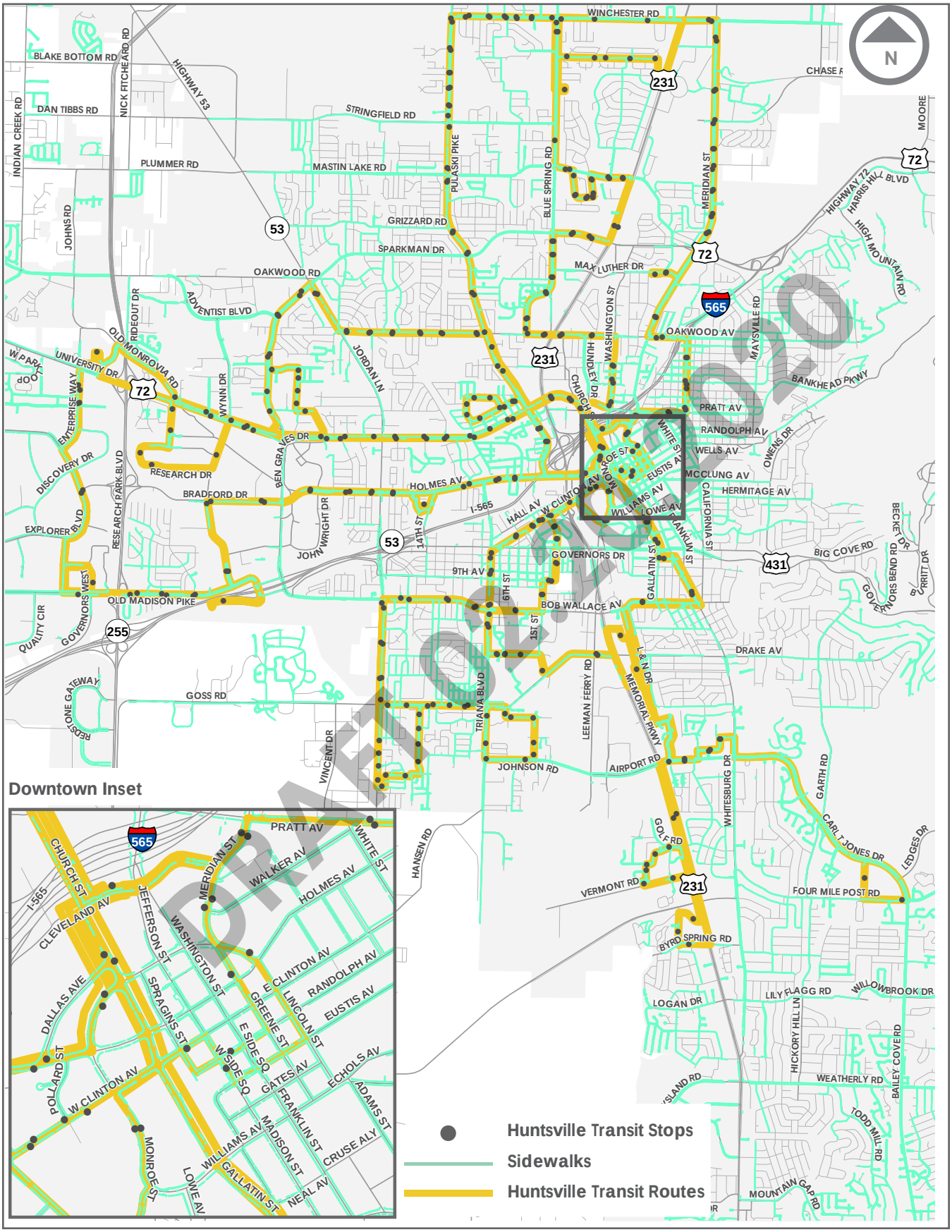
In essence, the MPO or local fixed route provider should seek funding to expand bus shelters and further sidewalk development within ½ mile of stops and within 3 miles for bike facilities. An assessment was performed of accessibility of transit routes using bike and pedestrian facilities. Map X shows transit routes, and the existing sidewalk facilities and current and proposed bike facilities available along the routes. Bike facilities are available or will be available within 3 miles of a transit route. All of Huntsville's fixed route buses accommodate bicycles through bike racks that are installed on the buses. The location of future transit shelters have been identified by Huntsville Public Transit, and funding has been secured to construct a limited number of those. Sidewalk deficiencies were noted and are planned.

Map X: Bike Access to Transit



Source: City of Huntsville GIS

Map X: Pedestrian Access to Transit



Source: City of Huntsville GIS

Transportation Alternatives (TA) Set-Aside Program

The FAST Act replaced the Transportation Alternatives Program (TAP) with a set-aside of STBG funding for Transportation Alternatives (TA). The TA Set-Aside Program provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; etc. TA activities are transportation-related initiatives that are designed to strengthen the cultural, aesthetic, and environmental aspects of the intermodal transportation system.

Under 23 U.S.C. 133(h) eligible activities under the TA program are depicted in Graphic X. Transportation Alternatives as defined in pre-FAST Act 23 U.S.C. 101(a)(29) include:

A. Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.

B. Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.

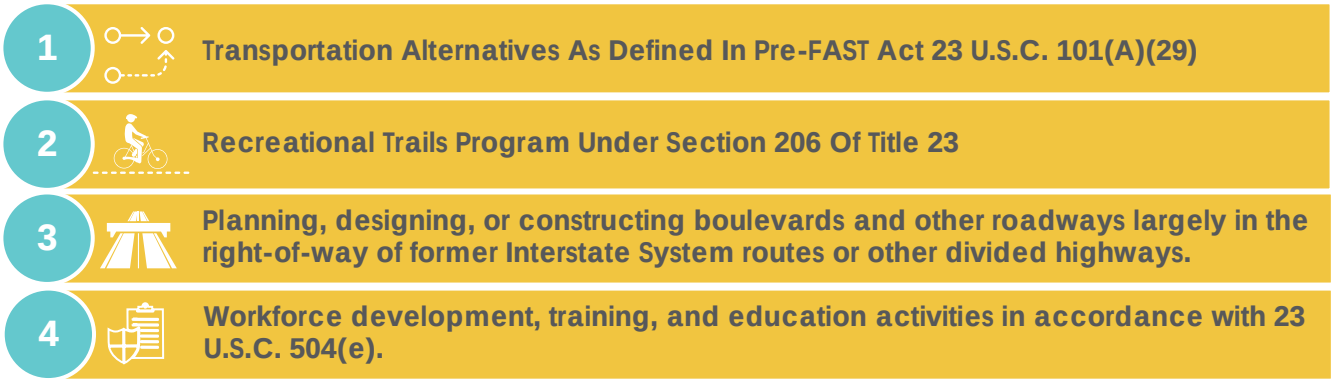
C. Construction of turnouts, overlooks, and viewing areas.

D. Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other nonmotorized transportation users.

E. Community improvement activities, including –
- Inventory, control, or removal of outdoor advertising
- Historic preservation and rehabilitation of historic transportation facilities
- Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control
- Archaeological activities relating to impacts from implementation of an eligible transportation project

F. Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to –
- Address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff, including activities described in sections 133(b)(3), 119(g), 328(a), and 329 of title 23
- Reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats

The Alabama Department of Transportation (ALDOT) accepts transportation enhancements project applications. A thorough review, which includes a five step process, is conducted annually to determine projects selected for funding. Through the Bicycle and Pedestrian Planning, the Huntsville Area MPO can ensure that bicycle and pedestrian accommodations will be more fully integrated into local, state and regional transportation improvements. As federal transportation policy with regards to bicycle and pedestrian accommodations evolves, new funding opportunities are made available to enhance the non-motorized transportation network.



Graphic X: Transportation Alternatives (TA) Set-Aside Program
Source: U.S. DOT FHWA A Guide To Federal-Aid Programs And Projects

TRiP2045 prepares the ground work for the governing body and the citizens of the Huntsville MPO Area to begin working toward a more bike friendly community. This plan offers various options to follow and resources which, if tapped, can create the opportunities necessary to reach this goal. This plan is a working document and, as such, it is not static. Thus opportunities for implementation may change, and the plan may require updates and/or amendments.

Planned Bicycle and Pedestrian Projects

Other factors considered in the feasibility of bicycle and pedestrian projects include traffic volume, connectivity, cost, land acquisition and safety. Currently, the Huntsville Area MPO has federal and local funds allocated for planned transportation enhancement projects aimed at increasing the quality of life for bicyclists and pedestrians. The City of Huntsville, through capital funding, allocates $600,000 per year in sidewalk construction and sidewalk improvement projects.

Table X displays the Huntsville MPO future transportation projects in TriP2045 and how these projects will address or consider bicycle and pedestrian travel. Maintenance and Operations (MO) projects are displayed in this section as well. These projects include the installation of bicycle route signs in order to accommodate bicyclists. Projects listed in Table X are identified as paved bike lanes, road diets/ protected bike lanes, sidewalks, paved shoulders, share the road bike route, greenways (shared use paths), green streets, and pedestrian corridors. These projects can be further defined as follows:

- **Paved Bike Lane:**

A corridor expressly reserved for bicycles existing on a street or roadway in addition to any lanes for motorized vehicles.

- **Road Diet/Protected Bike Lanes:**

A typical road diet serves to reduce the number of lanes on a roadway and a barrier is placed between the driver and the cyclist to improve safety for pedestrians and bicyclists.

- **Paved Shoulders:**

Refers to the part of the highway that is adjacent to the regularly traveled portion of the highway and is on the same level as the highway.

- **Share the Road/Bike Routes:**

A facility shared with motorists and identified only by signs. A bicycle route has no pavement markings or lane stripes. A street which is recommended for bicycle use but does not have a specific area designated within the right of way.

- **Sidewalk:**

An improved pedestrian surface that is typically located adjacent to a roadway.

- **Greenway (Shared-Use Path):**

A linear park, alternative transportation route, or open space conservation area that provides passive recreational opportunities for pedestrian and/or bicycle paths.

- **Green Streets:**

Well-landscaped, tree-lined streets with bicycle and/or pedestrian facilities that provide attractive, functional routes between city parks and other community destinations.

- **Pedestrian Corridors:**

A pedestrian system from the edge of the roadway to the edge of the right-of-way, generally along the sides of streets, between street corners.

All paved bike lanes, share the road/bike routes, and sidewalks are typically constructed on both sides of the street. Greenways, shared use paths, pedestrian corridors, and green streets are typically constructed on one side of the street, or will provide a single transportation route beside or near the planned road improvements listed in Section X. Additional details concerning the exact placement of greenways, green streets, and pedestrian corridors will not be known until engineering design can begin. As mentioned in Section X, several corridors have been identified that cannot accommodate bicycles and pedestrians because the corridor is a limited access or controlled access roadway, or are U.S. routes and carry high volumes of traffic.

Insert table with bike ped projects

Last-Mile Connectivity

"Last Mile Connectivity" refers to the final mile between destinations and accessible public transit and alternative transportation options. This planning term is used when transportation planners and engineers attempt to find connecting routes between people's origins, destinations, and the closest transit stops at both ends. A radius of one-mile is often drawn around each transit stop and potential bike and pedestrian routes, as well as ADA accessibility, within that mile radius are determined for access between transit and nearby destinations.

The member jurisdictions of the Huntsville-Area MPO each invest in multi-modal infrastructure differently and use methodologies unique to their communities and residents' needs. The City of Huntsville is the only member jurisdiction with a fixed-route public transit system, including bus stops. However, other jurisdictions address last-mile connectivity for residents using alternative modes of transportation to access destinations within one mile. Alternative Modes projects such as greenways, trails, sidewalks, ADA compliance accessibility, bike lanes, scooters, and bike routes all contribute to last-mile connectivity in the MPO Area.

New in Last-Mile Connectivity: Autonomous Vehicles

MPO Staff have received training on the possibility of autonomous vehicles (AVs) to meet the last-mile gap in transportation at national and regional MPO conferences. The Huntsville-Area MPO supported two different grants for AV Testing Grounds in Huntsville -

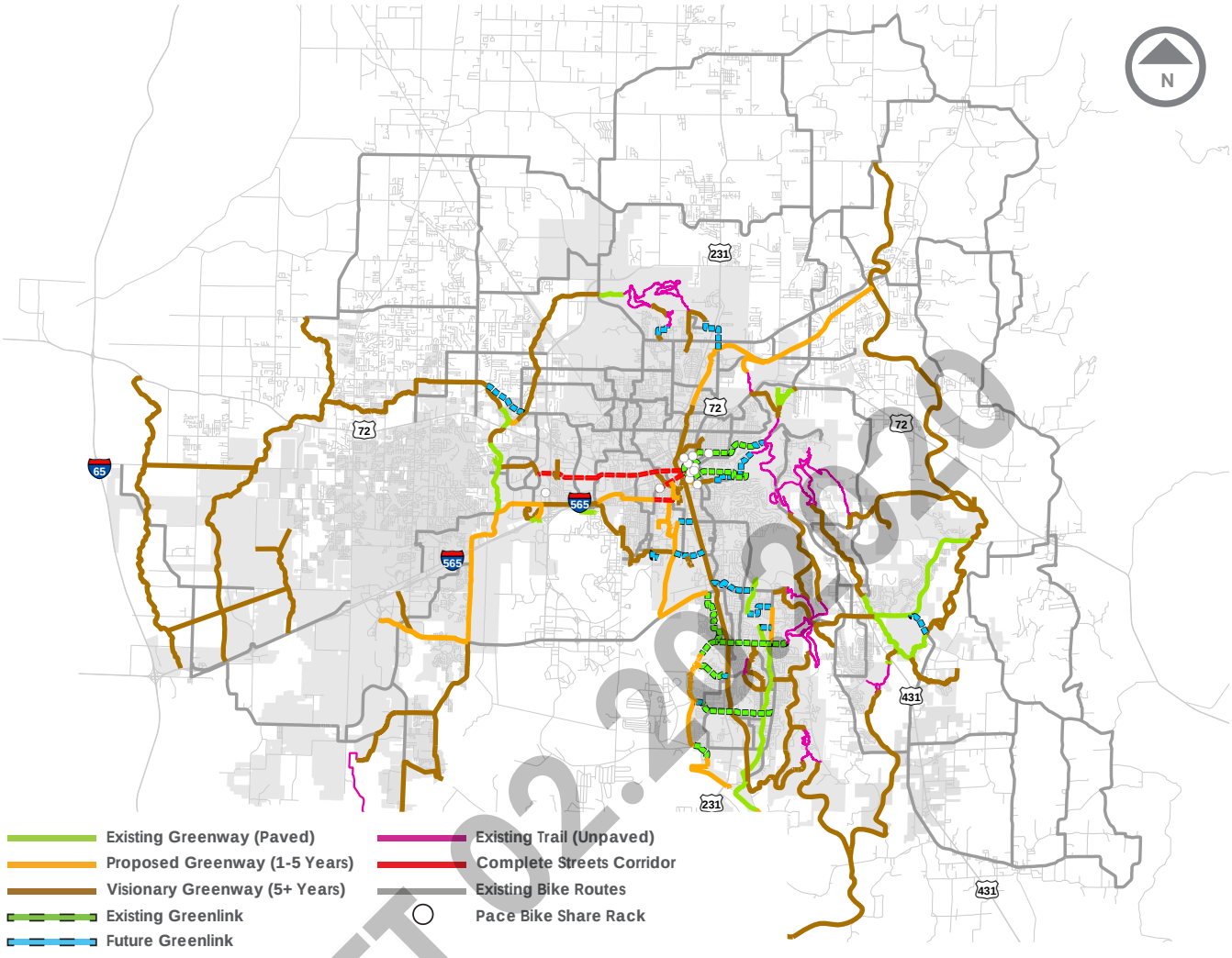
1. Cummings Research Park AV testing ground:
An autonomous vehicle testing ground grant with the Huntsville Chamber of Commerce would have placed an autonomous vehicle on a closed-loop of Research Park to circulate employees between business campuses and to food and shopping destinations in CRP.

2. Redstone Arsenal and Redstone Gateway:
A three-year AV testing pilot program was envisioned to begin implementation with an AV fixed-route on Redstone Arsenal, including the incorporation of smart technology at intersections. After troubleshooting in the first two years, the goal of the program was to take AVs 'outside the gate' to the Redstone Gateway development just north of Gate 9. The Huntsville-Area MPO intends to continue to support such efforts by member jurisdictions and other regional partners to test autonomous vehicles in the MPO-Area for last-mile connectivity. The Huntsville-Area MPO is also investigating smart-cities technologies such as traffic signalization which is responsive to autonomous vehicles. Either of these options could arrive as pilot programs in the MPO-Area within the next five years.

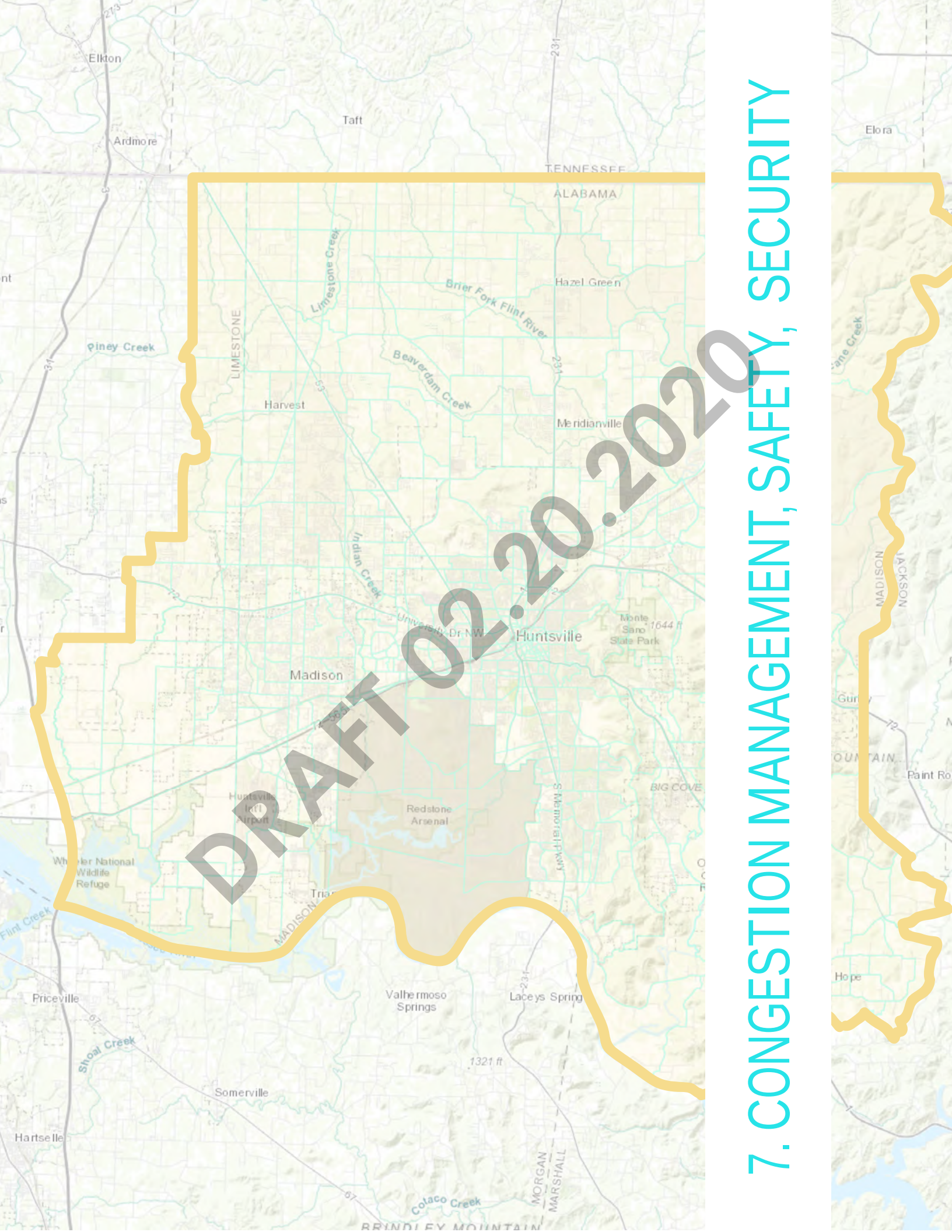
By 2045, it is anticipated that some percentage of the vehicles moving on the area's transportation infrastructure will be autonomous vehicles. Future long-range transportation plans may be modeled after other MPO areas whose plans already include AV chapters. A future AV chapter would include funding, policymaking, and planning for autonomous vehicle infrastructure and smart cities technology innovations. The state of Alabama is still developing AV policy and recommendations, local jurisdictions cannot move forward with AV implementation until statewide safety and regulation legislation is established.

As part of the TVA project, the City of Huntsville own 6 electric vehicle charging stations - two on Fountain Circle (Downtown), two at Chase Industrial Park, and two at Bridge Street. Responsibility for the Bridge Street charging stations have since been transferred; however the City still owns the remaining four stations.

Map X: Alternative Modes



Source: City of Huntsville GIS



7. CONGESTION MANAGEMENT, SAFETY, SECURITY

2020 Commuter Study

The Congestion Management Process (CMP) is completed as a separate MPO planning effort from the Long Range Transportation Plan. The TRiP2045 planning document is updated from the Year 2040 Transportation Plan, with the exception of this chapter. This chapter and the CMP will be fully updated in FY2021 by Metro Analytics and MPO staff using data and analysis gathered during the ongoing MPO Regional Commuter Study which began in November, 2019.

All final deliverables for this Commuter Study are to be presented to the Huntsville-Area MPO in November, 2020 and will be incorporated into this TRiP2045 document as the updated CMP at that time.

Graphic X: Commuter Study

What follows beyond this executive summary are some minor narrative updates- mainly references to newer versions of documents and federal regulations as well as updated maps, where applicable. Otherwise, the text of the Year 2040 CMP is mostly unchanged and awaits the updates of the Huntsville-Area MPO Regional 2020 Commuter Study.

Executive Summary

Congestion Management, Safety Management, and Security of the transportation system form three major program elements to be considered in the planning process. These elements serve to increase the mobility of persons and freight that utilize the transportation system and to eliminate or mitigate hazards on the transportation network.

TEA-21 legislation required a Congestion Management System be developed for Transportation Management Areas, such as the Huntsville Urbanized Area. The SAFETEA-LU legislation changed the requirement to a Congestion Management Process, and the MAP-21/FAST Act legislation continues that requirement. The Congestion Management Process provides for effective management and operations, and an enhanced linkage to the planning and environmental review process based upon cooperatively developed travel demand reduction, operational management strategies, and capacity increases.

Recently, there has been a focus upon livability concepts and their relationship to transportation planning, especially in managing congestion on the transportation network. In addition to congestion management, the MAP-21/FAST Act considers the importance of two planning factors: the safety and security of the transportation system, and added emphasis upon maintenance and operations strategies. Since these factors are clearly integrated within Congestion Management, they will be included in this section as well.

All three elements addressed in this section are interrelated, and also utilize management and operations strategies to ensure the network is effectively and efficiently managed in terms of congestion, safety, and security. It is through the implementation of these management and operations strategies as well as other initiatives identified in the section, that improvements to congestion, safety, and security can be made upon the network. Periodic monitoring of the network will be performed to ensure that implemented strategies and projects are effective and that ongoing activities remain successful.

Progress on Projects Listed in the CMP of the 2040 LRTP

- **1: Memorial Parkway from Bob Wallace to Clinton Avenue**

Between 2015 and 2020, some but not all recommendations of the 2040 CMP have taken place on this corridor. Improved traffic signal coordination, pedestrian connectivity and geometric improvements at intersections have occurred within these limits. Additionally, the City of Huntsville has completed the design and continues to pursue a federal grant to improve bicycle and pedestrian safety across Memorial Parkway to connect the community with job centers downtown. Additionally, the City, in partnership with the State has launched a corridor study at the I-565 and Memorial Parkway interchange to study lane configuration and capacity issues at the heavily used interchange.

- **2: US 72 West from Hughes Road to Providence Main Street**

The State continues to move forward with design efforts to widen this corridor to 6-lanes through multiple jurisdictions. The new scope is between Providence Main Street and County Line Road. The project also includes pedestrian and bicycle connectivity to future greenways in the area. Access management and intersections improvements have been performed at some intersections. The State and the cities of Madison and Huntsville continue to work together to move this project forward to acquisition and construction to reduce congestion as recommended in the 2040 CMP.

- **3: Research Park Boulevard from I-565 to US HWY 72**

Widening of Research Park Boulevard between US Hwy 72 and Old Madison Pike is currently under construction and part of the 2020-2023 TIP. The project limits have purposefully been changed to Old Madison Pike to avoid the I-565 interchange. Additionally, Redstone Arsenal expanded access and capacity at Gate 9 by adding additional lanes and moving the gate entrance further south in order to increase allowable stacking distances on the Rideout Road (Research Park Boulevard) near I-565 interchange.

The Resolute Way interchange described in the Year 2040 CMP has also been added to the 2020-2023 TIP as a Regionally Significant Project in which the City of Huntsville and Redstone Arsenal continue to work together to define a corridor. The State continues to evaluate options to improve I-565 and Research Park Boulevard interchange in conjunction with current and proposed improvement projects within the area.

- **4: I-565 from I-65 to Wall Triana Highway**

This project was not completed by 2020. However, the 2020-2023 TIP includes multiple projects along this corridor in which ALDOT is undertaking to improve and widen I-565 between I-65 and County Line Road by resurfacing the existing roadway and restriping to include an additional lane in each direction. These projects are to begin construction in 2020. ALDOT is also near completion of interchange improvements at Greenbrier Parkway along I-565 to create a nonstop eastbound to northbound movement to help improve this corridor.

- **5: US 231 (Memorial Parkway) from Whitesburg Drive to Martin Road**

A new limited access major arterial has been completed along this corridor to include three overpasses, new mainline and service roads. This section of roadway provides a nine mile stretch of limited access highway, known as Memorial Parkway between north and south Huntsville.

- **6: US 231 from Mastin Lake Road to Winchester Road**

This project is listed in the current 2020-2023 TIP. ALDOT is currently in the process of completing the plans and acquisition to construct a new overpass at Mastin Lake Road to include access management improvements to Winchester Road. The first phase of work will consist of structure removals and clearing to prepare the site for utility relocations to begin in 2020. The project will provide ten miles of limited access highway connectivity along Memorial Parkway between north and south Huntsville.

- **7: US 72 East (ARC Corridor V) from Maysville Road to Moores Mill Road**

An interim project was completed by the State. Improvements consisted of adding a third left turn lane eastbound at Moores Mill Road to reduce stacking at the intersection. Also, a third through lane was added for westbound traffic through Moores Mill Road. However, upgrading this corridor to an expressway is still much needed as described in the 2040 CMP and funding has been reallocated to 2049.

- **Rank 8: Governors Drive from California Street to Monte Sano Boulevard**

The intersection improvements were completed in 2015. The widening of Cecil Ashburn Drive as described in the 2040 CMP is currently under construction. The City has completed a design to add capacity for eastbound traffic and will continue to seek grant funds to help improve stacking and capacity along this corridor.

- **9: Winchester Road from Moores Mill Road to Henson Drive**

This project is currently finalizing design and acquisition process and is listed in the 2020-2023 TIP for construction in FY20. The current project scope extends to Naugher Road. This is the third project along Winchester Road to widen it to Bell Factory Road, all of which have been completed or are currently under construction.

- **10: Bradford Drive from Explorer Boulevard to Wynn Drive**

The corridor has been monitored as recommended in the 2040 CMP. The City of Huntsville has resurfaced this road and added bike lanes on each side. The City does not anticipate widening or making other modifications to this corridor at this time. The Chamber of Commerce may seek improvements to the corridor as part of the new Research Park Master Plan, released in 2018.

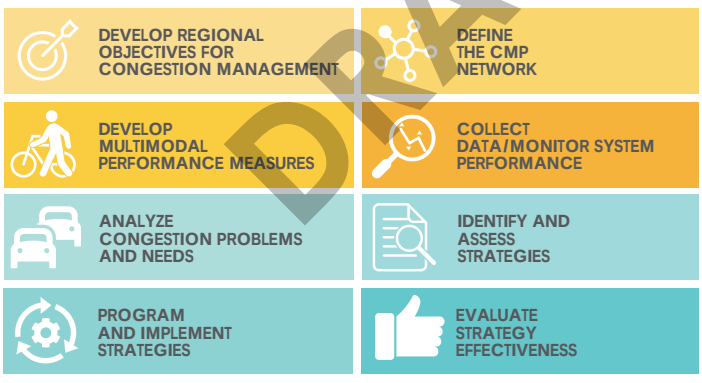
Congestion Management Element

One of the greatest challenges faced by the Huntsville Urbanized Area is increasing traffic congestion, resulting in motorist frustration, the loss of productivity, and the deterioration of air quality. The Huntsville Urbanized Area has been designated as a Transportation Management Area by the Federal Highway Administration and the Federal Transit Administration (UZA 2010 population 286,692, Federal Register July 18, 2012). This designation requires the MPO to develop and maintain a comprehensive congestion management process.

As aforementioned, the updated Congestion Management Element will be incorporated in the ongoing Commuter Study to be adopted in November 2020. This section details the congestion management analysis performed as a part of the 2040 LRTP specifying current and future congestion problems on the network, and identifying various strategies to correct system deficiencies.

The legislative requirements view the Congestion Management Process (CMP) as objectives driven. The CMP also has an emphasis on incorporating management and operations in the project development process, so that short-term improvements may be made to alleviate immediate congestion problems, and long range solutions may also be offered as a more permanent solution.

One of the planning factors identified in federal regulations that must be considered in the transportation planning process is "to promote efficient system management and operations" [23 CFR 450.306(a)]. The legislation specifically requires that the metropolitan transportation plan, or long range plan, include not only capital projects, but management and operations strategies as well. These management and operations strategies are highlighted as an important component in mitigating congestion in addition to increasing safety and security.



Graphic X: Steps to an Effective CMP

Publications by the Federal Highway Administration define Transportation Systems Management and Operations (TSMO) as an integrated approach to optimize the performance of existing and programmed infrastructure through the implementation of multi-modal, intermodal, and often cross-jurisdictional systems, services, and projects. Implementing a planning process with a strong TSMO component is best accomplished by a new way of thinking about management and operations in transportation planning – one that is objectives-driven and performance-based such as the CMP.

The CMP actualizes the operations objectives through a systematic approach for developing performance measures, identifying and analyzing problems, collecting data, developing strategies, implementing strategies, and further evaluating how the implemented strategy(ies) impact the transportation network. TSMO strategies are integrated into the long range transportation plan through the CMP.

Congestion Management Process

The Congestion Management Process (CMP) is a federally required program providing for the comprehensive and continuous study of traffic movement on major corridors at the regional level. Locally, the Huntsville Area MPO's CMP consists of on-going data collection and analysis used to establish trends and to monitor the overall mobility of the transportation system through benchmarking techniques established in the CMP Procedures and Responsibilities Report, found in Appendix X of this document.

The purpose of the CMP is to establish certain characteristics of the local transportation system, so that future data analysis may be performed which would show changes in system efficiency and the quality of the transportation system service experienced by users. The CMP is divided into the following four sections to cover all aspects of the CMP addressed in the federal requirements, as displayed in Graphic X.

The cornerstone of an effective CMP is dependent upon the quality and quantity of data collected for the study area. Specific performance criteria and the parameters of study were established in the CMP Procedures and Responsibilities Report, found in Appendix X.

The following elements were selected for study, and have been incorporated into this document.

1. CMP Transportation Network
The CMP Transportation Network consists of all major arterials, minor arterials, major collectors, and major rural collectors that have been modeled per the MPO's TRiP 2045 Transportation Plan. Traffic counts have been taken from the base year network (2015) of the transportation model and were used in compiling this report on mobility.

2. Local Public Transit Systems
Both fixed route and demand response public transit services were studied that receive federal funds through the Federal Transit Administration either directly or through the State of Alabama.

The City of Huntsville Department of Parking and Public Transit administers a fixed route service - the Huntsville Orbit (formerly Shuttle). Huntsville Orbit operates nine (9) fixed-routes that radiate from the downtown Transfer Station and serves 474 bus stops throughout the city.

Graphic X: Sections of CMP

The Orbit provides fixed route service Monday through Friday from 6:00 a.m. until 9:00 p.m. Routes 4, 5, 6, and 7 end service approximately one hour later than other routes. Route 6 also begins 45 minutes earlier than other routes. Each route arrives at the Transfer Station just prior to the top of each hour and departs at the top of the hour. Routes 4 and 6 run every 30 minutes while other routes run hourly.

The UAH Shuttle is a Friday evening-only route intended to serve UAH students' shopping needs. The route is contracted, and open to the general public. The route operates as a large counterclockwise loop, with stops on UAH campus, the University Drive Walmart Supercenter, Target, and Bridge Street Town Centre shopping mall. It does not serve the Transfer Station. The UAH Shuttle helps fill a nighttime mobility gap for UAH students by effectively extending the western service area of Routes 3 and 4 to 10:15 p.m.

Huntsville Shuttle began operating a pilot express route, Chase Industrial Express, between the Transfer Station and the Technicolor facility in Chase Industrial Park (4905 Moores Mill Rd. NE) on October 1, 2018. The service uses vans operated by Huntsville Shuttle staff to transport passengers. The service makes one round-trip per weekday.

The City of Huntsville also administers a demand response paratransit service, known as Huntsville Access (formerly Handi-Ride). In accordance with the Americans with Disabilities Act (ADA) of 1990, Huntsville Access is available to persons traveling within ¾-mile of the Shuttle Bus route network (defined as ADA paratransit zone) with a physical, visual or cognitive disabling condition that prevents them from accessing or using Shuttle Bus service. The service operates Monday through Friday from 6:00 a.m. until 6:00 p.m. Service is limited to pre-qualified individuals that are elderly and/or disabled and cannot access traditional fixed route transit service.

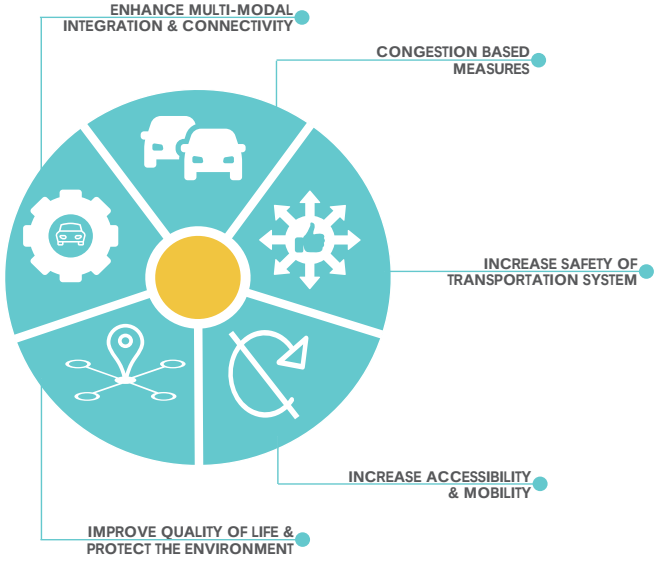
Madison County operates a demand response transportation service as well. Transportation for Rural Areas of Madison County (TRAM) operates Monday through Thursday from 6:30 am until 3:30 pm, and Fridays from 6:30 a.m. until 2:30 p.m., excluding official County holidays and hazardous weather. This service is limited to individuals residing in rural Madison County; otherwise, there are no other service restrictions.

The City of Madison currently does not provide municipal transit service than the Madison Assisted Ride System (MARS). The MARS program is available for residents eligible for paratransit services under ADA guidelines. However, as travel and congestion continue to increase along the Highway 72, Hughes Road, Sullivan Street/Wall-Triana Highway, and Madison Boulevard corridors, the potential for transit demand is likely to increase.

A. State of the System

Data collection for the CMP is being performed in accordance with the methods and procedures outlined in the CMP Procedures and Responsibilities Report.

The recent traffic count data collected and utilized in this report was collected by all entities and was input into the base year transportation model during its 2015 update.



Graphic X: Categories of Performance Measures

CMP Objectives

Various objectives for the Huntsville Urbanized Area have been developed, and are based upon the identified performance measures. These objectives and their correlating performance measures follow:

1. Congestion-Based Measures: V/C Ratio and Fixed Route Rate of Occupancy

- Reduce the number of segments on the transportation network that have a V/C ratio of 1.0 or higher, so that by 2045 the transportation network exhibit improved traffic flow. This can be accomplished by implementing various strategies that relate to land use, access management, operational improvements, construction of bike and pedestrian facilities, as well as road widening.

2. System Efficiency Based Measures: Daily VMT, Daily VMT per Person, Roadways Operating at Congested Conditions (uncongested vs. congested lane miles, congested vs. uncongested VMT)

- Reduce congestion on the transportation network so that users accessing the network may experience overall efficient trips.

3. System Mobility Based Measures: Trip oriented and measures the ease and freedom with which persons can travel from one location to another (Total yearly public transit ridership, average daily passengers on transit services, annual revenue miles, average speed on the transportation network)

- Correlate public transit ridership with bus capacity so that by 2020 certain routes or systems can easily handle the demand for service.

- Routinely increase average speed of all classifications of corridors on the transportation network so that by 2020 enhanced mobility on the overall network can be realized. This may be accomplished through the implementation of short-term and long-term strategies that will either operationally enhance mobility or increase system capacity.

4. System Accessibility Measures: Activity oriented and measures the degree of ease that individuals experience in traveling to employment, shopping, school, and even other modes of transportation.

- Increase carpool activity and the use of alternative modes of transportation besides the vehicle, so that system accessibility may be improved and congestion experienced on the network may be reduced. This may be performed through marketing various modes of transportation and providing more opportunities for network users to try new methods of transportation.

- Decrease travel to work time by subarea by implementing short-term congestion relieving strategies as well as planning long-term road widening projects, so that users of the network may access the system during peak times with minimal delay.

5. Non-Recurring Congestion Measures: Work Zone Data by Location

- Reduce non-recurring delay by identifying work zone locations that may impact traffic delay, and by investigating and monitoring the need for improvements to work zone management processes.

B. CMP Technical Ranking

Methods were established in the Huntsville Area Transportation Study CMP Procedures and Responsibilities Report (Appendix F) for prioritizing current and anticipated congested corridors. The corridors within the defined CMP transportation network were prioritized based upon the criteria as shown in Graphic X.

Graphic X: CMP Transportation Network Criteria

It is important to note that the model only indicates the locations where average daily traffic volumes may exceed average daily roadway capacity. The local MPO does not possess a consistent method for measuring hourly or peak real-time traffic flow for all corridors comprising the CMP network. Therefore, peak hourly flow is not used as a standard of measure, since benchmarks must be established that can be measured consistently from year to year.

Since it is not feasible to identify congestion mitigation strategies for all corridors simultaneously, the top ten corridors were selected. The top ten corridors that have been selected, are presented for congestion mitigation strategy recommendations in Section X of this report.

Table X presents the list of the 2015 top ten congested corridors. The travel time and speed of the top ten corridors selected for study, where congestion is either occurring or is subject to occur by 2040 has been compiled. Travel time and speed is indicated from the roadway segment to the center of Huntsville.

2015 CMP TOP TEN CORRIDOR TECHNICAL RANKING LIST
1. Memorial Parkway *Bob Wallace Avenue to Clinton Avenue*
2. US 72 West *Hughes Road to Providence Main Street*
3. Research Park Boulevard *I-565 to US 72*
4. I-565 *I-65 to Wall Triana Highway*
5. US 231 South *Whitesburg Drive to Martin Road*
6. US 231 North *Mastin Lake Road to Winchester Road*
7. US 72 East *Maysville Road to Moores Mill Road*
8. Governors Drive *California Street to Monte Sano Boulevard*
9. Winchester Road *Moores Mill Road to Henson Drive*
10. Bradford Drive *Explorer Boulevard to Wynn Drive*

Table X: 2015 CMP Top Ten Congested Corridors

C. Strategy Recommendations

The CMP Procedures and Responsibilities Report comprehensively lists each strategy to be considered within screening matrices to assist jurisdictions in selecting appropriate and feasible strategies to correct problematic corridors. The strategy recommendations, in order of consideration are displayed in Graphic X.

Each corridor selected for strategy recommendations has been through a comprehensive screening process. Some solutions may be nontraditional, but may be effective in combating traffic congestion. It is important to remember that the recommendations presented will more than likely require additional study.

The upcoming November 2020 Commuter Study is aimed at preparing the Huntsville Area MPO to mitigate congested corridors on the CMP Transportation Network.

STRATEGY RECOMMENDATIONS	
1	STRATEGIES THAT ELIMINATE OR REDUCE TRIPS
2	STRATEGIES THAT INVOLVE TRAFFIC OPERATIONAL IMPROVEMENTS
3	STRATEGIES THAT SHIFT TRIPS FROM SINGLE OCCUPANCY VEHICLES TO OTHER MULTI-MODAL OPTIONS
4	STRATEGIES THAT INVOLVE INTELLIGENT TRANSPORTATION SYSTEMS
5	STRATEGIES THAT ADD CAPACITY FOR ALL VEHICLES

Graphic X: Strategy Recommendation Levels

D. Strategy Effectiveness Evaluations

The previous Congestion Management System Report on Mobility, submitted in 2010, highlighted improvements along segments that were recommended for action. In order to alleviate traffic congestion on the transportation network, the City of Huntsville along with the State of Alabama initiated the Restore Our Roads program, in which the City of Huntsville will match 50% local funds with 50% federal dollars on critical projects.

Several of the previously identified congested corridors during 2010 have been identified as Restore Our Roads projects. As the projects are completed, the staff will depend upon real-time observations in the field to indicate the improvement's success. This method of analysis and measure of system effectiveness will be applied and the improvement evaluated for effectiveness in the future. Detailed evaluations are attached in Appendix X.

Since the methodology differs in some portions of the CMP which establishes benchmarks for the region, overall system trends have not yet been substantiated. At the present time, census data and other performance measures gives some indication that overall mobility on the transportation network is efficient and accessible, with the exception of several trouble spots which are identified and addressed in this report. Strategy recommendations have been made for the top ten corridors.

The previous CMS Report on Mobility identified past strategy recommendations that are now in process or on the verge of construction. Once additional strategy recommendations are implemented for other corridors, an assessment will be conducted on the effectiveness of the improvement(s). The overall effectiveness of the congestion management process is dependent upon the data collected, performance of the transportation model, and appropriate analysis of selected performance measures. Ongoing data collection, continuous monitoring, and future reports will serve to comprehensively measure network performance and will provide a more multidimensional review and assessment of the state of the local transportation system.

- **Performance Measure (PM) Targets**

In compliance with the Joint Planning Rule from FWHA (23 CFR 450 and 771) and FTA (49 CFR 613), under the MAP-21 and the FAST Act, State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) are to implement a performance-based approach to planning and programming activities. This includes setting data-driven performance targets for transportation performance measures. This approach supports the seven national goals for the federal-aid highway and public transportation programs listed in [23 USC 150(B)].

Under the 23 CFR 490, the DOTs and MPOs are required to establish targets for applicable national performance measures. The Safety Performance Measures (PM1), Bridge/Pavement Measures (PM2), the System Performance Measures (PM3), and the FTA's Transit Asset Management (TAM) Targets have been adopted by ALDOT and the MPOs.

- **Performance-Based Plans Descriptions**

Listed are brief descriptions of ALDOT's plans which align with their respective performance measures and targets and are supported by the highway and transit projects listed in this TIP.

1. Strategic Highway Safety Plan (SHSP) and Highway Safety Improvement Program (HSIP) Report (HSIP) (PM1)

The SHSP provides a comprehensive framework for reducing fatalities and serious injuries on all public roads, with the ultimate vision of eradicating the State's roadway deaths. The Alabama SHSP 3rd Edition was completed in July 2017 and the current focus is the National Goal of "Toward Zero Deaths" initiative which is to reduce fatalities by 50% by 2035. The HSIP is an annual report required by states that documents the statewide performance measures toward the zero deaths vision. It identifies and reviews traffic safety issues around the state to identify locations with potential for improvement.

2. Transportation Asset Management Plan (TAMP) (PM2)

The TAMP is a focal point for information about the bridge and pavement assets, their management strategies, long-term expenditure forecasts, and business management processes. The TAMP is consistent with ALDOT's desire to make data-driven spending decisions related to its assets.

3. Alabama Long-Range Plan and Statewide Freight Plan (PM3)

The Alabama Statewide Long-Range Plan provides a high-level description of existing and projected travel and maintenance conditions of Alabama's infrastructure. This Plan places emphasis on the roadway system because it is the primary mode of transportation for the movement of people and goods. The targets support system reliability along Alabama's infrastructure system.

The Alabama Statewide Freight Plan (FP) provides an overview of existing and projected commodity flow by mode (truck, rail, waterway, air and pipeline) along existing and projected network characteristics through data analysis. In general, the FP provides an overall profile of Alabama's multimodal freight network, existing and projected freight flows by truck, and congested areas of concern throughout the state. The targets support the movement of freight which affects economic vitality.

4. Transit Asset Management (TAM)

Transit Asset Management (TAM) is a business model that uses the condition of assets to guide the optimal prioritization of funding at transit properties to keep transit networks in a State of Good Repair (SGR). The benefits of the plan are: improved transparency and accountability, optimal capital investment and maintenance decisions, more data-driven decisions, and has potential safety benefits. This plan aligns with the transit targets under Transit Asset Management.

1 SAFETY PERFORMANCE MEASURES- PM1	2 BRIDGE/PAVEMENT PERFORMANCE MEASURES- PM2	3 SYSTEM PERFORMANCE MEASURES- PM3
1. No. of Fatalities 2. Fatality Rate per 100 million VMT 3. No. of Serious Injuries 4. Serious Injury Rate per 100 million VMT 5. No. of Combined Non-Motorized Fatalities and Serious Injuries 6. No. of Fatalities	1. Percent of Interstate System Pavement in Good Condition 2. Percent of Interstate System Pavement in Poor Condition 3. Percent of Non-Interstate NHS Pavement in Good Condition 4. Percent of Non-Interstate NHS Pavement in Poor Condition 5. Percent of NHS Bridge Deck Area in Good Condition 6. Percent of NHS Bridge Deck Area in Poor Condition	1. Percent Person-Miles Traveled on the Interstate that are Reliable 2. Percent Person-Miles Traveled on the Non-Interstate NHS that are Reliable 3. Percent Change in Tailpipe CO2 (greenhouse gas) Emissions on the NHS Compared to the Calendar Year 2017 Level 4. Truck Travel Time Reliability (TTTR) Index 5. Annual Hours of Peak Hour Excessive Delay Per Capita 6. Percent Non-SOV Travel 7. Total Emissions Reduction

Graphic X: Performance Measures
Source: 23 CFR §924, 23 CFR § 490

Safety Management Element

The elimination of hazards that may pose problems within the transportation network will improve the safety of the transportation system. The MAP-21 legislation continued to split the safety and security requirements of TEA-21 into two separate and distinct planning factors to be undertaken by States and MPOs. This was done, beginning with the SAFETEA-LU legislation, to further emphasize these planning factors.

Strategic Highway Safety Plan (SHSP)

23 CFR Part 924 requires States to develop a Strategic Highway Safety Plan (SHSP) to focus on implementable policies and methods to make travel on State roads safer for motorists. Additionally, the legislation calls for long range statewide and metropolitan transportation plans to include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects contained in the Strategic Highway Safety Plan.

The State of Alabama developed its Strategic Highway Safety Plan during 2006 with the assistance of almost 100 individuals from 31 agencies and organizations, including representatives from the Technical Coordinating Committee of the Huntsville Area MPO. The plan has since been updated in July 2017.

The SHSP provides a comprehensive framework for reducing fatalities and serious injuries on all public roads, with the ultimate vision of eradicating the State's roadway deaths. The strategies detailed in the plan integrate the efforts of partners and safety stakeholders from the 4 Es of safety (Engineering, Education, Enforcement, and Emergency Medical Services).

SHSP Emphasis Areas

A review of the State's 2017 SHSP indicates that the local MPO and various agencies and organizations within its jurisdictions, have implemented a variety of strategies to assist the State in meeting its implementation goals. Some strategies are wholly State-driven and can only be enacted at the State level. The four emphasis areas that are the focus of the 2017 SHSP are displayed in Graphic X.

Graphic X: SHSP Emphasis Areas

- Emphasis Area 1: High-Risk Behavior

Crashes occur as a result of multiple factors associated with the roadway, vehicle, and user/operator. As an example, a distracted and unbelted young driver is speeding and runs off the roadway, crashing into a tree.

Drivers, passengers, motorcyclists, pedestrians, and bicyclists engage in a number of risky behaviors associated with traffic crashes. Alabama DOT and its safety partners have identified strategies in five focus areas to reduce high-risk behaviors that pose the greatest risks to system users: Speeding and Aggressive Driving; Distracted/Drowsy Driving; Impaired Driving; Occupant Protection; and Safety Culture.

- Emphasis Area 2: Infrastructure And Operations

Implementation of roadway-based safety countermeasures is intended to prevent crashes from occurring and to reduce the severity of crashes that do occur.

Understanding how various roadway features contribute to crashes and crash severities is a basic element of planning a safety program. Two focus areas within infrastructure and operations for Alabama are roadway departure crashes and intersection crashes.

- Emphasis Area 3: At-Risk Road Users

The At-Risk Road Users emphasis area is comprised of young and older drivers, pedestrians, bicyclists, and motorcyclists. These roadway users are at risk for varying reasons. For instance, young drivers often have a skewed perception of risk combined with inexperience behind the wheel that can result in poor decision-making, while the driving skills of older drivers can deteriorate over time due to physical, cognitive and/or vision impairment.

Pedestrians, bicyclists, and motorcyclists are the most vulnerable roadway users due to factors such as a lack of physical protection. They also are more likely to be more severely injured when involved in a crash. Alabama DOT is developing a Vulnerable Road Users Guide that will emphasize when and where to incorporate infrastructure elements that address vulnerable road users in the early stages of project development, with highest cost effectiveness

- Emphasis Area 4: Decision And Performance Improvement

Understanding the crash trends and factors is critical to the effectiveness of traffic safety initiatives in Alabama. Efforts to reduce crashes and their consequences require robust data, analytical tools, and analysis. The fourth emphasis area for the Alabama SHSP 3rd Edition captures the areas of transportation safety that develop, define, and empower safety decisions and decision-makers in the State.

Alabama DOT uses HSM methods and other analytical tools to evaluate safety improvements. These tools require the use of robust datasets, in addition to an active capacity building and work- force development program. By improving data systems, developing a strong internal safety culture, and developing a safety-oriented workforce, Alabama can continue to improve on past successes in crash reductions, and become a national leader on the path towards zero deaths.

SHSP Implementation

The FHWA 2017 SHSP Implementation Process Model describes the components necessary for successful implementation. The model outlined features four steps for successful implementation (emphasis area action plans; linkage to existing plans, marketing, and monitoring evaluation and feedback). The Implementation Plan identifies for each SHSP strategy, an action step leader, expected outcome(s), project type, needs and resources, and output and/or any additional outcome measures (in addition to the fatality and serious injury performance measures).

The Implementation Plan also provides information on marketing and communications, including recommendations on communication tactics and methods to inform the public and safety stakeholders about the SHSP and deliver the SHSP message. The intent is to keep the SHSP in the forefront of every stakeholder's mind so they remain interested and committed to the plan and to helping the public understand the State's highway safety issues and that they are a part of the solution in reducing roadway fatalities and injuries.

The Steering Committee will continue to provide oversight during plan implementation by:

- Tracking implementation progress in each of the emphasis areas as a part of Steering Committee meetings
- Discussing strategy implementation progress and suggesting new actions as needed
- Evaluating the effectiveness of the overall plan as outlined in the SHSP Evaluation Section

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems (ITS), a collective group of innovative technologies, were developed and have been deployed globally to improve transportation system efficiency, safety, and security. ITS aims to provide travelers with current information on traffic conditions, provide vehicles with safety equipment, and improve the transportation infrastructure by relieving congestion and enhancing productivity. ITS can assist emergency responders in securing the transportation network during special events as well as time of emergency.

ITS uses a number of technologies including; information processing, communications, and control systems. The anticipated benefits of coordinating and integrating these technologies with the Huntsville area transportation system include improved safety, reduced congestion, improved mobility, improved economic productivity, and a savings in public investment dollars without negatively affecting the environment.

Huntsville Urbanized Area ITS Strategic Initiatives

The City of Huntsville, in cooperation with other regional governments and organizations, has identified ITS strategies for its region, and has developed a Strategic Regional ITS Plan. Two important aspects of the Plan are the Concept of Operations and the Regional ITS Architecture. The Concept of Operations includes, but is not limited to, the integrated and coordinated operations of incident management, emergency management, and advanced traffic signal and traveler information.

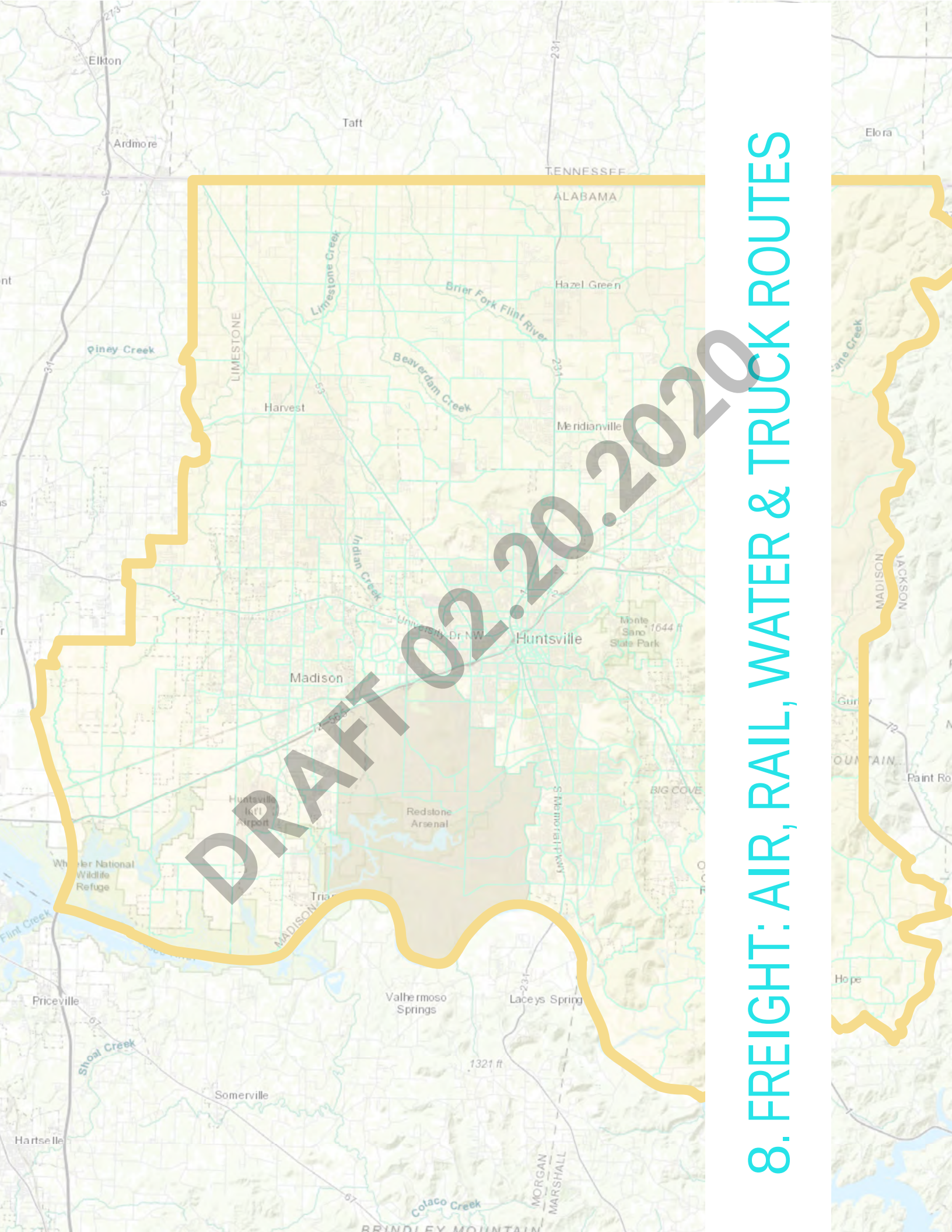
The development of the Concept of Operations translates the region's identified transportation operations problems into a set of core strategies for developing the Huntsville Regional ITS operations and management program. The Regional ITS Architecture defines the specific transportation management and incident management components needed to achieve the regional vision of the City. The components are applicable to the Huntsville area transportation system are displayed in Graphic X.

The City of Huntsville is continuing its initiative to implement ITS technologies identified in the strategic plan, and integrate them into the transportation system. This is being accomplished by meetings with regional stakeholders, which include law enforcement and other public safety personnel, to discuss implementation strategies for utilizing technology for increasing the safety and security of the transportation system within the MPO jurisdiction. Specific projects have been identified to bring the system to fruition.

Additionally, the City should continue to apply for any available funding for the deployment of ITS technologies that complement the ITS strategic plan. Congestion management and safety management projects have been identified. A systematic approach of integrating these improvements to the transportation system, along with the implementation of ITS technologies and construction of the transportation improvements yields a transportation network that will provide more efficient and safe travel in future years.

ITS COMPONENTS APPLICABLE TO THE HUNTSVILLE AREA TRANSPORTATION SYSTEM	
1	**TRAFFIC SIGNAL CONTROL SYSTEMS** *Provides for the control and coordination of traffic signals, surveillance and monitoring of traffic, and the monitoring of hardware and software malfunctions.*
2	**FREEWAY MANAGEMENT SYSTEMS** *Provides for the following on limited access facilities: surveillance and incident detection, intelligent ramp control, information dissemination, incident management, lane use control, and coordination/integration with all appropriate agencies that are affected by freeway management strategies.*
3	**TRANSIT MANAGEMENT SYSTEM** *Provides for the following with respect to public transit operation: transit vehicle tracking, demand-responsive operations, passenger and fare management, vehicle security, vehicle maintenance, and multimodal coordination.*
4	**REGIONAL MULTI-MODAL TRAVELER INFORMATION SYSTEM** *Provides multi-modal trip planning, route guidance, traveler advisory functions, confirmation and payment services for travelers, special event information, and pre-trip/en-route trip planning assistance, including roadway conditions, traffic information, travel times, and transit information.*
5	**EMERGENCY MANAGEMENT SYSTEM** *Provides for the integration and coordination of appropriate emergency management agencies (county and local police, fire, E-911) with respect to the transportation infrastructure.*
6	**INCIDENT MANAGEMENT PROGRAM** *Provides for the detection and verification of roadway incidents, appropriate response to incidents, site traffic management, incident clearance, and motorist information.*
7	**RAILROAD GRADE CROSSING WARNING SYSTEM** *Provides for the implementation of technologies, which increase roadway and rail safety for at-grade crossings throughout the Huntsville area transportation system.*

Graphic X: Huntsville Area Transportation System ITS Components



8. FREIGHT: AIR, RAIL, WATER & TRUCK ROUTES

Introduction

The efficient movement of freight through the region plays an important role in the quality of life and economic vitality of the area. Therefore, planning for the effective transport of goods is a key component of the region's long range transportation plan.

Currently, the urban area has excellent linkages between the Huntsville International Airport and the highway system via I-565 which facilitate the movement of freight. The International Intermodal Center (IIC) is located at the airport and is connected by spur to a main line of the Norfolk Southern Railroad. However, there is currently no direct connection to the Tennessee River.

A River Port Development Study was conducted in 2000 identifying potential locations for river terminal sites in Huntsville, as a site is vitally important to capture additional economic markets. As a result of this study, property was acquired for future port development. Cargo waterway service is available in nearby Decatur offering barge service for bulk commodities and general cargo providing access for customers to the IIC and I-565.

The categories that follow explain the various modes of transportation that are either available or are being investigated in the region. Each is an important component of an efficient intermodal freight transportation system.

Airports

The Huntsville-Madison County Airport Authority (HMCAA) is a public corporation which owns and operates: Huntsville International Airport, International Intermodal Center, Jetplex Industrial Park, and the Foreign Trade Zone No. 83. These properties, located on more than 6,000 acres, are valued in excess of $1 billion.

Huntsville International Airport (HSV), with its state-of-the-art amenities, is the largest commercial airport in North Alabama. Located just 12 miles from downtown Huntsville, HSV serves more than 1.2 million passengers annually. The airport has parallel 10,000-foot and 12,600-foot runways with a 5,000-foot separation, allowing simultaneous approaches even during inclement weather. Air traffic operations to date are 23,000 annually with passenger traffic exceeding 1 million (enplaned and deplaned passengers) and air cargo activity of more than 189 million pounds per year.

The IIC opened in 1986 in the Global Logistics Park at the Port of Huntsville. The IIC rail terminal is served by Norfolk Southern, with dedicated stack-train service to/from both east coast and west coast ports. Cargo services via air and rail serve over 1,000 industries.

Air cargo services currently in place at Huntsville International Airport include 7-10 weekly scheduled non-stop international cargo flights to Mexico, Europe, Hong Kong, with previous and anticipated future service to San Paulo, Brazil, as well as daily flights by three major all-air cargo carriers via their hubs in the U.S. The Port of Huntsville now has more than 300,000 square feet of cargo space with 5,250 square feet of cold storage and 11,000 square feet of temperature control storage.

Graphic X: HSV Statistics

The legislation by U.S. Senator Richard Shelby (R-Ala.) on July 29, 2019 announced that six airports in Alabama will receive a total of $14,344,107 in Federal Aviation Administration (FAA) grants. Huntsville International Airport is receiving $10,426,057 in grant funding to rehabilitate a runway and an apron, reconstruct taxiway lighting and airfield guidance signs, and to rehabilitate and construct a taxiway.

U.S. Customs and Border Protection have offices in the International Intermodal Center, where it oversees the transportation and inspection of the above-mentioned cargo. It collects over $50 million annually in import duty taxes, making the inland Port of Huntsville – located at the Huntsville International Airport – the second-largest port in the state of Alabama.

Foreign-Trade Zone No. 83, located at the Port of Huntsville, includes the Jetplex Industrial Park and the Mallard Fox Creek Industrial Park and Port in Decatur, AL. Operated by the Huntsville Foreign-Trade Zone Corporation, this service-plus entity provides technical expertise on regulatory Customs issues, as well as money savings from duty exemptions.

Graphic X: Port of Huntsville Import Duty Taxes

Airport Hub Operations

The Federal Aviation Administration's (FAA) latest aviation forecast includes data for 2005-2017. While the acts of terrorism that occurred in the United States on September 11, 2001, impacted the aviation industry, the market has rebounded since then only to be recently impacted by the price of fuel and the economy. Even with these factors, commercial aviation remains on track with passengers to exceed one billion by 2015, which represents an annual 3.2% growth rate.

International travel is growing about 2% faster than domestic travel. In addition, total air cargo tonnage is expected to increase by 83% from 2005-2017 with domestic growth at a rate of 3.2% and international tonnage increasing by 6.2% annually. The trend of opening markets worldwide will impact the movement of freight around the world but freight has also been the most affected by the downturn in the economy.

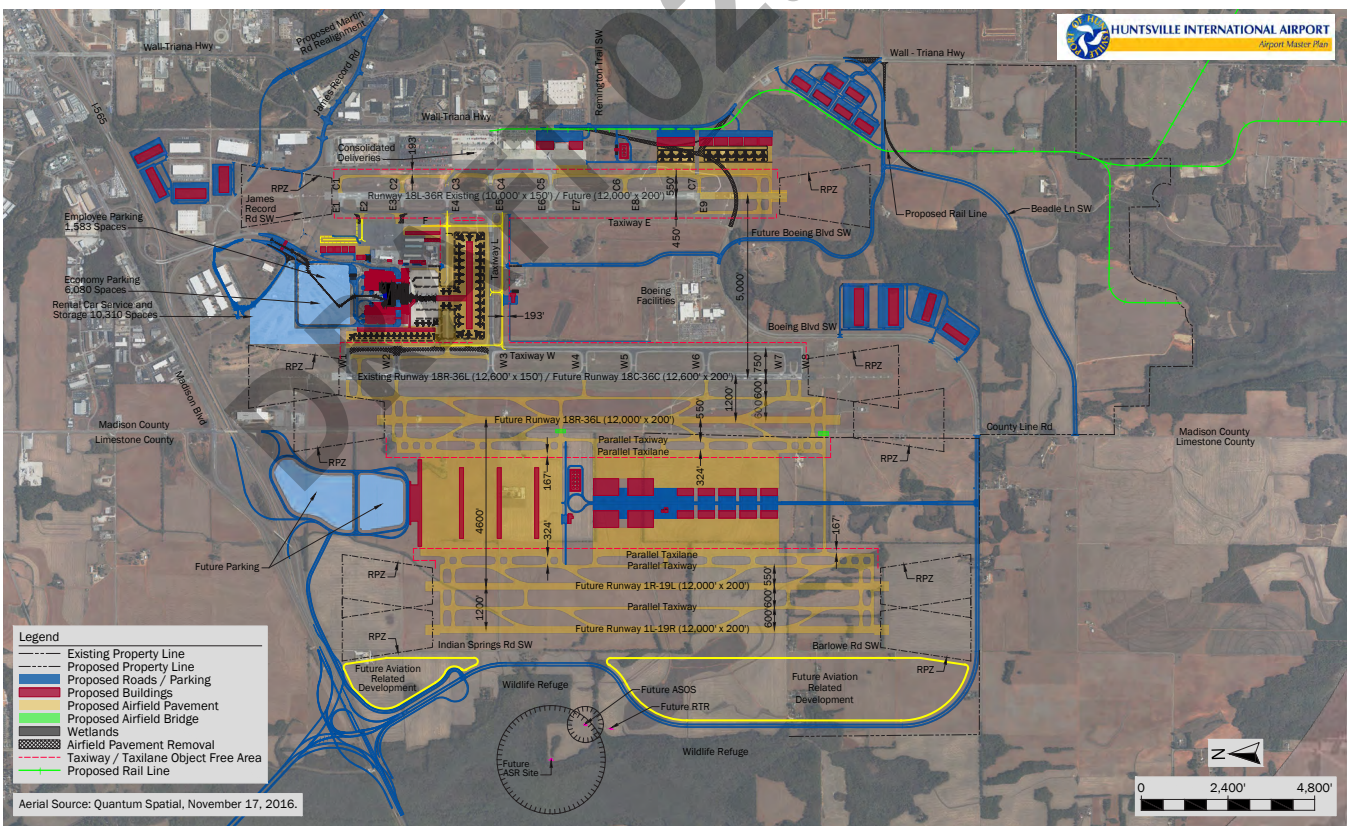
Currently, Huntsville International Airport is operating at less than 30% of its capacity and has an excess capacity of 219,000 operations per year as determined by the FAA Office of Capacity. To protect future growth potential, the HMCAA continues to pursue an aggressive land acquisition program, which will make the Port of Huntsville complex approximately 10,000 acres.

The Huntsville International Airport is strategically located between Atlanta, Birmingham, Memphis, and Nashville, making it an attractive transfer point for the Southeastern United States. Airport hubs develop where people live and where resulting demand and airline revenue dictate such a need. Approximately 1 million people reside within a 50-mile radius of Huntsville International Airport, there are. If the radius is moved to 100 miles, the population increases to approximately 4.2 million. This is a larger population than the 100-mile radius around the Nashville or Birmingham airports. Graphic X represents the HSV Service Area.

HIA also serves an international business community. The presence of many international companies has been a driving force in continuous economic growth in North Alabama. The Jetplex Industrial Park is home to L.G. Electronics, the first Korean manufacturing operation located in North America.

Graphic X: HSV Service Area
Source: Port of Huntsville Website

The Airport Layout Plan reflects parallel 12,600 feet and 10,000 feet runways with the ability to expand to a total of five parallel runways as depicted in the master plan (Map X).



Graphic X: Huntsville International Airport Master Plan
Source: Huntsville-Madison County Airport Authority (HMCAA)

In Madison County alone, there are over 60 foreign-based corporations. These include representation from Canada, France, Denmark, Germany, Ireland, Italy, Japan, Korea, Kuwait, Netherlands, Singapore, South Africa, Sweden, Switzerland, and the UK. The Huntsville Area MPO's population base has its origin from nearly 100 countries. There are several international schools in place as well as the very active North Alabama International Trade Association.

Services already in place at Huntsville International include U.S. Customs Port of Entry, Foreign-Trade Zone No. 83, freight forwarders, customs brokers, and weekly scheduled international cargo flights to Europe, Mexico and Hong Kong. The world-class International Intermodal Center combines air, rail, and highway modes of transportation and more than 90% of all cargo at the Intermodal Center has an international origin or destination.

Truck-Rail Intermodal Facilities

In order to efficiently serve the growing demand of its customers and at the same time cope with the trend of industry movement to suburban and rural locations often remote from existing rail facilities, the railroads are placing increasing importance on intermodal facilities. Development of domestic containerization by railroads is consistent with the trend toward more diverse points of origin and destination, shipment of smaller units, and the need for more rapid service.

International markets (imports and exports) are also adding volume to rail capacity at record levels. Over the past 10 years, intermodal traffic has been the fastest-growing rail traffic segment. Intermodal combines the convenience of trucks with the long-haul economy of the railroads.

Truck-rail intermodal traffic has increased 24% over the past 13 years, rising from 12.3million trailers and containers in 2006, to 15.3 million units in 2019. This growth trend is expected to continue as international trade increases and the railroads seek to take more domestic trucks off of the nation's highways.

The IIC is one of the entities that is owned and operated by the HMCAA and provides multi-modal services and facilities at one central hub location. The center supports a range of services for receiving, transferring, storing, and distributing air, rail, and highway cargo as well as features a U.S. Customs and Border Protection Port of Entry with Customs Officials, U.S. Department of Agriculture Inspectors, and Custom Brokers on site.

Rail service is provided by Norfolk Southern. The Intermodal Center is capable of handling trailer on flat car and container on flat car (TOFC/COFC) and double-stack service. The center is located in Foreign Trade Zone No. 83, enhancing trade and economic development. The Intermodal Center serves as a regional distribution hub for rail customers within a 200-mile radius and a 600-mile radius for air cargo customers. The IIC rail services map is displayed in Graphic X.

Graphic X: IIC Service Area
Source: Port of Huntsville Website

International Intermodal Center Expansion for Future Capacity

Due to rapid rail volume growth and depot activity, further expansion of facilities at the Intermodal Center was necessary. The second phase of an expansion of the Intermodal Center was completed at the end of 2003. In this project, 4,000 feet of siding track was installed parallel to the existing mainline from Short Pike to the old Cheeseborough-Pond building. The terminal yard paving and concrete joint sealing was strengthened and rehabilitated. Track #4 was extended south off the mainline to add 2,000 feet for additional lift capacity. This additional 2,000 feet provides 50% more additional loading and unloading capacity. In addition, the outbound building and inbound/outbound truck lanes were expanded. The entire 36-acre expansion area was lighted and fenced.

A 45-ton overhead Mi-Jack gantry crane was added to the equipment lineup. The Mi-Jack is rubber tire-mounted, thus it can traverse the entire rail yard while being operated with a radio control by a single individual on the ground. This second crane increases lift capacity and efficiency on the yard while providing complete backup for the original crane. The original rail-mounted Paceco gantry crane received upgrades and refurbishments resulting in a near doubling of lift capacity for that crane. This expansion has doubled the size of the existing terminal and quadrupled rail lift capacity from 26,000 containers to 114,000 containers.

The Port of Huntsville in Alabama opened its new, 92,000-square-foot air cargo building in May, 2009 achieving a milestone toward its mission to provide quality intermodal transportation services to a diverse customer base and expand the economy of the Tennessee Valley region. The new $7 million building increases the air cargo facility capacity of the J.E. Mitchell, Jr. International Intermodal Center (IIC) by 30% and offers a versatility that invites a variety of tenants.

In 2015, the container volume at the Intermodal Center is 90% international and 10% domestic. A 1999 study by the Kingsley Group, which was commissioned by the Intermodal Center, indicated domestic rail volume between Huntsville and the Northeast U.S. would grow substantially between 2000 and 2025. One growth scenario in the Kingsley study projected as many 55,000 domestic containers moving between Huntsville and the Northeast U.S. by 2025.

While there has been some growth in the Northeast corridor from Huntsville, the rapid growth projected has not materialized. To address this lack of domestic intermodal growth, in June 2007 Norfolk Southern announced a $2.5 billion rail expansion called the I-81 Crescent Corridor. The corridor stretches from New Orleans to the South and Memphis to the West – across Alabama – and then to the Northeast U.S., running parallel to Interstate 81 – through 13 states.

This new corridor expansion allowed for the realization of substantial increases in domestic intermodal traffic at the Intermodal Center. Norfolk Southern projects the Corridor may take as many as one million trucks per year off the highway.

With 30 new lanes now open connecting to the 2,500-mile Crescent Corridor, Norfolk Southern's high-capacity intermodal routes are truck competitive, fuel efficient, and dependable.

The Intermodal Center currently serves 12 major steamship lines, which also utilize the Center as a container yard depot to store and manage their equipment in Huntsville.

Current system users and projected increases in rail traffic, coupled with the recent expansion of the Center, place the region in a strategic position to accommodate anticipated cargo growth.

Graphic X: Crescent Corridor
Source: Norfolk Southern Website

Truck-Rail Service Facilities

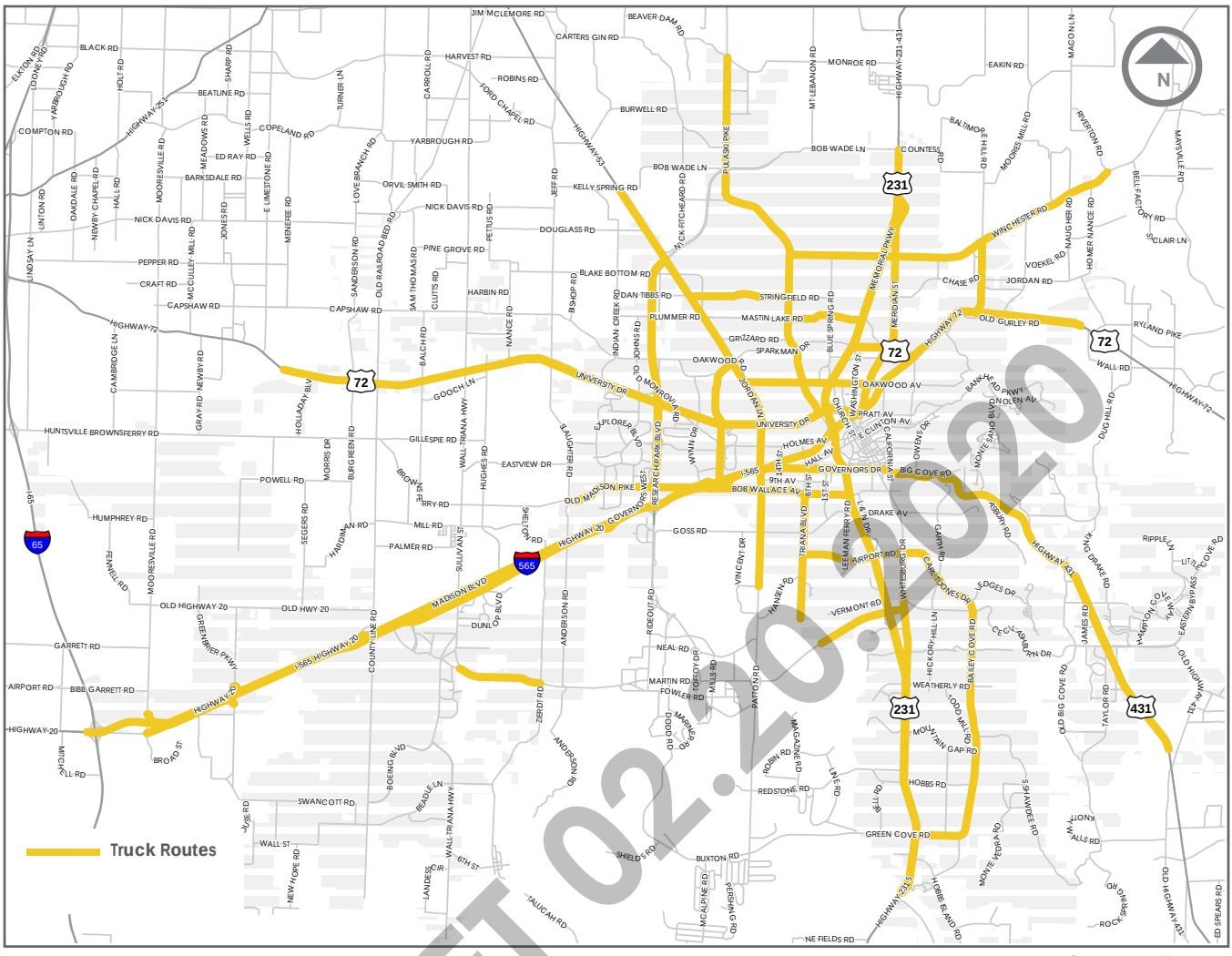
Truck-rail, drayage*, cartage, warehousing, and chassis leasing companies, as well as motor freight carriers, serve the Huntsville area. Information on these companies and carriers can be found in Appendix X.

**Drayage consists of trucking goods between a warehouse and rail yard.*

A. Truck Routes

Ordinance No. 96-810 established truck routes within the City of Huntsville and these are illustrated in Map X. Designated truck routes on state highways include I-565, U.S. 431, U.S. 231, U.S. 72 East and West, Alabama Highway 53, Alabama Highway 20, and AL-255 Research Park Boulevard. Truck routes established on City of Huntsville streets are shown in Map X.

Map X: Truck Routes



Source: City of Huntsville GIS

TRUCK ROUTES ESTABLISHED ON CITY OF HUNTSVILLE STREETS			
1.	Jordan Lane from I-565 to Redstone Arsenal	11.	Meridian St. north of Pratt Av.
2.	Triana Blvd south of Bob Wallace Avenue	12.	Oakwood Av. between Jordan Lane & Andrew Jackson Way
3.	Johnson Rd. from Triana Blvd to Leeman Ferry Rd.	13.	Moores Mill Rd. between U.S. Hwy 72 East & Winchester Rd.
4.	Airport Rd. from Leeman Ferry Rd. to Carl T. Jones Rd.	14.	Winchester Rd. from Pulaski Pike to city limits
5.	Carl T. Jones Rd. from Airport Rd. to Bailey Cove Rd.	15.	Stringfield Rd. between Alabama Hwy 53 & Pulaski Pike
6.	Bailey Cove Rd. from Carl T. Jones Rd. to Green Cove Road	16.	Mastin Lake Rd. between Pulaski Pike & Memorial Pkwy
7.	Bob Wallace Av. from I-565 to Memorial Pkwy	17.	Old Madison Pike from I-565 to city limits
8.	Pulaski Pike from University Dr. to city limits	18.	Martin Rd. in its entirety
9.	Sparkman Dr. west of Jordan Lane	19.	Green Cove Rd. from Memorial Pkwy to Bailey Cove Rd.
10.	Pratt Avenue between Memorial Pkwy & Meridian St.	20.	Whitesburg Dr. from Airport Rd. to Memorial Pkwy

B. Railroad Facilities

Three railroads operate in the urbanized area – Huntsville-Madison County Airport Authority (HMCAA), Huntsville/Madison County Railroad Authority (HMRA), and Norfolk Southern (NS).

- **Huntsville-Madison County Airport Authority (HMCAA)**

The Huntsville-Madison County Airport Authority owns and operates 6.2 miles of industrial switching track off the Norfolk Southern spur into the International Intermodal Center (IIC). The Airport Authority completed $18 million in capital improvements to the IIC to enhance the efficiency of the IIC operations. The tracks serving the IIC have the capability to extend rail southward to any potential riverport facility bringing total track to approximately 12 miles.

- **Huntsville-Madison County Railroad Authority (HMCR)**

The Huntsville-Madison County Railroad Authority (HMCR) is a Class III* non-profit short-line railroad that owns and operates over 13 miles of track originating in downtown Huntsville with a corridor that extends south and terminates at the Tennessee River. The HMCR owns 5.5 acres of land in south Huntsville with future plans to develop for additional trans-load and storage demands. Graphic X represents the HMCR interchanges with Holmes Avenue.

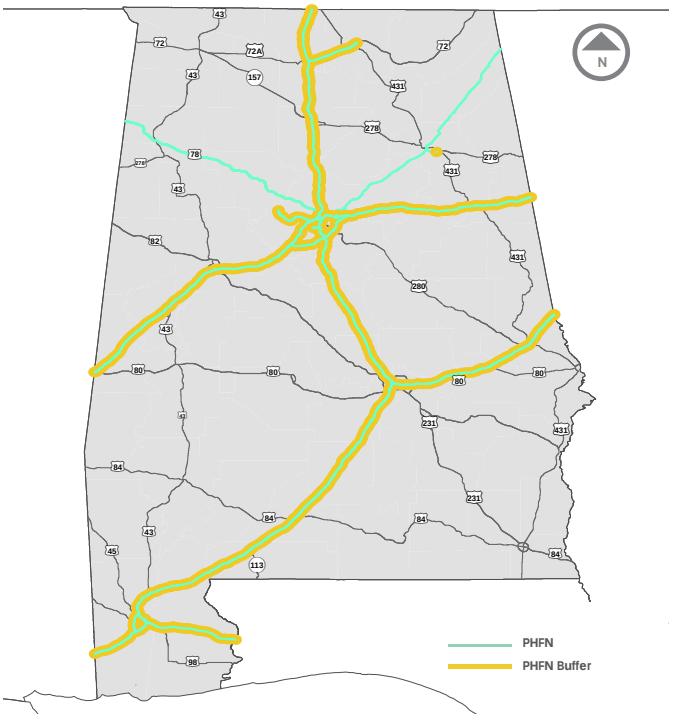
Graphic X: Holmes Avenue Railroad Crossing
Source: Google

- **Norfolk Southern (NS)**

This Class I* railroad has both North to South and East to West lines with most of the track located in the central and northern part of the state. The NS has 1,144 miles of track within Alabama. Major commodities transported include coal, chemicals, lumber and wood products.

From Huntsville west to I-65 the Southern railway mainline runs north and parallel to I-565, encompassing some of the highest quality industrial development property in North Alabama. This property adjoins industrial property in Morgan County along the Tennessee River and in the direction of the river ports in Decatur, Alabama.

There is currently a trend of railroads granting operating rights to other railroads for use of tracks. Consideration should be made to the future possibilities of operating rights for railroads serving Huntsville and Memphis. Shared operating rights could substantially increase intermodal rail and truck activities between these two cities.



Map X: Freight Network
Source: Huntsville GIS

**In the United States, the Surface Transportation Board defines a Class I railroad as having annual carrier operating revenues of $250 million or more in 1991 dollars, which adjusted for inflation was $452.6 million in 2012. A Class II railroad hauls freight and is mid-sized in terms of operating revenue. As of 2011, a railroad with revenues greater than $37.4 million but less than $433.2 million for at least three consecutive years is considered Class II. A Class III railroad has an annual operating revenue of less than $20 million (1991 dollars). Class III railroads are typically local short-line railroads serving a small number of towns and industries or hauling cars for one or more railroads; many Class III railroads were once branch lines of larger railroads or abandoned portions of main lines.*

C. Rail Freight Trends

- **Freight**

The 2017 Alabama Statewide Freight Plan, projects the future of rail transportation in Alabama in the Freight Analysis Framework Version 4.3 (FAF 4.3) available from the USDOT. FAF 4.3 contains freight movement data for the United States taken from the Commodity Flow Survey and additional economic and mode specific databases. The FAF 4.3 freight flow data is presented for large aggregated zones, totaling 123 zones nationwide and comprising three zones in Alabama: 1) Birmingham Area, 2) Mobile Area, and 3) Remainder of the State.

According to the Plan, total tonnage will increase by approximately 42 percent from 2012 to 2040. According to the FAF 4.3 data, the most prevalently shipped commodity by rail in Alabama is coal, with over 20,000 kilotons originating in and destined for Alabama. By 2040, the amount of basic chemicals shipped out of Alabama is projected to double to approximately 8,000 and become the state's leading export over coal. Coal is also projected to remain Alabama's largest import by rail, but at slightly less than current levels. The share of freight traffic shipped by rail is anticipated to increase by slightly over 20 percent from current levels by 2040.

- **Intermodal**

Each transportation mode has its strengths and role in facilitating mobility. The interaction of the modes occurs at Intermodal connections that facilitate the interaction of modes and the opportunity to benefit from each in getting freight to market on time and economically. Truck-rail intermodal traffic at the Port of Huntsville since 2006 has experienced some peak years in the range of 45,000 to 46,000 units per year, but those volumes declined after the recession period of 2008-2009.

The past four years, truck-rail intermodal traffic at Port of Huntsville has averaged 31,645 units per year, with 2019 coming in at 31,137 units. The new Mazda-Toyota plant, along with their affiliated tier suppliers, could potentially double the truck-rail intermodal traffic at Port of Huntsville in 2021, and going forward from there. Intermodal facilities are located in Birmingham, Mobile, Montgomery and Huntsville. Information regarding the latest data and trends for the Port of Huntsville (International Intermodal Center) are highlighted and detailed in Section X.

Waterway Facilities

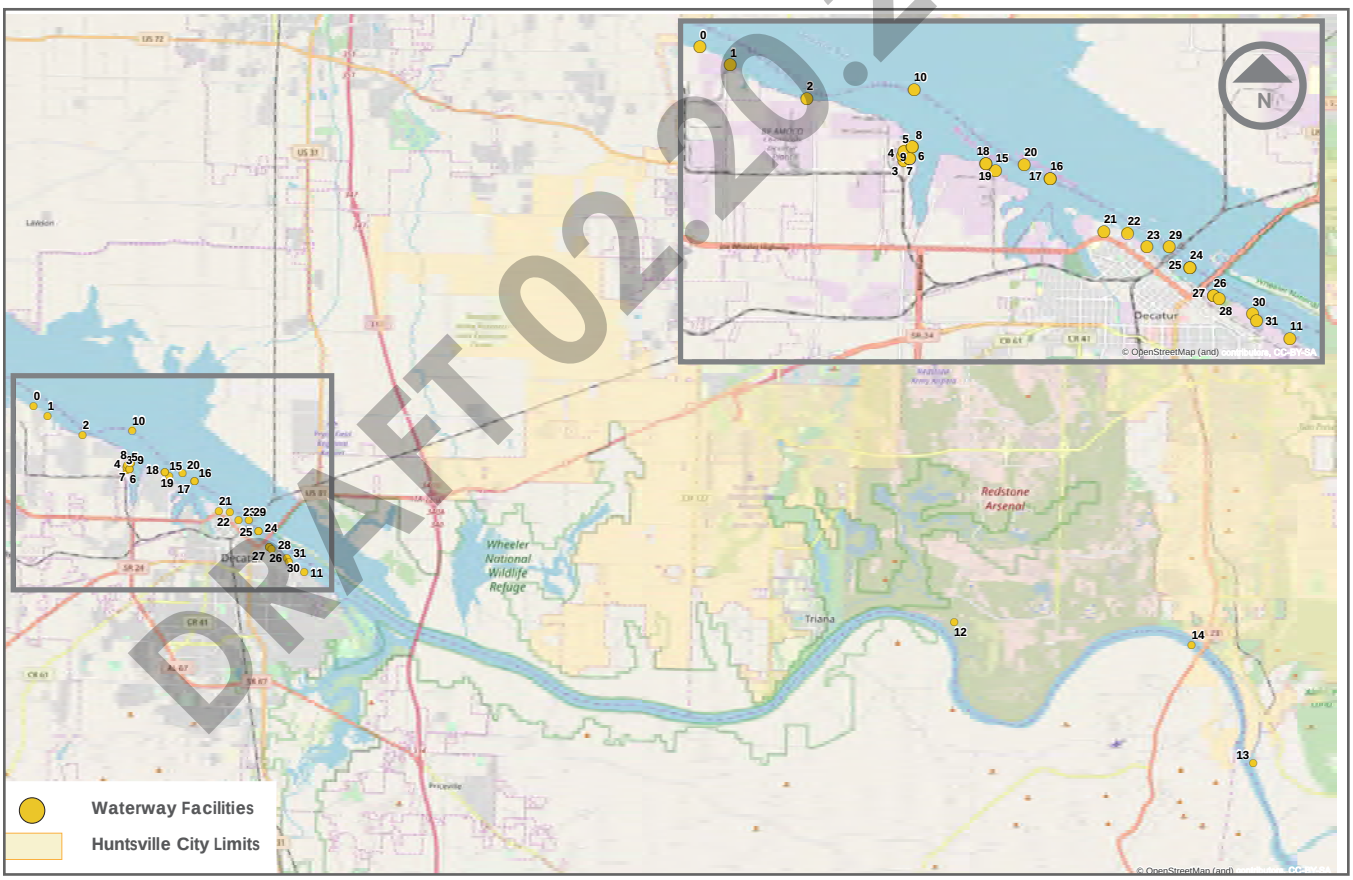
The transportation of goods via water transportation makes economic sense. Shipping of bulk commodities utilizing barge transportation proves more cost effective, since one barge can transport as much tonnage as 15 rail cars or 60 semi-trucks. The significance of the future development of this mode of transportation in the Huntsville area has been recognized. If developed, it would provide existing and expanding industries with another option of shipping products in a cost-effective manner.

The 2000 River Port Development Study determined that the City of Huntsville should identify and procure property to make barge transportation a reality to diversify its economic base. The study, which involved a full evaluation and screening of potential sites, recommended purchase at the southern end of Wall-Triana Highway, approximately 3 miles southwest of the Town of Triana. Since that time, the property has been purchased.

While the Huntsville economy can continue to grow in the advanced technology sector with or without a river port, diversification of industry is vital to future economic growth. Diversification into more traditional manufacturing industries could fit into future plans for broadening Huntsville's economic base, and a viable river port would be an asset that could aid in attracting transportation intensive industries.

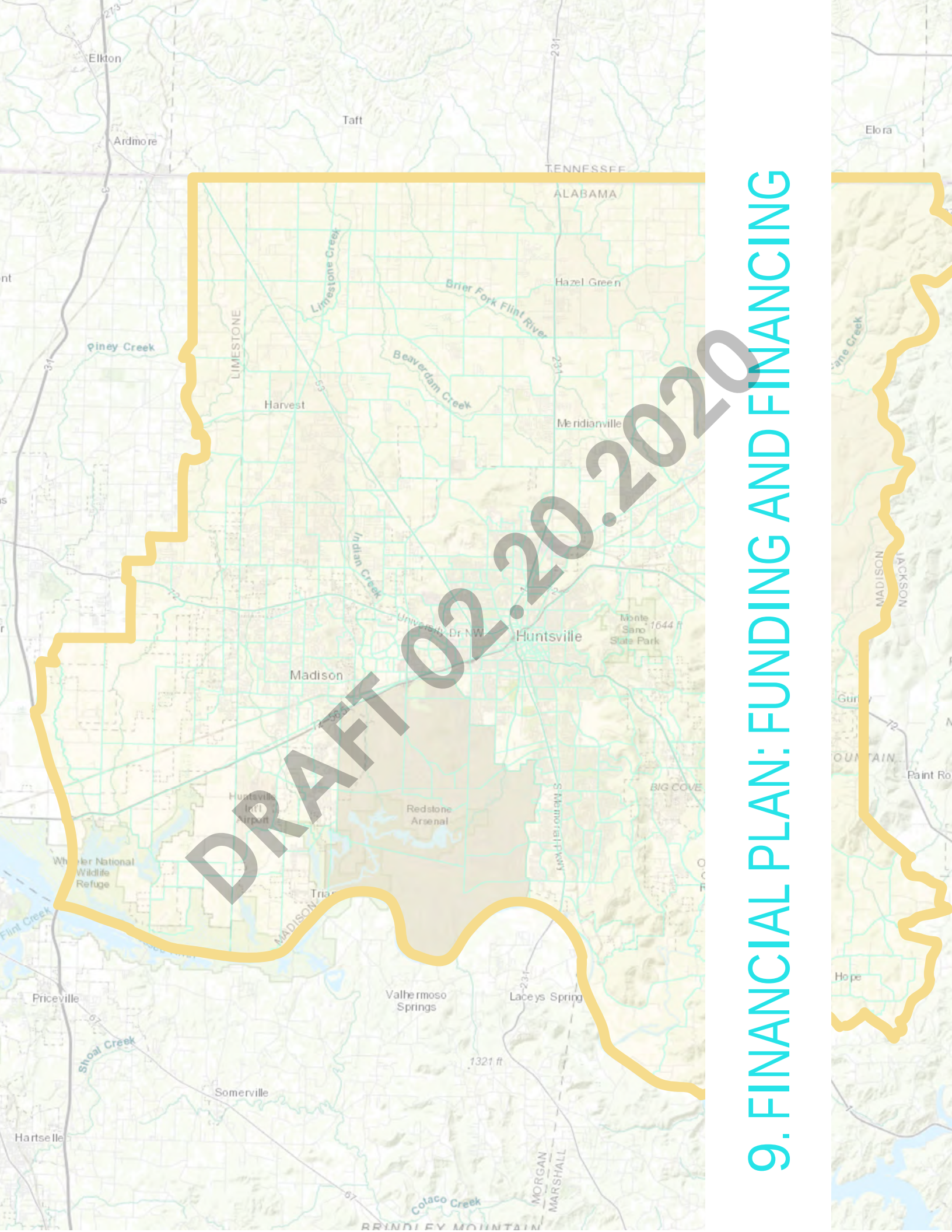
The feasibility of the new river port development is highly dependent upon a common desire and concerted effort by community leaders to recruit businesses using barge transportation. Map X illustrate the Tennessee River and Inland Waterway System. Table X in Appendix X describes waterway facilities in the vicinity of Huntsville. Map X illustrates these waterway facilities.

Map X: Waterways



Source: City of Huntsville GIS

Various modes of transportation in the area provide options for industries moving goods along the transportation system, and for individuals seeking alternative methods of trip-taking either within or outside of the study area. Long range plans have been developed to improve and/or expand services with existing or future capacity capabilities. The provision of multimodal services for industries and the general population will continue to be available, and will expand as demand and potential growth and development dictates.



9. FINANCIAL PLAN: FUNDING AND FINANCING

Introduction

MAP-21/FAST Act legislation requires MPOs to demonstrate how the long-range transportation plan can be successfully implemented through the development of a financial plan. The financial plan must indicate resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommend any additional financial strategies for needed projects and programs.

While the consideration of bicycle and pedestrian facilities have been made as part of the planned projects listed in Chapter 5, additional bicycle, pedestrian, and greenway projects have been identified in Chapter 6. These additional projects have been incorporated into this section.

Funding Sources

The implementation of a financially constrained plan for the Huntsville urban area will require a mix of funding sources. These sources include various programs at the federal, state and local levels.

Many of the needs identified are located on the state and federal highway system, and therefore, will require substantial financial assistance through the state and U.S. DOT funding programs. In order to determine available resources, historic funding data from ALDOT was examined in addition to ALDOT's expectation of future funding. During the previous ten years, over $213.5 million of project funding was utilized across all categories for capacity- adding projects, as well as maintenance and operations projects.

Graphic X: Projects Funded Previous 10 Years
Source: Huntsville 2040 LRTP

Historically, the largest proportion of funding was allocated for Surface Transportation Projects. In analyzing future projections, it is expected the largest proportion of funding, will continue to be from the Surface Transportation Project category. Table X depicts the estimated federal funding forecasts for the Huntsville Urban Area for the fiscal year 2020 to 2023. The expected operations and capital budgets for the Huntsville Urbanized Area transit program, are shown in Tables X and Graphic X.

The operating estimates are based upon the current budget and FTA allocation of funds, and take into account a typical 1% annual rate of inflation for future operating expenditures. FTA operating funds are matched by the project sponsors on a 50/50 cost basis. The capital and preventative maintenance estimates are based upon the current budget and FTA allocation of funds, and take into account a typical .5% annual rate of inflation for future preventative maintenance (PM) and capital expenditures.

FTA PM and Capital funds are matched by the project sponsors on an 80/20 cost basis. If FTA funds are not available in the amounts noted, project sponsors will be required to pay for deficiencies. FTA allows PM allocations to be treated as a capital allocation and is matched at an 80/20 cost basis instead of 50/50.

HUNTSVILLE URBAN AREA ESTIMATED FUNDING FORECASTS: TIP PROJECTS FY 2020 THRU FY 2023						
MAP-21/FAST Act Funding Categories	Capacity	Operations & Maintenance	Capacity - STPHV	Operations & Maintenance - STPHV	State	Transit
2.4.1. - Surface Transportation Attributable	*$0*	*$0*	*$18,705,600*	*$3,280,394*	*$0*	*$0*
2.4.2 - Other Surface Transportation	*$43,462,525*	*$10,060,688*	*$0*	*$0*	*$6,357,892*	*$0*
2.4.3 - NHS/IM/Bridge	*$48,346,274*	*$53,694,227*	*$0*	*$0*	*$21,672,626*	*$0*
2.4.4. - Appalachian Highway	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
2.4.5. - TAP	*$0*	*$2,001,615*	*$0*	*$0*	*$0*	*$0*
2.4.6 - Bridge	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
2.4.7 - State Funded	*$0*	*$0*	*$0*	*$0*	*$500,000*	*$0*
2.4.8. - Transportation Enhancement	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
2.4.9. - Transit	*$0*	*$0*	*$0*	*$0*	*$0*	*$23,887,369*
2.4.10 - System Maintenance	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
2.4.11. - Safety	*$0*	*$3,495,928*	*$0*	*$0*	*$195,452*	*$0*
2.4.12. - Other Federal and State	*$7,022,806*	*$3,775,656*	*$0*	*$0*	*$1,074,843*	*$0*
2.4.13. - CMAQ	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
2.4.14. - High Priority	*$0*	*$1,478,612*	*$0*	*$0*	*$0*	*$0*
TOTALS	***$98,831,605***	***$74,506,725***	***$18,705,600***	***$3,280,394***	***$29,800,813***	***$23,887,369***

Table X: Estimated Funding Forecasts
Source: Alabama Department of Transportation

It is assumed that the local MPO will continue to receive funds from the National Highway Performance Program, Bridge Program, Interstate Maintenance Program, Surface Transportation Program, and Transit programs during the next 25 years. To effectively determine anticipated revenues per relevant funding programs or categories, the ALDOT staff projected funding based upon each program's average past revenues within a ten-year period.

HUNTSVILLE URBANIZED AREA LONG TERM PLAN APPROPRIATION ESTIMATES FY 2020 - 2045					
Years	Capacity Funding	Operations & Maintenance Funding	Transit Funding	MPO Dedicated Funding	State Funding
2020 - 2023	$98,831,605	$74,506,725	$10,466,635	$32,784,160	$29,800,813
2024 - 2028	$32,349,757	$54,292,191	$13,667,752	$37,587,054	$0
2029 - 2033	$33,999,920	$57,061,638	$14,364,945	$39,504,372	$0
2034 - 2038	$35,734,257	$59,972,355	$15,097,702	$41,519,492	$0
2039 - 2045	$53,110,946	$89,135,433	$22,439,342	$61,709,397	$0
TOTAL	**$254,026,484**	**$334,968,343**	**$76,036,376**	**$213,104,476**	**$0**

Table X: Huntsville Urbanized Area Long Term Plan Appropriation Estimates
Source: Alabama Department of Transportation

Graphic X represents the estimated operating appropriations for transit operations. The estimates are based upon the current budget and FTA allocation of funds, and take into account a typical 1% annual rate of inflation for future operating expenditures. Graphic X also represents the estimated capital vehicle and preventative maintenance (PM) appropriations for transit capital and preventative maintenance. The estimates above are based upon the current budget and FTA allocation of funds, and take into account a typical 0.5% annual rate of inflation for future preventative maintenance (PM) and capital expenditures.

HUNTSVILLE URBANIZED AREA TRANSIT CAPITAL AND PREVENTATIVE MAINTENANCE (PM) ESTIMATED CAPITAL VEHICLE AND PM APPROPRIATIONS (FEDERAL FUNDS ONLY)				
Years	Total Funding	Operations and Maintenance Funding	Preventative Maintenance Funding	Capital Funding
2020 - 2024	$13,200,185	$5,544,078	$2,508,035	$5,148,072
2025 - 2029	$13,807,191	$5,799,020	$2,623,366	$5,384,804
2030 - 2039	$29,795,278	$12,514,017	$5,661,103	$11,620,158
2040 - 2044	$16,028,101	$6,731,803	$3,045,339	$6,250,960
2045	$3,205,620	$1,346,361	$609,068	$1,250,192
TOTAL	**$76,036,376**	**$31,935,278**	**$14,446,911**	**$29,654,187**

Table X: Huntsville Urbanized Area Transit Capital and Preventative Maintenance
Source: Alabama Department of Transportation

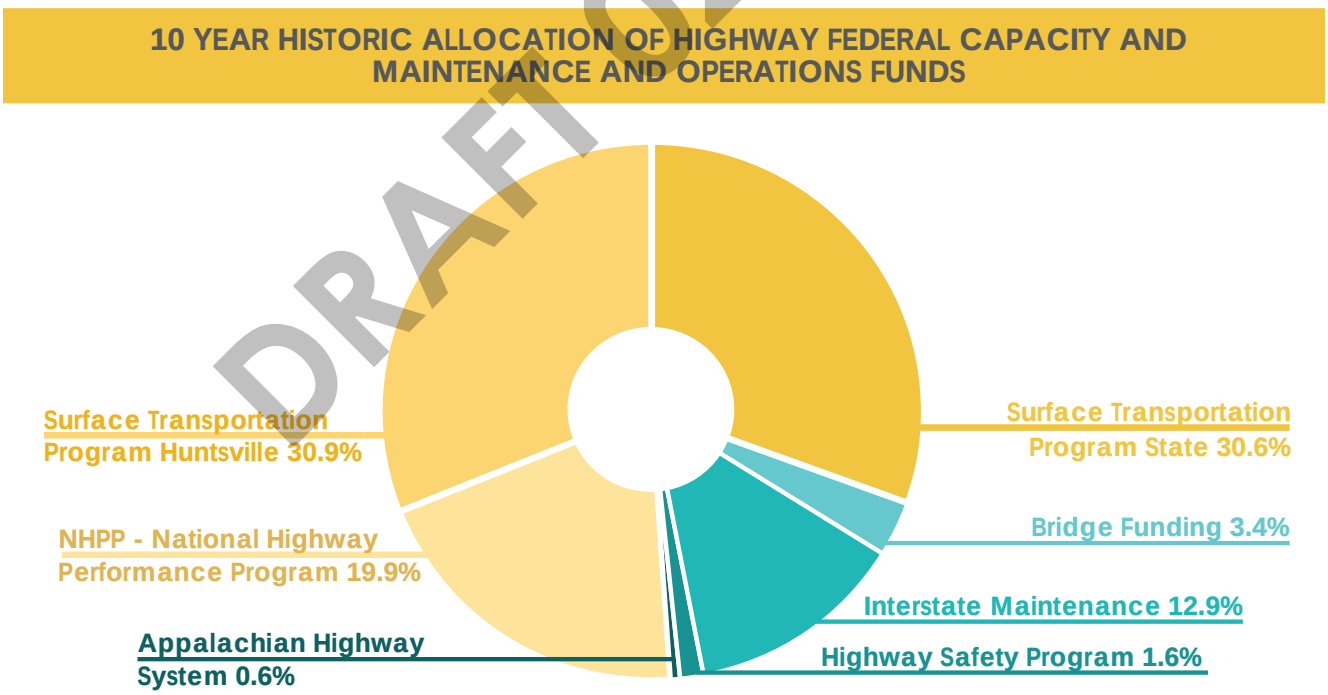
Additionally, the ALDOT's plan to spend $150 million per year statewide on capacity projects over a ten-year period was considered when making these funding projections. The FTA projections were based upon past funding trends and information gathered from the ALDOT and the Huntsville Public Transit Division.

The ALDOT estimates Surface Transportation Program Any Area (STPAA) funds to be approximately $11.7 million, for the next 10 years, for the purpose of constructing capacity projects. STPAA maintenance and operations funds are estimated to be $149.5 million during the twenty-five year period.

The maintenance funds will be used to maintain current and planned roadway facilities in the study area. Even though historic data has been analyzed in order to project anticipated funding, there are instances where funding in certain project categories will increase due to new sources of financing, at the discretion of the Governor, or the leveraging of local funds to complete projects. Examples of this are the Alabama Transportation Rehabilitation and Improvement Program (ATRIP) and the City of Huntsville/State of Alabama Restore our Roads initiative.

Based upon the uncertainty of future funding amounts through the Highway Trust Fund, and a large maintenance effort proposed by the State, the Alabama Department of Transportation has made a decision to spend more dollars on maintenance and operations activities over the next twenty-five years. Because of this, the Alabama Department of Transportation will be limiting its spending for the next ten years to capacity projects, while dedicating the remaining funds to maintenance and operations projects.

The Huntsville MPO has historically used its own directed Surface Transportation Program funds for capacity projects. This practice will continue, as maintenance and operations activities are typically funded through each jurisdiction's own capital improvements budget.

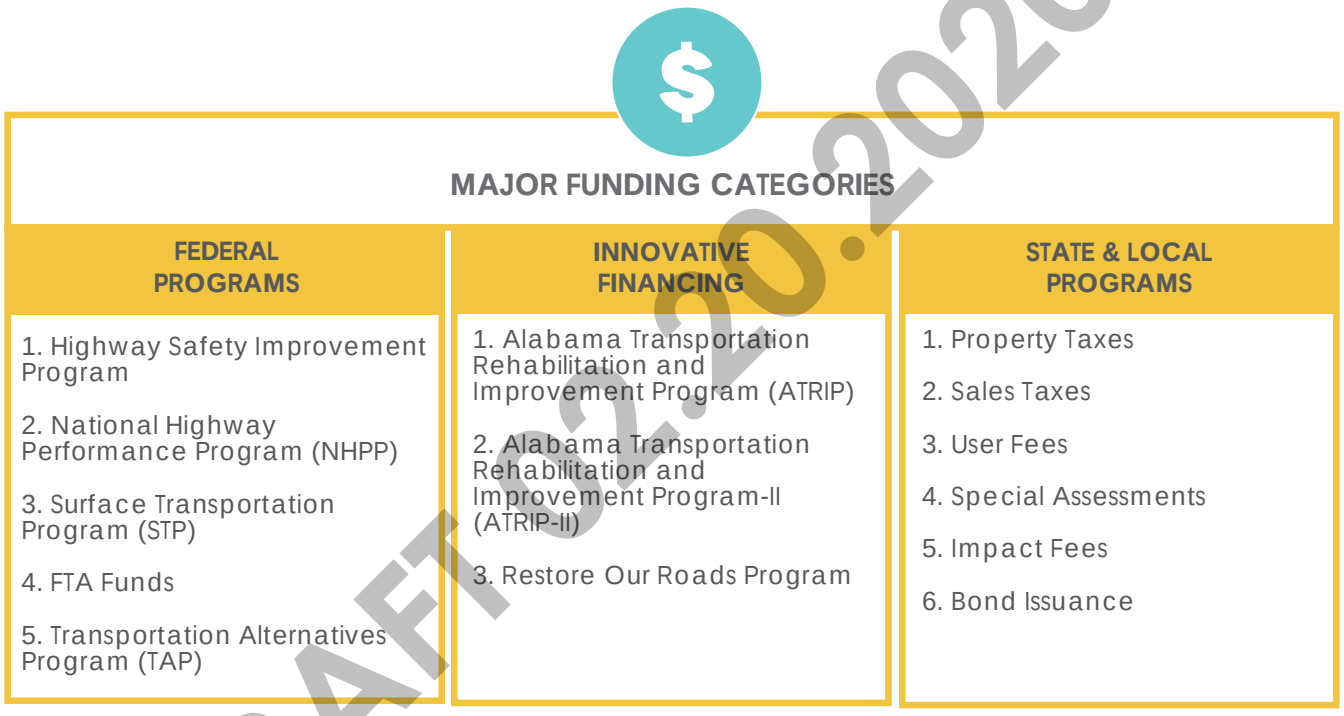


Graphic X: Historic Allocation of Funds
Source: Alabama Department of Transportation

Major Funding Categories

The MAP-21/FAST Act legislation streamlined federal highway transportation programs, by simplifying and consolidating the program structure into a smaller number of broader core programs. Activities carried out under the previous National Highway System Program, Interstate Maintenance Program, Highway Bridge Program, and Appalachian Development Highway System Program have now been incorporated into the National Highway Performance Program (NHPP), Surface Transportation Program (STP), Highway Safety Improvement Program (HSIP), and Congestion Mitigation and Air Quality (CMAQ) Improvement Program.

The Huntsville Area MPO does not qualify for CMAQ funds, since the area meets the National Ambient Air Quality Standards for ozone, carbon monoxide, and particulate matter. The following is an analysis of anticipated revenues for the long range plan implementation.



Graphic X: Major Funding Categories
Source: Alabama Department of Transportation

Federal Programs

Federal funding amounts shown in this section reflect the Alabama Department of Transportation's projections of future funds. Various categories of federal funds are available for transportation improvements. These categories may be further broken down into capacity adding and maintenance and operations.

Capacity funding is dedicated to projects that improve or widen an eligible corridor. Maintenance and Operations (MO) funding is dedicated to projects that construct improvements such as traffic signal installation, improved signage, intersection improvements, etc. Historically, ALDOT has used maintenance funds for activities such as resurfacing, corridor studies, signalization, safety improvements, shoulder paving, pedestrian overpasses, signals and markings, and streetscape projects. More information can be found in Appendix X.

Innovative Financing

The two innovative financing mechanisms adopted include the Alabama Transportation Rehabilitation and Improvement Program (ATRIP) and the Restore Our Roads Program. In order to facilitate the delivery of projects, Congress has enabled States to develop and use a variety of financial tools such as bonds to make needed investments on the transportation network. ATRIP utilizes Grant Anticipation Revenue Vehicles (GARVEE) bonds. GARVEE bonds utilize the State's future federal aid funds as collateral, to issue low interest rate bonds that address projects that are needed immediately.

Restore Our Roads Program is an initiative between the State of Alabama and the City of Huntsville to construct critical transportation improvements in the City of Huntsville. This special agreement between the two entities commits a total of $250 million to needed road improvements, with both jurisdictions splitting the cost on a 50/50 basis.

State and Local Programs

Project costs not covered by federal programs are the responsibility of state and local governments. Most federal programs require a 20 percent match of state or local funds. State and local funding comes primarily from property taxes, sales taxes, user fees, special assessments, and impact fees. The revenues from property or sales taxes can also be used to pay off general obligation or revenue bonds.

Locally, the City of Huntsville approved Ordinance 13-959 in December 2013, that allocates an additional 1 percent sales and use tax to road and other infrastructure projects. The City of Madison and Madison County have also created the Town Madison Cooperative District to fund an interchange on I-565 near Zierdt Road. The Town Madison Cooperative District is a Community Development District that allows sales tax revenue, as well as property taxes from the district, to repay money borrowed for development in the area.

Federal Competitive Grants

Federal competitive grant programs may be available to fund major transportation projects, such as the FHWA BUILD grant and DOT Smart City Program. The goal of these grant programs is to support innovative and collaborative local transportation projects which align with the specific criteria of each individual grant. MPO member jurisdictions apply for competitive federal grant programs according to each individual grant's application schedule as outlined in a Notice of Funding Availability. MPO member jurisdictions applying for such grants may contact the MPO to include their proposed grant-funded project(s) in the TRiP 2045, if not included already, as 'visionary' projects. In the event of a winning grant application, funded projects will be moved to the 'financially constrained' category in the TRiP 2045 and added to the TIP, if applicable.

Note - The projection of State revenues is difficult to predict and may vary from year to year; therefore, projected State Program funding is not included in this section.

Program Costs

The overall list of planned projects was evaluated, and the projects were categorized per funding source as appropriate. The projects receiving the highest priority, were those projects that either are in process, in the Transportation Improvement Program, or are exhibited on the Alabama Department of Transportation's Comprehensive Project Management System (CPMS) as being programmed for future years. The Alabama Department of Transportation established a policy to dedicate State-directed funds for capacity projects, during fiscal years 2020 through 2045, and to program remaining funds to maintenance and operating projects for the entire twenty-five year period.

The Huntsville Area MPO has the authority to program the Surface Transportation Program urbanized area funds, and has done so. Once programmed projects were segregated from the remaining projects, future projects were selected based upon available funds remaining.

1. Financially Constrained Projects

A breakdown of the financially constrained planned transportation projects per funding category is available in Table X. All costs have been adjusted at 1 percent per year for the anticipated year of expenditure.

The cost of most projects reflects current year dollars, because it is unknown exactly when those projects may be constructed. It is therefore impossible to estimate inflated costs for a future year when the future year of construction is unknown. In some instances, the Alabama Department of Transportation has estimated the cost of an improvement for a future scheduled year, and those costs are reflected. The costs for both tables reflect charges for preliminary engineering, right of way, construction, and include the costs for bike lanes and sidewalks, where planned.

2. Visionary Projects

In many instances, projects exceeded anticipated funding revenues. While the MPO staff developed reasonable cost estimates of all project costs using the techniques previously described, the staff had to limit projects based upon expected revenues per source. Since TRiP 2045 must be financially constrained, projects lacking funding are listed in Table X as visionary projects. This list of visionary projects will be maintained in the hope that additional funds will be acquired.

Proposed Sources of Revenues to Cover Shortfalls

23 CFR 450.322(f)(10)(ii) and (iii) directs the MPO, public transportation operator(s), and the State to "…cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under § 450.314(a)."

Additionally, the regulations require that "…all necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified. The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified."

Currently, funds are inadequate to finance all of the NHPP and STP projects identified in TRiP 2045. Alternative sources of funds will be needed to cover any shortfalls. It is anticipated that supplemental funding for the long-range plan may come from the following sources as shown in Graphic X.

Graphic X: Alternative Funding Sources

There may be some instances where corridors may be required, based upon market demand and development. In cases such as this, private funds may be made available to perform needed roadway improvements, based upon specific development-driven growth. Additionally, Table X identifies unfunded maintenance and operations projects, as well as unfunded enhancement-type projects.

The maintenance and operations projects primarily focus on the construction of interchanges, bridge replacements, and geometric improvements. The projects have been categorized by funding source. Enhancement-type projects, which would include the construction of greenways and signage of bike routes, may be eligible for Transportation Alternatives Program funds.

The allocation of these funds are based upon the discretion of the State of Alabama and the MPO, and are distributed through grant activities. All of these types of projects compliment the road improvement projects identified in Section 4, by providing bicycle and pedestrian facilities such as bike lanes and signage, bike routes, and greenways. Federal funds in the amount of over $63.6 million are required to construct these types of projects.

The long range transportation plan presented, and the projects selected to facilitate the future movement of people and goods within the MPO study area, are realistic and exhibit financial constraint. The projects detailed in this document indicate the best fit for improvements within the area. Actual implementation of this plan will be incremental, since these projects will be programmed into future 5-year Transportation Improvement Programs (TIPs) as local priorities and available funds dictate.

FINANCIALLY CONSTRAINED PROJECTS

2.4.1 SURFACE TRANSPORTATION ATTRIBUTABLE PROJECTS

SPONSOR: MADISON COUNTY

PROJECT FAMILY ID	PROJECT NUMBER (FANBR)	PROJECT DESCRIPTION	PROJECT LENGTH (MILES)	SCOPE	PROJECT TYPE	FY	FEDERAL STATE OTHER	ESTIMATED TOTAL COST
38017	100062257 STPHV 4514 ( )	ADDITIONAL LANES ON JEFF ROAD (CR-19) FROM DOUGLASS ROAD TO SR-53	3.20	UT	ADDITIONAL ROADWAY LANES	2024	$960,000 $0 $0	$960,000
38017	100062258 STPHV 4514 ( )	ADDITIONAL LANES ON JEFF ROAD (CR-19) FROM DOUGLASS ROAD TO SR-53	3.20	CN	ADDITIONAL ROADWAY LANES	2025	$17,000,000 $0 $4,250,000	$21,250,000
TOTALS BY SPONSOR				***FEDERAL: $17,960,000***		***ALL FUNDS: $22,210,000***		

SPONSOR: TBD

38014	100062238 STPHV 4514 ( )	HUNTSVILLE NORTHERN BYPASS FROM 1500 FEET EAST OF SR-1 (US-231/431) INTERSECTION TO WINCHESTER ROAD	6.06	CN	GRADE, DRAIN, BASE AND PAVE	2024	$20,000,000 $0 $5,000,000	$25,000,000
42074	100067312 STPHV 4517 ( )	WIDENING FOR ADDITIONAL LANES ON CR-47 (BLAKE BOTTOM ROAD) FROM CR-19 (JEFF ROAD) TO SR-255 (RESEARCH PARK BOULEVARD)	2.38	PE	ADDITIONAL ROADWAY LANES	2027	$484,400 $0 $121,100	$605,500
42074	100067314 STPHV 4517 ( )	WIDENING FOR ADDITIONAL LANES ON CR-47 (BLAKE BOTTOM ROAD) FROM CR-19 (JEFF ROAD) TO SR-255 (RESEARCH PARK BOULEVARD)	2.38	RW	ADDITIONAL ROADWAY LANES	2028	$240,000 $0 $60,000	$300,000
42074	100067316 STPHV 4517 ( )	WIDENING FOR ADDITIONAL LANES ON CR-47 (BLAKE BOTTOM ROAD) FROM CR-19 (JEFF ROAD) TO SR-255 (RESEARCH PARK BOULEVARD)	2.38	UT	ADDITIONAL ROADWAY LANES	2030	$400,000 $0 $0	$400,000
42074	100067318 STPHV 4517 ( )	WIDENING FOR ADDITIONAL LANES ON CR-47 (BLAKE BOTTOM ROAD) FROM CR-19 (JEFF ROAD) TO SR-255 (RESEARCH PARK BOULEVARD)	2.38	CN	ADDITIONAL ROADWAY LANES	2031	$5,667,600 $0 $1,416,900	$7,084,500
44571	100070587 STPHV 4519 ( )	REDSTONE ARSENAL EAST CONNECTOR FROM I-565 TO REDSTONE ARSENAL GATE 10 (PATTON ROAD GATE)	0.00	CN	GRADE, DRAIN, BASE, PAVE AND BRG	2024	$24,000,000 $0 $6,000,000	$30,000,000
TOTALS BY SPONSOR				***FEDERAL: $50,792,000***		***ALL FUNDS: $63,390,000***		

2.4.2 OTHER SURFACE TRANSPORTATION PROGRAM PROJECTS

SPONSOR: CITY OF MADISON

34944	100061224 ACAA61224 ATRP (012)	ADDITIONAL LANES SR-2 (US-72) FROM BALCH ROAD TO HUGHES ROAD IN THE CITY LIMITS OF MADISON	1.55	CN	ADDITIONAL ROADWAY LANES	2024	$4,399,890 $0 $2,167,110	$6,567,000
TOTALS BY SPONSOR				***FEDERAL: $4,399,890***		***ALL FUNDS: $6,567,000***		

FINANCIALLY CONSTRAINED PROJECTS

2.4.3 NHS / INTERSTATE MAINTENANCE / NHS BRIDGE PROJECTS

SPONSOR: ALDOT

PROJECT FAMILY ID	PROJECT NUMBER (FANBR)	PROJECT DESCRIPTION	PROJECT LENGTH (MILES)	SCOPE	PROJECT TYPE	FY	FEDERAL STATE OTHER	ESTIMATED TOTAL COST
22279	100043927 BRF 0053 (518)	BRIDGE REPLACEMENT (WHITEBURG BRIDGE) OF SOUTHBOUND BRIDGE ON SR-53 (US-231) OVER THE TENNESSEE RIVER (008809)	1.59	CN	BRIDGES AND APPROACHES	2042	$960,000 $0 $0	$960,000
15103	100037275 NH 0053 (553)	SR-53 ADDITIONAL LANES FROM N OF TAURUS DRIVE TO HARVEST ROAD	0.78	CN	GRADE, DRAIN, BASE AND PAVE	2024	$7,966,753 $1,991,688 $0	$9,958,442
37694	100061846 NHF 0002 (566)	ADDITIONAL LANES SR-2 (US-72) FROM COUNTY LINE ROAD TO PROVIDENCE MAIN ROAD IN THE CITY OF HUNTSVILLE	5.44	UT	ADDITIONAL ROADWAY LANES	2024	$2,532,117 $633,029 $0	$3,165,146
37694	100061847 NH 0002 ( )	ADDITIONAL LANES SR-2 (US-72) FROM COUNTY LINE ROAD TO PROVIDENCE MAIN ROAD IN THE CITY LIMITS OF HUNTSVILLE	5.44	CN	ADDITIONAL ROADWAY LANES	2024	$24,000,000 $6,000,000 $0	$30,000,000
TOTALS BY SPONSOR					***FEDERAL: $78,708,128***		***ALL FUNDS: $98,385,160***	

SPONSOR: TBD

22279	100062194 BRF 0053 (518)	BRIDGE REPLACEMENT (WHITEBURG BRIDGE) OF SOUTHBOUND BRIDGE ON SR-53 (US-231) OVER THE TENNESSEE RIVER (008809)	1.59	PE	BRIDGES AND APPROACHES	2041	$277,614 $69,404 $0	$347,018
35557	100059101 NH I565 ( )	ADD LANES I-565 FROM CR-115 (GREENBRIER ROAD) TO MADISON COUNTY LINE	3.56	CN	ADDITIONAL ROADWAY LANES	2043	$20,688,654 $5,172,163 $0	$25,860,817
1700	100066444 NH 0001 ( )	SR-1 (MEMORIAL PARKWAY) FROM LAKEWOOD DRIVE TO HOLLOW ROAD INCLUDING OVERPASSES AT STALLWORTH ROAD AND WINCHESTER ROAD (PHASE II)	1.62	PE	GRADE, DRAIN, BASE, PAVE AND BRG	2037	$2,575,725 $643,931 $0	$3,219,656
1700	100066446 NH 0001 ( )	SR-1 (MEMORIAL PARKWAY) FROM LAKEWOOD ROAD TO HOLLOW ROAD INCLUDING OVERPASSES AT STALLWORTH ROAD AND WINCHESTER ROAD (PHASE II)	1.62	RW	GRADE, DRAIN, BASE, PAVE AND BRG	2037	$5,612,874 $1,403,219 $0	$7,016,093
1700	100066447 NH 0001 ( )	SR-1 (MEMORIAL PARKWAY) FROM LAKEWOOD DRIVE TO HOLLOW ROAD INCLUDING OVERPASSES AT STALLWORTH ROAD AND WINCHESTER ROAD (PHASE II)	1.62	UT	GRADE, DRAIN, BASE, PAVE AND BRG	2038	$2,594,678 $648,670 $0	$3,243,347
1700	100066448 NH 0001 ( )	SR-1 (MEMORIAL PARKWAY) FROM LAKEWOOD DRIVE TO HOLLOW ROAD INCLUDING OVERPASSES AT STALLWORTH ROAD AND WINCHESTER ROAD (PHASE II)	1.62	CN	GRADE, DRAIN, BASE AND PAVE	2038	$48,271,168 $12,067,792 $0	$60,338,959
35555	100059097 NH I565 ( )	ADD LANES I-565 FROM EAST OF I-65 (MP 0.617) TO CR-115 (GREENBRIER RD)	2.85	PE	ADDITIONAL ROADWAY LANES	2044	$920,586 $230,146 $0	$1,150,732
35557	100059100 NH I565 ( )	ADD LANES I-565FROM CR-115 (GREENBRIER RD) TO MADISON COUNTY LINE	3.56	PE	ADDITIONAL ROADWAY LANES	2041	$1,082,564 $270,641 $0	$1,353,205
TOTALS BY SPONSOR					***FEDERAL: $82,023,863***		***ALL FUNDS: $102,529,828***	

VISIONARY PROJECTS

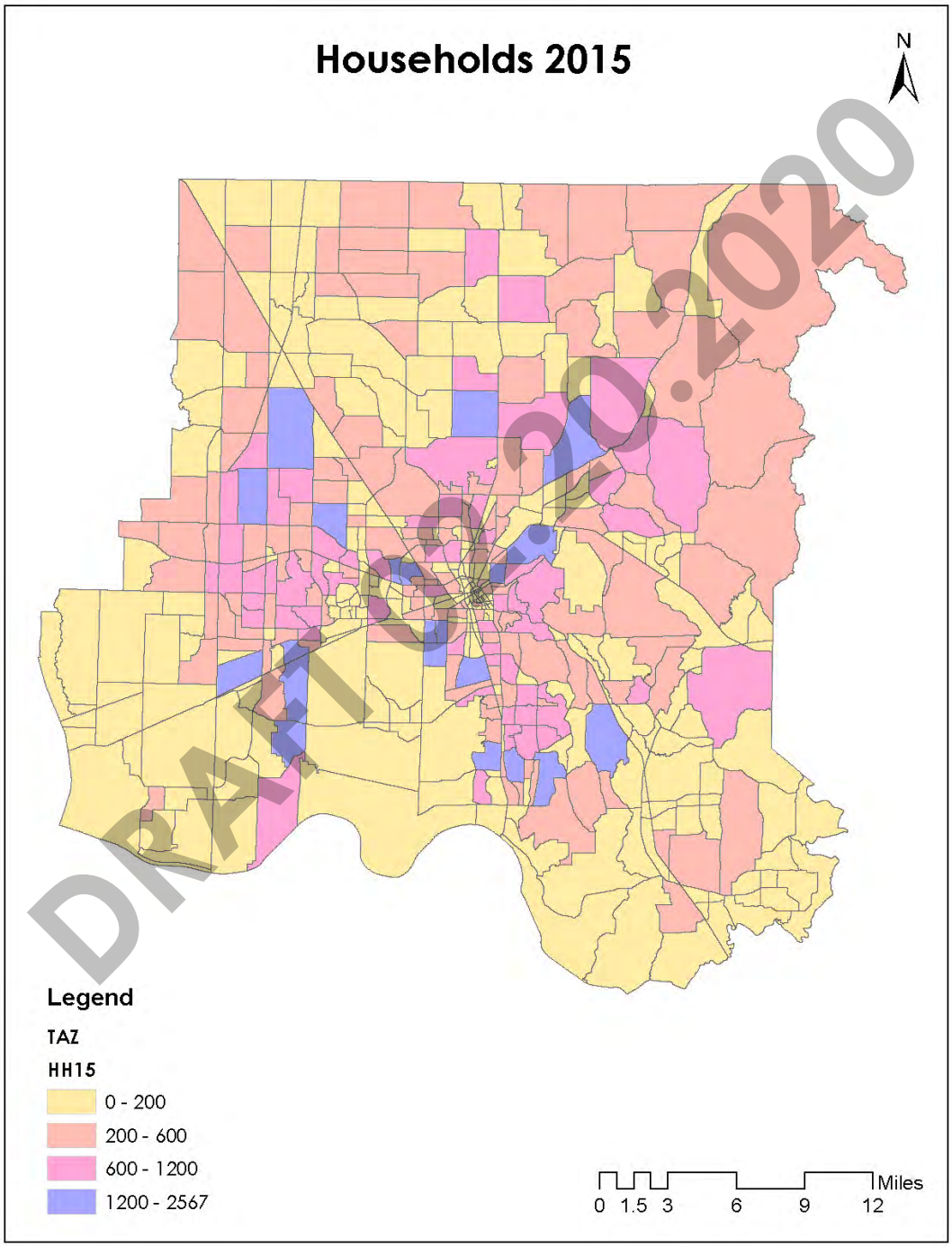
XX

SPONSOR:

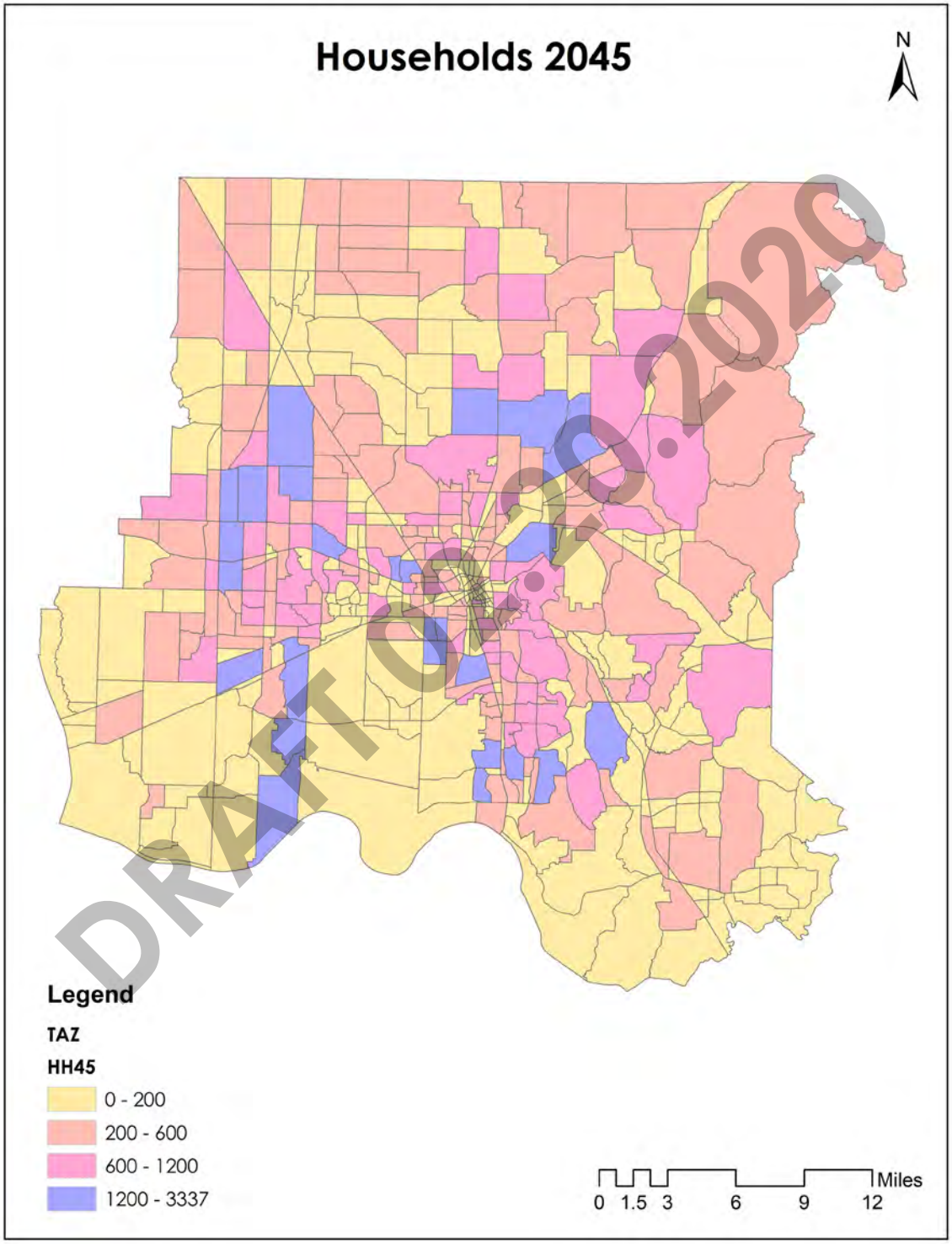
PROJECT FAMILY ID	PROJECT NUMBER (FANBR)	PROJECT DESCRIPTION	PROJECT LENGTH (MILES)	SCOPE	PROJECT TYPE	FY	FEDERAL STATE OTHER	ESTIMATED TOTAL COST

Appendix A:
Socio-Economic Maps

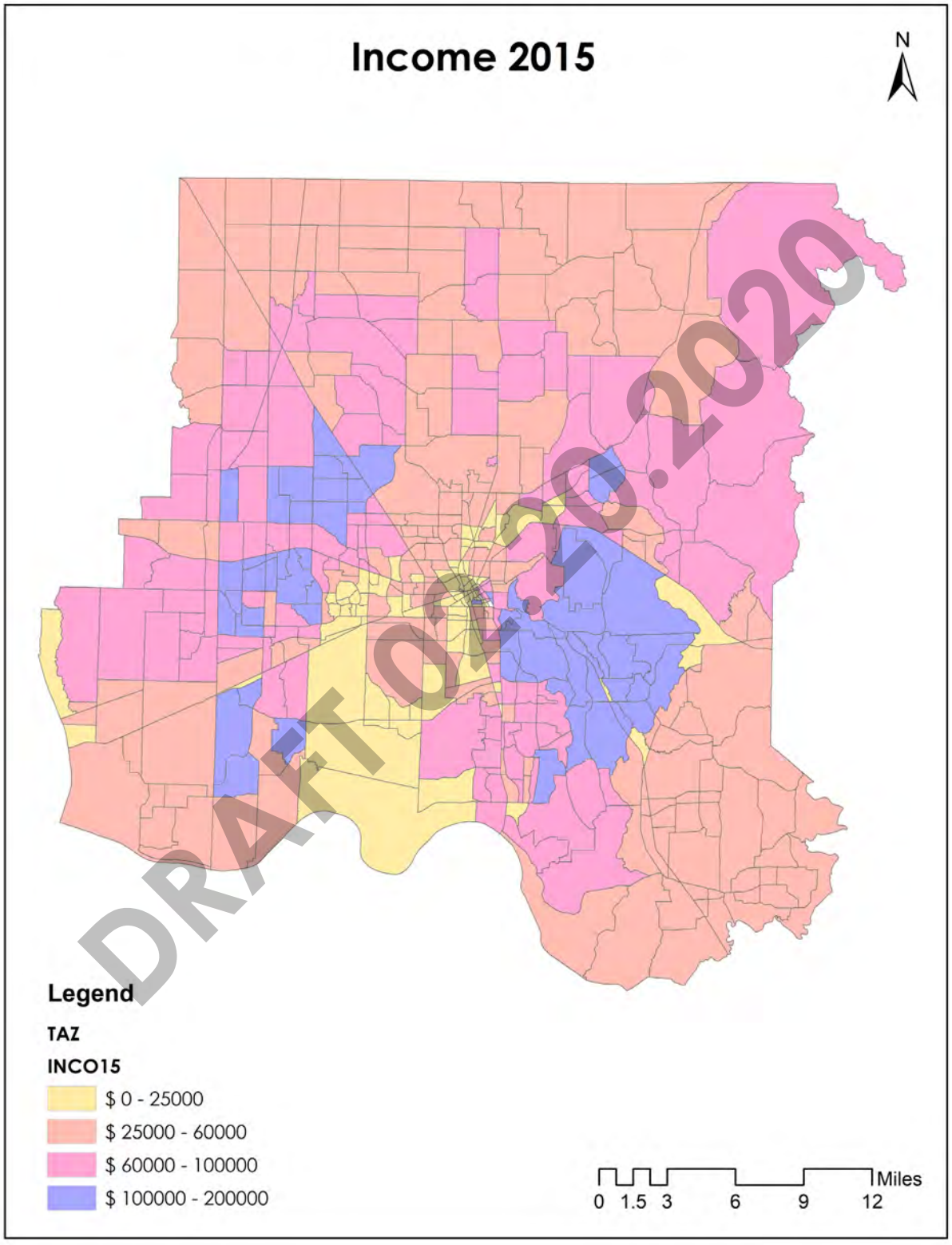
Map 1a: Households 2015



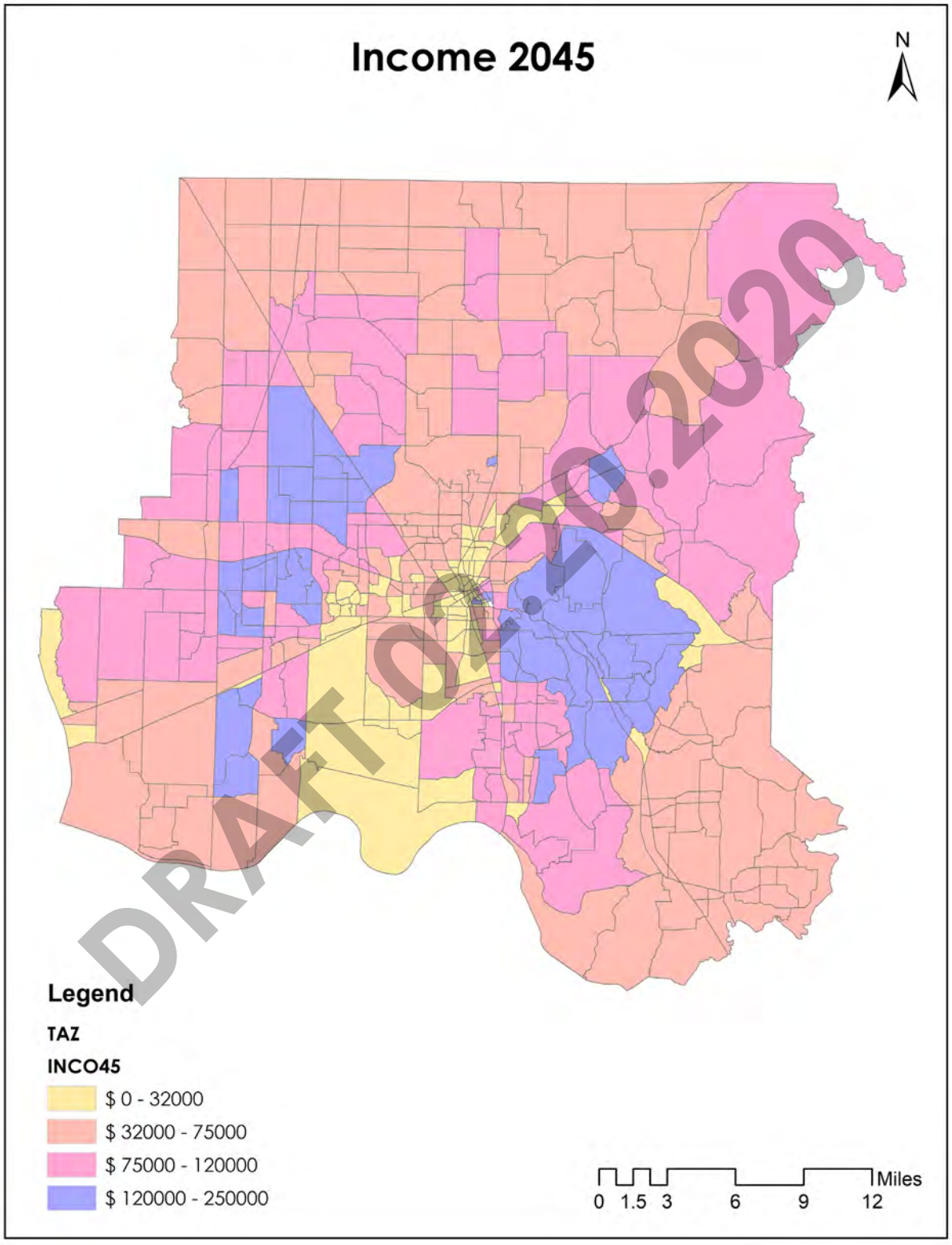
Map 1b: Households 2045



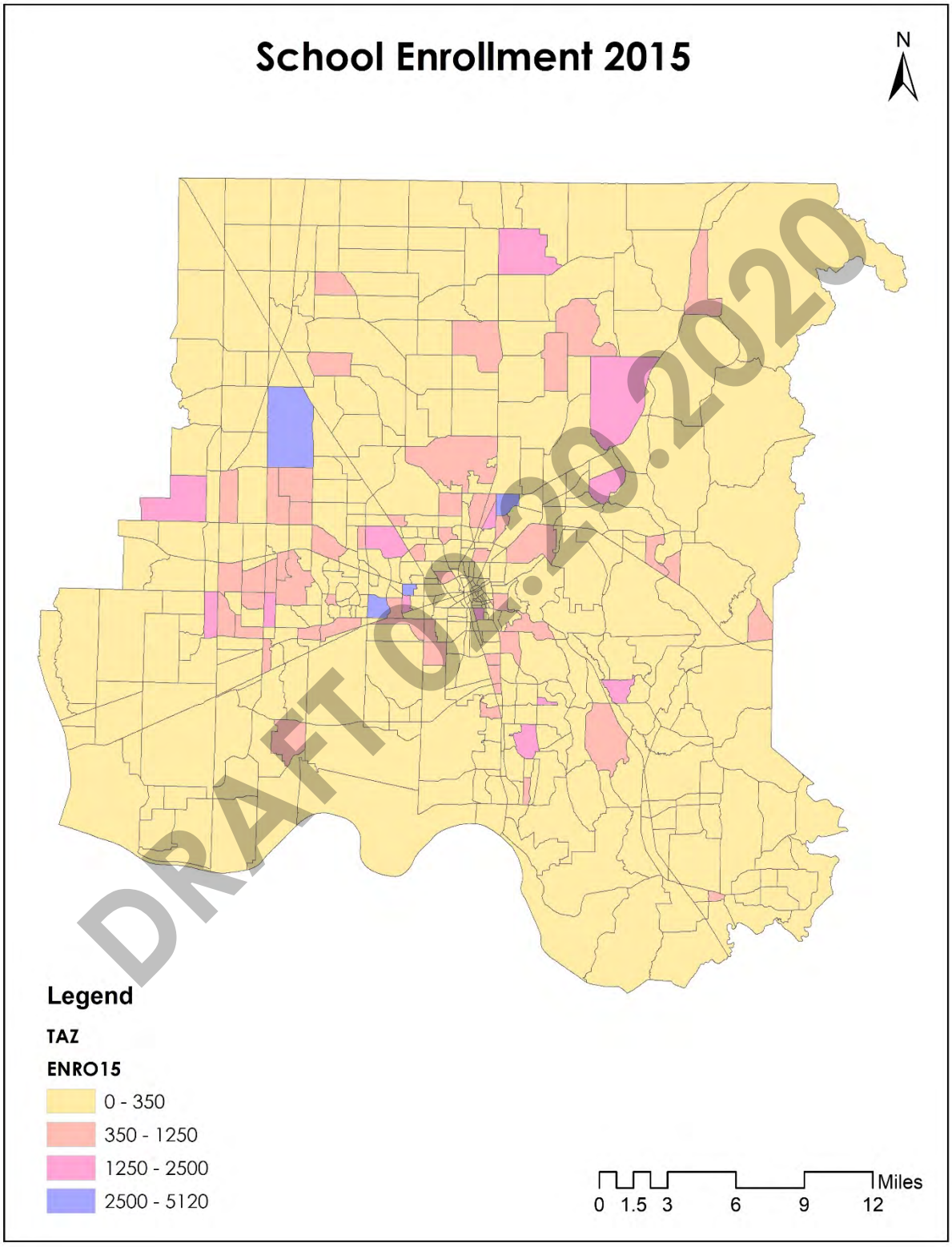
Map 2a: Income Distribution 2015



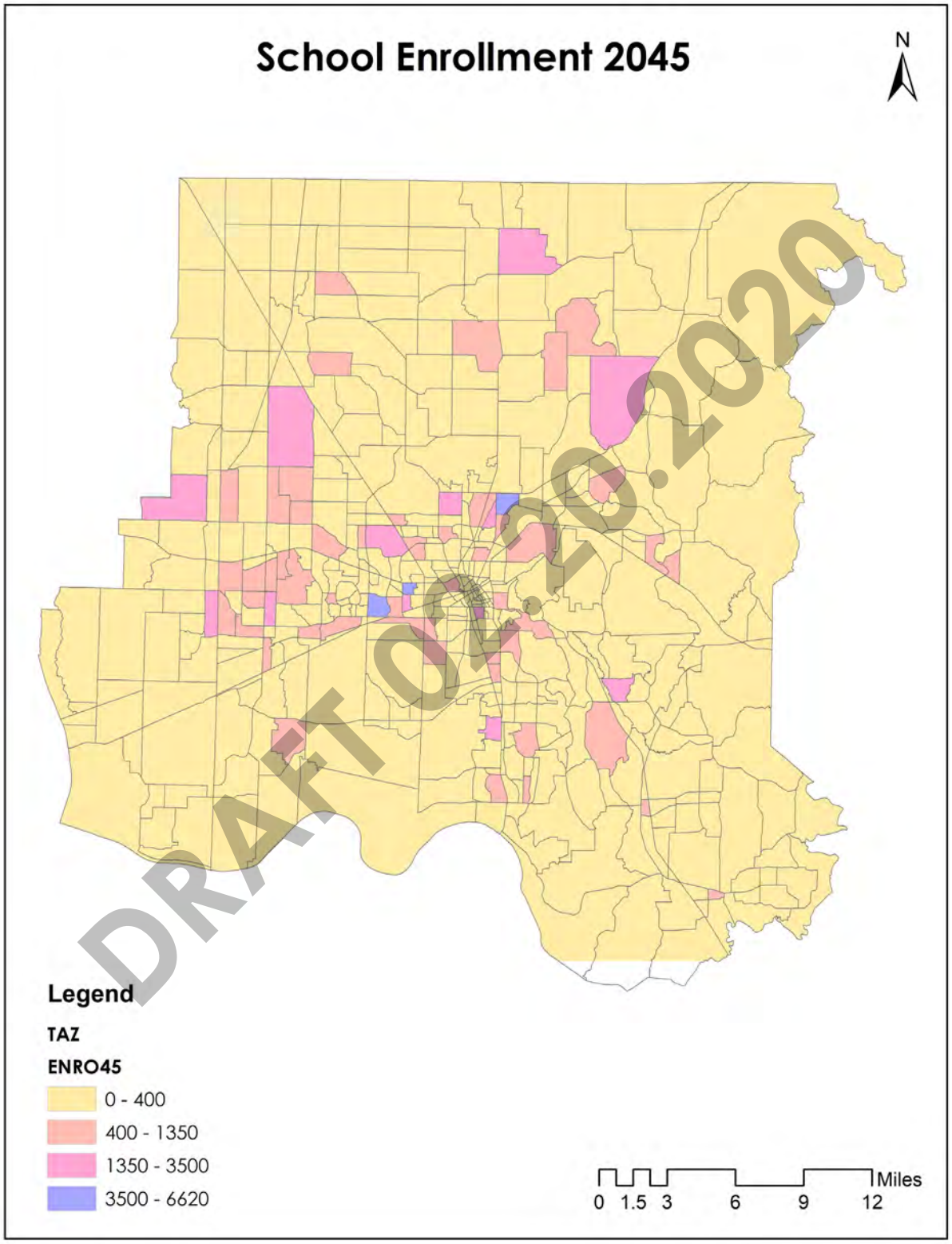
Map 2b: Income Distribution 2045



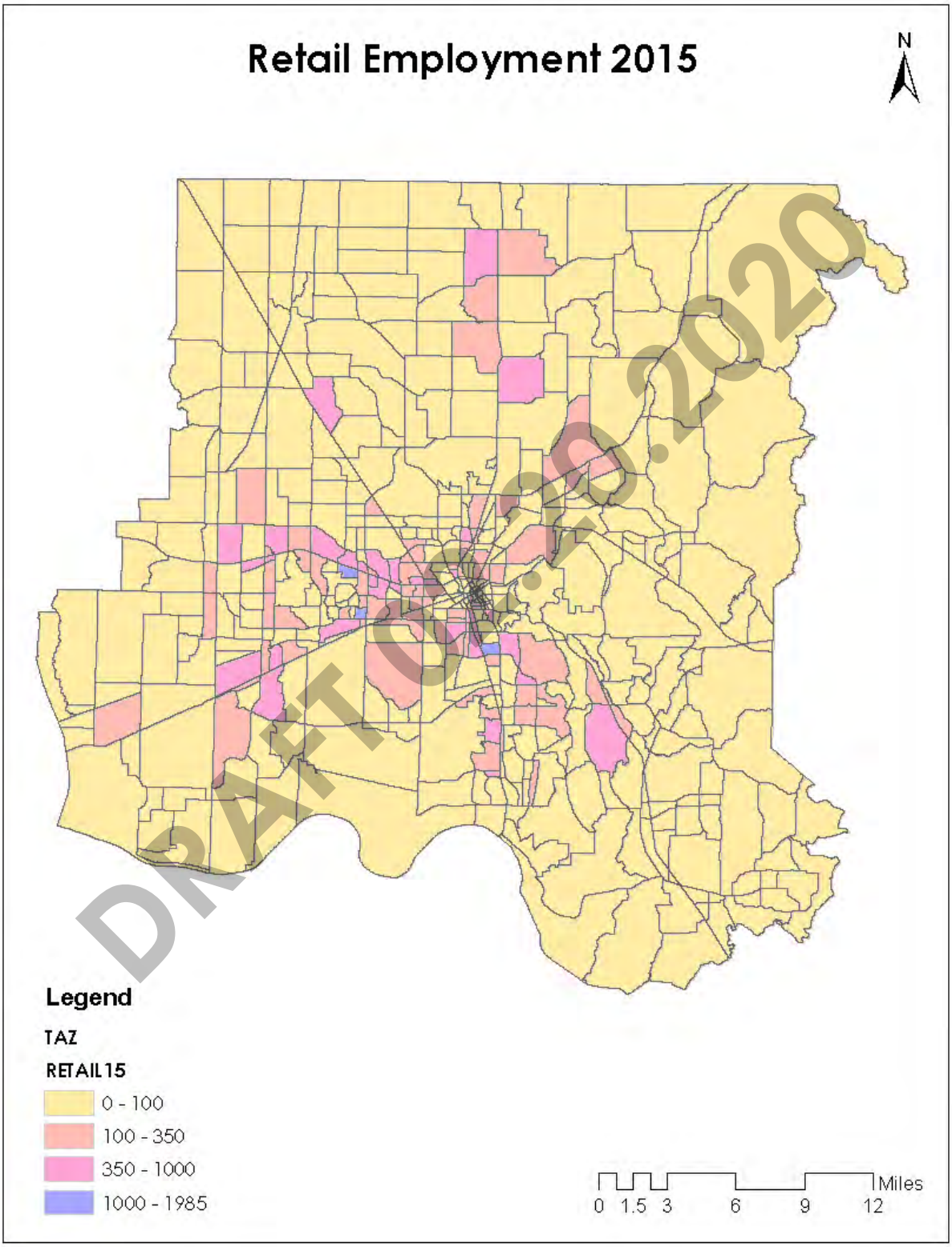
Map 3a: School Enrollment 2015



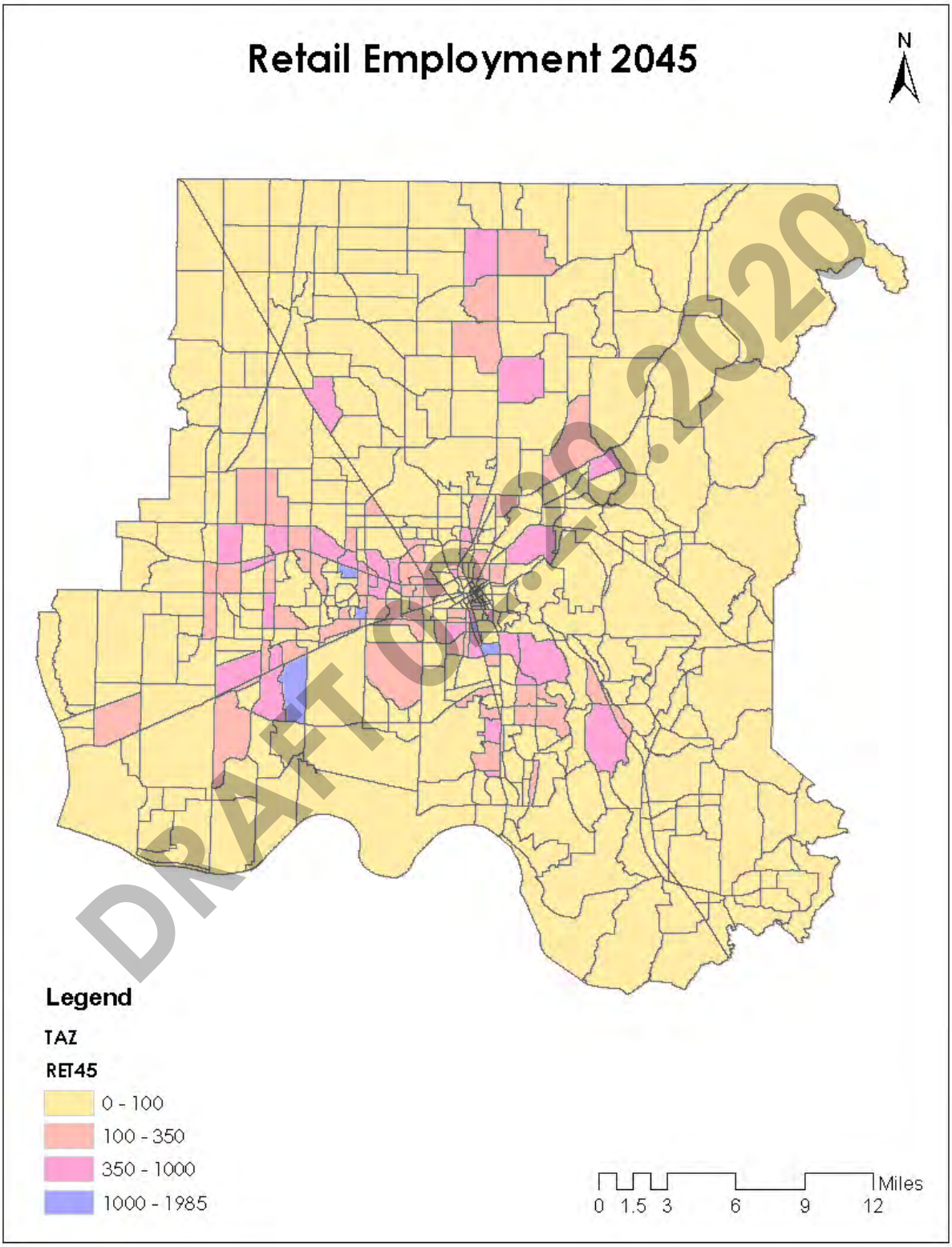
Map 3b: School Enrollment 2045



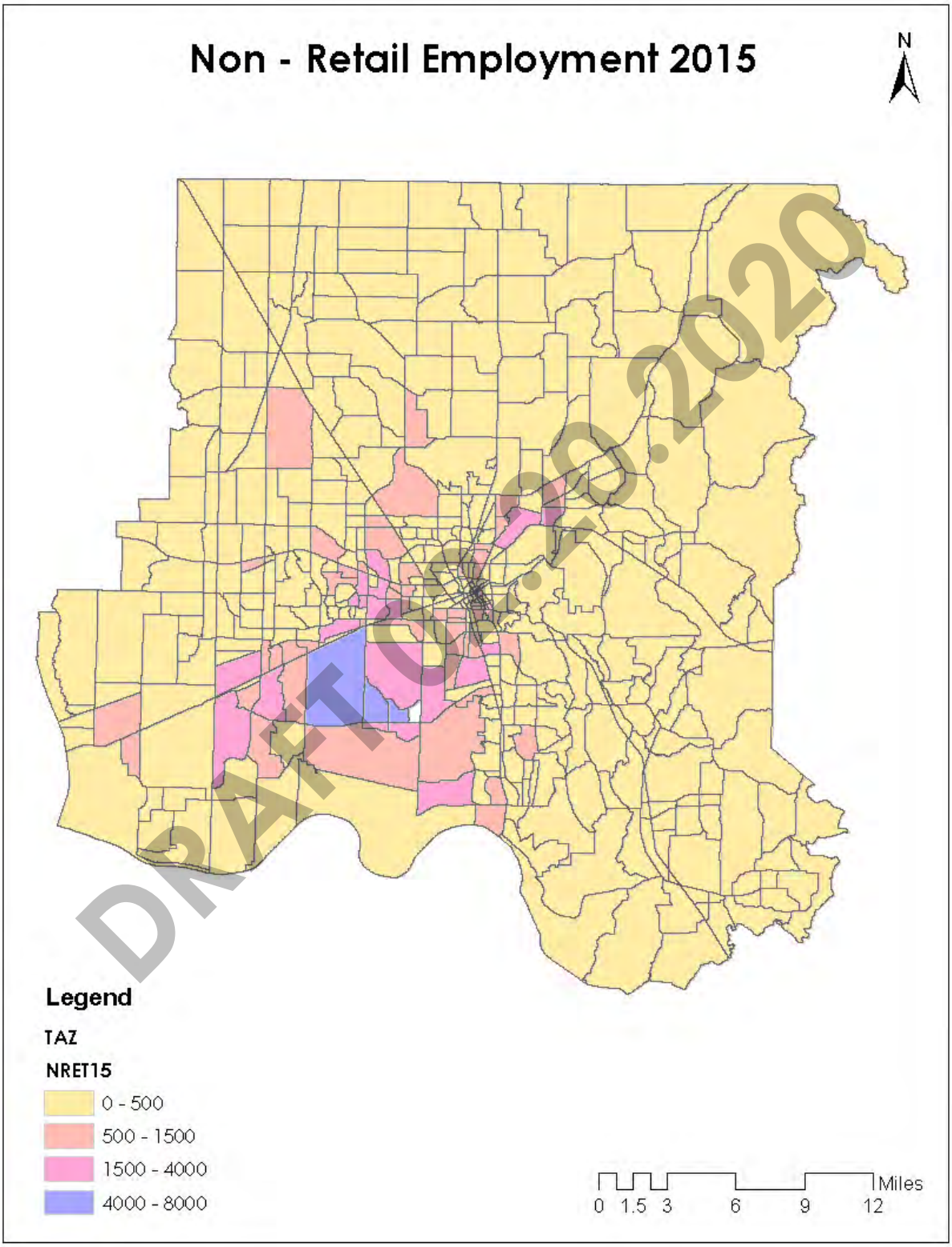
Map 4a: Retail Employment 2015



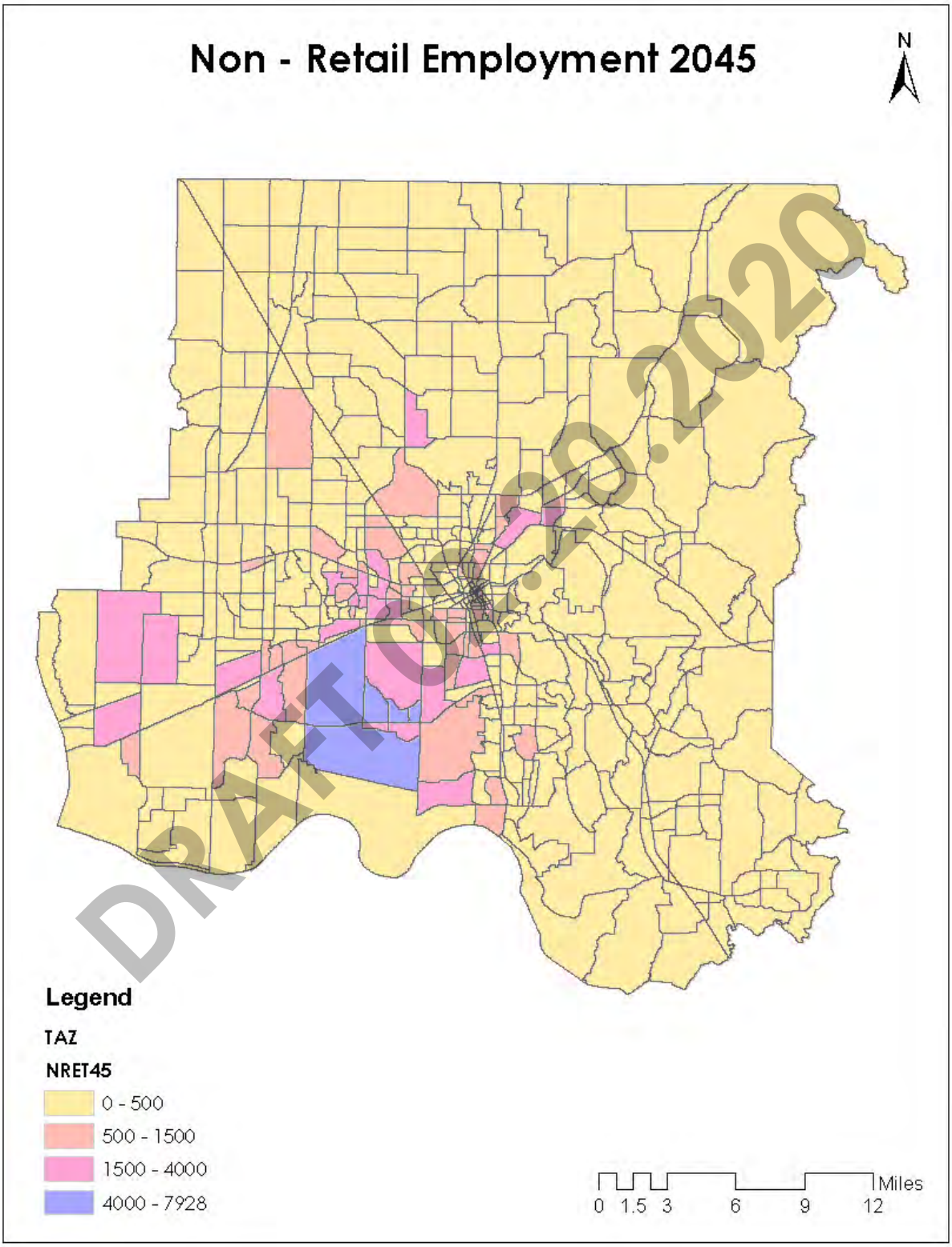
Map 4b: Retail Employment 2045



Map 5a: Non - Retail Employment 2015



Map 5b: Non - Retail Employment 2045



Appendix D:
Congestion Management Process Procedures and Responsibilities Report

On July 8, 2002, the Huntsville Urbanized Area was designated by the Federal Highway Administration and the Federal Transit Administration as a Transportation Management Area (TMA). With that designation came an additional transportation planning mandate; the responsibility of developing, establishing, and implementing a Congestion Management Process (CMP) for the Huntsville Urbanized Area. Federal regulations 23 CFR 500.109 and 23 CFR 450.320 require all TMAs, defined as urbanized areas with a population exceeding 200,000 or upon special request from the Governor, to develop, establish, and implement a Congestion Management Process as part of the metropolitan planning process.

The purpose of this report is to document the development and operation of the CMP for the Huntsville Area Transportation Study – Metropolitan Planning Organization. This report will describe the role of the CMP in the transportation planning process, and will define federal and local MPO objectives guiding CMP procedures. It will also define the parameters of the CMP network study area, identify data collection requirements and responsibilities necessary for the effective implementation of the CMP program, and establish specific performance measures for assessing the condition of the transportation system being studied. Additionally, this report will establish methods to prioritize corridors for further study, will provide a toolbox of strategies to mitigate existing and anticipated congestion, and will define the CMP monitoring and update cycle. The implementation of the procedures established by this document will be incorporated into Chapter 7 of TRiP2045.

Role of CMP in the Transportation Planning Process

23 CFR 450.320 stipulates that congestion be addressed in Transportation Management Areas (TMAs) by mandating the incorporation of CMP within the metropolitan planning process. MAP 21/FAST Act further requires that TMAs "address congestion management through a process that provides for effective management and operation, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing travel facilities…through the use of travel demand reduction and operational management strategies" [MAP 21/FAST Act, Section 1201, amended 134(k)(3)(A)].

The transportation planning regulations also requires the following:

- The CMP is required in metropolitan areas with a population greater than 200,000 (TMAs), as well as in urbanized areas that have requested designation as a TMA.
- In TMAs in nonattainment of national ambient air quality standards for carbon monoxide or ozone, no Federal funds may be spent for capacity-adding projects unless the projects are shown in a CMP.

The Congestion Management Process is intended to be an integral part of the metropolitan planning process, rather than preparation in development of a Long Range Plan.

The CMP also applies a new way of thinking about regional transportation systems management and operations (TSMO). TSMO is an integrated approach that seeks to optimize the performance of existing infrastructure through the implementation of multi-modal, intermodal, and often cross-jurisdictional systems, services, and projects. This includes regional collaboration and coordination activities between transportation and public safety agencies. Transportation systems management and operations strategies aim at improving service efficiency, enhancing public safety and security, reducing traveler delays, and improving access to information for travelers.

TSMO strategies can include a broad range of activities, including incident management, travel demand management, freeway and arterial management, transit priority strategies, traveler information, and activities that support emergency preparedness and response. While TSMO strategies can enable transportation operators to improve service without costly infrastructure projects, TSMO is also built into many capital improvement programs to maintain efficient use of new capacity over the long term.

MAP 21/FAST Act specifically requires consideration of TSMO in the metropolitan planning process; "Promote efficient system management and operation" is specifically identified as one of eight planning factors that must be taken into account in the development of the metropolitan transportation plan [see MAP 21/FAST Act, Section 1201, amended 134(h)(1)(G)]. MPOs must also include "operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods" [amended 134(i)(2)(F)].

Integration of the CMP process into the metropolitan transportation plan (otherwise known as the long range transportation plan) is desirable, since the application of mitigation techniques can be incorporated and programmed directly into the plan. Since the overall goal of the metropolitan transportation plan is to reduce congestion in the most efficient and effective method necessary to achieve a free-flow transportation network, incorporation of the CMP into the metropolitan transportation plan is not only ideal, but required.

The incorporation of the CMP into the metropolitan transportation plan further elevates the process to a core planning activity as opposed to a stand-alone plan. Since the CMP is such an integral part of the planning process, rather than a stand-alone effort, it takes advantage of the expertise and understanding of all who contribute to the development of the metropolitan transportation plan. In particular, local individuals and their families that travel on the local area network.

The intent of the CMP is to support decisions concerning transportation improvements. While the process itself is supported by a system of data collection, monitoring and analysis, and reports which detail various strategies that may effectively address specific congestion problems, the CMP provides a set of tools for identifying and mitigating congestion throughout the long range planning, financial planning, and project development phases.

Historically, MPOs have developed metropolitan transportation plans with a 25 year horizon, focused on the capital investments (highways, transit, bicycle, and pedestrian facilities) needed to satisfy the anticipated demand. While these demands remain important and must be considered, the reality is that, in most metropolitan areas, this traditional approach is constrained by limited funding, environmental and quality of life consideration, and land use concerns. Additionally, given the long lead times for the capital investments to be constructed, the public remains frustrated by the lack of mobility improvements within a shorter timeframe. It is time for metropolitan transportation planning to provide a mix of long-term capital investment and both long-term and near-term operational enhancements to the regional transportation system, and this process can be achieved through the integration of the CMP into the metropolitan transportation plan.

Role of Livability in the Congestion Management Process

The transportation planning process involves the development of investments and policies to support quality of life. There has been a recent focus on livability concepts and their relation to transportation planning. Approaching the CMP from a context of community versus vehicular traffic only, will enhance transportation plans and alternatives to address congestion problems and to support livability in the MPO study area. To meet this goal, the CMP will develop congestion management objectives that account for community issues, not just vehicle traffic; set multimodal performance measures that focus on people, not just vehicles; and identify the most appropriate congestion management strategies for specific locations, based upon their positive contributions to communities and neighborhoods. The livability concepts as well as the assessment of livability in the MPO Study Area are available in Appendix G.

CMP Objectives

The Huntsville area MPO has identified both federal and local objectives of the Congestion Management Process.

- Federal

According to 23 CFR 500.109(A), an effective Congestion Management Process is a systematic and regionally accepted approach for managing congestion that provides accurate, up-to-date information on transportation system operations and performance and assesses alternative strategies for congestion management that meet State and local needs. From the federal viewpoint, the main objectives of the CMP are to provide decision-makers at the State and local level with a better understanding of existing and future system performance, and to provide them with better information on the effectiveness of congestion management strategies.

The federal regulations do provide some flexibility to MPOs for developing their CMP to meet these objectives; however, there are specific key elements that must be included in the CMP in order for it to be considered effective. Since the CMP is systematic and methodical, key elements have been identified by the Federal Highway Administration that must be included as part of the Congestion Management Process. The Federal Highway Administration's Congestion Management Process: A Guidebook identifies eight key elements as follows:

1. Develop Regional Objectives for Congestion Management
2. Define the CMP Network
3. Develop Multimodal Performance Measures
4. Collect Data/Monitor System Performance
5. Analyze Congestion Problems and Needs
6. Identify and Assess Strategies
7. Program and Implement Strategies
8. Evaluate Strategy Effectiveness

The development of "Regional Objectives for Congestion Management" relates specifically to the Congestion Management Process, but other objectives and regional priorities can be derived from the vision and goals that are stated as part of the long range transportation plan. These objectives may concentrate on operations, land use, system preservation, and livability.

The Huntsville area MPO has tailored its CMP to reflect local capabilities, resources, and the desires of the individual agencies involved in the development of the CMP. All of these key elements are part of the Huntsville Area Transportation Study Congestion Management Process, and are addressed in this document.

- Huntsville Area MPO

Local objectives of the CMP should complement those identified at the federal level. The Huntsville area MPO will meet the prescribed federal objectives by reporting on the state of existing and anticipated system performance, mitigating existing and anticipated congestion through the implementation of appropriate and effective strategies, and by monitoring system performance and the effectiveness of implemented strategies. In order to meet these objectives, the following guidelines relating to the development and implementation of the local CMP were established:

1. The CMP must be consistent with federal rules and regulations, as well as federal objectives presented earlier.
2. The CMP must be somewhat simple to implement, with minimal financial and personnel impacts.
3. The CMP must support other MPO, County, and municipal transportation monitoring and planning activities.
4. The CMP must utilize data derived from the most recently approved MPO transportation network models. The transportation network models incorporate both housing and employment data throughout the network, giving a more realistic distribution of trips and better indication of congested corridors.
5. Development of other transportation monitoring programs should consider methods to measure congestion on a real time basis.
6. The CMP must be devised to identify and evaluate only those strategies appropriate for travel conditions in the local MPO study area. Potential near and long-term strategies for the Huntsville area MPO may be recommended through the CMP process, but will be addressed for implementation in the MPO's Year 2040 Transportation Plan.

Specific objectives pertaining to identified performance measures are listed in Chapter 7 of TRiP2045.

CMP Oversight

The Technical Coordinating Committee (TCC) of the Huntsville area MPO has been appointed to review and oversee the development of the local CMP. The TCC is comprised of the specialized representatives from these various departments and agencies within the MPO's jurisdiction: City of Huntsville Planning Division, City of Madison Planning Department, Madison County Engineering Department, Alabama Department of Transportation, Federal Highway Administration, City of Huntsville Engineering Department, City of Huntsville Legal Department, City of Huntsville Community Development Department, City of Huntsville Department of Natural Resources and Environmental Management, Madison County Department of Planning and Economic Development, Comcast Cable, Huntsville Housing Authority, Huntsville-Madison County Marina and Port Authority, Huntsville Planning Commission, Huntsville-Madison County Airport Authority, Top of Alabama Regional Council of Governments, Redstone Arsenal, City of Huntsville Department of Parking and Public Transit, City of Madison Engineering Department, Huntsville Utilities, Huntsville-Madison County Railroad Authority, Marshall Space Flight Center, and the US Space and Rocket Center.

Public participation is also part of the development of these procedures for establishing the local CMP through the MPO's Citizens' Advisory Committee (CAC). The CAC is comprised of citizens from the various jurisdictions represented on the MPO. As customary, meetings of the CAC are advertised through the local news media and internet site, and opened to the general public. Presentations and mailings were made to the CAC during this process, and public input was gathered as well. The CAC will continue to play a vital role by providing public review and comment on strategies and projects developed through the CMP.

CMP Area, Network, and Modes

Federal rules require that a CMP area and network be defined, based upon transportation system performance standards meeting State and local needs. The CMP should measure both existing and anticipated congestion of the multimodal transportation system within the parameters of study defined by the State and local MPO. The Huntsville area MPO has selected the CMP area, network, and modes of transportation to be studied.

- CMP Area

The Huntsville CMP Study Area shall be the same as the geographic parameters established for the MPO's most recently adopted Long Range Transportation Plan. This study area has been modeled and was used in the development of the MPO's latest Long Range Transportation Plan.

- CMP Network

The CMP network shall consist of all major and minor arterials, major collectors, and major rural collectors that are included in the MPO's latest modeled network, and located within the boundaries of the MPO study area.

Preliminary information reveals that major collectors and major rural collectors within the CMP study area boundaries do not currently present a significant congestion problem; however, the classifications were added to the study area based upon anticipated performance deficiencies shown in the MPO's modeled network.

- Transportation Modes

The modes of transportation selected for study consists of the traditional urban mix of vehicles that have been modeled, and public transit systems that are the recipients of federal transit funds. Public transit services to be studied are fixed route and demand response.

CMP – Concept of Operations

Figure 1 on page F-8 presents an overview of the Huntsville Area Transportation Study's CMP. The process is systematic and is designed to provide the most current and accurate information concerning system performance to the MPO. It enables the MPO to amend the TIP and/or the metropolitan transportation plan, if necessary, to include new projects that will alleviate congested corridors identified through the CMP. The process requires the MPO to:

1. Periodically report on existing and anticipated conditions on the local CMP network
2. Identify local corridors which must be segregated for further study
3. Identify the types of strategies that will most effectively eliminate congestion on priority corridors
4. Recommend specific projects or strategies for implementation
5. Program the project or strategies into the TIP or metropolitan transportation plan if necessary
6. Implement the recommended project or strategy, and
7. Evaluate the results of the project or strategy implementation.

The collection of transportation system data and the application of specific performance measures tailored to meet the Huntsville Area Transportation Study CMP will allow the MPO to carry out the CMP and prepare a report on the state of the system that is incorporated into the metropolitan transportation plan. This section identifies the data collection requirements and performance measures selected by the MPO to carry out the CMP. Additionally, each step in the CMP process will be explained in detail.

Data Collection Requirements and Responsibilities

Coordinated data collection among all jurisdictions is required for an effective CMP. Since the foundation of the CMP is the measurement of existing and anticipated congestion, both recurring and non-recurring, the data needed to support the requirements of the local CMP consists of the most recent base year and future year modeled transportation networks, public transit service data, and active work zone data. While updated traffic count information may be available, it is preferred to use modeled traffic counts, since certain socio-economic characteristics are incorporated and bear influence on how trips are distributed throughout the network.

Additionally, the MPO maintains a current database of detailed information on roadway segments which comprise the CMP network. Data collection responsibilities are as follows:

- Traffic Count Data

Traffic count data is collected by the State of Alabama, City of Huntsville, City of Madison, and Madison County. This data is incorporated, calibrated, and validated in the Base Year transportation model, and is reflected in the MPO's Long Range Transportation Plan transportation network models.

- Work Zone Data: State of Alabama

The Alabama Department of Transportation's Region 1 tracks transportation improvements in the MPO Study Area from the engineering design phase to the bidding process and eventually onto construction. Work Zone Data can be obtained from the Division Office pertaining to the number of working days that a project is estimated to be under construction and the estimated completion dates. The Division Office can also provide additional data pertaining to detours and construction speed limits.

- Public Transportation Data:

  - City of Huntsville

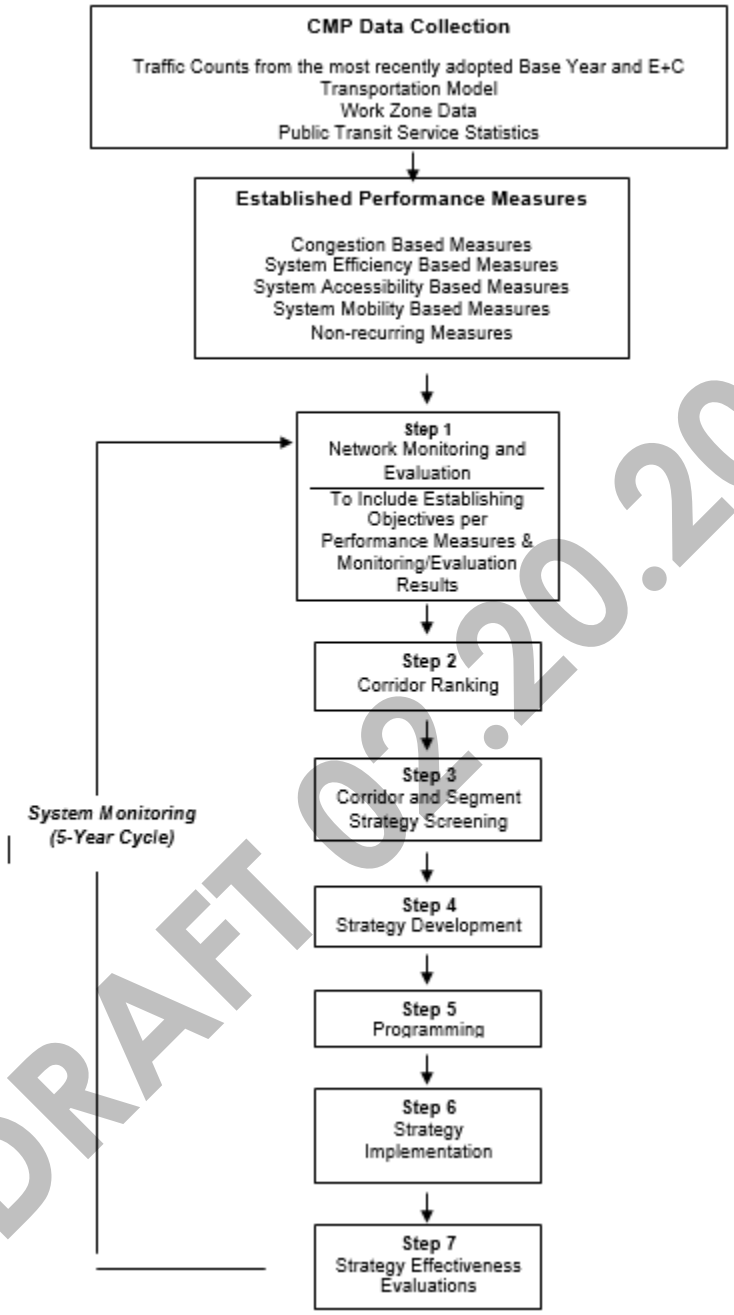
    The City of Huntsville Department of Parking and Public Transit continuously collects service performance data concerning its fixed route service and demand response service to meet annual Federal Transit Administration (FTA) reporting requirements.

    Additionally, the department is required to submit a Title VI Report to FTA every three years, justifying transit system accessibility. Transit service statistics for the past four years from the submitted National Transit Database report provided to FTA, and the latest Title VI Report available will be requested for input in Chapter 7: Congestion Management Process.

  - Madison County

    The Madison County Department of Planning and Economic Development collects and maintains transit service data for its demand response program: TRAM. Service statistics are provided on an annual basis to the Multimodal Office of ALDOT's Bureau of Transportation Planning and Modal Programs in Montgomery. Transit service statistics for the previous four years from the latest report provided to ALDOT, will be requested for input in Section 8.2: Congestion Management Process.

Figure 1
Huntsville Area Transportation Study Congestion Management Process



Taken from Advancing Metropolitan Planning for Operations: An Objectives-Driven, Performance-Based Approach - A Guidebook available at http://www.ops.fhwa.dot.gov/publications/fhwahop10026/index.htm)

Performance Measures

MAP-21/FAST Act places an increased emphasis on performance management within the Federal-aid highway program and transit programs, and requires use of performance-based approaches in statewide, metropolitan, and non-metropolitan transportation planning. The legislation also emphasizes the integration of various performance based plans within the overall planning process.

Federal regulations [23 CFR 500.109(b)] specifically requires that the CMP consider "strategies that manage demand, reduce single occupant vehicle (SOV) travel, and improve transportation system management and operations. Where the addition of general purpose lanes is determined to be an appropriate congestion management strategy, explicit consideration is to be given to the incorporation of appropriate features into the SOV project to facilitate future demand management strategies and operational improvements that will maintain the functional integrity of those lanes." This is best accomplished through the establishment of multidimensional performance measures. The Federal Highway Administration's training course, Congestion Management for Technical Staff, defines the types of congestion management performance measures as congestion based, efficiency based, mobility based, and accessibility based. The training course also recommends that performance measures have the following characteristics:

- Clearly understood (to simplify decision making)
- Sensitive to all travel modes
- Sensitive to time
- Supporting data not too costly or difficult to collect
- Supporting data can be forecast, and
- Ability to measure effects of strategies

The most effective performance measures rely on existing data sources as well as the appropriate application of real-time system performance monitoring capabilities available through Intelligent Transportation Systems (ITS) technologies. At the present time, the application of ITS technologies in the region is in its infancy. Once the regional ITS architecture is developed and projects are implemented, the region's monitoring capability will be greatly enhanced. Given this situation, the Huntsville area MPO has tailored its specific performance measures to meet the Federal Highway Administration's recommendations through its current capabilities.

An assessment of various recurring and non-recurring performance measures was conducted, and appears at Table 1 and Table 2. The tables show the category of the performance measure, data required for its use, and its applicability to the Huntsville Area Transportation Study CMP. Data collected by previously identified departments and agencies is critical to the CMP process, since the data is applied to performance measures, resulting in graphic representations of mobility trends in the area. Performance measures that are readily applicable to the established CMP area, network, and modes have been selected for inclusion in the Huntsville Area Transportation Study CMP.

Data collection responsibilities for each performance measure and the format for data presentation is further identified. It is preferred that performance measures and presentation formats be consistent from year to year so that trend analysis may be easier to perform. Performance measures that focus on livability, such as VMT per person and travel time to work per subarea, have always been utilized. The identification and use of these performance measures is detailed as follows.

- Congestion Based Measures

Congestion based measures are facility oriented and show how much of the road or bus capacity is being used within a corridor. There are two measures identified for this category that will be used in the Huntsville Area Transportation Study CMP.

- V/C Ratios of the CMP Network, both current and projected.
  V/C ratios for the current and projected CMP network will be obtained through methods used by the MPO's transportation modeling software, which has been endorsed by the Alabama Department of Transportation and approved by the local MPO. Segments displaying a v/c ratio equal to or greater than 1.0 on both sides of the corridor will be considered congested per State and local standards.

- Fixed Route Rate of Occupancy
  The fixed route rate of occupancy measures congestion on fixed route buses, either on an average daily basis or during peak times. This number is calculated by dividing the number of average daily riders (or peak service riders) into the capacity of the system. Officials at the City of Huntsville Department of Parking and Public Transit report that there is not a standard peak time of service. Since this is the case, the rate of occupancy will be displayed for average service, and not peak hour service. At the present time, the average system wide rate of occupancy is available. Route specific information will be available in the near future.

- System Efficiency Based Measures

System efficiency based measures provide an overall assessment of the transportation system's performance by measuring system demand and the level of congestion in the area. Measures in this category will consist of vehicle miles traveled (VMT) and roadways operating at congested conditions. It is important to note that the VMT estimates do not indicate system wide demand, only demand on the CMP network. It does provide a relative comparison of VMT trends on the CMP network.

- Average Daily Vehicle Miles of Travel
  The average daily vehicle miles of travel is calculated by multiplying each segment's average daily traffic count by each segment's length, and then summing the individual segment's VMT.

Table 1: Assessment of Recurring Performance Measures

Measure of Congestion	Data Requirements	Readily Applicable to CMP Area, Network, Modes?
Congestion Based		
Volume to Capacity Ratio	Results from current and projected transportation model, based upon system wide traffic counts and system wide capacity levels	Yes
Fixed Route Rate of Occupancy	Huntsville Public Transit statistics	Yes
System Efficiency		
Average/Percent Vehicle Miles of Travel	System wide traffic counts per models, mileage of CMP network	Yes
Average/Percent Vehicle Miles of Travel per Person	System wide traffic counts per models, mileage of CMP network, estimated county population	Yes
Duration of Congestion	Hourly traffic counts and roadway capacities, or travel time surveys	No – Data sources not currently available
Number/Percent of Vehicle Miles Traveled Congested	V/C Ratios of CMP network, lengths of congested segments, traffic counts	Yes
Number/Percent of Vehicle Hours Traveled Congested	Hourly traffic counts and roadway capacities, or travel time surveys	No – Data sources not currently available
Trips by Travel Mode	Assessment of number of trips made by all modes within network area	No – Difficult to ascertain for all modes; data not collected
Person Miles Traveled	Vehicle occupancies, traffic volumes, segment lengths	No – Difficult to ascertain vehicle occupancies; data not collected
Total Person Hours Traveled by mode	Vehicle occupancies, traffic volumes, segment lengths, travel time	No – Difficult to ascertain vehicle occupancies, travel time; data not collected
System Mobility		
Transit Passengers Served	Transit statistics from Huntsville Public Transit and TRAM	Yes
Transit Revenue Miles	Transit statistics from Huntsville Public Transit and TRAM	Yes
Average Daily Ridership on Fixed Routes	Transit statistics from Huntsville Public Transit	Yes
System Wide Average Ridership	Transit statistics from Huntsville Public Transit and TRAM	Yes
Travel Speed on CMP Network Classifications	Must be ascertained from current model	Yes
Travel Times Along Corridors	Travel time surveys	No – Data source not currently available
System Accessibility		
Percent of Population within "X" Minutes of Selected Areas	Must determine selected areas, must conduct travel time surveys	No – Data sources not currently available
Percent of Population within "X" Miles of Transit	Must determine population along current transit routes, establish mileage threshold	Yes – but further assessment of accessibility based upon population density and level of income seems better use of resources
Mean Travel Time to Work	Census data	Yes
Transit Accessibility per Population Density and Level of Income	Census data, transit route maps	Yes

Table 2: Assessment of Non-Recurring Performance Measures

Measure of Congestion	Data Requirements	Readily Applicable to CMP Area, Network, Modes?
Average Delay due to Active Work Zones	Traffic surveillance information	No – Information does not exist
Locations Experiencing Delay due to Work Zones	Current and planned work zone data obtained through the Alabama Department of Transportation, Division 1 Office	Yes

- Average Daily Vehicle Miles of Travel per Person
  Average daily vehicle miles of travel per person is calculated by dividing the CMP daily VMT by the countywide population for the year that the VMT was developed. It provides planners with an idea of personal mobility and system utilization, and can establish a relationship between population growth and length of trips in the area.

- Roadways Operating at Congested Conditions
  The number, percent, and classification of roads operating at congested VMT as well as the base year total congested versus uncongested VMT can be determined by calculating the v/c ratio for each segment on the CMP network and per each roadway classification. Segments with v/c ratios equal to or greater than 1.0 (according to State and local standards) are classified as congested. Multiplying each segment's average daily traffic count (congested versus uncongested and by classification) by each segment's length, and then summing the individual segment's VMT will provide the end result required.

- System Mobility Based Measures
  Mobility based measures are more trip-oriented. These measures express the ease and freedom with which persons can travel from one location to another. It also measures the number of persons traveling by differing modes within the corridor. The Huntsville Area Transportation Study CMP will investigate system mobility on several levels.

- Transit Ridership
  The mobility of users of fixed route and demand response public transit services provided within the MPO jurisdiction will be investigated by determining total ridership, average daily passengers served by fixed route transit services, and annual revenue miles. This will assist in determining passenger "throughput" on the system.

  System wide rate of occupancy, mentioned earlier, can also be applied here since rate of occupancy is also an indicator of the system's ability to accommodate passenger trips. Passenger mobility is affected if the fixed route transit system cannot accommodate the passenger's trip.

The following will be specifically addressed:

1. Total ridership
   a. Huntsville Shuttle
   b. Handi-Ride
   c. TRAM
2. Average Daily Passengers – Huntsville Shuttle
3. Annual Revenue Miles
   a. Huntsville Shuttle
   b. Handi-Ride
   c. TRAM

- CMP Transportation Network

Mobility on the CMP transportation network is difficult to measure without actual travel time data. At the present time, the Huntsville area MPO does not have the resources to conduct such study. Estimated travel speed and estimated travel time will be determined.

- System Accessibility Measures

System accessibility measures are activity oriented, and can be used to express the ease that persons are able to access activities such as work, shopping, etc. as well as other modes of transportation. System accessibility is somewhat difficult to measure. The Huntsville area MPO will measure system accessibility of the City of Huntsville's fixed route Shuttle Bus system as well as the entire CMP network.

o Public Transit Accessibility
The ease of public access to fixed route transportation services in the City of Huntsville will be investigated. At the present time, the best way to measure public transit accessibility is by referencing the latest Title VI information submitted to FTA. Additionally, maps used in preparation of the Title VI Report will be consulted. These maps are based upon the latest census data, showing specific thresholds of minority population as well as income levels. Locations which meet the established thresholds and are along public transit routes shall indicate public accessibility to the system. These maps will also be used later in the CMP process for strategy screening.

o CMP Network Accessibility
Currently the only information available concerning the accessibility of the CMP network is Commuting to Work data, reported by the U.S. Census Bureau. Also, the latest Census Transportation Planning Package will be consulted for additional information. The use of this type of data has been selected, since most peak time trips are work related. More detailed analysis of these statistics can be made available in the City of Huntsville Planning Division's 2013 publication, Journey to Work Huntsville.

- Non-Recurring Congestion Measures

Non-recurring congestion measures tend to measure delay due to incidents and accidents on the CMP network. It is difficult to adequately measure these random events since the time of delay, severity of accidents/incidents, and the time to clear such events vary widely and are unpredictable. The best stable method to assess non–recurring congestion is through the collection of active work zone data. Delay caused by temporary construction activities can impact traffic trying to access the area. While actual time of delay is not recorded, locations experiencing the construction of transportation improvements will typically experience the most delay, causing congestion to occur.

The MPO will develop a Work Zone database, listing the active and planned future work zones and pertinent information.

Development of the CMP

There are two outcomes that result from the CMP: One outcome is an assessment of the overall condition of the CMP network. The other outcome involves the determination of current and future congested corridors and isolated segments, their prioritization, the application of appropriate strategies for solving congestion on the selected corridors, their potential programming into the planning process, possible implementation, and evaluation of effectiveness once implementation occurs. The CMP will include the following sections:

- State of the System – defines system mobility trends per performance measures
- CMP Technical Ranking – lists in priority order all congested corridors
- Strategy Recommendations – summarizes recommendations for mitigating congestion on top-ranked corridors
- Strategy Effectiveness Evaluations – summarizes extent of improvement after strategies are implemented

In order to prepare this section and maintain an effective CMP which correlates with local planning goals and initiatives, the following steps in the CMP must be addressed:

Step 1 – Network Monitoring and Evaluation

The first step to be accomplished in the CMP is network monitoring and evaluation. This requires two tiers of analysis. The first tier involves the implementation of the established performance measures, an analysis of system performance based upon the results of the measures, and the establishment of CMP objectives to be met in the future.

The second tier of analysis requires a study of the CMP network to determine which existing and anticipated segments are classified as congested. For the purpose of the CMP, both current and future volume/capacity (v/c) ratios will be calculated for each segment on the CMP network using the methods established by the State's current transportation planning modeling software.

Current traffic volumes will be taken from the Base Year transportation network model, found in the MPO's Year 2040 Transportation Plan. Current roadway capacities are indicated by the MPO's transportation planning model. Future traffic volumes will be taken from the future modeled traffic count for each segment. Future "improved" roadway capacity for each segment will be indicated by the MPO's transportation planning model. The "improved" roadway capacity takes into account all future improvements programmed into the Transportation Improvement Plan and the adopted Long Range Transportation Plan.

Segments indicating a v/c ratio of 1.0 or greater will be considered as congested, according to current State and local standards and as shown in Section III.B.1.a. of this report.

Step 2 – Corridor Ranking

Once existing and anticipated segments with v/c ratios equal to or greater than 1.0 are identified, they will be segregated and ranked according to a prioritization process. There may be numerous segments of roadway identified that are congested. Since it is not feasible to identify congestion mitigation strategies for all of these roadways simultaneously, a systematic method for determining which segments to study first was devised. Although this technique results in a numerically ranked list - the CMP Technical Ranking - it does not supersede any project priority list approved by the MPO. Segments are only ranked for consideration purposes only.

The method of prioritizing corridors is described at Table 3. The prioritization process involves assigning points to each segment based upon extent of congestion, existing traffic volume, traffic accident history, multi-modal connectivity, and prior funding commitments. All of these factors are somewhat self-explanatory.

Once all appropriate points have been assigned to each segment and calculations have been made, each segment will be ranked in order from highest score to lowest. If any one segment appears toward the top of the list, and surrounding links are contiguous or near contiguous, the whole congested link will be presented for study. This will be done until all corridors have been identified.

For the purpose of the CMP, corridors are defined as a collection of segments that are contiguous or near contiguous and involve multiple intersections.

Step 3 – Corridor and Segment Strategy Screening

3A. General

The CMP requires through its legislation, the identification and evaluation of strategies to determine the most effective method(s) to address congestion. According to the FHWA publication Congestion Management Process: A Guidebook the recommended categories of strategies, or combination of strategies to be considered are:

- Transportation demand management strategies, including promoting alternatives, managing and pricing assets, land use, and work patterns
- Traffic operations strategies
- Public transit strategies
- Road capacity strategies, where necessary

While legislation does not dictate a specific order to how these strategies are to be considered, it is implied that construction of additional system capacity should be the last option examined for MPOs that are at non-attainment for air quality.

MAP-21 requires that for "transportation management areas classified as nonattainment for ozone or carbon monoxide pursuant to the Clean Air Act, Federal funds may not be advanced in such area for any highway project that will result in a significant increase in the carrying capacity for single-occupant vehicles unless the project is addressed through a congestion management process." [In part, amended 134(n)(1)].

Furthermore, the CMP must give priority to strategies that reduce congestion and improve the mobility of people, goods, and services without requiring the construction of additional roadway capacity. Capacity adding projects are not prohibited, but the CMP requires the MPO to consider alternative strategies to capacity increases, and that measures be incorporated into the project to make the most efficient use of the new capacity once it has been constructed. The Huntsville urbanized area is currently at attainment, but will in good faith address construction of additional system capacity lastly.

In reality, all reasonable strategies must be considered and incorporated in future plans even if additional system capacity is determined to be the appropriate fix, since the corridor must be effectively managed once improvements are made and for years to come. 23 CFR 500.109(a) states that "Where the addition of general purpose lanes is determined to be an appropriate strategy, explicit consideration is to be given to the incorporation of appropriate features in the SOV project to facilitate future demand management and operational improvement strategies that will maintain the functional integrity of those lanes."

The interim legislation pertaining to congestion management, which was in effect from 1994 until 1997, provided greater detail and more examples of strategies to be considered. These examples were studied at great length, and most strategies mentioned in the interim legislation were deemed viable and worthy of inclusion in the final strategy categories selected for analysis.

Many congestion management strategies that may be identified in the CMP may help to support livable communities. Increasing transit, bicycling, and walking options provides more transportation choices, which in turn can decrease household transportation costs, reduce dependence on fuel, improve air quality, and promote public health.

Strategies that better manage and operate the transportation system can enhance economic competitiveness by decreasing travel times for commuters and freight operators, reducing fuel consumption. Coordinating land use and transportation planning can help to not only manage congestion, but to promote healthy, safe, and walkable communities.

Using the CMP to support livability involves a comprehensive approach that allows for congestion to be assessed in the context of multiple goals to include economic vitality, safety, multimodal options, and the environment. Placing an emphasis on demand management and operational strategies can help to preserve the current infrastructure, support existing communities, and improve multimodal travel choices.

3B. Huntsville Area Transportation Study CMP Strategy Determination

To ensure that all levels of strategies are appropriately considered, the Huntsville area MPO devised a strategy screening matrix including specific questions to be considered in each strategy category. The questions, when applied to the top 10 corridors, may assist in devising potential strategies to mitigate congestion. Maps and charts displaying socio-economic and transportation characteristics have been prepared to aid in answering some questions. These maps are available in Attachment 2 of this report. Additionally, maps and graphics pertaining to livability should be referenced as well. These maps are available in Appendix G of this plan. Larger maps suitable for more in-depth analysis can be made available to jurisdictions upon request.

Once the CMP Technical Ranking list is developed, the process of congestion mitigation must begin. Jurisdictions will be notified of the ranking results. Those jurisdictions with corridors and/or isolated segments presented in the CMP Technical Ranking list and chosen for strategy evaluations will be responsible for formulating solutions to address congestion problems. The strategy screening matrix is meant to be used as a guide for identifying various strategies to mitigate congestion. It is not meant to be an inflexible tool.

Jurisdictions are not limited to considering these specific strategies, but may identify other strategies that may work as well or better. It is not necessary to answer every single question presented, nor is it the intent of the legislation that all potential strategies be extensively studied. Each jurisdiction should determine the extent of using the matrix; however, all strategy categories should be considered. The goal should be to identify those strategies that can be reasonably implemented for a specific corridor or deficiency.

In some instances, strategies may or may not be feasible for implementation due to political, technical, and/or operational support. All potential strategies will be included in the screening matrix, since the areas political, technical, and/or operational environment may change in the future. The screening matrix for each strategy follows each level's definition, and is shown at Table 4. The five strategy categories have been assigned to levels, and are considered in the following order:

Level One	Strategies that Eliminate or Reduce Trips
Level Two	Strategies that Involve Traffic Operational Improvements and Access Management
Level Three	Strategies that Shift Trips from Single Occupancy Vehicles to Public Transit, Other High Occupancy Vehicles (HOVs), and Other Modes
Level Four	Strategies that Involve Implementation of Intelligent Transportation Systems for Traffic Management
Level Five	Strategies that Add Capacity for All Vehicles

Step 4 – Strategy Development

4A. Selection of Appropriate Strategies

Once the chosen corridors and isolated segments are put through the screening process, the selection of appropriate strategies must be accomplished. This is the responsibility of the jurisdiction conducting the screening. A positive response to the screening questions shown at Table 4 indicates the strategy is potentially applicable; however, the questioning process should not stop at the first positive answer. There may be multiple strategies that are applicable, and it will be the responsibility of the each jurisdiction to determine the most effective strategy or combination of strategies to be used to mitigate identified congestion problems. Strategies 1 through 5 should be considered for corridors identified as deficient. Huntsville Area Transportation Study CMP Strategy Screening Forms are available electronically for use by jurisdictions completing this process.

Some flexibility is required when considering strategies to be implemented. There may be instances where a specific strategy may be initially considered, but upon further investigation the strategy may not be applicable or effectively address congestion problems experienced in the area as once determined. Some strategies may provide a temporary fix; however, strategies must be considered and implemented which provide a more permanent solution to the deficiency. Due to financial constraints or other concerns, there may be some instances where it may not be possible to mitigate corridor deficiencies by alternative CMP strategies or by roadway widening. Overall, the strategies selected for a specific corridor or isolated segment must have a good potential for success and must also effectively eliminate the deficiency.

4B. Strategy Recommendations

The strategy screening process alone typically will not provide enough information to justify project funding and implementation. After potential strategies are identified, additional study must be conducted by the appropriate jurisdiction before the strategy is even considered for possible future programming or funding, and implementation. The depth of study required is dependent upon the strategy selected. For instance, if traffic signal timing improvements are deemed an effective strategy, then a traffic engineering study should be conducted to determine appropriate changes to be made along the corridor.

The type of additional studies conducted as a result of strategy recommendations could range from low cost traffic engineering studies and analysis to more expensive major investment studies. Additional data collection and analysis may not be necessary if it is obvious to the Technical Coordinating Committee and the MPO that the overriding strategy recommendation for a specific corridor is the only viable option, and a decision can be readily made concerning the appropriate action to take. It is then that additional study can be focused on actual project implementation rather than analyzing which recommendation to implement. The CMP will include the potential strategies for each corridor and isolated segment as well as the next action recommended - which may be a more thorough study, design, or implementation.

- Level One - Strategies that Eliminate or Reduce Trips

Level One Strategies attempt to eliminate or reduce the need for making trips. The strategies to be studied in this category include such options as growth management, the development of activity centers, congestion pricing, and certain types of transportation demand management.

- Level Two - Strategies that Involve Traffic Operational Improvements and Access Management

Level Two Strategies emphasize actions that could be taken to optimize the corridor's or segment's operation for all trips that use highway facilities and modes. These strategies could include intersection widening, channelization, turning restrictions, signalization improvements, computerized signal systems, incident management, construction zone management, and driveway and median controls.

- Level Three – Strategies that Shift Trips from Single Occupancy Vehicles to Public Transit, Other HOVs, and Other Modes

Level Three Strategies attempt to encourage the use of and provide availability of other modes for trip-making instead of relying on SOV use. The largest barrier to this strategy is personal. It requires the modification of the public's personal behavior, which may prove to be difficult. Various items could be implemented in this category, but until behavior is modified, the strategy may not appear to be beneficial.

- Level Four – Strategies that Involve Implementation of Intelligent Transportation Systems for Traffic Management

Level Four Strategies involve the use of Intelligent Transportation Systems to manage traffic congestion.

- Level Five - Strategies that Add Capacity for All Vehicles

Level Five Strategies include actions that increase roadway capacity by adding lanes to the roadway system.

Step 5 - Programming

As mentioned earlier, it is not the intent of the CMP strategy evaluation procedures or strategy recommendations to supersede the decision-making process of the MPO's Long Range Transportation Plan and the MPO's Transportation Improvement Program (TIP). However, the primary purpose of the recommended strategies and associated CMP is to support and complement the Long Range Transportation Plan and the TIP by providing additional information on the status of the local transportation system as well as the benefits of appropriate congestion management strategies.

If a corridor is selected for further study, has been evaluated, and a project selected, that does not necessarily mean that the recommended project will be funded immediately through the TIP. New projects may be identified through the CMP process for possible funding and implementation, but all TIP projects will equally compete against each other for funding. The CMP is not intended to be the tool for prioritizing projects. The overall metropolitan and statewide planning process will determine which improvements best address the transportation goals and objectives for the State and for the Huntsville area MPO.

It is important to understand that the final decision to implement an appropriate strategy or group of strategies may not be known until the MPO goes through the TIP update cycle. It is then that the MPO will have a better understanding of funding priorities and the availability of funding for specific projects. Some improvements, such as re-timing traffic signals, may bypass the programming process and not go through the MPO for funding. Such improvements can be handled with the jurisdiction's operating funds.

Step 6 – Strategy Implementation

If the TIP is amended to include projects identified through the CMP process, strategy or project implementation procedures that currently apply to the TIP will be followed. Strategy or project implementation may include preliminary engineering, design, right-of-way acquisition; or depending upon the strategy, actual construction.

Step 7 – Strategy Effectiveness Evaluations

Federal guidelines require strategies be evaluated after implementation to determine their overall efficiency and effectiveness. The results will be written in the CMP's Strategy Effectiveness Evaluations section as a brief commentary, with information provided by the project's sponsoring jurisdiction. Strategy effectiveness evaluations will compare pre-implementation system performance with post-implementation system performance based upon the area's established performance measures and other analysis that may be necessary. If the implemented strategies do not appear to be effectively solving the congestion problem, other strategies may be determined for implementation along the corridor or isolated segment. This will be documented to provide guidance to jurisdictions on selection of effective strategies for future implementation as well as justify the need to look at alternative solutions.

- **Summary**

The purpose of this report is to document the CMP of the Huntsville Area Transportation Study. The CMP is one of several management systems mandated by federal legislation. The CMP is managed at the local level and is a coordinated effort among all member jurisdictions of the MPO to include the Alabama Department of Transportation. Federal rules allow local flexibility in the development of the CMP, taking into consideration local resources and data availability. The Huntsville area MPO meets the federal CMP objectives presented through the implementation of this report.

The Huntsville Area Transportation Study CMP plays a supporting role in the overall transportation planning process. The CMP uses a methodical approach to identify locations which currently experience or may experience future congestion, and to develop and recommend strategies to mitigate congestion problems. The CMP, when incorporated with the Long Range Transportation Plan and the Transportation Improvement Program, yields informed decisions and minimizes data collection and analysis costs.

CMP performance measures are used to identify system wide trends and congested areas on the CMP network. These measures are currently supported by information obtained through the Long Range Transportation Plan's modeled networks and data collected by the ALDOT and member jurisdictions of the MPO. This data is summarized in conjunction with the preparation of the long range transportation plan by the MPO and these results, as well as recommended strategies for alleviating congestion, will be published within the Year 2040 Transportation Plan.

The Congestion Management Subcommittee, comprised of the Technical Coordinating Committee of the MPO, was responsible for overseeing the development of the local CMP and will continue in its oversight role for updating the CMP procedures if necessary. Members of the subcommittee will also play a vital role in strategy development, strategy recommendations, and strategy implementation for each of their jurisdictions. Citizen involvement and public participation in this process will also continue, as public review and comment on strategies developed through the CMP process will be conducted.

The MPO will review the CMP and will make recommendations for projects to be included in the Transportation Improvement Program and the Long Range Transportation Plan as necessary, understanding that the overall transportation planning process should sort out project priorities. All Transportation Improvement Program projects are competitive, and projects that have been identified through the CMP process may not be funded immediately.

If projects resulting from the CMP are approved, funded, and implemented, federal rules require the strategies be evaluated to determine its efficiency and effectiveness. Strategy effectiveness evaluations will be conducted and the information received by the project's sponsoring jurisdiction will be included in the CMP. The CMP will be updated in conjunction with the long range transportation plan and will be published as part of that document.

Appendix F:
Freight

Following is a list of truck-rail, drayage, cartage, warehousing, and chassis leasing companies, as well as motor freight carriers, serving the Huntsville area. Drayage consists of trucking goods between a warehouse and rail yard.

Rail-Highway Companies

- Norfolk Southern Corporation (256) 772-7084
- TOFC/COFC/Double Stack
- TOFC – Trailer on flat car (with wheels)
- COFC – Container on flat car (without wheels)
- Double Stack – Containers stacked two high on flat car
- CV Depot Services
- Mechanical Repair & Maintenance
- Chassis leasing services

Draymen Serving Rail-Highway Facilities

(Companies that truck goods from a warehouse to a rail yard or vice-versa)

Averitt Express	Madison	(256) 350-9141
Comtrak Logistics	Madison	(256) 464-7905
Cowan Trucking	Nashville	(615) 255-4615
Diamond Express	Birmingham	(205) 591-0661
Diamond Express	Chattanooga	(423) 266-2164
House's Loading Service	Madison	(256) 772-4659
Jim Potter & Sons	Sheffield	(256) 383-7836
Liberty Transport	Huntsville	(256) 704-3635
Mason Dixon	Madison	(256) 772-1301
Mainstream Transportation	Memphis	(800) 762-1223
Midwest Carriers	Florence	(256) 246-0047
Old Dominion	Madison	(256) 464-9086
Phoenix Transit	Nashville	(615) 469-2273
Sea Lane Express, Inc.	Madison	(256) 461-9334
TCW	Birmingham	(205) 252-4786
RoadLink USA	Tarrant	(205) 841-1169

Motor Freight Carriers

AAA Cooper Transportation	Decatur	(256) 355-9610
Averitt Express	Madison	(256) 350-9141
BJJJ Trucking, Inc.	Huntsville	(256) 464-7857
Comtrak, Inc.	Madison	(256) 464-7995
Con-Way	Decatur	(256) 351-0390
FirstFleet, Inc.	Huntsville	(256) 772-5304
Huntsville Air Freight	Huntsville	(256) 772-9800
Old Dominion	Madison	(256) 464-9086
Overnight Express	Huntsville	(256) 533-0394
Overnight Transportation	Huntsville	(256) 533-0394
Roadway Express	Huntsville	(256) 772-9216
SAIA Motor Freight Line, Inc.	Madison	(256) 464-0200
Service Transport Inc.	Madison	(256) 772-0002
Southeastern Freight Lines	Madison	(256) 772-0096
Steve Cagle Trucking Co.	Huntsville	(256) 881-0098
USA Motor Express	Florence	(800) 897-0690
Yellow Transportation	Decatur	(256) 353-8511
Watkins Motor Lines	Huntsville	(800) 553-5425
Wilson Trucking	Madison	(256) 774-5201

Custom Brokers and Freight Forwarders

Companies serving the International Intermodal Center

BAX Global	Madison	(256) 461-8018
CH Robinson	Madison	(256) 461-8994
Eagle Global Logistics	Huntsville	(256) 772-6585
Expeditors International	Huntsville	(256) 774-1156
J.F. Lumpkin, Chb	Madison	(256) 461-0042
Kuehne + Nagel, Inc	Huntsville	(256) 464-0888
Landstar Logistics	Huntsville	(256) 461-7183
Page & Jones, Inc.	Huntsville	(256) 772-0231
Panalpina, Inc.	Huntsville	(256) 772-9149
Team Worldwide	Huntsville	(256) 461-7770
UPS Supply Chain Solutions	Huntsville	(256) 461-1880

Truck Routes

Ordinance No. 96-810 established truck routes within the City of Huntsville. Designated truck routes on state highways include I-565, U.S. 431, U.S. 231, U.S. 72 East and West, Alabama Highway 53, Alabama Highway 20, and Research Park Boulevard. Truck routes established on city of Huntsville streets include the following:

1. Jordan Lane from I-565 to Redstone Arsenal
2. Triana Boulevard south of Bob Wallace Avenue
3. Johnson Road from Triana Boulevard to Leeman Ferry Road
4. Airport Road from Leeman Ferry Road to Carl T. Jones Road
5. Carl T. Jones Road from Airport Road to Bailey Cove Road
6. Bailey Cove Road from Carl T. Jones Road to Green Cove Road
7. Bob Wallace Avenue from I-565 to Memorial Parkway
8. Pulaski Pike from University Drive to city limits
9. Sparkman Drive west of Jordan Lane
10. Pratt Avenue between Memorial Parkway and Meridian Street
11. Meridian Street north of Pratt Avenue
12. Oakwood Avenue between Jordan Lane and Andrew Jackson Way
13. Moores Mill Road between U.S. Highway 72 East and Winchester Road
14. Winchester Road from Pulaski Pike to city limits
15. Stringfield Road between Alabama Highway 53 and Pulaski Pike
16. Mastin Lake Road between Pulaski Pike and Memorial Parkway
17. Old Madison Pike from I-565 to city limits
18. Martin Road in its entirety
19. Green Cove Road from Memorial Parkway to Bailey Cove Road
20. Whitesburg Drive from Airport Road to Memorial Parkway

Table X: Waterway Facilities in the Vicinity of Huntsville				
Map ID	Terminal	River/ Mile	Contact Info	GIS Coordinates
1.	NUCOR, Inc	Tennessee/ Mile 298	4301 Iverson Blvd, Trinity, AL 35673 (256) 301-3500 (256) 560-4975 www.nucor.com	34.662498, -87.08277
2.	Boeing Company-United Launch Alliance, Decatur	Tennessee/ Mile 298.2	100 Decatur Way, MC6010-1001, Trinity, AL. 35673 (256) 432-1000 (256) 432-1460 www.ulalaunch.com	34.657248, -87.06970
3.	Kinder Morgan Terminals, Decatur Mallard-Fox Creek Port	Tennessee/ Mile 298.5	1802 Red Hat Road, Decatur, AL 35602 (256) 353-4553 (256) 353-4951 www.kindermorgan.com	34.65611, -87.06889
4.	B.P Decatur Works	Tennessee/ Mile 299.5	1401 Findley Island Road, P.O. Box 2215, Decatur, AL 35603 (256) 340-5200 (256) 301-5443 www.bp.com	34.649444, -87.05361
5.	Cronimet Corporation	Tennessee/ Mile 301	1220 State Docks Road, Decatur, AL 35601 (256) 350-7776 (256) 350-7662 www.cronimet.com	34.637775, -87.03426
6.	Gavilon	Tennessee/ Mile 301.4	1030State Docks Road, Decatur, AL 35601 (256) 351-7002 (256) 351-8012 www.gavilon.com	34.6375, -87.03306
7.	Cemex, Inc	Tennessee/ Mile 301.4	1216 State Docks Road, Decatur, AL 35601 (256) 351-6336 (256) 353-7795	34.638056, -87.03444
8.	Decatur-Morgan County Port - Cronimet Corp	Tennessee/ Mile 301.4	1220 State Docks Road, Decatur, AL 35601 Phone: (256) 353-7762 FAX: (256) 350-7776 Web: www.cronimet.com	34.63889, -87.03417
9.	Ascend Performance Inc., Decatur Chemical Dock	Tennessee/ Mile 301.9	P.O. Box 2204, Decatur, AL 35609-2204 (256) 552-2011 (256) 552-2153 www.ascendmaterials.com	34.636435, -87.01765

Map ID	Terminal	River/ Mile	Contact Info	GIS Coordinates
10.	Ascend Performance Inc., Decatur Chemical Dock	Tennessee / Mile 301.9	1050 Chemstrand Ave. Decatur, AL 35601 (256) 552-2011 (256) 552-2153 www.ascendmaterials.com	34.636435, -87.01765
11.	Port of Decatur, Decatur Transit, Inc	Tennessee/ Mile 304.1	P.O. Box 1784, 500 Market Street NW Decatur, AL 35602 (256) 353-9601 (256) 353-1777 www.Decaturtransit.com	34.619722, -86.98555
12.	Port of Decatur-Fleeting	Tennessee/ Mile 304.2	P.O. Box 1784, Decatur, AL 35602 (256) 353-9601 (256) 353-1777 www.Decaturtransit.com	34.619767, -86.98114
13.	Agriliance-AFC,LLC, Decatur Fertilizer Wharf	Tennessee/ Mile 305.2	905 Market Street, Decatur, AL 35601 (256) 308-1733 (256) 560-2733 www.agri-afc.com	34.610180, -86.97197
14.	Alabama Farmers CO-OP-Grain	Tennessee/ Mile 305.3	800A Market St. Decatur, AL 35601 (256) 353-6844 (256) 560-2671 www.alafarm.com	34.606852, -86.96439
15.	Bunge Corporation	Tennessee/ Mile 305.6	P.O. Box 2248, 1400 Market Street SE, Decatur,AL 35602 (256) 301-4000 (256) 309-2258 www.bunge.com	34.606389, -86.96444
16.	Conagra-Decatur Flour Mill	Tennessee/ Mile 306.3	2050 Market Street, Decatur, AL 35601 (256) 552-4707 (256) 552-4709 www.conagrafoods.com	34.601389, -86.95694
17.	Army Missile Command (Inactive)	Tennessee/ Mile 323.5	Building 5302, Redstone Arsenal, AL 35898 (256) 876-4515 (256) 876-1190	34.587385, -86.68557
18.	NASA Marshall Space Flight Center	Tennessee/ Mile 324	Address AS20, Marshall Space Flight Center, Huntsville, AL 35812 (256) 544-9451 (256) 544-1693 www.nasa.gov	34.585833, -86.6808

Map ID	Terminal	River/ Mile	Contact Info	GIS Coordinates
19.	Huntsville-Madison Co. Marina & Port Authority (Inactive)	Tennessee/ Mile 333.8	P.O. Box 14250, Huntsville, AL 35815 (256) 882-1057 (256) 880-7620 www.dittolanding.com	34.576496, -86.55938
20.	Baker Sand and Gravel Company, Inc.	Tennessee/ Mile 336.6	500 Bill Mathews Road, Huntsville, AL 35803 (256) 881-4951 (256) 213-9687	34.536111, -86.54527

Appendix G:
Funding Sources

Federal Programs

Federal funding amounts shown in this section reflect the Alabama Department of Transportation's projections of future funds. Various categories of federal funds are available for transportation improvements.

1. Highway Safety Improvement Program funds
   These funds have been retained by MAP-21/FAST Act to continue comprehensive funding to states for specific types of safety projects.

2. National Highway Performance Program (NHPP) funds
   NHPP funds the National Highway System (NHS) and the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. These routes in the Huntsville urban area, include the following: I-565, U.S. 72, U.S. 231, U.S. 431, and Research Park Boulevard from I-565 to University Drive. Under MAP-21/FAST Act, this funding category consolidated the National Highway System, Interstate Maintenance activities, and National Highway System Bridge Projects.

3. Surface Transportation Program (STP) funds
   Surface Transportation Program (STP) funds are typically divided into several different categories as designated by Congress. STP funds dedicated to road construction are split into two major categories: STP Any Area (STPAA) and STP Huntsville (STPHV). STPAA dedicated projects are funded with federal and state matching money. STPHV dedicated projects are funded with federal and local matching money. Receipt of STPHV revenues are contingent upon the local area's ability to provide the typical 20 percent matching funds to finance transportation projects within their jurisdictions.

4. Federal Transit Authority (FTA) funds
   FTA funds for all programs that do not fall within the urbanized area program, are anticipated to be a total of $10.8 million during the next twenty-five years. Future anticipated FTA urbanized area program funds are shown on page X in Table X and Table X. A breakdown of financially constrained transit projects is shown in Table X, while visionary projects are shown on Table X.

   The estimated amount to be received during the next 25 years in the urbanized area falls below the transit system's capital needs discussed in Chapter 6: Multi-Modal Infrastructure. To make up for this projected deficiency, additional federal funds will need to be allocated, or other creative funding will need to be identified.

The rural program assumes consistent funding, and will continue to provide services based upon their future allocations. A full discussion of transit grant fund programs that the MPO area receives, is provided in Chapter 6: Multi-Modal Infrastructure.

5. Transportation Alternatives Program (TAP)
   The TAP was authorized under MAP-21/FAST Act (Section 1122), and replaces most of the project activities under SAFETEA-LU Transportation Enhancement guidelines. The TAP provides some flexibility in shifting funds to and from other programs. Eligible projects provide for pedestrian, bicycle, and non-motorized modes of transportation, as well as recreational trails, these funds are at the discretion of the MPO.

Innovative Financing

1. Alabama Transportation Rehabilitation and Improvement Program (ATRIP)
   The ATRIP was an innovative financing program that was initiated by the State of Alabama. In order to facilitate the delivery of projects, Congress has enabled States to develop and use a variety of financial tools such as bonds to make needed investments on the transportation network. ATRIP utilized Grant Anticipation Revenue Vehicles (GARVEE) bonds.

   Jurisdictions throughout the State were encouraged to apply for ATRIP funds that required matching local monies. Most ATRIP funds have been utilized in the MPO Area and the ATRIP program has not been further extended for the 2020-2045 time frame.

2. Restore Our Roads Program
   The Restore Our Roads Program is an initiative between the State of Alabama and the City of Huntsville to construct critical transportation improvements in the City of Huntsville. This special agreement between the two entities commits a total of $250 million to needed road improvements, with both jurisdictions splitting the cost on a 50/50 basis.

Appendix H:
Acronyms and Glossary of Transportation Planning Terms

The following acronyms and planning terms may appear in this document and are commonly used by the MPO when communicating transportation plans and initiatives to the public.

Acronyms

3-C	Cooperative, Continuous, Comprehensive
ADA	Americans with Disabilities Act
ADEM	Alabama Department of Environmental Management
ADT	Average Daily Traffic
ALDOT	Alabama Department of Transportation
BEA	Bureau of Economic Analysis
CAC	Citizens Advisory Committee
CBER	Center for Bureau and Economic Research - University of Alabama
CMP	Congestion Management Process
CN	Construction
DBE	Disadvantaged Business Enterprise
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GIS	Geographical Information Systems
HATS	Huntsville Area Transportation Study
ISTEA	Intermodal Surface Transportation Efficiency Act (1991)
ITS	Intelligent Transportation Systems
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
MO	Maintenance and Operations
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
PE	Preliminary Engineering
PIP/PPP	Public Involvement Plan/Public Participation Plan or Process
PS&E	Plans, Specifications, and Estimates
RW	Right of Way
SAFETEA– LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users
STIP	State Transportation Improvement Program
TAP	Transportation Alternatives Program
TAZ	Traffic Analysis Zone
TCC	Technical Coordinating Committee
TDM	Travel Demand Management

TIP	Transportation Improvement Program
TMA	Transportation Management Area
TSM	Transportation System Management
TSMO	Transportation Systems Management and Operations
UPWP	Unified Planning Work Program
VMT	Vehicle Miles Traveled
YOE	Year of Expenditure

Glossary

- 8-Hour Ozone NAAQS – The 8-hour ozone national ambient air quality standard codified at 40 CFR 50.10.
- Air Quality Conformity – The link between air quality planning and transportation planning
- Airport – A landing area regularly used by aircraft for receiving or discharging passengers or cargo.
- Allocation – An administrative distribution of funds for programs that do not have statutory distribution formulas.
- American Association of State Highway and Transportation Officials (AASHTO) – A nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia and Puerto Rico. It represents all five transportation modes: air, highways, public transportation, rail and water. Its primary goal is to foster the development, operation and maintenance of an integrated national transportation system.
- American Institute of Certified Planners (AICP) – The American Planning Association's professional institute that provides recognized leadership nationwide in the certification of professional planners, ethics, professional development, planning education, and the standards of planning practice.
- American Planning Association (APA) – A nonprofit public interest and research organization committed to urban, suburban, regional, and rural planning. APA and its professional institute, the American Institute of Certified Planners, advance the art and science of planning to meet the needs of people and society.
- American Public Transportation Association (APTA) – Acting as a leading force in advancing public transportation, APTA serves and leads its diverse membership through advocacy, innovation, and information sharing to strengthen and expand public transportation.
- Americans With Disabilities Act (ADA) – The legislation defining the responsibilities of and requirements for transportation providers to make transportation accessible to individuals with disabilities.

- Apportionment – 1) A term that refers to a statutorily prescribed division or assignment of funds. An apportionment is based on prescribed formulas in the law and consists of dividing authorized obligation authority for a specific program among the States. 2) The distribution of funds as prescribed by a statutory formula.
- Appropriation – Authorization of funding expenditures from Congress.
- Appropriations Act – Action of a legislative body that makes funds available for expenditure with specific limitations as to amount, purpose, and duration. In most cases, it permits money previously authorized to be obligated and payments made, but for the highway program operating under contract authority, the appropriations act specifies amounts of funds that Congress will make available for the fiscal year to liquidate obligations.
- Arterial – A class of roads serving major traffic movements (high-speed, high volume) for travel between major points.
- Arterial Highway – A major highway used primarily for through traffic.
- Arterial Street – A class of street serving major traffic movements (high-speed, high volume) for travel between major points.
- Asphalt – A dark brown to black cement-like material containing bitumen as the predominant constituent. The definition includes crude asphalt and finished products such as cements, fluxes, the asphalt content of emulsions, and petroleum distillates blended with asphalt to make cutback asphalt. Asphalt is obtained by petroleum processing.
- Attainment Area – An area considered to have air quality that meets or exceeds the U.S. Environmental Protection Agency (EPA) health standards used in the Clean Air Act. Nonattainment areas are areas considered not to have met these standards for designated pollutants. An area may be an attainment area for one pollutant and a nonattainment area for others.
- Audit – Periodic investigation of financial statements and their relationships to planned or permitted expenditures.
- Authorization – Basic substantive legislation or that which empowers an agency to implement a particular program and also establishes an upper limit on the amount of funds that can be appropriated for that program. It also may refer to the act of approving project funds.
- Authorization Act – Basic substantive legislation that establishes or continues Federal programs or agencies and establishes an upper limit on the amount of funds for the program(s). The current authorization act for surface transportation programs is the Transportation Equity Act for the 21st Century (TEA-21).
- Average Annual Daily Traffic (AADT) – The total volume of traffic on a highway segment for one year, divided by the number of days in the year.
- Average Annual Daily Truck Traffic (AADTT) – The total volume of truck traffic on a highway segment for one year, divided by the number of days in the year.

- Bikeway – 1) Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes. (23CFR217) 2) A facility designed to accommodate bicycle travel for recreational or commuting purposes. Bikeways are not necessarily separated facilities; they may be designed and operated to be shared with other travel modes.
- Bureau Of Economic Analysis (BEA) – The Bureau of Economic Analysis is an agency of the U.S. Department of Commerce
- Bureau Of Labor Statistics (BLS) – The Bureau of Labor Statistics (BLS) is the principal fact-finding agency for the Federal Government in the broad field of labor economics and statistics. The BLS is an independent national statistical agency that collects, processes, analyzes, and disseminates essential statistical data to the American public, the U.S. Congress, other Federal agencies, State and local governments, business, and labor. The BLS also serves as a statistical resource to the Department of Labor. BLS data must satisfy a number of criteria, including relevance to current social and economic issues, timeliness in reflecting today's rapidly changing economic conditions, accuracy and consistently high statistical quality, and impartiality in both subject matter and presentation.
- Bureau of Transportation Statistics (BTS) – The Bureau was organized pursuant to section 6006 of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 (49 U.S.C. 111), and was formally established by the Secretary of Transportation on December 16, 1992. BTS has an intermodal transportation focus whose missions are to compile, analyze and make accessible information on the Nation's transportation systems; to collect information on intermodal transportation and other areas; and to enhance the quality and effectiveness of DOT's statistical programs through research, the development of guidelines, and the promotion of improvements in data acquisition and use. The programs of BTS are organized in six functional areas and are mandated by ISTEA to 1) Compile, analyze, and publish statistics 2) Develop a long-term data collection program 3) Develop guidelines to improve the credibility and effectiveness of the Department's statistics 4) Represent transportation interests in the statistical community 5) Make statistics accessible and understandable and 6) Identify data needs.
- Bus – Large motor vehicle used to carry more than 10 passengers, includes school buses, intercity buses, and transit buses.
- Bus Lane – 1) A street or highway lane intended primarily for buses, either all day or during specified periods, but sometimes also used by carpools meeting requirements set out in traffic laws. (APTA1) 2) A lane reserved for bus use only. Sometimes also known as a diamond lane.
- Calendar Year – The period of time between January 1 and December 31 of any given year. (DOE6)

- Capacity – A transportation facility's ability to accommodate a moving stream of people or vehicles in a given time period.
- Carpool – An arrangement where two or more people share the use and cost of privately owned automobiles in traveling to and from pre-arranged destinations together.
- Census – The complete enumeration of a population or groups at a point in time with respect to well-defined characteristics for example, population, production, traffic on particular roads. In some connection the term is associated with the data collected rather than the extent of the collection so that the term sample census has a distinct meaning. The partial enumeration resulting from a failure to cover the whole population, as distinct from a designed sample enquiry, may be referred to as an incomplete census.
- Clean Air Act Amendments (CAAA) – The original Clean Air Act was passed in 1963, but the national air pollution control program is actually based on the 1970 version of the law. The 1990 Clean Air Act Amendments are the most far-reaching revisions of the 1970 law. The 1990 Clean Air Act is the most recent version of the 1970 version of the law. The 1990 amendments made major changes in the Clean Air Act.
- Code of Federal Regulations (CFR) – A compilation of the general and permanent rules of the executive departments and agencies of the Federal Government as published in the Federal Register. The code is divided into 50 titles that represent broad areas subject to Federal regulation.
- Collector (Highway) – In rural areas, routes that serve intracounty rather than statewide travel. In urban areas, streets that provide direct access to neighborhoods and arterials.
- Commercial Service Airport – Airport receiving scheduled passenger service and having 2,500 or more enplaned passengers per year.
- Commute – Regular travel between home and a fixed location (e.g., work, school).
- Commuter – A person who travels regularly between home and work or school.
- Conformity – Process to assess the compliance of any transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act.
- Congestion Management System (CMS) – Systematic process for managing congestion. Provides information on transportation system performance and finds alternative ways to alleviate congestion and enhance the mobility of people and goods, to levels that meet state and local needs.
- Congestion Mitigation and Air Quality Improvement Program (CMAQ) – A categorical Federal-aid funding program created with the ISTEA. Funding goes to the States, who allocate to MPOs in non-conformity for certain pollutants. MPOs must use the funding on projects that contribute to meeting National air quality standards. CMAQ funds generally may not be used for projects that result in the construction of new capacity available to SOVs (single-occupant vehicles).

- Constant Dollars – Dollar value adjusted for changes in the average price level by dividing a current dollar amount by a price index. See also Chained Dollar and Current Dollar.
- Corridor – A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways and transit route alignments. (APTA1)
- Crash (Highway) – An event that produces injury and/or property damage, involves a motor vehicle in transport, and occurs on a trafficway or while the vehicle is still in motion after running off the trafficway.
- Dedicated Funds – Any funds raised specifically for transit purposes and which are dedicated at their source (e.g., sales taxes, gasoline taxes, and property taxes), rather than through an allocation from the pool of general funds. (FTA1)
- Demand Responsive Vehicle (Transit) – A nonfixed-route, nonfixed-schedule vehicle that operates in response to calls from passengers or their agents to the transit operator or dispatcher.
- Department of Health and Human Services (HHS) – The Department of Health and Human Services is the United States government's principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves.
- Department of Housing and Urban Development (HUD) – HUD's mission is to increase homeownership, support community development and increase access to affordable housing free from discrimination. To fulfill this mission, HUD will embrace high standards of ethics, management and accountability and forge new partnerships--particularly with faith-based and community organizations--that leverage resources and improve HUD's ability to be effective on the community level.
- Department of Transportation (DOT) – Establishes the nation's overall transportation policy. Under its umbrella there are ten administrations whose jurisdictions include highway planning, development and construction; urban mass transit; railroads; aviation; and the safety of waterways, ports, highways, and oil and gas pipelines. The Department of Transportation (DOT) was established by act of October 15, 1966, as amended (49 U.S.C. 102 and 102 note), "to assure the coordinated, effective administration of the transportation programs of the Federal Government" and to develop "national transportation policies and programs conducive to the provision of fast, safe, efficient, and convenient transportation at the lowest cost consistent therewith."
- Environmental Impact Statement (EIS) – Report developed as part of the National Environmental Policy Act requirements, which details any adverse economic, social, and environmental effects of a proposed transportation project for which Federal funding is being sought. Adverse effects could include air, water, or noise pollution; destruction or disruption of natural resources; adverse employment effects; injurious displacement of people or businesses; or disruption of desirable community or regional growth.

- Environmental Justice (EO 12898) – Environmental justice assures that services and benefits allow for meaningful participation and are fairly distributed to avoid discrimination. Prohibits disproportionally high and adverse human health or environmental effects on minority and low-income populations.
- Environmental Protection Agency (EPA) – The federal regulatory agency responsible for administering and enforcing federal environmental laws, including the Clean Air Act, the Clean Water Act, the Endangered Species Act, and others.
- Environmental Restoration – Re-establishment (including all site preparation activities) of natural habitats or other environmental resources on a site where they formerly existed or currently exist in a substantially degraded state. This can include the restitution for the loss, damage, or destruction of natural resources arising out of the accidental discharge, dispersal, release or escape into or upon the land, atmosphere, watercourse, or body of water of any commodity transported by a motor carrier. This also may include the on-site or offsite replacement of wetlands and other natural habitats lost through development activities. (49CFR387 and 23CFR 777)
- Environmentally Sensitive Area – An area of environmental importance having natural resources which if degraded may lead to significant adverse, social, economic or ecological consequences. These could be areas in or adjacent to aquatic ecosystems, drinking water sources, unique or declining species habitat, and other similar sites. (49CFR194)
- Evaluation of Alternatives – A synthesis of the information generated by an analysis in which judgments are made on the relative merits of alternative actions.
- Expenditures – 1) Actual cash (or electronic transfer) payments made to the States or other entities. Outlays are provided as reimbursement for the Federal share of approved highway program activities. 2) A term signifying disbursement of funds for repayment of obligations incurred. An electronic transfer of funds, or a check sent to a State highway or transportation agency for voucher payment, is an expenditure or outlay.
- Expressway – A controlled access, divided arterial highway for through traffic, the intersections of which are usually separated from other roadways by differing grades.
- Fatality – For purposes of statistical reporting on transportation safety, a fatality is considered a death due to injuries in a transportation crash, accident, or incident that occurs within 30 days of that occurrence.
- Federal Aviation Administration (FAA) – FAA provides a safe, secure, and efficient global aerospace system that contributes to national security and the promotion of US aerospace safety. As the leading authority in the international aerospace community, FAA is responsive to the dynamic nature of customer needs, economic conditions, and environmental concerns.
- Federal Finance System (FFS) – An automated accounting system used by the DOI for tracking obligations and expenditures.

- Federal Highway Administration (FHWA) – A branch of the US Department of Transportation that administers the federal-aid Highway Program, providing financial assistance to states to construct and improve highways, urban and rural roads, and bridges. The FHWA also administers the Federal Lands Highway Program, including survey, design, and construction of forest highway system roads, parkways and park roads, Indian reservation roads, defense access roads, and other Federal lands roads. Federal agency within the U.S. Department of Transportation responsible for administering the Federal-Aid Highway Program. Became a component of the Department of Transportation in 1967 pursuant to the Department of Transportation Act (49 U.S.C. app. 1651 note). It administers the highway transportation programs of the Department of Transportation under pertinent legislation
- Federal Lands Highway Program (FLHP) – Provides funds to construct roads and trails within (or, in some cases, providing access to) Federal lands. There are four categories of FLHP funds: Indian Reservation Roads, Public Lands Highways, Park Roads and Parkways, and Refuge Roads. Funds available to the US Forest Service may be used for forest development roads and trails. To be eligible for funding, projects must be open to the public and part of an approved Federal land management agency general management plan. 23 U.S.C. 204.
- Federal Register – Daily publication which provides a uniform system for making regulations and legal notices issued by the Executive Branch and various departments of the Federal government available to the public.
- Federal-aid Highway Program (FAHP) - An umbrella term for most of the Federal programs providing highway funds to the States. This is not a term defined in law. As used in this document, FAHP is comprised of those programs authorized in Titles I and V of TEA-21 that are administered by FHWA.
- Federal-Aid Highways - Those highways eligible for assistance under Title 23 U.S.C. except those functionally classified as local or rural minor collectors. (23CFR500)
- Federal Transit Administration (FTA) – A branch of the US Department of Transportation that is the principal source of federal financial assistance to America's communities for planning, development, and improvement of public or mass transportation systems. FTA provides leadership, technical assistance, and financial resources for safe, technologically advanced public transportation to enhance mobility and accessibility, to improve the Nation's communities and natural environment, and to strengthen the national economy. (Formerly the Urban Mass Transportation Administration) operates under the authority of the Federal Transit Act, as amended (49 U.S.C. app. 1601 et seq.). The Federal Transit Act was repealed on July 5, 1994, and the Federal transit laws were codified and re-enacted as chapter 53 of Title 49, United States Code.

The Federal Transit Administration was established as a component of the Department of Transportation by section 3 of Reorganization Plan No. 2 of 1968 (5 U.S.C. app.), effective July 1, 1968. The missions of the Administration are 1) to assist in the development of improved mass transportation facilities, equipment, techniques, and methods, with the cooperation of mass transportation companies both public and private. 2) to encourage the planning and establishment of area wide urban mass transportation systems needed for economical and desirable urban development, with the cooperation of mass transportation companies both public and private. and 3) to provide assistance to State and local governments and their instrumentalities in financing such systems, to be operated by public or private mass transportation companies as determined by local needs; and 4) to provide financial assistance to State and local governments to help implement national goals relating to mobility for elderly persons, persons with disabilities, and economically disadvantaged persons.

- Financial Analysis – Estimating costs, establishing a revenue baseline, comparing revenues with costs and evaluating new revenue sources.
- Financial Capacity – Refers to the ISTEA requirement that an adequate financial plan for funding and sustaining transportation improvements be in place prior to programming Federally-funded projects. Generally refers to the stability and reliability of revenue in meeting proposed costs.
- Financial Planning – The process of defining and evaluating funding sources, sharing the information, and deciding how to allocate the funds.
- Financial Programming – A short-term commitment of funds to specific projects identified in the regional Transportation Improvement Program (see TIP).
- Fiscal Constraint – Making sure that a given program or project can reasonably expect to receive funding within the time allotted for its implementation.
- Fiscal Year (FY) – The yearly accounting period beginning October 1 and ending September 30 of the subsequent calendar year. Fiscal years are denoted by the calendar year in which they end (e.g. FY 1991 began October 1, 1990, and ended September 30, 1991).
- Fixed-Route – Term applied to transit service that is regularly scheduled and operates over a set route; usually refers to bus service.
- Formula Capital Grants – Federal transit funds for transit operators; allocation of funds overseen by FTA.
- Freedom of Information Act (FOIA) – Allows all U.S. citizens and residents to request any records in possession of the executive branch of the federal government. The term records includes documents, papers, reports, letters, films, photographs, sound recordings, computer tapes and disks
- Freeway – A divided arterial highway designed for the unimpeded flow of large traffic volumes. Access to a freeway is rigorously controlled and intersection grade separations are required.
- Future Needs – Represents the gap between the vision and the current or projected performance of the system
- General Aviation – 1) All civil aviation operations other than scheduled air services and nonscheduled air transport operations for taxis, commuter air carriers, and air travel clubs that do not hold Certificates of Public Convenience and Necessity.

2) All civil aviation activity except that of air carriers certificated in accordance with Federal Aviation Regulations, Parts 121, 123, 127, and 135. The types of aircraft used in general aviation range from corporate multiengine jet aircraft piloted by professional crews to amateur-built single-engine piston-driven acrobatic planes to balloons and dirigibles.

- Geographic Information System (GIS) – 1) Computerized data management system designed to capture, store, retrieve, analyze, and display geographically referenced information. 2) A system of hardware, software, and data for collecting, storing, analyzing, and disseminating information about areas of the Earth. For Highway Performance Monitoring System (HPMS) purposes, Geographical Information System (GIS) is defined as a highway network (spatial data which graphically represents the geometry of the highways, an electronic map) and its geographically referenced component attributes (HPMS section data, bridge data, and other data including socioeconomic data) that are integrated through GIS technology to perform analyses. From this, GIS can display attributes and analyze results electronically in map form. (FHWA2)
- Grants – A federal financial assistance award making payment in cash or in kind for a specified purpose. The federal government is not expected to have substantial involvement with the state or local government or other recipient while the contemplated activity is being performed. The term grants-in-aid is commonly used program by States and local government agencies to fund various activities.
- High Occupancy Vehicle (HOV) – Vehicles carrying two or more people. The number that constitutes an HOV for the purposes of HOV highway lanes may be designated differently by different transportation agencies.
- High Occupancy Vehicle Lane – Exclusive road or traffic lane limited to buses, vanpools, carpools, and emergency vehicles.
- Highway – Is any road, street, parkway, or freeway/expressway that includes rights-of-way, bridges, railroad-highway crossings, tunnels, drainage structures, signs, guardrail, and protective structures in connection with highways. The highway further includes that portion of any interstate or international bridge or tunnel and the approaches thereto (23 U.S.C. 101a).
- Highway Trust Fund (HTF) – An account established by law to hold Federal highway user taxes that are dedicated for highway and transit related purposes. The HTF has two accounts: the Highway Account, and the Mass Transit Account.
- Historic Preservation – Protection and treatment of the nation's significant historic buildings, landmarks, landscapes, battlefields, tribal communities, and archeological sites; prominent federally-owned buildings; and State and privately-owned properties. [National Park Service, Historic Preservation Services]
- Infrastructure – 1) In transit systems, all the fixed components of the transit system, such as rights-of-way, tracks, signal equipment, stations, park-and-ride lots, but stops, maintenance facilities. 2) In transportation planning, all the relevant elements of the environment in which a transportation system operates. (TRB1) 3) A term connoting the physical underpinnings of society at large, including, but not limited to, roads, bridges, transit, waste systems, public housing, sidewalks, utility installations, parks, public buildings, and communications networks.
- Intelligent Transportation Systems (ITS) – The application of advanced technologies to improve the efficiency and safety of transportation systems.

- Intermodal – The ability to connect, and the connections between, modes of transportation.
- Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) – Legislative initiative by the U.S. Congress that restructured funding for transportation programs. ISTEA authorized increased levels of highway and transportation funding from FY92-97 and increased the role of regional planning commissions/MPOs in funding decisions. The Act also required comprehensive regional and statewide long-term transportation plans and places an increased emphasis on public participation and transportation alternatives.
- International Airport – 1) Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic. 2) An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service. 3) A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use. 4) Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.
- Intersection – 1) A point defined by any combination of courses, radials, or bearings of two or more navigational aids. 2). Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.
- Interstate – Limited access divided facility of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.
- Interstate Commerce – Trade, traffic, or transportation in the United States which is between a place in a State and a place outside of such State (including a place outside of the United States) or is between two places in a State through another State or a place outside of the United States. (49CFR390)
- Interstate Highway – Limited access, divided highway of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.
- Interstate Highway (Freeway or Expressway) – A divided arterial highway for through traffic with full or partial control of access and grade separations at major intersections. (FHWA3)
- Interstate Highway System (IHS) – The system of highways that connects the principal metropolitan areas, cities, and industrial centers of the United States. Also connects the US to internationally significant routes in Canada and Mexico.
- Interstate Maintenance (IM) – The Interstate Maintenance (IM) program provides funding for resurfacing, restoring, rehabilitating and reconstructing (4R) most routes on the Interstate System.
- Intrastate – Travel within the same state.
- Intrastate Commerce – Any trade, traffic, or transportation in any State which is not described in the term interstate commerce. (49CFR390)
- Land Use – Refers to the manner in which portions of land or the structures on them are used, i.e. commercial, residential, retail, and industrial, etc.
- Land Use Plan – A plan which establishes strategies for the use of land to meet identified community needs.

- Level of Service (LOS) – 1) A qualitative assessment of a road's operating conditions. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unit of demand for each public facility. 2) This term refers to a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested conditions rated as LOS-F.
- Limitation on Obligations – Any action or inaction by an officer or employee of the United States that limits the amount of Federal assistance that may be obligated during a specified time period. A limitation on obligations does not affect the scheduled apportionment or allocation of funds, it just controls the rate at which these funds may be used.
- Local Street – Street intended solely for access to adjacent properties.
- Long Range Transportation Plan (LRTP) – A document resulting from regional or statewide collaboration and consensus on a region or state's transportation system, and serving as the defining vision for the region's or state's transportation systems and services. In metropolitan areas, the plan indicates all of the transportation improvements scheduled for funding over the next 20 years. (See Metropolitan Transportation Plan.)
- Long Term – In transportation planning, refers to a time span of, generally, 20 years. The transportation plan for metropolitan areas and for States should include projections for land use, population, and employment for the 20-year period.
- Maintenance Area – Maintenance area is any geographic region of the United States previously designated nonattainment pursuant to the CAA Amendments of 1990 and subsequently designated to attainment subject to the requirement to develop a maintenance plan under section 175A of the CAA, as amended.
- Management Systems – (1) Systems to improve identification of problems and opportunities throughout the entire surface transportation network, and to evaluate and prioritize alternative strategies, actions and solutions. (2) A systematic process, designed to assist decision makers in selecting cost-effective strategies/actions to improve the efficiency and safety of, and protect the investment in, the nation's transportation infrastructure.
- Mass Transportation – Another name for public transportation.
- Memorandum of Understanding (MOU) – A document providing a general description of the responsibilities that are to be assumed by two or more parties in their pursuit of some goal(s).
- Metropolitan Planning Area – The geographic area in which the metropolitan transportation planning process required by 23 U.S.C. 134 and section 8 of the Federal Transit Act (49 U.S.C. app. 1607) must be carried out. (23CFR420)
- Metropolitan Planning Organization (MPO) – 1) Policy body, required in urbanized areas with populations over 50,000, and designated by local officials and the governor of the state. Responsible in cooperation with the state and other transportation providers for carrying out the metropolitan transportation planning requirements of federal highway and transit legislation. 2) Formed in cooperation with the state, develops transportation plans and programs for the metropolitan area.

For each urbanized area, a Metropolitan Planning Organization (MPO) must be designated by agreement between the Governor and local units of government representing 75% of the affected population (in the metropolitan area), including the central cities or cities as defined by the Bureau of the Census, or in accordance with procedures established by applicable State or local law (23 U.S.C. 134(b)(1)/Federal Transit Act of 1991 Sec. 8(b)(1)).

- Metropolitan Statistical Area (MSA) – Areas defined by the U.S. Office of Management and Budget. A Metropolitan Statistical Area (MSA) is 1) A county or a group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or 2) An urbanized area of at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). The contiguous counties are included in an MSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSAs consist of towns and cities rather than counties.
- Metropolitan Status – A building classification referring to the location of the building either located within a Metropolitan Statistical Area (MSA) or outside a MSA.
- Metropolitan Transportation Plan (MTP) – The official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area, in accordance with 23 U.S.C. 134, 23 USC 135 and 49 U.S.C. 5303. See Long Range Transportation Plan.
- Mile – A statute mile (5,280 feet). All mileage computations are based on statute miles.
- Minor Arterials (Highway) – Roads linking cities and larger towns in rural areas. In urban areas, roads that link but do not penetrate neighborhoods within a community.
- Mobility – The ability to move or be moved from place to place.
- Mode – A specific form of transportation, such as automobile, subway, bus, rail, or air.
- Motorbus (Transit) – A rubber-tired, self-propelled, manually steered bus with a fuel supply onboard the vehicle. Motorbus types include intercity, school, and transit.
- Motorcycle – A two- or three-wheeled motor vehicle designed to transport one or two people, including motor scooters, minibikes, and mopeds.
- Motorized Vehicle – Includes all vehicles that are licensed for highway driving. Specifically excluded are snow mobiles and minibikes.
- Multimodal – The availability of transportation options using different modes within a system or corridor.
- National Ambient Air Quality Standards (NAAQS) – Federal standards that set allowable concentrations and exposure limits for various pollutants. The EPA developed the standards in response to a requirement of the CAA. Air quality standards have been established for the following six criteria pollutants: ozone (or smog), carbon monoxide, particulate matter, nitrogen dioxide, lead, and sulfur dioxide.
- National Environmental Policy Act of 1969 (NEPA) – Established a national environmental policy requiring that any project using federal funding or requiring federal approval, including transportation projects, examine the effects of proposed and alternative choices on the environment before a federal decision is made.
- National Highway System (NHS) – This system of highways designated and approved in accordance with the provisions of 23 U.S.C. 103b). (23CFR500)

- National ITS Architecture – A systems framework to guide the planning and deployment of ITS infrastructure. The national ITS architecture is a blueprint for the coordinated development of ITS technologies in the U.S. It is unlikely that any single metropolitan area or state would plan to implement the entire national ITS architecture.
- Nonattainment Area (NAA) – Any geographic area that has not met the requirements for clean air as set out in the Clean Air Act of 1990.
- Noncompliance – Failure to comply with a standard or regulation issued under 46 U.S.C. Chapter 43, or with a section of the statutes.
- Objectives – Specific, measurable statements related to the attainment of goals.
- Obligation – The Federal government's legal commitment (promise) to pay or reimburse the States or other entities for the Federal share of a project's eligible costs.
- Obligation Limitation – A restriction, or ceiling on the amount of Federal assistance that may be promised (obligated) during a specified time period. This is a statutory budgetary control that does not affect the apportionment or allocation of funds. Rather, it controls the rate at which these funds may be used.
- Obligational Authority (OA) – The total amount of funds that may be obligated in a year. For the Federal-Aid Highway Program this is comprised of the obligation limitation amount plus amounts for programs exempt from the limitation.
- Occupancy – The number of persons, including driver and passenger(s) in a vehicle. Nationwide Personal Transportation Survey (NPTS) occupancy rates are generally calculated as person miles divided by vehicle miles.
- Occupant – Any person who is in or upon a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle (e.g., a skateboard rider who is set in motion by holding onto a vehicle).
- Occupant (Highway) – Any person in or on a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle (e.g., a skateboard rider holding onto a moving vehicle). Excludes occupants of parked cars unless they are double parked or motionless on the roadway.
- Other Freeways and Expressways (Highway) – All urban principal arterials with limited access but not part of the Interstate system.
- Other Principal Arterials (Highway) – Major streets or highways, many of multi-lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.
- Other Revenue Vehicles (Transit) – Other revenue-generating modes of transit service, such as cable cars, personal rapid transit systems, monorail vehicles, inclined and railway cars, not covered otherwise.
- Outlays – Actual cash (or electronic transfer) payments made to the States or other entities. Outlays are provided as reimbursement for the Federal share for approved highway program activities.
- Paratransit – 1) Comparable transportation service required by the American Disabilities Act (ADA) for individuals with disabilities who are unable to use fixed route transportation systems. (49CFR37) (APTA1) 2) A variety of smaller, often flexibly scheduled-and-routed transportation services using low-capacity vehicles, such as vans, to operate within normal urban transit corridors or rural areas.

These services usually serve the needs of persons that standard mass-transit services would serve with difficulty, or not at all. Often, the patrons include the elderly and persons with disabilities.

- Parkway – A highway that has full or partial access control, is usually located within a park or a ribbon of park-like developments, and prohibits commercial vehicles. Buses are not considered commercial vehicles in this case.
- Particulate Matter (PM2.5 and PM10) – Particulate matter consists of airborne solid particles and liquid droplets. Particulate matter may be in the form of fly ash, soot, dust, fog, fumes, etc. These particles are classified as coarse if they are smaller than 10 microns, or fine if they are smaller than 2.5 microns. Coarse airborne particles are produced during grinding operations, or from the physical disturbance of dust by natural air turbulence processes, such as wind. Fine particles can be a by-product of fossil fuel combustion, such as diesel and bus engines. Fine particles can easily reach remote lung areas, and their presence in the lungs is linked to serious respiratory ailments such as asthma, chronic bronchitis and aggravated coughing. Exposure to these particles may aggravate other medical conditions such as heart disease and emphysema and may cause premature death. In the environment, particulate matter contributes to diminished visibility and particle deposition (soiling).
- Particulate Matter Emissions (PM) – Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. They originate from many different stationary and mobile sources as well as from natural sources, including fuel combustion from motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. Fine particles are most closely associated with such health effects as increased hospital admissions and emergency room visits for heart and lung disease, increased respiratory symptoms and disease, decreased lung function, and even premature death.
- Parts Per Million (PPM) – A measure of air pollutant concentrations.
- Passenger Car – A motor vehicle designed primarily for carrying passengers on ordinary roads, includes convertibles, sedans, and stations wagons.
- Passenger Mile – 1) One passenger transported one mile. Total passenger miles are computed by summation of the products of the aircraft miles flown on each inter-airport flight stage multiplied by the number of passengers carried on that flight stage. 2) The cumulative sum of the distances ridden by each passenger.
- Pedestrian – Any person not in or on a motor vehicle or other vehicle. Excludes people in buildings or sitting at a sidewalk cafe. The National Highway Traffic Safety Administration also uses another pedestrian category to refer to pedestrians using conveyances and people in buildings. Examples of pedestrian conveyances include skateboards, nonmotorized wheelchairs, roller skates, sleds, and transport devices used as equipment.
- Pedestrian Corridor, Walkway (or Walkway) – A continuous way designated for pedestrians and separated from the through lanes for motor vehicles by space or barrier. (23CFR217)
- Performance Measures – Indicators of how well the transportation system is performing with regard to such things as average speed, reliability of travel, and accident rates. Used as feedback in the decision making process.

- Person Trip – A trip taken by an individual. For example, if three persons from the same household travel together, the trip is counted as one household trip and three person trips.
- Person-Miles – An estimate of the aggregate distances traveled by all persons on a given trip based on the estimated transportation-network-miles traveled on that trip.
- Planning Funds (PL) – Primary source of funding for metropolitan planning designated by the FHWA.
- Program Development – An element in the planning process in which improvements are formalized in the transportation improvement program and provides more detailed strategies.
- Programming – Prioritizing proposed projects and matching those projects with available funds to accomplish agreed upon, stated needs.
- Project – A locally sponsored, coordinated, and administered program, or any part thereof, to plan, finance, construct, maintain, or improve an intermodal passenger terminal, which may incorporate civic or cultural activities where feasible in an architecturally or historically distinctive railroad passenger terminal. (49CFR256)
- Public Entity – 1) Any state or local government; 2) Any department, agency, special purpose district, or other instrumentality of one or more state or local governments; and 3) The National Railroad Passenger Corporation (Amtrak) and any commuter authority. (49CFR37)
- Public Meeting or Hearing – A public gathering for the express purpose of informing and soliciting input from interested individuals regarding transportation issues.
- Public Participation – The active and meaningful involvement of the public in the development of transportation plans and programs.
- Public Transit – Passenger transportation services, usually local in scope, that is available to any person who pays a prescribed fare. It operates on established schedules along designated routes or lines with specific stops and is designed to move relatively large numbers of people at one time.
- Public Transit Agencies – A public entity responsible for administering and managing transit activities and services. Public transit agencies can directly operate transit service or contract out for all or part of the total transit service provided.
- Public Transit System – An organization that provides transportation services owned, operated, or subsidized by any municipality, county, regional authority, state, or other governmental agency, including those operated or managed by a private management firm under contract to the government agency owner.
- Public Transportation – Transportation by bus, rail, or other conveyance, either publicly or privately owned, which provides to the public general or special service on a regular and continuing basis. Also known as mass transportation, mass transit and transit.
- Public Road – Any road under the jurisdiction of and maintained by a public authority (federal, state, county, town or township, local government, or instrumentality thereof) and open to public travel.
- Rail – A rolled steel shape laid in two parallel lines to form a track for carrying vehicles with flanged steel wheels.
- Rural Planning Organizations (RPO) – RPOs are generally defined as associations of local governments that plan rural transportation systems and advises each state's DOT on rural transportation policy, programs, and projects.

In general, most RPOs assist state DOTs in the development and prioritization of short- and long-range transportation plans, provide a forum for rural transportation interests, and establish a link to other regional transportation planning organizations and providers. Additionally, RPOs assist rural communities to identify transportation needs and possible solutions.

- Regional Railroad – Railroad defined as line haul railroad operating at least 350 miles of track and/or earns revenue between $40 million and $266.7 million.
- Regionally Significant Project – means a transportation project (other than projects that may be grouped in the TIP and/or STIP or exempt projects as defined in EPA's transportation conformity regulation (40 CFR part 93)) that is on a facility which serves regional transportation needs (such as access to and from the area outside the region; major activity centers in the region; major planned developments such as new retail malls, sports complexes, or employment centers; or transportation terminals) and would normally be included in the modeling of the metropolitan area's transportation network. At a minimum, this includes all principal arterial highways and all fixed guideway transit facilities that offer a significant alternative to regional highway travel. (23 CFR 450.104)
- Reliability – Refers to the degree of certainty and predictability in travel times on the transportation system. Reliable transportation systems offer some assurance of attaining a given destination within a reasonable range of an expected time. An unreliable transportation system is subject to unexpected delays, increasing costs for system users
- Remote Areas – Sparsely populated areas such as mountains, swamps, and large bodies of water.
- Research – Investigation or experimentation aimed at the discovery of new theories or laws and the discovery and interpretation of facts or revision of accepted theories or laws in the light of new facts. (49CFR171)
- Revenue – Remuneration received by carriers for transportation activities.
- Revenue Vehicle-Miles (Transit) – One vehicle (bus, trolley bus, or streetcar) traveling one mile, while revenue passengers are on board, generates one revenue vehicle-mile. Revenue vehicle-miles reported represent the total mileage traveled by vehicles in scheduled or unscheduled revenue-producing services.
- Right of Way – The land (usually a strip) acquired for or devoted to highway transportation purposes.
- Road – An open way for the passage of vehicles, persons, or animals on land. (DOI4)
- Road Class – The category of roads based on design, weather ability, their governmental designation, and the Department of Transportation functional classification system.
- Road Functional Classification – The classification of a road in accordance with the Bureau of Land Management (BLM) 9113.16. Code as follows C-collector, L-local, R-resource.
- Rural Highway – Any highway, road, or street that is not an urban highway.
- Rural Mileage (Highway) – Roads outside city, municipal district, or urban boundaries.
- Safety Management System – A systematic process that has the goal of reducing the number and severity of transportation related accidents by ensuring that all opportunities to improve safety are identified, considered and implemented as appropriate.

- Smart Growth – A set of policies and programs design to protect, preserve, and economically develop established communities and valuable natural and cultural resources.
- Sprawl – Urban form that connotatively depicts the movement of people from the central city to the suburbs. Concerns associated with sprawl include loss of farmland and open space due to low-density land development, increased public service costs, and environmental degradation as well as other concerns associated with transportation.
- Stakeholder – Person or group affected by a transportation plan, program or project. Person or group believing that are affected by a transportation plan, program or project. Residents of affected geographical areas.
- State – As defined in chapter 1 of Title 23 of the United States Code, any of the 50 States, comprising the United States, plus the District of Columbia and the Commonwealth of Puerto Rico. However, for some purposes (e.g., highway safety programs under 23 U.S.C. 402), the term may also include the Territories (the U.S. Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands) and the Secretary of the Interior (for Indian Reservations). For the purposes of apportioning funds under sections 104, 105, 144, and 206 of Title 23, United States Code, the term State is defined by section 1103(n) of the TEA-21 to mean any of the 50 States and the District of Columbia.
- State Implementation Plan (SIP) – Produced by the state environmental agency, not the MPO. A plan mandated by the CAA that contains procedures to monitor, control, maintain, and enforce compliance with the NAAQS. Must be taken into account in the transportation planning process.
- State Infrastructure Bank (SIB) – A revolving fund mechanism for financing a wide variety of highway and transit projects through loans and credit enhancement. SIBs are designed to complement traditional Federal-aid highway and transit grants by providing States increased flexibility for financing infrastructure investments.
- State Planning and Research Funds (SPR) – Primary source of funding for statewide long-range planning.
- State Transportation Agency – The State highway department, transportation department, or other State transportation agency to which Federal-aid highway funds are apportioned. (23CFR420)
- State Transportation Improvement Program (STIP) – A staged, multi-year, statewide, intermodal program of transportation projects, consistent with the statewide transportation plan and planning processes as well as metropolitan plans, TIPs, and processes.
- Statewide Transportation Plan – The official statewide intermodal transportation plan that is developed through the statewide transportation planning process.
- Surface Transportation Program (STP) – Federal-aid highway funding program that funds a broad range of surface transportation capital needs, including many roads, transit, sea and airport access, vanpool, bike, and pedestrian facilities.
- Telecommuting – Communicating electronically (by telephone, computer, fax, etc.) with an office, either from home or from another site, instead of traveling to it physically.
- Title VI – Title VI of the Civil Rights Act of 1964. Prohibits discrimination in any program receiving federal assistance.

- Trafficway (Highway) – Any right-of-way open to the public as a matter of right or custom for moving persons or property from one place to another, including the entire width between property lines or other boundaries.
- Transit Vehicle – Includes light, heavy, and commuter rail; motorbus; trolley bus; van pools; automated guideway; and demand responsive vehicles.
- Transportation Conformity – Process to assess the compliance of any transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act.
- Transportation Control Measures (TCM) – Transportation strategies that affect traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include HOV lanes, provision of bicycle facilities, ridesharing, telecommuting, etc. Such actions may be included in a SIP if needed to demonstrate attainment of the NAAQS.
- Transportation Demand Management (TDM) – Programs designed to reduce demand for transportation through various means, such as the use of transit and of alternative work hours.
- Transportation Enhancement Activities (TE) – Provides funds to the States for safe bicycle and pedestrian facilities, scenic routes, beautification, restoring historic buildings, renovating streetscapes, or providing transportation museums and visitors centers. 23 U.S.C. 101(a) and 133(b)(8).
- Transportation Equity Act for the 21st Century (TEA-21) – Authorized in 1998, TEA-21 authorized federal funding for transportation investment for fiscal years 1998-2003. Approximately $217 billion in funding was authorized, which was used for highway, transit, and other surface transportation programs.
- Transportation Improvement Program (TIP) – A document prepared by a metropolitan planning organization that lists projects to be funded with FHWA/FTA funds for the next one- to three-year period.
- Transportation Management Area (TMA) – 1) All urbanized areas over 200,000 in population, and any other area that requests such designation. 2) An urbanized area with a population over 200,000 (as determined by the latest decennial census) or other area when TMA designation is requested by the Governor and the MPO (or affect local officials), and officially designated by the Administrators of the FHWA and the FTA. The TMA designation applies to the entire metropolitan planning area(s). (23CFR500)
- Trust Fund – A fund credited with receipts that are held in trust by the government and earmarked by law for use in carrying out specific purposes and programs in accordance with an agreement or a statute.
- Trust Funds – Accounts that are designated by law to carry out specific purposes and programs. Trust Funds are usually financed with earmarked tax collections.
- Unified Planning Work Program (UPWP) – The management plan for the (metropolitan) planning program. Its purpose is to coordinate the planning activities of all participants in the planning process. The UPWP is essentially the working budget for a fiscal year.
- Urban Highway – Any road or street within the boundaries of an urban area. An urban area is an area including and adjacent to a municipality or urban place with a population of 5,000 or more. The boundaries of urban areas are fixed by state highway departments, subject to the approval of the Federal Highway Administration, for purposes of the Federal-Aid Highway Program.

- Urbanized Area – Area that contains a city of 50,000 or more population plus incorporated surrounding areas meeting size or density criteria as defined by the U.S. Census.
- Vanpool (Transit) – Public-sponsored commuter service operating under prearranged schedules for previously formed groups of riders in 8- to 18-seat vehicles. Drivers are also commuters who receive little or no compensation besides the free ride.
- Vehicle Miles of Travel (VMT) – The number of miles traveled nationally by vehicles for a period of 1 year. VMT is either calculated using 2 odometer readings or, for vehicles with less than 2 odometer readings, imputed using a regression estimate.
- Vehicle-Miles (Highway) – Miles of travel by all types of motor vehicles as determined by the states on the basis of actual traffic counts and established estimating procedures.
- Vehicle-Miles (Transit) – The total number of miles traveled by transit vehicles. Commuter rail, heavy rail, and light rail report individual car-miles, rather than train-miles for vehicle-miles.
- Visioning – A variety of techniques that can be used to identify goals.
- Zone – The smallest geographically designated area for analysis of transportation activity. A zone can be from one to ten square miles in area. Average zone size depends on the total size of study area.

Source: http://www.fhwa.dot.gov/planning/glossary/glossary_listing.cfm

Appendix I:
Legislative Compliance

Federal Public Participation Requirements

Title 23 United State Code (USC) 134 and 135
23 USC 134 is a codification of the law establishing planning policy, defining MPO organizational structure, and delineating MPO and State responsibilities in the transportation planning process.

Moving Ahead for Progress in the 21st Century Act (MAP-21)/ FAST Act
This is the most recent transportation legislation, signed into law by President Obama in July 2012. This law amends, modifies, and adds to existing 23 USC 134 and 135. The language specific to the participation process is found in 134(i)(6): Participation by Interested Parties.

23 Code of Federal Regulations (CFR) 450
23 CFR 450 is FHWA/FTA interpretation of 23 USC 134 and 135, providing specific requirements and actions for MPOs and the State implementing agency, the DOT. The applicable language for both is found, respectively, in 450.210(1)(I and others) ("…the State shall…") and 450.316(1)(vii and others) ("…the MPO shall…"). Furthermore, federal regulation 23 CFR 450.316 requires MPOs to develop and use a documented participation plan that defines a process of providing reasonable opportunities for the general public as well as transportation users and providers among various modes, to be involved in the metropolitan planning process. The federal regulation requires that the participation plan be developed by the MPO in consultation with all interested parties and shall, at a minimum, describe explicit procedures, strategies, and desired outcomes.

Clean Air Act
A series of acts aimed at reducing smog and air pollution, the most recent of which is the Clean Air Act Extension of 1970, with amendments in 1977 and 1990. The 1990 amendment established the State Implementation Plan (SIP), under which states are obligated to notify the public of plans for pollutant control and allow opportunities for input into the process.

Civil Rights Act of 1964, 42 USC 2000d, et seq. 42 USC 2000d
This legislation prohibits exclusion from participation in any federal program on the basis of race, color, or national origin. This is the seminal or shaping expression of the law. Title VI of the Civil Rights Act of 1964 prohibits discrimination in any program receiving federal assistance, and local MPOs must follow those provisions. The implementing regulations of Title VI are found at 49 CFR 21 and 23 CFR 200.

In particular, 23 CFR 200.5(p) includes other civil rights provisions of federal statues and related authorities that prohibit discrimination in programs and activities receiving federal assistance. In general, all local MPO plans and programs comply with the prohibition against discrimination in federally funded programs in accordance with the provisions of Title VI.

Further legislation concerning civil rights and discrimination are as follows:

- 23 USC 324 – This is the law prohibiting discrimination on the basis of sexual orientation. This requirement is found in 23 CFR 450.334(1).
- 29 USC 794 (Rehabilitation Act of 1973, and Section 504 of that Act) and the Americans with Disabilities Act (ADA) of 1992 - These are laws prohibiting discrimination on the basis of a disability, and in terms of access to the transportation planning process.
- 42 USC 6101 (Age Discrimination Act) – This is the law that indicates "no person shall on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."
- Executive Order 12898 – Executive Orders by the President as the head of the Executive Branch typically carry the weight of the law. This is not actually true unless the order has been given discretionary power through an Act of Congress, or a later act gives Congressional weight to the order. Significant orders by Presidents in the past affect the ability of segments of the population to gain access, and in this case, the planning process. Order 12898, often simply called "Environmental Justice," requires federal agencies to identify "disproportionally high and adverse human and health environmental effects of its programs on minority populations and low-income populations…" and prohibits actions that would adversely affect a disproportionally high number among these populations. Section 5-5 addresses the public involvement part of the order.
- Limited English Proficiency Persons (LEP) and Language Assistance Plan – As required by Title VI of the Civil Rights Act of 1964, Executive Order 13166, and FTA Circular FTA C4702.1B, October 2012, the MPO has completed a Four Factor Analysis of the Huntsville Metropolitan Planning Area to determine requirements for compliance with the Limited English Proficiency Persons (LEP) provisions. Based on the analysis, the MPO has identified a population within the MPA that may require MPO assistance in participating in the planning process. A Language Assistance Plan has been developed as follows:
  - A total of 1.07% of the population of the Huntsville Area Metropolitan Planning Study Area are not proficient speakers of English, therefore the MPO is required to develop a Language Assistance Plan. Spanish is the largest representative language spoken by .69% of those residing in the MPO Study Area.

- The MPO can provide language assistance services by having available persons that are fluent in Spanish. Assistance with other languages may be available upon request and as resources allow.
- Notice of the availability of language assistance to LEP persons is provided through the MPO staff and the Public Participation Plan.
- The MPO monitors, evaluates, and updates the LEP annually through update of the PPP and staff reports.
- Training of the MPO staff to provide language assistance is done under guidance of the Alabama Department of Transportation.

The MPO periodically reviews the above steps to ensure that inadvertent discrimination on the basis of national origin is not occurring. In addition to the above actions, the MPO will provide the following:

- Notice of MPO meetings and hearings in the secondary language as requested.
- Translation services for meetings or hearings on request.
- Translation services, verbal only, of planning documents, subject to 2 week notice.
- Title VI Complaint Form(s) in the secondary language as requested.

State Public Involvement Requirements

Alabama Open Meetings Act

All meetings associated with the Huntsville Area Transportation Study – MPO are open to the public in accordance with the Alabama Open Meetings Act, Act No. 2005-40, which sets forth the general rule of law for open meetings. The Act requires that all governmental agencies, boards, committees, and institutions be in compliance.