SHOALS AREA METROPOLITAN PLANNING ORGANIZATION

2035 LONG RANGE TRANSPORTATION PLAN

Prepared by Skipper Consulting, Inc. for the Northwest Alabama Council of Local Governments (NACOLG)

May 2010

Shoals Area Metropolitan Planning Organization (MPO)

2035 Long Range Transportation Plan (LRTP)

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Shoals Area Metropolitan Planning Organization Membership

FISCAL YEAR 2010

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Vice-Chairman Larry Irons – Commissioner, Lauderdale County
Bobby Irons – Mayor, City of Florence
Ian Sanford – Mayor, City of Sheffield
Billy Shoemaker – Mayor, City of Tuscumbia
Roger Creekmore – Commissioner, Colbert County
James Brown – 2nd Division Engineer, Alabama Department of Transportation
Keith Jones – Executive Director, Northwest Alabama Council of Local Governments

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Mr. Robert J. Jilla – Multimodal Transportation Engineer of the Bureau of Transportation Planning and Modal Programs, Alabama Department of Transportation
Ken Allamel – Chairman, Technical Coordinating Committee
Louis Stumpe – Mayor, Town of St. Florian
Jerry Mitchell – Mayor, Town of Killen
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Mark Chamblee, Town of Leighton
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Steve Holt, Shoals Area Chamber of Commerce
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Northwest Alabama Council of Local Governments (NACOLG)

Keith Jones, Executive Director
Jesse E. Turner, Director of Transportation Planning
Joseph E. Holt, Transportation Planner

SHOALS AREA
METROPOLITAN PLANNING ORGANIZATION

RESOLUTION 10-18

Adopting the 2035 Long Range Transportation Plan (LRTP)
for the Shoals Urban Area

WHEREAS, the Shoals Area Metropolitan Planning Organization (MPO) has been designated by the Governor of Alabama as the agency authorized, together with the State of Alabama, to conduct the continuing, cooperative, and comprehensive planning process for the Shoals Urban Area in accordance with applicable provisions of amended 23 USC 134, 135 (SAFETEA-LU Section 6001, August 2005); 49 USC 5303, 5304, 5309; 23 CFR 450 et al; 42 USC 7401 et seq.; 40 CFR Parts 51, 93; and

WHEREAS, pursuant to 23 CFR 450.322, the metropolitan transportation planning process requires the development of a metropolitan transportation plan with a minimum 20-year horizon, includes long and short-range strategies for an integrated transportation network, requires review every five years (four years in air quality non-attainment or maintenance areas), requires approval of the MPO Policy Committee, and the effective date of which is determined by concurrence from the Alabama Department of Transportation, the Federal Highway Administration and the Federal Transit Administration; and

WHEREAS, the MPO has participated in the Interagency Consultation and Public Participation Process for the 2035 Long Range Transportation Plan as required under 23 CFR 450.322(g) and (i); and

WHEREAS, the Northwest Alabama Council of Local Governments (NACOLOG), as staff to the Shoals Area MPO, and consistent with the above provisions and in cooperation with the Bureau of Planning and Modal Programs of the Alabama Department of Transportation, has prepared the 2035 Long Range Transportation Plan; now

THEREFORE, BE IT RESOLVED that the Shoals Area MPO hereby adopts the 2035 Long Range Transportation Plan (LRTP) for the Shoals Urban Area.

ADOPTED THIS 20th DAY OF MAY 2010

SIGNED: _____
David Bradford, Chairman

ATTEST: _____

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1.0 INTRODUCTION

1.1 Purpose

This report documents the year 2035 long-range transportation plan for the Shoals Area Transportation Study. The purpose of the long-range transportation plan is to (1) identify current transportation needs, (2) forecast future transportation needs, and (3) establish strategies and projects that address the needs. The federal regulations (23 CFR Part 450.322) related to this topic state that the strategies and projects should "lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods." While the plan is required to consider all modes of transportation and transportation funding, the governing body, the Shoals Area Metropolitan Planning Organization (MPO), only has oversight of federal highway and transit funds. This fact, of course, limits to a certain extent what strategies are included in the plan and it also prevents any non-federal highway or transit funded projects from being included. The laws that require Metropolitan Planning Organizations (MPOs) to develop long-range transportation plans are Section 134 of Title 23 of the United States Code and Section 5303 of Title 49 of the United States Code. The rules that govern metropolitan planning organizations are published in the Code of Federal Regulations (CFRs) as Title 23, Chapter 1, Part 450, Subpart C. Section 450.322 specifically relates to the development of long-range transportation plans. The regulations reflect the changes resulting from the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (Pub. L. 109-59, August 10, 2005). SAFETEA-LU added eight factors to guide the transportation planning process within an MPO area. The Act states that the planning process, which includes the development of long-range transportation plans, "shall provide for the consideration of projects and strategies that will:

A. support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
B. increase the safety of the transportation system for motorized and non-motorized users
C. increase the security of the transportation system for motorized and non-motorized users
D. increase the accessibility and mobility of people and for freight
E. 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
F. enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
G. promote efficient system management and operation
H. emphasize the preservation of the existing transportation system"

1.2 MPO Structure

Transportation planning within the Shoals study area falls under the auspices of the Shoals Area MPO. The Shoals Area Transportation Study was created in 1974 upon execution of an agreement between the cities of Florence, Sheffield, Tuscumbia and Muscle Shoals, Colbert County, Lauderdale County, the Northwest Alabama Council of Local Governments, and the State of

Alabama Highway Department (now the State of Alabama Department of Transportation). The MPO is made up of the Policy Committee, the Technical Advisory Committee and the Citizens Advisory Committee. The Policy Committee membership is outlined in the MPO bylaws. The Technical Advisory Committee and the Citizens Advisory Committee are appointed by the Policy Committee. Following is a list of the policy committee members:

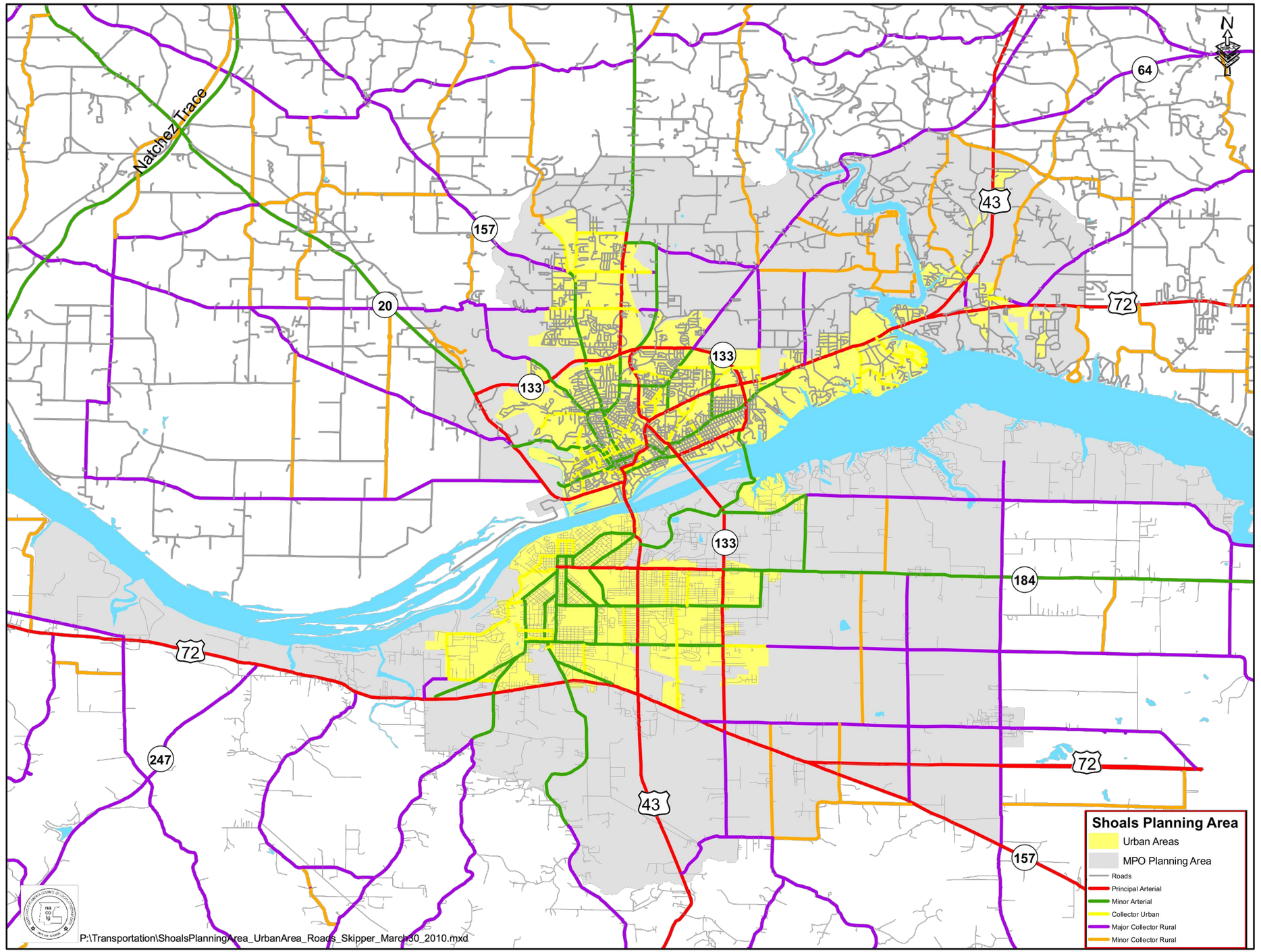
- the mayor of the City of Florence
- the mayor of the City of Sheffield
- the mayor of the City of Tuscumbia
- the mayor of the City of Muscle Shoals
- a member of the Colbert County Commission
- a member of the Lauderdale County Commission
- the Executive Director of the Northwest Alabama Council of Local Governments
- the second division engineer of the Alabama Department of Transportation
- the multimodal transportation engineer of the Alabama Department of Transportation (non-voting)
- the division administrator of the Federal Highway Administration (non-voting)
- the chairman of the Technical Coordinating Committee (non-voting)
- the mayor of the Town of St. Florian (non-voting)
- the mayor of the Town of St. Killen (non-voting)
- the mayor of the Town of St. Leighton (non-voting)

This committee is in charge of all decision-making responsibilities relative to the transportation planning process in the Shoals Study Area.

The Metropolitan Planning Organization Policy Committee receives input and advice from the Technical Coordinating Committee (TCC). This committee consists of members who work in areas related to transportation planning and who, in many instances, work directly in some planning capacity such as city planning and engineering. This committee is vital to the success of the overall transportation planning process as these professionals are the individuals that must integrate the end product of their collective efforts into their own work responsibilities on a daily basis. This is also the first line of the decision-making responsibility in the planning process.

1.3 Study Area

There are two boundaries that are defined in a transportation study area, the urban area boundary and the study area boundary. The urban area boundary is defined largely by the U. S. Census Bureau. The study area boundary is defined by the MPO in cooperation with the Alabama Department of Transportation. The study area is defined as the urban area boundary plus the area that is projected to become urbanized within the next twenty years. Included in the Shoals Area Transportation Study are the Cities of Florence, Sheffield, Tuscumbia and Muscle Shoals plus portions of Colbert and Lauderdale Counties as shown in Figure 1.1.



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Study Area

2035 Shoals LRTP - NACOLG

1.1 Figure

1.4 Public Involvement

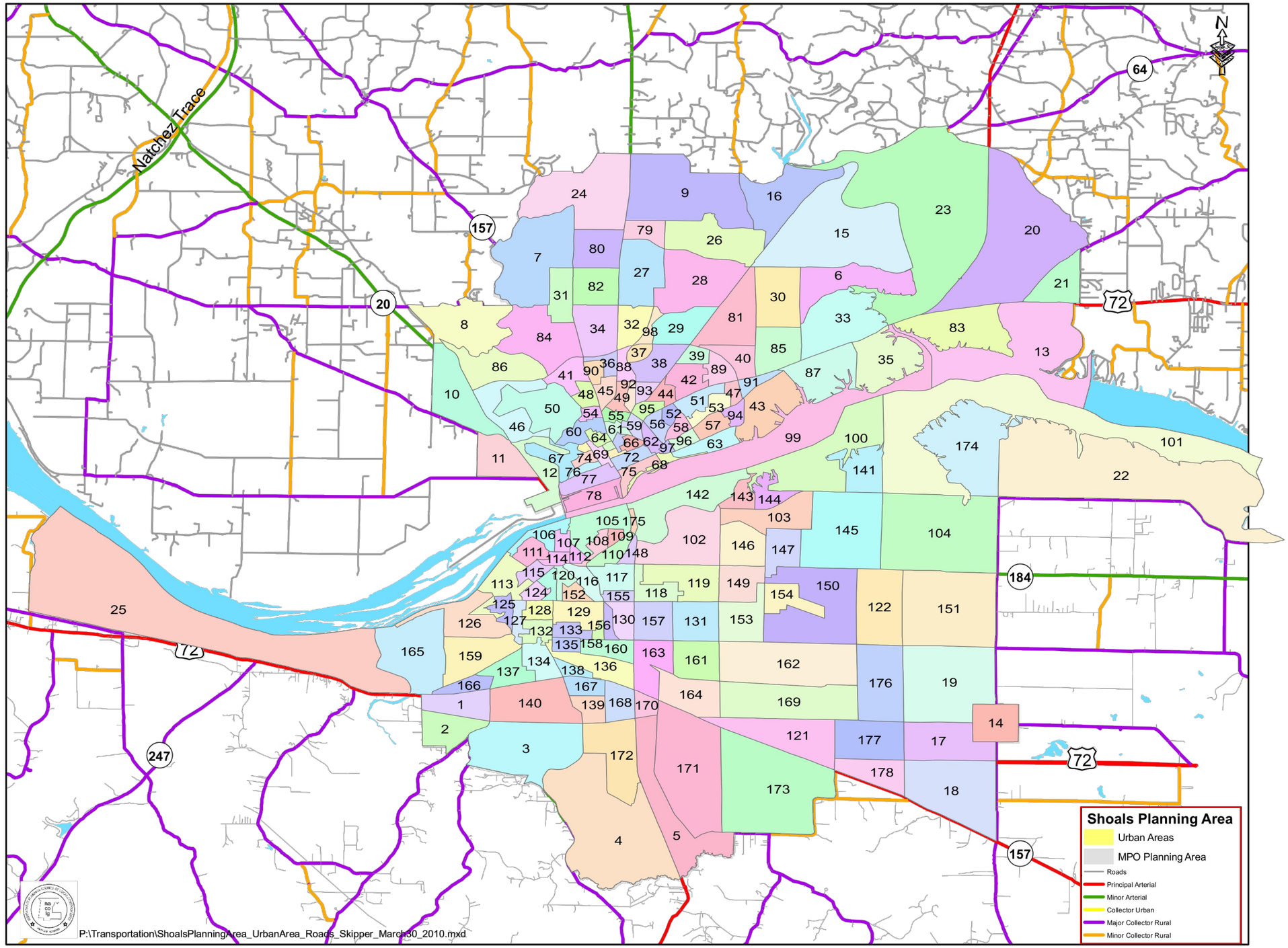
The process of preparing the long-range transportation plan included several opportunities for input of public comments and comments by local elected officials. The process included input by these groups early in the planning process, as well as input regarding the entire long-range transportation plan in its draft stage.

1.5 Documentation Process

This project is an update of the current long-range transportation plan for the Shoals study area. The current long-range transportation plan was adopted by the MPO in May 2003. The base year of the current long-range transportation plan was 2005 and the horizon year was 2035. Responsibility for transportation planning for the MPO, including the long range transportation plan, rests with the staff of the Northwest Alabama Council of Local Governments (NACOLG).

1.6 Traffic Analysis Zones

The study area is divided into individual cells called traffic analysis zones (TAZ). A traffic analysis zone is defined as a subdivision of a study area of homogeneous land use within a distinct border for the compilation of land use and traffic generation data. The TAZ system developed by the Shoals Area MPO was employed for this analysis. 178 internal zones and 20 external zones are included within the study area boundary. The TAZ structure is illustrated in Figure 1.2.



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Traffic Analysis Zones

2035 Shoals LRTP - NACOLG

1.2 Figure

2.0 EXISTING TRANSPORTATION SYSTEM

2.1 Roadway Classifications and Descriptions

All transportation networks have some form of classification to categorize the hierarchy of movement in the system. The roadway network developed for the Shoals study area was based on the functional classification system prepared by the Alabama Department of Transportation with assistance from the MPO. The components of this network are principal arterials, minor arterials, and collectors. The distribution of mileage in these classifications was as follows:

Principal Arterials	134.32 miles
Minor Arterials	158.12 miles
Collector Roads	337.52 miles
TOTAL	629.96 miles

Each type of roadway provides separate and distinct traffic service functions and is best suited for accommodating particular demands. Their designs also vary in accordance with the characteristics of traffic to be served by the roadway. The following is a brief description of each roadway type.

Arterials are important components of the total transportation system. They serve as feeders to the interstate system as well as major travelways between land use concentrations within and beyond the study area. Arterials are typically roadways with relatively high traffic volumes and traffic signals at major intersections. The primary function of arterials is moving traffic. Arterials provide a means for local travel and land access.

Collectors provide both land service and traffic movement functions. Collectors serve as feeders between arterials as well as provide access to the local streets. Collectors are typically lower volume roadways that accommodate short distance trips.

2.2 Roadway Capacity

Roadway networks are evaluated by comparing the traffic volumes along each facility to the facility's capacity. Roadway capacity is defined as the ability of the facility to accommodate traffic. Service flow volume is the level of traffic flow (vehicles per day) that can be accommodated at various levels of service. The current level of service scale (LOS), as developed by the Transportation Research Board in the *Highway Capacity Manual, Seventh Edition*, ranges from a level of service "A" to a level of service "F". Abbreviated definitions of each level of service are as follows:

Level of Service A	Free traffic flow
Level of Service B	Reasonably free flow
Level of Service C	Stable traffic flow
Level of Service D	High-density stable traffic flow
Level of Service E	Capacity level traffic flow
Level of Service F	Forced or breakdown traffic flow

As a general rule, desired operation of a roadway should be no lower than level of service “C". Level of service "D" may be acceptable under certain circumstances. A level of service "E" or "F" is considered unacceptable.

The methodology used to evaluate roadway segment capacity in this project was a tabular analysis relating roadway classification, number of lanes, levels of service, and daily service volumes. The estimated 24-hour capacities of the facilities included in the area network are shown in Table 2.1. Figure 2.2 summarizes the deficient roadway segments.

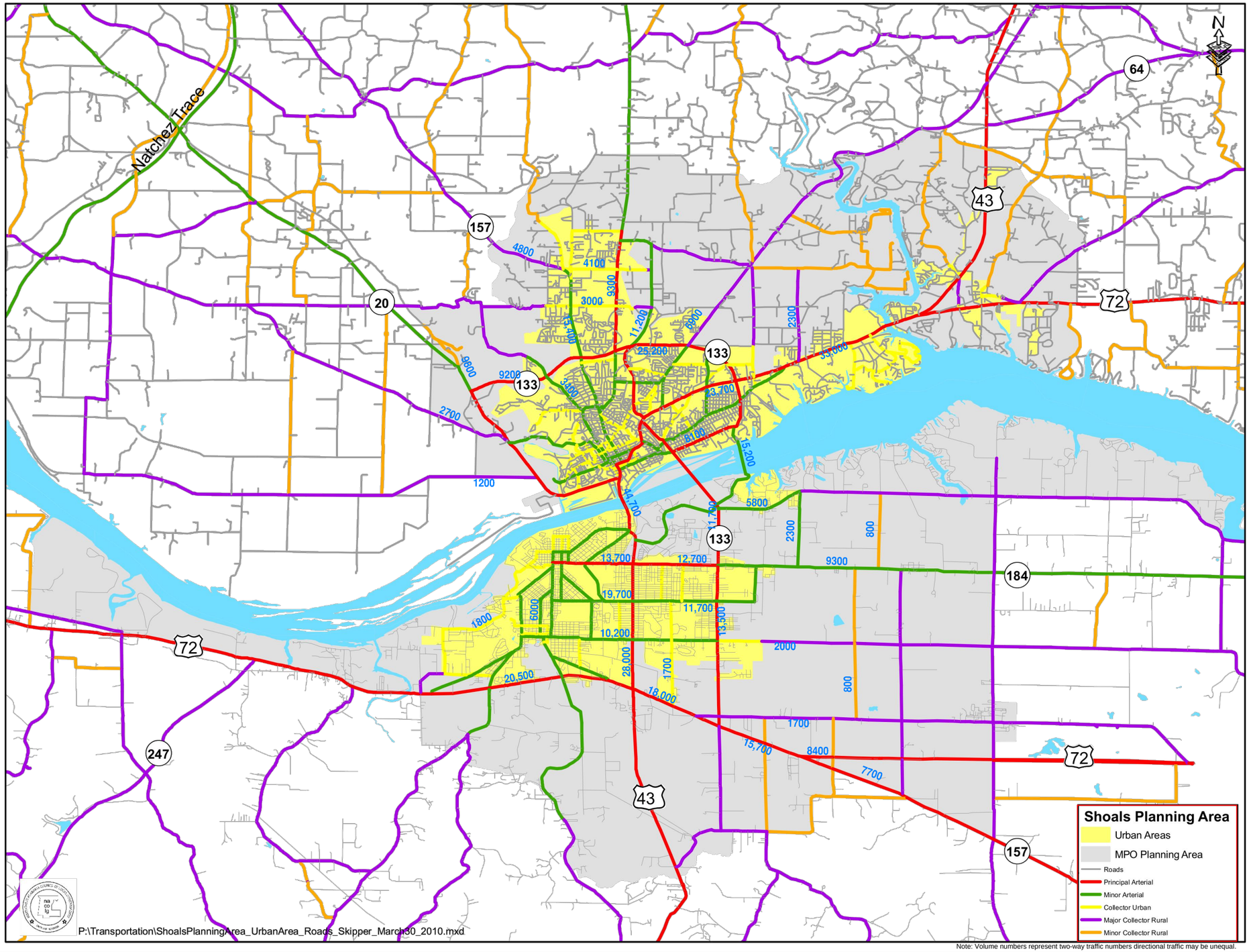
2.3 Existing Traffic Volumes

Traffic volumes, as indicated by traffic counts at various locations on the roadway network, reflect current travel patterns and how well the network is serving the travel demand. The traffic counts are collected throughout the study area annually by ALDOT. Existing average annual daily traffic counts, which were conducted in 2005, are shown in Figure 2.1.

Table 2.1
ALDOT Approved Capacities

Link Type	Functional Classification	Number of Lanes	Daily Capacity
11	Freeways	4	68,000
12		6	102,000
13		8	136,000
14		10	170,000
21	Expressways	4	50,000
22		6	75,000
23		8	100,000
31	Divided Principal Arterials	2	22,000
32		4	33,900
33		6	50,000
34		8	73,600
35	Undivided Principal Arterials	2	17,800
36		4	31,000
37		6	45,800
38		8	63,100
41	Divided Minor Arterials	2	21,000
42		4	31,900
43		6	45,600
44		8	
45	Undivided Minor Arterials	2	17,800
46		4	27,400
47		6	
48		8	

Link Type	Functional Classification	Number of Lanes	Daily Capacity
51	Divided Collectors	2	20,800
52		4	28,500
53		6	42,000
54	Undivided Collectors	2	16,600
55		4	26,200
56		6	38,700
61	One-Way Principal Arterials	2	17,100
62		3	25,600
63		4	
71	One-Way Minor Arterials	2	14,100
72		3	19,500
73		4	26,000
81	One-Way Collectors	2	11,300
82		3	15,600
83		4	20,800
91	One-Way Ramps	1	9,000
92		2	18,000
93		3	27,000
98	Time Barriers		
99	Centroid Connectors	2	14,000



Legend

13,700 Traffic Volume (veh/day)

North

Scale: ~1:10,000

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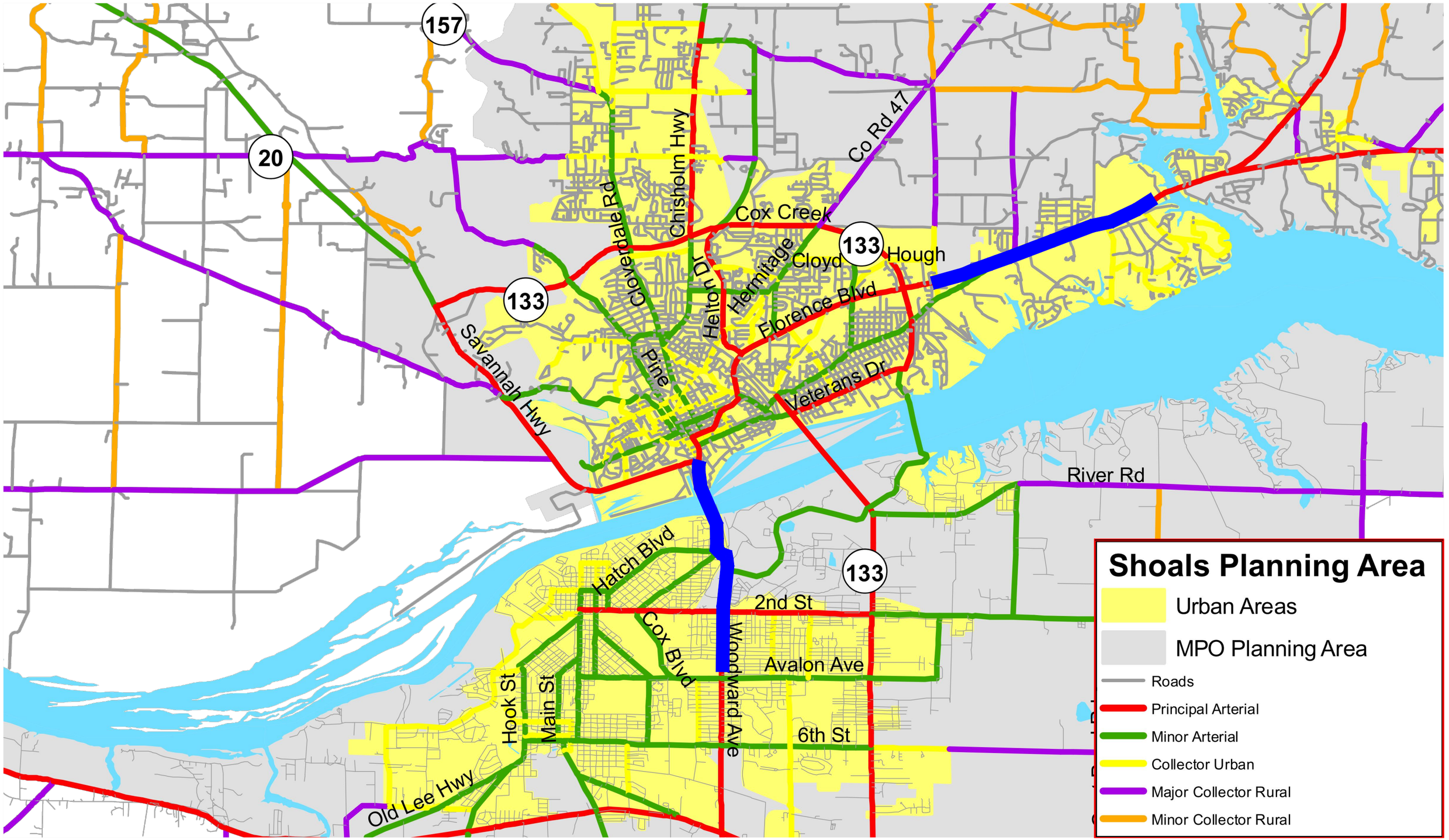
Existing Traffic Volumes

2035 Shoals LRTP - NACOLG

2.1 Figure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Cloverdale Rd
Cox Creek
Hermitage
Cloyd
Hough
Helton Dr
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Pine
Savannah Hwy
Veterans Dr
River Rd
Hatch Blvd
2nd St
Cox Blvd
Woodward Ave
Avalon Ave
Hook St
Main St
6th St
Old Lee Hwy
Shoals Planning Area
Urban Areas
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CONSULTING INC.
Existing Deficient Links
2035 Shoals LRTP - NACOLG
2.2
Figure

2.4 Public Transit

The NACOLG Urbanized Public Transit Program operates in the Florence Urbanized area, covering the cities of Florence, Muscle Shoals, Tuscumbia, and Sheffield. NACOLG Transit has a fleet of 33 vehicles, consisting of mini buses, commuter and modified vans. Management of the Transit Program is provided by the Transit Department at the NACOLG offices in Muscle Shoals, Alabama.

The Demand Response public transit operates Monday through Friday. Routes are scheduled from 7:00 a.m. until 4:30 p.m. To complement the demand response routes, a shopping shuttle in the City of Florence operates three days per week serving the low-income residential communities and all of the major shopping centers in the respective communities. The shuttle route is subsidized by the City and the Housing Authority. The City of Florence subsidizes evening transportation three times per month for handicapped citizens who attend support groups.

Transit services for 14 routes are coordinate with the social service agencies throughout the urbanized area. These routes operate twice a day, five days a week. Contracted routes are scheduled according to the demand of the agencies and operate as early as 6:00 a.m. and as late as 11:00 p.m. All contract routes are open to the general public and rides are scheduled on demand.

Job Access/Reverse Commute (JARC) transportation is provided by NACOLG Transit. Service contracts with local taxi companies in Lauderdale and Colbert Counties allow NACOLG to provide service to JARC clients 24 hours a day, 7 days a week. This service provides low-income/TANF eligible persons with transportation to and from work and daycare.

2.5 Pedestrian and Bicycle Facilities

Sidewalks are available in various locations throughout the study area, with the highest concentration in the downtown areas. There are several bicycle and pedestrian facilities in the study area. The City of Florence has developed a series of pedestrian and bicycle trails along the banks of the Tennessee River. The most extensive system is located within the Tennessee Valley Authority Reservation in Muscle Shoals. In the central business districts of Florence, Sheffield and Tuscumbia most signalized intersections are equipped with pedestrian signals and crosswalks to assist in the safe movement of pedestrians.

Below is a list of needs and problems that were identified by the NACOLG for bicycle facilities:

- More bicycle facilities are wanted for both travel and recreational purposes.
- Increased attention to bicycle facility safety.
- Current bicycle facilities are not linked.
- Encourage bicycle advocates to participate in the LRTP development process.

2.6 Intermodal System

The Intermodal System consists of sites providing linkages between one or more modes of transportation. In a true intermodal system, the performance or use of one mode will affect

another. The intermodal system should provide an efficient, safe, and convenient process to move goods and people.

There is an extensive intermodal system in the Shoals area. Included in this system are two railways, Norfolk-Southern Railroad and the Tennessee Southern Rail Company. Norfolk-Southern serves Colbert County with connections to markets to the east, west and south of the Shoals Area. The Tennessee Southern Rail Company is a shortline railroad that serves Lauderdale County with connections into middle Tennessee. The rail service in the Shoals Area is freight based with no passenger rail service.

The Tennessee River provides unique opportunities for commercial and industrial transportation in the Shoals Area. The navigable waterway has created the opportunity for thousands of industrial and service jobs at businesses and industries that utilize the river for transportation. Port facilities are available on both sides of the waterway for use by commercial and industrial interests. Public and private docks are located along the Tennessee River providing and intermodal transportation connection. The Florence – Lauderdale County Port Authority is a public, not-for-profit organization chartered by the Lauderdale County Commission and the City of Florence. The Authority owns the Port of Florence. The Port Authority leases land and equipment to private operators and manages the public dock.

The Port of Florence is a multi-modal port located at mile 256 on the Tennessee River. Tennessee Southern Railroad provides rail access to the port and operator services at the public dock. The railway connects to CSX north of Columbia, Tennessee. Tennessee Southern Railroad also operates the Port Authority's 40-ton overhead bridge crane. Fleeting is provided by Muscle Shoals Marine Service.

The Northwest Alabama Regional Airport is located north of U.S. Highway 72 Alternate in the southeastern corner of the urban area. Commercial passenger air service is provided by Mesaba Airlines operating as a Delta Connection with daily connections to Atlanta, Georgia. The airport has one runway which is 6,693 feet long and 150 feet wide and a second runway which is 4,000 feet long and 100 feet wide. The longest runway has ILS approach capabilities which permit operations with only a 200 foot ceiling and one-half mile visibility. The airport has 14 "T" hangers, 12 aerial ports and tie-downs for over 75 general aviation aircraft.

3.0 SOCIOECONOMIC DATA

The interrelationship between land use and a transportation system is used to determine the demand for travel on a roadway network. Each land use (residential, retail, non- retail, etc.) generates and attracts traffic dependent on the nature of the development and the amount of land developed. In order to identify this demand for travel, inventories of existing land uses must be accomplished. This information is used in conjunction with the physical location of the adjacent land uses, constraints of the roadway network and other related factors to develop the interrelationship between land use and the transportation system.

3.1 Base Year (2005) Socioeconomic Data

Each traffic analysis zone within the study area was inventoried to determine the existing primary land use within its boundary. Factors used to characterize land use within each TAZ are listed below:

- Households
- Mean Income of Households
- Retail Employment
- Non-Retail Employment
- School Enrollment

There were 101,093 people and 41,774 households within the study area in 2005. The average mean income for these households was $38,305. There were 7,750 retail jobs and 33,162 non-retail jobs reported within the study area in 2005. There were 23,175 persons enrolled in school within the study area in 2005. It should be noted that the household and mean income data is collected at the location of the home. The employment data is collected at the work site, and the school enrollment is collected at the school site. The 2005 socioeconomic data by TAZ is shown in Appendix A.

3.2 Socioeconomic Data Forecast

The generation of future traffic is based on a forecast of the socioeconomic data used to develop the base year model. The target year for this plan update calls for a long-range forecast to 2035. The Northwest Alabama Council of Local Governments prepared the data forecast using historic trends in development patterns and census figures. Other considerations included the density of development in each TAZ and the suitability of vacant land for development in each TAZ. The socioeconomic forecasts were projected to the planning district level and then refined to the TAZ level. The base year and forecast year study area totals for each data variables are shown in Table 3.1.

Table 3.1
Socioeconomic Forecasts

Data Variable	2005	2035	% Change
Population	105,342	118,706	12.7%
Households	45,530	49,668	14.1%
Mean Income	$38,305	$38,305	0.0%
Retail Employment	8,069	10,272	27.3%
Non-Retail Employment	34,552	40,875	18.3%
School Enrollment	24,215	30,026	24.0%

It should be noted that the mean income was assumed to remain constant over the 30-year period. It is fully recognized that there will be a significant increase in income in most, if not all, of the traffic analysis zones through the year 2035. However, most of this increase in income will be the result of inflation and not increased buying power. It can be assumed that income growth due to inflation does not yield a corresponding change in the number of trips generated by a household. The trip generation rates used in this model are based on 2005 income data. Therefore, in order to discount the affects of inflation and eliminate the need for adjustments to the trip generation rates, it was decided to hold mean income by traffic analysis zone constant.

4.0 ENVIRONMENTAL CONSIDERATIONS

4.1 Air Quality Conformity

The Clean Air Act (CAA), codified as Title 42 of United States Code (USC) Section 7401, and implemented by the Environmental Protection Agency (EPA) under Title 40 of Code of Federal Regulations (CFR), Parts 51 and 93, establishes tolerance standards on ground-level and atmospheric pollutants and provides for corrective mitigation measures when area monitor readings exceed allowable levels. Air quality in Alabama, as in other states, is adversely affected by pollutant emissions from automobile and truck exhaust systems, and this condition is exacerbated by congestion on urban roadways. This connection between automobile/truck emissions, traffic congestion, and increasing pollutant levels is well established and acknowledged by EPA, Federal Highway Administration (FHWA), and other agencies.

Common pollutants include ozone (O_3) and particulate matter 2.5 ($PM_{2.5}$), among others, and the EPA standards, which determine tolerance violations, are known as the National Ambient Air Quality Standards (NAAQS). Standards are typically established for ground-level ozone in terms of parts per billion (ppb) and for particulate matter, in tons per day. A violating pollutant is measured by a monitoring station in 1-hour and 8-hour increments for a given year to arrive at allowable averages.

Title 40 CFR Part 93 provides the rules and regulations for Air Quality Conformity, stating the procedures and requirements necessary by states and local governments to reach conformity, and Titles 23 and 49 of USC are interpreted through the Federal Highway Administration's (FHWA) 23 CFR 450 to insure conformity compliance is carried through in local planning by the MPO's and other transportation agencies.

Conformity, as commonly defined, is *a process which ensures federal funding and approval goes to transportation activities that are consistent with our air quality goals.* The US Department of Transportation cannot fund, authorize, or approve federal actions to support projects that do not conform to Clean Air Act requirements governing the current National Ambient Air Quality Standards (NAAQS). At the very heart of Air Quality Conformity is the requirement that projects are included in a *conforming* and fiscally constrained transportation plan (Long Range Plan) and a similarly constrained short range program, a Transportation Improvement Program (TIP).

States are required to establish State Implementation Plans (SIP), providing air quality goals for transportation plans and programs. The SIP, as set forth in 23 CFR 450.104, will generally state *that transportation activities will not cause new air quality violations, worsen existing conditions, or delay timely attainment of the air quality standards.* This then, describes the heart of the conformity process.

SIP's are established for the various pollutants monitored in a given area, as required by CAA. Each pollutant is assigned an allowable emission ceiling, referred to as the emissions "budget." This becomes the highest level of emissions allowed under a Long Range Transportation Plan or TIP, while demonstrating attainment of standards. It is against the budgets that readings from

monitoring stations are measured to determine whether an area or county is non-conforming and thus must begin the mitigation process. Failing to meet conformity rules or exceeding emissions budgets can have varying outcomes, most of them unpleasant. They may include the loss of federal funding, projects underway can be halted, federal permits can be denied, and projected projects can be frozen in place, any of which can seriously and immediately impact a road network. For any and all of those reasons, it is essential that immediate steps are taken by the affected MPO to begin the Air Quality Conformity Determination process.

As of June of 2009, the counties of the Shoals Urban Area are in conformity, with no reporting violations of ozone (O_3) or particulate matter ($PM_{2.5}$). At this point, which is early in the "season" in terms of projecting violations for 2009, The Shoals area is *not* in violation in the pollutants being watched.

It is likely that EPA, under a new administration, will adopt stricter standards, possibly .70 ppb for O_3. This, in effect, would move all counties in Alabama into non-conforming status for ground-level ozone. Barring a move to make newer standards retroactive, the necessary publication of notice of rulemaking, and allowing the time needed for the public participation process, the earliest effect on the Shoals planning and publication efforts would be at some point after new transportation legislation is in effect, probably late 2011 or early 2012.

In terms of practical action, a finding of non-conformity for Shoals area in March 2010 will necessitate amending the project listings in this FY2010 Long Range Update. Additionally, the FY2010 Rebalanced and Updated FY2008-2011 TIP will require amending, and two additional documents will be prepared: a document called *FY 2011 Air Quality Conformity Determination for Colbert and Luaderdale Counties in Alabama,* and *2035 Long Range Transportation Plan Shoalsr Area Planning Area, Summary of Plan Consistency with SAFETEA-LU - Transportation Planning and Programming Requirements*. MPO staff will prepare three Resolutions for MPO approval: one approving the amended Long Range document, one approving the amended TIP, and a third approving the Air Quality Conformity Determination. The Summary document does not require MPO approval.

4.2 Environmental Mitigation and Climate Change

"According to the FHWA report Integrating Climate Change into the Transportation Planning Process, there is general scientific consensus that the earth is experiencing a long-term warming trend and that human-induced increases in atmospheric greenhouse gases (GHGs) may be the predominant cause. The combustion of fossil fuels is by far the biggest source of GHS emissions. In the United States, transportation is the largest source of GHG emissions, after electricity generation. Within the transportation sector, cars and trucks account for a majority of emissions.

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. Transportation infrastructure is vulnerable to predicted changes in sea level and increases in severe weather and extreme high temperatures. Long-term transportation planning will need to respond to these threats."

INTRODUCTION TO INTEGRATING CLIMATE CHANGE INTO THE TRANSPORTATION PLANNING PROCESS
- Federal Highway Administration, Final Report, July 2008

5.0 LAND USE AND TRANSPORTATION COORDINATION

The Shoals MPO recognizes, in formulating and implementing transportation improvements, the importance of coordinating such improvements with land use and development planning in order to create *Consistency with Other Plans*. The MPO further recognizes that land use policies and decisions are primarily the authority of local municipal jurisdictions. Frequently, the Northwest Alabama Council of Local Governments works with municipal and county governments, as well as economic development organizations, on issues relating to transportation, planning and development, in cooperation with local governments.

The Long Range Transportation Plan provides an opportunity to further the coordination of transportation and land use in the MPO area. The goals for such coordination are (1) to enhance the effectiveness and efficiency of transportation investments in terms of mobility, reduced congestion, safety and environmental quality, (2) to support ongoing and sustainable economic and community development throughout the region and (3) to enhance ongoing quality of life measures for the counties and communities in the Shoals MPO area.

In preparing the LRTP Update, existing land use information, available from the MPO, was reviewed as were the adopted plans of various jurisdictions. Interviews with a few MPO members, various staff and developers were utilized for a perspective on proposed land development trends and "on the horizon" projects including residential, industrial and commercial development as well as recreation, leisure and tourism development.

While not a visioning exercise, exactly, these informal discussions provided an opportunity to understand the "big picture" for the Shoals MPO area and to discuss the importance of coordinating land use and transportation and how such coordination is being provided for at present. This information has been utilized to help reinforce the land use and socio-economic information that is utilized in the transportation modeling process.

Finally, General Land Use/Transportation Guidelines are included in the LRTP to further the coordination of transportation planning with local land use planning and to ensure efficient and economic mobility, mitigate congestion and support economic development and environmental quality.

Although not intended to be an exhaustive land use study or policy statement, this section of the LRTP provides further progress in the coordination between transportation and land use. Continued discussion of this important aspect of LRTP will allow the MPO and member governments to realize the benefits of such coordination to the transportation system and to continued community and economic development of the MPO area.

5.1 General Development Trends In The MPO Study Area

In looking at past, current and future development in the MPO study area, the long term trend towards steady growth from the 1990's and early 2000's is expected to continue. Most believe, however, that growth has moderated, in part, due to the slowdown in the national economy and

that return to previous development patterns is less predictable as to the timing of it. Growth is expected to be bolstered in the Shoals based on the impact of I-22 and the connection into northeast Mississippi and Tennessee; the tourism connection of the Shoals to Memphis and Tupelo; people moving from Memphis and other areas to lakes and rivers in northwest Alabama; the rail car project and Barton industrial development to the west; the presence of industrial parks and continued aggressive industrial recruiting throughout the Shoals; and the attraction for alternative economic development like recreation, tourism and entertainment. Recreation and tourism continues to be a strong trend in the Shoals economy. The Tennessee River continues to attract seasonal and permanent residential growth along with other developments along the valley.

Information from the Center for Business and Economic Research (CBER) at the University of Alabama was reviewed to further document the expectations with respect to future development. According to CBER, along with the rest of the United States, the Shoals Area has been affected by the downturn in the global economy. The Shoals area continues to be an attractive market, however, the underlying effects of the national economy has apparently had an impact on new housing starts and industrial development in the last few years and could have a moderating influence on total growth for the life of this plan update. At the same time, given the factors indicated above and the momentum of certain trends, development in the Shoals Area is expected to continue to grow in the long term as it has over the previous decade or so.

Major development projects impacting the MPO area from a regional perspective include the Barton Industrial Park and National Alabama Corporation; continued growth and expansion of UNA in Florence, including the funding for science and math building; development resulting from I 22 corridor and a potential highway from northwest Alabama through Tuscaloosa to Mobile. Other developments include large subdivisions developing near existing or planned golf courses; industrial parks and airport facilities which provide a network of industrial development opportunities; and increased revitalization and growth of the downtowns in the study area.

Muscle Shoals and Florence have experienced and are expected to continue growth as in the past. Much of the growth to the north growth has been in the Florence corporate limits, however, there has been some increasing residential growth to the east in Lauderdale County in the Killen and in St. Florian communities.

The development of the Robert Trent Jones Golf Trail at the Shoals added 36 championship holes to the City of Muscle Shoals and a Marriott Hotel and Spa to the City of Florence in 2005. The City of Florence has three additional hotels under construction on highway 72 and sees more tourism development in the future. Waterfront development and facilities continue to be opportunities for growth in Florence. Florence also has two major residential neighborhood developments under construction. Both Bent Brook and Black Berry Village will contain approximately 150 lots. The city's attractiveness to a broad demographic continues to drive residential development for retirees to college students. University of North Alabama has record enrollment in fall of '09 and expect more growth with the University's marketing and affordability in the future. The City of Florence has a comprehensive master plan to guide development and continues to focus on infill

development. The master plan identifies potential areas for growth generally to the North and West.

In the Killen area, the proposed Clay Harbor Resort is a large commercial and residential mixed use development including a Marina with dry storage, restaurant other retail. Other developers are looking at sites on Tennessee River for similar development. In addition to residential growth, efforts continue to grow industrial development in the St. Florian-Florence-Lauderdale part of Lauderdale County.

In Muscle Shoals, there has been considerable annexation, especially toward the east and the airport and industrial park. The industrial park in Muscle Shoals is a growth attraction and residential growth is expected to resume as the economy recovers. Woodward Avenue is an example of the need for access management and coordination of transportation and land use, with vacant buildings occurring in some cases. A grid system – town center at City Hall and sidewalks connecting to parks and schools near City Hall as well as access management plans for 6th Street and Avalon are better models. Avalon is being improved and will create better access to the airport. The highway 133 project extending to the south will be an opportunity for well planned development. According to information from the City at the time of LRTP research, Muscle Shoals had 11 residential developments in the pipeline totaling over 1100 lots.

The potential release of approximately 1,300 acres of the TVA Muscle Shoals Reservation for redevelopment is a major focus in the Shoals area, impacting not only the City of Muscle Shoals, but, the area in general. Regardless of its ultimate use, the development or reuse of a site like this could have significant influence on transportation and other development trends. The idea that this land land could become a mixed use development is on the table and several community meetings have been held. The potential for development of residential, commercial, industrial and recreation is significant.

Sheffield and Tuscumbia have experienced some population shifts in the periods since the 1950's and 60's and are reversing those trends in varying degrees in light of infill, entertainment and downtown development efforts.

In Sheffield, the planned River City Development, is a 300 acre site along the Tennessee River. Plans call for an 18-hole golf course and a riverside resort, with retail shops, restaurant, pool, marina and a pier that provides boaters access to the resort. The resort also will have apartment-style residences that will be sold. The City continues to proactively redevelop and revitalize downtown Sheffield with increased multi-modal transportation and street improvements. The city plans connections to increase traffic into downtown Sheffield to attract commercial and retail activities. Other development initiatives in Sheffield include: Possible growth resulting from I-22; growth of Keller Hospital and surrounding redevelopment; continued traffic connection to Florence on main bridge; industrial growth to the west – maybe the south; housing and Commercial development revamp; potential for Shoals area multi-modal center somewhere in MPO area; development of Jackson Highway and Cox Avenue/Avalon Development corridors.

In Tuscumbia, I 22 and US 72 Corridors are keys to attract businesses. Other opportunities include: Jobs and residential growth potential from Barton project rail car project, including major jobs, employment and residential development in the western corridor; despite loss of textile jobs, Reynolds reduced, Ford closed, and others, jobs have increased by several thousand over the recent reporting of the LRTP, through the effect of industrial development partnerships; RSA Veterans Park is proposed; tourism travel and increased traffic from Toyota plant will impact retail development; Downtown Tuscumbia is improving and business recruitment is a priority; implementation of the corridor plan and infrastructure improvements to 72 corridor are critical.

In the southern part of the MPO area and Colbert County, in the direction of Leighton, the overall growth of the MPO area is impacting these areas as well. The Golf course is in close proximity, for example and is having impact on growth opportunities. In the Leighton area, the early indicator of overall economic growth is demonstrated by new developments on Highway 157. There are prospects in the works for other companies to locate in Leighton, if 20 becomes an improved access route. In the meantime, several art galleries and historic homes are located downtown and projects to revitalize the downtown are in the discussion stages. For example, the restoration of the old cotton gin as a working/active museum is being considered. Residential development could have increasing impact in the Leighton area during the next LRTP planning period compared to previous projections.

5.2 Overview of Land Use Planning in MPO Study Area

The Shoals area, including Lauderdale and Colbert counties is an attractive and historic region of north Alabama and the Tennessee Valley. The cities in the Shoals MPO are located on or near the Tennessee River and were, for the most part, planned with various versions of a traditional grid pattern and are generally compact in their original form which as positive. Although these communities have experienced sprawl along major corridors, there is a certain intact pattern to the land use of the cities and some “common ground” and connectedness of the communities. Florence, Tuscumbia and Sheffield have historic and somewhat traditional mixed use downtowns. Although Muscle Shoals has a relatively dense residential pattern, the city has grown in a somewhat suburban pattern. This development trend has been evident to a more or less degree in the other cities as well, as the communities have grown in recent years. Still, infill and redevelopment is evident in virtually all of the cities. The overall pattern of development reflects the potential for greater connectedness and coordination of planning from community to community, taking advantage of the core centers and neighborhoods.

Over a number of years, the cities, often with the assistance of the council of governments have established an increasingly involved planning approach. Numerous planning studies and comprehensive plans have been completed and updated, including regional and county studies and plans, municipal plans, downtown plans, corridor plans and special plans and studies. These planning efforts have included a certain consistency and have helped to promote good land use planning in the individual jurisdictions and have promoted intergovernmental coordination in varying degrees.

5.3 Regional and County Plans

Land use planning is clearly the province of local and municipal government with the exception of special authority of the counties for subdivision regulation and other limited land use type authority. Certain regional and county studies and plans have been done which, if not directly, indirectly help address the transportation/land use coordination.

5.4 Comprehensive Economic Development Strategy

The CEDS for the shoals region reflects a long range vision for economic development in the region and identifies goals where economic development and land use are often related, for example: Transportation goals include increase transportation connections that link neighborhoods, communities and counties; complete infrastructure for county residents; mixed uses that support compact development; multimodal access to goods and services, employment; urban and neighborhood planning processes-master plans; Community Development Goals include infrastructure to support Mixed Use Development as well as assets based and sustainable economic development and the capacity for community development and civic culture; Business and Industry goals include: access to technology and support, existing industry

Specific projects in the CEDS that support transportation and land use coordination include: Sheffield Central Business District (CBD) development; access to port of Florence; renovate local sewer systems; brownfield developments in Florence and Sheffield; CBD master plan in Muscle Shoals; redevelopment of underutilized industrial and abandoned industrial properties; complete Barton Riverfront Industrial Park-1800 jobs; complete St. Florian-Florence-Lauderdale Industrial Park; Littleville Industrial Park; wireless technology in CBD's; connect bio-med programs from Shoals to Huntsville; redevelopment of TVA reservation to business and mixed use; complete master plans for all communities as needed-include in the ACE program; inventory retail centers and corridors; complete infrastructure in existing communities; telecommunications needs assessment; improve waste water treatment facilities in general; urban mass transit for the Shoals; Shoals Bike and Pedestrian Plan; Community wayfinding plans; mega industrial park; place based community assets and interactive map.

5.5 Municipal Plans Downtown and Special District Planning

Municipalities have the authority for local land use planning and the communities in the Shoals area have been engaged in this type of planning for a number of years. The municipalities of Florence, Sheffield, Killen, Muscle Shoals and Tuscumbia have adopted comprehensive plans at some point in the past or have ongoing or proposed updates in the works or under consideration. These plans address the coordination of transportation and land use in varying degrees, with some common themes. In addition, several of the communities have completed downtown redevelopment or revitalization plans and others have been involved in special district plans such as riverfront plans, corridor plans, etc. The following is a summary of certain aspects of these plans that may be illustrative of some common themes, etc.

Florence Comp Plan-2007: Plan is kept up to date and utilized in the implementation of public improvements and projects, as well as land use and zoning decisions. Includes major components: Green infrastructure; Activity Centers; Commercial Corridors; Downtown; Port of Florence;

Industrial Support Centers; Recreation Support Centers; Neighborhoods; Planning and Design Standards; Transportation Network based on mobility and access through roadway and intersection improvements.

Killen Plan: Goals, objectives and land use plan include being a walkable community; focus on activity centers; diversity; common space; sewer system; sidewalks and walkways; cost benefit growth management; historic preservation; access to commercial property; safety and public health; respect for natural beauty; cultural identity; growth inside the town; transportation and access management; highway beautification; focus on retail and service districts; CBD development; traditional residential district; residential/recreation/neighborhood commercial connections.

Planning in Muscle Shoals: Includes an existing land use study; corridor study in 2002 and updated in 2009; land use and zoning provisions along 6th Street with access management and buffers included; access management along 133; new subdivision regulations and updated ordinances; comprehensive plan update proposed; context sensitive design planned on Avalon, 6th Street and other important corridors.

Sheffield Revitalization and Redevelopment Plan and Redevelopment Strategy: Urban design framework includes focus on CBD; urban fabric-streets, parks, public spaces; CBD infill; linkages to larger region; maintain lower densities at edge of Sheffield/increase internal densities. Strategy includes the redevelopment of commercial corridors that connect to CBD and housing reinvestment in neighborhoods.

Goals include mixed use principles-live, work, shop-zoning to support mixed use; possibly form based codes; BID district; vehicular and parking plans; mixed use commercial and residential redevelopment; restored historic structures; civic uses to bring people downtown; redevelop fringe neighborhoods; housing rehab; develop attractions in the city; recreation uses downtown; redevelop Park West; redevelop civic square in CBD; multiple events downtown.

The plan includes focus on activity nodes, thoroughfares and corridors; more consistent connections of nodes/activity centers/neighborhoods; retail/residential development and riverfront mixed use; Montgomery Ave. residential; Hatch Blvd corridor; Hospital east and west neighborhood redevelopment; thoroughfare improvements-design guidelines and way-finding; focus on entertainment district and build housing in CBD; major retail sites-Jackson Highway, Third Street, Montgomery Ave., Avalon Ave.; reinforce traditional grid.

Urban design goals include quality of public spaces; infill development; pedestrian and vehicular circulation; define urban fringe; enriching amenities; redevelopment of major thoroughfares-Hatch Blvd/Jackson Highway; 2nd Street/South Montgomery Ave. and others with design guidelines; protect urban edges from encroachment and bring back neighborhood commercial

In works is a plan for River City Development that links downtown to 160 acre development on east side of Spring Creek and 165 acres on the west side. The City is working with others on major

grant to relocate the RR tracks which will impact multi-jurisdictions and enhance access to downtown and inner city neighborhoods, not only in Sheffield.

Tuscumbia Comp Plan 2005: Goals include preserving and enhancing existing neighborhoods; greenway and pedestrian network; development of U.S. Highway 72 corridor; protect and redevelop CBD; encourage mixed use development; enhance gateways; improve transportation network; support Avalon and George Wallace Boulevard redevelopment. Strategy includes urban design theme for streetscape; link downtown and neighborhoods to U.S. Highway 72 corridor; access management should be part of all commercial projects that front a busy thoroughfare; proposed mixed use areas-between Joe Wheeler Drive and U.S. Highway 72 and Johnson Woods-near Helen Keller Hospital/Shoals Community College; enhance Gateways.

5.6 Corridor Plans

The MPO recognizes that land use and development frequently impact transportation access, capacity, safety, and appearance of roadways most directly along various corridors in the region and the various municipalities. Special corridor plans are used to address these planning challenges and opportunities. One such corridor plan is the U.S. Highway 72 Corridor Plan, recognizing the potential impact of new industrial and related development along this corridor, which ranges from existing commercial development to relatively undeveloped along the corridor. Other coordinated efforts include the plans for economic development in conjunction with the I-22 Corridor and the Wilson Dam and Highway 133 studies. Other corridor studies are underway or proposed to address local situations or in conjunction with roadway or specific street projects.

5.7 Other Special Studies and Plans

A number of special studies and plans have been conducted over the years which indirectly impact the coordination of land use and transportation. For example, County Hazard Mitigation Plans, Rural Transportation Plans and GIS mapping have helped to create data and planning processes which may ultimately facilitate improved coordination between transportation and land use, although, not directly. The Statewide Bicycle Pedestrian Plan and Outdoor Recreation Trails Plan contribute to the overall coordination of Land Use and Transportation, especially with respect to multi-modal alternatives. Individual municipalities and the counties, as well as the private sector utilize these special studies to test ideas, investigate feasibility and address transportation and land use coordination in a focused location.

5.8 General Guidelines for Land Use-Transportation Coordination

As municipalities, counties, developers and citizen's work together to improve transportation in the Shoals MPO area, there are certain principles for transportation-land use coordination that can be very beneficial in improving mobility, mitigating congestion and ensuring development opportunities and environmental quality. There seems to be some common recognition of these principles in the various community plans that have been approved or updated in recent years.

Having reviewed the various planning efforts and trends in land use in the Shoals study area, the following are examples of General Land Use/Transportation Guidelines for consideration in order to improve the coordination between land use and transportation in support of the LRTP. As the

jurisdictions continue to develop experience and a confidence level with these and other kinds of guidelines the guidelines can be refined, added to, made more or less specific as various applications prove successful. These guidelines should be considered preliminary in that they will improve over time in their usefulness in meeting the goals for coordination of land use and transportation.

- Public Involvement - Ongoing public involvement is a key to the coordination of transportation and land use. Such coordination requires an increasing understanding of how transportation and land use coordination can result in transportation improvements being more effective, improve access, safety, the environment and livability of the communities served by transportation systems.
- Comprehensive Community Master Plans – Adoption and updating of Comprehensive Community Master Plans to facilitate the coordination of transportation and land use. Consideration of Comprehensive and other community plans in proposing and implementing transportation improvements.
- Downtown and Neighborhood Based Plans – Adoption and updating of downtown and special district plans that include mixed use and multi modal solutions.
- Major Thoroughfare Plans – As part of or as separate efforts, the adoption of major thoroughfare plans for communities and even the counties that can aid in the land use and transportation implementation.
- Complete Streets – The adoption of complete streets policies, guidelines, etc. to complement major transportation systems and improve local access, through bicycle, pedestrian, transit and other modes; in coordination with land use.
- Bicycle and Pedestrian Improvements/Walkable Communities including Safe Routes to School – The coordination of land use considerations in the implementation of bicycle and pedestrian improvements to result in more effective solutions to local transportation.
- Access Management – A key feature of local comprehensive plans is the application of access management features especially in coordination with commercial districts and corridors. The application of these features are generally the province of local government and can be a critical aspect of coordinating the interface between transportation and land use.
- Corridor Plans – The use of special corridor plans are an excellent way to ensure better coordination between land use and transportation, including more comprehensive provisions, beyond access management, for existing or new major roads.
- Zoning and Subdivision Regulation Updates – Updated Zoning and Subdivision Regulations that incorporate access management and context sensitive methods, as well as incentives for mixed use development.
- Special Design Based Codes – Form-based codes and/or overlay districts that incorporate land use and transportation coordination provisions and design guidelines.
- Historic Districts – Survey and designation of important historic districts as part of overall land use plan and tools to reinforce revitalization and preservation of special districts.

- Adoption of consistent land use concepts that focus on activity centers, neighborhoods, special districts and corridors.
- Encourage mixed use centers and districts, including residential, wherever practical and appropriate to reduce unnecessary automobile travel demand, whether as in fill or new development sites.
- Encourage infill development, especially housing, and development adjacent to and connected to existing infrastructure as a way of using existing streets and public improvements where possible.
- Support the redevelopment of brownfield (industrial) sites and greyfield (commercial or other sites) as part of land use and transportation plan and overall development strategy.
- Incorporate areas for natural resource and open space protection into land use plans to support priorities for transportation and development.
- Promote connectivity between centers, districts and neighborhoods to avoid unnecessary travel and increase the use of alternative modes of travel like pedestrian and bicycle.
- Promote densities that are consistent with urban, suburban and rural development character, consistent with the desires of the community.
- Incorporate transportation and land use guidelines in locating, planning and design major public facilities in such a way as to reinforce the goals embodies in the guidelines and local land use plans.
- Promote site planning that is consistent with land use, urban design and transportation plans, especially with respect to building placement and proper relationship with streets, sidewalks and connections to adjacent or nearby developments, neighborhoods and districts.
- Establish consistent streetscape, parking, lighting, signage and way-finding design guidelines, appropriate for the character of the development and the travel way. The location and design of parking is especially critical to how traffic is served and the overall relationship of parking and building to adjacent developments, districts and neighborhoods as well as the adjacent travel ways.
- Establish updated design standards for public streets to include not only automobile requirements, but, also provisions for sidewalks, street widths and designs that are consistent with the centers or corridors served by the streets.
- Intergovernmental Coordination – when considering any of the land use and transportation guidelines, continue to consider coordination of major land use and transportation across jurisdictions, including the consideration of establishing consistent land use and/or zoning designations to ensure predictability for the public and private sector.

6.0 TRANSPORTATION MODELING PROCESS

6.1 Travel Demand Models

Travel demand models are developed to predict future traffic on the street and highway system. The models are initially developed using estimates of existing socioeconomic data to duplicate travel for the base year, which, for this study was 2005. How well the model duplicates for the base year is taken as an indication of how well it will predict future travel. If the model cannot produce traffic volumes similar to those observed on existing streets and highways, then the model is reevaluated and adjustments are made. This adjustment or calibration process continues until the model is adequately simulating base year traffic conditions. The process of building and modifying the model to simulate base year travel is called calibration. After the model is calibrated, forecasts for the future year socioeconomic data are used as input into the model to predict future travel demand.

Roadway travel demand in the study area was analyzed using a standard travel demand modeling process. The standard modeling process is defined by a four-step analysis procedure:

Step 1	Trip Generation
Step 2	Trip Distribution
Step 3	Mode Split
Step 4	Assignment

As the standard transportation demand modeling process in the State of Alabama deals only with private transportation, (i.e., not public transit), Step #3, mode split, is ignored.

The Alabama Department of Transportation has adopted a transportation demand modeling package known as TRANPLAN, developed by the Urban Analysis Group, for use in modeling in the State of Alabama. TRANPLAN performs the various steps required in the modeling process. The following sections address the modeling process in more detail.

6.2 Roadway Network

The network file is an abstract, computerized representation of the actual roadway network. The network file is created by transferring a roadway map to a form that can be processed by the computer program. The roadway network includes all roadways that are classified as a collector or higher grade. At each intersection node numbers are assigned. These node numbers are used to define individual links in the roadway network. The length, carrying capacity, and average speed of each link in the network is coded as part of the roadway network description. TAZ's are connected to the roadway network by imaginary lines through which the trips produced in or attracted to each TAZ may gain access to the roadway system. This entire abstract description of the actual roadway network is coded, entered into the computer, and becomes the network file for the study area.

6.3 Trip Generation

The trip generation program translates estimates of the socioeconomic data into numbers of trips. Given estimates of the socioeconomic data for a TAZ, the trip generation program predicts the number of trips that will be produced by that TAZ and the number of trips that will be attracted to that TAZ from all other TAZ's in the study area.

To perform trip generation, the relationships between observed travel and the socioeconomic data are defined through the use of mathematical equations and ratios. To determine the total number of trips that a TAZ may produce or attract, the number of households or employees within that TAZ are multiplied by the appropriate trip generation rate. Using this process productions and attractions are produced for each TAZ.

The Alabama Department of Transportation has developed a stand-alone program to be used to calculate productions and attractions on a per-traffic analysis zone basis. The purpose of the program is to take seven data files prepared by the user to calculate productions and attractions by zone for each of six trip purposes. The seven data files which must be supplied by the user are:

1. automobile ownership by income range
2. trip generation rate by household by automobile ownership by income range
3. trip purpose percentages
4. trip attraction rates
5. socioeconomic data set
6. percent external-external trips to total trips for five classifications of roadways
7. external zone numbers, counts, and road types

The trip generation program produces production and attraction data files for six trip purposes. These six trip purposes are:

Trip Purpose 1	Home Base Work (HBW)
Trip Purpose 2	Home Base Other (HBO)
Trip Purpose 3	Non-Home-Based (NHB)
Trip Purpose 4	Truck-Taxi (T-T)
Trip Purpose 5	Internal-External (I-X)
Trip Purpose 6	External-External (X-X)

The Alabama DOT trip generation program calculates productions and attractions using the socioeconomic data set and the data files containing the automobile ownership and trip rate information. Calculation of productions is a three-step process. First, the number of households in the zone are subdivided into four automobile ownership groups (0, 1, 2, 3+) according to the percents included in the automobile ownership file. The income of the zone is used to choose the line of the automobile ownership file to use. Second, the number of households in the zone, previously divided into automobile ownership categories, are multiplied by trip rates to generate productions. Once again, the income of the zone is used to select the line of the trip generation

file to be used in the calculation. Third, the productions are divided into the six trip purposes according to the data in the trip purpose percentage file.

Trip attractions are calculated in a one-step process. The trip attraction file contains factors by which to multiply data from the socioeconomic data file to produce trip attractions for the various trip purposes.

The trip generation program allows for the input of external zone counts, roadway types, and percent external-external trips to produce internal-external and external-external production and attraction files.

The trip generation program requires six income ranges. The income ranges selected for use in the State of Alabama are shown below.

$0 - $9,999
$10,000 - $19,999
$20,000 - $29,999
$30,000 - $39,999
$40,000 - $49,999
$50,000 +

The automobile ownership curve is a four-by-six matrix. The columns represent the four automobile ownership categories (0, 1, 2, 3+). The rows represent the six income ranges. The data in each cell of the matrix represents the percent of households in the income range which own that number of automobiles. Each row of the matrix sums to 100%. Table 6.1 shows the automobile ownership curve for the Shoals study area.

The trip generation curve is also a four-by-six matrix. The four columns are the automobile ownership categories and the six rows are the income ranges. The data in each cell of the matrix represents the trips per household in the income range which own that number of automobiles. Table 6.2 shows the trip generation rate curve for the Shoals study area.

Table 6.1
Trip Production Cross-Classification
Matrix #1 - Automobile Ownership Curve

Income Range	Automobile Ownership			
	0 Autos	1 Auto	2 Autos	3+ Autos
$0 - $9,999	34.3%	47.2%	13.7%	4.9%
$10,000 - $19,999	8.2%	51.5%	31.2%	9.1%
$20,000 - $29,999	3.1%	32.1%	46.9%	17.8%
$30,000 - $39,999	1.1%	19.9%	52.1%	26.9%
$40,000 - $49,999	0.5%	11.9%	51.2%	36.5%
$50,000 +	0.0%	4.2%	40.1%	55.7%

Table 6.2
Trip Production Cross-Classification
Matrix #2 - Trip per Household Curve

Income Range	Automobile Ownership			
	0 Autos	1 Auto	2 Autos	3+ Autos
$0 - $9,999	0.304	2.583	4.179	4.874
$10,000 - $19,999	0.646	4.103	5.508	6.201
$20,000 - $29,999	1.192	5.533	6.384	7.108
$30,000 - $39,999	2.381	10.319	11.112	12.483
$40,000 - $49,999	1.242	8.298	9.088	9.991
$50,000 +	0.593	8.693	9.766	10.330

The trip purpose percent file is a five-item file that contains the percent of total trips that are: home base work, home base other, non-home base, truck and taxi, and internal-external. The first three trip purposes must add to 100%. The trip purpose percents for the Shoals study area are shown below.

Home Base Work (HBW)	22%
Home Base Other (HBO)	53%
Non-Home Base (NHB)	25%
Truck-Taxi (TT)	15.4%
Internal-External	0%

The trip attraction file is an eleven-item file that contains factors to multiply against the socioeconomic data file to produce trip attractions. The eleven attraction factors and associated weights are shown below.

Home Base Work per Employee	1.230
Home Base Other per Household	0.700
Home Base Other per Student	0.580
Home Base Other per Retail Employee	5.540
Home Base Other per Non-Retail Employee	1.240
Non-Home Base per Household	0.350
Non-Home Base per Retail Employee	3.160
Non-Home Base per Non-Retail Employee	0.620
Truck-Taxi per Household	0.210
Truck-Taxi per Retail Employee	1.940
Truck-Taxi per Non-Retail Employee	0.380

Internal-external attractions at each internal zone are calculated by a ratio of the total employment in each internal zone to the total internal-external productions at the external zones.

A methodology separate from the Alabama Department of Transportation trip generation program was used to determine internal-external productions and external-external productions and attractions for each external zone.

Total base year productions and attractions for each of the six trip purposes are shown in Table 6.3.

Table 6.3
Base Year Productions and Attractions

Trip Purpose	Productions	Attractions
Home Base Work	59,783	59,783
Home Base Other	144,085	144,085
Non-Home Base	67,945	67,945
Truck-Taxi	41,846	41,846
Internal-External	30,672	30,672
External-External	64,155	64,155
Total	408,486	408,486

6.4 Trip Distribution

After trip generation has been completed, the productions and attractions for each TAZ are calculated. Trip distribution is the process by which the trips originating in one TAZ are distributed to other TAZ's throughout the study area. The output from trip distribution is a set of tables called trip tables that show travel flow between each pair of zones.

The method used to distribute trips throughout the Shoals study area was the gravity model. In the gravity model, the number of trips between two areas is directly proportional to the amount of activity in the areas and inversely proportional to the separation between the areas (represented as a function of travel time). In other words, the areas farther from each other will tend to exchange fewer trips. The generalized formula for the gravity model relates the desire for travel to three factors: 1) trip productions; 2)trip attractions; and 3) friction factors. The formula is:

---

where
$Prods_i$ = productions at origin zone *i*
$Attrs_j$ = attractions at destination zone *j*
FF_{ij} = friction factor between origin zone *i* and destination zone *j*

The effect of travel time on the exchange of trips between two zones is represented by a friction factor. Simply stated, a friction factor represents the level of accessibility between each zone, with higher value meaning greater accessibility and lower travel time. Each trip purpose must

have a set of friction factors. The maximum time value of friction factors used in the Shoals model was 45 minutes.

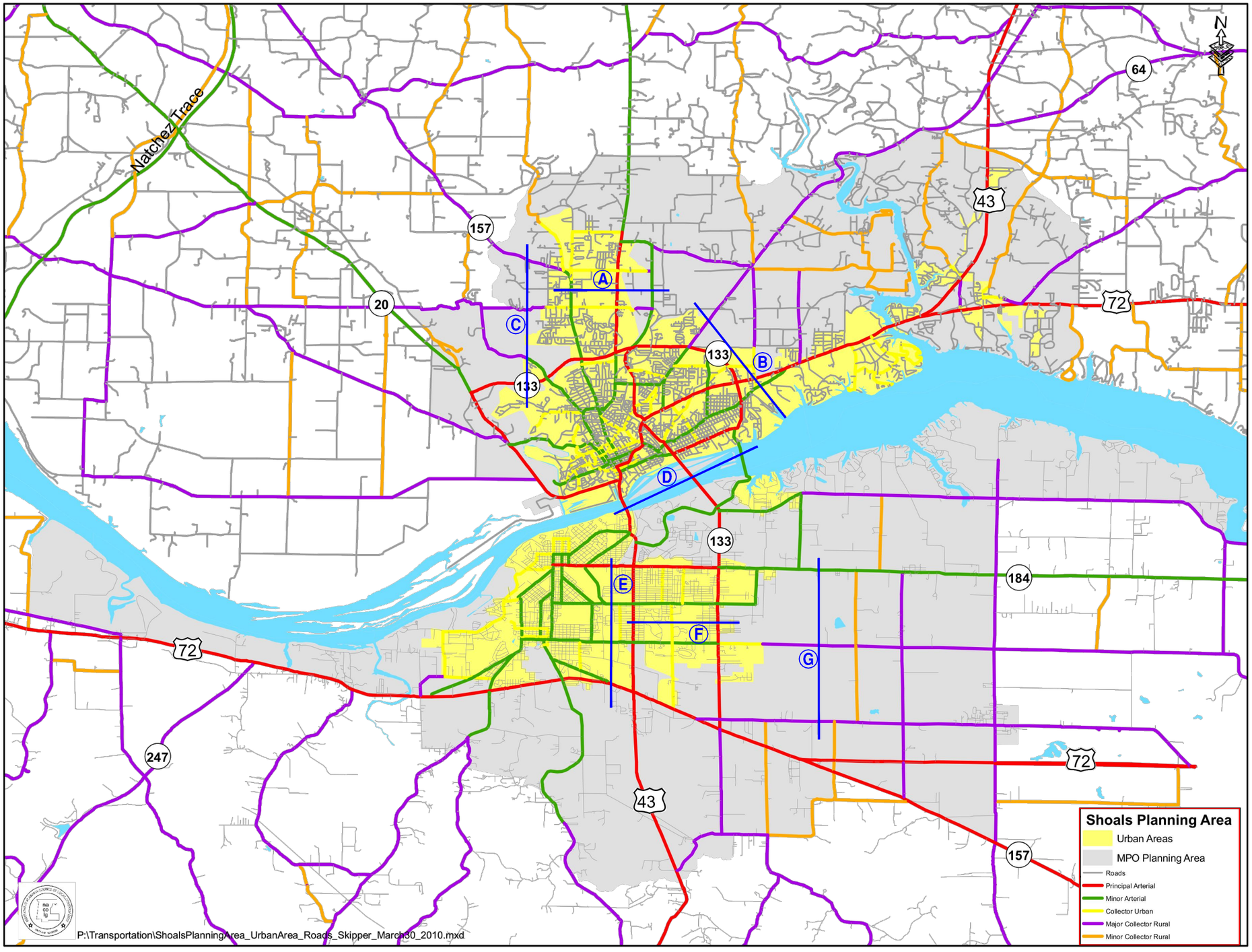
6.5 Traffic Assignment

In trip generation, the number of trips by zone were forecast. Those forecast trips were then given destinations by trip distribution. Assigning these trips to specific routes and establishing traffic volumes is the last phase of the forecasting process. In the assignment process the existing trip tables that are produced in the trip distribution step of the modeling process is used to assign base year trips to the base year network. Trips between any two zones will generally follow the path (roadway links) between zones that require the least amount of travel time. In determining time to go from one zone to another, delays due to congestion are taken into consideration.

The equilibrium assignment process which was used in this study considers demand in relation to capacity. The equilibrium assignment technique consists of a series of all or nothing loadings with an adjustment of travel time according to delays encountered in the associated iteration. The assignment from each iteration is combined with the assignment for the previous iteration in such a way as to minimize the travel time of each trip. As a result of these time adjustments, the loadings of different iterations may be assigned to different paths. By combining information from various iterations, the number of iterations required to reach equilibrium is reduced. Equilibrium occurs when no trip can be made by an alternate path without increasing the total travel time of all trips on the network.

6.6 Model Calibration

Trips cannot be merely assigned to the roadway network. The model has to be calibrated to assure that it is replicating existing traffic volumes. Travel demand models are run to predict link volumes which are then compared to actual traffic counts at selected locations along screen lines and cutlines. Screen line are imaginary lines established to intercept traffic flows through a study area and are usually located along physical barriers such as rivers or railroads. Cutlines are shorter than screen lines; they measure traffic volumes in a corridor. Seven screen lines were developed for the calibration process. The location of these screen lines is shown in Figure 6.1. The base year model assignment was compared to actual traffic volumes crossing the screen lines, and adjustments were made to the input model data set until assigned traffic volumes approximated actual screen line traffic volumes. When all of the reasonable adjustments and factors were included in the model, a final assignment was made. The final assignment was compared to performance measures based on national averages from studies of other urbanized areas. The total of the ground counts compared to the total of the model assignments for all of the screen lines should not be more than five percent. The error for the Shoals model was less than four percent. The final Screen line volume result is shown in Table 6.4.



Legend

F Screen Line

North

Scale: ~1:10,000

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Screen Line Locations

2035 Shoals LRTP - NACOLG

6.1 Figure

Table 6.4
Screen Line Assignment Analysis

Screen Line	Station	Location	Count	Assignment	Difference
A	1	Wood Avenue	10,000	11,200	12.0%
	2	Chisolm Road	6,700	6,700	0.0%
	3	Helton Drive	2,600	2,900	11.5%
	Screen Line A Total		**19,300**	**20,800**	**7.8%**
B	1	Old Jackson Hwy	5,800	6,400	10.3%
	2	Hough Road	2,200	2,200	0.0%
	3	Florence Blvd	33,000	30,000	-9.1%
	Screen Line B Total		**41,000**	**38,600**	**-5.9%**
C	1	Rasch Road	2,300	2,700	17.4%
	2	Mitchell Blvd	900	1,300	44.4%
	3	Cox Creek Pkwy	6,200	7,100	14.5%
	Screen Line C Total		**9,400**	**11,100**	**18.1%**
D	1	O'Neil Bridge	35,800	38,400	7.3%
	2	Wilson Dam	12,900	13,700	6.2%
	Screen Line D Total		**48,700**	**52,100**	**7.0%**
E	1	2nd Street	9,200	6,600	-28.3%
	2	Avalon Avenue	16,000	13,800	-13.8%
	3	6th Street	6,400	10,200	59.4%
	4	SR 157	15,500	16,700	7.7%
	Screen Line E Total		**47,100**	**47,300**	**0.4%**
F	1	US 43	23,500	24,400	3.8%
	2	Harding Ave	900	500	-44.4%
	3	SR 133	7,300	8,300	13.7%
	Screen Line F Total		**31,700**	**33,200**	**4.7%**
G	1	SR 184	9,400	10,600	12.8%
	2	Tuscumbia-Decatur Rd	2,000	1,800	-10.0%
	3	Hereford Ln	1,700	2,100	23.5%
	Screen Line G Total		**13,100**	**14,500**	**10.7%**
		GRAND TOTAL	**201,000**	**208,000**	**3.5%**

7.0 TRAVEL DEMAND FORECASTS

7.1 Future Year Productions and Attractions

The Alabama Department of Transportation trip generation program was used to calculate future year (2035) productions and attractions in the same manner as base year productions and attractions were calculated. 2035 socioeconomic data, presented in an earlier section of this report, was used to calculate the future year productions and attractions. Internal-external productions and external-external productions and attractions were calculated using historical traffic growth patterns at each external zone. The productions and attractions for future year 2035 conditions are shown in Table 7.1.

Table 7.1
Future Year Productions and Attractions

Trip Purpose	Productions	Attractions
Home Base Work	67,934	67,934
Home Base Other	163,682	163,682
Non-Home Base	77,205	77,205
Truck-Taxi	47,560	47,560
Internal-External	63,079	63,079
External-External	126,886	126,886
Total	546,346	546,346

7.2 Future Year Trip Table

Future year 2035 productions and attractions were distributed using the gravity model according to the methodology used to distribute the existing year productions and attractions. Resultant trip tables for each of the six trip purposes for 2035 were produced. These trip tables were then added and then converted to origin-destination format.

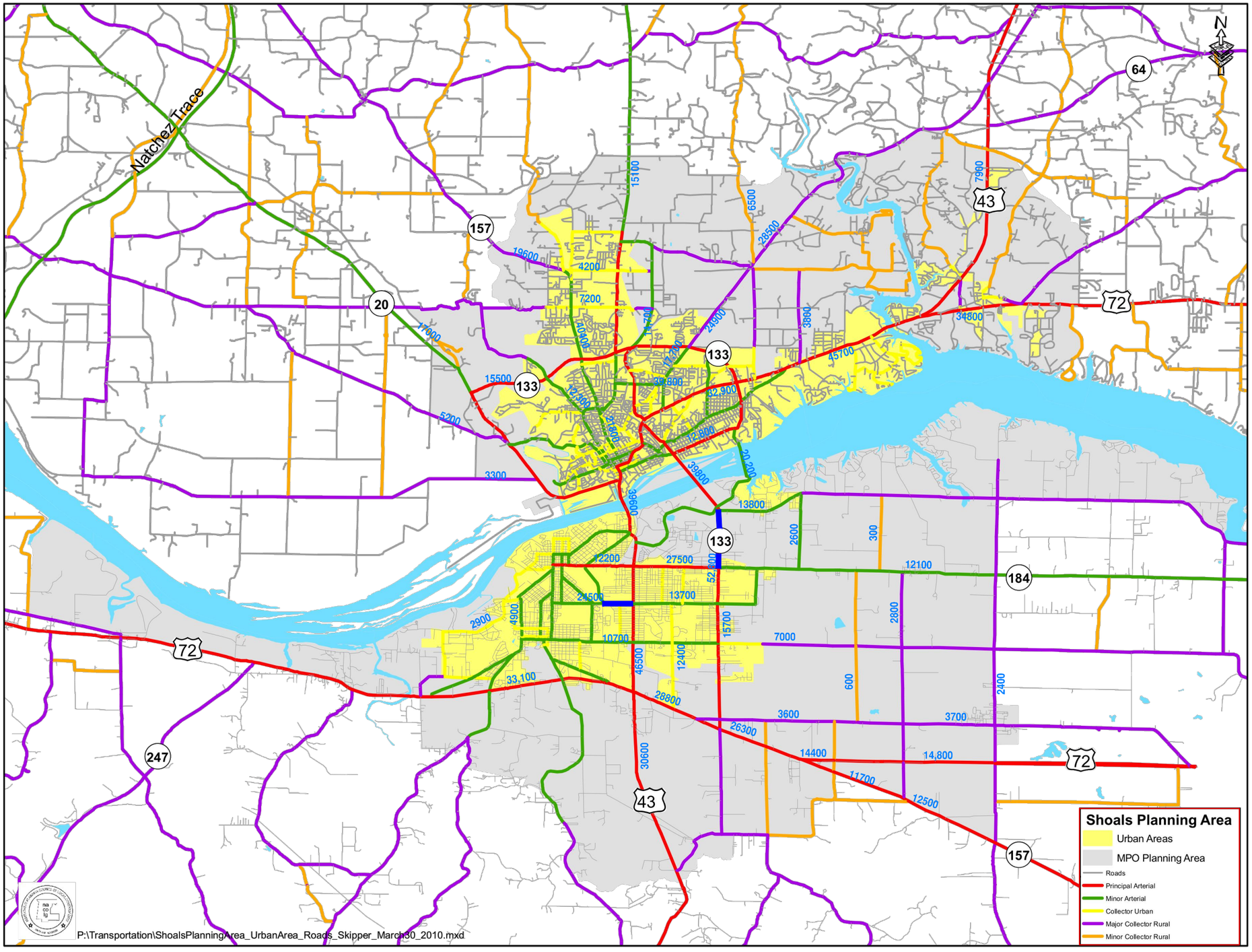
7.3 Future Year No Build Assignment

Before any roadway improvements are added to the network, the future year 2035 trip table is assigned to the "no build" network using the assignment methodology and criteria cited previously.

The "no build' network, also known as the "existing plus committed" network, includes the 2005 roadway network as presented earlier, plus any significant projects (in terms of capacity addition) included in the Transportation Improvement Program (TIP) through Fiscal Year (FY) 2005. The purpose of this step is to identify where future year deficiencies might occur. Two projects were added to the base year network from the Existing Plus Committed network. They were widening Wilson Dam Road from the Singing River Bridge (Patton Island) to 2nd Street and Avalon Avenue from Woodward Avenue to Cox Blvd. The results of the 2035 no-build assignments are shown in Figure 7.1.

7.4 Projected Deficiencies

Roadways which show a projected volume/capacity (v/c) ratio of greater than 1.00 should be considered deficient. Emphasis should be placed on those areas where the v/c ratio is greater than 1.20. Based on those ratios, the roadways estimated to be deficient by 2035 are shown in Figure 7.2.



Legend

13,700 Traffic Volume (veh/day)

Committed Projects

North

Scale: ~1:10,000

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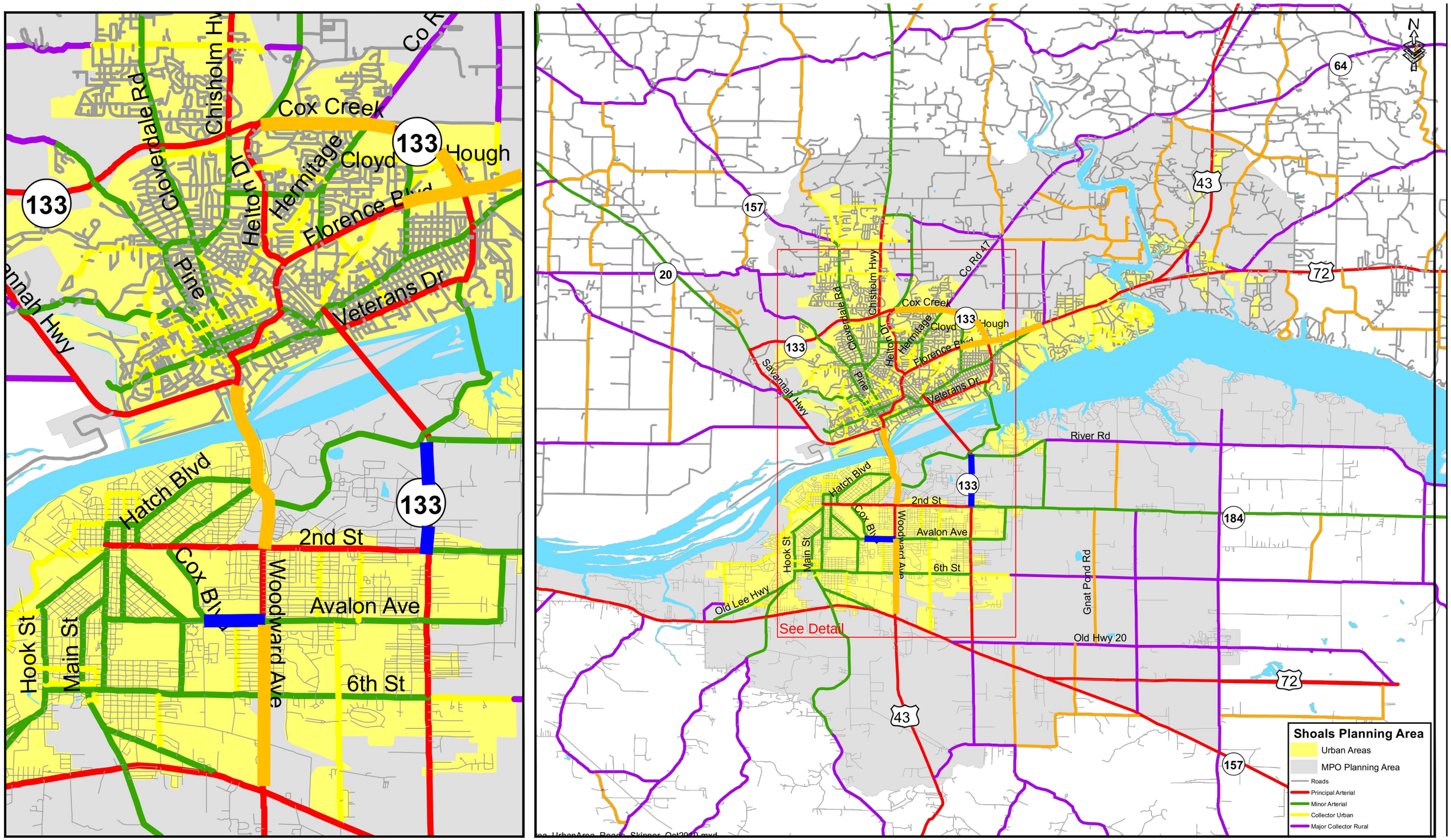
Existing + Committed Volumes

2035 Shoals LRTP - NACOLG

7.1 Figure



Legend

Deficient Links

Committed Projects

North

Scale: ~1:10,000

SKIPPER CONSULTING INC.

Existing + Committed Deficient Roadway Links

2035 Shoals LRTP - NACOLG

7.2 Figure

8.0 FINANCIAL PLAN

Federal regulations require long-range transportation plans to be financially constrained. Projected revenues based on historic funding must be adequate to fund the projects included in the 2035 Long Range Transportation Plan. The Financial Plan was developed to demonstrate the implementation strategy of the long-range transportation plan. Multiple federal funding sources were considered in developing the financial position of the Shoals Area MPO. These included National Highway System (NHS) funds, Surface Transportation Program - Attributable to Any Area (STP-AA) funds, Surface Transportation Program - Attributable to Other Areas (STP-OA) funds, Congressional Demonstration Project/High Priority Projects, Maintenance Funds and Federal Transit Administration (FTA) funds.

The NHS and the STP-AA funds are matched at the state level and are available to the entire state. The Maintenance Allocation outlines the ability of the involved governments and agencies to maintain their existing transportation systems as well as any new facilities built under the 2035 Long Range Transportation Plan. FTA funds are for transit projects in the area and are matched on a local basis. STP-OA funds are currently allocated to each of the smaller urbanized areas that do not receive designated Surface Transportation Program funding. The Shoals Area Metropolitan Planning Organization (MPO) currently receives a yearly STP-OA allocation of approximately $1.208 million per year. This money is provided on a 20% local match basis.

To develop the financial plan, for other funding categories the MPO staff and ALDOT constructed a framework of annual funding benchmarks for all relevant funding categories. An annual average was calculated for each of the appropriate funding categories. The annual average funding marks were developed from a six year historic funding trend for each funding categories. These averages are the basis for the projected 25 year funding marks which are detailed in Table 8.1.

Table 8.1
Projected Capacity and Operations and Maintenance Funds

Funding Category	Shoals Average Annual Costs*	Capacity			Operations And Maintenance		
		Average Annual Cap Costs*	% Costs	Year of Expenditure (YOE)	Average Annual O&M Costs*	% Costs	Year of Expenditure (YOE)
STP-OA (ATTRIB)**	$1,524,000	$649,000	60%	$22,860,000	$875,000	40%	$15,240,000
STP-OA(NOT ATTRIB)	$914,000	$548,000	60%	$13,705,000	$365,000	40%	$9,137,000
STP-AA	$3,754,000	$2,065,000	55%	$51,615,000	$1,689,000	45%	$42,231,000
NHF	$1,629	$978,000	60%	$24,440,000	$652,000	40%	$16,293,000
BRIDGE**	$24,000	$0	0%	$0	$24,000	100%	$588,000
SAFETY	$401,000	$0	0%	$0	$401,000	100%	$10,017,000
EQUITY BONUS	$1,581,000	$949,000	60%	$23,713,000	$632,000	40%	$15,808,000
DPI/HPP**	$950,000	$950,000	100%	$23,754,000	$0	0%	$0
TOTAL	$10,776,000	$6,138,000		$160,087,000	$4,638,000		$109,313,000

*Based on a 6 year average of authorized funds.
**Percentages are based on actual funds.

8.1 Estimated Implementation Costs

The total estimated cost of each project identified in the Shoals Area 2035 Long Range Transportation Plan was provided by ALDOT, local officials or Goodwyn Mills & Cawood, Inc. The total estimated costs of LRTP by funding category and the available funds for each funding category for the 25 year planning period are illustrated in Table 8.2.

Table 8.2
LRTP Project Costs and Available Funds by Program (YOE)

	NHF	STP-AA	STP-OA	STP-OA (State)	DPI/HPP
LRTP Project Costs	$23,117,181	$98,464.798	$26,435,432	$8,174,447	$6,886,255
Federal Funds	$24,440,000	$51,515,000	$22,860,000	$13,705,000	$23,754,000
Match	$6,110,000	$12,904,000	$5,715,000	$3,426,000	$5,938,000
Total Available Funds	$30,550,000	$64,519,000	$28,575,000	$17,131,000	$29,692,000

9.0 TRANSPORTATION PLAN DEVELOPMENT

The MPO followed a five-step process to develop the long range transportation plan. The steps included data collection , data projection, data review, project selection and plan review and approval.

9.1 Data Collection

The data collection effort involved the compilation of socio-economic data, transportation system inventory, environmental data, historic trends and financial data. The data was collected by the staff of the Northwest Alabama Council of Local Governments, and reviewed by the MPO and the Alabama Department of Transportation for accuracy.

9.2 Data Projections

To plan for the future the MPO must make assumptions of what the study area will be like in the future. To accomplish this, existing data were projected forward to the year 2035. The forecasted data included households, retail employment non-retail employment and school enrollment. The forecasted data was allocated to the TAZ level to show future land use and emphasize the growth areas that should be addressed in the plan.

The socio-economic data that were collected and projected were used in the transportation demand modeling process to calibrate the model to base year conditions and to forecast future traffic volumes on the study area roadways.

9.3 Data Review

The data review process involved examining the results from the transportation demand model runs, socio-economic data and environmental factors. The MPO used the results of the transportation demand model to identify segments of the roadway network that were expected to exceed their design capacities by the year 2035. The MPO reviewed the socio-economic data and the environmental factors to determine if there were any transportation deficiencies that were not identified in the transportation demand modeling process.

9.4 Project Selection

When the MPO began selecting projects for inclusion in the transportation plan, projects that would help to alleviate transportation deficiencies were identified in the data review step. Projects that addressed capacity problems, safety concerns, traffic management issues, economic development and social services activities were selected. The selected projects were analyzed using the transportation demand model to determine their effects on future traffic flow.

The final task in the project selection process was to determine if sufficient funds were available to construct the proposed projects. Based on the Financial Plan described in a previous section of this report it was determined that sufficient funds would be available over the 25 year planning period to construct the projects that were identified for inclusion in the Shoals Area 2035 Long Range Transportation Plan.

10.0 ROADWAY PLAN

Using the five step process outlined in the Transportation Plan Development chapter of this document and the Financial Plan the roadway plan was developed. The goals of the roadway plan were to relieve traffic congestion and increase mobility throughout the study area while providing a safe and efficient transportation system for the year 2035. No additional projects beyond those included in the 2030 Long Range Transportation Plan were identified for inclusion in the 2035 Long Range Transportation Plan.

Roadway projects identified in the 2030 Long Range Transportation Plan that had not been completed were brought forward to develop the 2035 Roadway Plan, described in Table 10.1 and illustrated in Figure 10.1.

10.1 Future Year Daily Traffic Volumes

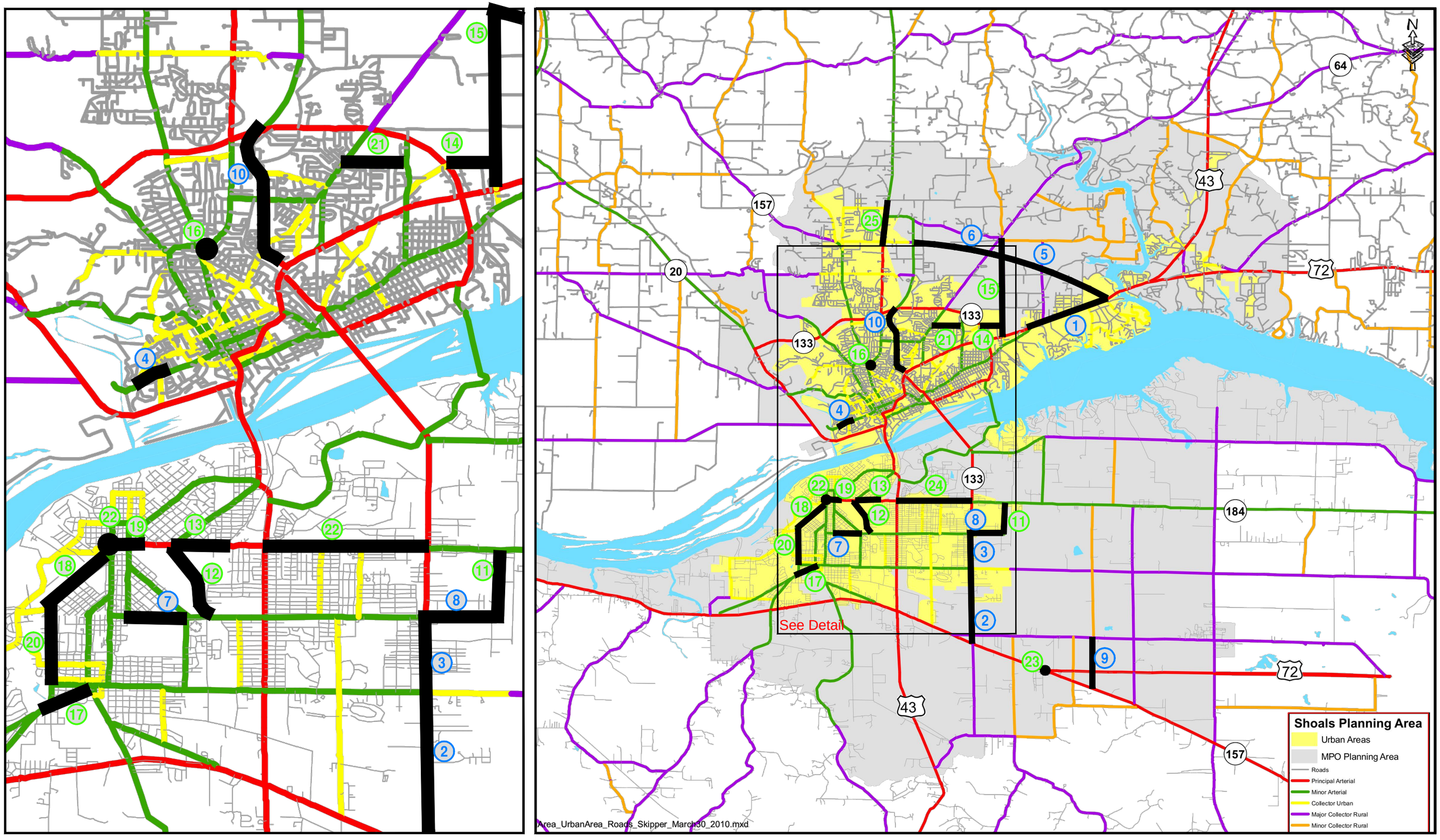
Future year trips were assigned to the roadway plan network using the TRANPLAN model to determine the benefit of the 2035 Roadway Plan. The 2035 forecasted daily volumes are illustrated in Figure 10.2. Based on these future year volumes the projected deficient links were determined and are illustrated in Figure 10.3.

Table 10.1
2035 Long Range Plan – Capacity Projects

Project Number	Map ID	Project Description	Status	Length	Lanes Before	Lanes After	Purpose And Need	Bicycle and Pedestrian Improvements	Estimated Cost (YOE)
NHF									
10053764-RW 100031926-UT 100031924-CN	1	Widen Florence Boulevard (SR 2) from Indian Springs to East of Harris Road	LRTP	1.5 miles	4	6	Increase Capacity	Widened Shoulders	$8,468,312
								Total	**$8,468,312**
								Available Funds	**$30,550,000**
								Balance	**$22,081,688**
STP-AA									
100033101– RW 100009152 –UT 100009150 – CN	2	Widen Wilson Dam Road (SR 133) from SR 157 to 2000 feet south of the railroad	TIP	0.6 miles	2	4	Increase Capacity	Widened Shoulders	$18,481,334
100009338 – CN	3	Widen Wilson Dam Road (SR 133) 2000 feet south of the railroad to 700 feet south of Avalon Avenue	LRTP	2.1 miles	2	4	Increase Capacity	Widened Shoulders	$38,228,616
								Total	**$56,709,950**
								Available Funds	**$64,519,000**
								Balance	**$7,809,050**
STP-OA									
N/A	4	Construct bridge and approaches on College Street	LRTP	0.5 miles	N/A	2	Improve Mobility	N/A	$2,322,572
N/A	5	Construct a connector road from US Highway 72 to CR 47	LRTP	2.2 miles	N/A	2	Improve Mobility	Widened Shoulders	$3,151,291
100046978– RW 100046978– UT 100046978– CN	6	Construct a connector road from Parkway Drive to CR 47	TIP	3.0 miles	N/A	2	Correct Horizontal Deficiencies	Widened Shoulders	$2,892,199
	7	Widen Avalon Avenue from Cox Boulevard to Helen Keller Hospital	LRTP	1.1 miles	2	4	Increase Capacity	Widened Shoulders	$2,325,298
100008544 – UT 100008543 – CN	8	Widen Avalon Ave. from Northwest Regional Airport to Wilson Dam Rd.	TIP	0.9 miles	2	4	Increase Capacity	Widened Shoulders	$4,112,627
N/A	9	Extend Gnat Pond Road from its Current end to SR 157	LRTP	1.5 miles	N/A	2	Improve Mobility	Widened Shoulders	$1,418,177
								Total	**$16,222,164**
								Available Funds	**$20,295,00**
								Balance	**$4,072,836**
STP-OA (State)									
100008548 – CN	10	Improve Helton from Hermitage Drive to Cox Creek Parkway	TIP	1.6 miles	2	4	Safety and Operations	Widened Shoulders	$5,109,942
								Available Funds	**$17,131,250**
								Balance	**$12,021,308**
Major Maintenance Projects									
STP-OA									
N/A	11	Improve Webster St. between Avalon Ave. and 2nd Street	TIP	1.0 miles	2	2	Operations	N/A	$815,000
N/A	12	Improve Cox Blvd. between Avalon Ave. and 2nd Street	TIP	1.1 miles	4	4	Operations	N/A	$1,041,954

Project Number	Map ID	Project Description	Status	Length	Lanes Before	Lanes After	Purpose And Need	Bicycle and Pedestrian Improvements	Estimated Cost (YOE)
N/A	13	Surface Maintenance on 2nd St. from Cox Blvd to Broad St.	TIP	0.7 miles	4	4	Operations	N/A	$200,000
N/A	14	Improve Hough Rd. from the existing three lane east to Middle Rd.	LRTP	0.7 miles	2	2	Safety and Operations	Widened Shoulders	$563,894
N/A	15	Improve Middle Road from CR 47 to U.S. Highway 72	LRTP	0.5 miles	2	2	Safety and Operations	Widened Shoulders	$3,151,291
100047003– RW 100047004– UT 100047005– CN	16	Replace the bridge at Hermitage Drive	TIP	0.2 miles	2	2	Safety	N/A	$2,040,503
N/A	17	Widen and realign 8th St. from Hook St. to Downtown Tuscumbia	LRTP	0.3 miles	2	2	Correct Horizontal Deficiencies	Widened Shoulders	$588,733
N/A	18	Improve W. Montgomery Ave. from Hook St. to S. Montgomery Ave.	LRTP	0.9 miles	2	2	Safety	Widened Shoulders	$1,338,318
100046997 – UT 100046998 – CN	19	Intersection Improvements on 2nd Street from Dover Ave. to Montgomery Avenue	LRTP	0.4 miles	N/A	N/A	Increase Capacity	Sidewalk Maint.	$643,422
N/A	20	Improve Hook Street from 6th Street to West Montgomery Avenue	LRTP	1.1 miles	2	2	Safety and Operations	Widened Shoulders	$1,225,301
N/A	21	Improve Cloyd Boulevard	TIP	1.9 miles	2	2	Safety and Operations	Widened Shoulders	$1,305,228
								Total	**$12,913,644**
								Available Funds	**$27,330,000**
								Balance	**$14,416,356**
DPI/HPP									
	22	Construct a railroad overpass at Montgomery Avenue	LRTP	0.5 miles	N/A	4	Improve Mobility	N/A	$6,886,255
								Available Funds	**$29,692,000**
								Balance	**$22,805,745**
NHF									
100004129 – PE 100049144 – UT 100004129 – PE	23	Construct an interchange at the intersection of SR 20 and SR 157	LRTP	0.5 miles	N/A	4	Increase Capacity	N/A	$14,648,869
								Available Funds	**$20,366,250**
								Balance	**$5,717,381**
STP-AA									
100049485 – PE 100049486 – PE 100049487 – PE	24	Improve 2nd Street (SR 184) from Wilson Dam Road to Woodward Avenue – Additional Lane	LRTP	1.8 miles	4	4	Safety and Operations	Widened Shoulders	$7,330,899
								Available Funds	**$52,788,750**
								Balance	**$45,457,851**
STP-OA (State)									
100008259– RW 100008261– UT 100008255– CN	25	Improve Chisholm Road from Rasch Road to Section Line Road	TIP	1.1 miles	2	2	Safety and Operations	Widened Shoulders	$3,064,505
								Available Funds	**$11,421,250**
								Balance	**$8,356,745**

Note: (YOE) is Year of Expenditure; Project list corresponds to map on p. 46.



Legend

1 Capacity Projects

17 Maintenance Projects

North

Scale: ~1:10,000

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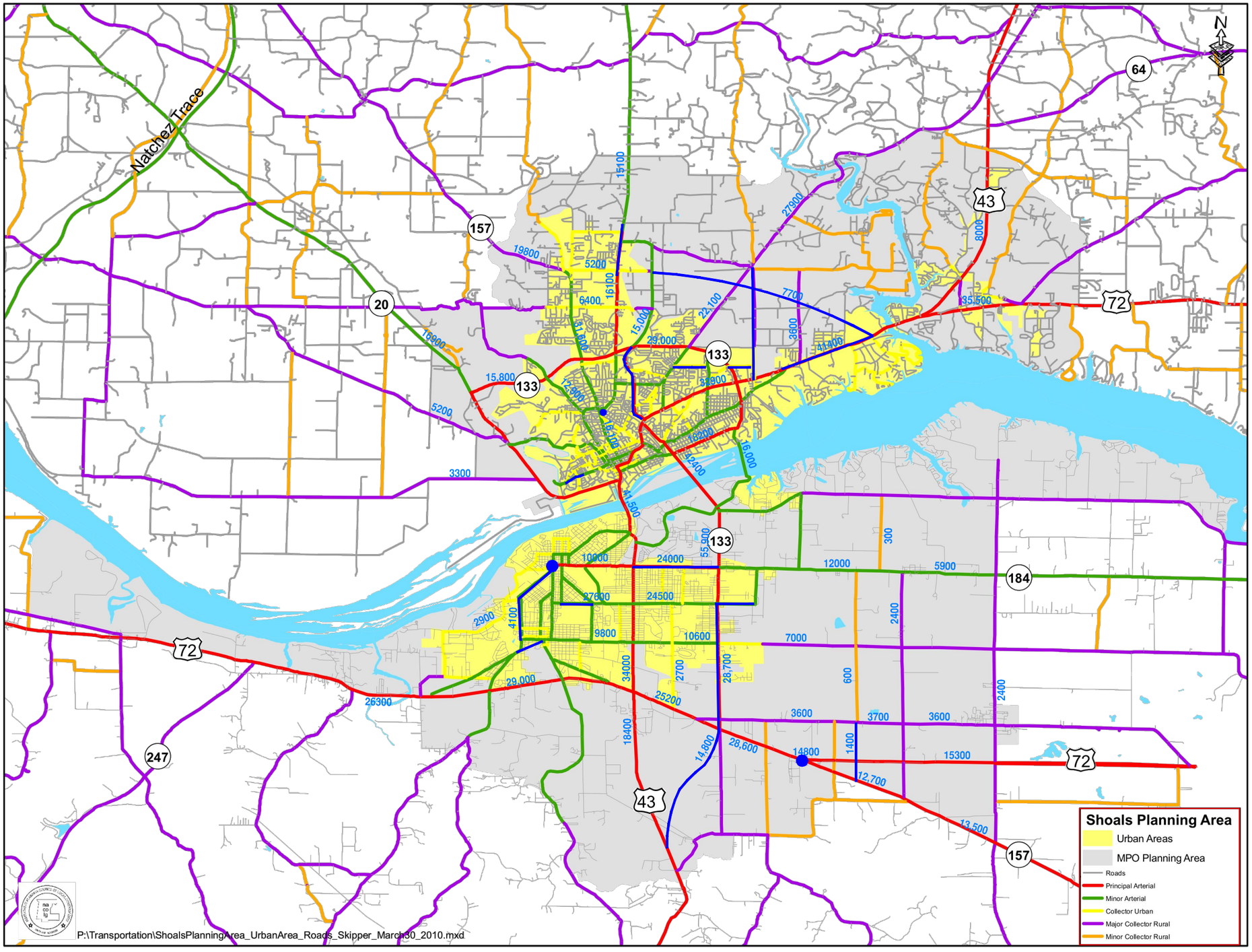
2035 Long Range Plan Capacity Projects

2035 Shoals LRTP - NACOLG

10.1 Figure



Legend

13,700 Traffic Volume (veh/day)

Capacity Projects

North

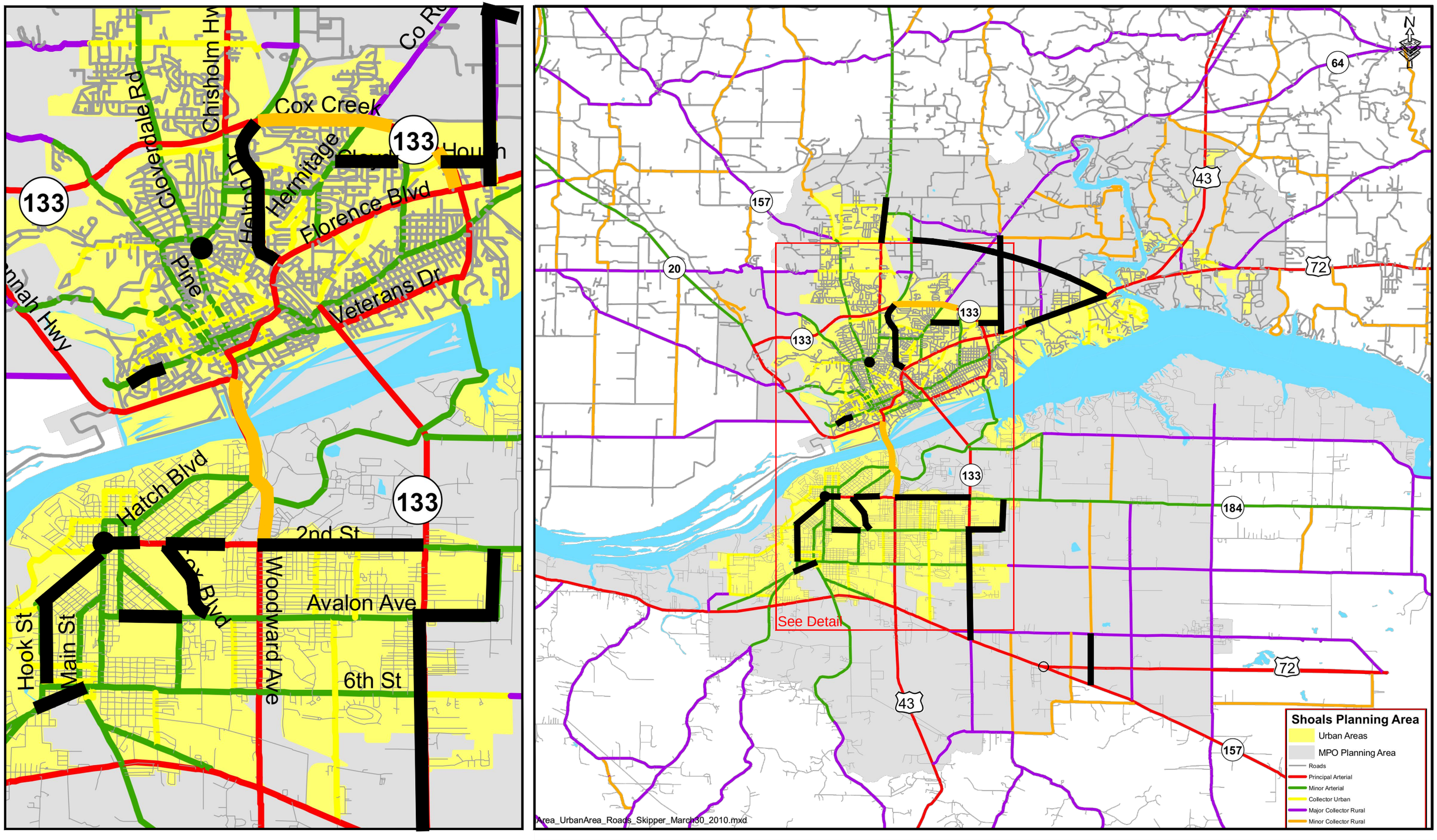
Scale: ~1:10,000

SKIPPER CONSULTING INC.

2035 Forecasted Daily Volumes

2035 Shoals LRTP - NACOLG

10.2 Figure



Legend

Capacity Projects

Deficient Links

North

Scale: ~1:10,000

SKIPPER CONSULTING INC.

2035 Long Range Plan Deficient Links

2035 Shoals LRTP - NACOLG

10.3 Figure

10.2 2035 Visionary Plan

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires MPOs to develop a financial plan to demonstrate how the long-range transportation plan can be implemented. MPOs are obligated to balance the financial costs of the plan projects against expected revenue. This limitation prevents some needed projects from being included in the transportation plan but it also reduces unrealistic expectations. All projects that could not fit into the transportation plan due to the financial constraints were included in the 2035 Visionary Plan. These projects can be added to the plan by amendment if funding becomes available. The fact that a project is on the Visionary Plan demonstrates the MPO's commitment to the project even though adequate funding is not currently available. The MPO will maintain the visionary plan in the hopes that additional funding will be acquired. The projects that compose the 2035 Visionary Plan are included in Table 10.2.

Although the projects from the MPO's bicycle and pedestrian plan are not listed, they are considered part of the 2035 Visionary Plan. For a complete listing of these projects, please see the current *Shoals Area Bicycle and Pedestrian Plan*.

Table 10.2
2035 Visionary Transportation Plan

Project Description	Status	Length	Lanes Before	Lanes After	Estimated Cost (YOE)
STP-AA					
Relocate U.S. Highway 43 South of SR 157 (Project ID: 100009144 – PE, 100009142 – CN, 100009146 – RW, 100009147 – UT)	LRTP	3.8 miles	N/A	4	$31,439,214

10.3 Pedestrian and Bicycle Policy and Plan

Bicycle facilities enhance urban mobility and improve the quality of life while relieving traffic congestion and expanding road capacity. Bicycle projects are relatively low cost projects that offer many benefits. Further, the Alabama Code of Law, Sec. 32-5A-263 designates bicycles as legal vehicles which can be operated in the right hand lane on any street (unless specifically prohibited). Based on these factors and 23 USC 217, and policy directives by FHWA dated June 12, 2009 and the US DOT dated March 15, 2010, it the policy of the MPO that bicycling and pedestrian facilities will be incorporated into all transportation projects unless exceptional circumstances exist.

Through the process of the preparation of the long-range transportation plan several pedestrian and bicycle projects were identified. Among these projects were: Phase 2 of the Florence Bicycle and Pedestrian Trail, the Reservation Road Bicycle and Pedestrian Trail which would continue along Wilson Dam Corridor and include Avalon Avenue from Wilson Dam Highway to Woodward Avenue, and the development of bicycle plans for each city in the urbanized area. In addition to these projects, the following recommendations are proposed:

- Encourage designed bicycle parking at all public facilities and major destinations.
- Design roads to accommodate bicyclist safely when possible.
- Create a bicycle route network that will provide safe routes between desired destinations.
- Use American Association of State Highway and Transportation Officials (AASHTO) standards for construction.
- Encourage bicycle safety programs.
- Promote efforts to provide intermodal connections between non-motorized activities and other modes of transportation.

10.4 Public Transit Plan

The process of preparing the public transit plan portion of the long range transportation plan was performed using the following steps:

1. An analysis of the existing operational conditions of the current public transit system.
2. Soliciting public input regarding the existing public transit operation.
3. Soliciting public input regarding the public transit needs in the study area.
4. Performing a traffic analysis zone (TAZ) level analysis to determine the demand for public transit in the study area.

Public transit helps increase the mobility of an area while decreasing traffic congestion and reducing the demand for parking. Transit projects should be viewed as providing a service to an area instead of being expected to make a profit.

The Shoals Area should continue to expand the current demand response transit system by expanding the hours of operation , providing subscription scheduling and extending the service area approximately four miles outside the corporate limits of each city. As the demand for public transit increases consideration should be given to developing fixed route transit system with complimentary paratransit services for qualified persons with disabilities.

10.5 Intermodal Plan

The intermodal plan for the Shoals study area is based on the current intermodal system, which is made up port of facilities along the Tennessee River, an airport and facilities of the Norfolk-Southern Railroad and Tennessee Southern Rail Company. Two projects were identified as intermodal projects during the planning process. A relocation of the Norfolk-Southern tracks, which extend through the southern portion of the study area and an access road to the state docks were identified as intermodal projects during this update. The railroad relocation would reduce the number of at-grade crossing in traffic congested areas. The railroad relocation would potentially improve both auto and rail efficiency in the Shoals Area. The dock access road would extend from Mitchell Boulevard to the state docks. This project would enhance intermodal activity between trucks and barges.

There are plans to increase the bulk and break bulk facilities at the Port of Florence. There are also plans to build a liquid bulk facility, increase warehouse facilities, increase the capacity of the overhead barge crane and to develop a new rail siting.

The Northwest Alabama Regional Airport plans to update its 2004 Master Plan in 2010.

11.0 CONCLUSIONS

The Shoals Area Transportation Plan has been carefully designed to accommodate existing as well as future transportation needs. Federal legislation makes it imperative that the study be continued if area governments are to continue receiving federal funds for transportation improvements. With the cooperation and coordination of the continuing study organization, it will be possible to maintain a plan, which meets the needs of the urban area for the next twenty-five years, while retaining the flexibility to accommodate unanticipated growth.

Appendix A
Abbreviations and Acronyms

Abbreviations & Acronym

ACS	American Community Survey
ALDOT	Alabama Department Of Transportation
CAA	Clean Air Act
CAC	Citizens Advisory Committee
CARE	Critical Analysis Reporting Environment
CBER	Center for Business and Economic Research
CBD	Central Buisness District
CEDS	Consumer Economic Development Strategy
CFR	Code Of Federal Regulations
COOP	Continuity Of Operations Plan
CTAC	Coordinated Transportation Advisory Council
CTP	Coordinated Transportation Plan
DBE	Disadvantaged Business Enterprise
DRI	Developments Of Regional Impact
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GHG	Green House Gases
GIS	Geographic Information System
ILS	Instrument Landing System
JARC	Job Access And Reverse Commute
LRTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NACOLG	North Alabama Councle Of Local Governments
NEPA	National Environmental Policy Act of 1969
PIP	Public Involvement Plan
P/L	Planning Funds
PPP	Public Participation Process (Plan)
RAID	Redundant Array Of Independent Discs
RPO	Rural Planning Organization
RSA	Retirement Systems of Alabama
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act; A Legacy For Users
SIP	State Improvement Plan
SPR	State Planning Research
STIP	State Transportation Improvement Program
TAC	Technical Advisory Committee

TDP	Transit Development Plan
TIP	Transportation Improvement Program
TVA	Tennessee Valley Authority
UNA	University of North Alabama
UPWP	Unified Planning Work Program
U.S.C.	United States Code
YOE	Year of Expenditure

Appendix B
Public Involvement