

# SHOALS AREA METROPOLITAN PLANNING ORGANIZATION

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## 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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FISCAL YEAR 2010

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**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

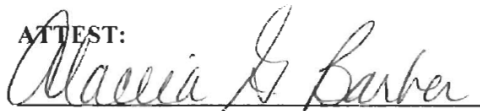
**WHEREAS**, the Northwest Alabama Council of Local Governments (NACOLOG), as staff to the Shoals Area MPO, and consistent with the above provisions and in cooperation with the Bureau of Planning and Modal Programs of the Alabama Department of Transportation, has prepared the 2035 Long Range Transportation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

  
**Alaccia G. Barber**

## Table of Contents

1.0 INTRODUCTION.....	1
1.1 Purpose.....	1
1.2 MPO Structure.....	1
1.3 Study Area.....	2
1.4 Public Involvement.....	4
1.5 Documentation Process.....	4
1.6 Traffic Analysis Zones.....	4
2.0 EXISTING TRANSPORTATION SYSTEM.....	6
2.1 Roadway Classifications and Descriptions.....	6
2.2 Roadway Capacity.....	6
2.3 Existing Traffic Volumes.....	7
2.4 Public Transit.....	11
2.5 Pedestrian and Bicycle Facilities.....	11
2.6 Intermodal System.....	11
3.0 SOCIOECONOMIC DATA.....	13
3.1 Base Year (2005) Socioeconomic Data.....	13
3.2 Socioeconomic Data Forecast.....	13
4.0 ENVIRONMENTAL CONSIDERATIONS.....	15
4.1 Air Quality Conformity.....	15
4.2 Environmental Mitigation and Climate Change.....	16
5.0 LAND USE AND TRANSPORTATION COORDINATION.....	18
5.1 General Development Trends In The MPO Study Area.....	18
5.2 Overview of Land Use Planning in MPO Study Area.....	21
5.3 Regional and County Plans.....	22
5.4 Comprehensive Economic Development Strategy.....	22
5.5 Municipal Plans Downtown and Special District Planning.....	22
5.6 Corridor Plans.....	24
5.7 Other Special Studies and Plans.....	24
5.8 General Guidelines for Land Use Transportation Coordination.....	24
6.0 TRANSPORTATION MODELING PROCESS.....	27
6.1 Travel Demand Models.....	27
6.2 Roadway Network.....	27
6.3 Trip Generation.....	28
6.4 Trip Distribution.....	31
6.5 Traffic Assignment.....	32
6.6 Model Calibration.....	32
7.0 TRAVEL DEMAND FORECASTS.....	35
7.1 Future Year Productions and Attractions.....	35
7.2 Future Year Trip Table.....	35
7.3 Future Year No Build Assignment.....	35

7.4	Projected Deficiencies.....	36
8.0	FINANCIAL PLAN.....	39
8.1	Estimated Implementation Costs.....	41
9.0	TRANSPORTATION PLAN DEVELOPMENT.....	42
9.1	Data Collection.....	42
9.2	Data Projections.....	42
9.3	Data Review.....	42
9.4	Project Selection.....	42
10.0	ROADWAY PLAN.....	43
10.1	Future Year Daily Traffic Volumes.....	43
10.2	2035 Visionary Plan.....	49
10.3	Pedestrian and Bicycle Policy and Plan.....	49
10.4	Public Transit Plan.....	50
10.5	Intermodal Plan.....	50
11.0	CONCLUSIONS.....	52

### List of Figures

Figure 1.1	Study Area.....	3
Figure 1.2	Traffic Analysis Zones.....	5
Figure 2.1	Existing Traffic Volumes.....	9
Figure 2.2	Existing Deficient Links.....	10
Figure 6.1	Screen Line Locations.....	33
Figure 7.1	Existing Plus Committed Volumes.....	37
Figure 7.2	Existing Plus Committed Deficient Roadway Links.....	38
Figure 10.1	2035 Long Range Plan Capacity Projects.....	46
Figure 10.2	2035 Forecasted Daily Volumes.....	47
Figure 10.3	2035 Long Range Plan Deficient Links.....	48

### List of Tables

Table 2.1	ALDOT Approved Capacities.....	7
Table 3.1	Socioeconomic Forecasts.....	14
Table 6.1	Trip Production Cross Classification Matrix #1 Automobile Ownership Curve.....	29
Table 6.2	Trip Production Cross Classification Matrix #2 per Household Curve.....	30
Table 6.3	Base Year Productions and Attractions.....	31
Table 6.4	Screen Line Assignment Analysis.....	34
Table 7.1	Future Year Productions and Attractions.....	35
Table 8.1	Projected Capacity and Operations and Maintenance Funds.....	40
Table 8.2	L RTP Project Costs and Available Funds by Program.(YOE).....	41
Table 10.1	2035 Long Range Plan Capacity Projects.....	44
Table 10.2	2035 Visionary Transportation Plan.....	49

# 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 strategic projects that address the needs. The federal regulations (23 CFR Part 450.322) related to this state that the strategies and projects multimodal transportation system to facilitate the safe and efficient movement of people

and 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 the strategies are included in the plan and it also prevents 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) (Public Law 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 and strategies that will:

- A. support the economic vitality of the metropolitan area, especially by global competitiveness, productivity, and efficiency
- B. increase the safety of the transportation system for motorized and nonmotorized users
- C. increase the security of the transportation system for motorized and nonmotorized 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 improvement plans and other planned growth and economic development patterns
- F. enhance the integration and connectivity of the transportation system, across 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 Metropolitan Planning Organization (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, and Lauderdale County, the Northwest Alabama Council of Local Governments, and the State of Alabama.



Alabama Highway Department (now the State of Alabama Department of Transportation). 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 (nonvoting)
- the division administrator of the Federal Highway Administration (nonvoting)
- the chairman of the Technical Coordinating Committee (nonvoting)
- the mayor of the Town of St. Floriana (nonvoting)
- the mayor of the Town of St. Killen (nonvoting)
- the mayor of the Town of St. Leighton (nonvoting)

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 related to transportation planning and who, in many, instances, work indirectly in some planning capacity such as city planning and engineering. This committee is vital to the success of the 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 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 Transportation Study are the Cities of Florence, Sheffield, Tuscumbia and Muscle Shoals portions of Colbert and Lauderdale Counties as shown in



#### 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 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 2030. 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 (NACOG).

#### 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 boundary for the compilation of land use and traffic generation data. The TAZ system developed by the Shoals Area MPO was employed for analysis. 178 internal zones and 20 external zones are included within the study area boundary. The TAZ structure is illustrated in Figure 12.



## 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 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 to 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 with distances 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 its design capacity. Capacity is defined as the ability of the facility to accommodate traffic under various levels of service. 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 *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 level of service "D" may be acceptable under certain circumstances. A level of service "E" or worse 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 hourly capacities of the facilities included in the area network are shown in Table 21. Figure 22 summarizes the deficient roadway segments.

### 2.3 Existing Traffic Volumes

Traffic volumes, as indicated by traffic counts at various locations on the roadway network, 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 21.

Table 21  
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







## 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 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 office in Muscle Shoals, Alabama.

The Demand Response public transit operates Monday through Friday, are scheduled from 7:00 a.m. until 4:30 p.m. To complement the demand response routes, a shopping shuttle 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 through a program 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 according to 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 River Authority Reservation in Muscle Shoals. In the central business district, 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 office 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 and convenient process to move goods and people.

There is an extensive intermodal system in the Shoals area. Included in this system are railways, Norfolk Southern Railroad and the Tennessee Southern Rail Company. Norfolk serves Colbert County with connections to markets to the east, west and south of the Shoals. The Tennessee Southern Rail Company is a shortline railroad that serves Lauderdale County connections into middle Tennessee. The rail service in the Shoals Area is 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, 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 intermodal transportation connections. 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 operators use public dock. The railway connects to CSX north of Columbia, Tennessee Southern Railroad has a 100-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 Mesa Airlines operating as a Delta Connection with daily service 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 ground and one instrument approach. The airport has 12 aerial ports and tie-ins for over 75 general aviation aircraft.

### 3.0 SOCIOECONOMIC DATA

The interrelationship between land use and a transportation system is used to determine demand for travel on a roadway network. Each land use (residential, 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 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 land use within its boundary. Factors used to characterize land use within each TAZ are 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 and 23,162 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 for forecast using 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 level and then refined to the TAZ level. The base year and forecast year study area totals for each data variable are shown in Table 3.1.

Table 3.1  
Socioeconomic Forecast

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, 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 per 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 adjusting 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 implemented by the Environmental Protection Agency (EPA) under Title 40 of Code of Federal Regulations (CFR) parts 51 and 93, establishes tolerance standards for ground level and atmospheric pollutants and provides for corrective mitigation measures when area monitoring 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 acknowledged by EPA, Federal Highway Administration (FHWA), and other agencies.

EPA standards, which determine tolerance violations, are known as the National Ambient Air Quality Standards (NAAQS). Standards are typically established for ozone in terms of parts per billion (ppb) and for particulate matter, in tons per day. A violating pollutant measured by a monitoring station on an annual 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. Titles 23 and 49 of USC are interpreted through the Federal Highway Administration

other transportation agencies.

*Conformity is commonly defined as a process which ensures federal funding and approval goes to transportation activities that are consistent with our air quality goals.* 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.

o @ h ven area, as required by CAA.

This becomes the highest level of emissions allowed under a Long Range Transportation Plan (LRTP) 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 ~~conforming~~ and thus must begin the mitigation process. Failing to meet conformity rules or exceeding emission 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 project projects can be frozen in place, any of which can seriously and immediately harm network. For any and all of those reasons, it is essential that immediate steps are taken by 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 in terms of projecting violations for TDS goals areas *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 level ozone. Barring a move to make newer standards retroactive, the publication of notice of rulemaking, and allowing the time needed for the public participation process, earliest effect the Shoals planning and publication efforts would be at some point after new transportation legislation is in effect, probably 2011 or early 2012.

In terms of practical action, a finding of conformity for Shoals area in March 2010 will necessitate amending the project listings in this FY2010 Long Range Update. Additionally, FY2010 Rebalanced and Updated FY2008IP will require amending, and two additional documents will be prepared: a document *FY2011 Air Quality Conformity Determination for Colbert and Luaderdale Counties in Alabama* and *2035 Long Range Transportation Shoals Area Planning Area, Summary of Plan Consistency with SAFETEA 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

*Process, there is general scientific consensus that the earth is experiencing a 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 GHG 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 create these strategies. In addition to contributing to climate change, transportation will likely also*

*affected by climate change. Transportation infrastructure is vulnerable to predicted changes in level and increases in severe weather and high temperatures. Long transportation*

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, importance of coordinating such improvements with land use and development planning 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 North 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, reduce congestion, safety and environmental quality, (2) to support ongoing and sustainable economic and community development throughout the area 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 as well as recreation, culture and tourism development.

While not a visioning exercise, exactly, these informal discussions provided an opportunity for coordinating land use and transportation and 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 Policies are included in the LRTP to further the coordination of transportation planning with local land use planning and to ensure efficient 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 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

however, that growth has moderated, in part, due to the slowdown in the national economy.

that return to previous development patterns is less predictable as to the timing of it. Growth expected to be bolstered in the Shoals based on the impact of 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; 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 residents 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 a negative 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 Barton Industrial Park and additional Alabama Corporation continued growth and expansion of UNA in Florence, including the funding for science and math building; development resulting from the 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 the 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 developments under construction. Both Bent Brook and Black Berry Village will contain approximately 150 units for retirees to college students. University of North Alabama is also located in the area.

Florence has a comprehensive master plan to guide development and continues to focus on

developmentThe 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, 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 Stone Mountain/Lauderdale part of Lauderdale County.

In Muscle Shoals there has been considerable annexation, especially toward the east and toward the airport and industrial park. The industrial park in Muscle Shoals is a growth attraction. 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 center at City Hall and sidewalks connecting to parks and schools near City Hall are better models. Sidewalk 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 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 issue 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. It is anticipated that this 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

downtown development efforts.

In Sheffield, the planned River City Development, is a 300 acre development 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 transit and street improvements. The city plans connections to increase traffic into downtown Sheffield to attract commercial and activities. Other development initiatives in Sheffield include: Possible growth resulting from growth of Keller Hospital and surrounding redevelopment; continued traffic connection to Florence on main bridge; industrial growth to the west and south; housing and Commercial development revamp; potential for Shoals area center somewhere in MPO area; development of Jackson Highway and Cox Avenue/Avalon Development corridors.

In Tuscumbia, I 22 and US 72 Corridors are key to sites. Other opportunities include: Jobs and residential growth potential from Barton project rail car project, including major employment and residential development in the western corridor; despite loss of textile jobs, Reynolds reduced and closed, and others, jobs have increased by several thousand over the recent reporting of the LRTP, through the effect of industrial development partnerships; Veterans Park is proposed; tourism travel and increased traffic from Toyota plant will improve 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 north of Leighton, the overall growth of the MPO area is impacting these areas as well. The Golf course is in close proximity as an example and is having impact on growth opportunities. In the Leighton area, the early indicators 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 important access route. In the meantime, several art galleries and historic homes are located downtown. 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 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 north Alabama and the Tennessee Valley. The cities in the MPO are located on or near the Tennessee River and were, for the most part, planned with various versions of a traditional pattern and are generally compact in their original form which is positive. Although the communities have experienced some sprawl along major corridors, there is a certain intact pattern to

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. 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 central neighborhoods.

Over a number of years, the cities, often with the assistance of the council of government, 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 the special authority of the counties for subdivision 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; modes of uses that support compact development; multimodal access to goods and services, employment and urban and neighborhood planning processes; 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 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 development in Florence and Sheffield; CBD master plan in Muscle Shoals; redevelopment of underutilized industrial and abandoned industrial properties; complete Barton Riverfront Industrial Park jobs; complete St. Francis Lauderdale Industrial Park; Littleton @ Highland -med programs from Shoals to Huntsville; redevelopment of TVA reservation to business and mixed use; complete master plans for all communities as included in the ACE program; inventory centers and corridors; complete infrastructure in existing communities; telecommunications network assessment; improve waste water treatment facilities in general; urban mass transit for 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 plans such as riverfront plans, corridor plans, etc. The following is a summary of certain aspects of 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

*Shoals Area*

*2035 Long Range Transportation Plan*

Industrial Support Centers; Recreation Support; Neighborhoods; Planning and Design Standards; Transportation Network based on mobility and access through roadway 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 urban core and access management; highway beautification; focus on retail and service districts; commercial development; traditional residential district; residential/recreation/neighborhood commercial connections.

*Planning in Muscle Shoals* includes an existing plan study; corridor study in 2002 and updated in 2009; land use and zoning provisions along 133<sup>rd</sup> Street with access management and buffers included; access management along 133; new subdivision regulations and updated ordinance comprehensive plan update proposed; context sensitive design planned on 133<sup>rd</sup> Street and other important corridors.

*Sheffield Revitalization and Redevelopment Plan and Redevelopment Strategy* design framework includes focus on CBD; urban 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, work, shopping 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; 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 more consistent connections of nodes/activity centers/neighborhoods; retail/residential development at riverfront mixed use; Montgomery Ave. residential; Hatch Blvd corridor; Hospital east and west neighborhood redevelopment; thoroughfare improvement design guidelines and zoning; focus on entertainment district and build housing in CBD; major Jacksonville Highway, Third Street, Montgomery Ave., Avalon Ave.; reinforce traditional grid.

Urban design goals include quality of public space development; pedestrian and vehicular circulation; define urban fringe; enriching amenities; redevelopment of major streets Hatch Blvd/Jackson Highway; 2<sup>nd</sup> Street/South Montgomery Ave. and others with design guidelines; protect urban edges from attachment and bring back neighborhood commercial

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

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

Tuscumbia Comp Plan 2005: Goals include preserving and enhancing existing neighborhood 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 of streetscape; link downtown and neighborhood 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 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 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 22 Corridor and the Milldam 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 in 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 Trail Plan contribute to the overall coordination of Land Use and Transportation, especially with respect to multimodal 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

In the Shoals MPO area, there are certain principles for transportation 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 the

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 kind 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 transportation and land use coordination can result in transportation improvements that are more effective, improve access, safety, the environment and livability of 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 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 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** 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 overlays 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 preserve 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, 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 and 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 of public facilities such a way as to reinforce the goals embodied 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 connections to streets, sidewalks and connections to adjacent or nearby developments, neighborhoods and districts.
- Establish consistent streetscape, parking, lighting, signage and design guidelines, appropriate for the character of the development and travel way. The location and design of parking is especially critical to how traffic is served and the overall relationship between 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 socioeconomic data to duplicate travel for the base year, which, for this study was 2005. How well the model duplicates the base year is taken as an indication of how well it will predict future travel. If the model does not 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 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 as follows:

- |        |                   |
|--------|-------------------|
| 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 model 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 a computer program. The roadway network includes all roadways 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 determined. The roadway network is then connected to the roadway network by imaginary lines through which the trips produced by each TAZ 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 number 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.

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 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 computer program to be used to calculate productions and attractions 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 to total trips for five classification categories
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-HomeBased (NHB)
Trip Purpose 4	TruckTaxi (TT)
Trip Purpose 5	InternalExternal (X)
Trip Purpose 6	ExternalExternal (X)

The Alabama DOT trip generation program calculates productions and attractions using socioeconomic data and the data files containing the automobile ownership and trip rate information. Calculation of productions is a step-by-step process. First, the number of households in the zone are subdivided into four automobile ownership groups (0, 1, 2, 3+) based on the percentages included in the automobile ownership file. The income of the zone is used to choose a 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 rate file to use.

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 separate 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 trips to produce internal and 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 six by four 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 that own that number of automobiles. Each row and column sums to 100%. Table 6.1 shows the automobile ownership curve for the Shoals study area.

The trip generation curve is also a six by four 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 file that contains the percent of total trips that are: home base work, home base other, non home base, truck and taxi, and internal. The first three trip purposes must add to 100%. The trip purpose percents for the Shoals study are shown below.

Home Base Work (HBW)	22%
Home Base Other (HBO)	53%
Non-Home Base (NHB)	25%
TruckTaxi (T)	15.4%
InternalExternal	0%

The trip attraction file is an eleven 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
TruckTaxi per Household	0.210
TruckTaxi per Retail Employee	1.940
TruckTaxi 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 productions at the external zones.

A methodology separate from the Alabama Department of Transportation trip generation program was used to determine internal productions and 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
<b>Total</b>	<b>408,486</b>	<b>408,486</b>

#### 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 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 tend to exchange fewer trips. The generalized formula for the gravity model relates the desired travel to three factors: 1) trip productions; 2) trip attractions; and 3) friction factors. The formula is:

$$T_{ij} = \frac{P_i \cdot A_j}{F_{ij}}$$

where  
 $P_i$  = productions at origin zone  
 $A_j$  = attractions at destination zone  
 $F_{ij}$  = friction factor between origin and destination zone

The effect of travel time on the exchange of trips between 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

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 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 trip tables that are produced in the trip distribution step of the modeling process is used to base year trips to the base year network. Trips between any two zones will generally follow the shortest path (roadway links) between zones that require the least amount of travel time. In determining the shortest path, delays due to congestion are not considered.

The equilibrium assignment process which was used in this study considers demand in relation to roadway capacity. The equilibrium assignment technique consists of a series of all or nothing loadings and an adjustment of travel times to delays encountered in the associated iteration. The assignment from each iteration is combined with the assignment for the previous iteration in a way as to minimize the travel time of each trip. As a result of these time adjustments, 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 model predicted traffic volumes which are then compared to actual traffic counts at selected locations along screen lines and cutlines. Screen lines are imaginary lines established to intercept traffic flows through an 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. After 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 truth 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 one percent. The final Screen line volume result is shown in Table 6-4.





Table 6.4  
 ScreenerLine 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
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
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
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
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
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
G	1	SR 184	9,400	10,600	12.8%
	2	Tusculum/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
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 productions and external productions and attractions were calculated using historical traffic growth patterns at each external zone. The productions and attractions for future 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
<b>Total</b>	<b>546,346</b>	<b>546,346</b>

### 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. Resulting trip tables for each of the six trip purposes for 2035 were produced. These trip tables were summed 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 discussed previously.

The "no build" network, also known as the "existing plus committed" network, includes the existing roadway network as presented earlier, plus identified 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 exist. Right-of-way projects were added to the base year network from the Existing Plus Committed network. They were Wilson Dam Road from the Singing River Bridge (Patton Island) to Avalon Avenue and from Woodward Avenue to Cox Blvd. The results of the 2035 no-build assignment 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.







Table 8.1  
 Projected Capacity and Operations and Maintenance Funds

Funding Category	Shoals Average Annual Costs	Capacity			Operations And Maintenance		
		Average Annual Cap Costs	% Cost:	Year of Expenditure (YOE)	Average Annual O&M Costs*	% Cost:	Year of Expenditure (YOE)
STPOA (ATTRIB)**	\$1,524,000	\$649,000	60%	\$22,860,000	\$875,000	40%	\$15,240,000
STPOA(NOT ATTRIB)	\$914,000	\$548,000	60%	\$13,705,000	\$365,000	40%	\$9,137,000
STPAA	\$3,754,000	\$2,065,000	55%	\$51,615,000	\$1,689,000	45%	\$42,230,000
NHF	\$1,629	\$978,000	60%	\$24,440,000	\$652,000	40%	\$16,293,000
BRIDGE**	\$240,000	\$0	0%	\$0	\$240,000	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%	\$23,750,000	\$0	0%	\$0
<b>TOTAL</b>	<b>\$10,776,000</b>	<b>\$6,138,000</b>		<b>\$160,087,000</b>	<b>\$4,638,000</b>		<b>\$109,313,000</b>

\*Based on a 6 year average 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 Funding Program (YOE)

	NHF	STPAA	STPOA	STPOA (State)	DPI/HPP
LRTP Project Costs	\$23,117,187	\$98,464,790	\$26,435,430	\$8,174,447	\$6,886,250
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 approval.

### 9.1 Data Collection

The data collection effort involved the compilation of socioeconomic 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 staff of the Northwest Alabama Council of Local Governments 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 household, retail employment, retail employment and school enrollment. The forecasted data was allocated to the TAZ level to show future land use and emphasize the geographic areas that should be addressed in the plan.

The socioeconomic 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, socioeconomic 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 socioeconomic 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 process. 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 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 2010 Long Range Transportation Plan were identified for inclusion in the 2035 Long Range Transportation Plan.

Roadway projects identified in the 2010 Long Range Transportation Plan that had not been completed were brought forward to develop the 2035 Roadway Plan. The 2035 Roadway Plan is 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 101  
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									
1005376RW 10003192F 10003192N	1	Widen Florence Boulevard (SR 2) from Indian Springs to East of H	L RTP	1.5 miles	4	6	Increase Capacity	Widened Shoulder	\$8,468,312
								Total	\$8,468,312
								Available Fund	\$30,550,000
								Balance	\$22,081,688
STPAA									
10003310RW 10000915DT 10000915CN	2	Widen Wilson Dam Road (SR 133) from SR 157 to 2000 feet south of railroad	TIP	0.6 miles	2	4	Increase Capacity	Widened Shoulder	\$18,481,334
10000933CN	3	Widen Wilson Dam Road (SR 133) 2000 feet south of the railroad south of Avalon Avenue	L RTP	2.1 miles	2	4	Increase Capacity	Widened Shoulder	\$38,228,610
								Total	\$56,709,954
								Available Fund	\$64,519,000
								Balance	\$7,809,050
STPOA									
N/A	4	Construct bridge and approaches on College Street	L RTP	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 4	L RTP	2.2 miles	N/A	2	Improve Mobility	Widened Shoulder	\$3,151,291
10004697RW 10004697BT 10004697CN	6	Construct a connector road from Parkway Drive to CR 47	TIP	3.0 miles	N/A	2	Correct Horizontal Deficiencies	Widened Shoulder	\$2,892,199
	7	Widen Avalon Avenue from Cox Boulevard to Helen Keller Hos	L RTP	1.1 miles	2	4	Increase Capacity	Widened Shoulder	\$2,325,298
10000854DT 10000854CN	8	Widen Avalon Ave. from Northwest Regional Airport to Wilson D	TIP	0.9 miles	2	4	Increase Capacity	Widened Shoulder	\$4,112,627
N/A	9	Extend Gnat Road from its Current end to SR 157	L RTP	1.5 miles	N/A	2	Improve Mobility	Widened Shoulder	\$1,418,177
								Total	\$16,222,164
								Available Fund	\$20,295,000
								Balance	\$4,072,836
STPOA (State)									
10000854CN	10	Improve Helton from Hermitage Drive to Cox Parkway	TIP	1.6 miles	2	4	Safety and Operatio	Widened Shoulder	\$5,109,942
								Available Fund	\$17,131,250
								Balance	\$12,021,308
Major Maintenance Projects									
STPOA									
N/A	11	Improve Webster St. between Avalon Ave. <sup>nd</sup> Street	TIP	1.0 miles	2	2	Operations	N/A	\$815,000
N/A	12	Improve Cox Blvd. between Avalon Ave. <sup>nd</sup> 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 S	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	L RTP	0.7 miles	2	2	Safety and Operatio	Widened Shoulder	\$563,894	
N/A	15	Improve Middle Road from CR 47 to U.S. Highway 72	L RTP	0.5 miles	2	2	Safety and Operatio	Widened Shoulder	\$3,151,291	
10004003 RW 100047004 UT 100047006 N	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 Tusc	L RTP	0.3 miles	2	2	Correct Horizontal Deficiencies	Widened Shoulder	\$588,733	
N/A	18	Improve W. Montgomery Ave. from Hook St. to S. Montgomery	L RTP	0.9 miles	2	2	Safety	Widened Shoulder	\$1,338,318	
10004699 UT 10004699 CN	19	Intersection Improvements of 6th Street from Dover Ave. to Montgom Avenue	L RTP	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 A	L RTP	1.1 miles	2	2	Safety and Operatio	Widened Shoulder	\$1,225,301	
N/A	21	Improve Cloyd Boule	TIP	1.9 miles	2	2	Safety and Operatio	Widened Shoulder	\$1,305,228	
									Total	\$12,913,64
									Available Fund	\$27,330,00
									Balance	\$14,416,35
DPI/HPP										
	22	Construct a railroad overpass at Montgomery Avenue	L RTP	0.5 miles	N/A	4	Improve Mobility	N/A	\$6,88,255	
									Available Fund	\$29,692,00
									Balance	\$22,805,74
NHF										
10000412 PE 10004914 UT 10000412 PE	23	Construct an interchange at the intersection of SR 20 and S	L RTP	0.5 miles	N/A	4	Increase Capacity	N/A	\$14,648,86	
									Available Fund	\$20,366,25
									Balance	\$5,717,381
STPAA										
10004948 PE 10004948 PE 10004948 PE	24	Improve 2nd Street (SR 184) from Wilson Dam Road to Woodward Additional Lane	L RTP	1.8 miles	4	4	Safety and Operatio	Widened Shoulder	\$7,330,899	
									Available Fund	\$52,788,75
									Balance	\$45,457,85
STPOA (State)										
10000825 RW 10000826 UT 10000825 N	25	Improve Chisholm Road from Rasch Road to Section Line Ro	TIP	1.1 miles	2	2	Safety and Operatio	Widened Shoulder	\$3,064,505	
									Available Fund	\$11,421,25
									Balance	\$8,356,745

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







### 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 transportation plan can be implemented. MPOs are obligated to balance the financial costs of 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 be included in the transportation plan due to 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 these projects are not currently being funded, 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)
STPAA					
Relocate U.S. Highway 43 South of (Project ID 100009144 . PE, 100009142 . CN, 100009146 . RW, 100009147 . UT)	L RTP	3.8 miles	N/A	4	\$31,439,210

### 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 Laws, 5A-263-02 designates bicycles as legal vehicles which can be operated in the right hand lane on any street (unless specifically prohibited). Based on these facts and 23 USC 217, and policy directives by FHWA dated June 12, 2009 and the US DOT dated March 15, 2010, it is 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, 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 designated 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 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 is 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 the city. As the demand for public transit increases consideration should be given to developing fixed route transit system and 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 of facilities along the Tennessee River, an airport and facilities of the Norfolk Southern Railroad and Tennessee Southern Rail Company. Two projects were identified during the planning process. A relocation of the Norfolk tracks, which extend through the southern portion of the study area and an access road to the docks were identified as intermodal projects during this update. The railroad relocation would reduce the number of grade crossings 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 project. This 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, improve 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 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 is possible to maintain a plan, which meets the needs of the urban area for the next twenty 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 Business 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
L RTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NACOLG	North Alabama Council 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
o * 7 - u -	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